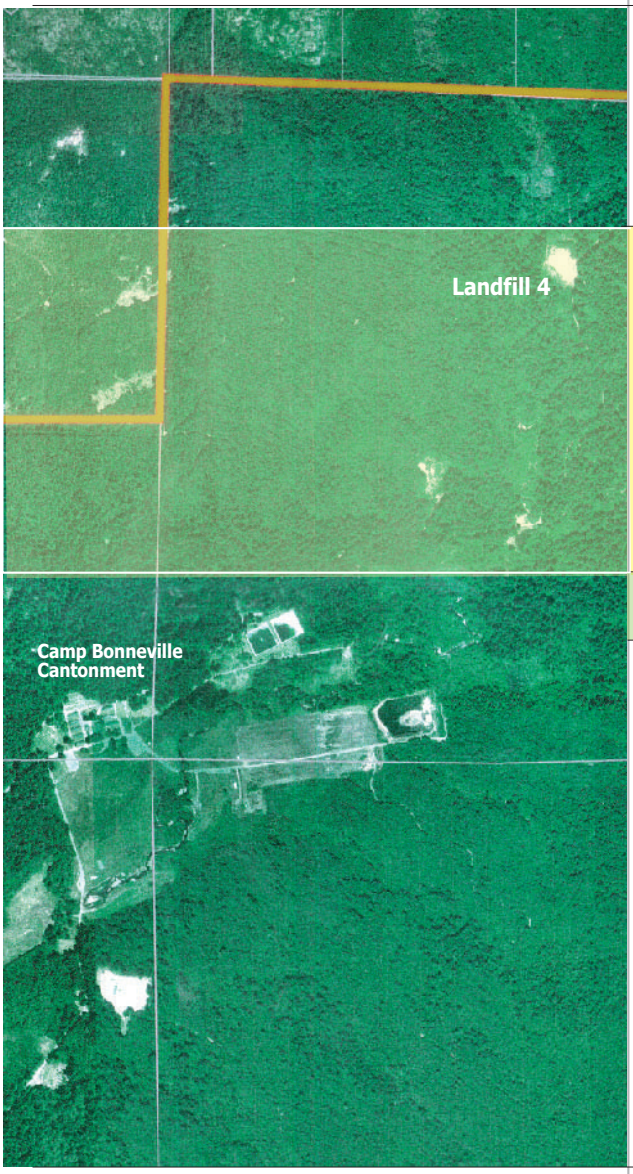
Final Report



LANDFILL 4
DEMOLITION AREA NO. 1
EXPANDED SITE INSPECTION
Camp Bonneville
Washington

VOLUME 1

Prepared for:

U.S. Army Corps of Engineers
Seattle District
4735 East Marginal Way South
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May 2003

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May 7, 2003

U.S. Army Corps of Engineers
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Attn: CENWS-PM-HW (Michael Nelson, P.E)
4735 East Marginal Way S.
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Subject: Final Report—Landfill 4/Demolition Area 1
Expanded Site Inspection
Camp Bonneville, Washington
Contract No. DACA67-98-D-1005, Delivery Order No. 0054

Dear Mr. Nelson,

As requested, 16 copies of the Final Report for the Expanded Site Inspection (ESI) at Landfill 4/Demolition Area 1 at Camp Bonneville, Washington are enclosed. Volume 1 contains the text, tables, and figures for the report as well as Appendices A-I, and Appendix L. Volume 2 contains Appendices J (Laboratory Reports) and K (Field Notes), which was presented in the Draft Final Report version and is not attached. However, information inadvertently omitted from Volume 2 is attached for inclusion in the Draft Final Volume 2.

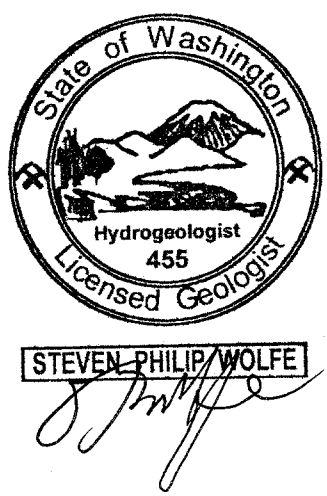
The stamp on this cover letter signifies that the geologic information presented in this document has been reviewed and approved by a licensed geologist and hydrogeologist in the state of Washington. After delivery of the Final Report, an electronic version will be prepared in Adobe Acrobat. Native files will also be provided.

If you have any questions regarding the report or need additional copies, please call me at (206) 438-2360.

Sincerely,

Steven P. Wolfe, L.G., L.H.G.
Senior Project Geologist

Attachments as noted



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Acronyms

ARAR	Applicable or Relevant and Appropriate Regulations
ARI	Analytical Resources Inc.
ASTM	American Society of Testing and Materials
bgs	below ground surface
BCT	BRAC Cleanup Team
BEC	BRAC Environmental Coordinator
BRAC	BRAC Base Realignment and Closure
ca	carcinogen
CCC	Civilian Conservation Corps
CCV	continuing calibration verification
CFR	Code of Federal Regulations
CERCLA	Comprehensive Environmental Resource Conservation and Liability Act
CLARC	cleanup levels and risk calculations
CLP	contract laboratory program
COC	chain of custody
COPC	contaminant of potential concern
CRREL	U.S. Army Cold Regions Research and Engineering Laboratory
CSM	Conceptual Site Model
DOC	dissolved organic carbon
DoD	Department of Defense
DQO	data quality objective
EBS	Environmental Baseline Survey
Ecology	Washington State Department of Ecology
EM	U.S. Army Corps of Engineers Engineering Manual
EO	exploded ordnance
EPA	U.S. Environmental Protection Agency
ESI	Expanded Site Investigation
FBI	Federal Bureau of Investigation
GIS	Geographic Information System
GPR	ground penetrating radar
HMX	octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
ICAL	initial calibration
IDW	Investigation-Derived Waste
ICP	inductively coupled plasma
JATO	jet-assisted takeoff
LCS	laboratory control sample
LCSD	laboratory control sample duplicate
µg/L	micrograms per liter
MDL	method detection limit
MS	matrix spike
MSD	matrix spike duplicate
MTCA	Model Toxics Control Act
NAD	North American Datum
NAWQC	National Ambient Water Quality Criteria
NC	nitrocellulose
nc	noncarcinogen

NG	nitroglycerin
NGVD	National Geodetic Vertical Datum
NTU	nephelometric turbidity unit
NQ	nitroguanidine
OB	open burning
OD	open detonation
OE	ordnance and explosives
ORP	oxidation/reduction potential
% REC	percent recovery
PA	picric acid
PANG	Portland Air National Guard
PCBs	polychlorinated biphenyls
PE	performance evaluation
PEL	permissible exposure limit
PETN	pentaerythritol tetranitrate
PID	photoionization detector
PQL	practical quantitation limit
PRG	preliminary remediation goal
Pt	Troutdale formation
PVC	polyvinyl chloride
Qa	quaternary flood plain
QA/QC	quality assurance/quality control
Qls	quaternary landslide deposit
R	coefficient of determination
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RDX	hexahydro-1,3,5-trinitro-1,3,5-triazine
RPD	relative percent difference
RQD	rock quality designation
RSD	relative standard deviation
SASR	Supplemental Archive Search Report
SI	Site Investigation
SOW	Statement of Work
SPT	standard penetration test
STL	Severn-Trent Laboratories
SVOC	semivolatile organic compound
TCRA	Time Critical Removal Action
TOC	total organic carbon
TNT	2,4,6-trinitrotoluene
TPH	total petroleum hydrocarbons
TPH-Dx	total petroleum hydrocarbons diesel fraction
TPH-Gx	total petroleum hydrocarbons gasoline fraction
TSS	total suspended solids
Tv	Oligocene volcanic bedrock
URS	URS Corporation
USACE	U.S. Army Corps of Engineers

USCS	Unified Soil Classification System
USGS	U.S. Geological Survey
UST	underground storage tank
UXO	unexploded ordnance
VOC	volatile organic compound
WAC	Washington Administrative Code

EXECUTIVE SUMMARY

An Expanded Site Inspection (ESI) was conducted at Landfill 4 – Demolition Area 1 (Landfill 4) at Camp Bonneville, Washington, in response to the discovery of hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) above regulatory screening criteria in one of two monitoring wells installed as part of a multi-sites investigation conducted in 1998. The overall objective of this ESI was to evaluate the potential impacts to groundwater resulting from historical activities related to open burning (OB)/open detonation (OD) at Landfill 4.

The lithology beneath Landfill 4 consists of approximately 45 to 65 feet of alluvial soils, underlain by weathered bedrock. The alluvial soils consist of silty clay to clayey silt that exhibits little evidence of weathering and appear to slope and thicken to the north and west. The approximately 15- to 30-foot-thick section of weathered bedrock is underlain by a hard, competent, and largely unweathered andesite. The weathered bedrock appears capable of transmitting groundwater; however, the relatively unweathered nature of the bedrock suggests that groundwater flow in the past has not been sufficient to completely weather the bedrock. Thin section evaluation did not suggest evidence of hydrothermal alteration. Fractures observed in thin section were filled with zeolite mineralization or calcite. Filled vesicles and unfilled vesicles are present. Zeolites are the primary vesicle filling. Connection among vesicles was not observed.

Groundwater in the alluvium flows radially toward the west, northwest, and southwest. The Washington Department of Ecology (Ecology) has a different interpretation of groundwater flow in the alluvial soils near the western edge of the landfill. Locally near Landfill 4, groundwater in the weathered bedrock flows toward the southwest. The regional groundwater flow direction in the weathered bedrock is unknown. The horizontal hydraulic gradient in the alluvium was calculated to be approximately 0.12 foot/foot, while the horizontal hydraulic gradient in the weathered bedrock was calculated to be 0.16 foot/foot. Mean vertical hydraulic gradients were estimated to be -0.04, 0.17, and 0.06, with the only upward vertical gradient calculated for well pair L4-MW1A/B. These hydraulic gradient values indicate that although there appears to be a vertical component to groundwater flow, the predominant component of groundwater flow is horizontal.

Data obtained from a recharge test conducted in two overburden wells were used to calculate a hydraulic conductivity ranging from approximately 1.6×10^{-6} cm/sec to 3.5×10^{-5} cm/sec for the alluvial soils. Based on the recharge test data, groundwater velocity in the alluvial soils is estimated to range from approximately 0.50 feet/year to 11 feet/year. Data obtained from slug tests suggested hydraulic conductivities ranging from 6.7×10^{-4} cm/sec to 2.7×10^{-3} cm/sec in the overburden wells. These values correlate roughly with published values, although the values obtained from the slug tests were approximately 10 times higher. The resulting groundwater velocities of 200 feet/year to 825 feet/year probably overestimate the groundwater velocity in the alluvium at Landfill 4. Hydraulic conductivities derived from the slug tests in the weathered bedrock ranged from approximately 3.0×10^{-5} cm/sec to 2.8×10^{-3} cm/sec. Groundwater velocity in the weathered bedrock is estimated to range from approximately 10 feet/year to 150 feet/year. Groundwater velocity in the alluvium and weathered bedrock is likely to be lower to the west, where the topographic gradient becomes gentler.

Alluvial groundwater in the area of Landfill 4 historically has not been considered a viable drinking water source as defined in WAC 173-340-720 (including a sustainable yield of 0.5 gallon/minute) and, due to the lithology and anticipated low rate of groundwater recharge, will likely not be considered as such in the future. A yield test conducted on one weathered bedrock well indicated a maximum sustainable groundwater flow rate of approximately 0.8 gallon/minute. Sustainable groundwater of the alluvium and weathered bedrock is limited by the thickness of the water-bearing units and the output may vary significantly depending on the season of the year and amount of precipitation.

Throughout the quarterly groundwater sampling and analysis at Landfill 4, the most commonly detected contaminants were HMX, RDX, and perchlorate ion. Explosives and propellants that exceeded screening criteria were consistently detected in wells L4-MW02A, L4-MW02B, L4-MW03A, L4-MW04A, and L4-MW05A. The greatest number of contaminants and the highest concentrations were routinely detected in well L4-MW02B. 1,1,1-trichloroethane, 1,1-dichloroethene, dichlorodifluoromethane, and to a lesser extent tetrachloroethene, were commonly detected in well L4-MW02B. No other wells contained VOCs exceeding screening criteria. In addition, arsenic, copper, iron, and lead exceeded screening criteria in at least one sampling round in all wells except upgradient wells L4-MW01A and L4-MW01B, and well L4-MW02A. Based on the groundwater sampling and analysis to date, the lateral extent of dissolved contaminants does not appear to be fully characterized in the alluvial soils or weathered bedrock.

Development of a conceptual site model suggests that potential human receptors include current and future on-site and off-site workers, future users of the site for recreation, current and future off-site residents, and trespassers. Commercial and domestic use of contaminated groundwater by current on-site receptors is considered an incomplete exposure pathway because on-site groundwater is obtained from one of three drinking water wells, which have been drilled to depths of 364 feet, 105 feet, and 516 feet bgs. These wells have not contained detectable containments and are drilled and installed in a different and much deeper formation than the wells at Landfill 4. Because of the hydrogeologic characteristics of the alluvium and anticipated low rate of groundwater recharge, shallow groundwater will likely not be considered as drinking water in the future. Use of groundwater from the alluvium as a drinking water source is considered an incomplete pathway under current and future use scenarios.

Surface water use by on-site and off-site receptors is a potentially complete pathway for future on-site recreational users and future on-site workers. The ingestion pathway for the consumption of fish affected by site contaminants is considered potentially complete but negligible because the contaminants detected in groundwater at Landfill 4 do not appreciably bioaccumulate in fish.

Potential primary ecological receptors on-site include terrestrial animals that may be exposed to COPCs in undisturbed surface soil and surface water. Terrestrial plants and waterfowl could also be exposed to COPCs in surface soil and surface water. Terrestrial animals and plants, benthic invertebrates, aquatic plants, and fish could be exposed to COPCs in surface water. The COPCs at the site do not appreciably bioaccumulate in terrestrial or aquatic biota and have little potential to biomagnify through a food web via consumption of contaminated prey.

Lacamas Creek is not considered a critical habitat because there are no known listed threatened or endangered animal species at Camp Bonneville, and because the dam located at the head of

Lacamas Lake, approximately 12 miles downstream of Landfill 4, precludes the use of Lacamas Creek by currently listed species.

1.0 INTRODUCTION

Since initially identified as a U.S. Government property selected for transfer and reuse by the Base Realignment and Closure (BRAC) '95 Commission, the Seattle District of the U.S. Army Corps of Engineers (USACE) has been conducting investigation and remediation efforts at Camp Bonneville, Washington, in support of property transfer. The work is being performed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This report focuses on investigation efforts at Landfill 4 – Demolition Area 1 (hereafter referred to as Landfill 4). This work has been performed by URS Corporation (URS) in accordance with the USACE Statement of Work (SOW) entitled *Expanded Site Inspection for Demolition Area 1/Landfill 4* (Contract DACA67-98-D-1005, Delivery Order No. 0054) (USACE 2000). Subsequent modifications to the original SOW were also included as part of the ESI. These modifications encompassed additional analytes for laboratory and geotechnical analyses, evaluation of thin sections from the bedrock, data validation, and the addition of performance evaluation (PE) samples to aid in the evaluation of the quality of the laboratory data obtained. Slug tests were performed in three shallow and three deeper wells to assist in estimating hydraulic conductivity and groundwater flow velocity. Field reconnaissance was performed along a 2,500-foot stretch of Lacamas Creek adjacent to Landfill 4 to search for competent and weathered bedrock outcrops and potential seep locations. In addition, a yield test was performed in one well to assess sustainable groundwater flow rates.

2.0 OBJECTIVES AND SCOPE OF WORK

This ESI has been performed as a follow up investigation to the initial investigation completed by Shannon & Wilson in 1999 as part of the multi-sites investigation (Shannon & Wilson 1999a). Based on the detection of 44 micrograms per liter (µg/L) of hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX) in the groundwater in one of the two wells installed in the 1998 Landfill 4-Demolition Area 1 (hereafter referred to as Landfill 4) investigation, the BRAC Cleanup Team (BCT) (composed of the BRAC Environmental Coordinator [BEC] from Fort Lewis, Region 10 of the U.S. Environmental Protection Agency [EPA], and the Washington State Department of Ecology [Ecology]) determined that further investigation of Landfill 4 was warranted. The ESI was selected as the appropriate pre-remedial CERCLA phase in which to obtain additional data for the site.

The overall objective of the ESI was to evaluate the potential impacts to groundwater resulting from historic landfill activities and activities related to the open burning/open detonation (OB/OD) conducted at Landfill 4. Specifically, the ESI was performed to:

- Evaluate the regional and local geology
- Evaluate the direction of groundwater flow in the overburden soil and bedrock
- Evaluate the horizontal and vertical hydraulic gradients
- Evaluate the contaminants of potential concern (COPCs) in the groundwater, including their distribution as related to the geology. The list of COPCs identified in the Management Plan (URS 2001) was based on limited information regarding the historic use of Landfill 4 and the one round of groundwater samples collected from the two existing wells onsite.
- Evaluate the subsurface lithology and identify its lateral and vertical continuity
- Evaluate the bedrock, including type, mineralogy, and potential fractures
- Evaluate the hillside west of Landfill 4 for seeps
- Perform field reconnaissance along Lacamas Creek to search for bedrock outcrops, weathered bedrock and potential seep locations
- Perform a yield test on one bedrock well to assess the sustainable groundwater flow
- Develop a topographic map from Landfill 4 to the north fork of Lacamas Creek
- Develop a Conceptual Site Model (CSM) that focuses on exposure pathways of contaminants and potential human and ecological receptors
- Obtain data that will enable a follow up investigation phase, if warranted

To complete the objectives stated above, the following scope of work was completed for the ESI:

- A Management Plan (URS 2001) was prepared that included a Work Plan, Field Sampling Plan, Quality Assurance/Quality Control (QA/QC) Plan, and Accident Prevention Plan.
- Unexploded ordnance (UXO) avoidance was performed to permit safe access to drilling locations and ensure that UXO was not present downhole prior to drilling.

- UXO avoidance was performed to permit safe access to complete the topographic survey and evaluate the hillside west of Landfill 4 for seeps and for the Lacamas Creek field reconnaissance.
- Four soil borings in the alluvium and four soil borings in the weathered bedrock were drilled and completed as monitoring wells.
- Three weathered bedrock wells included coring into the bedrock.
- Seven of the eight new wells were developed to enable the collection of groundwater samples representative of the surrounding water-bearing formations. One well installed in the overburden adjacent to Lacamas Creek was dry and development was not possible.
- The two previously existing wells were redeveloped to improve the flow rate of the groundwater, if possible.
- The eight new wells, in addition to the two previously existing wells and one soil boring in the alluvium, were surveyed for northing, easting, and vertical location.
- Slug tests were performed in three of the wells constructed in the overburden soils and three of the wells constructed in the weathered bedrock.
- The survey data collected was provided to Fort Lewis to include in the existing Geographic Information System (GIS) of the site.
- A topographic survey was completed from Landfill 4 to the North Fork of Lacamas Creek.
- Groundwater sampling was performed using the low-flow purging technique and analyzed for COPCs. This report includes the results of the four quarterly rounds of groundwater sampling.
- PE samples were analyzed to supplement the data quality assessment.
- Data validation was performed to assist in evaluating the quality of the laboratory data.
- Geotechnical samples were evaluated from the various soil horizons above the bedrock observed during drilling activities.
- Thin sections of the bedrock were prepared and evaluated for petrographic characteristics from the weathered bedrock and competent bedrock.
- Geologic field reconnaissance along a 2,500-foot stretch of Lacamas Creek was performed.
- A yield test was performed in one bedrock well, which was resampled after the yield test was performed.

Deviations from the Management Plan are presented in Appendix A.

3.0 SITE BACKGROUND

3.1 SITE LOCATION AND USE

Camp Bonneville is located in Clark County, Washington, near the town of Proebstel, approximately 10 miles from the city of Vancouver (Figure 3-1). The area of interest for this ESI is Landfill 4 (Figure 3-2).

Landfill 4 is located about 5,000 feet northeast of the Camp Bonneville cantonment. The landfill underlies Demolition Area 1. The site reportedly was used by Vancouver Barracks for the disposal of building demolition debris during the mid-1960s. According to the Environmental Baseline Survey (EBS) (Woodward-Clyde 1996), the former Camp Bonneville facility manager reported that firearms were also disposed of at this location. This site was assigned BRAC Parcel Number 21(7)HR(P). Identified potential contaminants at the site included building demolition debris, explosive and propellant residue and debris from historical on-site ordnance demolition activities, total petroleum hydrocarbons (TPH), semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), organochlorine insecticides and herbicides, and metals.

Historic activities at Camp Bonneville included disposal of unserviceable ammunition and training (Supplemental Archive Search Report [SASR] - URS Greiner Woodward Clyde [URSGWC], 1999). In addition, the site had been used by a number of groups and agencies, including the Army, Portland Air National Guard (PANG), local fire departments, and law enforcement for training and disposal operations. For example, the Bureau of Alcohol, Tobacco, and Firearms has used Demolition Area 1 for explosive and firearms disposal.

Interviews conducted for the SASR indicated that the PANG demolished AIM 7E Sparrow Missiles at Demolition Area 1. Review of aerial photographs suggested that the PANG used the center of Demolition Area 1 to detonate approximately 40 Mark 38 rocket motors and an unspecified number of warheads. The warheads, consisting of high explosives, were detonated. The rocket motors were filled with shape charges, buried approximately 4 feet deep in trenches with the nozzle aboveground, and detonated. During detonation of the motors, unburned propellant, which was a rust-colored rubbery substance, was blown out of the trench. The PANG collected unburned propellant, let it dry, and then set it on fire. Metals were taken to Fort Lewis for disposal.

Approximately six AIM 4 Falcon Missiles, warheads, and motors and AIM 9 warheads (but not motors) were detonated approximately 20 years ago at Demolition Area 1. The nozzles were opened to fill the motors with smokeless powder. The propellant, a hard plastic substance, was completely consumed. In addition to AIM missiles, one set of ejection seats from an F-84, containing rocket propellant, was also detonated at Demolition Area 1. In the middle to late 1970s, a jet-assisted takeoff (JATO) from a C-119 or other Air Force Reserve plane was detonated.

General demolition training was conducted by PANG at this site using C4 (approximately 1.5 pounds), detonation cord (approximately 0.5 pound), and 2,4,6-trinitrotoluene (TNT) (approximately 0.5 pound). Car bodies were detonated as well as railroad ties.

The site investigation area consists of a clearing surrounded by wooded areas and a gravel access road along its eastern edge. The site occupies a west-facing slope at an elevation of approximately 520 feet as referenced to the U.S. Geological Survey (USGS) National Geodetic Vertical Datum (NGVD). The land surface slopes downward to the west, toward the north fork of Lacamas Creek, which flows southward into the main Lacamas Creek. The slope is gentle near the eastern edge of the site and steeper near the western edge of the site. During the fieldwork for the Landfill 4 Investigation (Shannon & Wilson 1999b), several patches of soil on the site surface were reported to have a pinkish-red hue and were generally devoid of vegetation. The cause of the discoloration was not known; however, similarly discolored soil has been reported at other sites where explosives contamination has been detected in shallow soil (USACE 1999). A number of holes and larger craters are present on the land surface due to the detonation of explosives on site. These depressions occasionally fill with water. A large depression in the southwestern portion of the demolition area was suggested to be a former soil borrow area. A firebreak surrounds the area just outside of a barbed-wire fence line. The north side of Landfill 4 is bordered by an area of trees, with a firebreak or dirt road farther north. Surface debris consists primarily of metal scraps such as wiring, metal shards, and automobile parts. Currently, Landfill 4 is used for OB/OD of UXO on an as-needed basis.

3.2 SITE HISTORY

Camp Bonneville is a U.S. Government property that was selected for transfer and reuse by the BRAC '95 Commission. When Vancouver Barracks was decommissioned, Camp Bonneville became a sub-installation of Fort Lewis, Washington. Camp Bonneville encompasses approximately 3,840 acres, which have been identified as BRAC property subject to lease or transfer. Two areas within Camp Bonneville, totaling 820 acres, are currently leased from the Washington Department of Natural Resources.

The installation is bounded by residential developments, densely forested lands, and small farms on all sides. Future use of the property by Clark County is intended to provide the community with educational, environmental, and recreational benefits. Clark County's draft land reuse plan for Camp Bonneville proposes that approximately 1,000 acres along the western portion be used as a public regional park (Otak 1998). More remote portions of Camp Bonneville are planned for trail use, including hiking, equestrian, and mountain biking activities. In addition, wildlife habitat areas are planned.

Camp Bonneville was established in 1909 as a drill field and rifle range. Between 1910 and 1995, installation use grew to include assault weapons, artillery, and field and air defense artillery. Troops from Vancouver Barracks began to use part of the facility for a target range in 1910. The original reservation, consisting of approximately 3,020 acres, was acquired by the federal government in 1918. It was officially named Camp Bonneville in 1926. The Camp Bonneville cantonment area was built in the late 1920s. The Camp Killpack cantonment area was built and occupied by the Civilian Conservation Corps (CCC) in 1935. The facilities were used for several military training programs, in addition to being used by Vancouver Barracks. During World War II, the facility was also used to house Italian prisoners of war.

In 1950, many of the buildings and systems at the facility were rehabilitated to use for training Army Reserve units. In the early 1950s, an additional 840 acres of land were leased from the

State of Washington. Vancouver Barracks, including Camp Bonneville, became a sub-installation of Fort Lewis, Washington, in 1959.

Since World War II, Camp Bonneville has been used as a training camp for active Army, Army Reserve, National Guard, Marine Corps Reserve, Navy Reserve, and Coast Guard Reserve units, as well as other Department of Defense (DoD) and government personnel. In the 1980s, the facility was used by a number of civilian organizations for camping, picnics, and environmental studies. Camp Bonneville was currently used by federal, state, and local law enforcement agencies for firearms training and practice, and general training purposes. The Federal Bureau of Investigation (FBI) makes frequent use of one of the firing ranges.

In 1996, following the selection of Camp Bonneville for closure under the BRAC authorization, all active military training units ceased operations at the camp. All out-grants for use of the facilities were cancelled with the exception of the FBI range. The FBI currently plans to maintain a firing range on Camp Bonneville property after the base has been officially released by the DoD.

Ordnance and explosives (OE) items, including ordnance scrap and UXO, have been found in different areas of Camp Bonneville. A surface and subsurface OE characterization project was conducted at Camp Bonneville to determine the presence and density of OE left from the years of training conducted at Camp Bonneville. The OE characterization was performed by dividing Camp Bonneville into sectors and performing random OE sampling within these sectors. The areas indicating the highest density of ordnance at the site included the former rifle-fired grenade ranges, Demolition Area 1, and the impact areas.

3.3 GEOLOGY AND HYDROGEOLOGY

3.3.1 Regional Geology and Physiography

Camp Bonneville is situated in the foothills of the middle Cascades in the transition zone between the Puget Trough and the Willamette Trough Provinces. The geology of this area generally consists of Eocene and Miocene volcanic and sedimentary rock types overlain by unconsolidated clays, silts, sands, and gravels of the Troutdale Formation (Phillips 1987).

The area surrounding Camp Bonneville has historically been a sparsely populated with scattered residences and is used primarily for agriculture and livestock grazing. The zoning at Camp Bonneville is FR-80; forest zoning with a 80-acre minimum lot size (Otak 1998). Neighboring properties are zoned FR-80, FR-40 (forest zoning with a 40-acre minimum lot size), R-5 (rural estate zoning with a minimum 5-acre lot size), and R-10 (rural estate zoning with a 10-acre minimum lot size). Although current zoning permits nothing smaller than a 5-acre lot size, many residences on much smaller lots were approved prior to the adoption of the current standards. The nearest town is Proebstel, an unincorporated community about 2.5 miles to the southwest of the western entrance to the camp. Increased residential development and population has occurred in the past few years in eastern Clark County. Clark County has been the fastest growing county in Washington, with an estimated 2000 population of 345,000 (Washington Office of Financial Management).

The two cantonments, Camp Killpack and Camp Bonneville, are located on the valley floor. The remainder of Camp Bonneville consists of moderately steep, heavily vegetated slopes that have

been used primarily as firing ranges. The valley floor is a relatively narrow floodplain, which ranges from an elevation of about 290 feet NGVD on the western end of Camp Bonneville to about 360 feet NGVD on the east. The adjoining slopes rise moderately steeply to elevations of between 1,000 and 1,500 feet NGVD along ridge tops within the property boundaries. The entire installation is heavily vegetated.

3.3.2 Surface Hydrology

The principal surface water feature in the vicinity of Landfill 4 is Lacamas Creek, which flows southward from the coalescence of two branch streams in the north-central part of Camp Bonneville, exiting the installation at its southwest corner. From the southwestern property boundary, Lacamas Creek flows southwestward and discharges into Lacamas Lake. Lacamas Lake discharges in to the Columbia River near the town of Camas, Washington.

Numerous minor tributaries draining adjacent uplands flow into Lacamas Creek. Buck Creek and David Creek, the largest of these streams, drain the southeastern hills of Camp Bonneville. Two artificial impoundments of Lacamas Creek, with a total surface area of less than 4,600 square feet, have been created to support a trout sports fishery (USACE 1987).

3.3.3 Geology and Soils

Camp Bonneville is situated along the structural and physiographic boundary between the western flank of the middle Cascade Mountains and the Portland-Vancouver Basin. The geology of the Camp Bonneville vicinity is known primarily from geologic mapping by Mundorff (1964) and Phillips (1987), a limited number of well logs available from the general area, and a Multi-Sites Investigation conducted by Shannon & Wilson (1999a).

The geology at Camp Bonneville can be divided into three general areas that correspond approximately to topographic divisions. The area west of Lacamas Creek is composed of a series of predominantly gravel and semiconsolidated conglomerate layers with scattered lenses and stringers of sand (Upper Troutdale Formation). Underlying the Troutdale Formation and comprising the area to the north and east of Lacamas Creek are predominantly basalt flows and flow breccia, with some pyroclastic and andesitic rocks that are folded and faulted. The bottomland along Lacamas Creek is composed of unconsolidated silt, sand, and gravel valley fill, with some clay. Because of the thick soil and dense vegetation, faults have not been identified within Camp Bonneville (ESE 1983). Northwest-southeast trending linear expressions were identified during an aeromagnetic survey conducted by Venkatakrishnan et al. (1980). These features extend into the northern portion and very southwestern corner of the site. These features are interpreted to be faults, joints, partings, stress-relief planes, or incipient shears. The aeromagnetic data revealed probable down-thrusting to the southwest in the area south of Camp Bonneville.

Shannon & Wilson (1999a) described the four distinctive stratigraphic units that underlie Camp Bonneville:

- Quaternary floodplain and stream channel alluvium and lacustrine deposits (Qa), which mantle the Lacamas Creek valley floor

- A Quaternary landslide deposit (Qls) of surface soils and bedrock displaced from the steep slope along David Creek
- A thick sequence of Quaternary to Pliocene-age gravel, fine-grained sand, and cobbly and bouldery sand known as the Troutdale formation (Pt), which underlies areas to the west of the Bonneville cantonment
- Oligocene volcanic bedrock (Tv), which is exposed at the surface in the eastern part of Camp Bonneville

These units are presented in a geologic map (Figure 3-3).

The Quaternary alluvium deposits that comprise the shallow surface soils of the Lacamas Creek valley floor are composed of stream channel, floodplain, and alluvial fan sediments. These deposits consist of a thin layer of clay and silt, underlain by silty sand and some gravel. During drilling and excavation activities associated with the removal of an underground storage tank (UST) in Camp Killpack (Hart Crowser 1996), at least 25 feet of silty clay was encountered and interpreted to be older alluvium. Borings from the multi-sites investigation (Shannon & Wilson 1999b) also encountered alluvial clays and silts overlying a relatively thick, silty clay deposit in the Camp Bonneville cantonment. These clayey soils probably originated as water deposits that were deposited on the valley floor in Quaternary time as a result of catastrophic flooding along the Columbia River (Shannon & Wilson 1999a).

Phillips (1987) mapped a large landslide deposit on the steep northwest-facing slope of Lacamas Creek above the Camp Bonneville cantonment (Figure 3-3). The age of the landslide is unknown; however, the topographic expression suggests that it is not recent as noted by the re-growth of vegetation. The slide displaced surface soils and bedrock over about 100 acres of land adjacent to David Creek to the northeast. The landslide deposits extended from an elevation of about 1,000 feet at the headwall of the slide to an elevation of about 500 feet at its toe along David Creek.

The Troutdale formation, which reportedly underlies a portion of the western part of the camp, ranges from a poorly consolidated sand and gravel to a well-indurated conglomerate in its upper part. Based on regional boring logs, the upper Troutdale formation is locally about 150 feet thick and consists of cemented sand, gravel, sandy clay, and boulders. It is underlain by up to 150 feet of the lower Troutdale formation, which contains considerably more clay interspersed with sandy and gravelly layers. There is considerable variation in the lithology and thickness of the Troutdale formation. In general, the formation thins eastward against the underlying bedrock, and the lower part of the formation reportedly is typically coarser grained toward the east (Mundorff 1964).

The bedrock that underlies the alluvial deposits and Troutdale formation is exposed at the surface in the eastern part of Camp Bonneville. This bedrock consists of Oligocene-age andesite and basaltic andesite flows, minor flow breccias, tuffs, and volcaniclastic sandstones. According to the logs of borings from the Multi-Sites Investigation (Shannon & Wilson 1999a), the uppermost bedrock is severely weathered. This weathered bedrock tends to form surface soils that contain gravel of basalt lithology. During drilling for the Multi-Sites Investigation, bedrock was encountered in 10 soil borings, at depths ranging from approximately 6 to 37 feet below ground surface (bgs).

Five soil borings were drilled during the Landfill 4 investigation conducted by Shannon & Wilson (1999b) using a hollow-stem auger drilling rig, including three shallow borings and two deep borings (Figure 3-4). The two deeper borings were converted to monitoring wells. Soils encountered in three shallow soil borings to depths of 21 feet bgs consisted of clayey silt and silty clay to the total depth. These soils were typically reddish-brown to brown and contained varying amounts of sand and gravel. Wet soils were encountered at a depth of approximately 16 feet bgs in two of the shallow borings, and only moist soil was encountered to the total depth in the other shallow boring.

In the two deeper borings, reddish-brown to brown clayey silt and silty clay were encountered to depths of approximately 25 feet bgs. This material was generally underlain by silty, sandy gravel, clayey silt, and clay. Highly weathered volcanic rock was encountered from approximately 58 feet bgs to hard rock at 64.5 feet bgs in boring L4-SB01, where drilling refusal was met. Boring L4-SB02 had similar lithology and reached a depth of 44.5 feet bgs, where drilling refusal was met.

3.3.4 Hydrogeology

Little information is available about the hydrogeology of Camp Bonneville, despite Mundorff's (1964) study of groundwater resources in Clark County. There are three drinking water wells at Camp Bonneville: a 364-foot well at the Camp Bonneville cantonment, a 516-foot well at the Camp Killpack cantonment, and a 105-foot well at the FBI training area (USACE 2002). Several groundwater monitoring wells associated with the sewage lagoon are located east of the Camp Bonneville cantonment and, to date, no groundwater samples have been collected from these wells. Based on regional information from Mundorff (1964) and the reported depths of the wells at the camp, water supply wells in the area generally extend into the Troutdale formation or underlying bedrock. Most of the nearby wells apparently obtain groundwater from depths of 150 to as much as 500 feet bgs.

The water table is typically within a few feet of the surface in areas underlain by alluvium and appears to fluctuate seasonally by several feet. A rising water table occurs in the winter through spring during the rainy season, and a falling water table occurs throughout the summer. The localized groundwater flow generally follows local topography toward tributaries and creeks. Groundwater flows from the uplands west toward Lacamas Creek and east toward the creek from the cantonments. The elevation of the water table at upland areas of Camp Bonneville has not been established. However, it may be fairly shallow (less than 50 feet bgs) on the eastern valley walls, which are marked by shallow bedrock, multiple creeks, and tributaries.

Two monitoring wells were installed as part of the investigation of Landfill 4 (Shannon & Wilson 1999b). The depths to water in the wells ranged from approximately 10 feet bgs to 19 feet bgs. Because only two monitoring wells were installed, the direction of groundwater flow could not be determined. However, the groundwater elevation data suggested a groundwater gradient from east to west between the two wells. This direction is consistent with the groundwater flow direction that would be expected based on topography.

3.4 PREVIOUS INVESTIGATIONS

3.4.1 Landfill 4 Investigation

A Site Investigation (SI) was conducted in late 1998 and early 1999 at Landfill 4 (Shannon & Wilson 1999b). The SI was conducted separately from the rest of the Multi-Sites Investigation (Shannon & Wilson 1999a) because of a need to perform a Time Critical Removal Action (TCRA) surface clearance for UXO prior to the commencement of fieldwork at Landfill 4.

The SI was conducted to evaluate the potential for contamination resulting from past uses of the Landfill 4 site. The investigation was directed primarily at evaluating potential environmental impacts from waste disposal within the landfill, but also considered potential impacts from activities related to use of the site as an OB/OD ordnance demolition area. The primary objectives of the investigation were to evaluate whether the site poses a potential risk to human health or the environment and to provide recommendations for additional actions (where appropriate), either for site remediation or for additional investigations to better evaluate the need for and extent of remediation. The Landfill 4 SI consisted of UXO avoidance, geophysical surveying, surface soil sampling, drilling and subsurface soil sampling, monitoring well installation and development, and groundwater sampling. The locations of the soil borings and monitoring wells drilled for this investigation are presented in Figure 3-4.

The approximate area of buried debris disposal was estimated to be 120 by 200 feet during the geophysical survey. The depth of the landfill material could not be determined; however, based on ground penetrating radar (GPR) profiles, it appeared to extend more than 11 feet bgs. During January 1999, groundwater was encountered at a depth of 10.4 feet bgs in monitoring well L4-MW01 (upgradient well) and at 18.8 feet bgs in well L4-MW02 (downgradient well). The report suggested that some of the landfill material could be in contact with groundwater, at least seasonally.

The only constituents detected in soil (both near-surface and subsurface) at concentrations exceeding a screening level (Ecology Model Toxics Control Act [MTCA] Method B for groundwater protection) and background concentrations were barium, copper, and possibly chromium. However, no pattern of metals concentrations was discerned. Total chromium was analyzed; however, the lowest screening criterion (which was exceeded) is based on chromium^{+6} (VI). Elevated barium and copper concentrations were detected in both upgradient and downgradient soil boring samples. Arsenic, beryllium, and nickel were detected in soil samples at concentrations above MTCA Method B criteria for groundwater protection but below background levels for Clark County. Low levels of one or more SVOCs, insecticides and herbicides, and VOCs were detected in some samples; however, concentrations of these constituents did not exceed the screening criteria, and several were suspected to be laboratory contaminants. The number of soil samples collected at the site was limited to two surface soil samples and 15 deeper samples from five soil borings drilled outside of the landfill area.

The only constituent detected in groundwater at a concentration exceeding a screening level was RDX. This compound was detected in the presumed downgradient well only. This compound may be associated with surface or near-surface ordnance demolition activities, rather than with deeper buried building demolition debris. Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX) was also detected in the downgradient well, but at a concentration below the screening

criteria. Low levels of three VOCs were detected in one or both wells; however, the concentrations detected were below the available screening criteria. Concentrations of metals in groundwater did not exceed any screening levels.

3.4.2 Surface Water Investigations

Investigation of Lacamas Creek and Tributaries

A limited surface water investigation was conducted in 1998 of Lacamas Creek and its tributaries in the vicinity of Camp Bonneville (Hart Crowser 1999). The objectives of the investigation included:

- Evaluating whether COPCs are entering Camp Bonneville via Lacamas Creek tributaries
- Evaluating whether COPCs are exiting Camp Bonneville via Lacamas Creek and potentially impacting Lacamas Lake
- Evaluating background concentrations from which to measure effects of activities at Camp Bonneville on downstream water quality
- Evaluating whether activities at Camp Bonneville have increased concentrations of constituents of concern downstream of the camp such that there are site-related water quality impacts

Surface water samples were collected in October 1998 at six locations shown on Figure 3-5. The upstream sample locations included two samples from the North Fork of Lacamas Creek, one sample from the East Fork of Lacamas Creek, and two samples from David Creek. The downstream sample was collected at the southwest corner of Camp Bonneville, near where Lacamas Creek exits the site. The five upstream samples were composited into one sample based on the relative contribution to the total inflow as measured by the stream flow rates. This composite sample and the downstream sample were laboratory analyzed for the following constituents:

- Hardness – EPA Method 6010
- Total suspended solids (TSS) – EPA Method 160.2
- Cyanide – EPA Method 9012
- Nitrate – EPA Method 300.0
- Nitrate/nitrite – EPA Method 353.2
- Total phosphorus – EPA Method 365.4
- Orthophosphate – EPA Method 365.2
- Fecal coliform – SM 9221E
- Fecal streptococcus – SM 9330C
- Total and dissolved priority pollutant metals, plus barium – EPA Method 200.8/7470
- Total petroleum hydrocarbons (NWTPH-Gx, NWTPH-Dx)

- Semivolatile organic compounds – EPA Method 8270C
- Pesticide/PCBs – EPA Method 8081A/8082
- Organophosphorus pesticides – EPA Method 8141A
- Nitroaromatic and nitroamine explosives, including pentaerythritol tetranitrate (PETN) – EPA Method 8330
- Ammonium picrate/picric acid – LTL 8303

Laboratory analysis revealed detections of nitrate/nitrite and nitrate in higher concentrations in the composite upstream sample compared to the downstream sample. Metals concentrations were similar in both samples and were below surface water screening criteria except for total and dissolved arsenic in the downstream sample and total arsenic in the upstream sample. In addition, total copper was also detected above surface water screening criteria in the downstream sample. SVOCs, organochlorine pesticides, PCB, and explosives were not detected in either sample. Non-petroleum hydrocarbons were detected in the two samples; however, the concentrations were attributed to naturally occurring biological material.

The report concluded that the activities conducted Camp Bonneville have not impacted the water quality of Lacamas Creek. The report also noted that the streambed of Lacamas Creek is composed predominantly of gravel and sand, with little fine-grained sediment.

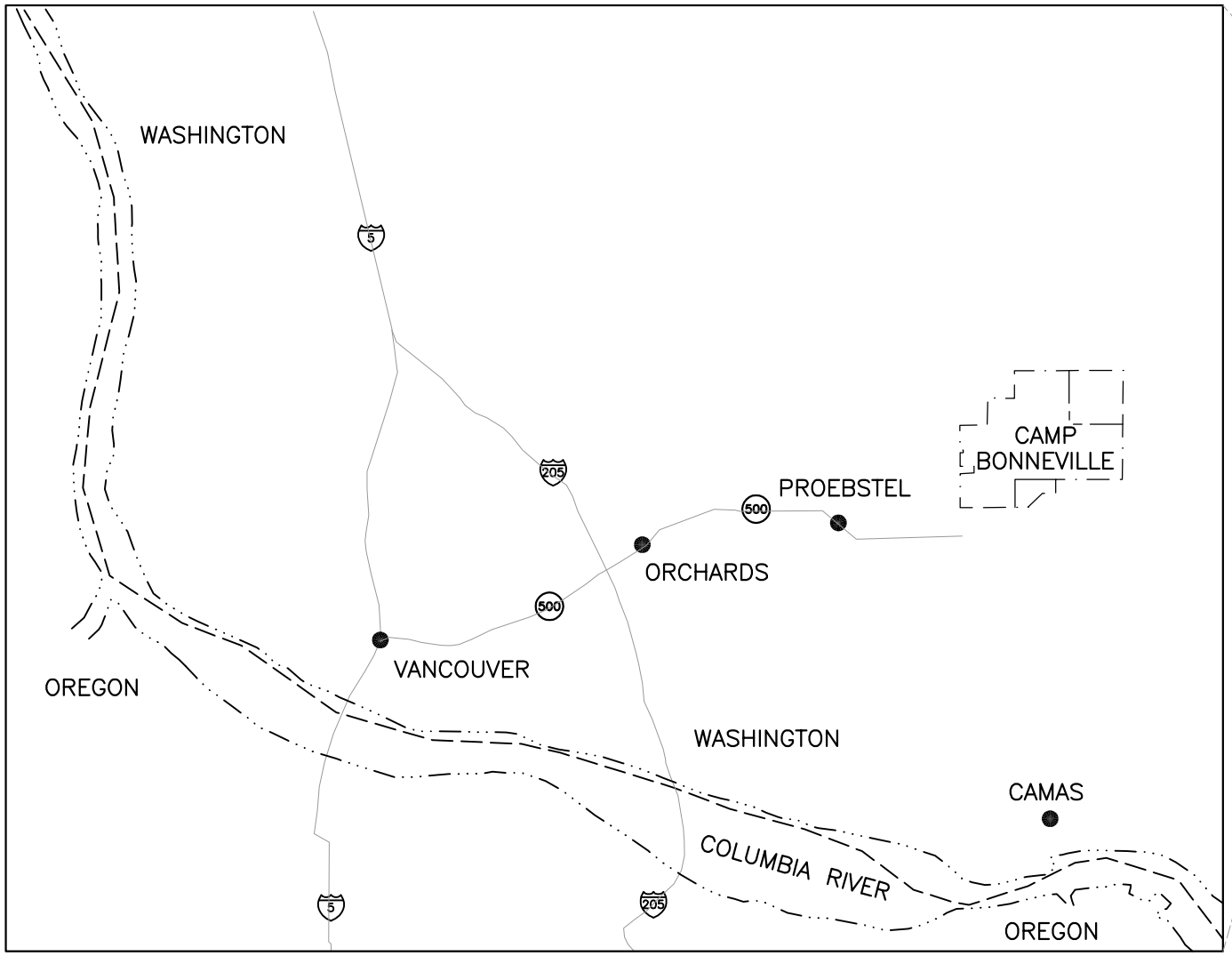
Investigation of Lacamas Creek

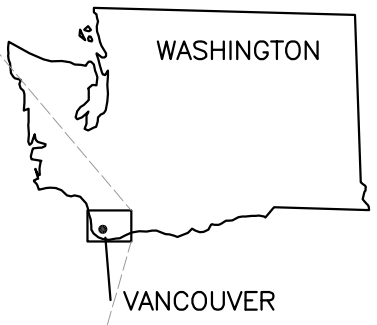
A limited surface water investigation was conducted in 1999 at Lacamas Creek in the vicinity of Landfill 4 (Hart Crowser 2000). The objective of the investigation was to provide preliminary information on potential impacts to Lacamas Creek from activities historically conducted at Landfill 4. The investigation also included examining the hillside west of Landfill 4 for seeps that would suggest daylighting of groundwater and a potential groundwater to surface water exposure pathway for human and/or ecological receptors. Three surface water samples were collected from Lacamas Creek upstream and downstream of Landfill 4. The locations of the samples are shown on the groundwater contour maps (Figure 3-4). All of the surface water samples were laboratory analyzed for the following constituents:

- Hardness – EPA Method 6010
- Total suspended solids (TSS) – EPA Method 160.2
- Nitrate – EPA Method 300.0
- Nitrate/nitrite – EPA Method 353.2
- Total and dissolved priority pollutant metals, plus barium – EPA Method 200.8/7470
- Nitroaromatic and nitroamine explosives, including pentaerythritol tetranitrate (PETN) – EPA Method 8330
- Picric acid – LTL 8303

Laboratory analysis revealed detections of TSS (downstream of Landfill 4 only), and several total and dissolved metals in all three samples, although all of the detected analytes were below

screening criteria. Explosive compounds, including picric acid and PETN, were not detected in the surface water samples. The report concluded that the activities conducted to date at Landfill 4 do not appear to have impacted Lacamas Creek.





LEGEND

- INSTALLATION BOUNDARY
- LEASED AREA BOUNDARY
- RIVER
- ROADS
- STATE LINE

0 1650 3300 6600 9900

APPROXIMATE SCALE IN FEET

N

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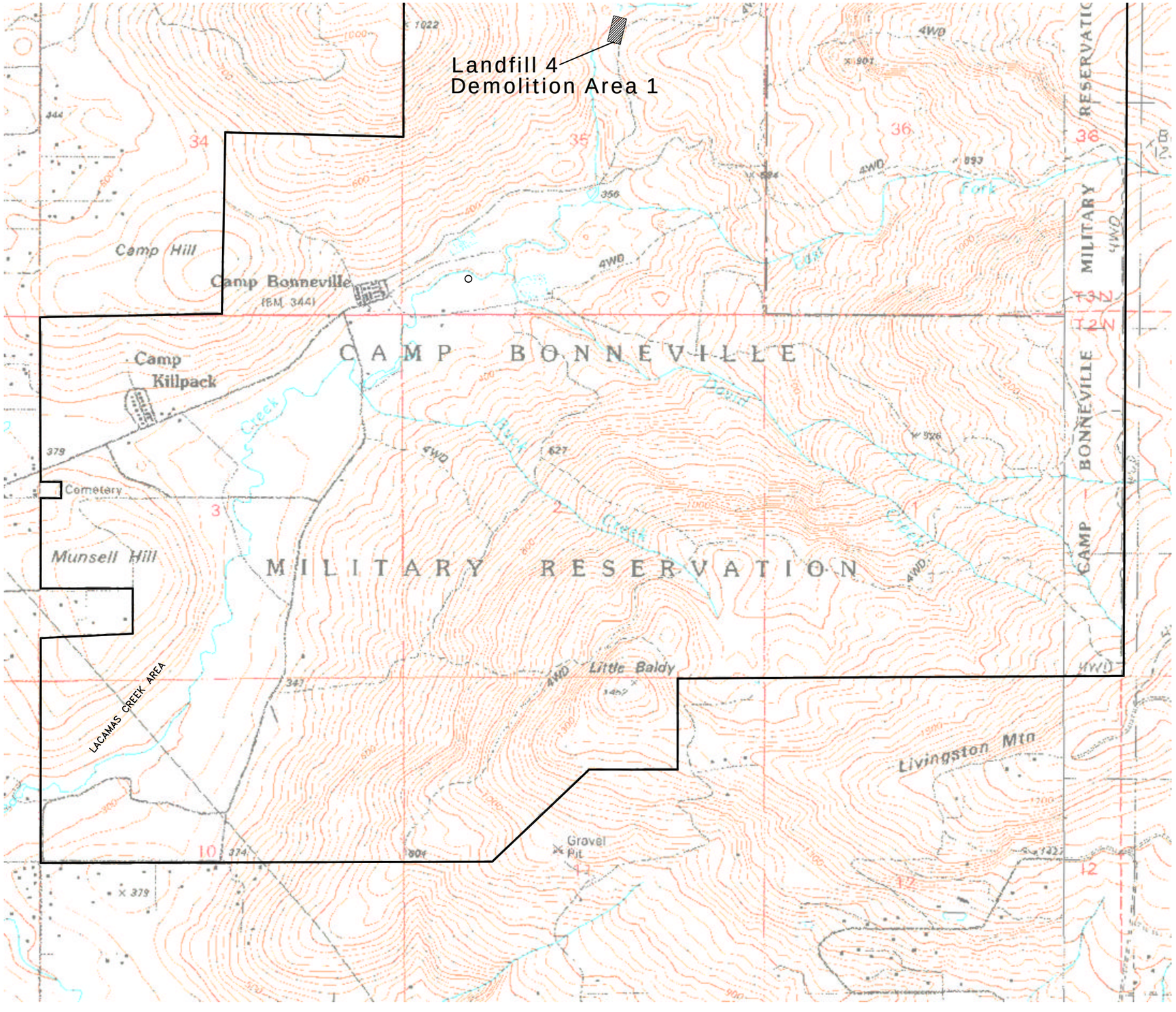
URS

U.S. ARMY
CORPS OF ENGINEERS
SEATTLE DISTRICT
SEATTLE,WASHINGTON

Location of Camp Bonneville
Military Installation

CAMP BONNEVILLE PN 53F0072207 WASHINGTON

FIGURE 3-1



URS

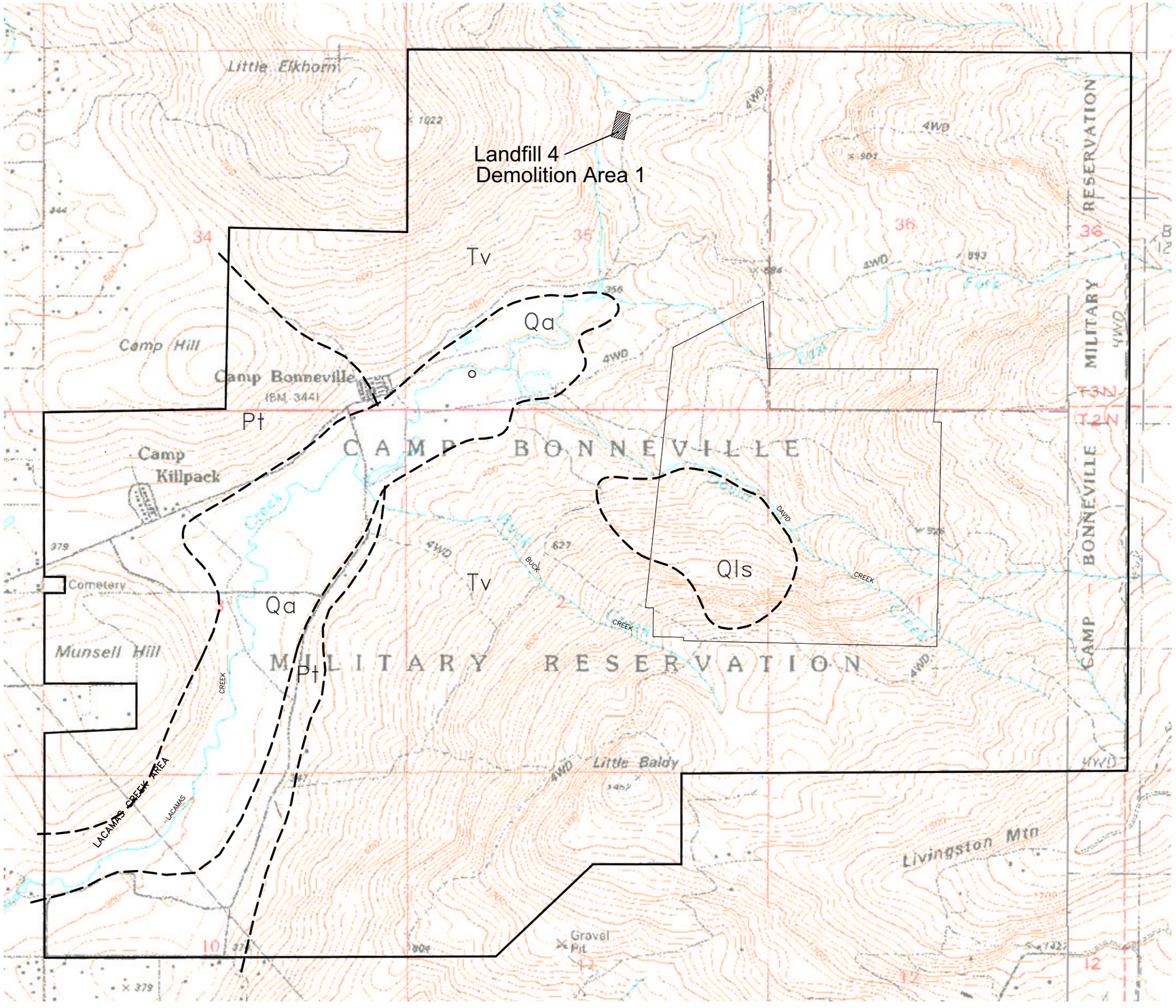
U.S. ARMY
CORPS OF ENGINEERS
SEATTLE DISTRICT
SEATTLE,WASHINGTON

Location of Landfill 4 Demolition Area 1

CAMP BONNEVILLE PN 53F0072207 WASHINGTON

FIGURE 3-2

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LEGEND

GEOLOGIC FORMATIONS

KEY TO GEOLOGIC FORMATIONS

Qa	Alluvium; floodplain and stream channel deposits of silt, clay, sand, and gravel.
Qls	Quaternary Landslide Deposit.
Pt	Troutdale Formation: Upper member consists predominantly of cemented sandy gravel with pebbles and cobbles; lower member consists predominantly of fine sand, silt, and clay.
Tv	Tertiary Volcanics: Basalt and andesite lava flows, with some pyroclastics, tuff, and volcaniclastic sandstones.

SOURCE

Geologic Information From Shannon & Wilson, Inc. (1999a)

N

0 375 750 1500 2250

SCALE IN FEET

URS

U.S. ARMY
CORPS OF ENGINEERS
SEATTLE DISTRICT
SEATTLE,WASHINGTON

Geologic Map of Camp Bonneville

CAMP BONNEVILLE PN 53F0072207 WASHINGTON

FIGURE 3-3

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HC-SW03

CREEK

LACAMAS

BANK

OF

CREEK

FORK

OF

HC-SW02

NORTH

TOP

ESTIMATED BOUNDARY
OF LANDFILL 4

L4-SB04

L4-SB03

L4-MW02A

CRATERS

L4-MW01A

CRATER

L4-SB05

BUNKER

HC-SW01

480 485 490 495 500 505 510 515 520 525 530 475

LEGEND

L4-MW01A	MONITORING WELL LOCATION AND DESIGNATION FROM SHANNON & WILSON (1999b)
L4-SB03	SOIL BORING LOCATION AND DESIGNATION FROM SHANNON & WILSON (1999b)
HC-SW02	APPROXIMATE LOCATION OF SURFACE WATER SAMPLE (HART CROWSER 2000)

NOTES

1) TOPOGRAPHY PROVIDED BY OLSEN ENGINEERING

2) BOUNDARY OF LANDFILL 4 ESTIMATED BASED ON SITE OBSERVATIONS AND TOPOGRPAPHIC ANALYSIS

0 50 100

Scale in Feet

N

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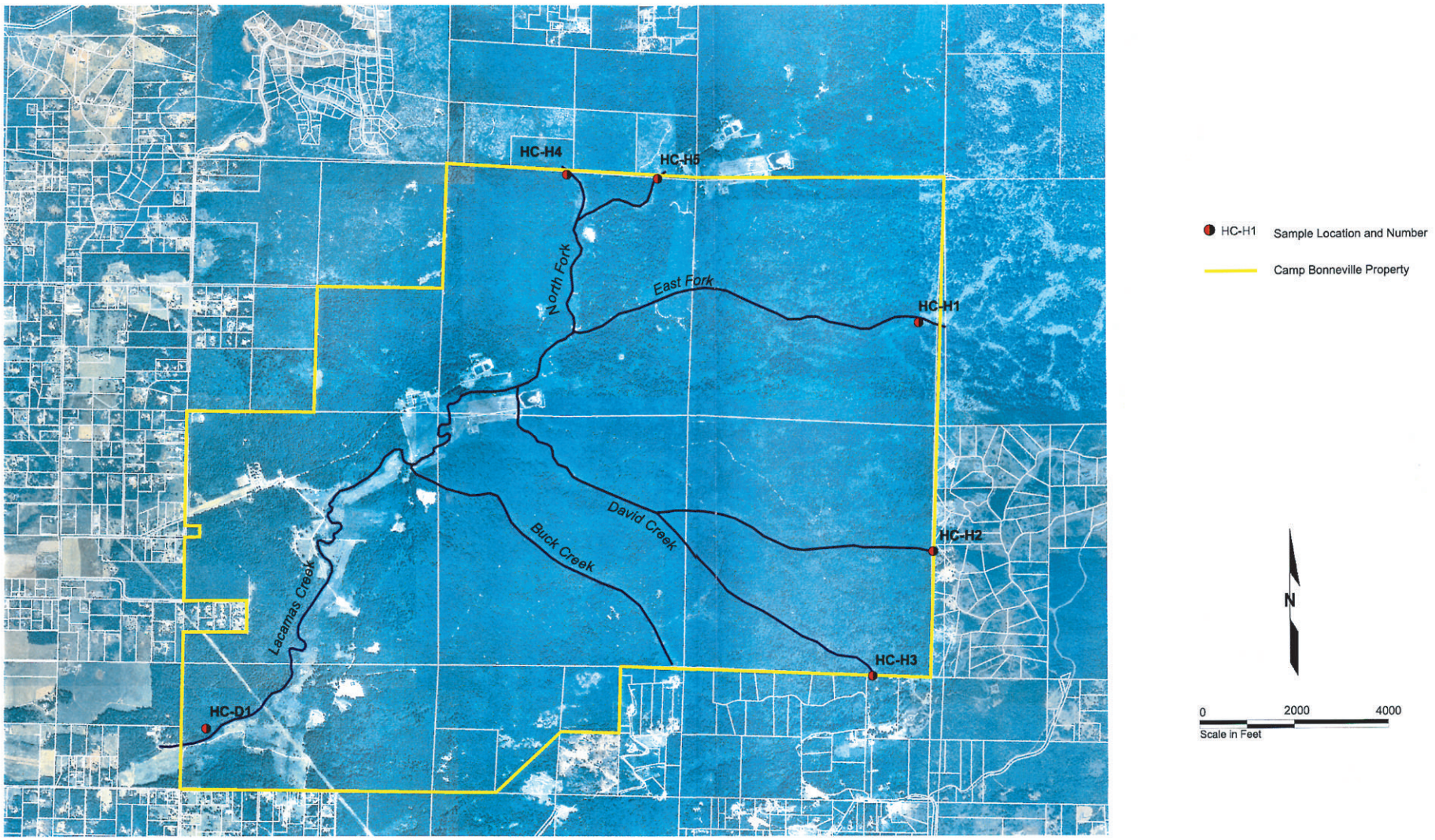
U.S. ARMY
CORPS OF ENGINEERS
SEATTLE DISTRICT
SEATTLE,WASHINGTON

Landfill 4

Locations of Soil Borings & Initial Monitoring Wells

FIGURE 3-4

CAMP BONNEVILLE PN 53F0072323.00 WASHINGTON



Source: Hart Crowser 1999

Figure 3-5
Surface Water Sample Locations

Job No. 33752889

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Camp Bonneville

4.0 FIELD INVESTIGATION METHODS

4.1 UXO AVOIDANCE

Because Camp Bonneville has been used for nearly 80 years as a military firing range and Landfill 4 has been historically used as an OB/OD area, UXO avoidance measures were conducted before workers were allowed to begin on-site activities. This section discusses the procedures used for UXO avoidance during field activities.

The most important safety precaution for fieldwork was to minimize exposure of personnel to potential UXO. This was accomplished by employing a team of UXO specialists who performed UXO avoidance activities in areas where the investigation was conducted. The UXO avoidance activities consisted of the following:

- Visually inspecting all investigation areas except those that are used on a regular basis for routine operations (i.e., existing roadways).
- Conducting magnetometer surface surveys for foot or vehicular traverses off established roadways and walkways, including the area between Landfill 4 and Lacamas Creek, where a topographical survey was conducted. UXO avoidance was also performed for the pathways created for drilling rig access. The size of the pathways was a minimum of two times the width of the largest vehicle to use the pathway (i.e., drilling rig). Pathways were cut across the south and east firebreak roads to create access to drilling locations for L4-MW03A, L4-W03B, and L4-MW05A (Figure 4-1). The north and west firebreak roads were improved and widened to gain access to drilling locations for L4-MW02B and L4-MW04A. Entry and egress paths were flagged to ensure that all personnel entered and exited the site along the prescribed pathway.
- Performing UXO avoidance to permit the construction of an access pathway for drilling equipment for drilling and installation of the weathered bedrock well and adjacent overburden soil boring south of Landfill 4. After discovering the presence of surface UXO and subsurface anomalies between the access road and drilling location of L4-MW07B, UXO clearance measures were required. UXO clearance consisted of conducting magnetometer surveys to approximately four feet below ground surface (bgs), unearthing the anomalies to assess potential UXO, and detonation of UXO found during the survey. The UXO construction support team also remained onsite during clearing and grubbing activities as well as road building in the event further evidence of UXO was encountered.
- Performing UXO avoidance to permit transportation of portable drilling equipment to the area adjacent to Lacamas Creek for drilling and installation of the overburden well (L4-MW06A).
- Conducting downhole magnetometer surveys for all boring locations to ensure safe downhole drilling conditions. To assess downhole conditions, a hand-auger was used to core to a depth of 6 feet bgs at each drilling location. The borehole was evaluated for UXO using an MK 26 Mod 0 Ordnance Locator and a downhole magnetometer at 2-foot intervals until a 6-foot depth was reached.

- Visually inspecting the hillside west of Landfill 4 to permit safe access to look for potential seeps along the hillside. UXO avoidance activities were also conducted at the two locations on the hillside where hand-auger borings were drilled to evaluate whether a gravel layer could be located.
- Accompanying personnel conducting site reconnaissance for mapping of weathered bedrock (UXO avoidance performed by a representative of the Washington Department of Ecology [Ecology]).

4.2 INVESTIGATION OF HILLSIDE FOR SEEPS

As part of the effort to fill in data gaps regarding the potential daylighting of a water-bearing unit at Landfill 4, the hillside west of the landfill was investigated for seeps. It was concluded that this portion of the investigation could provide information regarding potential migration, and human and ecological receptor pathways of contaminants from the landfill. This was performed by first conducting UXO avoidance procedures on the hillside followed by removal of surface vegetation and careful evaluation of potential seeps emanating from the landfill. In addition, two hand-auger borings were drilled to approximately 8 feet bgs on the hillside in an effort to locate the gravel layer identified in the boring logs from L4-MW01A and L4-MW02A. The locations of the hand-auger borings were selected based on the depth at which gravel was initially observed in the borings for L4-MW01A and L4-MW02A (Shannon & Wilson 1999b). This soil layer appeared to slope downward to the west. The location where the gravel may appear (if present) on the western slope was estimated by measuring the vertical distance from the top of the slope that would intersect the anticipated slope of the gravel layer.

4.3 GEOLOGIC FIELD RECONNAISSANCE OF LACAMAS CREEK

Geologic field reconnaissance was conducted along a 2,500-foot length of the North Fork Lacamas Creek to evaluate the location of competent and weathered bedrock outcrop along the stream as well as searching for potential seep locations. The reconnaissance began at the bridge along the access road and proceeded upstream to Landfill 4. A geologist from URS conducted the reconnaissance accompanied by representatives from the USACE, Ecology, and contractors to EPA. A UXO field technician from Ecology also accompanied the team to provide UXO avoidance support.

The objectives of the geologic reconnaissance were to map the location of in-place rock (competent and weathered bedrock) formations distinguishable from loose rock or boulders in the stream channel, and evaluate potential seep locations that may be associated with the weathered bedrock. The bedrock outcrops and associated field conditions were recorded and included the location, material type, and degree of weathering, identification of groundwater seepage face(s), date, and weather conditions. This work was conducted during low-flow conditions of Lacamas Creek for safety considerations.

4.4 DRILLING PROCEDURES AND MONITORING WELL INSTALLATION

Eight monitoring wells were drilled and constructed in June and July 2001 and December 2002 (Figure 4-1). Seven of the eight wells were developed. Well L4-MW06A could not be

developed due to a lack of water. These activities were conducted in accordance with the Management Plan (URS 2001). URS contracted drilling and monitoring well installation services to Cascade Drilling, Inc., of Portland, Oregon. URS personnel supervised oversight of drilling, well construction and well development activities, with assistance from the Seattle District USACE. All decisions regarding implementation of the Sampling and Analysis Plan were made with concurrence of USACE personnel.

Records of drilling operations and related activities were documented by URS geologists and by the drilling contractor. These records consisted of soil boring and well construction logs and information recorded in the project field logbook. A drilling report was prepared and maintained by the drilling contractor on a daily basis, specifying the amount of hours worked, material used, unforeseen problems, and other special comments or observations.

Soil boring and well construction logs were completed to show the total depth of the boring, zones of water loss or production during drilling, diameter of the borehole, formation changes, occurrence of groundwater, well construction details, water level measurements, field screening results, or any other information deemed appropriate by field personnel. Soil descriptions were recorded in accordance with American Society for Testing and Materials (ASTM) D2488-90 "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)" (ASTM 1990) and the USACE Engineering Manual (EM) 1110-1-4000 (USACE 1998). Soil boring and well completion logs, and well development and sampling forms are presented in Appendix B.

4.4.1 Construction of Access Road

The drilling contractor prepared an access road to the proposed well locations for L4-MW07B and the adjacent overburden soil boring. The access road was to extend approximately 200 feet from the road and include a drilling pad large enough to accommodate the drill rig and support vehicles. UXO avoidance was conducted prior to construction of the access road and downhole to a depth of six feet, at two-foot intervals. During the initial UXO avoidance the week of September 9, 2002, several UXO-related items were found at the surface including a conical nose plug for a bomb, a spoon of a hand grenade, and a fin to a 25-pound aerial practice bomb. In addition to these items, scrap metal was present at the surface and other below ground anomalies were present throughout the proposed drilling area for L4-MW07B. As a result, UXO construction support was necessary to provide a safe access route to the drilling location and permit construction of the access road.

UXO construction support continued during the week of December 9, 2002 beginning with clearance activities from the road to the drilling locations. Anomalies detected revealed abundant surface and near surface scrap metal, reinforced concrete, and wires. In addition, one live 2.36-inch antitank round was located in the proposed access road area. In accordance with the UXO clearance Management Plan (UXB Inc. 2002), UXO clearance activities ceased while the UXO was evaluated by the UXO construction support team. The evaluation indicated that the safest disposition of the UXO was to detonate it in place. Prior to preparing it for detonation, the following agencies and organizations were notified:

- USACE – Seattle District
- Fort Lewis BRAC Environmental Coordinator

- Vancouver Fire Department

The antitank round was prepared for detonation by first evacuating all personnel to Range Control except for the UXO construction support team. Four blasting caps equipped with five-minute fuses were then affixed to the round. The fuses were lit and the antitank weapon was detonated after the UXO construction support team evacuated to a safe distance. UXO support continued following detonation and additional anomalies or UXO were not discovered. The UXO construction support team remained onsite for the clearing and grubbing and access road preparation.

UXO avoidance was also conducted for the route used to transport portable equipment to the drilling location for L4-MW06A. Surface and subsurface anomalies were detected; however, a safe access route to the location for well L4-MW06A was established. Downhole anomalies were not detected prior to installing the well.

4.4.2 Hand Auger

Well L4-MW06A was installed in the overburden adjacent to Lacamas Creek (Figure 4-1) using a hand auger. The limited access to the drilling location required transporting the drilling equipment to the well location. The direct push rods were advanced using a hand auger. A split-spoon sampler was driven directly to a specific depth and a soil sample was retrieved for lithologic analysis. After hand-augering to a depth of three feet bgs, the a 24-inch split-spoon sampler was driven from three to five feet bgs using a 30-pound hammer. The sample was then extracted and the split-spoon sampler was driven to a depth of six feet bgs where refusal was experienced.

Upon sample retrieval, the field geologist logged the sample in accordance with the Unified Soil Classification System (USCS). Log entries included depth, estimated density, color, soil type, and moisture content. In addition, any unusual features such as odor, unusual solid constituents, and the presence of free-product, if any, were recorded.

Once driven to the selected depth, a ¾-inch diameter monitoring well was constructed using schedule 40 polyvinyl chloride (PVC) well screen with a 10-slot size. Due to the remote location of this well, protective bollards were not constructed. To protect the well, a five-foot steel casing section was placed over the well riser and set in concrete. Approximately three feet of the casing were above ground with the remaining two feet set in the concrete. The steel casing has a locking cap.

A pre-packed PVC continuously wound V-wire well screen was intended to be used. However, because of the shallow nature of the well and length of screen, conventional PVC well screen was use. Pre-pack continuously wound V-wire screen was prepared in 5-foot length and cutting these screens would compromise their integrity. The well screen was 10-slot size and two feet in length. The well screen included a 20/40-sand filter pack. After the screen was placed, a two-foot sand pack was placed above the screen. A bentonite seal was placed above the sand pack to one foot bgs. The well included a concrete seal from one foot bgs to the surface and the well was completed with a surface monument.

4.4.3 Hollow-Stem Auger

Four borings (L4-MW03A, L4-MW04A, L4-MW05A, and L4-SB07A) were advanced into the unconsolidated alluvium using a hollow-stem auger drilling method. The shallow well borings were advanced to obtain information regarding the alluvial lithology, location, and thickness of the upper water-bearing unit and to measure the groundwater flow direction and horizontal hydraulic gradient in the shallow aquifer.

The borings were drilled to depths ranging from 36 feet bgs (L4-MW05A) to 54 feet bgs (L4-MW04A). The possible presence of perched groundwater at each well location was evaluated during drilling. Each soil boring was advanced until water was encountered, which was anticipated to be in the gravel layer observed in the two pre-existing monitoring wells installed during the Shannon & Wilson investigation (Shannon & Wilson 1999b). Evidence of an increase in soil moisture in the cuttings, the driller's observations, and soil sampling with a standard penetration test (SPT) split-spoon sampler were used to evaluate the presence of water and associated water-bearing lithology.

No clearly defined shallow water-bearing formation was encountered; however, minimal water was noted in each of the shallow borings, except L4-SB07A. To provide additional information on the lithology and to ensure that the bottom of the alluvium was reached, the soil borings were advanced into weathered bedrock. The auger was then retracted and the borings were backfilled with bentonite chips to below the level where groundwater was first observed. Monitoring wells were constructed in three of the four borings so that the well screens intercepted the initial water level surface observed during drilling. Based on the apparent thickness of the water-bearing formation, well screens were either 5 feet or 10 feet in length, with the wells with thinner water-bearing formations being constructed with the 5-foot screens.

The alluvium encountered in boring L4-SB07A contained primarily fine-grained material chiefly composed of clay with lesser amounts of silt. The borehole was permitted to remain open at depths of 20, 25, 30, 35, and 40 feet bgs for approximately 30 minutes at each interval to evaluate if groundwater would enter the borehole with additional time. At each interval except 40 feet bgs, groundwater was not present in the borehole following the 30-minute time interval. The water encountered at 40 feet bgs was interpreted to be from the weathered bedrock as the lithology appeared similar to the weathered bedrock encountered at Landfill 4 and it also appeared at a similar depth as the weathered bedrock at Landfill 4. Because a water-bearing stratigraphic unit was not encountered in the alluvium, the pilot borehole was grouted to the surface with bentonite slurry and a well was not installed. This decision was discussed during a conference call on December 16, 2002 with participants from Ecology, USACE, and URS. After reviewing the lithology encountered during the soil boring, all participants on the conference call agreed that installing a monitoring well in the alluvium was not appropriate.

Cuttings and sampled material was examined for odors and visual evidence of contamination. A photoionization detector (PID) was used to field screen the soil for the presence of organic vapors. No evidence of soil contamination was observed. All hollow-stem auger cuttings and split-spoon samples were placed in 55-gallon drums, with the cuttings from each boring stored separately from the other borings.

4.4.4 Air Rotary and Rock Coring

Four borings (L4-MW01B, L4-MW02B, L4-MW03B, and L4-MW07B) were advanced into bedrock using the air rotary drilling method equipped with a downhole pneumatic hammer. In addition, rock coring was conducted in all of the weathered bedrock wells except L4-MW07B. The borings were advanced to obtain information regarding:

- Bedrock type
- Lateral continuity
- Potential degree of fracturing
- Depth and thickness of the weathered bedrock
- Nature of the contact between the weathered bedrock and competent bedrock
- The presence of a deeper water-bearing formation
- Groundwater flow direction and horizontal hydraulic gradient of the deeper portion of the aquifer

The coring procedure involved first sealing off the overlying alluvium using a cement-bentonite grout to prevent the downward cascading effect of water. After the alluvium was sealed, drilling continued until the weathered bedrock zone was encountered. Drilling proceeded through the weathered bedrock in 5-foot increments to check for the presence of groundwater. Once the bottom of the weathered bedrock was penetrated, rock coring proceeded an additional 10 feet (in 5-foot increments) into the competent bedrock. Upon review of the cuttings by the field geologist, USACE field representative, and the driller, it was concluded that successful retrieval of an intact core from the weathered bedrock was unlikely. The professional opinion of personnel present was that weathered bedrock in the core barrel would fall out while removing the core barrel from the borehole.

In accordance with USACE EM 1110-1-4000 (USACE 1998) and various ASTM procedures, the recovered rock core sections were placed in the correct vertical alignment and marked with arrows pointing toward the top of the core. The rock core was photographed, logged, and placed in a labeled wood box. Rock coring was not performed in the weathered bedrock zone. Because of the pulverizing action of the air rotary hammer, the cuttings from the weathered zone appeared greatly fragmented (fragments were generally uniform in size) and most likely not representative of the in-place weathered bedrock.

An Ingersoll-Rand T4W drilling rig fitted with a 10-inch-diameter drill bit was used to drill the deeper borings. The borings were drilled to depths ranging from 56 feet bgs (L4-MW07B) to 86 feet bgs (L4-MW01B). The upper portion of each boring was drilled with 10-inch-diameter temporary steel casing to seal off and support the borehole. The remaining deeper portions of the boreholes were drilled using a 7-inch steel casing. This allowed the placement of a bentonite seal between the end of the 10-inch casing and the telescoping portion of the 7-inch casing to seal off the observed shallow groundwater from the deeper portion of the aquifer. The hole was drilled slightly larger in diameter than the steel casing, allowing the casing to advance closely behind the drill bit. Cuttings were removed from the borehole by a high-pressure stream of air that was forced through the center of the inner drill string, out the bit face, and upward through

the annular space between the drill string and the outer casing or between the drill string and the open borehole. The cuttings were routed through a 6-inch-diameter hose to a cyclone separator, where they were discharged into a 55-gallon steel drum. Water was used in two of the boreholes to reduce the clumping effect of fine-grained soil and promote removal of the cuttings.

The possible presence of perched water at each well location was assessed during drilling. Evidence of an increase in moisture in the cuttings and the driller's comments were used to evaluate the presence of groundwater. Since the driller added water to the borehole during drilling, comments regarding the presence of groundwater and changes in drilling were an important factor in the determination of the presence of groundwater. No zones of perched water were observed in the overlying alluvium during drilling of the deeper borings. Groundwater was first encountered in the three deep well borings at approximate depths ranging from 27 feet bgs (L4-MW03B) to 50 feet bgs (L4-MW01B).

The cuttings were examined for odors and visual evidence of contamination. A PID was used to field screen the cuttings for the presence of organic vapors. No evidence of soil contamination was observed, and all the soil cuttings were placed in 55-gallon steel drums and labeled with the respective well boring identification.

4.4.5 Well Installation

Monitoring wells were constructed in accordance with the Washington State minimum standards for construction and maintenance of wells (Chapter 173-160 of the Washington Administrative Code [WAC]) and EM 1110-1-4000. Cascade Drilling Inc. was responsible for obtaining and submitting all well drilling permits and logs as required by the State of Washington.

When the desired depth for well installation was reached (with consultation with the USACE on-site representative), advancement of the drill pipe (or auger) ceased, and cuttings removal was discontinued. For the shallow wells drilled with hollow-stem auger, 2-inch prepacked V-wire casings were used. These casing assemblies included 20/40-grade filter sand packed around a 2-inch-diameter polyvinyl chloride (PVC) well screen (0.010-inch slot). As mentioned above, well screens used were either 5 feet or 10 feet in length depending on the observed thickness of the water-bearing formation. Ten-foot, schedule 80 PVC non-prepacked well screens and casings were used in the four deeper groundwater monitoring wells. The slot size for the screens installed in the deeper wells was 0.010 inch. The deeper wells were installed in the weathered bedrock where groundwater was observed.

A silica sand filter pack (10/20 grade) was placed into the annulus between the well casing and drill pipe. The casing was retracted periodically to allow the filter pack to settle evenly around the well screen. Filter pack material was placed so that it extended from a minimum of 6 inches below the bottom of the well screen to a minimum of 3 feet above the top of the well screen. The filter pack material was carefully placed to prevent bridging of the material across the annulus and damage to the well screen or casing. Silica sand (20/40 grade) was placed in a minimum thickness of 1 foot above the filter pack installed around the well screen to act as a barrier between the 10/20 grade sand and the bentonite seal described below.

A filter pack seal consisting of bentonite pellets was installed above the filter pack to a minimum thickness of 2 feet. Fresh water obtained from the Camp Killpack range-control building was

added several times to the bentonite seal over a ½-hour period to ensure that adequate water was available to hydrate the bentonite.

The annular space above the filter pack and the filter pack seal was filled with bentonite/cement grout in the deeper wells, mixed according to the requirements of Chapter 173-160 WAC and EM 1110-1-4000. The seal was tremied from the top of the filter pack seal upward to approximately 2 feet bgs. The annular seal in the shallow wells was completed with bentonite chips to 2 feet bgs.

A concrete surface seal was installed above the annular seal from the surface to 2 feet bgs. A watertight, steel aboveground vault was installed into the concrete surface seal to a minimum of 2 feet bgs. A lockable well plug equipped with an expandable rubber seal was placed into the top of the well casing. A padlock was placed on the lid of the well vault to discourage unauthorized access. Four metal posts were placed around each well and were set 2 feet below the surface and extended a minimum of 2 feet above the surface. Well construction logs are provided in Appendix B.

Once driven to the selected depth using the direct push method, monitoring well L4-MW06A was constructed using ¾-inch schedule 40 PVC. The well screen was 10-slot size and two feet in length. A one-foot sand pack was placed above the screen. The well was completed with bentonite seal and grout, and a surface monument. Due to the remote location of this well, protective bollards will not be constructed. To protect the well a steel casing section was placed over the well riser and set in concrete. Approximately three feet of the PVC riser was placed above ground with approximately one foot set in the concrete. The steel casing was provided with a locking cap.

4.4.6 Well Development

The wells were left undisturbed for a minimum of 48 hours prior to development to allow the bentonite grout to cure. Seven of the eight wells installed during this investigation (well L4-MW06A was dry), in addition to the two previously installed wells (L4-MW01A and L4-MW02A) were redeveloped in an attempt to increase the groundwater flow. The initial method of development was intended to include the use of a bailer to remove fines from the water column, followed by surging and/or pumping the well until the field parameters became stabilized in accordance with the procedures discussed in the Management Plan (URS 2001). However, during initial development activities, it was discovered that the recharge rate in several wells, particularly the shallow wells screened in the overburden, would likely not produce sufficient water to use a pump. The low groundwater flow rate was attributed to the amount of silt and clay found in the water-bearing zone.

A teleconference call was conducted on June 25, 2001, to discuss the initial results of the well development and to review supplemental methods of well development that would result in adequate groundwater flow and stabilization of field parameters. Representatives from the USACE, Ecology, and the Ft. Lewis BEC participated in the teleconference call; a representative from the EPA was not available. After lengthy discussion of a variety of development methods, the following approach was agreed to for well development. The methods discussed below generally agree with those stated in the Final Management Plan, with the exception of conducting a semiquantitative recharge test in two of the shallow monitoring wells.

- Based on the volume of water produced during drilling activities, the presumed higher-producing deeper wells were developed first. Fine-grained sediment was removed from the water column using a bailer and/or surge block. After the fine-grained sediment was removed, the wells were pumped to maximize the water production from the well. The pumping rate was moderated as necessary to maintain consistent flow.
- A semiquantitative recharge test was performed on shallow wells L4-MW01A and L4-MW05A to evaluate how quickly the water levels would recover after being bailed dry.
- Development of the shallow wells proceeded from the well presumed to produce the most water to the well presumed to produce the least water. Development consisted of using a bailer and/or surge block to remove sediments from the water column. The length of time for bailing or surging was based on the initial recharge tests and observations made during bailing or surging. For those wells producing sufficient volumes of water, pumping was also performed to improve water production in the wells.
- During pumping, turbidity was monitored and recorded on the well development logs. If it appeared that fine-grained sediments were penetrating the filter pack after a period of pumping (i.e., turbidity values increasing), the pumping rate was modified to maintain a consistent flow rate. If the volume of water in the shallow wells did not permit pumping, development continued with bailing and/or surging until field parameters stabilized or for a maximum of 8 hours.

Measurements of specific conductance, temperature, pH, dissolved oxygen, turbidity, and oxidation/reduction potential (ORP) were made approximately every 15 minutes for those wells with continuous water flow. For those wells that went dry after bailing, measurement intervals were based on their recovery rate. Field measurements made during well development were recorded on well development sheets (Appendix B).

In addition to the modifications to well development procedures discussed above, an adjustment to development of well L4-MW07B was necessary. This well was developed initially with a dedicated bailer to remove suspended sediment from the water column. Development was to continue by pumping in accordance with the Management Plan (URS 2001). However, equipment difficulties precluded the use of the generator and pump. Therefore, with concurrence from the onsite USACE representative, development continued by removing water from the well with a bailer until the water quality parameters stabilized. The turbidity value in the well decreased from a high of 203 nephelometric turbidity units (NTUs) to 0 NTUs after approximately 1.5 hours of development (Appendix B). All of the other water quality parameters measured during development also stabilized after 1.5 hours of development.

4.5 FIELD-SCREENING AND SOIL SAMPLE DESCRIPTION

A PID was used to monitor the field staff breathing zone for volatile organic gases. No organic vapor concentrations were detected during drilling operations. Field-screening results were entered in the comments section of the well boring logs (Appendix B).

In addition, field screening was conducted to detect organic vapors in soil. A portion of each soil sample (or small quantity of the drill cuttings) was placed in a ziplock bag and screened with the

PID. No detectable quantities were present in any of the soil samples screened during drilling operations. All headspace readings were recorded in the comments section of the well boring logs (Appendix B).

4.6 GEOTECHNICAL SAMPLES AND PETROGRAPHIC ANALYSIS

4.6.1 Geotechnical Samples

Soil samples were collected during drilling to evaluate soil types, lithology, and mineral content. These samples were retained to permit re-evaluation of the soil descriptions and to compare the soils between borings. During drilling activities, it became evident that the subsurface soils were similar with subtle differences between the soil types, such as the relative percentage of gravel, silt, and clay content. Based on these field observations, soils were classified in accordance with the Unified Soil Classification System (USCS) and geologic cross sections were prepared (discussed in Section 5.1). Until the weathered bedrock was reached, the contacts between different geologic units were gradational and indistinct.

To remove some of the subjectivity of using field observations to classify soils within the USCS system and to obtain data that may prove useful in evaluating groundwater occurrence and movement, samples from what were interpreted to be the different stratigraphic soil units were submitted for the following analyses:

- Particle size distribution by ASTM Method D 422-90
- Atterberg limits by ASTM Method D 4318
- Soil identification by ASTM D 2488
- Laboratory soil classification by ASTM D 2487

Based on observations during drilling and consultation with the USACE on-site geologist, soil samples were submitted from the soil horizons above the weathered bedrock identified in the geologic cross sections discussed in Section 5. Because the soil samples were initially collected for comparison and further geologic evaluation only and not specifically for geotechnical analyses, the volume of individual soil samples collected was not sufficient for all of the planned analyses. The samples for geotechnical analysis were selected based on their similarity in appearance, interpreted geologic horizon, and proximity (depth of sample and proximity of borings). Based on these criteria, the samples submitted for geotechnical analysis were:

- L4-MW03A (25 feet bgs: Atterberg limits, soil identification, and laboratory soil classification)
- L4-MW03B (25 feet bgs: Atterberg limits, soil identification, and laboratory soil classification)
- L4-MW03B (35 feet bgs: particle size distribution and laboratory soil classification)
- L4-MW04A (41 feet bgs: Atterberg limits, soil identification, and laboratory soil classification, and particle size distribution)
- L4-MW05A (35 feet bgs: particle size distribution and laboratory soil classification)

4.6.2 Petrographic Analysis

Part of the drilling program at Landfill 4 consisted of coring into the weathered and competent bedrock in three of the deeper borings at the site. Although cores were successfully extracted from the competent bedrock, the action of the air rotary bit on the weathered bedrock caused fragmentation of the weathered bedrock; therefore, coring was not attempted in the weathered bedrock. The competent rock cores were assessed for rock type, potential fractures, degree of weathering, and other indications of features that may impact potential groundwater movement.

To assist in this evaluation, one thin section was prepared for petrographic analysis from the weathered bedrock and two thin sections were prepared for petrographic analysis from competent rock cores. The weathered bedrock for thin section preparation was obtained from 55 feet bgs from the boring for L4-MW01B while thin sections were prepared from 61 feet bgs and 69 feet bgs from the competent bedrock from the cores for L4-MW03B. These depths represent bedrock near the top of the unweathered zone and the near the bottom of the core. The weathered bedrock from the deeper borings appeared similar, and because the largest volume of sample was retained from the boring for L4-MW01B, it was selected for thin section preparation. In addition, while the cores from the deeper borings also appeared similar, the boring for L4-MW03B exhibited the most complete recovery and was therefore selected for thin section preparation. Because of the fragmented nature of the weathered bedrock, this thin section required impregnation with epoxy resin.

4.7 SLUG TESTS

Rising and falling head slug tests were performed in three overburden wells and three weathered bedrock wells at Landfill 4 from April 22-26, 2002. Slug tests were performed in overburden wells L4-MW01A, L4-MW02A, and L4-MW05, which have screened interval lengths of 10 feet, 10 feet, and five feet, respectively. Slug tests were performed in three weathered bedrock wells (L4-MW01B [upgradient well], L4-MW02B, and L4-MW03B), each having a 10-foot screened interval. Both the overburden and weathered bedrock wells are 2-inch diameter wells. This section presents a discussion of the field methodology used to perform the slug tests. Additional discussion regarding the slug testing procedures and methodology is presented in Appendix C. Analysis of the slug test data is discussed in Section 5.1.5.

Prior to conducting the slug tests, the depth of each well to be tested was measured to evaluate if fines had accumulated in the bottom of the well casing and affected the screened interval in the well. The groundwater elevation was then measured with an electrical sounder as described in the Management Plan (URS 2001). The sounder was rinsed with distilled water between wells. A calibrated pressure transducer was placed in the center of the screened interval of the well to be tested. The transducer was connected to a two-channel Aquistar DL-2 data logger. Because the data logger to be used has two channels, the slug tests in wells L4-MW01A and well L4-MW02A, L4-MW01B L4-MW2B, and L4-MW03B and L4-MW05A were conducted simultaneously. The first two sets of wells are approximately 250 feet apart and the tests did not interfere with one another. The wells in the last set are approximately 65 feet apart and the two wells are screened in different water-bearing zones. The slug, transducer, and transducer cable were cleaned prior to use in each well by washing in a solution of tap water and Alconox, and

rinsing with deionized water. A new length of nylon rope was connected to the slug for each well.

Two slugs were initially evaluated for performance in the overburden wells. The slugs used for the evaluation in well L4-MW05A were 3-feet and 6-feet long, one-inch diameter PVC pipe, sealed at each end with no openings and filled with sand to ensure that the buoyancy effect of the slug was overcome. The evaluation indicated that the 3-feet slug created a sufficient water level change in the shallow wells for subsequent analysis. As a result, a 3-feet slug was used in shallow wells L4-MW01A and L4-MW02A. A six-foot long slug was used for all of the weathered bedrock wells. Two slug tests were performed in each well to evaluate reproducibility of the results, except for well L4-MW05A. One slug test is comprised of one falling head and one rising head test.

The falling head slug test was conducted by lowering the slug into the well with a length of nylon rope and simultaneously activating the transducer. Water level versus time data were recorded using the data logger connected to the transducer. Groundwater level measurements were collected at 1-second intervals for the initial 45 minutes. From 45 minutes to 60 minutes, measurements were collected at 5-second intervals and after 60 minutes, measurements were collected at 30-second intervals. The test was terminated when the groundwater level returned to at least 90 percent of the pre-test level. A laptop computer connected to the data logger was used in the field enabling real-time viewing of data and evaluating the groundwater level-time curve. The rising head slug test was conducted by quickly withdrawing the slug from the well and measuring the rate of water level recovery with similar intervals of data collection.

4.8 YIELD TEST

A groundwater yield test was conducted at monitoring well L4-MW02B. The objectives of the yield test included:

- Determining the sustainable flow rate from weathered bedrock well L4-MW02B
- Evacuating the stagnant water and suspended solids in the well prior to sample collection to evaluate if elevated levels of COPCs are representative of weathered bedrock water in the vicinity of L4-MW02B

The yield test was performed using a small-diameter, low capacity submersible pump placed approximately two feet from the bottom of the well with 3/8-inch diameter tubing connecting the pump to a discharge point (drum) above land surface. The pump was turned on and the initial flow rate was restricted to approximately 0.250 liters per minute (L/min). During pumping, an electronic water level meter was used to record the water level in the well at five-second intervals for the initial five minutes, and at 30-second intervals for the remaining portion of the yield test. The flow rate was increased by 0.250 L/min increments until the well was pumped dry. Once the well was pumped dry, water level recovery in the well was measured using the electronic water level indicator. Water level measurements were recorded at five-second intervals for the first 1.5 minutes of recovery, at 15-second intervals for the next two minutes, at 30-second intervals for the next four minutes, and at one-minute intervals for the remainder of the recovery test. Measurements were recorded until the water level returned to within 90% of its static level.

Well L4-MW02B was sampled for explosives residues (including PETN, PA, nitroglycerin), perchlorate ion, nitroguanidine and VOCs during the same sampling event that included new well L4-MW07B in January 2003.

4.9 GROUNDWATER SAMPLING METHODS

Four quarterly rounds of groundwater samples were collected from the two existing wells and six new wells at Landfill 4. The first round of samples was collected 14 days after completion and development of the new wells in July 2001. Subsequent quarterly groundwater sampling rounds were conducted in October 2001, January 2002, and April 2002. In addition, two new wells were installed in December 2002; however, the overburden well (L4-MW06A) did not produce water and was therefore not sampled. Weathered bedrock well L4-MW07B was sampled once in January 2003. This well was purged and sampled utilizing low-flow, minimal drawdown procedures described in this section and based on procedures described in detail in the USACE standard operating procedure, *Low-Flow Groundwater Purging and Sampling* (USACE 1997).

4.9.1 Well Depth and Static Water Level Measurement

Before sampling began, the total depth and static water level of each well were measured with a Solinst-brand electric water level indicator. The probe and attached tape were thoroughly washed with a solution of phosphate-free, laboratory-grade detergent (Liquinox) and distilled water and rinsed with distilled water before use in each well.

The depth to the groundwater was measured by slowly inserting the water-level indicator probe into the well casing. The probe was gently inserted into and retracted from the water surface so that the water surface could be determined accurately. The graduation mark on the water-level tape adjacent to the reference mark on the rim of the PVC well casing represents the depth to water. This measurement was recorded in the field logbook and on the groundwater sampling form to a precision of 0.01 foot. Survey precision for the horizontal and vertical components of the wells was to 0.01 feet.

After measuring the depth to water, the total depth of the well was measured by slowly inserting the probe to the bottom of the well. The total depth of the well is represented by the point at which the weight of the water-level probe suspended from the measuring tape can no longer be felt by the person taking the measurement. The total depth of the well was recorded in the field logbook and on the groundwater sampling form. The measured total depth of the well will be compared to well construction details to ascertain whether sediment has accumulated in the well. The calculated thickness of sediment in the well was recorded in the logbook and on the groundwater sampling form.

Following measurement of the total depth, the wells were locked. Well caps were loosely fixed to the well so that the water level in the well will equilibrate with atmospheric pressure by the time the sampling team returned to the well to purge and sample. Allowing the well to equilibrate with the atmosphere results in more accurate static water level measurements.

4.9.2 Low-Flow Purging

As stated in the Management Plan (URS 2001), a low-flow, minimal drawdown technique was used for groundwater purging and sampling. Low-flow sampling minimizes disturbance to the aquifer and is designed to ensure that samples collected from the wells are representative of groundwater. The low pumping rate induces laminar flow in the immediate vicinity of the sampling pump intake, thus drawing groundwater directly from the aquifer, horizontally through the well screen, and into the sampling device. However, strict adherence to the Management Plan could not be accomplished in the shallow wells. Although low-flow continuous purging of the shallow wells was planned for sampling, the poor recharge rate of the shallow wells precluded continuous pumping, even at the pumping rates typical for low-flow purging. As a result, it is possible that stagnant water may have been included in the groundwater samples from the shallow wells.

Purging and sampling was performed with a 1.75-inch-diameter, stainless steel, electric submersible impeller pump (Grundfos Redi-Flo II). The pump was attached to and suspended in the well with a stainless steel safety cable. A grounded electric wire was attached to the pump and extended to the ground surface, where it was connected to the electronic pump controller. A polyethylene discharge hose was attached to the pump and extended to the surface, where it was attached to a discharge port.

The pump intake was positioned at a level that is adjacent to or slightly above the midpoint of the saturated screened interval for each well. Care was taken to gently insert the pump to minimize disturbance of any sediment that may have accumulated in the well. Purging proceeded by pumping groundwater from the well at a rate of approximately 0.2 to 0.3 liter per minute. The flow rate was measured by filling a 1-liter container and measuring the rate of filling using a stopwatch. During purging, the water level in the well was monitored at least every 2 to 5 minutes to make sure that the water level did not recede and allow water to cascade down the sides of the well screen.

Specific conductance, temperature, pH, dissolved oxygen, turbidity, and oxidation-reduction potential were measured during purging using a YSI Model 6820 water quality meter and flow-through cell. Water was discharged to 55-gallon drums located at each well.

The water quality meter was calibrated each morning before sampling according to the manufacturer's instructions. Water quality measurements made during purging were recorded on a groundwater sampling sheet at intervals of approximately 5 minutes. When readings stabilized over three measurements, purging ceased and samples were collected. Stabilization was reached when three successive readings were within ±0.2 for pH, ± 1ºC for temperature, and ±10 percent for specific conductance.

4.9.3 Sample Collection and Analyses

URS collected a sample after water quality parameters had stabilized during purging. The pump was not turned off nor was the pumping rate changed between the purging and sampling process. Samples that did not require filtering were collected into the sample container directly from the end of the discharge hose.

Samples collected for dissolved metals analysis were field-filtered. An inline, nitrocellulose, 0.45-micron cartridge filter (Cole-Parmer Model 29600-00) was attached to the sample discharge line. Groundwater was rinsed through the filter for approximately 1 minute prior to filling the sample bottle. The bottle was then filled directly from the discharge outlet on the filter. The bottle was filled to just below the neck to prevent overfilling and loss of the sample preservative. Samples collected for other analytes were not filtered.

The monitoring well turbidity measurements suggested that suspended solids were likely to be in the groundwater samples and that the concentration of the suspended solids may vary for the various aliquots collected from one well. To ensure that suspended solids were not significantly affecting the representativeness of the samples, the laboratories were instructed not to shake the sample bottles prior to obtaining an aliquot for analysis.

4.10 MANAGEMENT OF INVESTIGATION-DERIVED WASTE

Investigation-derived waste (IDW) generated during the ESI was managed according to guidelines described in this section.

According to the EPA guidelines, the most important elements of managing IDW include:

- Leaving the site in no worse condition than existed before the investigation
- Removing wastes that present an immediate threat to the human health or the environment
- Complying with federal and state applicable, relevant, and appropriate regulations to the extent practicable
- Planning and coordination of IDW management
- Minimizing the quantity of generated wastes

The following types of IDW were generated during this project.

4.10.1 Drill Cuttings

Drill cuttings resulting from soil boring activities were placed in 55-gallon drums and maintained on-site until the field screening and laboratory testing results of groundwater samples were received. Only soil from one boring was placed in each 55-gallon drum. Cuttings were transported to the Burlington Environmental Services (BES), Inc. facility in Kent, Washington for disposal as non-regulated waste.

4.10.2 Development and Purge Water

During development of the monitoring wells, field personnel observed the water for visual and olfactory evidence of contamination. A PID was used to assess the potential presence of VOCs. Water generated during development of the wells was contained in 55-gallon drums. Only water from one well was placed in each 55-gallon drum. Use of low-flow, minimal drawdown sampling procedures greatly reduced the volume of water produced during monitoring well purging. A maximum of approximately 15 liters of groundwater was purged from each well

during the sampling process. The water was transported to the BES, Inc. facility in Kent, Washington for disposal as non-regulated waste.

4.10.3 Decontamination Solutions

Decontamination solutions consisted of a 1 percent solution of Liquinox nonphosphatic laboratory detergent and distilled water. Liquinox is nontoxic, nonhazardous, and biodegradable. Approximately 5 gallons of Liquinox solution were generated at each well during decontamination of sampling pumps and other reusable equipment. Approximately 2 gallons of decontamination solution were generated at groundwater sampling stations. Decontamination solutions developed at wells were placed in 55-gallon drums and were transported to the BES, Inc. facility in Kent, Washington for disposal as non-regulated waste.

4.10.4 Personal Protective Equipment

The sampling tasks to be performed for this project were performed in Level D personal protective equipment (PPE). The only PPE that needed disposal was latex gloves. These were bagged and disposed of with other inert solid wastes.

4.10.5 Solid Wastes

Nonhazardous solid wastes such as used paper towels, used gloves, and used sampling hose were placed in plastic refuse sacks and discarded into an offsite rubbish receptacle.

4.11 TOPOGRAPHIC AND MONITORING WELL SURVEYING

Olson Engineering, Inc., completed a topographic survey at Landfill 4. The survey was used to create an accurate base map of the area between the landfill's eastern border and Lacamas Creek. UXO avoidance was performed along the selected transects and sight lines prior to collecting survey data. The areas where UXO avoidance indicated safe access were flagged to ensure safe entry and egress from survey transects. The survey data and resultant map were used to aid in evaluating the site hydrogeology and to accurately locate potential areas where the shallow aquifer may crop out in the hillside west of the landfill. The contour interval was set at 1 foot. The map was also used to accurately represent ground surface topography and salient features on geologic cross sections.

All survey data were based on previously surveyed features at the site. The monitoring well locations were surveyed first and linked to the existing wells installed by Shannon & Wilson during the previous Landfill 4 investigation. Horizontal and vertical precision of the monitoring wells locations was 0.01 feet. The topographic data were then linked to the monitoring wells installed as part of this ESI. Data were provided in Washington State Planar Coordinates and North American Datum (NAD) 83 feet – Washington South format. Electronic files were provided in AutoCAD Release 14 and are compatible with the GIS database maintained at Fort Lewis. Descriptions of features such as edges of roads and corners of buildings were provided with the survey data. The vertical datum used was NGVD 29.

4.12 QUALITY CONTROL ACTIVITIES

QC procedures for the groundwater monitoring were consistent with the Management Plan (URS 2001) and were based on the USACE *Engineer Manual-200-1-3, Appendix I Shell for Analytical Chemistry Requirements* (Shell) (USACE 1998). Team members worked closely with the project laboratories (Severn-Trent Laboratories [STL] and Analytical Resources, Inc. [ARI]) to ensure that samples were handled and analyzed following procedures and QC criteria described in the Final Management Plan. A schedule of fieldwork and sampling was established approximately two weeks before commencement of fieldwork. The laboratories were notified by phone each day that samples were shipped.

STL and ARI contacted the URS Analytical Chemistry Task Manager and the URS Project Manager when the samples were received and when uncertainties regarding the samples required clarification. During the first sampling event (July 2001), twice weekly teleconference calls were scheduled between the laboratory project managers and the URS Analytical Chemistry Task Manager, the URS Project Manager and, at various times, the USACE Project Chemist. The scheduled calls occurred 1 week before the sample collection and for 2 weeks after the laboratories received the samples. After the first 3 weeks, the scheduled calls were deemed no longer necessary and for all other sampling events the laboratories, the URS Analytical Chemistry Task Manager, and the USACE Project Chemist maintained communication on an as-needed basis.

Sample containers and preservatives were appropriate for the analyses requested. Samples were shipped on a schedule that ensured that holding times were met. Complete documentation records for the sampling activities were kept including the field logbook, collection forms, and chains-of-custody (COC). Sample custody was maintained in the field and during sample transportation.

4.12.1 Field Quality Control Samples

Field QC was accomplished through the analysis of controlled samples that were introduced to the laboratories from the field. For each sampling event, equipment rinsate blanks, trip blanks, field duplicates, and temperature blanks were collected and submitted to the project laboratories to provide a means of assessing the quality of data resulting from the field sampling program. Table 4-1 lists the frequency of QC sample collection.

Equipment rinsate blanks were collected to evaluate the potential for cross-contamination of samples during collection and assess the integrity of field equipment for potential background contamination. The rinsate blank was submitted to the laboratories with a sample number that was indistinguishable from the primary samples.

Trip blanks were submitted with the samples to be analyzed for VOCs and gasoline-range TPH (TPH-Gx) to evaluate whether cross-contamination may have occurred during field activities or during sample transportation to the laboratory. The trip blanks were provided by the laboratory and were transported to and from the field unopened. The trip blanks were submitted in the cooler containing samples to be analyzed for VOCs and TPH-Gx.

For the first four sampling events, one field duplicate sample (a split water sample collected at a single location) was collected from either monitoring well L4-MW02A or L4-MW02B, the wells

that contained elevated concentrations of RDX and HMX. For the fifth sampling event, the field duplicate was collected at monitoring well L4-MW-07B. The field duplicate samples were collected and analyzed to evaluate field sampling techniques as well as internal laboratory techniques. The field duplicate samples were submitted blind to the laboratories, with sample numbers that were indistinguishable from the primary samples. In October 2001, two of the groundwater samples were field-filtered and analyzed for dissolved explosives and propellants. The purpose of these analyses was to assess the potential correlation between total suspended solids and the concentrations of explosives and propellants.

Temperature blanks were used to measure sample temperatures when the coolers were received at the laboratories. A temperature blank was submitted with each cooler containing samples.

4.12.2 Laboratory Quality Control Samples

Laboratory QC was accomplished by analyzing initial and continuing calibration samples, method blanks, surrogate spikes, laboratory control samples (LCS), matrix spike (MS), matrix spike duplicate (MSD), and laboratory duplicate samples. Two weeks prior to the start of the sampling activity, the laboratories were provided with the Management Plan, which included method-specific QC criteria (such as QC frequency, QC limits, and corrective actions).

In addition, double-blind PE samples consisting of independent, third party verifiable compounds and analytes, were used to assess the accuracy of the analytical methods and the performance of the laboratories. For the first four sampling events, one PE sample each was submitted and analyzed for selected herbicides, VOCs, SVOCs, and metals. Two PE samples each were submitted for explosives residues, nitroguanidine, and perchlorate ion. For the fifth sampling event in January 2003, one PE sample each was submitted for explosives residues, nitroguanidine, perchlorate ion, and VOCs.

4.12.3 USACE Quality Assurance Laboratory

A triplicate volume sample was collected from monitoring well L4-MW02A in July 2001 and analyzed for all target compounds. A triplicate volume sample was also collected from monitoring well L4-MW02B in October 2001 and analyzed for explosives, nitroguanidine, and perchlorate ion. The triplicate volumes were split into three aliquots for each analysis as follows:

- A field sample analyzed by the project laboratories
- A blind duplicate sample analyzed by the project laboratories
- A QA duplicate sample analyzed by the USACE QA laboratory

4.12.4 Data Validation

Definitive chemical data from the analysis of explosives, propellants, VOCs, SVOCs, herbicides, and metals were validated. Emphasis was placed on the target explosives residues and propellants, all target VOCs, and the four plasticizer and stabilizer compounds determined by SVOC analysis, which include diphenylamine, diethylphthalate, n-nitrosodiphenylamine, and di-n-butylphthalate. The original scope for metals validation was for barium alone. The scope was expanded to include all metals with emphasis on the four metals (barium, arsenic, mercury, lead)

contained in the PE sample. The scope for metals validation was expanded to ensure the quality and concentration of the spiked PE samples and other detected metals. For the first four sampling events, explosives and propellant data were validated by URS. DMD, Inc. validated all other data. For the fifth sampling event, DMD, Inc. validated all the data. The data were validated using procedures identified in the EPA guidance *National Functional Guidelines for Organic Data Review* (EPA 1994a) and *National Functional Guidelines for Inorganic Data Review* (EPA 1994b) as applicable to the USACE Shell and the Management Plan.

The validation included verification of the following:

- Compliance with the Management Plan
- Sample preservation and handling procedures
- Holding time conformance
- Instrument calibration performance
- Method blank analysis
- Detection limits
- Analyte identification and quantitation conformance
- Laboratory duplicate precision
- Matrix spike/matrix spike duplicate (MS/MSD) and laboratory control sample (LCS)/LCS duplicate percent recoveries (% Rec) and relative percent differences (RPD)
- Surrogate percent recoveries
- Data completeness and format
- Data qualifiers assigned by the laboratories

DMD, Inc also performed a review of data that were not validated (e.g., alkalinity). The review included a limited assessment of laboratory and sample-specific conformance to quality control (QC) criteria. The data quality review included evaluation of precision, accuracy, comparability, completeness, sampling documentation, holding times, field and laboratory blank analysis, reporting limits, and a summary of qualified data but did not include review of raw data or recalculation of reported results.

Summarized results of the data validation can be found in Section 5.2. Appendix D provides a detailed discussion of the data quality, a comparison of the data to project data quality objectives, explanations for QC exceedances, and tables that provide data for all detected and undetected analytes. The data validation reports can be found in Appendix E.

4.13 LABORATORY ANALYTICAL PROGRAM

Target compounds and analytes at Landfill 4 include artillery propellants, explosives, missile/rocket propellants, herbicides, TPH, VOCs, SVOCs, and metals (Table 4-2). STL, in Colchester Vermont, analyzed the samples for explosives including nitroaromatics, nitramines, pentaerythritol tetranitrate (PETN), nitroglycerin, and picric acid. STL, in Knoxville Tennessee, analyzed the samples for nitroguanidine and perchlorate ion. Prior to approval of the Final

Management Plan, a USACE chemist, experienced with analyses of explosives and propellants, reviewed and approved STL's analytical SOPs. ARI analyzed the samples for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), herbicides, cyanide, TPH, metals, and water quality parameters. All three laboratories are certified by the USACE.

Samples submitted for analyses included monitoring well samples, rinsate blanks, and trip blanks. In addition, double-blind PE samples were submitted for analysis of explosives residues, nitroguanidine, perchlorate ion, and selected VOCs, SVOCs, herbicides, and metals. Tables 4-3 through 4-12 provide the well locations, sample identifications, laboratory identifications, dates of sample collection, sample types, and method references for each sample listed on the COCs. Samples were analyzed for the following compounds and analytes as defined in the Management Plan:

- Explosives residues (nitroaromatics, nitramines, PETN, nitroglycerin, and picric acid)
- Nitroguanidine
- Perchlorate ion
- VOCs
- SVOCs
- Organochlorine herbicides
- Total and dissolved priority pollutant metals
- Total and dissolved organic carbon (TOC/DOC)
- Inorganic ions (chloride, nitrite/nitrate, sulfate)
- TSS
- Carbonate and bicarbonate (alkalinity)
- Hardness (calculated)
- Total cyanide
- TPH-Gx
- TPH, diesel fraction (TPH-Dx)

4.14 SCREENING CRITERIA FOR IDENTIFICATION OF INDICATOR CHEMICALS AND COPCS

Concentrations of chemicals detected in groundwater samples were compared to screening concentrations to identify indicator chemicals and COPCs. Regulatory criteria provide guidance for screening chemical data in order to identify compounds in groundwater that may pose a threat to human health and/or the environment. The regulatory criteria chosen for the Landfill 4 investigation (Table 4-13) provide a conservative evaluation of detected analytes for potentially complete pathways and potentially complete but negligible pathways. Screening concentrations are derived from formulae that combine chemical toxicity information with selected human exposure assumptions to determine the concentrations of chemicals that correspond to specified

risk levels. The formulae thus yield Risk-Based Concentrations (RBCs) that can be useful tools for identifying indicator chemicals and COPCs when establishing Preliminary Remediation Goals (PRGs). The following screening criteria were chosen for this assessment:

- Washington Model Toxics Control Act (MTCA) Method A groundwater cleanup levels for potable water (WAC 173-340-720)
- MTCA Standard Method B (CLARC 3.1) cleanup levels
- National Ambient Water Quality Criteria (NAWQC)
- EPA Region 9 PRGs
- EPA Region 10 RBCs

Analytes with concentrations above screening criteria are identified as COPCs. It is only after this screening is completed, and in concert with an analysis of remedial alternatives, that the appropriate groundwater cleanup levels and the point of compliance for those cleanup levels can be determined for the site. For example, it may be more appropriate to use modified Method B groundwater cleanup levels at the site; these levels are standard Method B criteria modified with chemical-specific or site-specific data. Brief descriptions of the screening criteria are discussed below.

4.14.1 MTCA Method A and Method B Groundwater Cleanup Levels

MTCA is applicable to investigation and remediation of sites within Washington state where hazardous substances have been released. The revised MTCA regulations (WAC 173-340), effective August 2001, direct the assessment of human and environmental risk resulting from releases of hazardous substances to groundwater and other media and, from this assessment, allow for a determination of the appropriate cleanup levels for the site. MTCA defines a "cleanup level" as the concentration of a hazardous substance in soil, water, air, or sediment that is determined to be protective of human health and the environment under specified exposure conditions. Another important aspect of determining the appropriate cleanup levels is determining the location on the site where the cleanup levels must be met (i.e., the point of compliance).

4.14.2 EPA Region 9 Tap Water PRGs

PRGs are risk-based tools for evaluating and cleaning up sites. They are derived from RBCs that combine exposure information assumptions and EPA toxicity data. These data are combined with standard exposure factors to estimate contaminant concentrations that are protective of humans over a lifetime of exposure. PRGs are used in addition to MTCA cleanup levels because PRGs exist for some chemicals that do not have MTCA cleanup levels. Additional information regarding EPA Region 9 PRGs is found at the following EPA internet web site:

<http://www.epa.gov/region09/waste/sfund/prg/index.htm>

4.14.3 EPA Region 10 Risk-Based Concentrations

The values are adapted from the table prepared by Region 9 with a hazard quotient of 0.1 and a 10^{-6} cancer risk (USEPA 2000).

4.14.4 National Ambient Water Quality Criteria

Surface water quality is regulated at federal, state, and tribal levels for protection of human health and for protection of aquatic life. Section 303 of the Clean Water Act authorized EPA to develop water quality criteria for acute and chronic exposure to toxic constituents to protect human health and aquatic life. The most recent revision of most of these criteria was published in April 1999 (USEPA 1999). The NAWQC were chosen as screening criteria for the Landfill 4 investigation because many of the Washington state water quality standards are derived from the NAWQC. To the extent that groundwater is known or likely to discharge to surface water at Landfill 4, surface water quality regulations are appropriate screening levels at the point of groundwater discharge to surface water.

Table 4-1
QUALITY CONTROL SAMPLE COLLECTION SUMMARY

Sample Type	Frequency
Rinsate blanks	5 percent
Temperature blanks	1 per cooler
Trip blanks	1 per cooler for VOC analyses
Field duplicates	10 percent
Duplicate for USACE QA laboratory	10 percent (first and second quarterly round of samples only)
Matrix spike	5 percent
Matrix spike duplicates	5 percent (organic analyses only)
Laboratory duplicates	5 percent (inorganic analyses only)
Performance evaluation samples	Once per groundwater sampling event

Table 4-2
TARGET COMPOUNDS AND ANALYTES
LANDFILL 4-DEMOLITION AREA 1
CAMP BONNEVILLE, WASHINGTON

Sampling Area	Munition Compound Class	Target Compounds and Analytes*		
		High Explosives and Organic Compounds	Artillery Propellants	Other
Landfill 4-Demolition Area 1	Artillery Propellants High Explosives Missile/Rocket Propellants	TNT RDX PETN PA HMX	Black Powder (nitrate) NC NG NQ Plasticizers Stabilizers AP	Priority Pollutant Metals (plus barium) TPH SVOCs Organochlorine Herbicides VOCs

Notes:
* Target compounds and analytes are referred to as COPCs in the Final Management Plan
Black powder is a mixture of potassium or sodium nitrate, charcoal, and sulfur
Plasticizers - dibutylphthalate, diethylphthalate
Stabilizers - diphenylamine, N-nitrosodiphenylamine
AP – Perchlorate ion
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
NC - nitrocellulose
NG - nitroguanidine
NQ - nitroglycerin
PA - picric acid
PETN - pentaerythritol tetranitrate
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
TNT - 2,4,6-trinitrotoluene
TPH - total petroleum hydrocarbons
VOCs - volatile organic compounds
SVOCs - semivolatile organic compounds

Table 4-3
REQUESTED ANALYSES, ANALYTICAL RESOURCES, INC.
JULY 2001

Date Sampled	Well ID	Sample ID	Sample Type	Lab Sample ID	Lab Sample ID (Dissolved metals only)	VOC[a]	SVOC[b]	Herbicides[c]	Total Metals[d]	Dissolved Metals[d]	NWTPH –Gx[e]	NWTPH –Dx[e]	Water Quality[f]
7/24/01	L4-MW01A	GW01MW01A	Primary	DK51A	DK51L	X	X	X	X	X	X	X	X
7/24/01	L4-MW01B	GW01MW01B	Primary	DK51B	DK51M	X	X	X	X	X	X	X	X
7/24/01	L4-MW02A	GW01MW02A	Primary	DK51C	DK51N	X	X	X	X	X	X	X	X
7/24/01	L4-MW02A	GW501MW02A	Duplicate	DK51D	DK51O	X	X	X	X	X	X	X	X
7/25/01	L4-MW02B	GW01MW02B	Primary	DK51E	DK51P	X	X	X	X	X	X	X	X
7/25/01	L4-MW03A	GW01MW03A	Primary	DK51H	DK51S	X	X	X	X	X	X	X	X
7/26/01	L4-MW03B	GW01MW03B	Primary	DK51I	DK51T	X	X	X	X	X	X	X	X
7/26/01	L4-MW04A	GW01MW04A	Primary	DK51F	DK51Q	X	X	X	X	X	X	X	X
7/26/01	L4-MW05A	GW01MW05A	Primary	DK51G	DK51R	X	X	X	X	X	X	X	X
7/24/01	-	GW01MW06A	PE	DK51K	—	X	X	X	X	—	—	—	—
7/27/01	-	GW1001MW03B	Rinsate	DK51J	DK51U	X	X	X	X	X	X	X	X
7/27/01	-	Trip Blank	Trip Blank	DK51V	—	X	—	—	—	—	X	—	—
Total of completed analyses:						**12**	**11**	**11**	**11**	**10**	**11**	**10**	**10**

[a]EPA *Test Methods for Evaluation of Solid Waste*, (SW-846) Method 8260B
[b]SW-846 Method 8270C
[c]SW-846 Method 8151A
[d]SW-846 Methods 6010B (Inductively Coupled Plasma [ICP]-Atomic Emission Spectroscopy [AES])/200.8 (ICP-MS)/7470A (Cold Vapor Atomic Adsorption [CVAA])
[e]Washington State Department of Ecology (Ecology) *Analytical Methods for Petroleum Hydrocarbons, Total Petroleum Hydrocarbons-Gasoline fraction (TPH-Gx) and Diesel Fraction (TPH-Dx)*
[f]Alkalinity by *Standard Methods (SM) for the Examination of Water and Wastewater*, 19th edition, Method SM2320. Sulfate, chloride, nitrite, and nitrate by EPA *Methods for the Chemical Analysis of Water and Wastes,* Method 300.0; total cyanide by EPA Method 335.2, total suspended solids by EPA Method 160.2, and total organic carbon/dissolved organic carbon by EPA Method 415.1.

Notes:

ID - Identification
PE - Performance evaluation
— - Not applicable

Table 4-4
REQUESTED ANALYSES, SEVERN-TRENT LABORATORIES
JULY 2001

Date Sampled	Well ID	Laboratory Sample ID	Sample Type	STL –Colchester Sample ID	Explosives[a]	STL-Knoxville Sample ID	Nitroguanidine[b]	Ammonium Perchlorate[c]
7/24/01	L4-MW01A	GW01MW01A	Primary	460216	X	EGXWX-001	X	X
7/24/01	L4-MW01B	GW01MW01B	Primary	460217	X	EGXW4-002	X	X
7/24/01	L4-MW02A	GW01MW02A	Primary	460218	X	EGXW5-003	X	X
7/24/01	L4-MW02A	GW501MW02A	Duplicate	460219	X	EGXW8-004	X	X
7/25/01	L4-MW02B	GW01MW02B	Primary	460220	X	EGXXC-005	X	X
7/25/01	L4-MW03A	GW01MW03A	Primary	460487	X	EG583-001	X	X
7/26/01	L4-MW03B	GW01MW03B	Primary	460723	X	EG584-002	X	X
7/26/01	L4-MW04A	GW01MW04A	Primary	460490	X	EG59j-005	X	X
7/26/01	L4-MW05A	GW01MW05A	Primary	460488	X	EG587-003	X	X
7/24/01	—	GW01MW06A	PE	460491	X	EG59K-006	X	X
7/27/01	—	GW01MW06B	PE	460492	X	EG6GK-007	X	X
7/27/01	—	GW1001MW03B	Rinsate	460489	X	EG589-004	X	X
				Completed Analyses	**12**	—	**12**	**12**

[a]EPA Test Methods for Evaluation of Solid Waste, SW-846 Method 8330A, including nitroglycerin, picric acid, and PETN
[b]EPA Test Methods for Evaluation of Solid Waste, SW-846 Method 8330A modified
[c]Methods for the Chemical Analysis of Water and Wastes, Method 314.0

Notes:
ARI - Analytical Resources, Inc.
ID - Identification
PE - Performance Evaluation Sample
STL - Severn-Trent Laboratories
— - Not applicable

Table 4-5
REQUESTED ANALYSES, ANALYTICAL RESOURCES, INC.
OCTOBER 2001

Date Sampled	Well ID	Sample ID	Sample Type	Lab Sample ID	Lab Sample ID (Dissolved metals only)	VOC [a]	SVOC[b]	Herbicides[c]	Total Metals[d]	Dissolved Metals[d]	NWTPH –Gx[e]	NWTPH –Dx[e]	Water Quality[f]
10/23/01	L4-MW01A	GW02MW01A	Primary	DT39A	DT39F	X	X	X	X	X	X	X	X
10/24/01	L4-MW01B	GW02MW01B	Primary	DT39B	DT39G	X	X	X	X	X	X	X	X
10/24/01	L4-MW02A	GW02MW02A	Primary	DT39C	DT39H	X	X	X	X	X	X	X	X
10/24/01	L4-MW02B	GW02MW02B	Primary	DT39D	DT39I	X	X	X	X	X	X	X	X
10/24/01	L4-MW02B	GW502MW02B	Duplicate	DT39E	DT39J	X	X	X	X	X	X	X	X
10/25/01	L4-MW03A	GW02MW03A	Primary	DT50A	DT50G	X	X	X	X	X	X	X	X
10/26/01	L4-MW03B	GW02MW03B	Primary	DT50B	DT50H	X	X	X	X	X	X	X	X
10/26/01	L4-MW04A	GW02MW04A	Primary	DT50C	DT50I	X	X	X	X	X	X	X	X
10/26/01	L4-MW05A	GW02MW05A	Primary	DT50D	DT50J	X	X	X	X	X	X	X	X
10/24/01	—	GW02MW07A	PE	DT50F	—	X	X	X	X	—	—	—	—
10/26/01	—	GW1002MW05A	Rinsate	DT50E	DT50K	X	X	X	X	X	X	X	X
10/24/01	—	Trip Blank	Trip Blank	DT39K	—	X	—	—	—	—	—	—	—
10/26/01	—	Trip Blank	Trip Blank	DT50L	—	X	—	—	—	—	—	—	—
10/26/01	—	Trip Blank	Trip Blank	DT50M	—	X	—	—	—	—	—	—	—
					Total of completed analyses:	**14**	**11**	**11**	**11**	**10**	**10**	**10**	**10**

[a]EPA *Test Methods for Evaluation of Solid Waste*, (SW-846) Method 8260B
[b]SW-846 Method 8270C
[c]SW-846 Method 8151A
[d]SW-846 Methods 6010B (Inductively Coupled Plasma [ICP]-Atomic Emission Spectroscopy [AES])/200.8 (ICP-MS)/7470A (Cold Vapor Atomic Adsorption [CVAA])
[e]Washington State Department of Ecology (Ecology) *Analytical Methods for Petroleum Hydrocarbons, Total Petroleum Hydrocarbons-Gasoline fraction (TPH-Gx) and Diesel Fraction (TPH-Dx)*
[f]Alkalinity by *Standard Methods (SM) for the Examination of Water and Wastewater*, 19th edition, Method SM2320. Sulfate, chloride, nitrite, and nitrate by EPA *Methods for the Chemical Analysis of Water and Wastes,* Method 300.0; total cyanide by EPA Method 335.2, total suspended solids by EPA Method 160.2, and total organic carbon/dissolved organic carbon by EPA Method 415.1.

Notes:

ID - Identification
PE - Performance evaluation
— - Not applicable

Table 4-6
REQUESTED ANALYSES, SEVERN-TRENT LABORATORIES
OCTOBER 2001

Date Sampled	Well ID	Sample ID	Sample Type	STL –Colchester Sample ID	Explosives[a]	STL-Knoxville Sample ID	Nitroguanidine[b]	Perchlorate Ion[c]
10/24/01	L4-MW01A	GW02MW01A	Primary	469450	X	H1J290104-001	X	X
10/24/01	L4-MW01B	GW02MW01B	Primary	469451	X	H1J290104-002	X	X
10/24/01	L4-MW02A	GW02MW02A	Primary, Total	469452	X	H1J290104-003	X	X
10/24/01	L4-MW02A	GW02MW02A	Primary, Dissolved	469453	X	H1J290104-013	X	—
10/24/01	L4-MW02B	GW02MW02B	Primary, Total	469454	X	H1J290104-004	X	X
10/24/01	L4-MW02B	GW502MW02B	Primary, Duplicate	469456	X	H1J290104-005	X	X
10/24/01	L4-MW02B	GW02MW02B	Primary, Dissolved	469455	X	H1J290104-014	X	—
10/25/01	L4-MW03A	GW02MW03A	Primary	469549	X	H1J290104-006	X	X
10/26/01	L4-MW03B	GW02MW03B	Primary	469550	X	H1J290104-007	X	X
10/26/01	L4-MW04A	GW02MW04A	Primary	469551	X	H1J290104-008	X	X
10/26/01	L4-MW05A	GW02MW05A	Primary	469553	X	H1J290104-011	X	X
10/23/01	—	GW02MW07A	PE	469552	X	H1J290104-009	X	X
10/23/01	—	GW02MW07B	PE	469809	X	H1J290104-010	X	X
10/26/01	—	GW1002MW05A	Rinsate	469554	X	H1J290104-012	X	X
				Completed Analyses	**14**	—	**14**	**12**

[a]EPA Test Methods for Evaluation of Solid Waste, SW-846 Method 8330A, including nitroglycerin, picric acid, and PETN
[b]EPA Test Methods for Evaluation of Solid Waste, SW-846 Method 8330A modified
[c]Methods for the Chemical Analysis of Water and Wastes, Method 314.0
Notes:
ID - Identification
PE - Performance Evaluation Sample
STL - Severn-Trent Laboratories
— - Not applicable

Table 4-7
REQUESTED ANALYSES, ANALYTICAL RESOURCES, INC.
JANUARY 2002

Date Sampled	Well ID	Sample ID	Sample Type	Lab Sample ID	Lab Sample ID (Dissolved metals only)	VOC[a]	SVOC[b]	Herbicides[c]	Total Metals[d]	Dissolved Metals[d]	NWTPH –Gx[e]	NWTPH –Dx[e]	Water Quality[f]
1/21/02	L4-MW01A	GW03MW01A	Primary	EB00A	EB00E	X	X	X	X	X	X	X	X
1/22/02	L4-MW01B	GW03MW01B	Primary	EB00B	EB00F	X	X	X	X	X	X	X	X
1/22/02	L4-MW02A	GW03MW02A	Primary	EB00C	EB00G	X	X	X	X	X	X	X	X
1/23/02	L4-MW02B	GW03MW02B	Primary	EB10B	EB10F	X	X	X	X	X	X	X	X
1/23/02	L4-MW02B	GW503MW02B	Duplicate	EB10C	EB10G	X	X	X	X	X	X	X	X
1/24/02	L4-MW03A	GW03MW03A	Primary	EB18A	EB18F	X	X	X	X	X	X	X	X
1/24/02	L4-MW03B	GW03MW03B	Primary	EB18B	EB18G	X	X	X	X	X	X	X	X
1/23/02	L4-MW04A	GW03MW04A	Primary	EB10D	EB10H	X	X	X	X	X	X	X	X
1/25/02	L4-MW05A	GW03MW05A	Primary	EB18C	EB18H	X	X	X	X	X	X	X	X
1/23/02	—	GW03MW08A	PE	EB10A	—	X	X	X	X	—	—	—	—
1/25/02	—	GW1003MW05A	Rinsate	EB18D	EB18I	X	X	X	X	X	X	X	X
1/21/02	—	012102Trip 01	Trip Blank	EB00D	—	X	—	—	—	—	X	—	—
1/23/02	—	012302Trip 02	Trip Blank	EB10E	—	X	—	—	—	—	X	—	—
1/25/02	—	012502Trip 03	Trip Blank	EB18E	—	X	—	—	—	—	X	—	—
Total of completed analyses:						**14**	**11**	**11**	**11**	**10**	**13**	**10**	**10**

[a]EPA *Test Methods for Evaluation of Solid Waste*, (SW-846) Method 8260B
[b]SW-846 Method 8270C
[c]SW-846 Method 8151A
[d]SW-846 Methods 6010B (Inductively Coupled Plasma [ICP]-Atomic Emission Spectroscopy [AES])/200.8 (ICP-MS)/7470A (Cold Vapor Atomic Adsorption [CVAA])
[e]Washington State Department of Ecology (Ecology) *Analytical Methods for Petroleum Hydrocarbons, Total Petroleum Hydrocarbons-Gasoline fraction (TPH-Gx) and Diesel Fraction (TPH-Dx)*
[f]*Standard Methods (SM) for the Examination of Water and Wastewater*, Method SM2320 (alkalinity)
Methods for the Chemical Analysis of Water and Wastes 19th edition, Methods 375.2 (sulfate); 325.2 (chloride); 353.2 (nitrite and nitrate); 335.2 (total cyanide); 160.2 (total suspended solids); and 415.1 (total organic carbon/dissolved organic carbon).

Notes:

ID - Identification
PE - Performance evaluation
— - Not applicable

Table 4-8
REQUESTED ANALYSES, SEVERN-TRENT LABORATORIES
JANUARY 2002

Date Sampled	Well ID	Sample ID	Sample Type	STL –Colchester Sample ID	Explosives[a]	STL-Knoxville Sample ID	Nitroguanidine[b]	Perchlorate Ion[c]
1/21/02	L4-MW01A	GW03MW01A	Primary	475620	X	H2A250107-001	X	X
1/22/02	L4-MW01B	GW03MW01B	Primary	475622	X	H2A250107-002	X	X
1/22/02	L4-MW02A	GW03MW02A	Primary, Total	475621	X	H2A250107-003	X	X
1/23/02	L4-MW02B	GW03MW02B	Primary, Total	475625	X	H2A280103-003	X	X
1/23/02	L4-MW02B	GW503MW02B	Primary, Duplicate	475626	X	H2A280103-004	X	X
1/24/02	L4-MW03A	GW03MW03A	Primary	475734	X	H2A260116-001	X	X
1/24/02	L4-MW03B	GW03MW03B	Primary	475735	X	H2A260116-002	X	X
1/23/02	L4-MW04A	GW03MW04A	Primary	475627	X	H2A280103-005	X	X
1/25/02	L4-MW05A	GW03MW05A	Primary	475736	X	H2A260116-003	X	X
1/23/02	—	GW03MW08A	PE	475623	X	H2A280103-001	X	X
1/23/02	—	GW03MW08B	PE	475624	X	H2A280103-002	X	X
1/25/02	—	GW1003MW05A	Rinsate	475737	X	H2A260116-004	X	X
				Completed Analyses	**12**	**—**	**12**	**12**

[a]EPA Test Methods for Evaluation of Solid Waste, SW-846 Method 8330A, including nitroglycerin, picric acid, and PETN
[b]EPA Test Methods for Evaluation of Solid Waste, SW-846 Method 8330A modified
[c]Methods for the Chemical Analysis of Water and Wastes, Method 314.0
Notes:
ID - Identification
PE - Performance Evaluation Sample
STL - Severn-Trent Laboratories
— - Not applicable

Table 4-9
REQUESTED ANALYSES, ANALYTICAL RESOURCES, INC.
APRIL 2002

Date Sampled	Well ID	Sample ID	Sample Type	Lab Sample ID	Lab Sample ID (Dissolved metals only)	VOC[a]	SVOC[b]	Herbicides[c]	Total Metals[d]	Dissolved Metals[d]	NWTPH –Gx[e]	NWTPH –Dx[e]	Water Quality[f]
4/23/02	L4-MW01A	GW04MW01A	Primary	EH80A	EH80H	X	X	X	X	X	X	X	X
4/23/02	L4-MW01B	GW04MW01B	Primary	EH80B	EH80I	X	X	X	X	X	X	X	X
4/24/02	L4-MW02A	GW04MW02A	Primary	EH80D	EH80K	X	X	X	X	X	X	X	X
4/24/02	L4-MW02A	GW504MW02A	Duplicate	EH80E	EH80L	X	X	X	X	X	X	X	X
4/24/02	L4-MW02B	GW04MW02B	Primary	EH80C	EH80J	X	X	X	X	X	X	X	X
4/25/02	L4-MW03A	GW04MW03A	Primary	EH80Q	EH80V	X	X	X	X	X	X	X	X
4/25/02	L4-MW03B	GW04MW03B	Primary	EH80P	EH80U	X	X	X	X	X	X	X	X
4/24/02	L4-MW04A	GW04MW04A	Primary	EH80F	EH80M	X	X	X	X	X	X	X	X
4/25/02	L4-MW05A	GW04MW05A	Primary	EH80O	EH80T	X	X	X	X	X	X	X	X
4/25/02	—	GW04MW09	PE	EH80N	EH80S	X	X	X	X	X	—	—	—
4/25/02	—	GW1004MW03B	Rinsate	EH80R	EH80W	X	X	X	X	X	X	X	X
4/25/02	—	042402TRIP01	Trip Blank	EH80G	—	X	—	—	—	—	X	—	—
Total of completed analyses:						**12**	**11**	**11**	**11**	**11**	**11**	**10**	**10**

[a]EPA *Test Methods for Evaluation of Solid Waste*, (SW-846) Method 8260B
[b]SW-846 Method 8270C
[c]SW-846 Method 8151A
[d]SW-846 Methods 6010B (Inductively Coupled Plasma [ICP]-Atomic Emission Spectroscopy [AES])/200.8 (ICP-MS)/7470A (Cold Vapor Atomic Adsorption [CVAA])
[e]Washington State Department of Ecology (Ecology) *Analytical Methods for Petroleum Hydrocarbons, Total Petroleum Hydrocarbons-Gasoline fraction (TPH-Gx) and Diesel Fraction (TPH-Dx)*
[f]*Standard Methods (SM) for the Examination of Water and Wastewater*, Method SM2320 (alkalinity)
Methods for the Chemical Analysis of Water and Wastes 19th edition, Methods 375.2 (sulfate); 325.2 (chloride); 353.2 (nitrite and nitrate); 335.2 (total cyanide); 160.2 (total suspended solids); and 415.1 (total organic carbon/dissolved organic carbon).

Notes:

ID - Identification
PE - Performance evaluation
— - Not applicable

Table 4-10
REQUESTED ANALYSES, SEVERN-TRENT LABORATORIES
APRIL 2002

Date Sampled	Well ID	Sample ID	Sample Type	STL –Colchester Sample ID	Explosives[a]	STL-Knoxville Sample ID	Nitroguanidine[b]	Perchlorate Ion[c]
4/23/02	L4-MW01A	GW04MW01A	Primary	485174	X	H2D260110-001	X	X
4/23/02	L4-MW01B	GW04MW01B	Primary	485175	X	H2D260110-002	X	X
4/24/02	L4-MW02A	GW04MW02A	Primary	485177	X	H2D260110-004	X	X
4/24/02	L4-MW02A	GW504MW02A	Duplicate	485178	X	H2D260110-005	X	X
4/24/02	L4-MW02B	GW04MW02B	Primary	485176	X	H2D260110-003	X	X
4/25/02	L4-MW03A	GW04MW03A	Primary	485171	X	H2D260110-010	X	X
4/25/02	L4-MW03B	GW04MW03B	Primary	485169	X	H2D260110-008	X	X
4/24/02	L4-MW04A	GW04MW04A	Primary	485179	X	H2D260110-006	X	X
4/25/02	L4-MW05A	GW04MW05A	Primary	485168	X	H2D260110-007	X	X
4/25/02	—	GW04MW09A	PE	485172	X	H2D260110-011	X	X
4/25/02	—	GW04MW09B	PE	485173	X	H2D260110-012	X	X
4/25/02	—	GW1004MW03B	Rinsate	485170	X	H2D260110-009	X	X
				Completed Analyses	**12**	**—**	**12**	**12**

[a]EPA Test Methods for Evaluation of Solid Waste, SW-846 Method 8330A, including nitroglycerin, picric acid, and PETN
[b]EPA Test Methods for Evaluation of Solid Waste, SW-846 Method 8330A modified
[c]Methods for the Chemical Analysis of Water and Wastes, Method 314.0

Notes:
ID - Identification
PE - Performance Evaluation Sample
STL - Severn-Trent Laboratories
— - Not applicable

Table 4-11
REQUESTED ANALYSES, ANALYTICAL RESOURCES, INC.
JANUARY 2003

Date Sampled	Well ID	Sample ID	Sample Type	Lab Sample ID	Lab Sample ID (Dissolved metals only)	VOC[a]	SVOC[b]	Herbicides[c]	Total Metals[d]	Dissolved Metals[d]	NWTPH –Gx[e]	NWTPH –Dx[e]	Water Quality[f]
1/8/03	L4-MW02B	GW05MW02B	Primary	FD27A	—	X	—	—	—	—	—	—	—
1/8/03	L4-MW07B	GW05MW07B	Primary	FD27B	FD27G	X	X	X	X	X	X	X	X
1/8/03	L4-MW07B	GW505MW07B	Duplicate	FD27D	FD27H	X	X	X	X	X	X	X	X
1/8/03	—	GW05MW10B	PE	FD27C	—	X	—	—	—	—	—	—	—
1/8/03	—	GW1005MW07B	Rinsate	FD27E	FD27I	X	X	X	X	X	X	X	X
1/8/03	—	Trip Blank	Trip Blank	FD27F	—	X	—	—	—	—	X	—	—
Total of completed analyses:						**6**	**3**	**3**	**3**	**3**	**4**	**3**	**3**

[a]EPA *Test Methods for Evaluation of Solid Waste*, (SW-846) Method 8260B
[b]SW-846 Method 8270C
[c]SW-846 Method 8151A
[d]SW-846 Methods 6010B (Inductively Coupled Plasma [ICP]-Atomic Emission Spectroscopy [AES])/200.8 (ICP-MS)/7470A (Cold Vapor Atomic Adsorption [CVAA])
[e]Washington State Department of Ecology (Ecology) *Analytical Methods for Petroleum Hydrocarbons, Total Petroleum Hydrocarbons-Gasoline fraction (TPH-Gx) and Diesel Fraction (TPH-Dx)*
[f]*Standard Methods (SM) for the Examination of Water and Wastewater*, Method SM2320 (alkalinity)
Methods for the Chemical Analysis of Water and Wastes 19th edition, Methods 375.2 (sulfate); 325.2 (chloride); 353.2 (nitrite and nitrate); 335.2 (total cyanide); 160.2 (total suspended solids); and 415.1 (total organic carbon/dissolved organic carbon).

Notes:

ID - Identification
PE - Performance evaluation
— - Not applicable

Table 4-12
REQUESTED ANALYSES, SEVERN-TRENT LABORATORIES
JANUARY 2003

Date Sampled	Well ID	Sample ID	Sample Type	STL –Colchester Sample ID	Explosives[a]	STL-Knoxville Sample ID	Nitroguanidine[b]	Perchlorate Ion[c]
1/8/03	L4-MW02B	GW05MW02B	Primary	514220	X	H3A090117-001	X	X
1/8/03	L4-MW07B	GW05MW07B	Primary	514221	X	H3A090117-002	X	X
1/8/03	L4-MW07B	GW505MW07B	Duplicate	514223	X	H3A090117-004	X	X
1/8/03	—	GW05MW10	PE	514222	X	H3A090117-003	X	X
1/8/03	—	GW1005MW07B	Rinsate	514224	X	H3A090117-005	X	X
				Completed Analyses	**5**	**—**	**5**	**5**

[a]EPA Test Methods for Evaluation of Solid Waste, SW-846 Method 8330A, including nitroglycerin, picric acid, and PETN
[b]EPA Test Methods for Evaluation of Solid Waste, SW-846 Method 8330A modified
[c]Methods for the Chemical Analysis of Water and Wastes, Method 314.0
Notes:
ID - Identification
PE - Performance Evaluation Sample
STL - Severn-Trent Laboratories
— - Not applicable

Table 4-13

COMPARISON OF LABORATORY METHOD DETECTION AND PRACTICAL QUANTITATION LIMITS AND APPLICABLE SCREENING VALUES FOR GROUNDWATER (µg/L)

Chemical of Concern	Laboratory MDLs and PQLs		Model Toxics Control Act (MTCA) Method B[A] (CLARC 3.1)		National Ambient Water Quality Criteria (NAWQC)[b]				EPA Region 9 Tap Water Preliminary Remediation Goal (PRG)[C]	EPA Region 10 Risk-Based Concentration[d]	
					Freshwater Aquatic Life Protection		Human Health Protection for Consumption of:				
	MDL	PQL	CA	NC	CMC	CCC	Water + Organisms	Organisms Only		10^{-6}	HQ = 0.1
Explosives											
Nitrobenzene	0.09	0.6	N/A	8	N/A	N/A	17	1900	3.4 nc	N/A	0.34
1,3-Dinitrobenzene	0.09	0.6	N/A	1.6	N/A	N/A	N/A	N/A	3.6 nc	N/A	0.36
1,3,5-Trinitrobenzene	0.18	0.6	N/A	42,900	N/A	N/A	N/A	N/A	1100 nc	N/A	110
2-Nitrotoluene	0.34	1.3	N/A	80	N/A	N/A	N/A	N/A	61 nc	N/A	6.1
3-Nitrotoluene	0.26	1.3	N/A	80	N/A	N/A	N/A	N/A	61 nc	N/A	6.1
4-Nitrotoluene	0.42	1.3	N/A	80	N/A	N/A	N/A	N/A	61 nc	N/A	6.1
2,4-Dinitrotoluene*	0.12	0.6	N/A	32	N/A	N/A	0.11	9.1	73 nc	N/A	7.3
2,6-Dinitrotoluene	0.24	0.6	N/A	16	N/A	N/A	N/A	N/A	36 nc	N/A	3.6
2,4/2,6-Dinitrotoluene*	0.24	0.6	0.129	N/A	N/A	N/A	N/A	N/A	0.099 ca	0.099	N/A
2,4,6-Trinitrotoluene (TNT)	0.21	0.6	2.92	8	N/A	N/A	N/A	N/A	2.2 ca	2.2	1.8
2-Amino-4,6-dinitrotoluene	0.10	0.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4-Amino-2,6-dinitrotoluene	0.18	0.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Octahydro-1,3,5,7-tetranitro											
-1,3,5,7-tetrazocine (HMX)	0.32	1.3	N/A	800	N/A	N/A	N/A	N/A	1800nc	N/A	180
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.22	1.3	0.795	48	N/A	N/A	N/A	N/A	0.61 ca	0.61	11
PETN	0.32	8.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Picric Acid	N/A	2.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Tetryl	0.14	1.3	N/A	160	N/A	N/A	N/A	N/A	360 nc	N/A	36
Propellants											
Perchlorate ion*	1.8	5.0	N/A	N/A	N/A	N/A	N/A	N/A	18 nc (as perchlorate	N/A	1.8
Nitroglycerin*	0.028	1.0	N/A	N/A	N/A	N/A	N/A	N/A	4.8 ca	4.8	N/A
Nitroguanidine	1.4	10	N/A	1600	N/A	N/A	N/A	N/A	3600 nc	N/A	

Table 4-13 (Continued)
COMPARISON OF LABORATORY METHOD DETECTION AND PRACTICAL QUANTITATION LIMITS AND APPLICABLE SCREENING VALUES FOR GROUNDWATER (µg/L)

Chemical of Concern	Laboratory MDLs and PQLs		Model Toxics Control Act (MTCA) Method B[A] (CLARC 3.1)		National Ambient Water Quality Criteria (NAWQC)[b]				EPA Region 9 Tap Water Preliminary Remediation Goal (PRG)[c]	EPA Region 10 Risk-Based Concentration[d]	
					Freshwater Aquatic Life Protection		Human Health Protection for Consumption of:				
	MDL	PQL	CA	NC	CMC	CCC	Water + Organisms	Organisms Only		10^{-6}	HQ = 0.1
Volatile Organic Compounds											
Acetone	2.28	5.0	N/A	800	N/A	N/A	N/A	N/A	610 nc	N/A	61
Benzene*	0.19	1.0	0.795	24	N/A	N/A	1.2	71	0.41 ca	0.41	1.1
Bromobenzene	0.19	1.0	N/A	N/A	N/A	N/A	N/A	N/A	20 nc	N/A	2.0
Bromochloromethane	0.31	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Bromodichloromethane*	0.13	1.0	0.706	160	N/A	N/A	0.56	46	0.18 ca	0.18	12
Bromoform	0.16	1.0	5.54	160	N/A	N/A	4.3	360	8.5 ca	8.5	73
Bromomethane*	0.29	1.0	N/A	11.2	N/A	N/A	48	4000	8.7 nc	N/A	0.87
2-Butanone (methyl ethyl ketone)	1.88	5.0	N/A	4800	N/A	N/A	N/A	N/A	1900 nc	N/A	190
n-Butylbenzene	0.12	1.0	N/A	N/A	N/A	N/A	N/A	N/A	61 nc	N/A	6.1
sec-Butylbenzene	0.15	1.0	N/A	N/A	N/A	N/A	N/A	N/A	61 nc	N/A	6.1
Tert-Butylbenzene	0.15	1.0	N/A	N/A	N/A	N/A	N/A	N/A	61 nc	N/A	6.1
Carbon disulfide	0.13	1.0	N/A	800	N/A	N/A	N/A	N/A	1000 nc	N/A	100
Carbon tetrachloride*	0.16	1.0	0.337	5.6	N/A	N/A	0.25	4.4	0.17 ca	0.17	0.43
Chlorobenzene	0.17	1.0	N/A	160	N/A	N/A	680	21,000	110 nc	N/A	11
Chloroethane (ethyl chloride)	0.28	1.0	N/A	N/A	N/A	N/A	N/A	N/A	4.6 ca	4.6	860
Chloroform*	0.26	1.0	7.17	80	N/A	N/A	5.7	470	0.16 ca	0.16	0.063
Chloromethane	0.30	1.0	3.37	N/A	N/A	N/A	N/A	N/A	1.5 ca	1.5	N/A
2-Chlorotoluene	0.27	1.0	N/A	160	N/A	N/A	N/A	N/A	120 nc	N/A	12
4-Chlorotoluene	o.18	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dibromochloromethane*	0.14	1.0	0.521	160	N/A	N/A	0.41	34	0.13 ca	0.13	12
1,2-Dibromo-3-chloropropane*	0.20	5.0	0.0313	N/A	N/A	N/A	N/A	N/A	0.048 ca	0.048	0.035
1,2-Dibromoethane (EDB)*	0.28	1.0	0.00052	N/A	N/A	N/A	N/A	N/A	0.00076 ca	0.00076	0.035
Dibromomethane (Methylene bromide)	0.27	1.0	N/A	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2-Dichlorobenzene	0.13	1.0	N/A	720	N/A	N/A	2700	17,000	370 nc	N/A	37
1,3-Dichlorobenzene*	0.20	1.0	N/A	N/A	N/A	N/A	400	2600	5.5 nc	N/A	0.55
1,4-Dichlorobenzene*	0.19	1.0	1.82	N/A	N/A	N/A	400	2600	0.5 ca	0.5	18

Table 4-13 (Continued)

COMPARISON OF LABORATORY METHOD DETECTION AND PRACTICAL QUANTITATION LIMITS AND APPLICABLE SCREENING VALUES FOR GROUNDWATER (µg/L)

Chemical of Concern	Laboratory MDLs and PQLs		Model Toxics Control Act (MTCA) Method B[A] (CLARC 3.1)		National Ambient Water Quality Criteria (NAWQC)[b]				EPA Region 9 Tap Water Preliminary Remediation Goal (PRG)[C]	EPA Region 10 Risk-Based Concentration[d]	
					Freshwater Aquatic Life Protection		Human Health Protection for Consumption of:				
	MDL	PQL	CA	NC	CMC	CCC	Water + Organisms	Organisms Only		10^{-6}	HQ = 0.1
Volatile Organic Compounds (continued)											
Dichlorodifluoromethane	0.16	1.0	N/A	1600	N/A	N/A	N/A	N/A	390 nc	N/A	39
1,1-Dichloroethane	0.26	1.0	N/A	800	N/A	N/A	N/A	N/A	810 nc	N/A	81
1,2-Dichloroethane*	0.26	1.0	0.481	N/A	N/A	N/A	0.38	99	0.12 ca	0.12	1.0
1,1-Dichloroethene*	0.28	1.0	0.0729	72	N/A	N/A	0.057	3.2	0.046 ca	0.046	5.5
cis-1,2-Dichloroethene	0.17	1.0	N/A	80	N/A	N/A	N/A	N/A	61 nc	N/A	6.1
trans-1,2-Dichloroethene	0.29	1.0	N/A	160	N/A	N/A	700	140,000	120 nc	N/A	12
1,2-Dichloropropane*	0.24	1.0	0.643	N/A	N/A	N/A	0.52	39	0.16 ca	0.16	0.69
1,3-Dichloropropane	0.23	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,2-Dichloropropane	0.13	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,1-Dichloropropene	0.16	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
cis/trans-1,3-Dichloropropene*	0.17	1.0	0.243	240	N/A	N/A	10	1700	0.081 ca	0.081	0.87
cis-1,3-Dichloropropene	0.17	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
trans-1,3-Dichloropropene	0.17	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Ethylbenzene	0.15	1.0	N/A	800	N/A	N/A	3100	29,000	1300 nc	N/A	130
Hexachlorobutadiene*	0.18	5.0	0.561	1.60	N/A	N/A	0.44	50	0.86 ca	0.86	0.73
2-Hexanone	0.12	5.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Iodomethane	0.11	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Isopropylbenzene (Cumene)	0.15	1.0	N/A	1600	N/A	N/A	N/A	N/A	660 nc	N/A	66
p-Isopropyltoluene (p-Cymene)	0.18	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Methylene chloride	0.25	2.0	5.83	480	N/A	N/A	4.7	1600	4.3 ca	4.3	160
4-Methyl-2-pentanone (methyl isobutyl ketone)	1.02	5.0	N/A	640	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Naphthalene	0.16	5.0	N/A	160	N/A	N/A	N/A	N/A	6.2 nc	N/A	N/A
n-Propylbenzene*	0.16	1.0	N/A	N/A	N/A	N/A	N/A	N/A	61 nc	N/A	0.62

Table 4-13 (Continued)

COMPARISON OF LABORATORY METHOD DETECTION AND PRACTICAL QUANTITATION LIMITS AND APPLICABLE SCREENING VALUES FOR GROUNDWATER (µg/L)

Chemical of Concern	Laboratory MDLs and PQLs		Model Toxics Control Act (MTCA) Method B[A] (CLARC 3.1)		National Ambient Water Quality Criteria (NAWQC)[b]				EPA Region 9 Tap Water Preliminary Remediation Goal (PRG)[c]	EPA Region 10 Risk-Based Concentration[d]	
					Freshwater Aquatic Life Protection		Human Health Protection for Consumption of:				
	MDL	PQL	CA	NC	CMC	CCC	Water + Organisms	Organisms Only		10^{-6}	HQ = 0.1
Volatile Organic Compounds (Continued)											
Styrene	0.16	1.0	1.46	1600	N/A	N/A	N/A	N/A	1600 nc	N/A	160
1,1,1,2-Tetrachloroethane*	0.11	1.0	1.68	240	N/A	N/A	N/A	N/A	0.43 ca	0.43	18
1,1,2,2-Tetrachloroethane*	0.21	1.0	0.219	N/A	N/A	N/A	0.17	11	0.055 ca	0.055	37
Tetrachloroethene*	0.16	1.0	0.858	80	N/A	N/A	0.8	8.85	1.1 ca	1.1	25
Toluene	0.23	1.0	N/A	1600	N/A	N/A	6800	200,000	720 nc	N/A	72
1,2,3-Trichlorobenzene	0.20	5.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene	0.16	5.0	N/A	80	N/A	N/A	260	940	190 nc	N/A	19
1,1,1-Trichloroethane	0.19	1.0	N/A	7200	N/A	N/A	N/A	N/A	790 nc	N/A	79
1,1,2-Trichloroethane*	0.22	1.0	0.768	32	N/A	N/A	0.60	42	0.2 ca	0.2	2.4
Trichloroethene	0.16	1.0	3.98	N/A	N/A	N/A	2.7	81	1.6 ca	1.6	3.7
Trichlorofluoromethane	0.21	1.0	N/A	2400	N/A	N/A	N/A	N/A	1300 nc	N/A	130
1,2,3-Trichloropropane*	0.24	3.0	0.00625	48	N/A	N/A	N/A	N/A	0.0016 ca	0.0016	3.1
1,2,4-Trimethylbenzene	0.17	1.0	N/A	N/A	N/A	N/A	N/A	N/A	12 nc	N/A	1.2
1,3,5-Trimethylbenzene	0.16	1.0	N/A	N/A	N/A	N/A	N/A	N/A	12 nc	N/A	1.2
Vinyl chloride*	0.34	1.0	0.029	24	N/A	N/A	2.0	525	0.02 ca	0.02	N/A
Total xylenes	N/A	N/A	N/A	16,000	N/A	N/A	N/A	N/A	1400 nc	N/A	140
o-Xylene	0.22	1.0	N/A	16,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A
m-Xylene	N/A	N/A	N/A	16,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A
p-Xylene	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
mp-Xylene	0.32	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 4-13 (Continued)

COMPARISON OF LABORATORY METHOD DETECTION AND PRACTICAL QUANTITATION LIMITS AND APPLICABLE SCREENING VALUES FOR GROUNDWATER (µg/L)

Chemical of Concern	Laboratory MDLs and PQLs		Model Toxics Control Act (MTCA) Method B[A] (CLARC 3.1)		National Ambient Water Quality Criteria (NAWQC)[b]				EPA Region 9 Tap Water Preliminary Remediation Goal (PRG)[C]	EPA Region 10 Risk-Based Concentration[d]	
					Freshwater Aquatic Life Protection		Human Health Protection for Consumption of:				
	MDL	PQL	CA	NC	CMC	CCC	Water + Organisms	Organisms Only		10^{-6}	HQ = 0.1
Semivolatile Organic Compounds											
Diphenylamine *(stabilizer)*	0.12	1.0	N/A	400	N/A	N/A	N/A	N/A	910nc	N/A	91
Bis (2-chloroisopropyl) ether *(SOW)**	0.39	1.0	N/A	320	N/A	N/A	N/A	N/A	0.27ca	0.27	24
Phenol	0.08	2.0	N/A	9600	N/A	N/A	21,000	4,600,000	22,000 nc	N/A	2200
Bis-(2-chloroethyl) ether*	0.13	2.0	0.0398	N/A	N/A	N/A	0.031	1.4	0.0098 ca	0.0098	N/A
2-chlorophenol	0.14	1.0	N/A	80	N/A	N/A	120	400	30 nc	N/A	3
1,3-dichlorobenzene*	0.08	1.0	N/A	N/A	N/A	N/A	400	2600	5.5 nc	N/A	0.55
1,4-dichlorobenzene*	0.12	1.0	1.82	N/A	N/A	N/A	400	2600	0.5 ca	0.5	18
benzyl alcohol	0.15	5.0	N/A	4800	N/A	N/A	N/A	N/A	11,000 nc	N/A	1100
1,2-Dichlorobenzene	0.13	1.0	N/A	720	N/A	N/A	2700	17,000	370 nc	N/A	37
2-methylphenol (o-cresol)	0.21	2.0	N/A	800	N/A	N/A	N/A	N/A	1800 nc	N/A	180
4-methylphenol (p-cresol)	0.18	1.0	N/A	80	N/A	N/A	N/A	N/A	180 nc	N/A	18
N-Nitroso-di-n-propylamine*	0.12	2.0	0.0125	N/A	N/A	N/A	0.005	1.4	0.0096 ca	0.0096	N/A
Hexachloroethane*	0.11	2.0	6.25	16	N/A	N/A	1.9	8.9	36 nc	N/A	3.6
Nitrobenzene*	0.14	1.0	N/A	8	N/A	N/A	17	1900	3.4 nc	N/A	0.34
Isophorone	0.10	1.0	92.1	3200	N/A	N/A	36	2600	71 ca	71	730
2-Nitrophenol	0.29	5.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dimethylphenol	0.41	3.0	N/A	320	N/A	N/A	540	2300	730 nc	N/A	73
Benzoic Acid	0.90	10.0	N/A	64,000	N/A	N/A	N/A	N/A	150,000 nc	N/A	15,000
Bis (2-Chloroethoxy) Methane	0.44	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dichlorophenol	0.18	3.0	N/A	48	N/A	N/A	93	790	110 nc	N/A	11
1,2,4-Trichlorobenzene	0.10	1.0	N/A	80	N/A	N/A	260	940	190 nc	N/A	19
Naphthalene*	0.08	1.0	N/A	160	N/A	N/A	N/A	N/A	6.2nc	N/A	0.62
4-Chloroaniline	0.50	3.0	N/A	64	N/A	N/A	N/A	N/A	150 nc	N/A	15
Hexachlorobutadiene*	0.12	2.0	0.561	1.6	N/A	N/A	0.44	50	0.86 ca	0.86	0.73
4-Chloro-3-methylphenol	0.40	2.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylnaphthalene	0.36	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorocyclopentadiene	0.32	5.0	N/A	96	N/A	N/A	240	17,000	260 nc	N/A	26

Table 4-13 (Continued)

COMPARISON OF LABORATORY METHOD DETECTION AND PRACTICAL QUANTITATION LIMITS AND APPLICABLE SCREENING VALUES FOR GROUNDWATER (µg/L)

Chemical of Concern	Laboratory MDLs and PQLs		Model Toxics Control Act (MTCA) Method B[A] (CLARC 3.1)		National Ambient Water Quality Criteria (NAWQC)[b]				EPA Region 9 Tap Water Preliminary Remediation Goal (PRG)[C]	EPA Region 10 Risk-Based Concentration[d]	
					Freshwater Aquatic Life Protection		Human Health Protection for Consumption of:				
	MDL	PQL	CA	NC	CMC	CCC	Water + Organisms	Organisms Only		10^{-6}	HQ = 0.1
Semivolatile Organic Compounds (Continued)											
2,4,6-trichlorophenol*	0.16	5.0	7.95	N/A	N/A	N/A	2.1	6.5	6.1 ca	6.1	N/A
2,4,5-trichlorophenol	0.19	5.0	N/A	1600	N/A	N/A	2600	9800	3600 nc	N/A	360
2-Chloronaphthalene	0.07	1.0	N/A	1280	N/A	N/A	1700	4300	490 nc	N/A	49
2-Nitroaniline*	0.30	5.0	N/A	N/A	N/A	N/A	N/A	N/A	2.1 nc	N/A	0.21
Dimethylphthalate	0.06	1.0	N/A	16,000	N/A	N/A	313,000	2,900,00	360,000 nc	N/A	36,000
Acenaphthalylene	0.37	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3-Nitroaniline	1.06	6.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthene	0.09	1.0	N/A	960	N/A	N/A	1200	2700	370nc	N/A	37
2,4-Dinitrophenol*	7.77	10.0	N/A	32	N/A	N/A	70	14,000	73 nc	N/A	7.3
4-Nitrophenol	0.33	5.0	N/A	N/A	N/A	N/A	N/A	N/A	290 nc	N/A	29
Dibenzofuran	0.09	1.0	N/A	N/A	N/A	N/A	N/A	N/A	24 nc	N/A	2.4
2,6-Dinitrotoluene*	0.09	5.0	N/A	16	N/A	N/A	N/A	N/A	36 nc	N/A	3.6
2,4-Dinitrotoluene*	0.13	5.0	N/A	32	N/A	N/A	0.11	9.1	73 nc	N/A	7.3
Diethylphthalate *(plasticizer)*	0.09	1.0	N/A	12,800	N/A	N/A	23,000	120,000	29,000 nc	N/A	2900
4-Chlorophenyl-phenylether	0.30	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Fluorene	0.11	1.0	N/A	640	N/A	N/A	1300	14,000	240 nc	N/A	24
4-Nitroaniline	1.41	5.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4,6-Dinitro-2-methylphenol	5.93	10.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitrosodiphenylamine *(stabilizer)*	0.12	1.0	17.9	N/A	N/A	N/A	5.0	16	14 ca	14	N/A
4-Bromophenyl-phenylether	0.64	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorobenzene*	0.12	1.0	0.0547	12.8	N/A	N/A	0.00075	0.00077	0.042 ca	0.042	2.9
Pentachlorophenol*	2.73	5.0	0.729	480	N/A	N/A	0.28	8.2	0.56 ca	0.56	110
Phenanthrene	0.46	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Carbazole	0.12	1.0	4.38	N/A	N/A	N/A	N/A	N/A	3.4 ca	3.4	N/A
Anthracene	0.12	1.0	N/A	2400	N/A	N/A	9600	110,000	1800 nc	N/A	180
Di-n-butylphthalate *(plasticizer)*	0.14	1.0	N/A	1600	N/A	N/A	2700	12,000	3600 nc	N/A	360
Fluoranthene	0.13	1.0	N/A	640	N/A	N/A	300	370	1500 nc	N/A	150

Table 4-13 (Continued)
COMPARISON OF LABORATORY METHOD DETECTION AND PRACTICAL QUANTITATION LIMITS AND APPLICABLE SCREENING VALUES FOR GROUNDWATER (µg/L)

Chemical of Concern	Laboratory MDLs and PQLs		Model Toxics Control Act (MTCA) Method B[A] (CLARC 3.1)		National Ambient Water Quality Criteria (NAWQC)[b]				EPA Region 9 Tap Water Preliminary Remediation Goal (PRG)[C]	EPA Region 10 Risk-Based Concentration[d]	
					Freshwater Aquatic Life Protection		Human Health Protection for Consumption of:				
	MDL	PQL	CA	NC	CMC	CCC	Water + Organisms	Organisms Only		10^{-6}	HQ = 0.1
Semivolatile Organic Compounds (Continued)											
Pyrene	0.11	1.0	N/A	480	N/A	N/A	960	11,000	180 nc	N/A	18
Butylbenzylphthalate	0.22	1.0	N/A	3200	N/A	N/A	3000	5200	7300 nc	N/A	730
3,3'-Dichlorobenzidene*	0.81	5.0	0.194	N/A	N/A	N/A	0.04	0.077	0.15 ca	0.15	N/A
bis(2-Ethylhexyl)phthalate*	0.19	1.0	6.25	320	N/A	N/A	1.8	5.9	4.8 ca	4.8	73
Chrysene*	0.13	1.0	0.012	N/A	N/A	N/A	0.0044	0.049	9.2 ca	9.2 ca	N/A
Di-n-octylphthalate	0.14	1.0	N/A	320	N/A	N/A	N/A	N/A	730 nc	N/A	73
Benzo(b)fluoranthene*	0.06	1.0	0.012	N/A	N/A	N/A	0.0044	0.049	0.092 ca	0.092 ca	N/A
Benzo(k)fluoranthene*	0.21	1.0	0.012	N/A	N/A	N/A	0.0044	0.049	0.92 ca	0.92 ca	N/A
Benzo(a)pyrene*	0.07	1.0	0.012	N/A	N/A	N/A	0.0044	0.049	0.0092 ca	0.0092 ca	N/A
indeno(1,2,3-cd)pyrene*	0.15	1.0	0.012	N/A	N/A	N/A	0.0044	0.049	0.092 ca	0.092 ca	N/A
Dibenzo(a,h)anthracene*	0.14	1.0	0.012	N/A	N/A	N/A	0.0044	0.049	0.0092 ca	0.0092 ca	N/A
Benzo (g,h,I) perylene	0.63	1.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Herbicides											
Dalapon	0.08	2.0	N/A	480	N/A	N/A	N/A	N/A	1100 nc	N/A	110
Dicamba	0.07	0.7	N/A	480	N/A	N/A	N/A	N/A	1100 nc	N/A	110
MCPA*	34.37	75	N/A	8	N/A	N/A	N/A	N/A	18 nc	N/A	1.8
MCPP*	N/A	75	N/A	16	N/A	N/A	N/A	N/A	36nc	NA	3.6
Dichlorprop	0.15	3.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2,4-D	0.16	1.5	N/A	160	N/A	N/A	100	N/A	360 nc	N/A	36
2,4,5-TP(Silvex)	0.03	0.3	N/A	128	N/A	N/A	10	N/A	290 nc	N/A	29
2,4,5-T	0.04	0.6	N/A	160	N/A	N/A	N/A	N/A	360 nc	N/A	36
2,4-DB	0.67	10	N/A	128	N/A	N/A	N/A	N/A	290 nc	N/A	29
Dinoseb	0.05	2.0	N/A	16	N/A	N/A	N/A	N/A	36 nc	N/A	3.6

Table 4-13 (Continued)

COMPARISON OF LABORATORY METHOD DETECTION AND PRACTICAL QUANTITATION LIMITS AND APPLICABLE SCREENING VALUES FOR GROUNDWATER (µg/L)

Chemical of Concern	Laboratory MDLs and PQLs		Model Toxics Control Act (MTCA) Method B[A] (CLARC 3.1)		National Ambient Water Quality Criteria (NAWQC)[b]				EPA Region 9 Tap Water Preliminary Remediation Goal (PRG)[C]	EPA Region 10 Risk-Based Concentration[d]	
					Freshwater Aquatic Life Protection		Human Health Protection for Consumption of:				
	MDL	PQL	CA	NC	CMC	CCC	Water + Organisms	Organisms Only		10^{-6}	HQ = 0.1
Priority Pollutant Metals Plus Barium, Iron, Magnesium, Calcium, Sodium, and Potassium											
Antimony*	9	50	N/A	6.4	N/A	N/A	14	4300	15 nc	N/A	1.5
Arsenic *	0.597	1	0.0583	4.8	340	150	0.018	0.14	0.045 ca	0.045	N/A
Barium	1	3	N/A	1120	N/A	N/A	1000	N/A	2600 nc	N/A	260
Beryllium	1	1	N/A	32	N/A	N/A	N/A	N/A	73 nc	N/A	7.3
Cadmium[e]	1	2	N/A	8	1.2[e]	0.92[e]	5	5	18 nc	N/A	1.8
Calcium*	21	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Chromium ,total	2	5	N/A	24000	570	74	N/A	N/A	55,000 nc	N/A	5500
Copper[e]	1	2	N/A	592	4.3[e]	3.2[e]	1300	N/A	1400 nc	N/A	140
Iron	4	20	N/A	N/A	N/A	N/A	N/A	N/A	11,000 nc	N/A	1,100
Lead[e]*	0.819	1	N/A	N/A	17[e]	0.66[e]	N/A	N/A	N/A	N/A	N/A
Magnesium	9	20	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mercury*	0.0184	0.1	N/A	4.8	1.4	0.77	0.050	0.051	11 nc	N/A	1.1
Nickel	3	10	N/A	320	470	52	610	4600	730 nc	N/A	73
Potassium	248	500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Selenium	1.381	2	N/A	80	N/A	5.0	170	11,000	180 nc	N/A	18
Silver[e]*	1	3	N/A	80	0.43[e]	N/A	N/A	N/A	180 nc	N/A	18
Sodium	18	50	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Thallium*	0.585	1	N/A	1.12	N/A	N/A	1.7	6.3	2.9 nc	N/A	0.29
Zinc[e]	4	6	N/A	4800	42[e]	43[e]	9100	69,000	11,000 nc	N/A	1100
Petroleum Hydrocarbons											
TPH-gasoline[f]	N/A	350	N/A	800	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TPH-diesel[f]	80	10,000	N/A	500	N/A	N/A	N/A	N/A	N/A	N/A	N/A
oil[f]	N/A	20,000	N/A	500	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 4-13 (Continued)

COMPARISON OF LABORATORY METHOD DETECTION AND PRACTICAL QUANTITATION LIMITS AND APPLICABLE SCREENING VALUES FOR GROUNDWATER (µg/L)

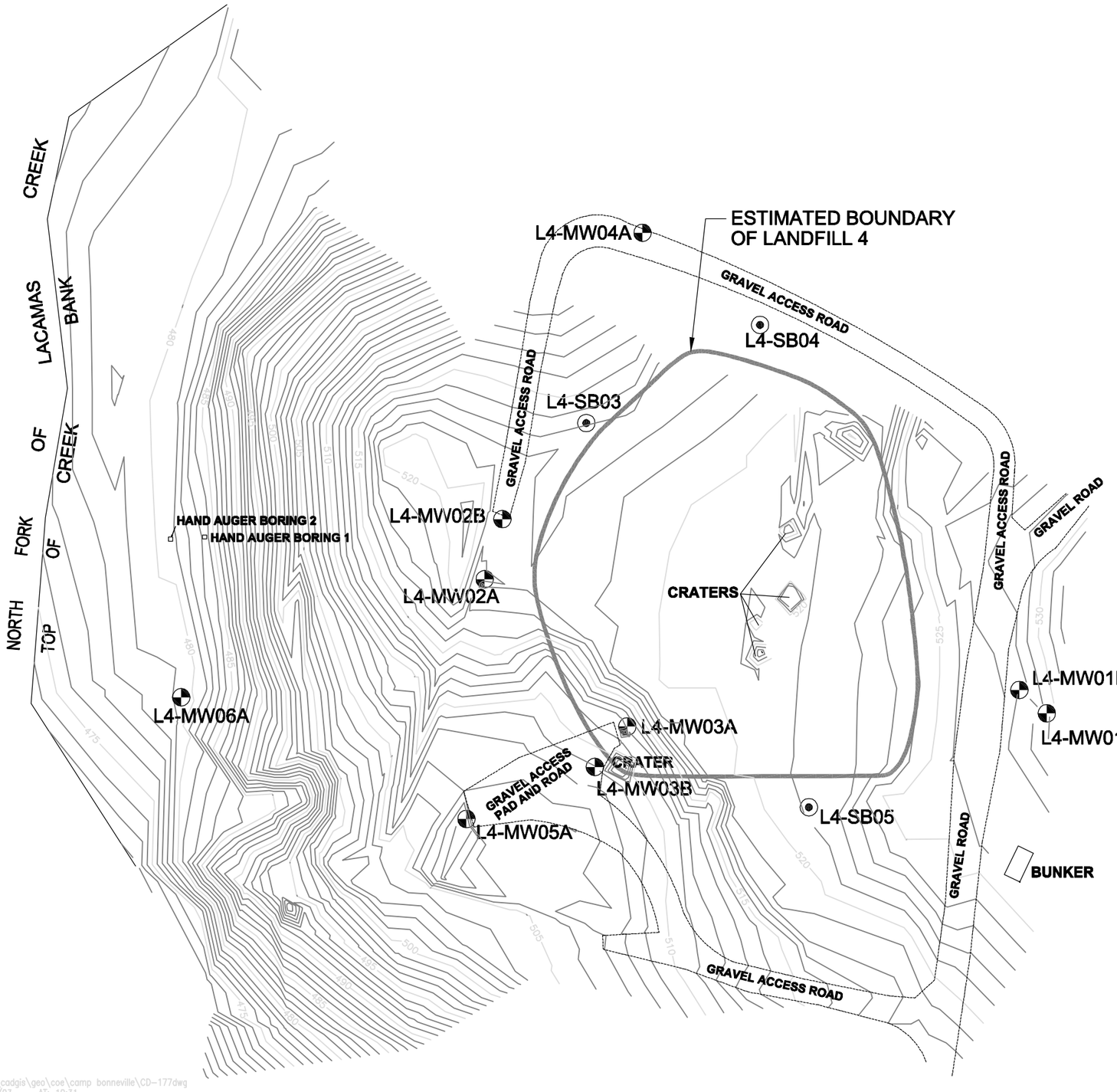
Chemical of Concern	Laboratory MDLs and PQLs		Model Toxics Control Act (MTCA) Method B[A] (CLARC 3.1)		National Ambient Water Quality Criteria (NAWQC)[b]				EPA Region 9 Tap Water Preliminary Remediation Goal (PRG)[C]	EPA Region 10 Risk-Based Concentration[d]	
					Freshwater Aquatic Life Protection		Human Health Protection for Consumption of:				
	MDL	PQL	CA	NC	CMC	CCC	Water + Organisms	Organisms Only		10^{-6}	HQ = 0.1
Inorganic Anions											
Chloride	310	2000	N/A	N/A	860,000	230,000	N/A	N/A	N/A	N/A	N/A
Nitrate/Nitrite	7	50	N/A	1,600	N/A	N/A	10,000	N/A	N/A	N/A	N/A
Sulfate	1200	10,000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Conventionals											
Total Organic Carbon (TOC)	606	1500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Dissolved Organic Carbon (DOC)	N/A	1500	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Suspended Solids (TSS)	N/A	1000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Cyanide	5	5	N/A	320	22	5.2	700	220,000	6.2 (as HCN)	N/A	N/A
Alkalinity (Carbonate/bicarbonate)	40	5000	N/A	N/A	N/A	20,000	N/A	N/A	N/A	N/A	N/A
Hardness	N/A	1000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Table 4-13 (Continued)
COMPARISON OF LABORATORY METHOD DETECTION AND PRACTICAL QUANTITATION LIMITS AND APPLICABLE SCREENING VALUES FOR GROUNDWATER (µg/L)

[a] Washington State MTCA Methods A and B (Chapter 173-340 WAC).
[b] National Recommended Water Quality Criteria - Correction. EPA Office of Water. EPA 822-Z-99-001. April 1999
[c] EPA Region 9 PRG for Tap Water. http://www.epa.gov/region09/wasate/sfund/prg/r9prgtable.xls. June 12, 2000.
[d] Based on EPA Region 9 PRG where 10^{-6} = Region 9 PRG cancer (ca) risk concentration and HQ = 0.1 is 0.1x the Region 9 PRG noncarcinogenic (nc) concentration.
[e] Freshwater NAWQC for cadmium, copper, lead, silver, and zinc are expressed as a function of hardness (mg/L of $CaCO_3$) in the water column. Values above correspond to a hardness value of 30 mg/L. The expected range of hardness values encountered at Camp Bonneville is 30 to 100 mg/L. Values were calculated according to the following formulae: CMC (dissolved) in µg/L = exp{mA[ln(hardness)]+bA} (CF) CCC (dissolved) in µg/L = exp{mC[ln(hardness)]+bC} (CF)
[f] Washington state MTCA Method A proposed amendments. November 1999.

Notes:

* - Laboratory reporting limit exceeds the screening value for one or more values
CA - carcinogen
CCC - criteria continuous concentration
CMC - criteria maximum concentration
EPA - U.S. Environmental Protection Agency
HQ - Hazard quotient
MDL - method detection limit
µg/L - micrograms per liter
PQL - practical quantitation limit
N/A - not applicable or available
N/C - noncarcinogen



LEGEND

L4-MW04A	MONITORING WELL LOCATION AND DESIGNATION
L4-SB03	SOIL BORING LOCATION AND DESIGNATION

NOTES

1) WELLS L4-MW01A, L4-MW02A AND ALL SOIL BORINGS INSTALLED BY SHANNON & WILSON (1999b).
2) TOPOGRAPHY PROVIDED BY OLSEN ENGINEERING
3) WELL L4-MW07B AND SOIL BORING L4-SB07A ARE LOCATED APPROXIMATELY 250 FT SOUTH OF LANDFILL 4

N

0 50 100

Scale in Feet

FILENAME: \sea2\cadgis\geo\coe\camp bonneville\CD-177dwg
EDIT DATE: 02/04/03 AT: 10:31

URS

U.S. ARMY
CORPS OF ENGINEERS
SEATTLE DISTRICT
SEATTLE,WASHINGTON

Landfill 4
Locations of Soil Borings and Monitoring Wells Immediately Adjacent to Landfill 4
FIGURE 4-1

CAMP BONNEVILLE PN 53F0072323.00 WASHINGTON

5.0 RESULTS OF INVESTIGATION

5.1 GEOLOGY OF STUDY AREA

This section presents the geology of the Landfill 4 area, interpreted from drilling data, groundwater elevations, lithology, bedrock coring, geotechnical analysis, and thin section evaluation. These data enabled the preparation of geologic cross sections, groundwater flow maps, characterization of the overburden soils, and characterization of the weathered and competent bedrock.

5.1.1 Hydrostratigraphy

Geologic cross sections were prepared to depict the relationships of the geologic units of Landfill 4. The locations of cross section lines A-A′ and B-B′ are shown on Figure 5-1. West-east (A-A′) and south-north (B-B′) geologic cross sections are presented on Figures 5-2 and 5-3.

Based on interpretation of the boring logs (Appendix B), Landfill 4 is underlain by approximately 45 to 65 feet of alluvial soils. These soils generally consist of a light- to medium-brown or reddish brown silty clay to clayey silt. This soil typically exhibits little evidence of weathering and fine- to medium-grained sand is occasionally present. Unweathered gravel was intermittently encountered in this soil. As shown on the geologic cross section on Figure 5-2, the different geologic units observed at Landfill 4 appear to slope and thicken to the west toward L4-MW02A/2B, while the geologic cross section on Figure 5-3 suggests a general sloping and thickening of geologic units to the north toward L4-MW04A. The soils above the weathered bedrock are similar with subtle differences, such as the relative percentages of sand, silt, and clay.

To evaluate whether a gravel layer or other potential water-bearing formation daylights on the steep slope west of Landfill 4 toward Lacamas Creek, the vegetation covering the hillside was carefully removed to evaluate whether seeps were present on the hillside. However, an extensive soil horizon was observed beneath the vegetation, and no seeps were observed. Therefore, two hand-auger soil borings were drilled in the locations shown on Figure 5-1 and on the east-west geologic cross section shown on Figure 5-2. These locations were selected based on the depth at which gravel was reported by Shannon & Wilson during drilling of borings for L4-MW01A and L4-MW02A. This depositional unit appeared to slope downward to the west. The location where the gravel might appear (if present) on the western slope was estimated by measuring the vertical distance from the top of the slope to where it would intersect the slope west of Landfill 4. Each hand-auger boring was drilled to approximately 8 feet bgs. Gravel was not encountered in the uphill boring (hand-auger boring 1) by 8 feet bgs, where stiff clay prevented further hand-auger penetration. However, gravel was encountered at the bottom of the downhill boring (hand-auger boring 2) (Figure 5-2). Based on the depth at which the gravel was encountered in hand-auger boring 2 (HA-2), it appeared that the gravel may represent the streambed for Lacamas Creek. It was noted that the Lacamas Creek streambed contains gravel with little or no sediment present.

Water was not observed in either hand-auger boring during the July 2001 and April 2002 quarterly sampling events. However, groundwater was present in HA-2 during the October 2001

and January 2002 quarterly sampling events. Based on the elevation of the groundwater in HA-2, the groundwater level was approximately one foot higher in HA-2 compared to the approximate surface water elevation of Lacamas Creek in October 2001. Similar measurements obtained in January 2002 revealed a groundwater elevation in HA-2 approximately 1.5 feet higher as compared to the approximate surface water elevation of Lacamas Creek.

Beneath the upper 45 to 65 feet of alluvial soil is an approximately 15- to 30-foot-thick section of sandy silt and gravelly clay. This soil is typically mottled yellow to orange and appeared to indicate the first presence of weathered bedrock observed in the borings. Although the action of the air rotary drilling bit caused the weathered bedrock to break into small fragments, it appeared that fragments of quartz and ferro-magnesium minerals were present; however, the mineralogy could not be identified in a hand specimen with a hand lens. The mineralogy of this weathered bedrock layer is described below in the petrographic analysis section (Section 5.1.8). The weathered bedrock is underlain by a hard, competent, phaneritic andesite, which is described in more detail in Section 5.1.10 and Appendix F.

Because the subsurface soils were similar (until weathered bedrock was encountered), selecting the depth for placement of the well screens for the overburden wells was difficult. Further complicating well screen placement was the general lack of substantial amounts of water encountered in the shallow borings, most likely due to the pervasive presence of fine-grained materials such as silt and clay. The decision on well screen placement and length was based on observation of the stratigraphy during drilling, noting the location and thickness of potential groundwater-bearing formations. These decisions were made by URS in consultation with the USACE on-site representative, with input from the drilling subcontractor. The length of screen used was based on the apparent thickness of the formation that produced groundwater. Five-foot screens were used in soils that appeared to have a thin groundwater-bearing formation (L4-MW03A and L4-MW05A) while 10-foot screens were used in soils that appeared to have a thicker groundwater-bearing formation (L4-MW04A).

As described in the Management Plan (URS 2001), placement of the well screens in the deeper water-bearing zone was based on the presence of water in either the weathered bedrock and/or competent bedrock. The weathered bedrock was approximately 10 to 15 feet thick, and water was encountered in this zone in all three deeper wells. All three deeper wells were constructed with 10-foot screens that were set in the weathered bedrock.

5.1.2 Field Screening of Soil Samples

A PID was used to monitor field staff breathing zone for volatile organic gases. No permissible exposure limits (PELs) were exceeded and no vapor concentrations were detected during drilling operations. All field screening results were entered in the comments section of the well boring logs.

In addition, field screening was conducted to detect VOCs in soil. A portion of each soil sample (or small quantity of the drill cuttings) was placed in a zipper-locked bag and screened with the PID. No detectable VOCs were present in the soil samples screened during drilling operations. All headspace readings were recorded in the comments section of the well boring logs.

5.1.3 Bedrock Coring

Rock coring and core logging were done in accordance with the USACE EM 1110-1-4000 (USACE 1998). Rock coring was performed in the competent bedrock zone encountered in three of the deeper borings (L4-MW01B, L4-MW02B, and L4-MW03B). A bentonite seal was set at the approximate contact between the weathered and unweathered bedrock to help stabilize the core bit during coring. Competent bedrock was encountered at 66 feet bgs (L4-MW01B), 75 feet bgs (L4-MW02B), and 60 feet bgs (L4-MW03B). Retrievable rock cores were not extracted from the weathered bedrock zone overlying the competent bedrock. The weathered bedrock material observed included highly altered bedrock fragments in a matrix of silty clay. The contact between the weathered bedrock zone and overlying alluvium was gradational. The weathered bedrock zone is estimated to be approximately 10- to 15-feet thick. The depth of the first encountered water in the three deep borings was generally observed at or immediately below the gradational contact between the weathered bedrock and overlying alluvium.

The core barrel and over-drilling bit were advanced in 5-foot runs with two runs completed at each boring. Each core run was removed from the core barrel, placed in a core box, marked, measured, and logged by a URS on-site geologist using methods described in the Management Plan. Rock core tops, mechanical breaks, and footage intervals were marked on the rock cores or wood inserts. Recovery measurements and rock quality designations (RQD) were noted on rock core logs with a description of lithology and fracture occurrence. A graphic representation of the core was drawn using a graphic log adjacent to the lithological descriptions. The core was then photographed and placed in a sealed wooden box.

One of the main purposes of the rock coring program was to characterize the nature of the native bedrock and frequency of bedrock fractures. The drilling program did not utilize inclined coring techniques. Therefore, no analysis of vertical fracture systems was performed. The coring technique used also did not allow for accurate orientation of north relative to the core.

Coring was much more successful on the third coring location (L4-MW03B) than the first two locations (L4-MW01B and L4-MW-2B). Field personnel reported that the driller experienced difficulties having the coring device lock onto the cores. As a result, upon extraction, some of the cores were lost. However, recovery was nearly 100% for the last core, suggesting that the problems encountered in the first two cores were corrected.

In general, the rock type encountered was field identified as a porphyrtic andesite characterized by massive bedding. The andesite was gray, slightly weathered to unweathered, and very hard with an observed fracture density of less than 1 fracture per linear foot. Vesicles and fractures observed on the rock cores were generally solid with some partial crystalline carbonate infilling. The majority of fractures were generally perpendicular to the core and usually not more than 10 degrees off horizontal. Descriptions of the recovered cores are included on the boring logs and provided in Appendix B. Additional descriptions of the mineralogy and related characteristics are discussed in the petrographic analysis (Section 5.1.10).

5.1.4 Slug Test Data Analysis

The slug test data were analyzed by three different methods using AQTESOLV (Duffield 1996). The three methods were Bouwer and Rice (1976), Cooper et al. (1967), and Hvorslev (1951). These methods and the results and analysis of the slug test data are discussed below. The

saturated thickness of the aquifer for the overburden and weathered bedrock wells as well as the water column height were obtained from the boring logs and cross-sections (Figures 5-2 and 5-3). Displacement-time curves for the slug tests are presented in Appendix G.

Bouwer and Rice (1976)

In accordance with Bouwer and Rice (1976), hydraulic conductivity is given as:

$$K = [r_c]^2/2L \times \ln[R_e/r_w] \times 1/t \times \ln[y_o/y_t] \quad [1]$$

Where:

K = hydraulic conductivity (feet per minute)
r_c = radius of casing (feet)
R_e = effective radius over which drawdown or recovery occurs (feet)
L = screen length (feet)
r_w = radial distance of undisturbed portion of aquifer from center of well (feet)
y_o = head of water displaced by the slug at start of the test (feet)
y_t = head of water in the well at time t during the test (feet)
t = time at which y_t is taken (minutes)

To calculate hydraulic conductivity, a plot of ln $[y_t]$ versus t was made. The slope of the straight-line portion of the curve is used to evaluate $(1/t \times \ln[y_o/y_t])$ in Equation [1]. The effective radius, R_e, was estimated from:

$$\ln[R_e/r_w] = [1.1/\ln(H/r_w)] + [A + B\ln[(D-H)/r_w]/(L/r_w)] \quad [2]$$

Where:

H = height of water table above well bottom (feet)
D = height of water table above impermeable barrier (feet)
A,B = dimensionless coefficient obtained from Figure 3 of Bouwer and Rice (1976)

For a situation in which D>>H, the above equation may be approximated by:

$$\ln[R_e/r_w] = [1.1/\ln(H/r_w) + (A + 6B)/(L/r_w)]^{-1} \quad [3]$$

Equation [1] is based on the following assumptions:

- The rise or decline of the water table around the well is negligible.
- Flow above the water table (in the capillary zone) is negligible.
- Head losses as water enters or leaves the well are negligible.
- The aquifer is homogeneous and isotropic.
- The method is applicable to a fully penetrating or fully screened well

Hydraulic conductivity was calculated for the wells in the overburden and weathered bedrock, with the mean hydraulic conductivity presented in Table 5-1. Rows labeled Test 1 contain the mean value obtained from two sets of results for the falling head test and Test 2 contains the mean value obtained from two sets of results for the rising head test. Mean hydraulic

conductivity in the overburden wells ranged from a low of 6.7 x 10^{-4} cm/second (well L4-MW01A) to a high of 2.0 x 10^{-3} cm/second (well L4-MW02A).

Mean hydraulic conductivity in weathered bedrock wells L4-MW02B and L4-MW03B ranged from a low of 4.5 x 10^{-4} cm/second (well L4-MW02B) to a high of 2.8 x 10^{-3} cm/second (well L4-MW03B). A manual curve fit was used for the displacement-time curve generated with the Bouwer and Rice method for upgradient well L4-MW01B (rising and falling head tests) that better represents early displacement data compared to the computer-generated automatic fit (Appendix G). However, the resultant hydraulic conductivity for L4-MW01B was calculated to be 2.0 x 10^{-2} cm/sec, one to two orders of magnitude higher than the other two weathered bedrock wells. This hydraulic conductivity does not appear to reflect the stratigraphy observed in the boring for L4-MW01B as the weathered bedrock typically contained a high percentage of fine-grained soils (silt and clay). Because the Bouwer and Rice method was originally developed for unconfined aquifer conditions, combined with the stratigraphy observed in the borings, the method of Cooper et al (1967, presented below) is considered more applicable for calculating hydraulic conductivity values for the weathered bedrock wells.

Cooper et al. (1967)

According to the Cooper, et al. method (Cooper et al. 1967), hydraulic conductivity (K) was calculated by the relationship:

$$K=T/b,$$

Where:
T = aquifer transmissivity
b = aquifer thickness

$$\text{and } T = 1.0r^2_c/t_1,$$

Where:
t_1 = vertical-time axis
r^2_c = well casing radius

A plot of the ratio of the measured head to the head after injection (or removal) of the slug was made as a function of time. This relationship was plotted on semi-logarithmic paper. These curves are compared to type curves, with the objective of finding the closest fit between the type curves and the curves derived from the field data.

Assumptions with the Cooper et al. method of determining hydraulic conductivity include:

- The method is applicable to fully penetrating or fully screened wells
- The aquifer is uniformly porous
- The aquifer has uniform thickness
- The aquifer is overlain and underlain by aquicludes (confined aquifer)
- The response to insertion and removal of slug is instantaneous

Because the Cooper et al. method does not apply to unconfined aquifers, hydraulic conductivity was not calculated for the overburden wells using this method. Hydraulic conductivity

calculated for the weathered bedrock wells is presented in Table 5-1. The values ranged from a low of 3.0 x 10^{-5} cm/second (L4-MW03B) to a high of 3.5 x 10^{-4} cm/second (L4-MW01B).

Hvorslev (1951)

Hvorslev (1951) developed an empirical relationship describing the water level response in an unconfined aquifer due to the instantaneous injection or removal of a slug from a well:

$$K = \frac{r^2 \ln(L/R)}{2LT_o}$$

Where:

K = hydraulic conductivity (cm/second)

r = well casing radius (feet)

L = length of well screen (feet)

R = well radius (feet)

To = time for water to rise (or fall) to 37% of initial water level change (seconds)

Assumptions with the Hvorslev method of determining hydraulic conductivity include:

- The aquifer has infinite horizontal and vertical extent
- The aquifer is homogeneous
- The aquifer potentiometric surface is initially horizontal
- The response to insertion and removal of slug is instantaneous
- The aquifer is unconfined
- Groundwater flow is steady

Because the Hvorslev method is not applicable to confined aquifers, hydraulic conductivity was not calculated for the weathered bedrock wells using this method. Hydraulic conductivity calculated for the overburden wells is presented in Table 5-1. The values ranged from a low of 8.9 x 10^{-4} cm/second (L4-MW01A) to a high of 2.7 x 10^{-3} cm/second (L4-MW02A). These values are generally comparable to those calculated using the Bouwer and Rice method.

Summary of Slug Test Data

Based on observations noted during drilling and installation of the wells, and the geotechnical analysis of selected overburden soil samples, the lithology above the bedrock at Landfill 4 consists predominantly of silty clays with lesser amounts of sandy silt. In addition, the lithology in the formations surrounding the overburden wells precluded the use of a pump during well development as the wells were pumped dry, even at low flow rates (well development is discussed in Section 5.1.6). Published hydraulic conductivities for these types of soil range from approximately 1 x 10^{-6} to 1 x 10^{-4} cm/sec (Freeze and Cherry 1979, Fetter 1988). However, evaluation of the slug test data using both the Bouwer and Rice (1976) and Hvorslev (1951)

methods yielded hydraulic conductivities of approximately 1 x 10^{-3} cm/sec (Table 5-1). The difference between the published hydraulic conductivity values and the values derived from the slug tests may be related to displacement of water during the slug test that was insufficient to test the aquifer. The filter pack of the wells may also have had an influence in the groundwater rates of recovery.

As mentioned above, the method of Cooper et al (1967) is considered more applicable for calculating hydraulic conductivity values for the weathered bedrock wells. Based on the stratigraphy observed during drilling, the performance of the weathered bedrock wells during development, and published values of hydraulic conductivity (Freeze and Cherry 1979), the hydraulic conductivities (Cooper et al method) shown in Table 5-1 for the weathered bedrock wells appear to be representative of the surrounding formation.

5.1.5 Groundwater Flow Direction, Hydraulic Gradients, and Estimated Velocities

The groundwater elevations during the four quarterly sampling events at Landfill 4 are shown in Tables 5-2 through 5-5. The groundwater elevations were similar for the sampling events conducted in July 2001 and October 2001. The groundwater elevations were approximately three feet higher during the January 2001 sampling event and approximately one foot higher during the April 2002 sampling event.

Groundwater elevations measured in the overburden wells were used to develop the groundwater potentiometric surface contour maps shown on Figures 5-4 through 5-7. Based on the groundwater elevation data, groundwater in the alluvium flows radially towards the west, northwest, and southwest. This mounding effect is generally consistent with the observed ground surface. As shown by the topographic contours, relatively steep embankments are present north, west, and south of Landfill 4.

The groundwater flow direction components also appear to be suggested by the geologic cross sections shown on Figures 5-2 and 5-3. Cross-section A-A′ shows a relatively steep groundwater gradient from east to west, from L4-MW01A to L4-MW02A. However, the cross section also indicates a downward gradient from L4-MW02A to L4-MW03A. South-north geologic cross-section B-B′ (Figure 5-3) suggests a mounding effect centered near L4-MW02A. Groundwater gradients from L4-MW02A appear to flow toward L4-MW04A and L4-MW05A. It is noted that Ecology differs in interpretation of the water level data. Ecology asserts that groundwater in the vicinity of L4-MW02A flows to the east.

Groundwater elevations measured in weathered bedrock wells L4-MW01B, L4-MW02B, and L4-MW03B were used to develop the groundwater potentiometric surface contour maps shown on Figures 5-8 through 5-11. Based on the groundwater elevation data, groundwater in the weathered bedrock flows locally towards the southwest. This flow direction is also suggested by the west-east geologic cross section shown on Figure 5-2. However, the regional direction of groundwater flow in the weathered bedrock is unknown.

The horizontal hydraulic gradient of the alluvium at Landfill 4 was calculated using data from monitoring wells L4-MW01A, L4-MW04A, and L4-MW05A. The calculated value was 0.12 foot/foot for all four groundwater sampling events. Using data from monitoring wells L4-MW01B, L4-MW02B, and L4-MW03B, the horizontal hydraulic gradient in the weathered bedrock was calculated to be 0.16 foot/foot for all four groundwater sampling events.

Vertical hydraulic gradients were estimated from the groundwater elevations in the three well pairs at Landfill 4. The mean vertical hydraulic gradient values in L4-MW01A/01B, L4-MW02A/02B, and L4-MW03A/03B were approximately -0.04, 0.17, and 0.06, respectively (Tables 5-2 through 5-5). The vertical hydraulic gradients exhibited little variation during the four groundwater sampling events. The values indicate that vertical gradients exist within the well pairs. The positive values in well pairs L4-MW02A/02B and L4-MW03A/03B indicate a downward vertical hydraulic gradient while the negative value for well pair L4-MW01A/01B indicates an upward vertical hydraulic gradient.

An estimate of the horizontal groundwater velocity was made for the alluvium using an estimated hydraulic conductivity and the calculated horizontal hydraulic gradient. As mentioned above, the horizontal gradient for the groundwater in the alluvial soils was calculated to be 0.12 foot/foot. To estimate the hydraulic conductivity, the recharge test data were used (Table 5-6) according to the method described by Hvorslev (1951). This method uses slug test data analysis and hydraulic conductivity is derived according to the following equation:

$$K = r^2 \times \ln(L/R)/2 \times L \times T_o,$$

where:

K = hydraulic conductivity in ft/sec
r = radius of well screen in feet
ln R = natural log of radius of well screen
L = length of well screen in feet
T_o = length of time for the water level to recover to 37 percent of the initial change (in seconds)

Based on the Hvorslev method, hydraulic conductivities were estimated to be 1.6×10^{-6} cm/sec for well L4-MW01A and 2.8×10^{-5} cm/sec for well L4-MW05A. Coupled with an estimated effective porosity of 0.40 (Freeze and Cherry 1979) for silt and clay, the horizontal velocity of the upper water-bearing unit at Landfill 4 is estimated to range from approximately 0.50 to 9 feet/year.

A more detailed estimate of horizontal groundwater velocity was calculated for the alluvial soils and the weathered bedrock based on the hydraulic conductivities derived from the slug tests discussed above (Section 5.1.4). The estimated velocity was calculated from:

$$V = K/n \times dh/dl \times 365 \text{ days per year}$$

Where:
V = groundwater velocity in feet per day
K = hydraulic conductivity in feet per day
n = effective porosity
dh/dl = horizontal hydraulic gradient in foot/foot

The horizontal gradient for the groundwater in the alluvial soils was calculated to be 0.12 foot/foot and the horizontal hydraulic gradient for the groundwater in the weathered bedrock was calculated to be 0.16 foot/foot. In addition, an estimated effective porosity of 0.40 (Freeze and Cherry 1979) for silt and clay was used in the velocity calculation. The results are presented in Table 5-1.

Estimated groundwater velocity in the alluvium ranged from a low of approximately 200 feet/year (well L4-MW01A) to a high of approximately 825 feet/year (well L4-MW02A). Higher velocities were consistently obtained using the hydraulic conductivities derived from the Hvorslev method as compared to those derived from the Bouwer and Rice method. Similar velocity estimates were also achieved with the 3-feet and 6-feet long slugs used in shallow well L4-MW05A. Review of the displacement-time curves indicated that both methods derived similar slopes using AQTESOLV (Duffield 1996). The apparent relatively high groundwater velocity estimated for the alluvial soils may be influenced by the local topography. The area at Landfill 4 is very hilly, with a steep slope to the west, toward Lacamas Creek. Because of the shallow nature of the groundwater in the alluvium, the groundwater flow direction and velocity likely reflect the local topography. On a more regional scale, toward the Lacamas Creek valley to the west, the topographic gradient becomes much more gentle. The groundwater velocity in this area is likely to be lower than that estimated at Landfill 4.

Estimated velocities for the weathered bedrock were calculated using the hydraulic conductivities obtained from the Bouwer and Rice method and the Cooper et al. method. Using the Cooper et al. method, estimated velocities for the weathered bedrock wells ranged from a low of approximately 10 feet/year in well L4-MW03B to a high of approximately 150 feet/year in well L4-MW01B. Significantly higher groundwater velocities were calculated using the hydraulic conductivity derived from the Bouwer and Rice method. However, as stated above in Section 5.1.4, the Cooper et al. method is believed to be more applicable to the conditions existing in the weathered bedrock at Landfill 4. Similar to the groundwater observed in the alluvium, the groundwater flow direction and velocity in the weathered bedrock is likely influenced by the hilly topography at Landfill 4. Further to the west, where the topographic gradient is more gentle, the groundwater velocity is probably lower than that estimated at Landfill 4.

5.1.6 Monitoring Well Development

Monitoring wells were developed in accordance with the EPA Resource Conservation and Recovery Act (RCRA) *Groundwater Monitoring Draft Technical Guidance* (USEPA 1992) and EM-1110-1-4000. In addition to developing the wells installed during this investigation, wells L4-MW01A and L4-MW02A, installed by Shannon & Wilson in 1998, were redeveloped to improve groundwater flow in the two wells. Both of these wells experienced slow recharge and high turbidity during the initial and only round of sampling in 1998. The newly installed wells were left undisturbed for a minimum of 48 hours prior to well development to allow the bentonite grout to cure.

Wells in the Overburden

Monitoring wells L4-MW01A, L4-MW02A, L4-MW03A, L4-MW04A, L4-MW05A, and L4-MW06A were constructed with screened intervals in the alluvial material overlying the weathered bedrock zone. Groundwater was encountered during the drilling of L4-MW03A, L4-MW04A, and L4-MW05A at approximately 25 to 30 feet bgs. Water was not present in well L4-MW06A during drilling or during subsequent investigations of the well, including after significant rain events. Therefore, this well could not be developed. Although water was observed in the shallow wells, the formation that appeared to produce the most water contained

significant amounts of silt and clay. The presence of fine-grained silt and clay in the water-bearing zone required additional effort during development discussed in Section 4.2.4.

The results of the monitoring well development are summarized in Table 5-7. Well development forms are included in Appendix B. The amount of silt and clay in the formation surrounding shallow wells L4-MW01A and L4-MW04A precluded the use of a pump during development. These wells were surged and bailed repeatedly with stainless steel bailers (supplied by the drilling contractor) to surge the filter pack and remove fines from the water column. During development, each of these wells went dry after surging and bailing. The water levels returned to approximately 90 percent of the initial volume in the well within 2 to 4 hours of being surged/bailed dry. Although the turbidity remained high in L4-MW01A and L4-MW04A after several days of surging and bailing, the other field parameters stabilized (Table 5-7).

Shallow wells L4-MW02A, L4-MW03A, and L4-MW05A were developed with a pump, after dedicated bailers were used to remove the fines from the water column. Well L4-MW05A went dry using the pump and the water level recovered to approximately 90 percent of the original volume after 1 hour. As a result, this well was surged/bailed and pumped down eight times during development. Continuous pumping was achieved during the development of wells L4-MW02A and L4-MW03A. Although the initial turbidity values for these two wells were more than 1,000 nephelometric turbidity units (NTUs), the turbidity value after development dropped to less than 5 NTUs. The other parameters measured in the field also stabilized during development.

Wells in the Weathered Bedrock

The four deep monitoring wells L4-MW01B, L4-MW02B, L4-MW03B, and L4-MW07B were constructed with screen intervals in the weathered bedrock zone. All four monitoring wells were developed initially with dedicated bailers to remove suspended sediment from the water column. The well development in L4-MW01B, L4-MW02B, and L4-MW03B was followed by pumping until the water quality parameters stabilized. The turbidity value in the deeper well L4-MW03B decreased to less than 5 NTUs during development (Table 5-7) and the turbidity of deeper well L4-MW01B decreased to 5.7 NTUs. After an initial turbidity measurement of 669 NTUs, the turbidity value for well L4-MW02B was 88 NTUs, despite approximately 8 hours of development. All of the other water quality parameters measured during development stabilized. Equipment malfunctions prevented the use of a generator and pump to further develop L4-MW07B. With concurrence from the USACE onsite representative, this well was further developed with a dedicated bailer. After a value of 203 NTUs, turbidity valued decreased to 0 NTUs after 45 minutes of pumping (Table 5-7). All of the other water quality parameters measured during development stabilized during development of L4-MW07B.

5.1.7 Recharge Tests

As mentioned in Section 4.3.4, a semiquantitative recharge test was performed in two overburden wells to assess how quickly the wells with poor water flow would recover and to aid in evaluating appropriate methods for well development. The wells selected for this test were L4-MW01A and L4-MW05A because they produced the least water during initial development activities. The depth to groundwater was measured, after which the wells were bailed dry. The water level was then periodically measured to evaluate how quickly the water levels returned to

their original elevation. The recharge test was first performed on well L4-MW01A. The initial depth to groundwater in this well was 16.48 feet. The results of the recharge test are shown in Table 5-6. As shown in the table, after approximately 45 minutes, the depth to groundwater had recovered to 18.21 feet. Based on this rate of recharge, it is estimated that the water level would have risen to its original level in approximately 1.5 hours.

A similar recharge test was conducted in well L4-MW05A. The original depth to groundwater prior to bailing the well dry was 23.63 feet. As shown in Table 5-6, the groundwater level recovered at a rate of approximately 7 feet every 30 minutes. It is estimated that based on this recharge rate, the groundwater would have risen to its original level in approximately 60 minutes.

5.1.8 Yield Test

Well L4-MW02B was selected for the yield test because it is screened in the weathered bedrock and represents groundwater flow within the weathered bedrock water-bearing strata. Based on observations recorded during drilling and well development, as well as the slow rate of recovery of the overburden wells during groundwater sampling, it was concluded that the predominant horizontal groundwater flow near Landfill 4 is in weathered bedrock. Well L4-MW02B was also selected to evaluate if removing the water column from the well would affect the concentration of COPCs in the groundwater.

Water level measurements collected during the yield and recovery portions of the test are contained in Appendix H. The portion of the yield test from a pumping rate of 1.75 L/min to 5 L/min is shown on Figure 5-12. The recovery data are shown on Figure 5-13. The initial water level prior to commencement of the yield test was 31.88 feet below the top of the casing (btoc). Table 5-8 illustrates the drop in water level in response to specific pumping rates. Consistent water levels were maintained with pumping rates as high as approximately 3 L/min (approximately 0.8 gallons/minute [gpm]). However, when the pumping rate was increased to 5 L/min (approximately 1.3 gpm), the well was pumped dry after an initial drop in the water level of 2.0 feet.

After well L4-MW02B was pumped dry, recovery measurements were collected. During the first 1.5 minutes, groundwater level measurements were recorded every five seconds. The measurement interval was increased to 15 seconds for the next two minutes of recovery and to 30 seconds for the next four minutes. Groundwater level measurements were collected every minute for the last 1 hour and 3 minutes of the recovery test. In total, the groundwater recovered to within approximately 90% of the static level within 1 hour and 10 minutes (Figure 5-13). During the initial 10 minutes, groundwater levels recovered approximately five feet; however, the next 15 minutes resulted in the groundwater recovering approximately 20 feet. During the remaining 45 minutes, groundwater levels recovered approximately 10 feet.

5.1.9 Geological Field Reconnaissance of Lacamas Creek

The Lacamas Creek geologic field reconnaissance was conducted on September 11, 2002 and included investigating the 2,500-foot section of the stream from the bridge along the access road upstream to Landfill 4. In-place outcrops of bedrock and other pertinent observations were mapped and are presented on Figure 5-14. The amount of debris (i.e., downed trees) and size of

boulders observed in the stream suggest that during the winter, the stream energy of Lacamas Creek is considerably higher when precipitation is highest in the region.

Outcrops of bedrock noted appeared to be volcanic in origin and are most likely related to the Tertiary andesite seen at Landfill 4 in the borings for the weathered bedrock monitoring wells and also noted by Shannon & Wilson on the geologic map of Camp Bonneville (Figure 3-3). The rocks in hand specimen typically consisted of plagioclase feldspar and pyroxene phenocrysts within a fined-grained matrix. The bedrock outcrops were most commonly present on the stream bottom and the bottoms of the adjacent stream banks, occasionally extending for more than 100 feet. Because of the difficulty distinguishing between soil associated with weathering of bedrock and the soil horizon, identifying weathered bedrock during the field reconnaissance was problematic. Two areas potentially containing what may be weathered bedrock were identified approximately 220 feet and 1575 feet south of Landfill 4 along the western stream bank (Figure 5-14). A potential seep was tentatively identified at the more southerly weathered bedrock location on the west bank of Lacamas Creek; however, because the stream reconnaissance was conducted during low-flow conditions, the seep could not be confirmed. Flowing groundwater was not observed at any weathered bedrock locations that could be sampled during the September 2002 stream reconnaissance. Furthermore, the potential seeps were observed on the western bank of Lacamas Creek, where sampling would not be warranted. Groundwater entering Lacamas Creek through a seep from Landfill 4 would enter from the eastern streambank. In addition to the bedrock outcrops, the remains of a smoke grenade were discovered approximately 1700 feet south of Landfill 4 on the western stream bank (Figure 5-14).

5.1.10 Petrographic Analysis

To evaluate the rock type, weathering characteristics, and potential microfracturing within the bedrock, three thin sections from the bedrock cores obtained from Landfill 4 were examined. This work was supplementary to field rock-core logging activities. One sample was evaluated from the weathered zone at the top of the bedrock surface (L4-MW01B, 64ft bgs), and the other two samples (L4-MW03B, 60.8ft bgs, L4-MW03B, 69ft bgs) were obtained at different depths within relatively unweathered bedrock in the same borehole. Additional information and photographs of representative portions of the thin sections are provided in Appendix F.

The sample from the weathered horizon consisted of disaggregated rock fragments. These fragments are relatively unweathered (ISRM weathering class I-II) and appear similar to the rock retrieved in the core samples. Weathered zones at the top of bedrock surface are typically capable of transmitting groundwater; however, the relatively unweathered nature of the fragments suggests that groundwater flows in the past have not been sufficient to completely weather the rock. The rock fragments do exhibit evidence of hydrothermal alteration unrelated to the current groundwater environment.

Samples collected from the rock core were unweathered (ISRM weathering class I). All fractures in the samples were filled with either zeolite mineralization or calcite. Rare smaller microfractures were typically filled with calcite. The largest fracture (up to approximately 2.5 millimeters wide) was filled with zeolites. Both filled vesicles (amygdules) and unfilled vesicles are present. Zeolites were the primary vesicle filling. No connection among vesicles was observed. A glassy groundmass was observed in portions of both samples. The presence of

volcanic glass can be viewed as further evidence of the lack of intense weathering and associated groundwater flow in these rocks.

5.1.11 Geotechnical Analysis

As shown in Figures 5-2 and 5-3, the uppermost 45 to 65 feet of soils at Landfill 4 principally consist of silty and clayey soils. Selected soil samples were tested for grain size analysis (hydrometer analysis) and Atterberg limits to more accurately assess the physical nature of the soils and classify them in accordance with the USCS. Limited volumes of soil samples were available for analysis. As discussed in Section 4.5.1, the samples selected for physical analysis were considered to be representative of the soils encountered above the weathered bedrock. The results of the analysis are presented in Appendix I. The results of the analysis show that soils in the lower portion of the overburden consist of sandy elastic silt (MH and MH/SM in the USCS). These soils grade upward into plastic clays (CH in the USCS) at depths of approximately 35 feet bgs and higher.

5.1.12 Monitoring Well Sampling

Low-flow continuous purging of the shallow wells was precluded because of the poor groundwater recharge rate and as a result, it is possible that stagnant water may have been included in the groundwater samples from the shallow wells. The analysis of groundwater samples that may include stagnant water suggests that the analytical results reflect extremely localized conditions and do not necessarily represent the groundwater conditions in the surrounding geologic formation. Furthermore, it is possible that field-measured parameters such as DO and ORP do not necessarily reflect the surrounding formation and the concentration of metals reported in the shallow wells may not represent the conditions in the surrounding formation. Stagnant water may have had an effect on the concentration of VOCs reported in the shallow groundwater samples.

5.2 GROUNDWATER ANALYTICAL DATA

This section summarizes the results of laboratory analyses for the four quarterly rounds of groundwater samples collected at Landfill 4 from July 2001 through November 2002 in addition to the groundwater samples collected from new well L4-MW07B and resampling of well L4-MW02B following the yield test. Additional discussion regarding the groundwater data and comparison of the data to screening criteria are presented in Section 5.3. Table 5-8 provides a summary of detected analyte concentrations for all monitoring events. Appendix J contains laboratory data sheets and Appendix D contains tables that provide data for all detected and undetected target analytes.

Validation was conducted for the explosives, propellants, VOC, SVOC, herbicide, and metals data. Emphasis was placed on the explosives residues and propellants, all target VOCs, the four plasticizer and stabilizer compounds determined by SVOC analysis, and four metals (barium, arsenic, lead, and mercury). Analytical data were evaluated using procedures identified in the EPA guidance *National Functional Guidelines for Organic Data Review* (USEPA 1994a) and *National Functional Guidelines for Inorganic Data Review* (USEPA 1994b) as applicable to the

USACE Shell and the Management Plan. The data validation reports are presented in Appendix E.

5.2.1 Groundwater Analytical Data – July 2001

Groundwater samples were collected from monitoring wells at Landfill 4 from July 24, 2001, through July 27, 2001. Eleven samples (nine groundwater samples, one rinsate blank, and one trip blank) were submitted for analyses. In addition, double-blind PE samples were submitted for analysis of explosives residues, nitroguanidine, perchlorate ion, and selected VOCs, SVOCs, herbicides, and metals. A field duplicate sample, GW502MW02A, was collected from monitoring well L4-MW02A, the well that contained elevated concentrations of RDX and HMX in previous sampling events (Shannon & Wilson 1999b).

Explosives and propellants were detected in all groundwater samples except those from upgradient monitoring wells L4-MW01A and L4-MW01B (Table 5-9). RDX was detected in the following monitoring wells:

- L4-MW02A (44 µg/L sample, 36 µg/L duplicate)
- L4-MW02B (120 µg/L)
- L4-MW03A (6.6 µg/L)
- L4-MW03B (0.6 µg/L)
- L4-MW04A (0.82 µg/L)
- L4-MW05A (5.2 µg/L)

Perchlorate ion was detected in monitoring wells:

- L4-MW02A (136 µg/L sample, 183 µg/L duplicate)
- L4-MW02B (199 µg/L)
- L4-MW03A (91.5 µg/L)
- L4-MW03B (15.5 µg/L)
- L4-MW04A (13.2 µg/L)
- L4-MW05A (63.8 µg/L)

HMX was detected in monitoring wells:

- L4-MW02A (2.5 µg/L sample, 2.5 µg/L duplicate)
- L4-MW02B (1.7 µg/L)
- L4-MW05A (0.28 µg/L)

2,4-Dinitrotoluene was detected in L4-MW02B only (0.3 µg/L).

Acetone, most likely a laboratory contaminant, was detected in the method blank and in all but two of the monitoring wells. In addition to acetone, eight other VOCs were detected in monitoring well L4-MW02B including dichlorodifluoromethane (120 µg/L), 1,1,1-

trichloroethane (290 µg/L), tetrachloroethene (1.1 µg/L), and 1,1-dichloroethene (36 µg/L). Tetrachloroethene was also detected in L4-MW05A (0.7 J µg/L). Metals were detected in all monitoring wells and the rinsate. SVOCs, TPH-Gx, TPH-Dx, nitrite, cyanide, TOC, DOC, and herbicides were not detected in the monitoring wells.

To ensure that suspended solids were not significantly affecting the representativeness of the samples, both laboratories were instructed not to shake the sample bottles prior to obtaining an aliquot for analysis. However, suspended solids were visible in most samples submitted for analysis. The TSS concentration in the sample collected from monitoring well L4-MW02B was 970 mg/L. Both ARI and STL confirmed that all sample aliquots from L4-MW02B contained visibly more particulate than samples collected from the other wells. In addition, the concentrations of metals and VOCs in the sample collected from L4-MW02B were much higher than in the other wells, although concentrations of RDX and HMX were also elevated in samples that contained low concentrations of TSS.

The data (with associated validation qualifiers) for the July 2001 groundwater monitoring samples meet the requirements of the Management Plan. The deliverables required by the project were present and the data packages were complete. The lower quantitation limits achieved were within specified limits (with the exception of MCPA and MCPP) and the double blind PE sample data were acceptable. Performance indicators were either within specification or within acceptable limits for the target analytes with the exceptions noted in the data validation reports (Appendix E).

5.2.2 Groundwater Analytical Data – October 2001

Groundwater samples were collected from monitoring wells at Landfill 4 from October 23, 2001, through October 26, 2001. Eleven samples (nine groundwater samples, one rinsate blank, and two trip blanks) were submitted for analyses. In addition, double-blind PE samples were submitted for analysis of explosives residues, nitroguanidine, perchlorate ion, and selected VOCs, SVOCs, herbicides, and metals. A field duplicate sample (GW502MW02B) was collected from monitoring well L4-MW02B, the well that contained elevated concentrations of RDX and HMX in the July 2001 sampling event. In addition, two of the groundwater samples were field filtered and analyzed for dissolved explosives and propellants. The purpose of these analyses was to assess potential correlation between total suspended solids (TSS) and target analyte concentrations.

Explosives and propellants were detected in all groundwater samples except those from upgradient monitoring wells L4-MW01A and L4-MW01B (Table 5-9). RDX was detected in the following monitoring wells:

- L4-MW02A (36 µg/L total, 36 µg/L dissolved)
- L4-MW02B (120 µg/L sample [total], 120 µg/L duplicate, 120 µg/L dissolved)
- L4-MW03A (6.6 µg/L)
- L4-MW03B (1.2 µg/L)
- L4-MW04A (0.78 µg/L)
- L4-MW05A (5 µg/L)

Perchlorate ion was detected in monitoring wells:

- L4-MW02A (193 µg/L)
- L4-MW02B (206 µg/L sample, 205 µg/L duplicate)
- L4-MW03A (94.3 µg/L)
- L4-MW03B (16.9 µg/L)
- L4-MW04A (14.7 µg/L)
- L4-MW05A (57.9 µg/L)

HMX was detected in monitoring wells:

- L4-MW02A (2.4 µg/L total, 2.4 µg/L dissolved)
- L4-MW02B (2.2 µg/L sample [total], 2.2 µg/L duplicate, 2.3 µg/L dissolved)
- L4-MW05A (0.31 µg/L)

2,4-Dinitrotoluene was detected in L4-MW02B (0.46 µg/L sample, 0.48 µg/L duplicate). 2-Nitrotoluene was detected in L4-MW02B (0.26 µg/L)

Six VOCs were detected in monitoring well L4-MW02B including dichlorodifluoromethane (120 µg/L sample, 120 µg/L duplicate), 1,1,1-trichloroethane (200 µg/L sample, 210 µg/L duplicate), 1,1-dichloroethene (34 µg/L sample, 35 µg/L duplicate), 1,1-dichloroethane (33 µg/L sample, 31 µg/L duplicate), 1,1,2-trichloro-1,2,2-trifluoroethane (83 µg/L sample, 81 µg/L duplicate), and tetrachloroethene (83 µg/L duplicate), and tetrachloroethene (0.8 J µg/L duplicate). Tetrachloroethene was also detected in monitoring well L4-MW 05A (0.6 J µg/L).

Metals were detected in all monitoring wells. Copper was detected at the practical quantitation limit (PQL) in the analysis of total metals in the rinsate. SVOCs, herbicides, TPH-Gx, TPH-Dx, nitrite, cyanide, TOC and DOC were not detected above their PQLs.

The data (with associated validation qualifiers) for the October 2001 groundwater monitoring samples meet the requirements of the Management Plan. The deliverables required by the project were present and the data packages were complete. The lower quantitation limits achieved were within specified limits (with the exception of iron, magnesium and five SVOCs) and the double blind PE sample data were acceptable. Performance indicators were either within specification or within acceptable limits for the target analytes, with the exceptions noted in the data validation reports (Appendix E).

Total and Dissolved Explosives and Propellants Analyses

To evaluate the potential correlation between TSS and concentration of explosives in groundwater, the October 2001 groundwater sampling included analyses of total and dissolved explosives for samples collected from monitoring wells L4-MW02A and L4-MW02B. Monitoring well L4-MW02B (TSS concentration of 970 mg/L) contained the greatest number and highest concentration of contaminants in the first round of groundwater sampling. Monitoring well L4-MW02A (TSS concentration of 2.6 mg/L) was selected for total and

dissolved analyses because of its downgradient location. To perform the two types of analysis, STL filtered an aliquot of each sample and analyzed it concurrently with an unfiltered aliquot.

Table 5-10 presents the detected compound concentrations for explosives and propellants and the RPD between compound concentrations in the total and dissolved aliquots. Perchlorate is not listed because the analytical method requires filtration of all samples prior to analysis. The data show no difference between the filtered and unfiltered aliquots. Although the TSS concentration in well L4-MW02B decreased to 4 mg/L (7.5 mg/L duplicate) in the October 2001 samples, the concentrations of explosives remained nearly identical. Additionally, both the TSS and explosives concentrations in samples collected from well L4-MW02A in October 2001 were similar to the concentrations reported for the July 2001 samples. These data suggest that it is unlikely that the concentrations of explosives and propellants in the groundwater are related to the concentration of suspended solids. Explosives are highly polar compounds and are, therefore, very soluble, their concentrations in groundwater likely do not vary with TSS concentrations.

Likewise, VOC concentrations detected in L4-MW02B do not appear to correlate with the TSS variations. Minerals (calcium, magnesium, potassium, and sodium) detected in the groundwater appear to be mainly in the dissolved state; however, other metals appear to be mainly in the undissolved state as they are either not present or present at reduced concentrations in the filtered samples.

5.2.3 Groundwater Analytical Data – January 2002

Groundwater samples were collected from monitoring wells at Landfill 4 from January 21, 2002, through January 25, 2002. Eleven samples (nine groundwater samples, one rinsate blank, and two trip blanks) were submitted for analyses. In addition, double-blind PE samples were submitted for analysis of explosives residues, nitroguanidine, perchlorate ion, and selected VOCs, SVOCs, herbicides, and metals. A field duplicate sample, GW503MW02B, was collected from monitoring well L4-MW02B, the well that contained elevated concentrations of RDX and HMX in previous sampling events.

Explosives and propellants were detected in all groundwater samples except those from upgradient monitoring well L4-MW01B (Table 5-9). RDX was detected in the following monitoring wells:

- L4-MW02A (25 µg/L)
- L4-MW02B (110 µg/L sample, 110 µg/L duplicate)
- L4-MW03A (6.7 µg/L)
- L4-MW03B (1.8 µg/L)
- L4-MW04A (0.63 µg/L)
- L4-MW05A (4.6 µg/L)

Perchlorate ion was detected in monitoring wells:

- L4-MW01A (6.5 µg/L)

- L4-MW02A (138 µg/L)
- L4-MW02B (227 µg/L sample, 226 µg/L duplicate)
- L4-MW03A (102 µg/L)
- L4-MW03B (22.1 µg/L)
- L4-MW04A (14.0 µg/L)
- L4-MW05A (57.4 µg/L)

HMX was detected in monitoring wells:

- L4-MW02A (2.1 µg/L)
- L4-MW02B (2.6 µg/L sample, 2.5 µg/L duplicate)
- L4-MW05A (0.39 µg/L)

2,4-Dinitrotoluene was detected in L4-MW02B (0.49 µg/L sample, 0.48 µg/L duplicate).

Five VOCs were detected in monitoring well L4-MW02B including dichlorodifluoromethane (100 µg/L sample, 100 µg/L duplicate), 1,1,1-trichloroethane (230 µg/L sample, 220 µg/L duplicate), 1,1-dichloroethene (35µg/L sample, 33 µg/L duplicate), 1,1-dichloroethane (32 µg/L sample, 30 µg/L duplicate), and 1,1,2-trichloro-1,2,2-trifluoroethane (86 µg/L sample, 83 µg/L duplicate). Tetrachloroethene was detected in monitoring well L4-MW-05A (0.6 J µg/L). Acetone was detected below the PQL in one trip blank and was also detected in samples GW03MW01A and GW03MW02A; but acetone was not detected in the method blanks.

Metals were detected in all monitoring wells. Calcium, iron, and lead were detected above the PQL in the analysis of total metals in the rinsate. Sodium was detected in the analysis of dissolved metals in the rinsate. SVOCs, herbicides, TPH-Gx, TPH-Dx, nitrite, cyanide, TOC and DOC were not detected in any sample above their PQLs.

The data (with associated validation qualifiers) for the January 2002 groundwater monitoring samples meet the requirements of the Management Plan. The deliverables required by the project were present and the data packages were complete. The lower quantitation limits achieved were within specified limits (with the exception of iron and magnesium) and the double blind PE sample data were acceptable. Performance indicators were either within specification or within acceptable limits for the target analytes with the exceptions noted in the data validation reports (Appendix E).

5.2.4 Groundwater Analytical Data – April 2002

Groundwater samples were collected from monitoring wells at Landfill 4 from April 23, 2002, through April 25, 2002. Eleven samples (nine groundwater samples, one rinsate blank, and two trip blanks) were submitted for analyses. In addition, double-blind PE samples were submitted for analysis of explosives residues, nitroguanidine, perchlorate ion, and selected VOCs, SVOCs, herbicides, and metals. A field duplicate sample, GW503MW02A, was collected from monitoring well L4-MW02A.

Explosives and propellants were detected in all groundwater samples except those from upgradient monitoring wells L4-MW01A and L4-MW01B (Table 5-9). RDX was detected in the following monitoring wells:

- L4-MW02A (24 µg/L sample, 26 µg/L duplicate)
- L4-MW02B (110 µg/L)
- L4-MW03A (7.4 µg/L)
- L4-MW03B (2.7 µg/L)
- L4-MW04A (0.54 µg/L)
- L4-MW05A (4.4 µg/L)

Perchlorate ion was detected in monitoring wells:

- L4-MW02A (104 µg/L sample, 130 µg/L duplicate)
- L4-MW02B (241 µg/L)
- L4-MW03A (106 µg/L)
- L4-MW03B (29.3 µg/L)
- L4-MW04A (15.8 µg/L)
- L4-MW05A (54.7 µg/L)

HMX was detected in monitoring wells:

- L4-MW02A (1.9 µg/L sample, 2.0 µg/L duplicate)
- L4-MW02B (2.6 µg/L)
- L4-MW05A (0.27 µg/L)

2,4-Dinitrotoluene was detected in L4-MW02B (0.41 µg/L).

Six VOCs were detected in monitoring well L4-MW02B including dichlorodifluoromethane (100 µg/L), 1,1,1-trichloroethane (210 µg/L), 1,1-dichloroethene (28 µg/L), 1,1-dichloroethane (29 µg/L), 1,1,2-trichloro-1,2,2-trifluoroethane (69 µg/L), and tetrachloroethene (0.8 J µg/L). Acetone was detected below the PQL in the rinsate blank; but acetone was not detected in the method blank.

Metals were detected in all monitoring wells. Chromium and iron were detected above the PQL in one of two rinsate samples at 7 µg/L and 200 µg/L respectively. Sodium was detected in the dissolved metals analysis of the method blank at 50 µg/L. SVOCs, herbicides, TPH-Gx, TPH-Dx, nitrite, cyanide, TOC and DOC were not detected in any sample above their PQLs.

The data (with associated validation qualifiers) for the April 2002 groundwater monitoring samples meet the requirements of the Management Plan.. The deliverables required by the project were present and the data packages were complete. The lower quantitation limits achieved were within specified limits (with two exceptions) and the double blind PE sample data were acceptable. Performance indicators were either within specification or within acceptable

limits for the target analytes with the exceptions noted in the data validation reports (Appendix E).

5.2.5 Groundwater Analytical Data – January 2003

Groundwater samples were collected from monitoring wells L4-MW02B and L4-MW07B on January 8, 2003. Five samples (two primary, one rinsate blank, one trip blank, and one duplicate) were submitted for analyses. The sample collected from well L4-MW02B was analyzed for explosives residue, nitroguanidine, perchlorate ion, and VOCs. The sample collected from well L4-MW07B was analyzed for explosives residue, nitroguanidine, perchlorate ion, VOCs, SVOCs, herbicides, metals, and water quality parameters. In addition, double-blind PE samples were submitted for analysis of explosives residues, nitroguanidine, perchlorate ion, and selected VOCs. A field duplicate sample, GW505MW07B, was collected from monitoring well L4-MW07B.

Perchlorate ion was detected in both monitoring wells as follows (Table 5-9):

- L4-MW02B (251 µg/L)
- L4-MW07B (4.9 µg/L)
- L4-MW07B duplicate (4.8 µg/L)

Other explosives and propellants were detected in well L4-MW02B as follows:

- RDX (110 µg/L)
- HMX (2.9 µg/L)
- 2,4-dinitrotoluene (0.47 µg/L)
- 2,4,6-trinitrotoluene (0.30 µg/L)

Six VOCs were detected in monitoring well L4-MW02B including dichlorodifluoromethane (26 µg/L), 1,1,1-trichloroethane (150 µg/L), 1,1-dichloroethene (20 µg/L), 1,1-dichloroethane (28 µg/L), 1,1,2-trichloro-1,2,2-trifluoroethane (20 µg/L), and tetrachloroethene (0.5 J µg/L). No target VOCs were detected in the sample from well L4-MW07B. Acetone was detected below the PQL and 2-butanone was detected above the PQL in the rinsate blank; but neither acetone nor 2-butanone were detected in the method blank. Data were not qualified based on rinsate blank contamination.

Arsenic, calcium, chromium, iron, magnesium, potassium, and sodium were detected in samples from well L4-MW07B. VOCs, SVOCs, herbicides, TPH-Gx, TPH-Dx, nitrite, cyanide, TOC, and DOC were not detected samples GW05MW07B or GW05MW07B above their PQLs. Nitrate was detected in the rinsate blank at 0.053 mg/L.

The data for all analyses (with associated validation qualifiers) meet the requirements of the Management Plan. The deliverables required by the project were present and the data packages were complete. The lower quantitation limits achieved were within specified limits, with the exception of n-notrosi-di-n-propylamine, MCPA, MCPP, iron, sodium, magnesium, and TSS. The double blind PE sample data were acceptable. Performance indicators were either within

specification or within acceptable limits for the target analytes, with the exceptions noted in the data validation reports (Appendix E).

5.3 COMPARISON OF DATA TO SCREENING CRITERIA

Detected compound concentrations in groundwater were compared to regulatory screening levels to identify COPCs that may pose a threat to human health and the environment. Groundwater data were compared to:

- Washington MTCA Methods A (for TPH only) and Method B cleanup levels for groundwater
- NAWQC
- EPA Region 9 PRGs
- EPA Region 10 RBCs

The chemicals that exceeded the screening criteria are RDX, perchlorate ion, 2,4-dinitrotoluene, 1,1,1-trichloroethane, 1,1-dichloroethene, benzene, dichlorodifluoromethane, tetrachloroethene, total arsenic, total copper, total iron, and total lead (Table 5-9).

RDX and perchlorate ion were detected in all monitoring wells except L4-MW01A (although percholate was detected in one round of sampling), L4-MW01B, and L4-MW07B (although percholate was detected in this well). RDX exceeded the screening criteria in all of the wells where it was detected, except for the first round of samples from L4-MW03B. RDX was consistently detected above screening criteria in L4-MW02A, L4-MW02B, L4-MW03A, L4-MW03B (sampling rounds 2-4), L4-MW04A, and L4-MW05A. Perchlorate was consistently detected above screening criteria in L4-MW02A, L4-MW02B, L4-MW03A, L4-MW03B, L4-MW04A, and L4-MW05A. In addition, perchlorate was detected above screening criteria in the one sample collected from L4-MW07B.

1,1,1-trichloro-1,2,2-trichloroethane, 1,1,1-trichloroethane, 1,1-dichloroethane, 1,1-dichloroethene, and dichlorodifluoromethane were consistently detected in L4-MW02B in all sample rounds. 1,1,1-trichloroethane, 1,1-dichloroethene, and dichlorodifluoromethane exceeded one or more screening criteria during all of the sampling rounds. In addition, benzene and tetrachloroethene exceeded screening criteria in at least one round of groundwater sampling.

Six to 12 total metals were detected in all of the wells in all groundwater sampling rounds. The metals that exceeded screening criteria in at least one sampling round included arsenic, copper, iron, and lead. Of the dissolved metals detected, only dissolved arsenic exceeded screening criteria in Lr-MW02B and LR-MW07B. No herbicides, SVOCs, TPH-Gx, TPH-Dx, nitrite, cyanide, DOC, or TOC were detected in the monitoring wells and, therefore, a screening level assessment of these analytes was not required.

A screening level assessment could not be conducted for analytes when the PQLs provided by the laboratory exceeded the screening criteria. Analytes whose screening criteria are lower than the laboratory PQLs are indicated by an asterisk (*) on Table 4-13.

In summary, screening criteria were exceeded in one or more groundwater samples for RDX, perchlorate ion, 1,1,1-trichloroethane, and dichlorodifluoromethane. These compounds will be

retained as COPCs. The list of COPCs will be refined based on the results of future groundwater sampling.

Table 5-1
HYDRAULIC CONDUCTIVITIES AND GROUNDWATER VELOCITY DERIVED FROM SLUG TESTS LANDFILL 4-DEMOLITION AREA 1 CAMP BONNEVILLE, WASHINGTON (Slug tests conducted April 22-26, 2002)

Well No.	Mean Hydraulic Conductivity from Slug Tests (cm/sec)			Mean Velocity (feet/year)		
	Bouwer and Rice, 1976	Cooper et al, 1967	Hvorslev, 1951	Bouwer and Rice, 1976	Cooper et al, 1967	Hvorslev, 1951
L4-MW-01A						
Test 1	7.9 x 10-4	NA	1.1 x 10-3	250	NA	325
Test 2	6.7 x 10-4	NA	8.9 x 10-4	200	NA	275
L4-MW02A						
Test 1	2.0 x 10-3	NA	2.7 x 10-3	630	NA	825
Test 2	2.0 x 10-3	NA	2.5 x 10-3	630	NA	750
L4-MW05A						
Test 1	1.1 x 10-3	NA	1.3 x 10-3	350	NA	375
Test 2	1.1 x 10-3	NA	1.3 x 10-3	350	NA	375
L4-MW01B						
Test 1	2.0 x 10-2	3.5 x 10-4	NA	8275	150	NA
Test 2	2.0 x 10-2	1.8 x 10-4	NA	8275	75	NA
L4-MW02B						
Test 1	1.1 x 10-3	5.4 x 10-5	NA	330	20	NA
Test 2	4.5 x 10-4	6.1 x 10-5	NA	150	25	NA
L4-MW03B						
Test 1	6.5 x 10-4	1.0 x 10-4	NA	270	40	NA
Test 2	2.8 x 10-3	3.0 x 10-5	NA	1150	10	NA

Table 5-1 (Continued)
HYDRAULIC CONDUCTIVITIES AND GROUNDWATER VELOCITY DERIVED FROM SLUG TESTS
LANDFILL 4-DEMOLITION AREA 1
CAMP BONNEVILLE, WASHINGTON
(Slug tests conducted April 22-26, 2002)

Notes:

1. 6-foot slug used for tests in deep wells (L4-MW-01B, L4-MW-02B, and L4-MW-03B).
2. 3-foot and 6-foot slug used for tests in shallow well L4-MW05A.
3. Based on slug test results in L4-MW05A, 3-foot slug was used in L4-MW01A and L4-MW02A.
4. Slug tests not conducted in L4-MW03A and L4-MW-4A.
5. Cooper et al method calculated transmissivity using AQTESOLV. Calculated hydraulic conductivity from: K = T/b.
6. Cross-sections showing well screen length and aquifer thickness on Figures 5-2 and 50-3.
7. Cooper et al method valid only for confined aquifers and therefore not used to calculate hydraulic conductivity in shallow wells.
8. Test 1 data are falling head tests (2 per well). Test 2 data are rising head tests (2 per well).
9. Test 1 data for L4-MW05A is for falling head test using 6-foot and 3-foot slug.
10. Test 2 data for L4-MW05A is for rising head tests using 6-foot and 3-foot slug.
11. Hvorslev method not used to calculate hydraulic conductivity in confined aquifer (deeper wells).
12. Assumed 5-foot head on top of well screen for penetration.
13. Velocities calculated using mean hydraulic conductivities each for falling and rising head test results.
14. See text for interpretation of slug test results.

Table 5-2
GROUNDWATER POTENTIOMETRIC SURFACE DATA AND VERTICAL GRADIENTS
LANDFILL 4-DEMOLITION AREA 1
CAMP BONNEVILLE, WASHINGTON
JULY 24, 2001

Monitoring Well Number	Top of Casing (TOC) Elevation (feet NGVD)	Screened Interval (feet NGVD)	Depth to Groundwater (feet BTOC)	Groundwater Elevation (feet NGVD)	Difference In Groundwater Elevation (feet)	Difference in Screen Midpoint Elevation (feet)	Estimated Vertical Hydraulic Gradient (foot/foot)
L4-MW01A	531.40	514.40-504.40	16.60	514.80	1.06	-27.83	–0.04
L4-MW01B	529.57	486.57-476.57	13.71	515.86			
L4-MW02A	519.93	491.93-481.93	24.47	495.46	-8.6	-35.47	0.24
L4-MW02B	518.46	456.46-446.56	31.6	486.86			
L4-MW03A	514.85	473.85-468.85	29.68	485.17	-0.89	-10.88	0.08
L4-MW03B	511.47	460.47-450.47	27.19	484.28			
L4-MW04A	511.79	478.79-468.79	28.21	483.58	NA	NA	NA
L4-MW05A	509.91	481.91-476.91	24.68	485.23	NA	NA	NA

Notes:

BTOC - below top of casing
NGVD - National Geodetic Vertical Datum

Table 5-3
GROUNDWATER POTENTIOMETRIC SURFACE DATA AND VERTICAL GRADIENTS (OCTOBER 23, 2001) LANDFILL 4-DEMOLITION AREA 1

Monitoring Well Number	Top of Casing (toc) Elevation (feet NGVD)	Screened Interval (feet NGVD)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet NGVD)	Difference in Groundwater Elevation (feet)	Difference in Screen Midpoint Elevation (feet)	Estimated Vertical Hydraulic Gradient (foot/foot)
L4-MW01A	531.40	514.40-504.40	17.42	513.98	0.62	-27.83	-0.02
L4-MW01B	529.57	486.57-476.57	14.97	514.60			
L4-MW02A	519.93	491.93-481.93	29.12	490.81	-4.93	-35.47	0.14
L4-MW02B	518.46	456.46-446.56	32.58	485.88			
L4-MW03A	514.85	473.85-468.85	30.30	484.55	-0.7	-10.88	0.06
L4-MW03B	511.47	460.47-450.47	27.62	483.85			
L4-MW04A	511.79	478.79-468.79	23.17	488.62	N/A	N/A	N/A
L4-MW05A	509.91	481.91-476.91	24.29	485.62	N/A	N/A	N/A

Notes:

btoc - below top of casing
NGVD - National Geodetic Vertical Datum
A positive value for vertical gradient indicates a downward gradient. A negative value indicates an upward gradient.

Table 5-4
GROUNDWATER POTENTIOMETRIC SURFACE DATA AND VERTICAL GRADIENTS
(JANUARY 22, 2002)
LANDFILL 4-DEMOLITION AREA 1

Monitoring Well Number	Top of Casing (toc) Elevation (feet NGVD)	Screened Interval (feet NGVD)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet NGVD)	Difference in Groundwater Elevation (feet)	Difference in Screen Midpoint Elevation (feet)	Estimated Vertical Hydraulic Gradient (foot/foot)
L4-MW01A	531.40	514.40-504.40	14.23	517.17	1.94	-27.83	-0.05
L4-MW01B	529.57	486.57-476.57	10.46	519.11			
L4-MW02A	519.93	491.93-481.93	23.38	496.55	-5.66	-35.47	0.16
L4-MW02B	518.46	456.46-446.56	27.57	490.89			
L4-MW03A	514.85	473.85-468.85	26.77	488.08	-0.87	-10.88	0.05
L4-MW03B	511.47	460.47-450.47	24.26	487.21			
L4-MW04A	511.79	478.79-468.79	25.97	485.82	N/A	N/A	N/A
L4-MW05A	509.91	481.91-476.91	21.86	488.05	N/A	N/A	N/A

Notes:

btoc - below top of casing
NGVD - National Geodetic Vertical Datum
A positive value for vertical gradient indicates a downward gradient. A negative value indicates an upward gradient

Table 5-5
GROUNDWATER POTENTIOMETRIC SURFACE DATA AND VERTICAL GRADIENTS
(APRIL 23, 2002)
LANDFILL 4-DEMOLITION AREA 1

Monitoring Well Number	Top of Casing (toc) Elevation (feet NGVD)	Screened Interval (feet NGVD)	Depth to Groundwater (feet btoc)	Groundwater Elevation (feet NGVD)	Difference in Groundwater Elevation (feet)	Difference in Screen Midpoint Elevation (feet)	Estimated Vertical Hydraulic Gradient (foot/foot)
L4-MW01A	531.40	514.40-504.40	16.18	515.22	1.67	-27.83	-0.04
L4-MW01B	529.57	486.57-476.57	12.68	516.89			
L4-MW02A	519.93	491.93-481.93	24.46	495.47	-4.99	-35.47	0.14
L4-MW02B	518.46	456.46-446.56	27.98	490.48			
L4-MW03A	514.85	473.85-468.85	28.06	486.79	-0.93	-10.88	0.06
L4-MW03B	511.47	460.47-450.47	25.61	485.86			
L4-MW04A	511.79	478.79-468.79	27.25	484.54	N/A	N/A	N/A
L4-MW05A	509.91	481.91-476.91	23.22	486.69	N/A	N/A	N/A
L4-MW06A	481.84	474.85-472.84	Groundwater not observed	N/A	N/A	N/A	N/A
L4-SB07A	476.35	N/A	Groundwater not observed	N/A	N/A	N/A	N/A
L4-MW07B	480.80	431.89-421.89	40.14*	440.66	N/A	N/A	N/A

Notes:

btoc – below top of casing
NGVD National Geodetic Vertical Datum
A positive value for vertical gradient indicates a downward gradient. A negative value indicates an upward gradient.
* Well L4-MW07B measured on January 8, 2003

Table 5-6
RESULTS OF SEMIQUANTITATIVE RECHARGE TESTS
WELLS L4-MW01A AND L4-MW05A
LANDFILL 4-DEMOLITION AREA 1
CAMP BONNEVILLE, WASHINGTON

Time	Water level (Depth to Groundwater) Well L4-MW01A	Time	Water Level (Depth to Groundwater) Well L4-MW05A
8:30 AM	16.48 feet (prior to bailing dry)	12:30 PM	23.63 feet (prior to bailing dry)
8:51 AM	24.55 feet	12:51 PM	32.16 feet
8:52 AM	23.98 feet	12:52 PM	32.01 feet
8:53 AM	23.62 feet	12:53 PM	31.58 feet
8:54 AM	23.35 feet	12:54 PM	31.15 feet
8:55 AM	23.04 feet	12:55 PM	30.74 feet
8:56 AM	22.72 feet	12:56 PM	30.37 feet
8:57 AM	22.5 feet	12:57 PM	29.99 feet
8:58 AM	22.29 feet	12:58 PM	29.64 feet
8:59 AM	22.11 feet	12:59 PM	29.31 feet
9:00 AM	21.96 feet	1:00 PM	28.99 feet
9:01 AM	21.81 feet	1:01 PM	28.69 feet
9:06 AM	21.16 feet	1:06 PM	27.32 feet
9:11 AM	20.44 feet	1:11 PM	26.46 feet
9:16 AM	19.81 feet	1:16 PM	25.73 feet
9:21 AM	19.57 feet	1:21 PM	25.17 feet
9:39 AM	18.21 feet		

Table 5-7
MONITORING WELL DEVELOPMENT DATA
LANDFILL 4-DEMOLITION AREA 1
CAMP BONNEVILLE, WASHINGTON

Parameters	L4-MW01A[a]		L4-MW01B		L4-MW02A		L4-MW02B		L4-MW03A		L4-MW03B		L4-MW04A[b]		L4-MW05A[c]		L4MW07B	
	Initial	End	Initial	End	Initial	End	Initial	End	Initial	End	Initial	End	Initial	End	Initial	End	Initial	End
Vol (gal)	0	30	0	95	0	35	0	175	0	55	0	55	0	25	0	35	0	20
Temp (°C)	12.54	11.99	10.47	10.28	11.1	11.31	12.27	11.78	11	11.51	11.05	11.76	12.84	12.68	10.35	10.31	8.65	8.96
PH	5.33	5.12	5.47	4.68	5.18	4.91	5.46	5.4	5.3	4.78	5.59	4.74	5.92	5.46	5.35	5.27	6.01	6.98
Cond (ms/cm)	0.107	0.113	0.026	0.028	0.038	0.035	0.122	0.123	0.147	0.029	0.571	0.226	0.044	0.049	0.035	0.033	0.438	0.340
ORP (mV)	226.3	242.4	223	302	274.1	310.7	187.9	227.5	248.3	326.1	266.1	245.1	224.6	233.4	282.6	342	177.5	222.1
DO (mg/L)	12.06	10.57	11.3	11.12	10.24	10.56	3.03	5.26	11.4	10.56	8.76	11.81	9.12	10.01	11.57	11.21	0.15	1.87
Turb (NTUs)	1741	1736	95	5.7	240	1.3	669	88	1454	3.5	174	2.7	>1000	>1000	131	72	1230	0
Development Method	Surge block/bailer		Pump after bailing		Pump after bailing		Pump after bailing		Pump after bailing		Pump after bailing		Surge block/ bailer		Pump after bailing		Bailing	

[a]MW-01A was surged/bailed approximately 15 times over a 10 day period. 90% recharge required 3-4 hours
[b]MW-04A was surged/bailed approximately 10 times over a 7 day period. 90% recharge required 2-3 hours
[c]MW-05A was surged/bailed and pumped down approximately 8 times between 0700-1600 on 7/10/01. 90% recharge required 1 hour.

Notes:
All wells were pumped or bailed until parameters stabilized except for consistently high turbidity in L4-MW-01A and L4-MW-04A (and to a lesser extent L4-MW05A)
Shallow wells: L4-MW01A, L4-Mw02A, L4-MW03A, Lf-MW04A, and L4-MW05A
Deeper wells: L4-MW01B, L4-MW02B, and L4-MW03B
All wells developed in July 2001 (well development sheets in Appendix B)

Table 5-8
WATER LEVEL RESPONSE TO PUMPING FOR YIELD TEST L4-MW02B
LANDFILL 4, CAMP BONNEVILLE, WASHINGTON

Pumping Rate (L/min)	Drop in Water Level (ft) Before Achieving Consistent Water Level
0.25	4.74
0.50	1.66
0.75	2.6
1.00	6
1.25	5.44
1.50	6.44
1.75	4.88
2.00	No change in water level during pumping
2.25	No change in water level during pumping
2.50	No change in water level during pumping
3.00	No change in water level during pumping
5.00	2.0 (well pumped dry at 5.0 L/min)

Table 5-9
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Well	MW-01A			
Sample ID Date Sampled	GW01MW01A 7/24/01	GW02MW01A 10/23/01	GW03MW01A 1/21/02	GW04MW01A 4/23/02
Explosives and Propellants, Total (µg/L)				
2,4-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	0.25.U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U
Perchlorate ion	5 U	5 U	**6.5**	5 U
Volatile Organic Compounds (µg/L)				
1,1,2-Trichloro-1,2,2-trifluoroethane	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U
Acetone	5 U	5 U	**3.9** J	5 U
Benzene	1 U	1 U	1 U	1 U
2-Butanone	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Tetrachloroethene	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Metals, Total (µg/L)				
Arsenic	0.2 U	**0.2**	0.2 U	0.2 U
Barium	**4**	**6**	3 U	3 U
Calcium	**4,630**	**3,940**	**2,400**	**2,250**
Chromium (total)	**25** J	**21**	**13**	**11**
Copper	2 U	**4**	2 U	2 U
Iron	**200**	**580**	**250**	**160**
Lead	1 U	**1**	1 U	**1**
Magnesium	**1,780**	**1,650**	**990**	**920**
Nickel	**10**	**20**	10 U	10 U
Potassium	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**8,550**	**6,090**	**4,520**	**2,680**
Zinc	**7**J	**12**	6 U	6 U
Metals, Dissolved (µg/L)				
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U
Barium	**4**	**3**	3 U	3 U
Calcium	**5,060**	**4,010**	**2,440**	**2,370**
Chromium (total)	**12**	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2 U
Iron	**110**	50 U	50 U	50 U
Lead	1 U	1 U	1 U	1 U
Magnesium	**1,910**	**1,620**	**1,000**	**980**
Nickel	**40**	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**9,010**	**6,440**	**4,680**	**2,910**
Zinc	6 U	6 U	6 U	6 U
Water Quality Parameters (mg/L)				
Alkalinity (as $CaCO_3$)	**15**	**13**	**10**	**8.3**
Bicarbonate (as $CaCO_3$)	**15**	**13**	**10**	**8.3**
Hardness (calculated)	**18.9**	**16.7**	**10.1**	**9.41**
Total Suspended Solids	**2.6**	**4.2**	**3.6**	**2.3**
Chloride	**1.7**	**1.3**	**2.2**	**1.5**
Nitrate as N	0.1 U	0.1 U	**0.029**	**0.056**
Sulfate	**19.5**	**13.2**	**8.3**	**6.9**

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING
LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Well	MW-01B			
Sample ID Date Sampled	GW01MW01B 7/24/01	GW02MW01B 10/24/01	GW03MW01B 1/22/02	GW04MW01B 4/23/02
Explosives and Propellants, Total (µg/L)				
2,4-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U
Perchlorate ion	5 U	5 U	5 U	5 U
Volatile Organic Compounds (µg/L)				
1,1,2-Trichloro-1,2,2-trifluoroethane 1,1,1-	2 U	2 U	2 U	2 U
Trichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U
Acetone	**8.3** B	5 U	5 U	5 U
Benzene	1 U	1 U	1 U	1 U
2-Butanone	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Tetrachloroethene	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Metals, Total (µg/L)				
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U
Calcium	**2,040**	**1,990**	**1,960**	**2,020**
Chromium (total)	**7***J*	**10**	1 U	1 U
Copper	2 U	2 U	2 U	2 U
Iron	**70**	**80**	50 U	50 U
Lead	1 U	1 U	1 U	1 U
Magnesium	**1,090**	**1,100**	**1,090**	**1,090**
Nickel	10 U	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**1,240**	**1,290**	**1,290**	**1,260**
Zinc	6 U	**7**	6 U	6 U
Metals, Dissolved (µg/L)				
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U
Calcium	**2,210**	**1,970**	**2,050**	**2,090**
Chromium (total)	5 U	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2 U
Iron	**40**	50 U	50 U	50 U
Lead	1 U	1 U	1 U	1 U
Magnesium	**1,150**	**1,140**	**1,150**	**1,130**
Nickel	10 U	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**1,310**	**1,340**	**1,400**	**1,320**
Zinc	6 U	6 U	6 U	6 U
Water Quality Parameters (mg/L)				
Alkalinity (as $CaCO_3$)	**11**	**12**	**11**	**10**
Bicarbonate (as $CaCO_3$)	**11**	**12**	**11**	**10**
Hardness (calculated)	**9.58**	**9.61**	**9.38**	**9.53**
Total Suspended Solids	1.1 U	1 U	1U	1 U
Chloride	**1.3**	**1.1**	**2.5**	**1.4**
Nitrate as N	0.1 U	0.1 U	0.01 U	**0.071**
Sulfate	**0.5**	**0.4**	2.5 U	2.5 U

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING
LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Well	MW-02A					
Sample ID Date Sampled	GW01MW02A 7/24/01	GW501MW02A 7/24/01	GW02MW02A 10/24/01	GW03MW02A 1/22/02	GW04MW02A 4/24/02	GW504MW02A 4/24/02
Explosives and Propellants, Total (µg/L)						
2,4-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	**2.5**	**2.5**	**2.4**	**2.1**	**1.9**	**2.0**
RDX	**44** D	**36** D	**36** D	**25 D**	**24 D**	**26 D**
Perchlorate ion	**136**	**183**	**193**	**138**	**104**	**130**
Explosives and Propellants, Dissolved (µg/L)						
2,4-Dinitrotoluene	NA	NA	0.25 U	NA	NA	NA
HMX	NA	NA	**2.4**	NA	NA	NA
RDX	NA	NA	**36** D	NA	NA	NA
Volatile Organic Compounds (µg/L)						
1,1,2-TC-1,2,2-TFE	2 U	2 U	2 U	2.U	2 U	2 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
Acetone	**8.3** B	**7.2**B	5 U	**3.3** J	5 U	5 U
2-Butanone	1 U	1 U	1 U	1 U	1 U	1 U
Benzene	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U
Metals, Total (µg/L)						
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	**4**	3 U
Calcium	**1,470**	**1,220**	**980**	**1,400**	**1,270**	**1,250**
Chromium (total)	**10** J	**6** J	**41**	**26**	**23**	**19**
Copper	2 U	2 U	**3**	2 U	**3**	**2**
Iron	**180**	**50**	**700**	**280**	**1,000**	**320**
Lead	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	**480**	**410**	**380**	**450**	**400**	**380**
Nickel	10 U	10 U	**30**	**20**	**10**	10 U
Potassium	500 U	500 U	500 U	500 U	500 U	500 U
Selenium	**0.6**	0.5 U	0.5 U	**0.6**	**0.6**	**0.5**
Sodium	**7,770**	**6,010**	**4,000**	**10,100**	**7,990**	**7,820**
Zinc	6 U	6 U	6 U	**8**	6 U	**49**
Metals, Dissolved (µg/L)						
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	3 U	3 U
Calcium	**1,270**	**1,260**	**960**	**1,370**	**1,320**	**1,290**
Chromium (total)	5 U	5 U	**10**	**12**	**7**	**8**
Copper	2 U	2 U	2 U	2 U	2 U	2 U
Iron	20 U	50 U	**80**	**110**	**100**	**80**
Lead	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	**410**	**420**	**360**	**460**	**400**	**390**
Nickel	10 U	10 U	**20**	**20**	**10**	**20**
Potassium	500 U	500 U	500 U	500 U	500 U	500 U
Selenium	**0.6**	**0.6**	0.5 U	0.5 U	**0.6**	**0.5**
Sodium	**5,710**	**6,000**	**3,910**	**10,200**	**8,240**	**7,830**
Zinc	6 U	6 U	6 U	**6**	6 U	6 U
Water Quality Parameters (mg/L)						
Alkalinity (as $CaCO_3$)	**3.1**	**4.9**	**3.7**	**4.3**	**2.3**	**1.9**
Bicarbonate (as $CaCO_3$)	**3.1**	**4.9**	**3.7**	**4.3**	**2.3**	**1.9**
Hardness (calculated)	**5.65**	**4.73**	**4.01**	**5.35**	**4.82**	**4.69**
Total Suspended Solids	**2.6**	1 U	**8.4**	**2.2**	**11**	**3.9**
Chloride	**2.3**	**1.8**	**1**	**2.7**	**1.8**	**1.7**
Nitrate as N	**0.3**	**0.3**	**0.3**	**0.36**	**0.39**	**0.34**
Sulfate	**15.5**	**10.3**	**5.3**	**19**	**19**	**17**

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING
LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Well	MW-02B						
Sample ID Date Sampled	GW01MW02B 7/25/01	GW02MW02B 10/24/01	GW502MW02B 10/24/01	GW03MW02B 1/23/02	GW503MW02B 1/23/02	GW04MW02B 4/24/02	GW05MW02B 1/8/03
Explosives and Propellants, Total (µg/L)							
2,4-Dinitrotoluene	0.3	0.46	0.48	0.49 J	0.48 J	0.41 J	0.47
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.30J
2-Nitrotoluene	0.25 U	0.26	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	1.7	2.2	2.2	2.6	2.5	2.6	2.9
RDX	120 D	120 D	120 D	110 D	110 D	110 D	110 D
Perchlorate ion	199	206	205	227	226	241	251
Explosives and Propellants, Dissolved (µg/L)							
2,4-Dinitrotoluene	NA	0.47 J	NA	NA	NA	NA	NA
HMX	NA	2.3	NA	NA	NA	NA	NA
RDX	NA	120 D	NA	NA	NA	NA	NA
Volatile Organic Compounds (µg/L)							
1,1,2-TC-1,2,2-TFE	91	83	81	86	83	69	20
1,1,1-Trichloroethane	290 D	200 D	210 D	230	220	210	150
1,1-Dichloroethane	29	33	31	32	30	29	28
1,1-Dichloroethene	36	34	35	35	33	28	20
Acetone	11 B	5U	5 U	5 U	5 U	5 U	5 U
Benzene	0.7 J	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	120 J	120 J	120 J	100 J	100 J	100 J	26
Tetrachloroethene	1.1	1 U	0.8 J	1 U	1 U	0.8 J	0.5 J
Trichloroethene	0.5 J	1 U	1 U	1 U	1 U	1 U	0.4 J
Trichlorofluoromethane	0.8 J	1 U	1 U	1 U	1 U	1 U	1U
Metals, Total (µg/L)							
Arsenic	2.5	0.2 U	0.2 U	0.2 U	0.2 U	0.3	NA
Barium	93	6	7	4	4	15	NA
Calcium	9,020	2,310	2,410	2,110	1,920	2,460	NA
Chromium (total)	18 J	15	20	21	18	33	NA
Copper	16	2 U	3	2 U	2 U	9	NA
Iron	10,400	180	380	200	120	4,970	NA
Lead	12	1 U	1 U	1 U	1 U	1	NA
Magnesium	6,410	1,100	1,160	1,050	940	1,850	NA
Nickel	10 U	10	10	10	10	20	NA
Potassium	4,230	770	820	500 U	500 U	1,000	NA
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
Sodium	13,000	3,830	4,470	3,000	2,780	2,250	NA
Zinc	41J	8	7	6 U	6 U	18	NA
Metals, Dissolved (µg/L)							
Arsenic	0.2 U	0.2	0.2	0.2 U	0.2 U	0.2 U	NA
Barium	8	6	6	4	4	3 U	NA
Calcium	1,460	2,350	2,310	2,110	2,080	1,920	NA
Chromium (total)	5 U	5 U	5 U	5 U	5 U	5 U	NA
Copper	2 U	2 U	2 U	2 U	2 U	2 U	NA
Iron	20 U	50 U	50 U	80	60	110	NA
Lead	1 U	1 U	1 U	1 U	1 U	1 U	NA
Magnesium	540	1,090	1,100	1,040	1,040	900	NA
Nickel	10 U	10 U	10 U	10	10	20	NA
Potassium	2,670	800	810	500 U	500 U	500 U	NA
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	NA
Sodium	11,500	3,740	3,680	3,070	3,030	2,340	NA
Zinc	6 U	6 U	6 U	7	6 U	6 U	NA
Water Quality Parameters (mg/L)							
Alkalinity (as $CaCO_3$)	15	5.9	5.2	3.4	4.4	3.5	NA
Bicarbonate (as $CaCO_3$)	15	5.9	5.2	3.4	4.4	3.5	NA
Hardness (calculated)	48.9	10.3	10.8	9.59	8.67	13.8	NA
Total Suspended Solids	970	4	7.5	3.0	1.2	89	NA
Chloride	17.3	6.8	7.1	6.0	3.2	3.4	NA
Nitrate as N	0.5	0.7	0.7	0.82	0.84	0.82	NA
Sulfate	16.9	2	2.6	3.1	2.6	2.5	NA

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING
LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Well ID	MW-03A			
Sample ID Date Sampled	GW01MW03A 7/26/01	GW02MW03A 10/25/01	GW03MW03A 1/24/02	GW04MW03A 4/25/02
Explosives and Propellants, Total (µg/L)				
2,4-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U
RDX	**6.6**	**6.6**	**6.7**	**7.4**
Perchlorate ion	**91.5**	**94.3**	**102**	**106**
Volatile Organic Compounds (µg/L)				
1,1,2-Trichloro-1,2,2-trifluoroethane	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U
Acetone	**7.1**B	5 U	5 U	5 U
Benzene	1 U	1 U	1 U	1 U
2-Butanone	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Tetrachloroethene	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Total Metals (µg/L)				
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U
Calcium	**1,670**	**1,590**	**1,570**	**1,470**
Chromium (total)	5 U	**18**	**18**	**9**
Copper	2 U	**3**	2 U	2 U
Iron	**210**	**100**	**2,180**	**130**
Lead	1 U	1 U	1 U	1 U
Magnesium	**670**	**720**	**740**	**650**
Nickel	10 U	**10**	**10**	10 U
Potassium	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**1,530**	**1,450**	**1,480**	**1,250**
Zinc	**7** *J*	6 U	6 U	6 U
Dissolved Metals (µg/L)				
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U
Calcium	**1,800**	**1,550**	**1,610**	**1,650**
Chromium (total)	5 U	**8**	5 U	5 U
Copper	2 U	2 U	2 U	2 U
Iron	20 U	**50**	20 U	20 U
Lead	1 U	**3**	1 U	1 U
Magnesium	**700**	**710**	**760**	**740**
Nickel	10 U	**10**	10 U	10 U
Potassium	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**1,700**	**1,430**	**1,570**	**1,420**
Zinc	6 U	6 U	6 U	6 U
Water Quality Parameters (mg/L)				
Alkalinity (as $CaCO_3$)	**9.9**	**7.4**	**8.1**	**6.6**
Bicarbonate (as $CaCO_3$)	**9.9**	**7.4**	**8.1**	**6.6**
Hardness (calculated)	**6.93**	**6.94**	**6.97**	**6.35**
Total Suspended Solids	**8.4**	1 U	**1.1**	**1.7**
Chloride	**1.4**	**1.2**	1 U	**1.3**
Nitrate as N	**0.1**	**0.1**	**0.14**	**0.13**
Sulfate	**0.3**	**0.2**	2.5 U	2.5 U

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING
LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Well ID	MW-03B			
Sample ID Date Sampled	GW01MW03B 7/26/01	GW02MW03B 10/26/01	GW03MW03B 1/24/02	GW04MW03B 4/25/02
Explosives and Propellants, Total (µg/L)				
2,4-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U
RDX	**0.6** *J*	**1.2**	**1.8**	**2.7**
Perchlorate ion	**15.5**	**16.9**	**22.1**	**29.3**
Volatile Organic Compounds (µg/L)				
1,1,2-Trichloro-1,2,2-trifluoroethane	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U
Acetone	**13** B	5 U	5 U	5 U
Benzene	1 U	1 U	1 U	1 U
2-Butanone	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Tetrachloroethene	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Total Metals (µg/L)				
Arsenic	0.2 U	**0.2**	**0.3**	0.2 U
Barium	**15**	**8**	**9**	**12**
Calcium	**5,450**	**3,970**	**3,800**	**3,470**
Chromium (total)	5 U	**33**	**65**	**62**
Copper	2 U	**4**	**4**	**4**
Iron	**230**	**450**	**1,110**	**1,580**
Lead	1 U	1 U	1 U	**1**
Magnesium	**1,990**	**1,790**	**1,810**	**1,640**
Nickel	10 U	**20**	**40**	**40**
Potassium	**9,350**	**3,090**	**2,100**	**1,700**
Selenium	0.5 U	0.5 U	**0.6**	0.5 U
Sodium	**26,500**	**10,400**	**8,320**	**5,700**
Zinc	**9** *J*	**10**	6 U	**16**
Dissolved Metals (µg/L)				
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U
Barium	**15**	**7**	**7**	**5**
Calcium	**6,400**	**4,190**	**4,160**	**3,570**
Chromium (total)	5 U	**5**	**7**	**7**
Copper	2 U	2 U	2 U	2 U
Iron	20 U	**50**	**90**	**70**
Lead	1 U	1 U	1 U	1 U
Magnesium	**2,250**	**1,820**	**1,930**	**1,580**
Nickel	10 U	10 U	**20**	**20**
Potassium	**10,600**	**3,270**	**2,210**	**1,500**
Selenium	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**28,200**	**11,100**	**9,010**	**6,740**
Zinc	6 U	6 U	6 U	**6**
Water Quality Parameters (mg/L)				
Alkalinity (as $CaCO_3$)	**45**	**13**	**13**	**11**
Bicarbonate (as $CaCO_3$)	**45**	**13**	**13**	**11**
Hardness (calculated)	**21.8**	**17.3**	**16.9**	**15.4**
Total Suspended Solids	**4.3**	**8.2**	**17**	**10**
Chloride	**26.5**	**12.1**	**9.5**	**8**
Nitrate as N	0.1 U	**1.1**	**0.77**	**0.54**
Sulfate	**24.8**	**7.6**	**7.8**	**6.1**

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING
LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Well ID	MW-04A			
Sample ID Date Sampled	GW01MW04A 7/25/01	GW02MW04A 10/26/01	GW03MW04A 1/23/02	GW04MW04A 4/25/02
Explosives and Propellants, Total (µg/L)				
2,4-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U
RDX	**0.82**	**0.78**	**0.63**	**0.54**
Perchlorate ion	**13.2**	**14.7**	**14.0**	**15.8**
Volatile Organic Compounds (µg/L)				
1,1,2-Trichloro-1,2,2-trifluoroethane	2 U	2.U	2.U	2.U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U
Acetone	5 U	5 U	5 U	5 U
Benzene	1 U	1 U	1 U	1 U
2-Butanone	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Tetrachloroethene	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Metals, Total (µg/L)				
Arsenic	**0.2**	**0.2**	0.2 U	0.2 U
Barium	**10**	**8**	**5**	**11**
Calcium	**2,700**	**1,940**	**1,630**	**1,740**
Chromium (total)	**18*J***	**34**	**47**	**23**
Copper	**7**	**9**	**4**	**9**
Iron	**2,730**	**2,350**	**1,440**	**3,430**
Lead	1 U	1 U	1 U	**1**
Magnesium	**1,330**	**960**	**760**	**1,020**
Nickel	10 U	**20**	**30**	**10**
Potassium	**720**	**800**	**550**	**900**
Selenium	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**2,230**	**2,050**	**1,710**	**1,420**
Zinc	**12*J***	**8**	6 U	**11**
Metals, Dissolved (µg/L)				
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U
Calcium	**2,800**	**1,730**	**1,560**	**1,610**
Chromium (total)	5 U	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2 U
Iron	20 U	50 U	**60**	50 U
Lead	1 U	1 U	1 U	1 U
Magnesium	**920**	**610**	**590**	**570**
Nickel	10 U	10 U	**10**	10 U
Potassium	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**2,620**	**2,050**	**1,780**	**1,580**
Zinc	6 U	6 U	6 U	6 U
Water Quality Parameters (mg/L)				
Alkalinity (as $CaCO_3$)	**9.7**	**9.1**	**8.3**	**7.1**
Bicarbonate (as $CaCO_3$)	**9.7**	**9.1**	**8.3**	**7.1**
Hardness (calculated)	**12.2**	**8.80**	**7.20**	**8.55**
Total Suspended Solids	**58**	**75**	**22**	**11**
Chloride	**1.2**	**1**	1 U	**1.3**
Nitrate as N	**0.2**	0.1 U	**0.059**	**0.047**
Sulfate	**1.6**	**1.3**	2.5 U	2.5 U

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING
LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Well ID	MW-05A			
Sample ID Date Sampled	GW01MW05A 7/26/01	GW02MW05A 10/26/01	GW03MW05A 1/25/02	GW04MW05A 4/25/02
Explosives and Propellants, Total (µg/L)				
2,4-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
2-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U
HMX	**0.28**	**0.31**	**0.39**	**0.27**
RDX	**5.2**	**5**	**4.6**	**4.4**
Perchlorate ion	**63.8**	**57.9**	**57.4**	**54.7**
Volatile Organic Compounds (µg/L)				
1,1,2-Trichloro-1,2,2-trifluoroethane	2 U	2 U	2.U	2.U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U
Acetone	**5.8** B	5 U	5 U	5 U
Benzene	1 U	1 U	1 U	1 U
2-Butanone	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Tetrachloroethene	**0.7** J	**0.6** J	**0.6** J	1.U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Metals, Total (µg/L)				
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U
Barium	**3**	**4**	**3**	**4**
Calcium	**3,170**	**2,700**	**2,210**	**2,260**
Chromium (total)	**11** *J*	**27**	**29**	**16**
Copper	2 U	**12**	2 U	**2**
Iron	**320**	**400**	**160**	**380**
Lead	1 U	1 U	1 U	1 U
Magnesium	**990**	**980**	**950**	**880**
Nickel	10 U	**20**	**20**	**10**
Potassium	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**1,790**	**1,710**	**1,790**	**1,670**
Zinc	**12** *J*	**40**	**7**	**18**
Metals, Dissolved (µg/L)				
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	**4**	3 U
Calcium	**2,750**	**2,490**	**2,290**	**2,190**
Chromium (total)	5 U	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2 U
Iron	20 U	50 U	50 U	50 U
Lead	10 U	1 U	1 U	1 U
Magnesium	**1000**	**960**	**970**	**940**
Nickel	10 U	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**1,770**	**1,680**	**1,900**	**1,740**
Zinc	6 U	6 U	**7**	6 U
Water Quality Parameters (mg/L)				
Alkalinity (as $CaCO_3$)	**13**	**11**	**11**	**9.3**
Bicarbonate (as $CaCO_3$)	**13**	**11**	**11**	**9.3**
Hardness (calculated)	**12**	**10.8**	**9.43**	**9.27**
Total Suspended Solids	**4.7**	**9.2**	**1.7**	**1.9**
Chloride	**1.5**	**1.3**	1 U	**1.4**
Nitrate as N	**0.1**	**0.2**	**0.22**	**0.2**
Sulfate	**0.3**	**0.2**	**3.1**	2.5 U

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING
LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Well ID	MW-07B	
Sample ID Date Sampled	GW05MW07B 1/8/03	GW505MW07B 1/8/03
Explosives and Propellants, Total (µg/L)		
2,4-Dinitrotoluene	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U
2-Dinitrotoluene	0.25 U	0.25 U
HMX	0.25 U	0.25 U
RDX	0.25 U	0.25 U
Perchlorate ion	**4.9**	**4.8**
Volatile Organic Compounds (µg/L)		
1,1,2-Trichloro-1,2,2-trifluoroethane	2 U	2 U
1,1,1-Trichloroethane	1 U	1 U
1,1-Dichloroethane	1 U	1 U
1,1-Dichloroethene	1 U	1 U
Acetone	5 U	5 U
Benzene	1 U	1 U
2-Butanone	5 U	5 U
Dichlorodifluoromethane	1 U	1 U
Tetrachloroethene	1 U	1 U
Trichloroethene	1 U	1 U
Trichlorofluoromethane	1 U	1 U
Metals, Total (µg/L)		
Arsenic	**0.3**	**0.4**
Barium	3 U	3 U
Calcium	**7,270**	**7,510**
Chromium (total)	**9**	**7**
Copper	2 U	2 U
Iron	**110**	**90**
Lead	1 U	1 U
Magnesium	**4,790**	**5,000**
Nickel	10 U	10 U
Potassium	**1,540**	**1,510**
Selenium	0.5 U	0.5 U
Sodium	**8,780**	**8,680**
Zinc	6 U	6 U
Metals, Dissolved (µg/L)		
Arsenic	**0.4**	**0.3**
Barium	3 U	3 U
Calcium	**7,210**	**6,730**
Chromium (total)	5 U	5 U
Copper	2 U	2 U
Iron	20 U	50 U
Lead	10 U	1 U
Magnesium	**4,780**	**4,420**
Nickel	**10**	10 U
Potassium	**1,470**	**1,420**
Selenium	0.5 U	0.5 U
Sodium	**8,980**	**8,210**
Zinc	6 U	6 U
Water Quality Parameters (mg/L)		
Alkalinity (as $CaCO_3$)	**38**	**40**
Bicarbonate (as $CaCO_3$)	**38**	**40**
Hardness (calculated)	**38**	**39**
Total Suspended Solids	**2.8**	2.5 U
Chloride	**15**	**14**
Nitrate as N	**0.16**	**0.13**
Sulfate	**2.6**	2.5 U

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING
LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Well ID	Rinsate					
Sample ID Date Sampled	GW1001MW03B 7/27/01	GW1002MW05A 10/26/01	GW1003MW05A 1/25/02	GW1004MW03B 4/25/02		GW1005MW07B 1/8/03
Explosives and Propellants, Total (µg/L)						
2,4-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U		0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U		0.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U		0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U		0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U		0.25 U
Perchlorate ion	5 U	5 U	5 U	5 U		4U
Volatile Organic Compounds (µg/L)						
1,1,2-Trichloro-1,2,2-trifluoroethane	2 U	2 U	2 U	2 U		2 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U		1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U		1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U		1 U
Acetone	**11** B	5 U	5 U	**4.1** J		**4** J
Benzene	1 U	1 U	1 U	1 U		1 U
2-Butanone	5 U	5 U	5 U	5 U		**14**
Dichlorodifluoromethane	1 U	1 U	1 U	1 U		1 U
Tetrachloroethene	1 U	1 U	1 U	1 U		1 U
Trichloroethene	1 U	1 U	1 U	1 U		1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U		1 U
Metals, Total (µg/L)						
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	3 U	3 U
Calcium	50 U	50 U	**60**	50 U	50 U	50 U
Chromium (total)	5 U	5 U	5 U	**7**	5 U	5 U
Copper	2 U	**2**	2 U	2 U	2 U	2 U
Iron	20 U	50 U	**70**	**200**	50 U	50 U
Lead	1 U	1 U	**3**	1 U	1 U	1 U
Magnesium	20 U	50 U	50 U	50 U	50 U	50 U
Nickel	10 U	10 U	10 U	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	**80**	50 U	50 U	50 U	50 U	500 U
Zinc	6 U	6 U	6 U	6 U	6 U	6 U
Metals, Dissolved (µg/L)						
Arsenic	0.2 U	0.2 U	0.2 U	--		0.2 U
Barium	3 U	3 U	3 U	--		3 U
Calcium	50 U	50 U	50 U	--		50 U
Chromium (total)	5 U	5 U	5 U	--		5 U
Copper	2 U	2 U	2 U	--		2 U
Iron	20 U	50 U	50 U	--		50 U
Lead	1 U	1 U	1 U	--		1 U
Magnesium	20 U	50 U	50 U	--		50 U
Nickel	10 U	10 U	10 U	--		10 U
Potassium	500 U	500 U	500 U	--		500 U
Selenium	0.5 U	0.5 U	0.5 U	--		0.5 U
Sodium	50 U	50 U	**130**	--		500 U
Zinc	6 U	6 U	6 U	--		6 U
Water Quality Parameters (mg/L)						
Alkalinity (as $CaCO_3$)	**2.5**	**2.7**	1 U	1 U		1 U
Bicarbonate (as $CaCO_3$)	**2.5**	**2.7**	1 U	1 U		1 U
Hardness (calculated)	0.2 U	0.3 U	0.3 U	0.3 U		0.3 U
Total Suspended Solids	1 U	1 U	1 U	**1.9**		2.5 U
Chloride	**1.5**	0.1 U	**1.3**	1 U		1 U
Nitrate as N	**0.1**	0.1 U	0.01 U	0.01 U		**0.053**
Sulfate	**0.3**	0.1 U	2.5 U	2.5 U		2.5 U

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING
LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Well ID	Trip Blank				
Sample ID Date Sampled	7/27/01	10/24/01 10/26/01	1/21/02 1/23/02 1/25/02	4/24/02	1/8/03
Volatile Organic Compounds (µg/L)					
1,1,2-Trichloro-1,2,2-trifluoroethane	2 U	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U	1 U	1 U	1 U	1 U
Acetone	5 U	5 U	**2.23** J **	5 U	5 U
Benzene	1 U	1 U	1 U	1 U	1 U
2-Butanone	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U

** acetone detected in trip blank 1/25/02 only

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING
LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Sample ID	Method Blank				
Date Sampled	July 2001	October 2001	January 2002	April 2002	January 2003
Explosives and Propellants, Total (µg/L)					
2,4-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Perchlorate ion	5 U	5 U	5 U	5 U	4 U
Volatile Organic Compounds (µg/L)	**8/4/01**	**8/6/01**			
1,1,2-Trichloro-1,2,2-trifluoroethane	2.U 2 U	2 U	2 U	2 U	2 U
1,1,1-Trichloroethane	1 U 1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethane	1 U 1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene	1 U 1 U	1 U	1 U	1 U	1 U
Acetone	**3.2** J 1 U	5 U	5 U	5 U	5 U
Benzene	1 U 1 U	5 U	5 U	5 U	5 U
2-Butanone	5 U 5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	1 U 1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	1 U 1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U 1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U 1 U	1 U	1 U	1 U	1 U
Metals, Total (µg/L)					
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	3 U
Calcium	50 U	50 U	50 U	50 U	50 U
Chromium (total)	5 U	5 U	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2 U	2 U
Iron	20 U	50 U	50 U	50 U	50 U
Lead	1 U	1 U	1 U	1 U	1 U
Magnesium	20 U	50 U	50 U	50 U	50 U
Nickel	10 U	10 U	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	50 U	50 U	50 U	50 U	500 U
Zinc	6 U	6 U	6 U	6 U	6 U
Metals, Dissolved (µg/L)					
Arsenic	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	3 U
Calcium	50 U	50 U	50 U	50 U	50 U
Chromium (total)	5 U	5 U	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2 U	2 U
Iron	20 U	50 U	50 U	50 U	50 U
Lead	1 U	1 U	1 U	1 U	1 U
Magnesium	20 U	50 U	50 U	50 U	50 U
Nickel	10 U	10 U	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Sodium	50 U	50 U	50 U	**50**	**500**
Zinc	6 U	6 U	6 U	6 U	6 U
Water Quality Parameters (mg/L)					
Alkalinity (as $CaCO_3$)	1 U	1 U	1 U	1 U	1 U
Bicarbonate (as $CaCO_3$)	1 U	1 U	1 U	1 U	1 U
Hardness (calculated)	0.2 U	0.3 U	0.3 U	0.3 U	0.3 U
Total Suspended Solids	1 U	1 U	1 U	1 U	1 U
Chloride	0.1 U	0.1 U	1 U	1 U	1 U
Nitrate as N	0.1 U	0.1 U	0.01 U	0.01 U	0.01 U
Sulfate	0.1 U	0.1 U	2.5 U	2.5 U	2.5 U

Table 5-9 (Continued)
DETECTIONS AND EXCEEDENCES OF ARARS IN GROUNDWATER SAMPLING LANDFILL 4-DEMOLITION AREA 1 - CAMP BONNEVILLE

Notes:

No semivolatile organic compounds, herbicide compounds, total petroleum hydrocarbon compounds, nitrite, cyanide, TOC, or DOC were detected.
Detected compounds/analytes are **bold**. Detected compounds/analytes above screening criteria are **bold and underlined**.
1,1,2-TC-1,2,2-TFE: 1,1,2-Trichloro-1,2,2-trifluoroethane
B - The analyte was detected in the associated method blank.
D - The reported analyte concentration is from a dilution of the sample.
J - The analyte was positively identified; the associated numerical value is below the reporting limit and is therefore estimated.
J - Data validation qualifier indicating that the analyte was positively identified but the associated numerical value is estimated.
- - - – Not analyzed
U - The analyte was undetected above the reporting limit.

Table 5-10
SUMMARY OF DETECTED TOTAL AND DISSOLVED EXPLOSIVES
OCTOBER, 2001

Compound/Analyte	PQL (µ/L)	GW02MW02B, Total Sample (µ/L)	GW02MW02B Dissolved Sample (µ/L)	RPD (%)
2,4-Dinitrotoluene	0.25	0.46	0.47	2.2
2-Nitrotoluene	0.25	0.26	0.25 U	nc
HMX	0.25	2.2	2.3	4
RDX	0.25	120	120	0

Notes:

(%) – percent
(µ/L) – micrograms per liter
HMX – octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazine
nc – not calculated
PQL – practical quantitation limit
RDX – hexahydro-1,3,5-trinitro-1,3,5-trazine

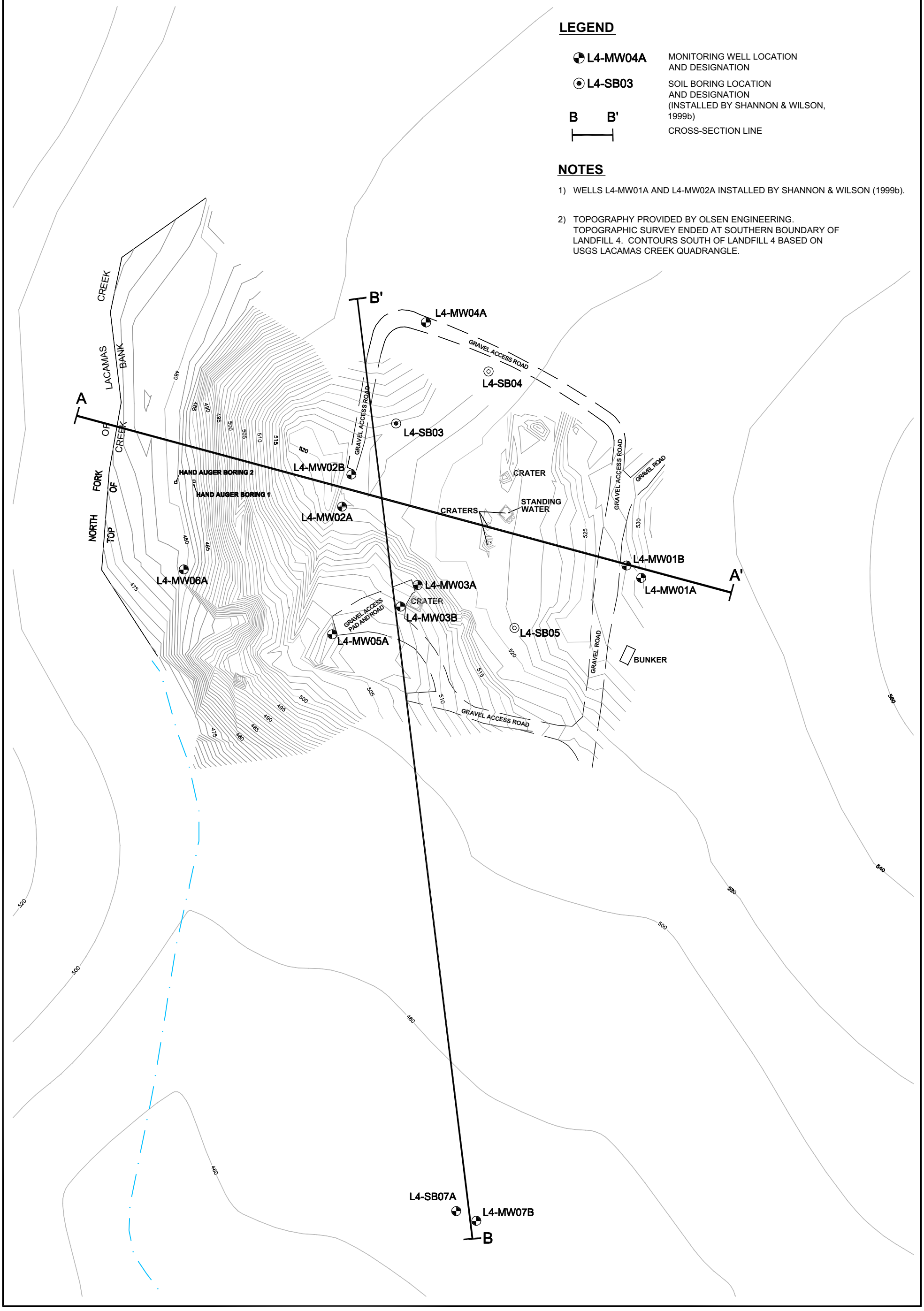
LEGEND

L4-MW04A	MONITORING WELL LOCATION AND DESIGNATION
L4-SB03	SOIL BORING LOCATION AND DESIGNATION (INSTALLED BY SHANNON & WILSON, 1999b)
B B'	CROSS-SECTION LINE

NOTES

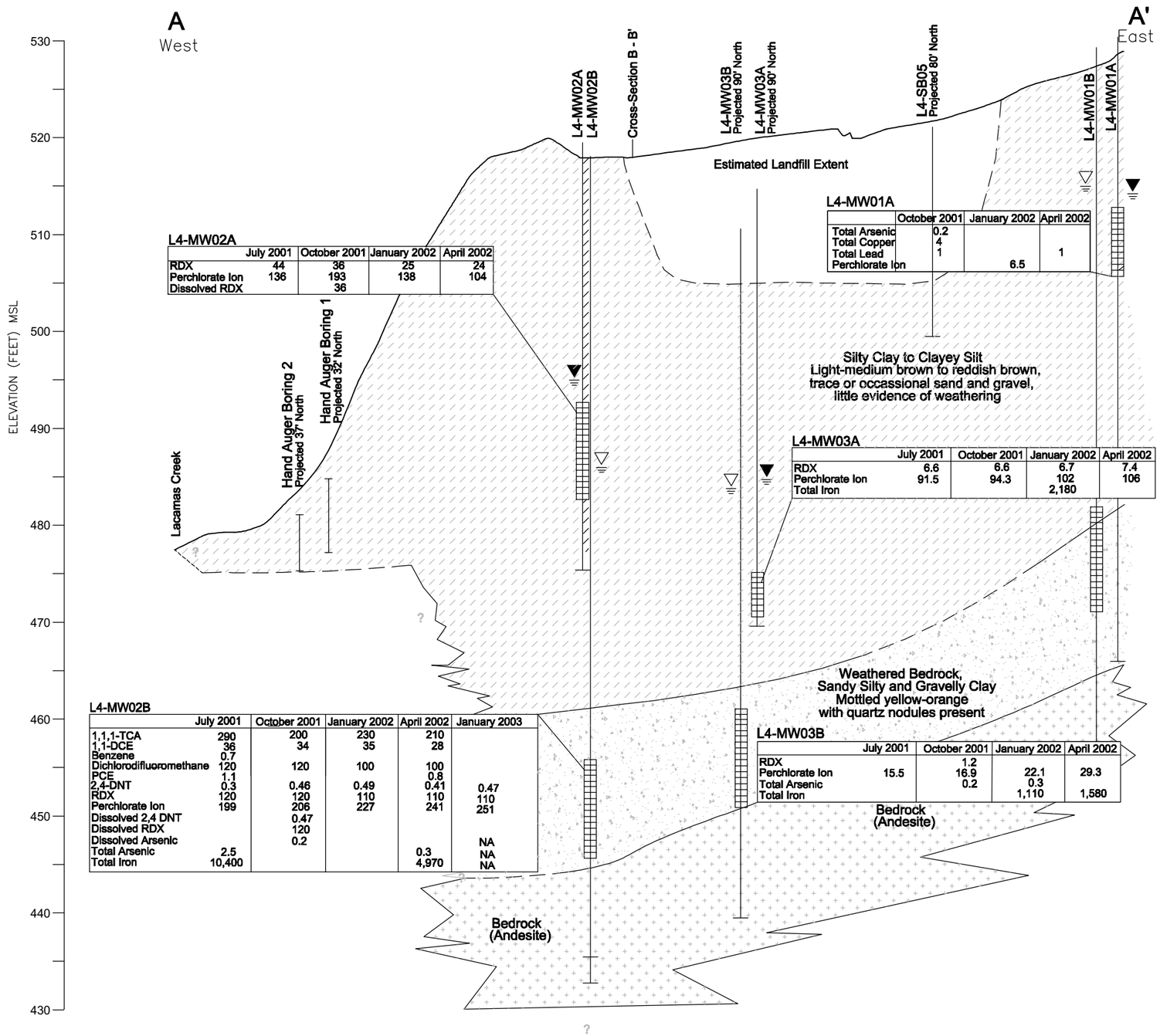
1) WELLS L4-MW01A AND L4-MW02A INSTALLED BY SHANNON & WILSON (1999b).

2) TOPOGRAPHY PROVIDED BY OLSEN ENGINEERING. TOPOGRAPHIC SURVEY ENDED AT SOUTHERN BOUNDARY OF LANDFILL 4. CONTOURS SOUTH OF LANDFILL 4 BASED ON USGS LACAMAS CREEK QUADRANGLE.



URS	0 20 40 80 SCALE IN FEET	**Figure 5-1** **LANDFILL 4** **Geologic Cross-Section Lines A-A' and B-B'**	U.S.ARMY CORPS OF ENGINEERS SEATTLE DISTRICT SEATTLE, WASHINGTON

FILENAME: Q:\Geo\COE\Camp Bonneville\Landfill 4\NEW X-SEC.dwg
EDIT DATE: 03/25/03 AT: 15:51



LEGEND

- L4-SB05 — SOIL BORING
- L4-MW03B — MONITORING WELL
- WELL SCREEN INTERVAL
- GROUNDWATER LEVEL IN OVERBURDEN WELLS (JULY 24, 2001)
- GROUNDWATER LEVEL IN WEATHERED BEDROCK WELLS (JULY 24, 2001)
- ASSUMED GEOLOGIC INTERPRETATION FOR AREAS BETWEEN BORINGS DASHED WHERE ESTIMATED

DCE	DICHLOROETHENE
DNT	DINITROTOLUENE
PCE	TETRACHLOROETHENE
TCA	TRICHLOROETHANE

NOTES

1) WATER LEVELS INDICATED WERE MEASURED ON JULY 24, 2001
2) MONITORING WELL L4-MW01A AND L4-MW02A AND SOIL BORING L4-SB05 INSTALLED BY SHANNON & WILSON (1999b)
3) CONCENTRATIONS NOTED ON FIGURE EXCEED ONE OR MORE SCREENING CRITERIA
4) ALL ANALYSES UNITS IN ug/l
5) JULY DATA FROM L4-MW01A DID NOT EXCEED SCREENING CRITERIA
6) NA-NOT ANALYZED

HORIZONTAL SCALE: 0 25 50 SCALE IN FEET

VERTICAL SCALE EXAGGERATION: APPROXIMATELY 5X
DATUM: NGVD 29

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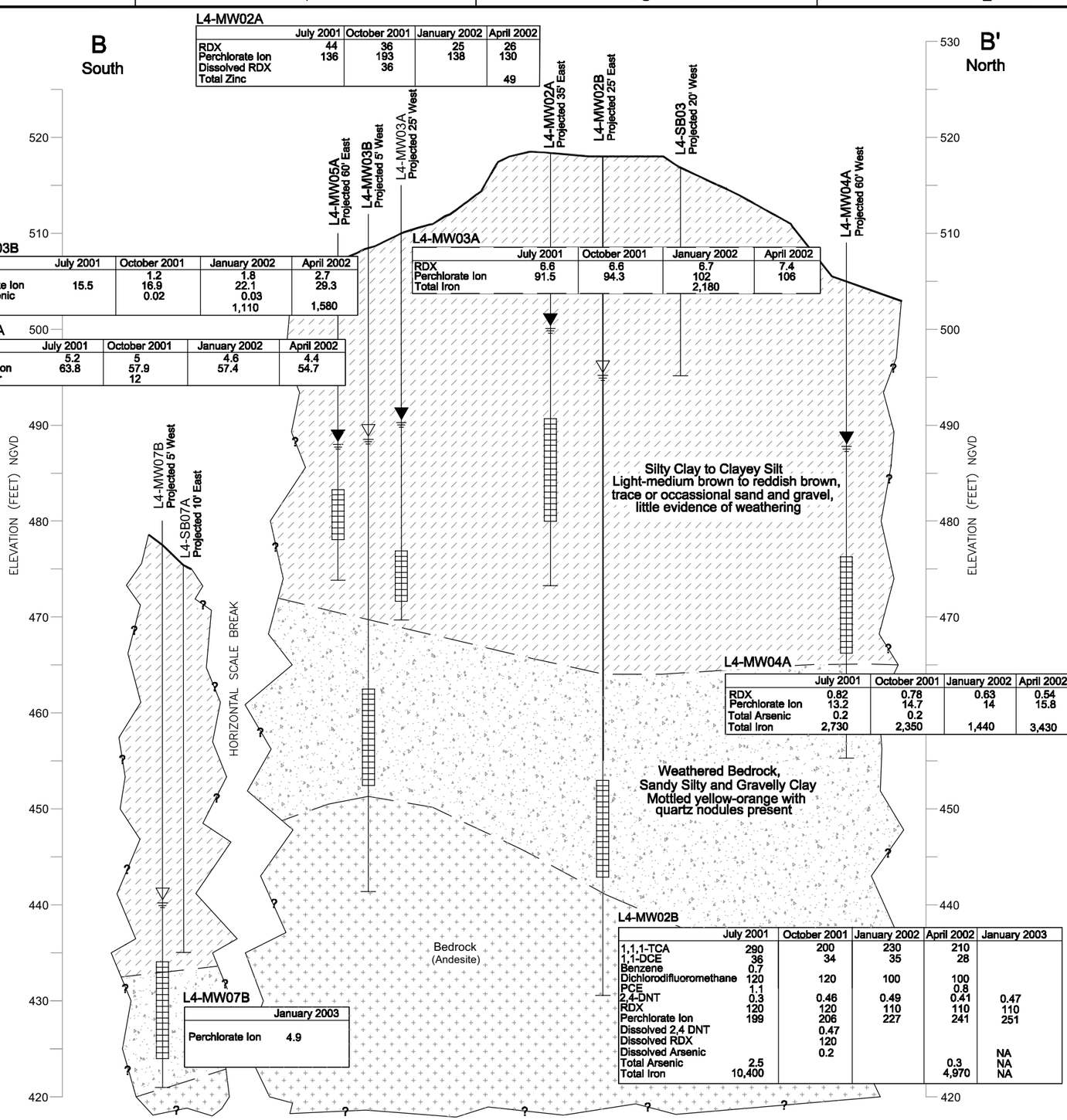
CAMP BONNEVILLE
LANDFILL 4
DEMOLITION AREA 1

GEOLOGIC CROSS SECTION A - A'

CAMP BONNEVILLE PN 33752889 WASHINGTON

FIGURE 5-2

FILENAME: Q:\Geo\COE\Camp Bonneville\Landfill 4\CB-174 Cross Section A-A'.dwg
EDIT DATE: 02/05/03 AT: 10:03



LEGEND

- L4-SB05 — SOIL BORING
- L4-MW03B — MONITORING WELL
- WELL SCREEN INTERVAL
- GROUNDWATER LEVEL IN OVERBURDEN WELLS (JANUARY 22, 2002)
- GROUNDWATER LEVEL IN WEATHERED BEDROCK WELLS (JANUARY 22, 2002), EXCEPT L4-MW07B (JANUARY 8, 2003)
- ASSUMED GEOLOGIC INTERPRETATION FOR AREAS BETWEEN BORINGS DASHED WHERE ESTIMATED

DCE DICHLOROETHENE
DNT DINITROTOLUENE
PCE TETRACHLOROETHENE
TCA TRICHLOROETHANE

NOTES

1) WATER LEVELS INDICATED WERE MEASURED ON JANUARY 22, 2002, EXCEPT L4-MW07B (JANUARY 8, 2003)
2) MONITORING WELL L4-MW01A AND L4-MW02A AND SOIL BORING L4-SB05 INSTALLED BY SHANNON & WILSON (1999b)
3) CONCENTRATIONS NOTED ON FIGURE EXCEED ONE OF MORE SCREENING CRITERIA
4) ALL ANALYSES UNITS IN ug/L
5) NA-NOT ANALYZED
6) L4-MW07B APPROXIMATELY 560 FEET SOUTH OF L4-MW03B

HORIZONTAL SCALE: 0 15 30 60 SCALE IN FEET

VERTICAL SCALE EXAGGERATION: APPROXIMATELY 5X
DATUM: NGVD 29

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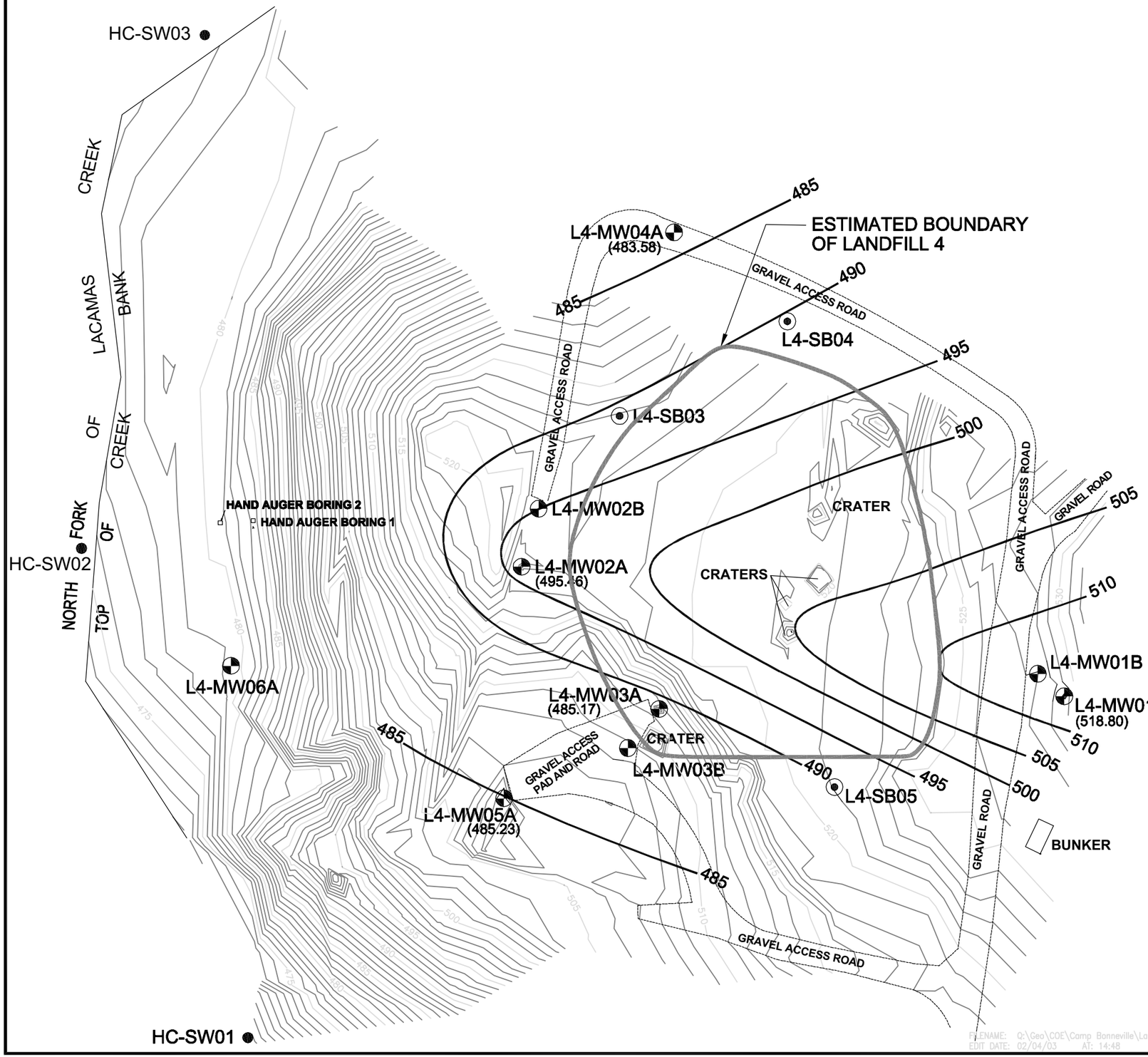
CAMP BONNEVILLE
LANDFILL 4
DEMOLITION AREA 1

GEOLOGIC CROSS SECTION B - B'

CAMP BONNEVILLE PN 37752889 WASHINGTON

FIGURE 5-3

FILENAME: Q:\Geo\COE\Camp Bonneville\Landfill 4\CB170A LF4 CROSS SEC B-B.dwg
EDIT DATE: 03/28/03 AT: 11:17



NOTES

1) WELLS L4-MW01A, L4-MW02A AND ALL SOIL BORINGS INSTALLED BY SHANNON & WILSON (1999b).
2) FIVE-FOOT GROUNDWATER ELEVATION CONTOUR INTERVAL.
3) TOPOGRAPHY PROVIDED BY OLSEN ENGINEERING
4) GROUNDWATER ELEVATION DATA ARE EXTRAPOLATED BETWEEN KNOWN DATA POINTS. ACTUAL GROUNDWATER ELEVATIONS ARE KNOWN ONLY AT SPECIFIC MONITORING WELL LOCATIONS

LEGEND

- L4-MW04A (483.58) — MONITORING WELL LOCATION AND DESIGNATION; GROUNDWATER ELEVATION (JULY 24, 2001)
- L4-SB03 — SOIL BORING LOCATION AND DESIGNATION
- HC-SW02 — APPROXIMATE LOCATION OF SURFACE WATER SAMPLE LOCATION (HART CROWSER, 2000)

N

0 50 100

Scale in Feet

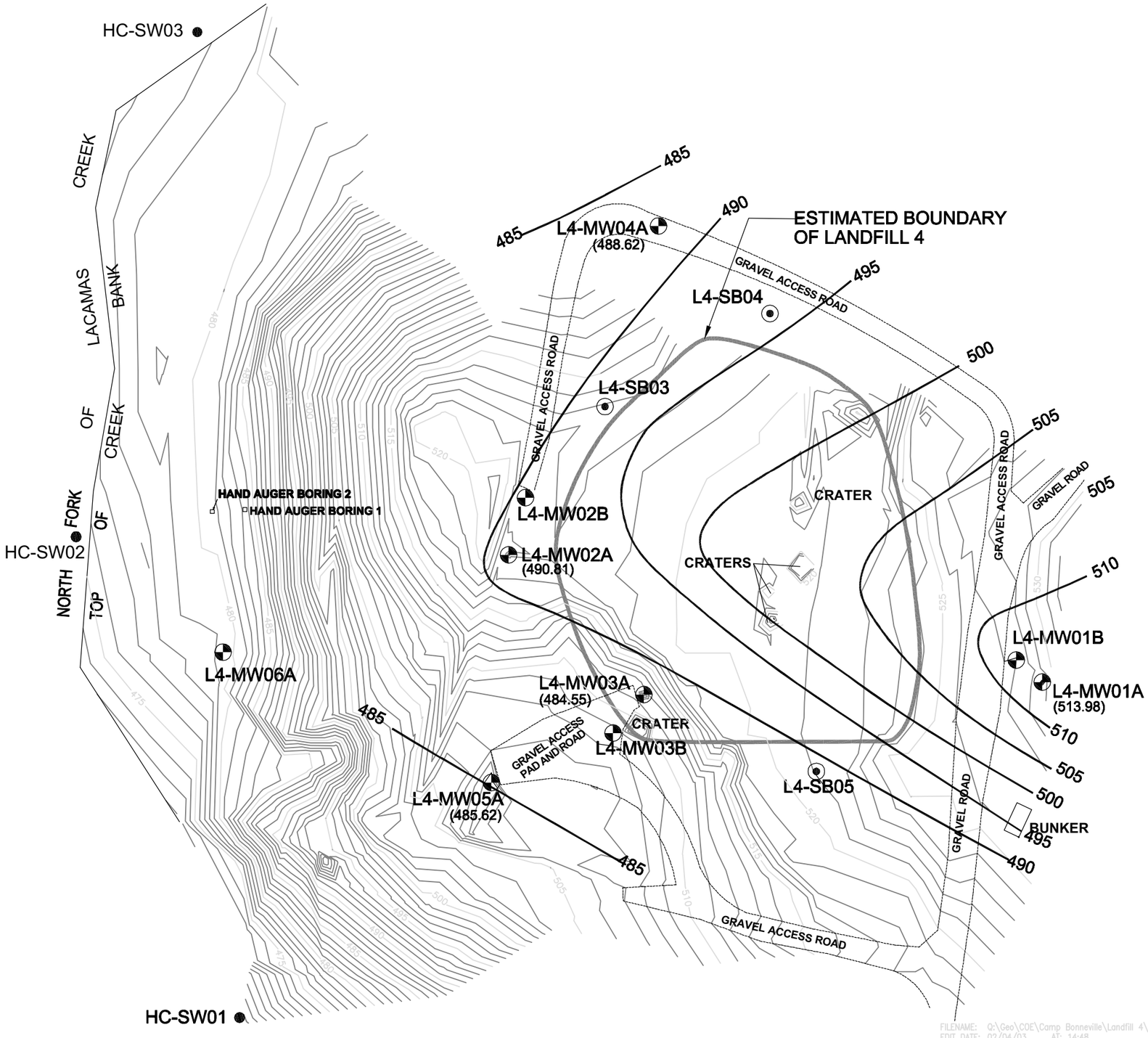
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Landfill 4
Groundwater Potentiometric Surface Map of Overburden Wells (July 24, 2001)
FIGURE 5-4

CAMP BONNEVILLE PN 33752889 WASHINGTON

FILENAME: Q:\Geo\COE\Camp Bonneville\Landfill 4\CB-165 LF4 GW OB WELLS.dwg
EDIT DATE: 02/04/03 AT: 14:48



NOTES

1) WELLS L4-MW01A, L4-MW02A AND ALL SOIL BORINGS INSTALLED BY SHANNON & WILSON (1999b).
2) FIVE-FOOT GROUNDWATER ELEVATION CONTOUR INTERVAL.
3) TOPOGRAPHY PROVIDED BY OLSEN ENGINEERING
4) GROUNDWATER ELEVATION DATA ARE EXTRAPOLATED BETWEEN KNOWN DATA POINTS. ACTUAL GROUNDWATER ELEVATIONS ARE KNOWN ONLY AT SPECIFIC MONITORING WELL LOCATIONS

LEGEND

- L4-MW04A (488.62) — MONITORING WELL LOCATION AND DESIGNATION; GROUNDWATER ELEVATION (OCTOBER 23, 2001)
- L4-SB03 — SOIL BORING LOCATION AND DESIGNATION
- HC-SW02 — APPROXIMATE LOCATION OF SURFACE WATER SAMPLE LOCATION (HART CROWSER, 2000)

0 50 100
Scale in Feet

N

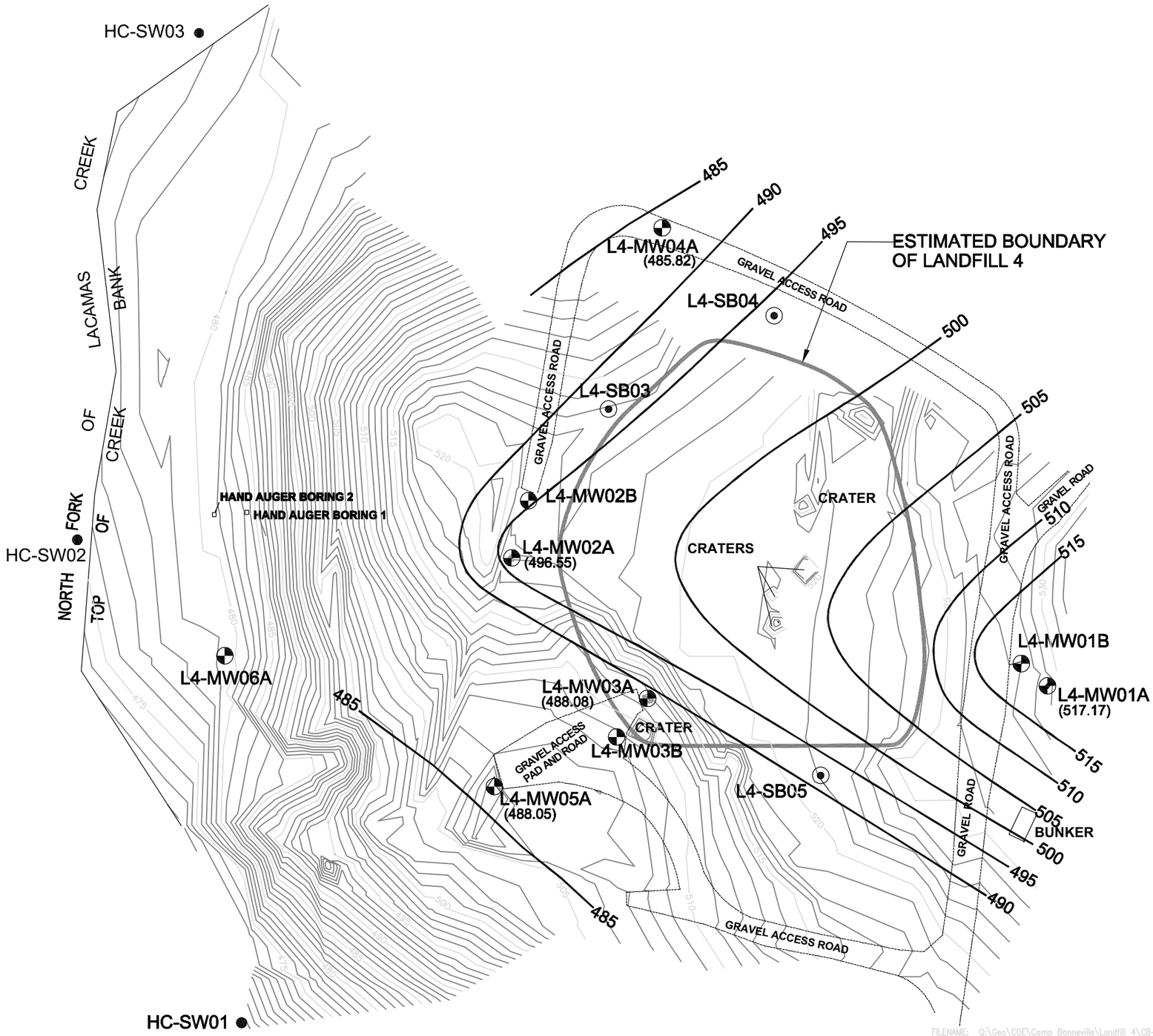
FILENAME: Q:\Geo\COE\Camp Bonneville\Landfill 4\CB-167 LF4 GW 10-23 OB WELLS.dwg
EDIT DATE: 02/04/03 AT: 14:48

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Landfill 4
Groundwater Potentiometric Surface Map of Overburden Wells (October 23, 2001)
FIGURE 5-5

CAMP BONNEVILLE PN 33752889 WASHINGTON



NOTES

1) WELLS L4-MW01A, L4-MW02A AND ALL SOIL BORINGS INSTALLED BY SHANNON & WILSON (1999b).
2) FIVE-FOOT GROUNDWATER ELEVATION CONTOUR INTERVAL.
3) TOPOGRAPHY PROVIDED BY OLSEN ENGINEERING
4) GROUNDWATER ELEVATION DATA ARE EXTRAPOLATED BETWEEN KNOWN DATA POINTS. ACTUAL GROUNDWATER ELEVATIONS ARE KNOWN ONLY AT SPECIFIC MONITORING WELL LOCATIONS

LEGEND

- **L4-MW04A (485.82)** — MONITORING WELL LOCATION AND DESIGNATION; GROUNDWATER ELEVATION (JANUARY 22, 2001)
- **L4-SB03** — SOIL BORING LOCATION AND DESIGNATION
- **HC-SW02** — APPROXIMATE LOCATION OF SURFACE WATER SAMPLE LOCATION (HART CROWSER, 2000)

0 50 100

Scale in Feet

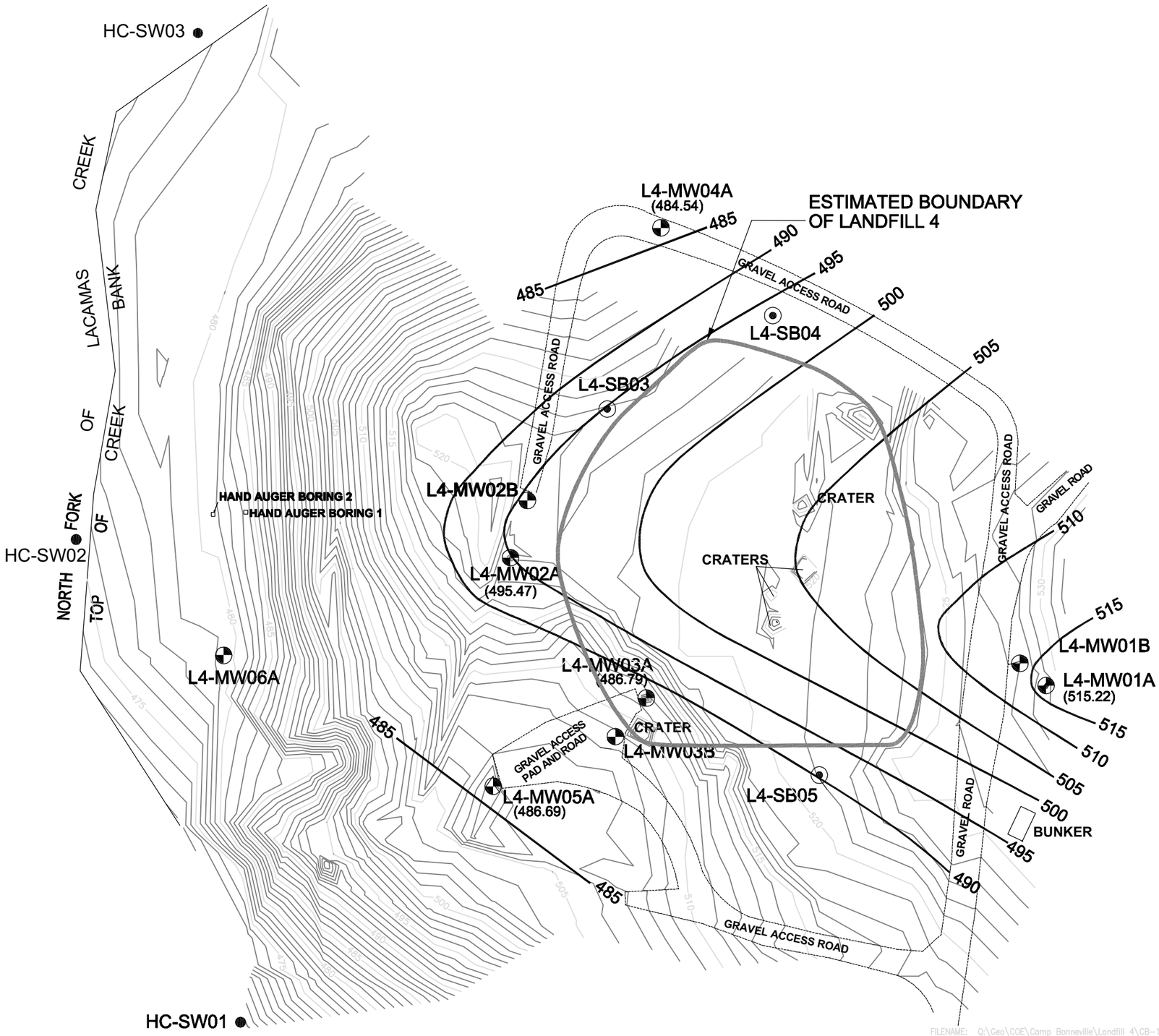
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SEATTLE,WASHINGTON

Landfill 4
Groundwater Potentiometric Surface Map of Overburden Wells (January 22, 2002)
FIGURE 5-6

CAMP BONNEVILLE PN 33752889 WASHINGTON

FILENAME: Q:\Geo\COE\Camp Bonneville\Landfill 4\CB-169 LF4 GW 1-22-02 Overburden.dwg
EDIT DATE: 02/04/03 AT: 14:48



NOTES

1) WELLS L4-MW01A, L4-MW02A AND ALL SOIL BORINGS INSTALLED BY SHANNON & WILSON (1999b).
2) FIVE-FOOT GROUNDWATER ELEVATION CONTOUR INTERVAL.
3) TOPOGRAPHY PROVIDED BY OLSEN ENGINEERING
4) GROUNDWATER ELEVATION DATA ARE EXTRAPOLATED BETWEEN KNOWN DATA POINTS. ACTUAL GROUNDWATER ELEVATIONS ARE KNOWN ONLY AT SPECIFIC MONITORING WELL LOCATIONS

LEGEND

- L4-MW04A (484.54) — MONITORING WELL LOCATION AND DESIGNATION; GROUNDWATER ELEVATION (APRIL 23, 2002)
- L4-SB03 — SOIL BORING LOCATION AND DESIGNATION
- HC-SW02 — APPROXIMATE LOCATION OF SURFACE WATER SAMPLE LOCATION (HART CROWSER, 2000)

0 50 100
Scale in Feet

N

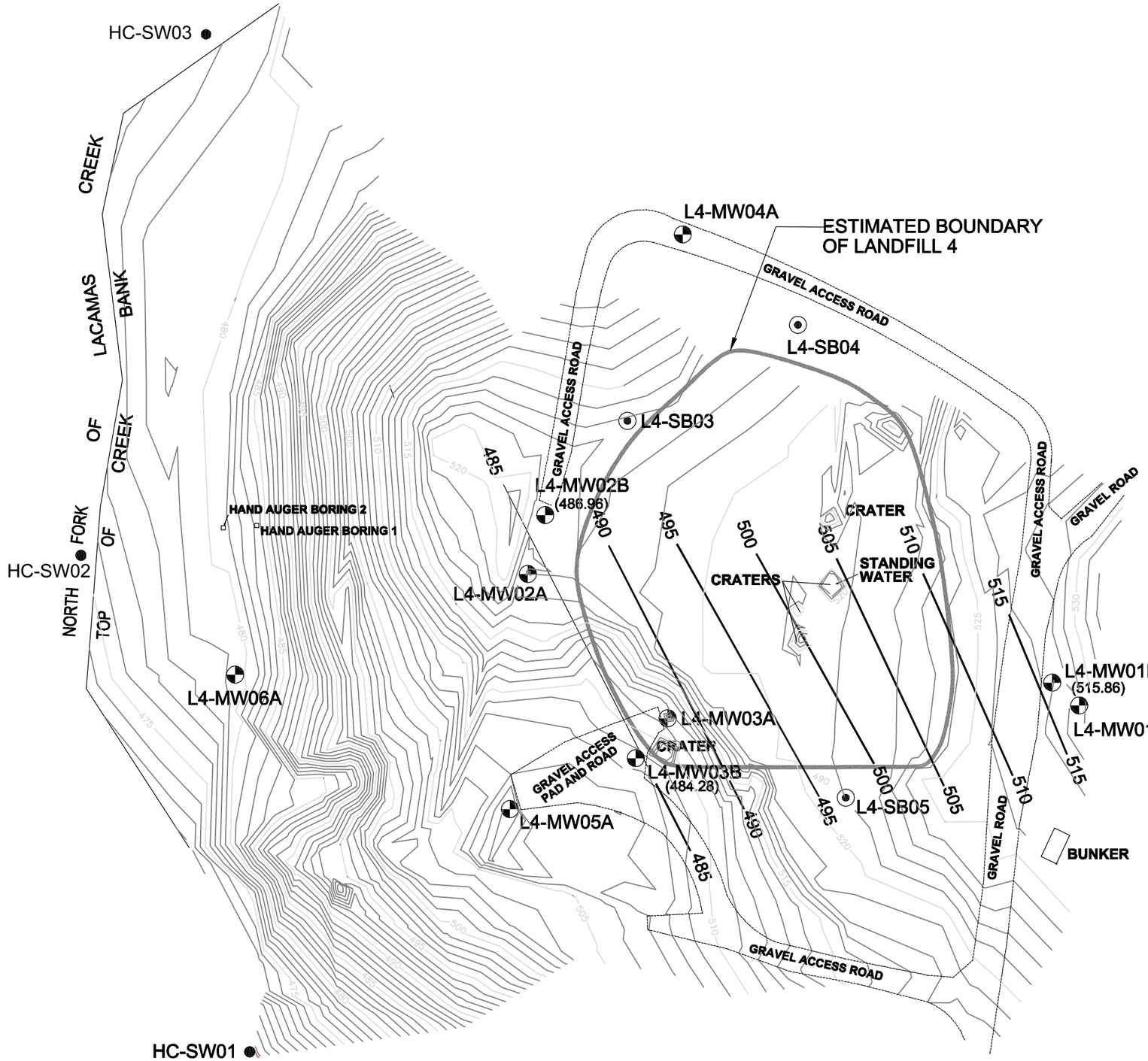
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SEATTLE,WASHINGTON

Landfill 4
Groundwater Potentiometric Surface Map of Overburden Wells (April 23, 2002)
FIGURE 5-7

CAMP BONNEVILLE PN 33752889 WASHINGTON

FILENAME: Q:\Geo\COE\Camp Bonneville\Landfill 4\CB-171 LF4 GW 4-23-02 Overburden.dwg
EDIT DATE: 10/01/02 AT: 14:48



NOTES

1) WELLS L4-MW01A, L4-MW02A AND ALL SOIL BORINGS INSTALLED BY SHANNON & WILSON (1999b).
2) FIVE-FOOT GROUNDWATER ELEVATION CONTOUR INTERVAL.
3) TOPOGRAPHY PROVIDED BY OLSEN ENGINEERING
4) GROUNDWATER ELEVATION DATA ARE EXTRAPOLATED BETWEEN KNOWN DATA POINTS. ACTUAL GROUNDWATER ELEVATIONS ARE KNOWN ONLY AT SPECIFIC MONITORING WELL LOCATIONS

LEGEND

- **L4-MW01B** — MONITORING WELL LOCATION AND DESIGNATION
- **(515.86)** — GROUNDWATER ELEVATION (JULY 24, 2001)
- **L4-SB03** — SOIL BORING LOCATION AND DESIGNATION
- HC-SW02 — APPROXIMATE LOCATION OF SURFACE WATER SAMPLE LOCATION (HART CROWSER, 2000)

0 50 100

Scale in Feet

N

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Landfill 4
Groundwater Potentiometric Surface Map of Weathered Bedrock Wells
(July 24, 2001)
FIGURE 5-8

CAMP BONNEVILLE PN 33752889 WASHINGTON

FILENAME: Q:\Geo\COE\Camp Bonneville\Landfill 4\CB-166 LF4 GW OB WELLS.dwg
EDIT DATE: 02/04/03 AT: 14:48

NOTES

1) WELLS L4-MW01A, L4-MW02A AND ALL SOIL BORINGS INSTALLED BY SHANNON & WILSON (1999b).
2) FIVE-FOOT GROUNDWATER ELEVATION CONTOUR INTERVAL.
3) TOPOGRAPHY PROVIDED BY OLSEN ENGINEERING
4) GROUNDWATER ELEVATION DATA ARE EXTRAPOLATED BETWEEN KNOWN DATA POINTS. ACTUAL GROUNDWATER ELEVATIONS ARE KNOWN ONLY AT SPECIFIC MONITORING WELL LOCATIONS

LEGEND

- **L4-MW01B (514.60)** — MONITORING WELL LOCATION AND DESIGNATION; GROUNDWATER ELEVATION (OCTOBER 23, 2001)
- **L4-SB03** — SOIL BORING LOCATION AND DESIGNATION
- **HC-SW02** — APPROXIMATE LOCATION OF SURFACE WATER SAMPLE LOCATION (HART CROWSER, 2000)

N

0 50 100

Scale in Feet

HC-SW03
HC-SW02
HC-SW01
NORTH FORK OF LACAMAS CREEK
TOP BANK OF LACAMAS CREEK
L4-MW04A
ESTIMATED BOUNDARY OF LANDFILL 4
GRAVEL ACCESS ROAD
L4-SB04
L4-SB03
HAND AUGER BORING 2
HAND AUGER BORING 1
L4-MW02B (485.88)
L4-MW02A
L4-MW06A
L4-MW03A
CRATER
L4-MW03B (483.85)
GRAVEL ACCESS PAD AND ROAD
L4-MW05A
L4-SB05
CRATERS
GRAVEL ROAD
L4-MW01B (514.60)
L4-MW01A
BUNKER
485
490
495
500
505
510
515
520
525
530

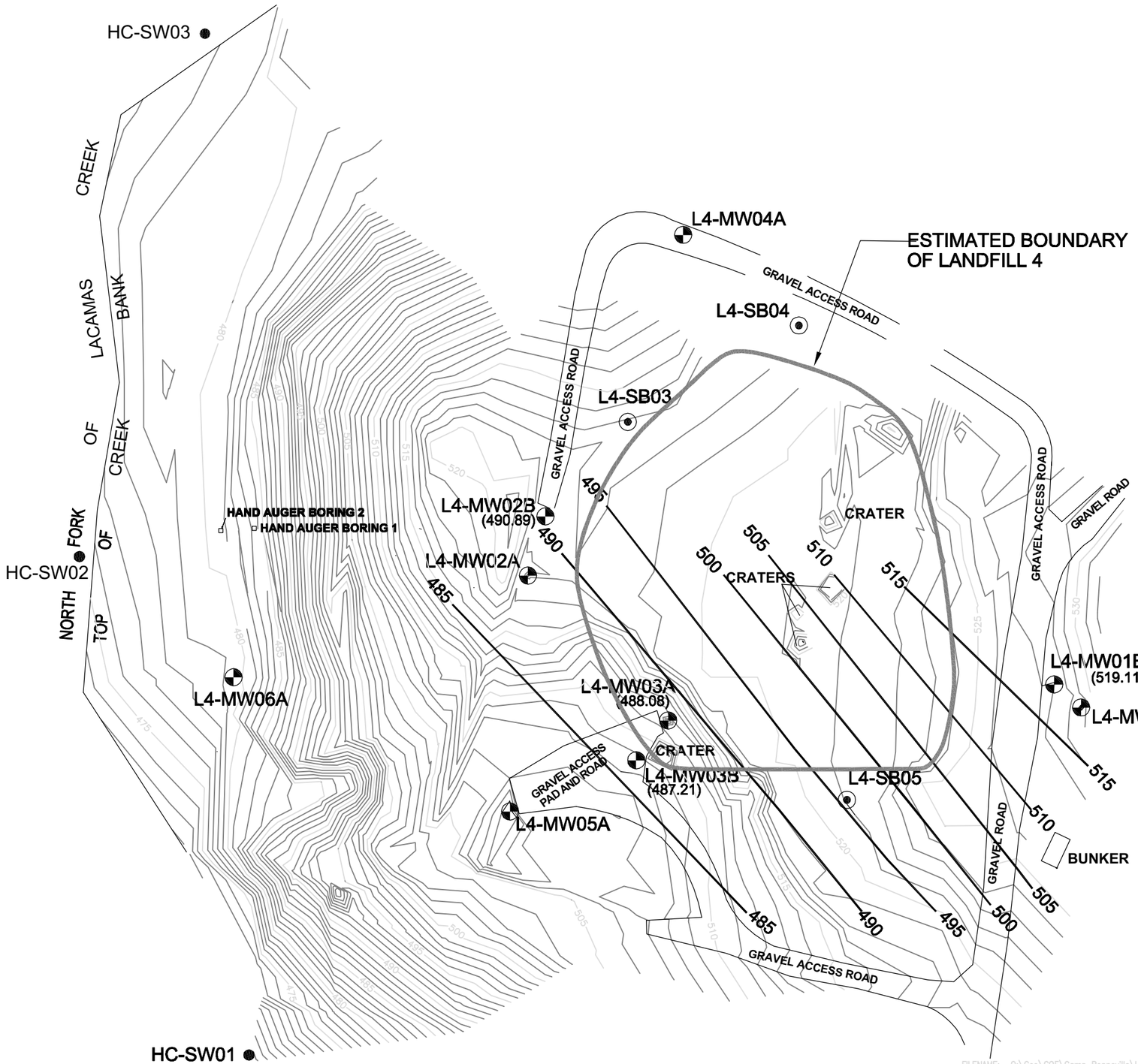
FILENAME: Q:\Geo\COE\Camp Bonneville\Landfill 4\CB-168 LF4 GW 10-23 Weathered Bedrock.dwg
EDIT DATE: 10/01/02 AT: 14:48

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Landfill 4
Groundwater Potentiometric Surface Map of Weathered Bedrock Wells (October 23, 2001)
FIGURE 5-9

CAMP BONNEVILLE PN 33752889 WASHINGTON



NOTES

1) WELLS L4-MW01A, L4-MW02A AND ALL SOIL BORINGS INSTALLED BY SHANNON & WILSON (1999b).
2) FIVE-FOOT GROUNDWATER ELEVATION CONTOUR INTERVAL.
3) TOPOGRAPHY PROVIDED BY OLSEN ENGINEERING
4) GROUNDWATER ELEVATION DATA ARE EXTRAPOLATED BETWEEN KNOWN DATA POINTS. ACTUAL GROUNDWATER ELEVATIONS ARE KNOWN ONLY AT SPECIFIC MONITORING WELL LOCATIONS

LEGEND

L4-MW01B (519.11)	MONITORING WELL LOCATION AND DESIGNATION GROUNDWATER ELEVATION (JANUARY 22, 2001)
L4-SB03	SOIL BORING LOCATION AND DESIGNATION
HC-SW02	APPROXIMATE LOCATION OF SURFACE WATER SAMPLE LOCATION (HART CROWSER, 2000)

N

0 50 100

Scale in Feet

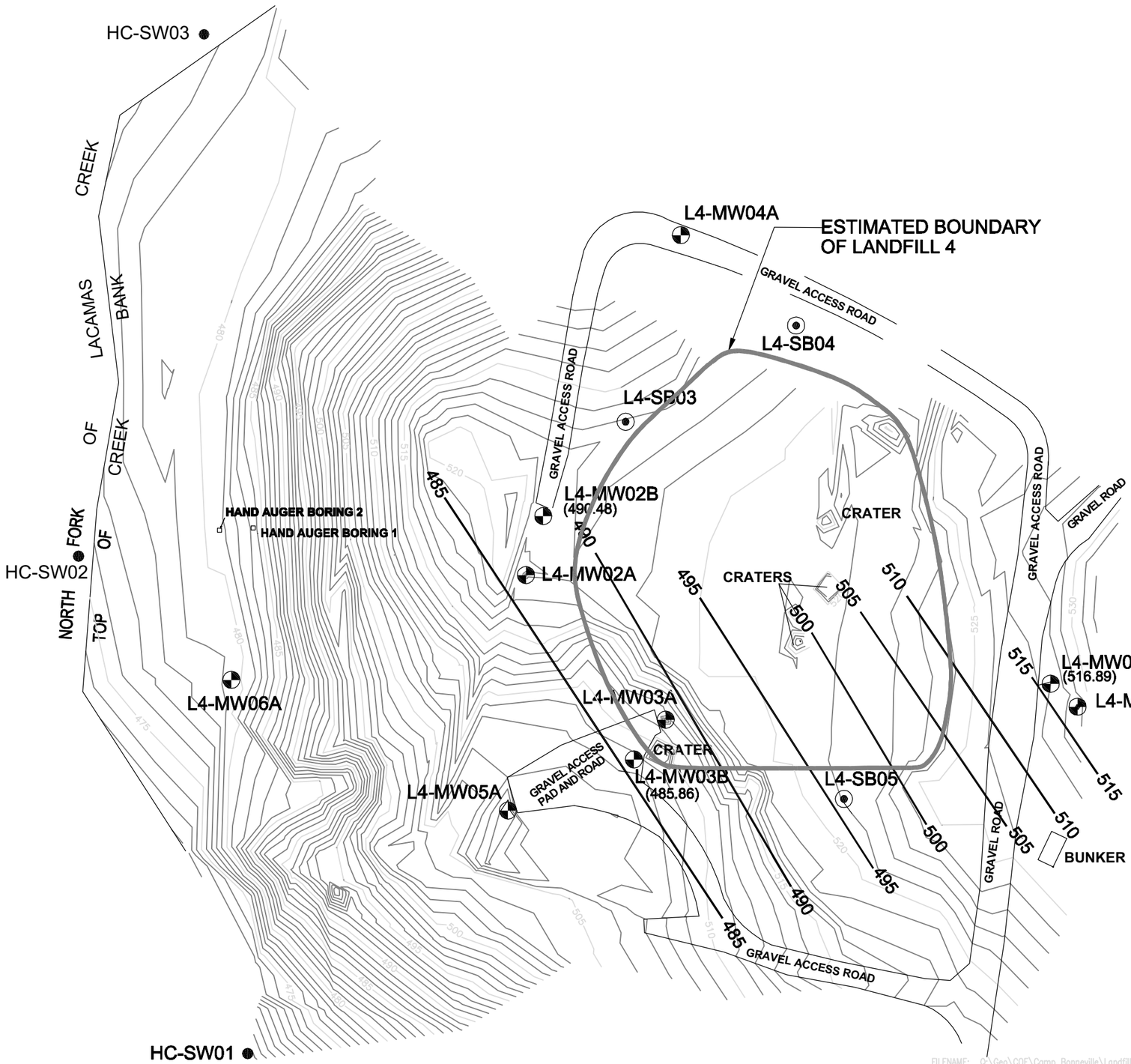
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Landfill 4
Groundwater Potentiometric Surface Map of Weathered Bedrock Wells
(January 22, 2002)
FIGURE 5-10

CAMP BONNEVILLE PN 33752889 WASHINGTON

FILENAME: Q:\Geo\COE\Camp Bonneville\Landfill 4\CB-170 LF4 GW 1-22-02 Overburden.dwg
EDIT DATE: 10/01/02 AT: 14:48



NOTES

1) WELLS L4-MW01A, L4-MW02A AND ALL SOIL BORINGS INSTALLED BY SHANNON & WILSON (1999b).
2) FIVE-FOOT GROUNDWATER ELEVATION CONTOUR INTERVAL.
3) TOPOGRAPHY PROVIDED BY OLSEN ENGINEERING
4) GROUNDWATER ELEVATION DATA ARE EXTRAPOLATED BETWEEN KNOWN DATA POINTS. ACTUAL GROUNDWATER ELEVATIONS ARE KNOWN ONLY AT SPECIFIC MONITORING WELL LOCATIONS

LEGEND

- **L4-MW01B (516.89)** — MONITORING WELL LOCATION AND DESIGNATION; GROUNDWATER ELEVATION (APRIL 23, 2002)
- **L4-SB03** — SOIL BORING LOCATION AND DESIGNATION
- **HC-SW02** — APPROXIMATE LOCATION OF SURFACE WATER SAMPLE LOCATION (HART CROWSER, 2000)

0 50 100

Scale in Feet

N

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Landfill 4
Groundwater Potentiometric Surface Map of Weathered Bedrock Wells (April 23, 2002)
FIGURE 5-11

CAMP BONNEVILLE PN 33752889 WASHINGTON

FILENAME: G:\Geo\COE\Camp Bonneville\Landfill 4\CB-172_LF4_GW 4-23-02 Weathered Bedrock.dwg
EDIT DATE: 10/01/02

FILENAME: \\sea2\cadgis\Geo\COE\Camp Bonneville\CB-132 PRES A - FP.dwg
EDIT DATE: 08/03/01 AT: 10:33

Initial Depth to Water = 31.88 feet BTOC
Screened Interval = 65-75 feet BTOC
Top of pump = 70 feet BTOC

L4-MW02B Yield Test

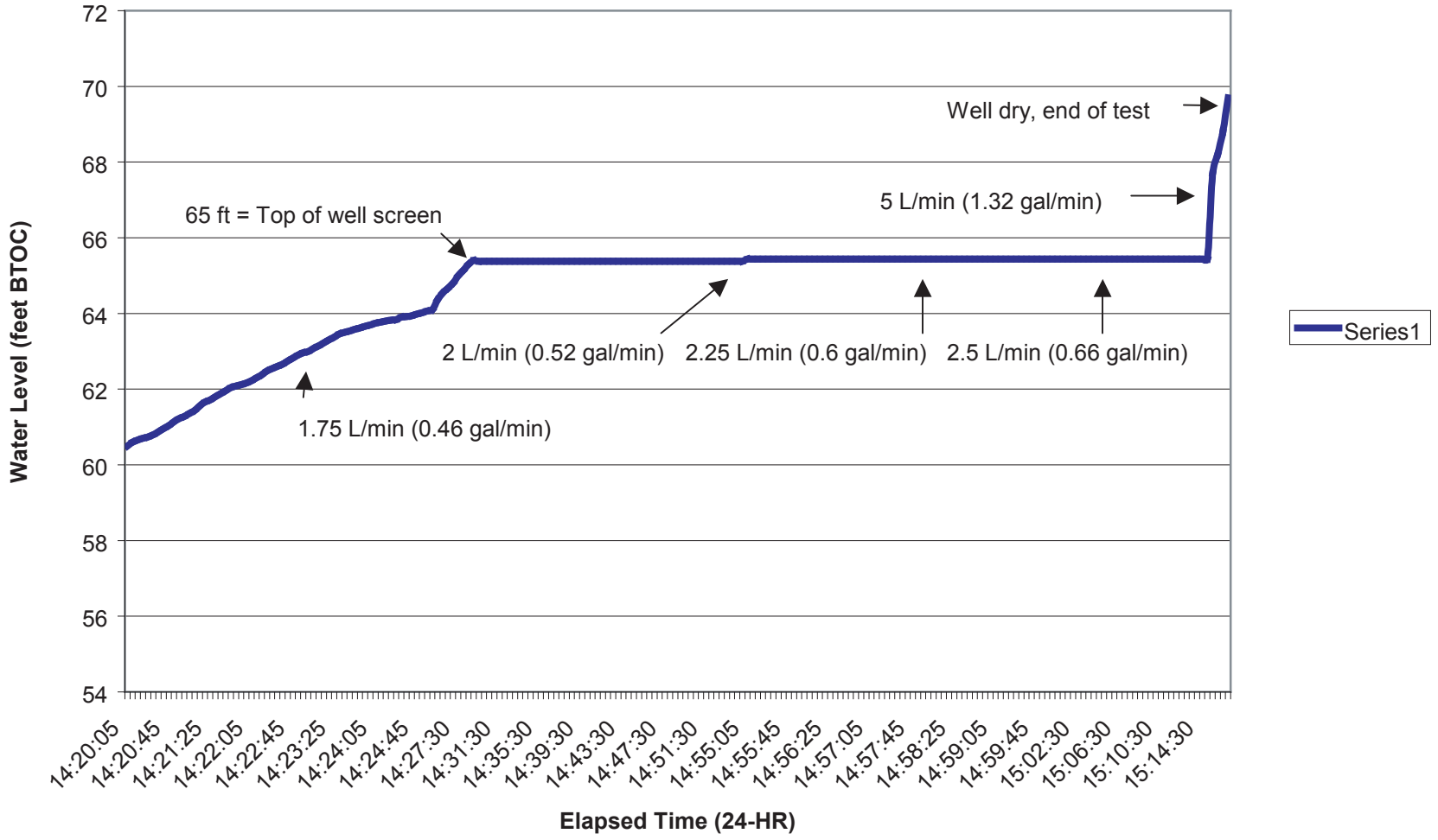


Figure 5-12
Pumping Portion 1, L4-MW02B Yield Test

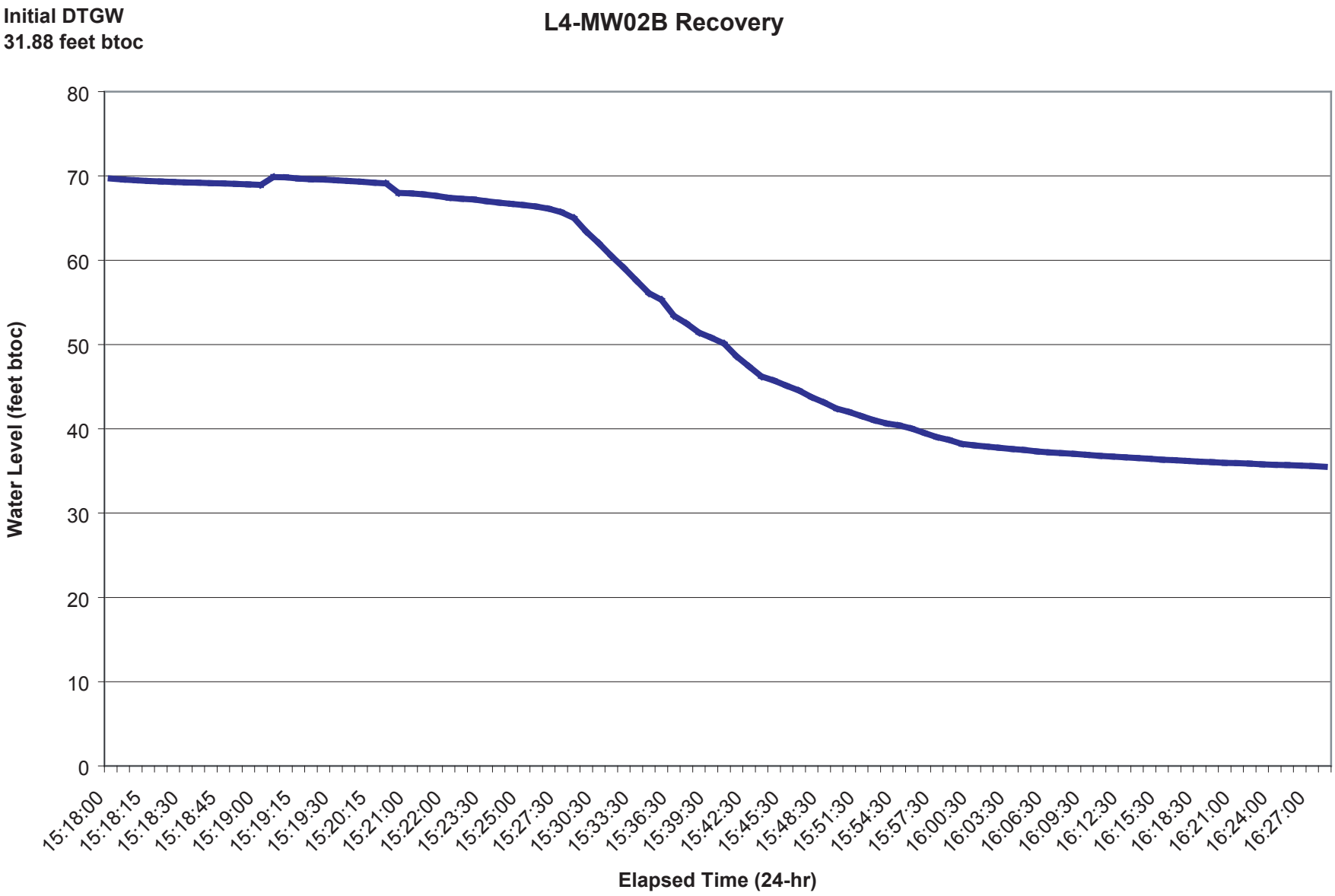
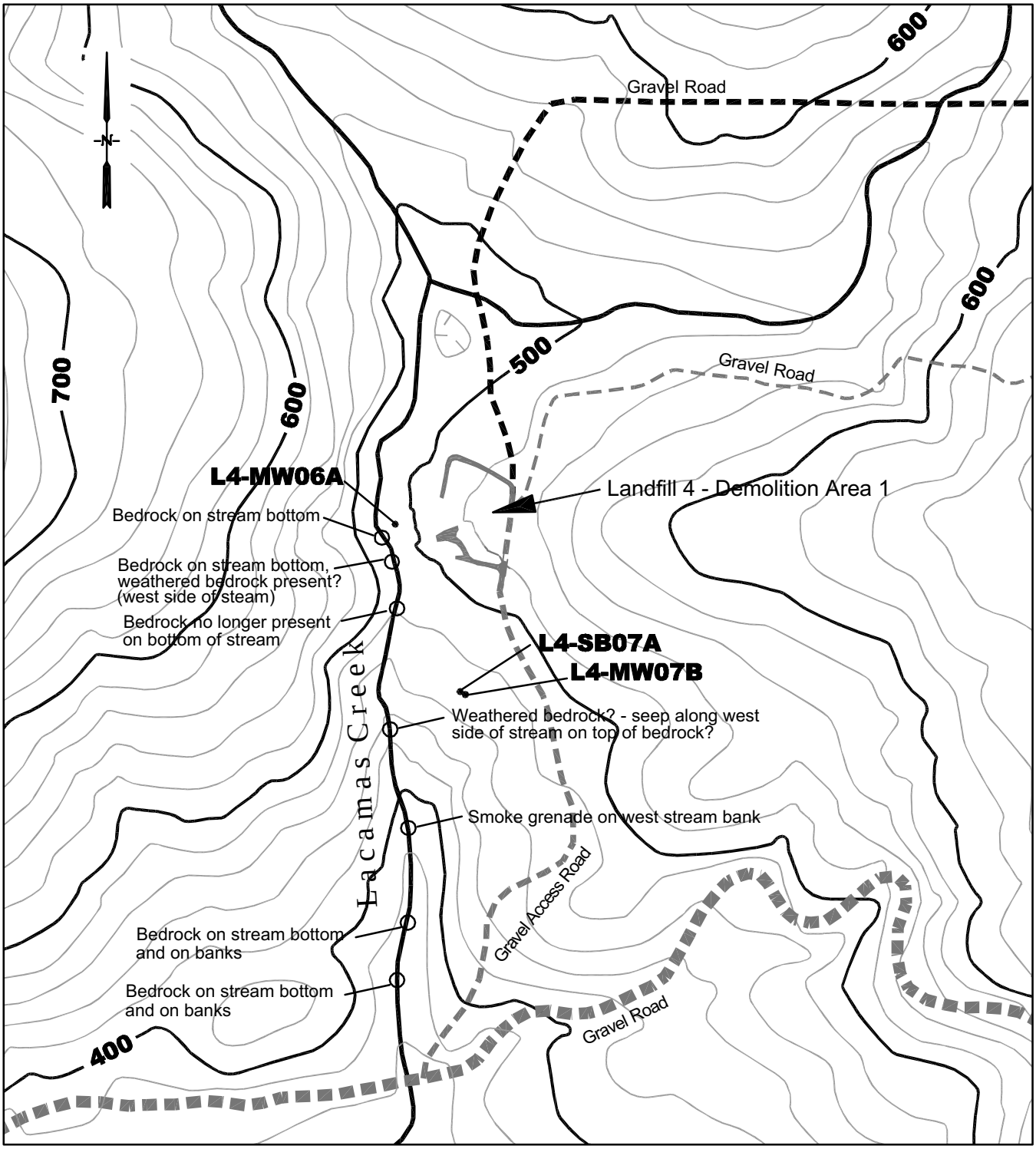


Figure 5-13
Recovery Portion 1, L4-MW02B Yield Test



FILENAME: Q:\Geo\COE\Camp Bonneville\Landfill 4\CB-178 LF4 Lacamas Creek well id.dwg
EDIT DATE: 01/15/03 AT: 14:07

Job No. 33752889

Figure 5-14
Geologic Field Reconaissance Lacamas Creek Area
and Location of Wells L4-MW06A, L4-MW07B, and Soil Boring L4-SB07A

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6.0 CONCEPTUAL SITE MODEL

A CSM is a schematic representation of potential pathways by which human or ecological receptors species may be exposed to chemicals at, or released from, a source. The purposes of the CSM for the Landfill 4 ESI are to identify exposure pathways that may result in adverse effects to human health or other ecological receptors, aid in identifying data gaps, and aid in identifying effective cleanup measures targeted at contaminant sources and exposure pathways, if necessary.

An exposure pathway describes a specific environmental pathway by which chemicals may be transported to human or other ecological receptors. A complete exposure pathway requires each of the following five elements:

- Source of contaminants
- Mechanism of contaminant release
- Environmental retention or transport medium (e.g., surface water, groundwater, or air)
- A point of potential human or ecological contact with the medium
- A means of contaminant entry into the body of the receptor (e.g., ingestion, inhalation, or dermal) at the contact point

If one of these elements is absent, the pathway is incomplete and exposure cannot occur. Incomplete pathways, as well as negligible pathways that would not contribute to overall risk, are not expected to result in adverse effects to human health or the environment.

6.1 POTENTIAL RELEASE AND TRANSPORT MECHANISMS

The sources of COPCs are the materials disposed of in Landfill 4 and potential explosives and/or propellants in the soil and subsurface water from historic and contemporary use of the area for OB/OD activities. Contaminants from these potential sources may enter groundwater and surface water. Contamination of surface and subsurface soil may also occur.

The main chemical release mechanisms for COPCs to the environment include:

- Leaching to subsurface soil
- Infiltration to groundwater
- Stormwater or groundwater to surface water

Landfill 4 is underlain by approximately 45 to 65 feet of alluvial soils. These soils generally consist of a light to medium-brown or reddish brown silty clay to clayey silt. This soil typically exhibits little evidence of alteration (i.e., weathering to form different minerals) and fine to medium-grained sand is occasionally present. Unweathered gravel is intermittently present in this soil. The alluvial soils are very similar, with only subtle differences, such as the relative percentages of sand, silt, and clay.

Below the alluvial soil is an approximately 15- to 30-foot-thick section of weathered bedrock. The underlying, competent bedrock was field-identified as a porphyrtic andesite. Bedrock cores show the andesite is largely unweathered and very hard with an fracture density of less than 1

fracture per linear foot. Vesicles observed in the rock cores generally contained crystalline carbonate infilling. The majority of fractures were perpendicular to the core and usually not more than 10 degrees from horizontal.

Fractures in the samples were filled with either zeolite mineralization or calcite. Smaller microfractures were typically filled with calcite. The largest fracture (approximately 2.5 millimeters wide) was filled with zeolites. Both filled vesicles and unfilled vesicles are present. Zeolites are the primary vesicle filling. No connection among vesicles was observed. The presence of volcanic glass groundmass can be viewed as further evidence of the lack of intense weathering and groundwater flow in these rocks. The thin section sample from the weathered bedrock consists of disaggregated rock fragments, which were relatively unweathered. The rock fragments exhibit evidence of hydrothermal alteration unrelated to the current groundwater environment at Landfill 4 as the hydrothermal alteration occurred in the distant past, prior to the presence of Landfill 4.

During this investigation, groundwater at Landfill 4 has been observed at approximately 16 feet to 28 feet bgs in the alluvial monitoring wells and approximately 13 feet to 31 feet bgs in the weathered bedrock monitoring wells. The depth to groundwater fluctuates seasonally as much as approximately 3 feet, with a rising water table in the late fall through spring during the rainy season, and a declining water table occurs throughout the summer. Based on groundwater measurements collected during this investigation, groundwater flow in the alluvium appears to flow radially from Landfill 4 to the west, southwest, and northwest, which is consistent with the observed topography in the area of Landfill 4. Groundwater flow in the weathered bedrock also has a local southwest component. However, the direction of groundwater flow in the weathered bedrock on a regional scale is unknown.

As mentioned in Section 3.0, drinking water in the vicinity of Camp Bonneville is primarily obtained from the Troutdale formation with fewer regional wells in the underlying volcanic bedrock at depths ranging from approximately 150 to 500 feet bgs. The Troutdale formation is not present in the eastern portion of Camp Bonneville and groundwater in the weathered bedrock was typically encountered at approximately 25 to 30 feet bgs. The physical characteristics of the underlying competent bedrock, such as the few fractures that are typically filled with zeolites or calcite, absence of connection between vesicles, and the volcanic glass groundmass, suggest that vertical downward migration of contaminants detected at Landfill 4 to regional wells in bedrock at depths of 150 to 500 feet is unlikely. Furthermore, dissolved contaminants in the weathered bedrock would not migrate to the Troutdale formation since the Troutdale formation is not present in the eastern portion of Camp Bonneville.

During the previous Landfill 4 investigation (Shannon & Wilson 1999b), subsurface soil samples collected from soil borings contained low concentrations of VOCs, one SVOC, and several metals. All of the detected constituents were below screening criteria except for barium, copper, and chromium, which also exceeded background values. Hydrocarbons, nitroaromatic and nitramine explosives, and PETN were not detected in the soil samples. During the same investigation, RDX and HMX were detected in monitoring well L4-MW02A in concentrations exceeding screening criteria. Several metals and three VOCs were also detected in the groundwater samples, although at concentrations below the screening criteria.

Groundwater sampling conducted as part of this investigation revealed that explosives and propellants were detected in all of the monitoring wells, except well L4-MW01B. Percholate

was detected in one round of sampling in wells L4-MW01A and L4-MW07B. Explosives and propellants detected included 2,4-DNT, RDX, and perchlorate ion. These constituents were detected in concentrations exceeding screening criteria in the initial four rounds of groundwater sampling and in the final sampling of L4-MW02B. Volatile organic compounds, most notably dichlorofluoromethane; 1,1,1-trichloroethane; 1,1-dichloroethene; and tetrachloroethene, were detected in monitoring well L4-MW02B in concentrations exceeding screening criteria. In general, monitoring well L4-MW02B contained the greatest number and highest concentration of detected analytes.

6.2 POTENTIAL HUMAN RECEPTORS

For this initial CSM, potential human receptors include current and future on-site workers, future users of the site for recreation, current and future off-site residents, and trespassers. Also included in the CSM are future on-site workers assumed to have unrestricted access to subsurface soil potentially impacted by contaminants released during remedial excavation activities. Exposure to contaminated soil and/or surface water to trespassers is considered to be negligible or incomplete because of the limited amount of time (and exposure) they would be on-site. Figure 6-1 identifies three types of human exposure scenarios:

- Potentially complete pathways
- Potentially complete but negligible pathways
- Incomplete pathways

The CSM includes potential release exposure mechanisms from domestic and commercial groundwater use (i.e., irrigation) and discharge into surface water on-site and off-site. Commercial and domestic use of contaminated groundwater by current and future on-site and off-site receptors is considered an incomplete exposure pathway because on-site groundwater is obtained from one of three drinking water wells, which have been drilled to depths of 364 feet bgs (Camp Bonneville well), 516 feet bgs (Camp Killpack well), and 105 feet bgs (FBI well). These wells have not contained detectable contaminants and are drilled and installed in a different and much deeper formation than the wells at Landfill 4.

The air exposure pathway (i.e., inhalation) is considered to be negligible to potential human receptors except for current and future on-site workers who may be exposed during remedial excavation or other earth-moving activities at Landfill 4. Potentially complete exposure pathways for direct contact of contaminants in soil through ingestion or dermal contact are limited to current and future on-site workers and future on-site recreational users exposed to excavated soil as part of earthwork related to possible remediation activities. However, this would be a short-term exposure. Because surface soil or subsurface soil data beneath the landfill has not been fully characterized, it is premature to eliminate this as a potential pathway.

The land uses surrounding Camp Bonneville are predominantly agriculture (livestock, grazing, orchards, farming), rural residential, and forest, with evidence of gradual encroachment of residential development from the Vancouver metropolitan area, 12 miles west of the installation. The population in the area near Camp Bonneville has increased in the past few years because of the development of eastern Clark County. The nearest community developments are the unincorporated town of Proebstel, about two miles west of Camp Bonneville, and the cities of

Camas and Washougal, approximately six miles to the south. The northeastern boundary of Camp Bonneville borders on forest land managed by the Washington Department of Natural Resources. The Livingston Quarry gravel mining operation is adjacent to the south boundary of the installation.

Potable water for surrounding residences is supplied by wells, typically from depths of approximately 150 to 500 feet bgs. According to the study by Mundorf (1964), groundwater for off-site residents is obtained primarily from the Troutdale aquifer with fewer wells in the underlying bedrock. As shown in Figure 3-4, Landfill 4 is underlain by Tertiary volcanics, including andesitic lava flows, pyroclastics, tuff, and volcaniclastic sandstone. The Troutdale formation underlies the area approximately 2 miles west and southwest of Landfill 4, but does not underlie the landfill itself.

Thin-section analysis of the bedrock revealed few fractures. The fractures were filled with zeolites and microcystalline secondary minerals such as calcite. Open fractures likely to transmit groundwater were not observed. In addition, the groundmass observed in the thin sections typically lacked fracturing or alteration further suggesting a lack of a significant groundwater flow pathway through the bedrock.

To date, groundwater in the alluvium beneath Camp Bonneville has not been considered a viable and potable drinking water source as defined in WAC 173-340-720. Because of the shallow aquifer characteristics, lithologic characteristics, calculated hydraulic conductivity, and low rate of groundwater recharge experienced during well development and sampling, it will likely not be considered as a viable aquifer in the future. Transmissivity in the alluvium is likely not sufficient to provide greater than 0.5 gallons per minute on a sustainable basis to a well constructed according to WAC 173-160 requirements. Definitive information on groundwater yield in the alluvium would be needed to evaluate whether a minimum of 0.5 gallons per minute could be sustained. In addition, sustainable output of groundwater from the alluvial soils is limited by formation thickness, and the output will vary significantly depending on the season of the year and amount of precipitation. Use of groundwater from the alluvium as a drinking water source is considered an incomplete pathway under current and future use scenarios.

A yield test was conducted in the weathered bedrock of well L4-MW02B to evaluate the weathered bedrock's potential as a viable drinking water source (in terms of sustained yield, not water quality). The maximum sustainable pumping rate was approximately 0.8 gallons per minute. Although this slightly exceeds the minimum sustainable output of 0.5 gallon per minute criterion for a potable drinking water sources (WAC 173 340-720), a recharge test in the weathered bedrock indicated approximately 60 minutes are required for groundwater to return to 90 percent of the original water level. In addition, slug tests conducted in the weathered bedrock yielded a hydraulic conductivity of approximately 1×10^{-4} to 1×10^{-5} cm/sec. These characteristics suggest a formation incapable of maintaining a consistent quantity of water. Therefore, ingestion of contaminated groundwater is considered an incomplete exposure pathway for potential human receptors, including trespassers. The inhalation and dermal exposure pathways are also considered incomplete.

In two studies conducted by Hart Crowser (1999 and 2000), surface water samples were collected in Lacamas Creek upstream and downstream of Landfill 4 during low flow conditions, including one sample collected near the southwestern border of the property, where Lacamas Creek exits the site. All of the analytes were either not detected or were detected in

concentrations below screening criteria, including total and dissolved metals. Explosive compounds, including RDX, HMX, PETN, and picric acid, were not detected in the samples. However, the surface water samples were not analyzed for nitroguanidine, nitroglycerin, or percholate ion. In addition, the relatively low octanol-water partition coefficients (K_{OW}) of many of the organic COPCs would largely preclude them from accumulating in significant concentrations to organic matter that may be present in Lacamas Creek.

Surface water ingestion by livestock or root uptake of homegrown produce is considered potentially complete for current and future off-site residents. However, similar exposure pathways for the remaining potential human receptors is considered incomplete. Direct contact of surface water is considered a potentially complete exposure pathway for human receptors except for trespassers. However, dermal exposure is considered a potentially complete but negligible exposure pathway as contaminants have not been detected in the surface water of Lacamas Creek to date and contaminants that may enter Lacamas Creek would be greatly reduced by the volume of water in the stream.

To assess if the portion of Lacamas Creek near Landfill 4 is a losing or gaining reach, two hand auger borings were drilled adjacent to the creek topographically below the landfill. Groundwater was not present in either of the hand auger borings during the July 2001 and April 2002 groundwater sampling events. However, groundwater was present during the October 2001 and January 2002 groundwater sampling events. This suggests that in the dry period of the year, groundwater from the alluvium beneath the landfill is not in hydraulic communication with Lacamas Creek, and the area of the creek next to the landfill is a losing reach. During the wet period of the year, however, groundwater from the alluvium may be in hydraulic communication with Lacamas Creek. However, groundwater entering Lacamas Creek would be mixed with surface water in the stream coming from upgradient of Landfill 4.

The ingestion pathway for the consumption of fish affected by site contaminants is considered potentially complete but negligible. The identified COPCs at Landfill 4 are primarily explosives, propellants, and VOCs. These organic chemical compounds generally have low K_{OW} values, indicating that they are unlikely to partition substantially from surface water into fish. Risks to humans from ingestion of fish are based on the chemical concentrations in the ingested fish tissue, not the surface water or groundwater contaminant concentrations. In addition, the concentrations detected in the groundwater are significantly below the concentrations demonstrated to have adverse health effects on aquatic life as listed in the EPA Aquatic Toxicity Information Retrieval (AQUIRE) database.

6.3 POTENTIAL ECOLOGICAL RECEPTORS

Camp Bonneville is a heavily wooded area and the dominant tree species are Douglas fir, western red cedar, western hemlock, and red alder. Depending primarily on moisture gradients, the understory is composed of salal, Oregon grape, vine maple, and sword fern (Larson 1980). Several species of small mammals and birds reside on the site including rock doves, cottontail rabbits, ground squirrels, mice, and shrews. Large mammals such as bears and cougars are also present at Camp Bonneville. There are several special-status species present at or near Camp Bonneville (USACE 1999). Special status species confirmed at or near Camp Bonneville include:

- Plants
  - Hairy-stemmed checker-mallow (state endangered species)
  - Small-flowered trillium (state sensitive species)
- Amphibians
  - Northern red-legged frog (federal species of concern)
- Birds
  - Vaux's swift (state candidate species)
  - Pileated woodpecker (state candidate species)
- Mammals
  - Brush Prairie (Northern) pocket gopher (state candidate species)
- Fish
  - Coastal Cutthroat Trout (species of concern)

Potential ecological receptors evaluated include:

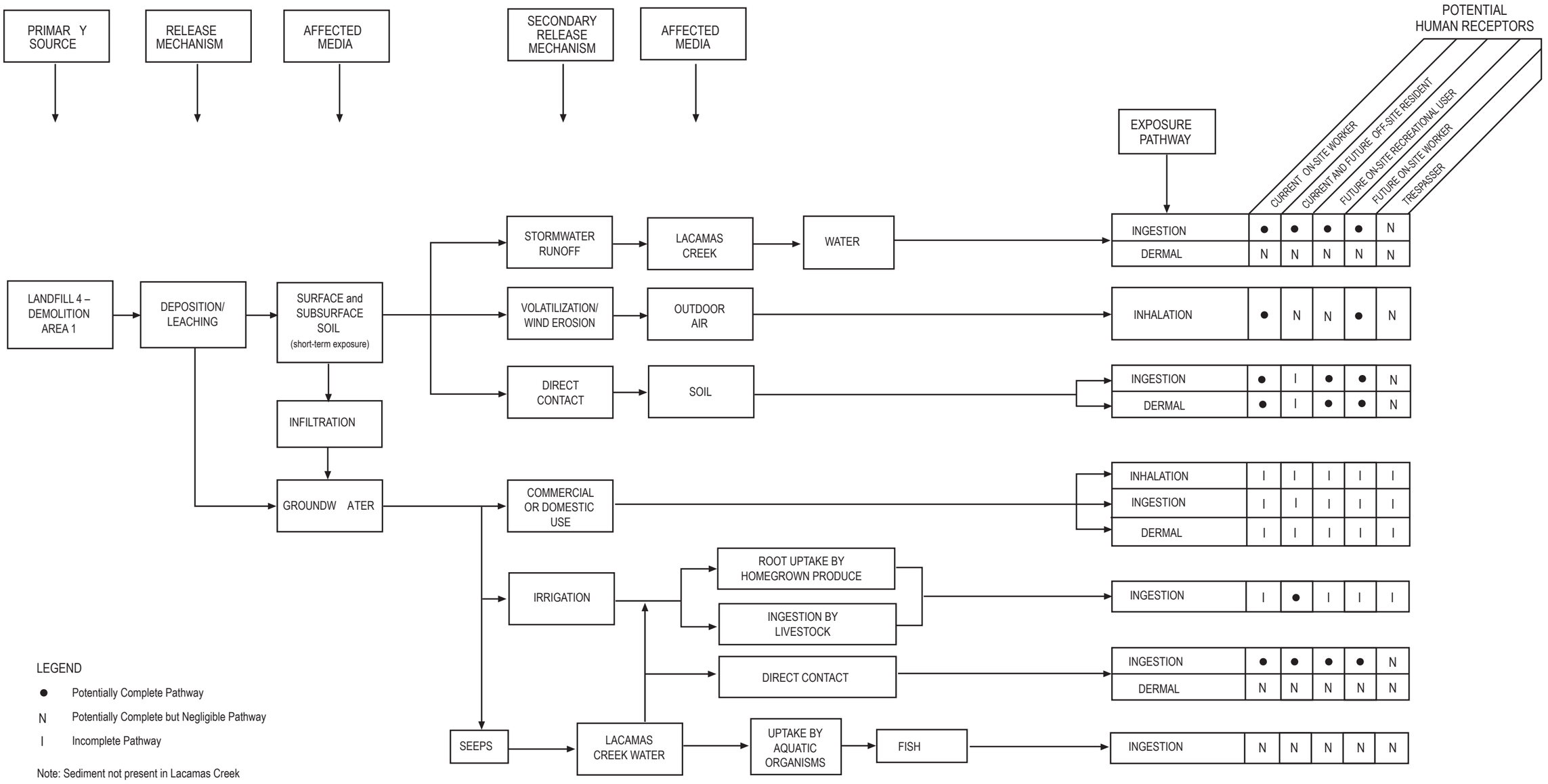
- Burrowing and nonburrowing terrestrial animals
- Terrestrial plants
- Aquatic plants and animals (including fish)
- Waterfowl
- Benthic invertebrates

Potential ecological receptors on-site include terrestrial animals that may be exposed to COPCs in undisturbed surface soil and surface water (Figure 6-2). Because of the limited amount of data available to date it is premature to eliminate the surface water pathway. Terrestrial animals and plants, benthic invertebrates, aquatic plants, waterfowl, and fish could be exposed to COPCs in surface water. A hypothetical future remedial excavation scenario in which subsurface soil is exposed and brought to the surface was also included in the exposure pathway model to account for possible future use of the site. In this scenario, terrestrial animals and plants are assumed to have direct exposure to subsurface soil on site, and terrestrial animals and waterfowl are assumed to have inhalation exposure to airborne particulates from subsurface soil, although this would be a short-term exposure. This potential pathway was included because of the incomplete characterization of surface and subsurface soil beneath Landfill 4.

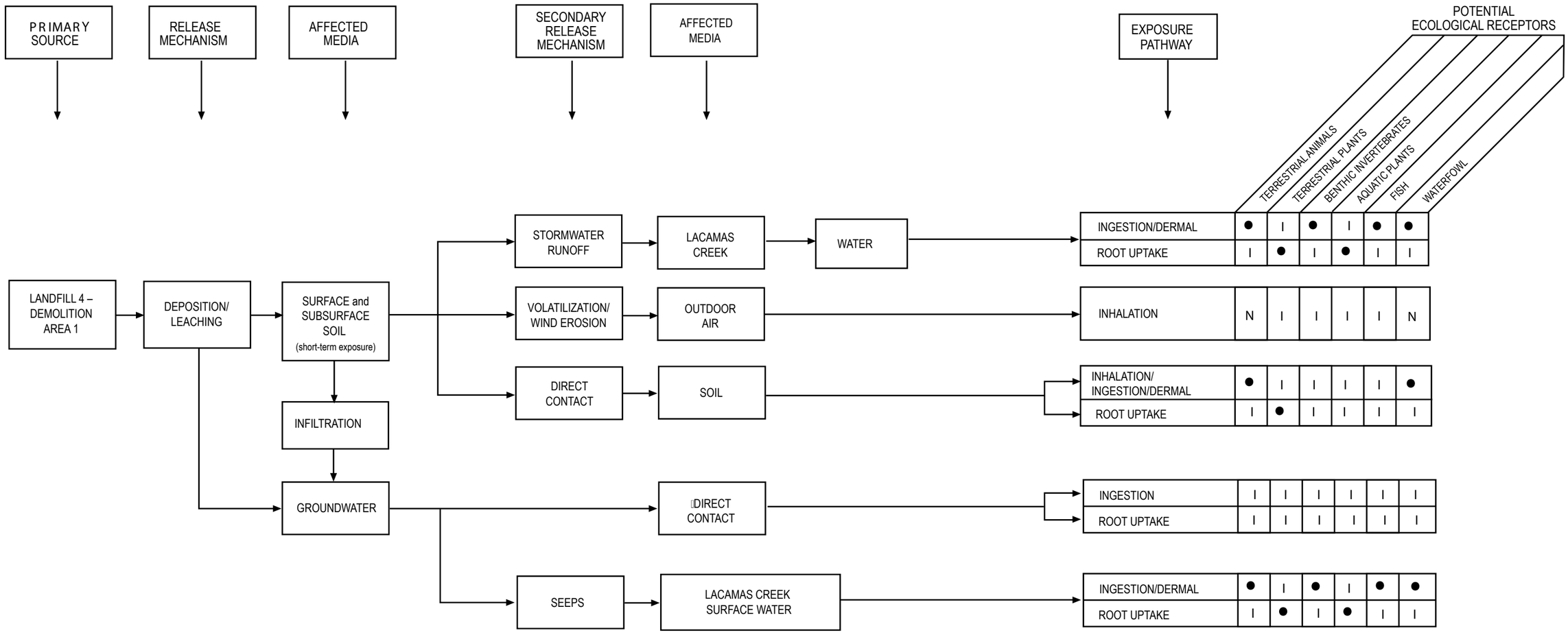
Potential off-site exposure would involve direct exposure to groundwater and/or surface water by animals and waterfowl and root uptake of groundwater COPCs by terrestrial plants. Aquatic plants, terrestrial animals, benthic invertebrates, fish, and waterfowl might be exposed to COPCs in surface water off site. However, groundwater is too deep to allow direct exposure either by burrowing animals or plant roots. The subsurface soils that may be the source of groundwater contaminants could also be too deep for plant roots or burrowing animals to be directly exposed to soil contaminants.

The COPCs at the site do not appreciably bioaccumulate in terrestrial or aquatic biota. They also have little potential to biomagnify through a food web via consumption of contaminated prey. For these reasons, exposure of ecological receptors not directly in contact with environmental media at the site to site chemicals via trophic transfer processes is considered an insignificant exposure pathway, and does not require evaluation.

Because there are currently no listed threatened or endangered animal species known to be present at Camp Bonneville, Lacamas Creek would not be considered a critical habitat. If in the future an animal species becomes listed as threatened or endangered (i.e., coastal cutthroat trout), Lacamas Creek may be considered a critical habitat. A dam is present on Lacamas Creek at the head of Lacamas Lake approximately 12 miles downstream of Landfill 4. This dam was reportedly constructed in the distant past to create a holding pond for logs. This dam does not have a means to permit fish to travel further upstream (i.e., fish ladder) in Lacamas Creek. Therefore, Lacamas Creek is not accessible to other potentially threatened or endangered species (i.e., chinook salmon) from other waterways (i.e., Columbia River).



Camp Bonneville	Project No. 33752889	Conceptual Site Model Potential Human Exposure Pathways	Figure 6-1



LEGEND

- ● Potentially Complete Pathway
- N Potentially Complete but Negligible Pathway
- I Incomplete Pathway

Note: Sediment not present in Lacamas Creek

Camp Bonneville	Project No. 33752889	Conceptual Site Model Potential Ecological Exposure Pathways	Figure 6-2

7.0 CONCLUSIONS

This ESI has been conducted at Landfill 4 in response to the discovery of RDX above regulatory screening criteria in one of two monitoring wells installed as part of a multi-sites investigation. The overall objective of the ESI was to evaluate the potential impacts to groundwater resulting from historic landfill disposal practices and OB/OD activities.

The conclusions regarding the geology of Landfill 4 are discussed below and are followed by conclusions from the groundwater sampling and analysis, and conclusions regarding the CSM.

7.1 GEOLOGY

Based on the results of the ESI, the following conclusions can be drawn regarding the geology at Landfill 4:

- Landfill 4 is underlain by approximately 45 to 65 feet of alluvial soils. A 15- to 30-foot-thick section of weathered bedrock underlies the alluvial soil. The weathered bedrock is underlain by a hard, competent, relatively unweathered phaneritic andesite, with an observed fracture density of less than 1 fracture per linear foot.
- A hydraulic conductivity ranging from approximately 1.6×10^{-6} cm/sec to 3.5×10^{-5} cm/sec was estimated for the alluvial soils based on the recharge test in wells L4-MW01A and L4-MW05A. Data obtained from slug tests resulted in hydraulic conductivities ranging from 6.7×10^{-4} cm/sec to 2.7×10^{-3} cm/sec in the overburden wells. Based on the slug test data, groundwater velocity in the alluvial soils in the vicinity of Landfill 4 is estimated to range from approximately 200 feet/year to 825 feet/year. On a more regional scale toward the Lacamas Creek Valley to the west, the topographic gradient becomes gentler. The groundwater velocity in this area is likely to be lower than that estimated at Landfill 4. The hydraulic conductivities derived from the slug tests performed on the overburden wells appear to correlate roughly with published values of similar material (1×10^{-6} to 1×10^{-4} cm/sec). However, since the mean hydraulic conductivity derived from the slug tests in the alluvial soil was approximately 1×10^{-3} cm/sec, the resulting groundwater velocities estimated for the alluvial soils are somewhat high for the conditions at Landfill 4 compared to velocities that would be estimated based on published hydraulic conductivity values.
- Hydraulic conductivities derived from the slug tests in the weathered bedrock ranged from approximately 3.0×10^{-5} cm/sec to 2.8×10^{-3} cm/sec (discounting the hydraulic conductivity derived from the Bouwer and Rice method). Groundwater velocity in the weathered bedrock is estimated to range from approximately 10 feet/year to 150 feet/year. Groundwater velocities are likely to decrease to the west (regionally) where the topographic gradient becomes gentler.
- Groundwater in the alluvium flows radially towards the west, northwest, and southwest. Groundwater in the weathered bedrock has a local flow component towards the southwest. It is the opinion of Ecology that groundwater in the vicinity of L4-MW02A flows to the east. However, the regional groundwater flow direction within the weathered bedrock is unknown.
- The mean horizontal hydraulic gradient within the alluvium was calculated to be approximately 0.12 foot/foot while the mean horizontal hydraulic gradient in the weathered

bedrock was calculated to be approximately 0.16 foot/foot. Mean vertical hydraulic gradients were calculated to be approximately –0.04, 0.17, and 0.06, with the only upward vertical gradient calculated for well pair L4-MW1A/B. These hydraulic gradient values indicate that although there appears to be vertical groundwater flow, the horizontal flow is generally more predominant.

- Shallow groundwater in the area of the site historically has not been considered a viable and potable drinking water source as defined in WAC 173-340-720 (capable of sustaining a minimum pumping rate of 0.5 gal/min), and, due to the shallow aquifer characteristics and low rate of groundwater recharge, will likely not be considered as such in the future. Transmissivity of the alluvium may not be sufficient to provide greater than 0.5 gallon per minute on a sustainable basis to a well constructed according to WAC 173-160 requirements. In addition, sustainable output of groundwater from the alluvium and weathered bedrock is reduced by the generally limited aquifer thickness, and the output will vary significantly depending on the season of the year and amount of precipitation.
- Based on the results from the yield test conducted at well L4-MW02B, the maximum sustainable pumping rate in the weathered bedrock is approximately 0.8 gpm.

7.2 GROUNDWATER SAMPLING AND ANALYSIS

The following conclusions can be drawn regarding all of the rounds of groundwater sampling and analysis at Landfill 4:

- Except for upgradient wells L4-MW01A and L4-MW01B, and L4-MW07B, a variety of explosives and propellants were detected in all of the groundwater sampling events. However, percholate was detected in L4-MW01A and L4-MW07B in one round of sampling. The most commonly detected compounds were HMX, RDX, and perchlorate.
- Explosives and propellants that exceeded screening criteria were consistently detected in L4-MW02A, L4-MW02B, L4-MW03A, L4-MW03B, L4-MW04A, and L4-MW05A.
- VOCs 1,1,1-trichloroethane, 1,1-dichlorothene, dichlorodifluoromethane, and to a lesser extent tetrachloroethene, were routinely detected in L4-MW02B in concentrations exceeding screening criteria. Other detected VOCs were below screening criteria.
- Total metals that exceeded screening criteria in at least one sampling round in all wells, except upgradient wells L4-MW01A and L4-MW01B, and L4-MW02A, included arsenic, copper, iron, and lead.
- The most contaminants and the highest concentrations of contaminants were found consistently in monitoring well L4-MW02B.
- The concentrations of explosives and propellants in the groundwater appear to be unrelated to the concentration of suspended solids.
- The lateral extent of COPCs in the alluvial and weathered bedrock groundwater does not appear to be fully characterized.

7.3 CONCEPTUAL SITE MODEL

The conclusions for the preliminary CSM developed for Landfill 4 includes the following:

- The principal chemical release mechanisms to the environment for COPCs at Landfill 4 include leaching to subsurface soil, infiltration to groundwater, and flow of stormwater or groundwater to surface water.
- Commercial and domestic use of contaminated groundwater by current and future on-site and off-site receptors is considered an incomplete exposure pathway because on-site groundwater is obtained from drinking water wells drilled to 364 feet bgs, 516 feet bgs, and 105 feet bgs. These wells have not had detectable concentrations of contaminants and considering the characteristics of the competent bedrock at Landfill 4, it is unlikely that contaminants would reach these depths or travel in groundwater through the unweathered bedrock any appreciable distance.
- The air exposure pathway is considered to be negligible for potential human receptors except for workers who may be exposed during excavation or earth-moving activities at Landfill 4.
- The low octanol-water partition coefficients of the organic COPCs would preclude them from accumulating in significant concentrations to organic matter that may be present in Lacamas Creek.
- Direct contact of surface water is considered a potentially complete exposure pathway for human receptors.
- The COPCs at the site do not appreciably bioaccumulate in terrestrial or aquatic biota. They also have little potential to biomagnify through a food web via consumption of contaminated prey.
- Lacamas Creek is not considered a critical habitat because there are no known listed threatened or endangered animal species at Camp Bonneville and because the dam located downstream of Landfill 4 precludes use of Lacamas Creek at Camp Bonneville by currently listed species.

8.0 RECOMMENDATIONS

Based on the data obtained from this ESI, recommendations for Landfill 4 include:

- Obtain data that would aid in a more thorough understanding of the lateral extent of dissolved contaminants in the alluvial and weathered bedrock. This may include installing a weathered bedrock well at L4-MW04A. A weathered bedrock well at this location would provide data to help refine local groundwater flow directions in the weathered bedrock. However, other potential well locations are greatly complicated by the very limited access available beyond the confines of Landfill 4. Other potential well locations will need to consider this difficulty. Suggested well locations should be viewed in the field by all parties, including regulatory agency representatives.

- Collect groundwater samples from the hand auger boring HA-2. The original objective of hand auger borings HA-1 and HA-2 was to evaluate potential gravel soil layers identified in by Shannon & Wilson (1999b) cropping out on the hillside west of Landfill 4. However, PVC piping was installed in HA-1 and HA-2 to evaluate if groundwater was present during different times of the year. Groundwater was observed during the October 2001 and January 2002 sampling events. Groundwater present in HA-1 and/or HA-2 should be sampled and analyzed for COPCs. The objective of this sampling would be to determine if COPCs are entering Lacamas Creek adjacent to the hand auger boring locations.

- Continue groundwater sampling and monitoring of all of the existing wells. Data from such sampling would be useful in identifying potential trends of contaminant concentrations before and after possible landfill remediation. It should be noted that although contaminants were detected in well L4-MW07B, only one round of data exist for that well. Additional sampling at different times of the year may yield different analytical results. If continued groundwater monitoring is to be performed, a reduced sampling frequency and/or analyte list may be warranted.

- Remove the source of the contaminants. Removal of Landfill 4 has been suggested as a means of removing the source of the contaminants detected in groundwater to date. Continued groundwater monitoring following removal of the landfill will be useful to identify potential changes in concentration of contaminants. The Conceptual Site Model will also require revision if the landfill is removed. If landfill removal is to be undertaken, a simplified groundwater and surface water monitoring strategy may be considered.

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Appendix A
Deviations from the Management Plan

UXO Avoidance

The Management Plan specified completing UXO avoidance at each soil boring location with a hand-auger in two foot increments to a depth of 6 feet bgs using a MK 26 Mod 0 Ordnance Locator. UXO avoidance was completed at three soil boring locations using a backhoe and a down-hole magnetometer to a depth of 8-10 feet bgs. Soil was removed in 2-foot lifts and the entire excavated area was evaluated by UXO avoidance specialists before proceeding to the next lift. UXO avoidance was insufficient to complete the road building to gain access to the drilling location for L4-MW07B. As a result, UXO clearance activities were necessary, which delayed fieldwork by approximately three months.

Deep Soil Borings

The Management Plan specified that during air rotary drilling the main 10-inch casing would be advanced at least three feet into the weathered bedrock zone and filled with bentonite grout and capped at the casing yoke. This would seal off the shallow water-bearing zone prior to drilling into the weathered bedrock zone. During drilling, a distinct and well-defined shallow water-bearing zone was not encountered. URS and USACE field personnel concurred that a seal should be placed at the bottom of the 10-inch casing prior to advancing the 7-inch casing further into the weathered bedrock.

Well Construction

The Management Plan specified that 32/40 silica sand would be placed to extend the filter pack to 3-feet above the top of the screen. URS and USACE field personnel concurred that 20/40 silica sand was more appropriate considering the lithology encountered during drilling.

Annular Seal

The Management Plan specified that bentonite/cement grout would be tremied into the annular seal to 2 feet bgs. The shallow monitor wells were instead completed with bentonite chips to 2 feet bgs.

Well Development

The Management Plan specified that groundwater would be evacuated from each well using a pump after first removing fine-grained material with a dedicated bailer. Based on the amount of fine-grained material in the surrounding formations, it was concluded by URS and USACE field personnel that a pump would likely not be usable for development of some of the wells, particularly the shallow wells. After a conference call on June 25, 2001 between the USACE, URS, Ecology, and the Ft. Lewis BEC that discussed options for developing the wells, it was decided that the shallow would be developed by extensive bailing and surging when possible and that the deeper wells would be developed by a combination of bailing, surging, and pumping (when possible). In addition, to evaluate the recharge rate of the shallow wells, a semi-quantitative recharge test was performed in L4-MW01A and L4-MW05A.

Low-Flow Groundwater Sampling

Although low-flow purging of all the wells was planned for groundwater sampling, this procedure was not strictly adhered to because of several poorly producing wells (particularly the shallow wells). The poor recharge rate of these shallow wells precluded continuous pumping to purge the wells, even at slow pumping rates. In addition, some of the wells where pumping was used as the purging method prior to sampling did not maintain a consistent head despite low-flow pumping. Therefore, these wells may have had appreciable amounts of stagnant water in the water column that was sampled.

Evaluation of Potential Seeps on Hillside West of Landfill 4

To evaluate the potential groundwater to surface water exposure pathway, the Management Plan specified that vegetation would be removed and that the hillside would be examined for seeps. During field activities, it became apparent that a substantial soil layer was present beneath the vegetation. While no seeps were observed, it was concluded by URS and USACE onsite personnel that a more appropriate evaluation could be performed by drilling hand-augers borings. Two hand-auger borings were advanced to approximately 8 feet bgs on the locations shown on Figures 4-1.

Laboratory Monitoring Program

As specified in the Management Plan, part of the process to institute corrective actions as necessary and to provide defensible quality data, twice weekly teleconferences with the laboratory were planned. While initially these teleconferences were conducted, it became apparent after three weeks to all parties, that this frequency of teleconferences was unnecessary. After the first three weeks, the teleconferences were conducted on an as-needed basis; however, close communication with both laboratories was maintained.

Data Validation

Data validation was conducted from the analysis of explosives, propellants, VOCs, SVOCs, herbicides, and metals with emphasis on the most important target analytes. For the metals, the most important target analyte was barium. Although the scope of work specified data validation for barium only (for metals), validation was expanded to include all of the other metals with emphasis on arsenic, barium, mercury, and lead to ensure the quality and concentration of the spiked samples.

Appendix B

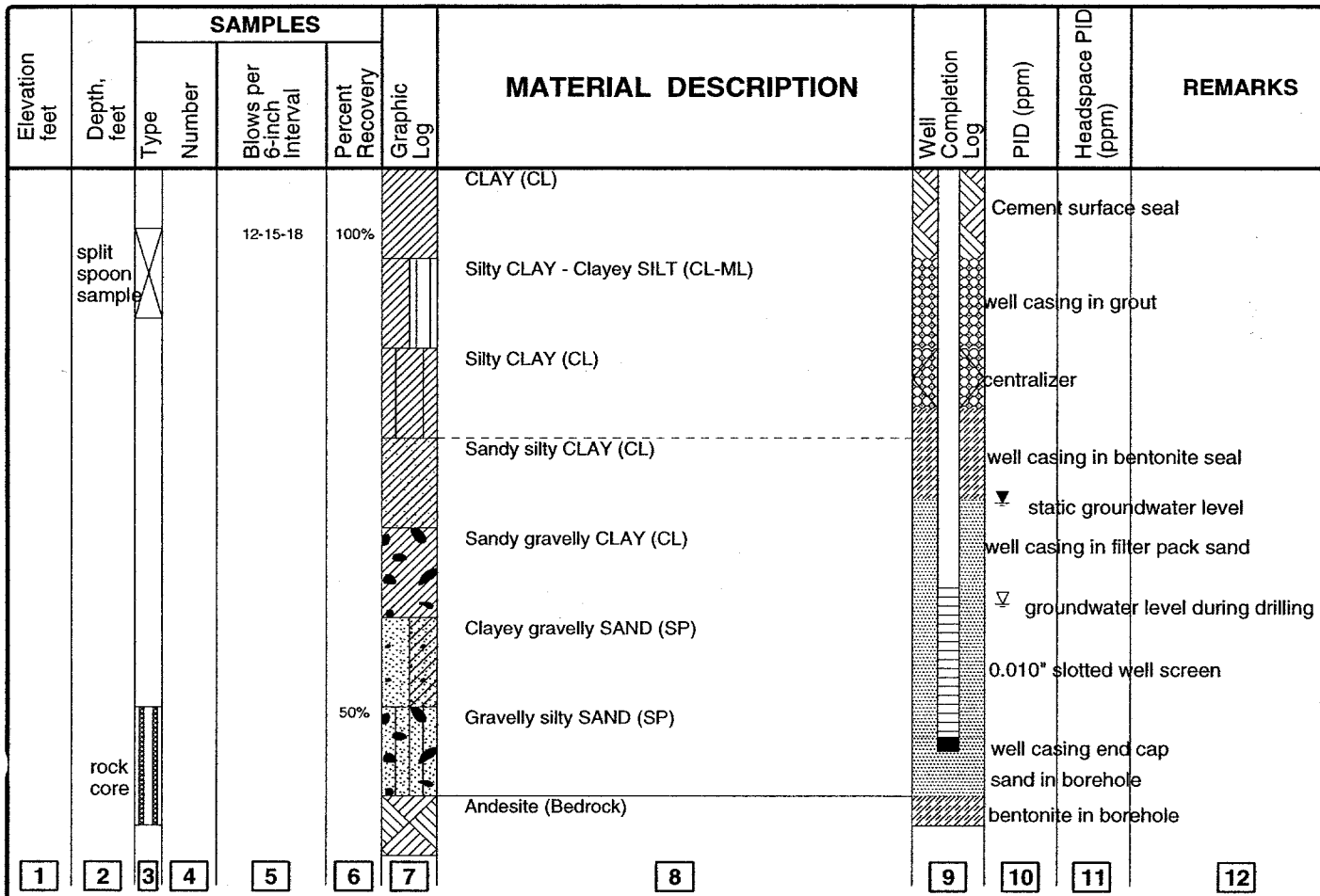
Boring Logs, Well Development Sheets, Groundwater Sampling Forms, and Chain of Custody Documentation

(Note: Shannon & Wilson boring logs L4-SB01 and L4-SB02 have been renamed L4-MW01A and L4-MW02A in the report text for labeling consistency with the wells drilled as part of this ESI.)

Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Key to Log of Borings

Sheet 1 of 1



COLUMN DESCRIPTIONS

1	**Elevation:**	Elevation (in feet) with respect to mean sea level or assumed datum.
2	**Depth:**	Vertical distance (in feet) below ground surface.
3	**Sample Type:**	Type of soil sample collected at depth interval depicted; symbols explained above.
4	**Sample Number:**	Sample identification number.
5	**Blows per 6 inches:**	Number of blows required to advance driven sampler each 6-inch drive interval.
6	**Percent Recovery:**	Percentage of sample recovered for given sample interval; blank if not recorded.
7	**Graphic Log:**	Graphic depiction of subsurface material encountered.
8	**Material Description:**	Description of subsurface material encountered, including USCS soil designation.
9	**Well Completion Log:**	Graphic depiction of well subsurface material.
10	**PID (ppm):**	Photoionization detector readings in parts per million (ppm) of standard gas.
11	**Headspace PID readings:**	PID readings taken of enclosed portion of soil sample at recorded depth.
12	**Remarks:**	Comments or observations pertinent to drilling/sampling.

GENERAL NOTES

1. Soil classifications are based on the Unified Soil Classification System (USCS) and include consistency/relative density (where standard blow count correlation is possible), moisture, and color. Field descriptions may have been modified to reflect results of laboratory tests.
2. Descriptions on these boring logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

Project: Landfill 4/Demolition Area 1
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Log of Boring L4-MW03A

Sheet 1 of 2

Date(s) Drilled	6/5/2001-	Logged By	J.Rapp	Checked By	S. Wolfe
Drilling Method	Hollow Stem Auger	Drilling Contractor	Cascade Drilling Inc.	Total Depth Drilled (FT BGS)	46.5
Drill Rig Type	CME-75	Sampler Type	18" Split Spoon	Surface Elevation	511.85 NGVD 29
Groundwater Level	28.50 feet bgs 6/5/01 1410	Drill Bit Size/Type	8.75" OD auger	Top of PVC Elevation	514.85 NGVD 29
Diameter of Hole (inches)	8.75	Diameter of Well (inches)	2	Type of Well Casing	Pre-packed V wire mesh	Screen Perforation	0.010"
Type of Sand Pack	20/40, 10/20 Silica	Type and Depth of Seal(s)	filter sand (38'-46' bgs); bentonite (2'-38' bgs); cement (0'-2')		
Comments	Monitoring well coordinates: Easting 1,154,413.64 Northing 141,287.41 (NAD 83 horizontal datum)				

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
510	0						Silty CLAY - Clayey SILT (CL-ML); moist; reddish-brown; low to medium plasticity					UXO avoidance to 8' bgs
	5						same as above					
505	10			7-7-7	100		same as above - increasing clay content		0	0	1150	
500	15			6-6-6	100		Silty CLAY (CL) - moist; light brown; soft; trace of sand		0	0	1156	
495	20			2-2-5	100		same as above - very soft		0	0	1206	
490	25			14-15-8	100		black-grey lenses of weathered sand		0	0	1227	
485	30											groundwater level 28.50' bgs (6/5/01 1410)

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW03A

Sheet 2 of 2

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
480	30			4-3-4	100		Clay (CL) - very moist; soft; light brown		0	0	1250	
475	35			5-5-5	100		same as above - very soft; highly weathered sand grains; white; black; yellow-orange		0	0	1300	
470	40			3-3-4	100		Sandy silty CLAY (CL) - wet; weathered sand grains; mottled pink-white-black		0	0	1310	groundwater encountered at approx. 43' bgs (6/5/01 1320)
465	45			11-30-42	100		same as above - wet; low plasticity; hard		0	0	1324	
							Boring terminated at approximately 46.5' bgs on 6/5/01 at 1330					
460	50											
455	55											
450	60											
445	65											
	70											

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW04A

Sheet 1 of 2

Date(s) Drilled	6/4/2001-	Logged By	J.Rapp	Checked By	S. Wolfe
Drilling Method	Hollow Stem Auger	Drilling Contractor	Cascade Drilling Inc.	Total Depth Drilled (FT BGS)	54.0
Drill Rig Type	CME-75	Sampler Type	18" Split Spoon	Surface Elevation	508.79 NGVD 29
Groundwater Level	35 feet bgs 6/5/01 0730	Drill Bit Size/Type	8.75" OD auger	Top of PVC Elevation	511.79 NGVD 29
Diameter of Hole (inches)	8.75 / Diameter of Well (inches) 2	Type of Well Casing	Pre-packed V wire mesh	Screen Perforation	0.010"
Type of Sand Pack	20/40, 10/20 Silica	Type and Depth of Seal(s)	bentonite (2'-30', 43'-54'); filter sand (30'-43'); cement (0'-2')		
Comments	Monitoring well coordinates: Easting 1,154,420.93 Northing 141,521.95 (NAD 83 horizontal datum)				

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
505	0						Silty CLAY - Clayey SILT (CL-ML); moist; reddish-brown; low to medium plasticity		0	0	0815	UXO avoidance to 8' using a backhoe
	5						same as above					
500	10						same as above - very soft clay		0	0	0820	
495	15						Silty CLAY (CL) - moist; light brown; soft; mottled grey-black					
490	20						same as above - weathered sand grains; mottled orange with black lenses		0	0	0830	Rig down for repairs 0900 - 1130
485	25	X		25-20-6	100		same as above - medium stiff; trace of yellow gravel		0	0	1155	
480	30											

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
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Log of Boring L4-MW04A

Sheet 2 of 2

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
	30			6-5-6	100		Sandy silty CLAY (CL) - very moist; highly weathered sand grains; yellow; red; black		0	0	1207	
				20-13-16	100				0	0	1220	
475												Depth to groundwater approx. 33' bgs on 6/4/01 1345
	35			6-6-7	100		same as above - highly weathered sand grains; white; black; yellow-orange; very soft		0	0	1228	
470												
	40			9-14-20	100		same as above - wet; weathered sand grains; mottled white-black		0	0	1300	Groundwater encountered at approx. 41' bgs on 6/4/01 1313
				14-30-33	100				0	0	1313	
465				14-56/6"	50				0	0		
	45			20-50/4"	25		weathered andesite fragments, hard		0	0		
460												
	50						same as above					
455												
	55						Boring terminated at approximately 54 feet bgs on 6/4/01 1500					
450												
	60											
445												
	65											
440												
	70											

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW05A

Sheet 1 of 2

Date(s) Drilled	6/6/2001-	Logged By	J.Rapp	Checked By	S. Wolfe
Drilling Method	Hollow Stem Auger	Drilling Contractor	Cascade Drilling Inc.	Total Depth Drilled (FT BGS)	36.5
Drill Rig Type	CME-75	Sampler Type	18" Split Spoon	Surface Elevation	506.91 NGVD 29
Groundwater Level	29.30 feet bgs 6/6/01 1130	Drill Bit Size/Type	8.75" OD auger	Top of PVC Elevation	509.91 NGVD 29
Diameter of Hole (inches)	8.75 / Diameter of Well (inches) 2	Type of Well Casing	Pre-packed V wire mesh	Screen Perforation	0.010"
Type of Sand Pack	20/40, 10/20 Silica	Type and Depth of Seal(s)	bentonite (2'-25', 34'-36' bgs); filter sand (25'-34' bgs); cement (0'-2')		
Comments	Monitoring well coordinates: Easting 1,154,337.25 Northing 141,243.45 (NAD 83 horizontal datum)				

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
505	0						Silty CLAY - Clayey SILT (CL-ML); moist; reddish-brown; low to medium plasticity		0	0	0940	UXO avoidance to 8' bgs
	5						same as above					
500												
	10			4-7-10	100		same as above		0	0	0946	
495												
	15			5-7-9	100		Silty CLAY (CL) - moist; light brown; mottled grey-black; medium plasticity		0	0	0954	
490												
	20			4-7-9	100		same as above		0	0	1001	
485												
	25			6-10-18	100		Sandy CLAY (CL) - wet; stiff; red-brown; weathered sand; trace of yellow gravel		0	0	1008	
480												Depth to groundwater 28.3' bgs on 6/6/0 1130
	30											

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
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Log of Boring L4-MW05A

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
475	30	X		4-5-7	100		same as above - decreasing stiffness		0	0	1016	Groundwater encountered at approx. 31' bgs 6/6/01 1110
470	35	X		5-7-10	100		same as above - wet; medium stiff; red-brown; some gravel		0	0	1023	
465	40						Boring terminated at approximately 36.5' bgs on 6/6/01 1136					
460	45											
455	50											
450	55											
445	60											
440	65											
	70											

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
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Log of Boring L4-MW06A

Sheet 1 of 1

Date(s) Drilled	9/9/02-	Logged By	J. Rapp	Checked By	S. Wolfe
Drilling Method	Hand Auger	Drilling Contractor	Cascade Drilling Inc.	Total Depth Drilled (FT BGS)	6.0
Drill Rig Type	NA	Sampler Type	18" Split Spoon	Surface Elevation	478.84 NGVD 29
Groundwater Level	Groundwater not present Groundwater not present	Drill Bit Size/Type	4" OD hand auger	Top of PVC Elevation	481.84 NGVD 29
Diameter of Hole (inches)	4	Diameter of Well (inches)	0.75	Type of Well Casing	Schedule 40 PVC	Screen Perforation	0.010"
Type of Sand Pack	20/40 Silica	Type and Depth of Seal(s)	bentonite (0-3'); filter sand (3-6'); screen interval (4-6')		
Comments	Monitoring well coordinates: Easting: 1154121.79 Northing: 141242.99 (NAD 83) horizontal datum				

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
	0						Surface vegetation Brown silty CLAY (CL-ML) - dense, moist, trace to some yellow sub-rounded to rounded gravel, gravel size is 0.125" median diameter					0-6' No odor or visual evidence of contamination
475					100%		Same as above with trace black, weathered, angular bedrock (andesite) fragments				0930	
	5						Same as above 30% black sub-angular to angular bedrock in silty clay matrix					
							Soil boring terminated at 6 feet bgs (due to refusal) on 9/9/02 at 0930					Groundwater not encountered
470												
	10											

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-SB07A

Sheet 1 of 2

Date(s) Drilled	12/16/02-	Logged By	J. Rapp	Checked By	S. Wolfe
Drilling Method	Hollow Stem Auger	Drilling Contractor	Cascade Drilling Inc.	Total Depth Drilled (FT BGS)	40.0
Drill Rig Type	CME-150	Sampler Type	18" Split Spoon	Surface Elevation	476.35 NGVD 29
Groundwater Level	40 feet bgs on 12/16/02	Drill Bit Size/Type	8.75" OD auger	Top of PVC Elevation	NA
Diameter of Hole (inches)	8 / Diameter of Well (inches) NA	Type of Well Casing	NA	Screen Perforation	
Type of Sand Pack	NA	Type and Depth of Seal(s)	Backfilled with bentonite		
Comments	Boring coordinates: Northing:140745.21 Easting: 1154417.20 (NAD 83 horizontal datum)				

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
475	0						Reddish-brown silty CLAY (CL) - medium dense, moist, medium plasticity, trace fine rock fragments				0856	0-40 feet: No odor or visual evidence of contamination
470	5			6, 11, 14	1.5				0	0	0900	
465	10			7,17,20	1.5		Reddish-brown clayey SILT to silty CLAY (CL-ML) - dense, moist, slight plasticity, some sub-round yellow-orange fine gravel, trace weathered black sand grains		0	0	0906	
460	15			6,8,10	1.5		Reddish-brown CLAY (CL) - medium stiff, moist, mottled gray and black, medium to low plasticity		0	0	0916	auger retracted - no groundwater present
455	20			4,9,19	1.5				0	0	0923	auger retracted - no groundwater present
	25											

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
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Log of Boring L4-SB07A

Sheet 2 of 2

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
450	25			10,10,13	1.5		Grayish brown CLAY (CL) - moist, medium stiff to stiff, some fine sand, gray, white and black mottled appearance		0	0	0943	auger retracted - no groundwater present
445	30			6,20,54	1.5		Grayish-brown CLAY (CL) - moist, very stiff to hard, some fine sand, trace to some angular rock fragments (weathered bedrock)		0	0	1000	auger retracted - no groundwater present
440	35			16,23,36	1.5				0	0	1020	auger retracted - no groundwater present
435	40			9,11,55	1		Boring Terminated at 40 feet bgs at 1040 on 12/19/02 ▽		0	0	1040	Water encountered at approximately 40 feet bgs Boring backfilled - no monitoring well installed
430	45											
425	50											
420	55											

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW01B

Sheet 1 of 3

Date(s) Drilled	6/14/2001 to-6/18/2001	Logged By	J.Rapp	Checked By	S. Wolfe
Drilling Method	Air Rotary Tubex	Drilling Contractor	Cascade Drilling Inc.	Total Depth Drilled (FT BGS)	76.0
Drill Rig Type	IR T3W Ingersoll Rand	Sampler Type	NA	Surface Elevation	526.57 NGVD 29
Groundwater Level	11 feet bgs 6/19/01 1120	Drill Bit Size/Type	Tricone	Top of PVC Elevation	529.57 NGVD 29
Diameter of Hole (inches)	10 / Diameter of Well (inches) 2	Type of Well Casing	Schedule 40 PVC	Screen Perforation	0.010"
Type of Sand Pack	20/40 Silica	Type and Depth of Seal(s)	bentonite (35'-38', 58'-76'); filter sand (38'-58'); cement grout (2'-35'); cement (0'-2')		
Comments	Monitoring well coordinates: Easting 1,154,600.01 Northing 141,304.73 (NAD 83 horizontal datum)				

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
525	0						Silty CLAY - Clayey SILT (CL-ML); moist; reddish-brown; low to medium plasticity		0	0	0810	UXO Avoidance to 10'
520	5						same as above		0	0	0812	
515	10						same as above		0	0	0828	Depth to groundwater 11' bgs (6/19/01 at 1120)
510	15						Silty CLAY (CL) - moist; light brown; soft;		0	0	0836	
505	20						same as above - weathered sand grains; mottled orange with black lenses of weathered sand		0	0	0859	centralizer at 20' bgs
500	25						same as above - trace of yellow gravel		0	0	0905	
	30											

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW01B

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
	30						Sandy silty CLAY (CL) - moist; red-brown; medium stiff; trace of gravel		0	0	0942	
495												
	35						same as above		0	0	0945	
490												
	40						Sandy CLAY (CL) - moist; mottled; yellow; black; weathered sand grains; weathered bedrock; trace yellow gravel		0	0	0959	centralizer at 40' bgs
485												
	45						same as above		0	0	1003	bentonite seal 45'-49' bgs
480												
	50						Sandy gravelly CLAY (CL) - wet; black; white; green; weathered bedrock; angular		0	0	1041	water encountered at approx. 50' bgs (6/14/01 1140) advance 7" steel casing fromn 49' bgs
475												
	55						same as above - calcite nodules, weathered bedrock		0	0	1240	
470												air rotary drilling through weathered bedrock zone, no coring
	60						Gravelly SAND (SP-GP) - wet, black, angular fragments of andesite		0	0	1301	
465												
	65		Run #1		92%		top of apparent competent bedrock Phaneritic Andesite - unweathered bedrock; porphyritic; hornblende; olivine; hard horizontal fracture (8 degrees); crystalline-carbonate infilling fracture (5 degrees) vesicles		0 0	0 0		bentonite seal placed at 65' bgs rock coring started on 6/15/01 0737 advance rock core bit from 66' bgs at 1,000 RPM
460												
	70											

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW01B

Sheet 3 of 3

Elevation, feet (MSL)	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Blows per 6-inch Interval	SAMPLES: Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
455	70		Run #2		46%		vesicles horizontal fracture vesicles horizontal fracture horizontal fracture fracture (15 degrees)		0	0		Run #1 66' - 71' bgs; 92% recovery; 86% RQD 73.2' bgs bottom of recovered rock core
450	75						Boring terminated at approx. 76' bgs (6/18/01 @ 1052); bottom 2.8' of core not recovered					Run #2 71' -76' bgs; 46% recovery; 100% RQD
445	80											
440	85											
435	90											
430	95											
425	100											
420	105											
	110											

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Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW02B

Sheet 1 of 3

Date(s) Drilled	6/19/2001 to-6/22/2001	Logged By	J.Rapp	Checked By	S. Wolfe
Drilling Method	Air Rotary Tubex	Drilling Contractor	Cascade Drilling Inc.	Total Depth Drilled (FT BGS)	85.0
Drill Rig Type	IR T3W Ingersoll Rand	Sampler Type	NA	Surface Elevation	515.46 NGVD 29
Groundwater Level	32.8 feet bgs 6/25/01 1133	Drill Bit Size/Type	Tricone	Top of PVC Elevation	518.46 NGVD 29
Diameter of Hole (inches)	10 / Diameter of Well (inches) 2	Type of Well Casing	Schedule 40 PVC	Screen Perforation	0.010"
Type of Sand Pack	20/40 Silica	Type and Depth of Seal(s)	bentonite (35'-38', 72'-85'); filter sand (57'-72'); cement grout (2'-35'); cement (0'-2')		
Comments	Monitoring well coordinates: Easting 1,154,354.30 Northing 141,385.97 (NAD 83 horizontal datum)				

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
515	0						Gravelly silty SAND (SP) - dry; light brown; possible imported fill		0	0	1440	UXO Avoidance to 8' bgs advance 9.75" steel casing
510	5								0	0	1443	
												rock obstruction
505	10						Rock - aphanitic; mica, hornblend, crystalline carbonate, possible boulder		0	0	1512	casing pushed off center. Use 14" hammer to open hole past rock obstruction.
500	15						Silty CLAY - Clayey SILT (CL-ML); moist; reddish-brown; low to medium plasticity		0	0		approximate bottom of rock obstruction
									0	0	1627	resume drilling 6/20/01
												centralizer at 19' bgs
495	20						same as above		0	0		
490	25						same as above - trace of yellow gravel		0	0		
									0	0	1654	
	30											

ENV_23A E:\PROJECTS\BONNEL~1\DELIVE~1\JOHNRI~1\BORING~1\CB_L4.GPJ URSSEA3.GLB WC_CORP1.GDT 3/24/03

URS

Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW02B

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
485	30						same as above - mottled yellow orange					
												static water level recorded on 6/25/01 1133
480	35						same as above					
									0	0	1706	
												centralizer at 39' bgs
475	40						Sandy CLAY (CL) - moist; mottled; yellow; black; weathered sand grains; weathered bedrock; trace yellow gravel; low plasticity					
												water encountered at 41.6' on 6/21/01 0843
470	45						same as above		0	0	1732	
									0	0	1745	resume drilling 6/21/01
465	50						same as above					
460	55						same as above					
									0	0	0815	
												centralizer at 59' bgs
455	60						same as above					
450	65						same as above - wet; hard; stiff		0	0	0857	
	70								0	0	0921	

\PROJECTS\BONNEL~1\DELIVE~1\JOHNRI~1\BORING~1\CB_L4.GPJ URSSEA3.GLB WC_CORP1.GDT
ENV_2?

Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW02B

Sheet 3 of 3

Elevation, feet (MSL)	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Blows per 6-inch Interval	SAMPLES: Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
445	70						Clayey gravelly SAND (SW) - wet; black; white; green; weathered andesite; angular		0	0	0938	
440	75		Run #1		40%		top of apparent component bedrock Phaneritic Andesite - unweathered bedrock; porphyritic; hornblende; olivine; hard vesicles horizontal fracture horizontal fracture		0	0	1240	bentonite seal; begin rock coring at 75' bgs
435	80		Run #2		0%				0	0	1320	end of core Run #1; 40% recovery; 100% RQD
430	85						Boring terminated at 85' bgs on 6/21/01 1500		0	0	1446	end of core Run #2; 0% recovery
425	90											
420	95											
415	100											
410	105											
	110											

ENV_23A E:\PROJECTS\BONNEL~1\DELIVE~1\JOHNRI~1\BORING~1\CB_L4.GPJ URSSEA3.GLB WC_CORP1.GDT 3/24/03

URS

Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW03B

Sheet 1 of 2

Date(s) Drilled	6/25/2001 to-6/27/2001	Logged By	J.Rapp	Checked By	S. Wolfe
Drilling Method	Air Rotary Tubex	Drilling Contractor	Cascade Drilling Inc.	Total Depth Drilled (FT BGS)	70.0
Drill Rig Type	IR T3W Ingersoll Rand	Sampler Type	NA	Surface Elevation	508.47 NGVD 29
Groundwater Level	27 feet bgs 6/26/01 0755	Drill Bit Size/Type	Tricone	Top of PVC Elevation	511.47 NGVD 29
Diameter of Hole (inches)	10 / Diameter of Well (inches) 2	Type of Well Casing	Schedule 40 PVC	Screen Perforation	0.010"
Type of Sand Pack	20/40 Silica	Type and Depth of Seal(s)	bentonite (42'-45', 60'-70'); filter sand (45'-60'); cement (2'-42'); cement (0'-2')		
Comments	Monitoring well coordinates: Easting 1,154,398.22 Northing 141,268.17 (NAD 83 horizontal datum)				

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
505	0						Silty CLAY - Clayey SILT (CL-ML) - moist; red-brown; some sand; trace gravel; low to medium plasticity		0	0	1330	UXO Avoidance to 8' bgs advance 9.75" steel casing
	5						same as above		0	0	1334	
500												centralizer at 7' bgs
	10						same as above					
495												
	15						same as above		0	0	1355	
490												
	20						same as above		0	0	1400	
485												
	25						same as above - medium stiff; trace of yellow gravel					
480												Depth to groundwater 27' bgs 6/26/01 0755 centralizer at 27' bgs
	30						same as above - some sand, some gravel		0	0	1450	
475												
	35											

PROJECTS\BONNEL~1\DELIVE~1\JOHNRI~1\BORING~1\CB_L4.GPJ URSSEA3.GLB WC_CORP1.GDT
ENV_27

Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW03B

Sheet 2 of 2

Elevation, feet (MSL)	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
	35						same as above					
470												
	40						Sandy CLAY (CL) - mottled; weathered sand grains; some yellow gravel		0	0	1457	
465												
	45						same as above - some gravel to 1"; weathered andesite fragments					centralizer at 47' bgs
460												
	50						same as above - weathered andesite, altered sand grains, quartz nodules		0	0	1550	groundwater encountered at approx. 50 feet bgs 6/25/01 1600
455												
	55						same as above - weathered andesite		0	0	1605	
450												
	60		Run #1		93%		Phaneritic Andesite - unweathered bedrock; porphyritic; hornblende; olivine; hard horizontal fracture fracture 30 - 35 degrees vesicles horizontal fracture		0	0		9.75" casing on top of competent bedrock; bentonite seal set prior to rock coring
445												
	65		Run #2		100%		fracture 2 degrees		0	0		Bottom of Run #1; 93% Recovery; 100% RQD
440							healed fracture; crystalline carbonate infilling					
	70						Boring terminated at 70' bgs on 6/26/01 at 1416					Bottom of Run #2; 100% Recovery; 100% RQD
435												
	75											
430												
	80											

URS

ENV_23A E:\PROJECTS\BONNEL~1\DELIVE~1\JOHNRI~1\BORING~1\CB_L4.GPJ URSSEA3.GLB WC_CORP1.GDT 3/24/03

Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW07B

Sheet 1 of 2

Date(s) Drilled	12/19/02-	Logged By	J. Rapp	Checked By	S. Wolfe
Drilling Method	Air Rotary	Drilling Contractor	Cascade Drilling Inc.	Total Depth Drilled (FT BGS)	56.4
Drill Rig Type	IR T3W Ingersoll Rand	Sampler Type	NA	Surface Elevation	477.89 NGVD 29
Groundwater Level	39.32 feet bgs on 12/20/02 0800	Drill Bit Size/Type	Tricone	Top of PVC Elevation	480.80 NGVD 29
Diameter of Hole (inches)	10 / Diameter of Well (inches) 2	Type of Well Casing	Schedule 40 PVC V-wrap	Screen Perforation	0.010"
Type of Sand Pack	20/40, 10/20 Silica	Type and Depth of Seal(s)	bentonite (2'-43' bgs); filter sand (41'-56' bgs); cement (0'-2'); screen interval (46-56')		
Comments	Monitoring well coordinates: Easting: 1154434.64 Northing: 140735.34 (NAD 83 horizontal datum)				

Elevation, feet (MSL)	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Blows per 6-inch Interval	SAMPLES: Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
475	0						Reddish-brown silty CLAY (CL) - moist, soft, low to medium plasticity, trace of fine sand				0955	0-56 feet: No odor or visual evidence of contamination
470	5											
465	10						Reddish-brown clayey SILT to silty CLAY (ML-CL) - moist, soft to medium stiff, low plasticity, trace fine sand					
460	15										1015	
455	20						Same as above - medium stiff, trace to some fine sand					
	25											

PROJECTS\BONNEL~1\DELIVE~1\JOHNRI~1\BORING~1\CB_L4.GPJ URSSEA3.GLB WC_CORP1.GDT
ENV_2

Project: Landfill 4/Demolition Area 1
Project Location: Camp Bonneville, WA
Project Number: 53-F0072323.00

Log of Boring L4-MW07B

Elevation, feet (MSL)	Depth, feet	SAMPLES: Type	SAMPLES: Number	SAMPLES: Blows per 6-inch Interval	SAMPLES: Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	PID (ppm)	Headspace PID (ppm)	Drilling Rate (24-hr clock)	REMARKS
	25						Same as above					
450												
	30						Same as above - Grayish-brown, trace fine yellow gravel					
445												
	35										1100	
440												
	40						Same as above - Trace yellow fine gravel, trace black angular rock fragments					39.32' Static groundwater level measured on 12/20/02 at 0800 Groundwater encountered at approximately 40 feet bgs on 12/19/02 at 1110
435												
	45						Apparent top of weathered bedrock unit				1140	
							Sandy gravelly CLAY (CL) - wet, low plasticity, matrix supported weathered bedrock is medium grey to black (ANDESITE), finely granular, porphyritic, mostly plagioclase, some noticeable amounts of hornblende and biotite occurring as phenocrysts, quartz nodules					
430												
	50											
425												
	55											
							Soil boring terminated at 56.4 feet bgs at 1150 on 12/19/02					
420												

ENV_23A E:\PROJECTS\BONNEL~1\DELIVE~1\JOHNRI~1\BORING~1\CB_L4.GPJ URSSEA3.GLB WC_CORP1.GDT 3/24/03

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/14/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E	Depth Water First Encountered (Ft) 16.0
Date Completed 12/14/98	Drilling Company Cascade	Drilling Method Hollow Stem Auger
Total Depth (Ft) 64.5	Sampling Method Grab and Modified Penetration Test	Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 6	Ground Elev. Ft 528.84	Monument Elev. Ft — PVC Elev. Ft 531.59

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery (%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
								Ground Surface				
	L4-SB01 -01	G			0.0	1000		Medium stiff, brown, slightly sand, clayey SILT; moist.	ML			1.0
5			20	100	0.0							
			23	100	0.0		9.0	Stiff, brown, slightly sandy, clayey SILT to silty CLAY; moist.	CL-ML			
10			17	100	0.0		11.5	Stiff, brown, silty CLAY; moist.	CL			
			9	100	0.0		14.0	Very stiff, brown, clayey SILT to silty CLAY; moist to wet.	CL-ML			14.4
15	L4-SB01 -02		16	100	0.0	1133	16.5	Medium stiff, brown, slightly sandy, clayey SILT to silty CLAY; wet.	CL-ML			17.0
			6	100	0.0		19.0	Medium stiff, brown, slightly sandy, clayey SILT	CL-ML			

Screen 17-27'

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING L4-SB01

August 1999 T-4117-05

Logged By	Reviewed By	
CMB	DNC	SHANNON & WILSON, INC. Geotechnical and Environmental Consultants

FIG. D-2
Sheet 1 of 4

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/14/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E	Depth Water First Encountered (Ft) 16.0
Date Completed 12/14/98	Drilling Company Cascade	Drilling Method Hollow Stem Auger
Total Depth (Ft) 64.5	Sampling Method Grab and Modified Penetration Test	Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 6	Ground Elev. Ft 528.84 / Monitoring Elev. Ft	PVC Elev. Ft 531.59

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol
			8	100	0.0			to silty CLAY, trace of gravel; wet.	
							23.0		
								Loose, red-brown, sandy, silty GRAVEL; wet.	GM
25			8	100	0.0				
							26.0		
	L4-SB01 -03		11	100	0.0	1145		Stiff, red-brown, slightly sandy, clayey SILT to silty CLAY, trace of gravel; moist.	CL-ML
							28.5		
								Stiff, brown, slightly gravelly, sandy, clayey SILT; moist to wet.	ML
30			9	100	0.0				
							33.0		
								Very soft, dark brown, sandy, clayey SILT; wet; scattered weathered, white, coarse sand.	ML
35			2	100	0.0				
							38.0		
								Stiff, brown, slightly sandy SILT; moist to wet; numerous white weathered sand.	ML

Soil Log / Well Log / Depth (Ft): 27.0, 28.0

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING L4-SB01

August 1999 T-4117-05

Logged By	Reviewed By		
CMB	DNC	SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	FIG. D-2 Sheet 2 of 4

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/14/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E		Depth Water First Encountered (Ft) 16.0
Date Completed 12/14/98	Drilling Company Cascade		Drilling Method Hollow Stem Auger
Total Depth (Ft) 64.5	Sampling Method Grab and Modified Penetration Test		Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 6	Ground Elev. Ft 528.84	Monitoring Elev. Ft	PVC Elev. Ft 531.59

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
			10	100	0.0							
							43.0	Stiff, gray to brown, slightly sandy, clayey SILT; moist to wet; with highly weathered coarse sand.	ML			
45			9	100	0.0							
50			15	100	0.0							
							53.0	Very stiff, gray mottled with white, sandy, clayey SILT; moist.	ML			
55			21	100	0.0							
							58.0	Hard, gray, sandy (fine to coarse), clayey SILT to silty CLAY; moist; weathered volcanic rock.	CL-ML			

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING L4-SB01

August 1999 T-4117-05

Logged By	Reviewed By		
CMB	DNC	SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	FIG. D-2 Sheet 3 of 4

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/14/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E		Depth Water First Encountered (Ft) 16.0
Date Completed 12/14/98	Drilling Company Cascade		Drilling Method Hollow Stem Auger
Total Depth (Ft) 64.5	Sampling Method Grab and Modified Penetration Test		Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 6	Ground Elev. Ft 528.84	Monitoring Elev. Ft	PVC Elev. Ft 531.59

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
			48	100	0.0							
			50/1"	0			64.5	BOTTOM OF BORING COMPLETED 12/14/98 Refusal on apparent top of rock				64.5
65												
70								NOTE: Monitoring well L4-MW01 was constructed in this boring.				
75												

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING L4-SB01

August 1999 T-4117-05

Logged By	Reviewed By		
CMB	DNC	SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	FIG. D-2 Sheet 4 of 4

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/14/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E	Depth Water First Encountered (Ft) 33.0
Date Completed 12/15/98	Drilling Company Cascade	Drilling Method Hollow Stem Auger
Total Depth (Ft) 44.5	Sampling Method Grab and Modified Penetration Test	Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 6	Ground Elev. Ft 518.10	Monument Elev. Ft	PVC Elev. Ft 520.85

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
								Ground Surface				
								Stiff, medium brown, clayey SILT to silty CLAY; moist.	CL-ML			1.0
	L4-SB02 -01	G			0.0	1500	4.0					
5			13	100	0.0			Medium stiff to stiff, red-brown, slightly sand, clayey SILT to silty CLAY; moist; thin layer of iron-oxide staining at 7.5 feet.	CL-ML			
			8	100	0.0		9.0					
								Stiff, red-brown, sandy, clayey SILT to silty CLAY; moist; iron staining.	CL-ML			
10			14	100	0.0		11.5					
	L4-SB02 -02		7	100	0.0	0905		Medium stiff, red-brown, slightly sandy, clayey SILT to silty CLAY; moist to wet to 13.5 feet; moist below 13.5 feet.	CL-ML			
	L4-SB06 -02		4	100	0.0			(The samples from 12-, 13.5-, and 15-feet were composited for duplicate and split samples, except that the volatile analyte containers were filled from the sample from 12-feet.)				
15	L4-SB07 -02			100	0.0							
			8	100	0.0		17.0	Medium stiff, red-brown to grayish-red-brown, clayey SILT to silty CLAY; moist; with weathered coarse sand; slightly sandy from 19.5 to 23 feet.	CL-ML			

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING LF-SB02

August 1999 T-4117-05

Logged By	Reviewed By		
CMB	DNC	SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	FIG. D-3 Sheet 1 of 3

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/14/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E	Depth Water First Encountered (Ft) 33.0
Date Completed 12/15/98	Drilling Company Cascade	Drilling Method Hollow Stem Auger
Total Depth (Ft) 44.5	Sampling Method Grab and Modified Penetration Test	Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 6	Ground Elev. Ft 518.10	Monitoring Elev. Ft	PVC Elev. Ft 520.85

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
			7	100	0.0							
							23.0	Soft, gray, slightly sandy, silty CLAY to clayey SILT; moist; with highly weathered coarse sand.	CL-ML			23.5
25			4	100	0.0							
							28.0	Medium stiff, dark brown, sandy, silty CLAY; moist; highly weathered volcanic rock.	CL			27.8
30	L4-SB02 -03		9	100	0.0	0945						
							33.0	Dense, light brown, silty, sandy GRAVEL; wet.	GM			
35			37	100	0.0		35.0	Dense, gray, weathered rock with thin black lenses.				
							37.0	Very stiff, brown, silty SAND to sandy SILT, trace of gravel; moist.	SM			37.8
												38.8

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Logged By CMB

Reviewed By DNC

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING LF-SB02

August 1999 T-4117-05

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. D-3
Sheet 2 of 3

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/14/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E	Depth Water First Encountered (Ft) 33.0
Date Completed 12/15/98	Drilling Company Cascade	Drilling Method Hollow Stem Auger
Total Depth (Ft) 44.5	Sampling Method Grab and Modified Penetration Test	Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 6	Ground Elev. Ft 518.10	Monitoring Elev. Ft / PVC Elev. Ft 520.85

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
			31	100	0.0							
			>50/1"	0			44.5	BOTTOM OF BORING COMPLETED 12/15/98 Refusal on rock				44.5
45												
50								NOTE: Monitoring well L4-MW02 was constructed in this boring.				
55												

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING LF-SB02

August 1999 T-4117-05

Logged By	Reviewed By		
CMB	DNC	SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	FIG. D-3 Sheet 3 of 3

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/15/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E	Depth Water First Encountered (Ft) Not Encountered
Date Completed 12/15/98	Drilling Company Cascade	Drilling Method Hollow Stem Auger
Total Depth (Ft) 21.0	Sampling Method Grab and Modified Penetration Test	Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 4	Ground Elev. Ft 516.14	Monument Elev. Ft / PVC Elev. Ft

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
								Ground Surface				
5								No samples from 0 to 9.5 feet. See log for boring L4-SB03A.				
							9.5					
10	L4-SB03 -02		13	100	0.0	1345		Stiff, red-brown, clayey SILT to silty CLAY.	ML-CL			
							11.5					
			13	100	0.0			Stiff to hard, brown/yellow/white, sandy, clayey SILT, trace of gravel; moist.	ML			
15	L4-SB03 -03		63	100	0.0	1414						
							16.0					
				100	0.0			Stiff to very stiff, brown/orange/white, sandy, clayey SILT, trace of gravel; moist to wet; numerous organics.	ML			

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Logged By CMB

Reviewed By DNC

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING L4-SB03

August 1999 T-4117-05

SHANNON & WILSON, INC.
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FIG. D-4
Sheet 1 of 2

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/15/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E	Depth Water First Encountered (Ft) Not Encountered
Date Completed 12/15/98	Drilling Company Cascade	Drilling Method Hollow Stem Auger
Total Depth (Ft) 21.0	Sampling Method Grab and Modified Penetration Test	Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 4	Ground Elev. Ft 516.14	Monitoring Elev. Ft / PVC Elev. Ft

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
			21	100	0.0		21.0	BOTTOM OF BORING COMPLETED 12/15/98				
25												
30												
35												

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING L4-SB03

August 1999 T-4117-05

Logged By	Reviewed By		
CMB	DNC	SHANNON & WILSON, INC. Geotechnical and Environmental Consultants	FIG. D-4 Sheet 2 of 2

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/15/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E	Depth Water First Encountered (Ft) None Encountered
Date Completed 12/15/98	Drilling Company Cascade	Drilling Method Hollow Stem Auger
Total Depth (Ft) 12.0	Sampling Method Grab and Modified Penetration Test	Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 4	Ground Elev. Ft 516.00	Monument Elev. Ft / PVC Elev. Ft

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
								Ground Surface				
	L4-SB03-01	G			0.0	1140		Medium stiff to stiff, red-brown, clayey SILT; moist.	ML			
							4.0					
5			13	100	0.0			Stiff, red-brown to brown, slightly sand to sandy, clayey SILT to silty CLAY; moist.	CL-ML			
			11	100	0.0							
							9.0					
10			18	100	0.0			Very stiff, brown, sandy, clayey SILT, trace of gravel; scattered organics.	ML			
							12.0	BOTTOM OF BORING COMPLETED 12/15/98				
								Refusal on rock.				
15								NOTE: Moved 3 feet west to drill boring L4-SB03.				

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING L4-SB03A

August 1999 T-4117-05

Logged By	Reviewed By	
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FIG. D-5
Sheet 1 of 1

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/15/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E		Depth Water First Encountered (Ft) Not Encountered
Date Completed 12/15/98	Drilling Company Cascade		Drilling Method Hollow Stem Auger
Total Depth (Ft) 21.0	Sampling Method Grab and Modified Penetration Test		Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 4	Ground Elev. Ft 515.83	Monument Elev. Ft	PVC Elev. Ft

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
								Ground Surface				
	L4-SB04 -01	G			0.0			Medium stiff, red-brown, clayey SILT to silty CLAY; moist.	ML-CL			
							4.0					
5			16	100	0.0			Stiff to very stiff, red-brown, silty CLAY; moist; medium to high plasticity, trace yellow, medium to coarse sand above 6.5 feet.	CH			
			25	100	0.0							
							9.0					
10			28	100	0.0			Stiff to very stiff, red-brown, slightly sandy, clayey SILT to silty CLAY; moist; trace of gravel below 11.5 feet.	ML-CL			
	L4-SB04 -02		18	100	0.0	1525						
							14.0					
15			13	100	0.0			Stiff, red-brown, silty CLAY, trace of sand and gravel; moist; mottled with orange below 16.5 feet.	CL			
			13	100	0.0							
							19.0					
								Medium stiff, red-brown/gray/yellow, slightly	CL			

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING L4-SB04

August 1999 T-4117-05

Logged By	Reviewed By		
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ENVIRONMENTAL BOREHOLE LOG

Date Started: 12/15/98	Location: SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E	Depth Water First Encountered (Ft): Not Encountered
Date Completed: 12/15/98	Drilling Company: Cascade	Drilling Method: Hollow Stem Auger
Total Depth (Ft): 21.0	Sampling Method: Grab and Modified Penetration Test	Hammer: Weight (lbs): 140 Drop (In): 30
Borehole Diam. (In): 4	Ground Elev. Ft: 515.83	Monitoring Elev. Ft / PVC Elev. Ft

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
	L4-SB04-03		8	100	0.0	1540	21.0	sandy, silty CLAY, trace of gravel; moist.				
								BOTTOM OF BORING COMPLETED 12/15/98				
25												
30												
35												

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Logged By: CMB

Reviewed By: DNC

Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING L4-SB04

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SHANNON & WILSON, INC.
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FIG. D-6
Sheet 2 of 2

ENVLOG2 8/4/99

ENVIRONMENTAL BOREHOLE LOG

Date Started 12/15/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E	Depth Water First Encountered (Ft) Not Encountered	
Date Completed 12/16/98	Drilling Company Cascade	Drilling Method Hollow Stem Auger	
Total Depth (Ft) 21.0	Sampling Method Grab and Modified Penetration Test	Hammer: Weight (lbs) 140	Drop (In) 30
Borehole Diam. (In) 4	Ground Elev. Ft 520.48	Monument Elev. Ft	PVC Elev. Ft

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
								Ground Surface				
	L4-SB05-01	G			0.0	1540		Medium stiff to stiff, red-brown, clayey SILT to silty CLAY; moist.	ML-CL			
							4.0					
5			11	100	0.0			Stiff, brown, clayey SILT to silty CLAY, trace of gravel; moist; thin lens of black and red sandy, silty clay.	ML-CL			
							6.5					
	L4-SB05-02		6	100	0.0	0850		Soft to medium stiff, brown/red/tan, slightly sandy to sandy, clayey SILT, trace of gravel; occasional organics; moist.	ML			
10			5	100	0.0							
			5	100	0.0							
							14.0					
15			6	100	0.0			Soft to medium stiff, dark brown, slightly sandy, clayey SILT; moist; with highly weathered white sand.	ML			
							16.5					
			2	100	0.0			Soft, gray-brown mottled with tan, fine to coarse sandy, clayey SILT; moist to wet.	ML			
							19.0					
								Medium stiff, brown, sandy, clayey SILT, trace	ML			

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

Landfill 4 Investigation
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Vancouver, Washington

LOG OF BORING L4-SB05

August 1999 T-4117-05

Logged By	Reviewed By		
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ENVIRONMENTAL BOREHOLE LOG

Date Started 12/15/98	Location SW 1/4 of NE 1/4 of Sec. 35, T3N, R3E	Depth Water First Encountered (Ft) Not Encountered
Date Completed 12/16/98	Drilling Company Cascade	Drilling Method Hollow Stem Auger
Total Depth (Ft) 21.0	Sampling Method Grab and Modified Penetration Test	Hammer: Weight (lbs) 140 Drop (In) 30
Borehole Diam. (In) 4	Ground Elev. Ft 520.48	Monitoring Elev. Ft / PVC Elev. Ft

Depth (Ft)	Sample Number	Interval	Blow Counts/6 In	Recovery(%)	PID (ppm)	Time	Depth (Ft)	Lithologic Description	USCS* Symbol	Soil Log	Well Log	Depth (Ft)
	L4-SB05-03		5	100	0.0	0915		of gravel; moist to wet.				
							21.0	BOTTOM OF BORING COMPLETED 12/16/98				
25												
30												
35												

Remarks: Refer to key for explanation of terminology and symbols.

* USC soil descriptions are based on visual classification, unless otherwise noted. Contacts between soil layers are approximate and may be gradual.

LEGEND

- 2" O.D. Split-Spoon Sample
- 3" O.D. Split-Spoon Sample
- G Grab Sample
- Water Level and Date Measured
- Water Level at Time of Drilling

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Landfill 4 Investigation
Camp Bonneville
Vancouver, Washington

LOG OF BORING L4-SB05

August 1999 T-4117-05

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FIG. D-7
Sheet 2 of 2

WELL DEVELOPMENT DATA SHEET

Project Name:	Camp Bonneville - Landfill 4	Well Number:	MW01A
Project/Task No.:	53-F00723.00/03100	Well Diameter:	2"
Date:	7/5/01	Screen Interval:	20' - 30' btoc
Weather:	sunny 70°F	Measuring Point (MP):	top of casing
Samplers:	John Rapp	Depth to bottom:	30' btoc
Purge Method:	stainless steel bailer	Depth to water:	16.53' btoc
Final Purge Volume:	~30 gal	Feet of Water:	30.01' btoc
Water Disposal	labeled drum	Gallons per Casing Foot:	0.16 gal/ft
Elevation of MP:		(2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Elevation of Water:		**Meter Information:**	**Model** / **Calib. Date**

Comments: MW01A was developed over a one week period due to slow recharge. Stable parameters not applicable to development - all water/sediment removed by bailer.

Meter Information:	Model	Calib. Date
pH: 4.01	YSI 600XL	7/5/01
~~Eh~~:		
Conductivity: 4.51		
DO Meter:		
Turbidity: 0.0		
Temperature: 23°C		
Other:		

Field Parameters	Units	0 Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature	°C	12.56	13.11	13.42	12.64	13.29	12.98	13.57
pH	SU	5.33	5.04	5.57	4.98	5.10	5.63	5.14
Conductivity	uS/cm	.107	.111	.212	.098	.099	.119	.088
~~Eh~~ ORP	mV	198	201	204	194	210	204	223
DO	mg/L	12.10	11.01	9.09	8.11	10.05	8.61	7.14
Turbidity	NTUs	1741	1740	1740	1645	1713	1740	1740
Time	HR	1330	1500	1700	0900	1130	1330	0830
		7/3/01	7/3/01	7/3/01	7/5/01	7/5/01	7/5/01	7/6/01

Field Parameters	Units	Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature	°C	13.09	12.57	11.86	12.54	11.99		
pH	SU	5.37	5.64	5.17	~~3.89~~ 3.05	5.12		
Conductivity	uS/cm	.122	.109	.163	.109	.113		
~~Eh~~ ORP	mV	184	194	209	211	218		
DO	mg/L	6.99	7.58	8.01	12.06	10.57		
Turbidity	NTUs	1740	1740	1740	1700	1736		
Time		1030	1400	0900	1310	1550		
		7/6/01	7/6/01	7/9/01	7/9/01	7/9/01		

WELL DEVELOPMENT DATA SHEET

Project Name:	CAMP BONNEVILLE - LANDFILL 4	Well Number:	L4 - MW01B
Project/Task No.:		Well Diameter:	2"
Date:	July 2, 2001	Screen Interval:	45 - 55' btoc
Weather:	partly cloudy 75°F	Measuring Point (MP):	top of casing
Samplers:	J. RAPP	Depth to bottom:	255.76' btoc
Purge Method:	PUMP	Depth to water:	~13.40' btoc
Final Purge Volume:	55 gallons	Feet of Water:	~42.36'
Water Disposal	steel drum w/ label	Gallons per Casing Foot:	0.16 gal/ft
Elevation of MP:		(2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Elevation of Water:		**Meter Information:**	**Model** / **Calib. Date**
Comments:		pH:	HORIBA U-22 / 7/2/01
		Eh:	
		Conductivity:	
		DO Meter:	
		Turbidity:	
		Temperature:	
		Other:	

Field Parameters	Units	0 Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature	°C	10.47	10.39	10.37	10.37	10.41	10.50	10.81
pH	SUs	5.47	5.07	4.93	4.89	4.84	4.73	4.71
Conductivity	mS	.026	.026	.026	.026	.025	.025	.025
Eh	V	223	243	260	268	272	289	297
DO	mg/L	11.30	11.00	10.72	10.57	10.90	10.38	10.10
Turbidity	NTUs	95	35.8	25.3	19.0	13.9	6.5	4.7
Time	24-HR	1500	1505	1510	1515	1520	~~1535~~	~~1540~~

Field Parameters	Units	Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time		~~1540~~						

WELL DEVELOPMENT DATA SHEET

Project Name:	CAMP BONNEVILLE - LANDFILL 4	Well Number:	MW02A
Project/Task No.:	53-FC072323.00/03100	Well Diameter:	2"
Date:	7/6/01	Screen Interval:	30.8' - 40.8' btoc
Weather:	sunny 70°F	Measuring Point (MP):	top of casing
Samplers:	John Rapp	Depth to bottom:	~40.5' btoc
Purge Method:	surge / bailer / pump	Depth to water:	27.19' btoc
Final Purge Volume:	~10 gal	Feet of Water:	~13'
Water Disposal	labeled drum	Gallons per Casing Foot:	~~.16 gal~~ ~2 gal
Elevation of MP:		(2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Elevation of Water:		**Meter Information:**	**Model** / **Calib. Date**
Comments:		pH:	YSI 600XL
		Eh:	
		Conductivity:	
		DO Meter:	
		Turbidity:	
		Temperature:	
		Other:	

Field Parameters	Units	0 Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature	°C	11.10	11.24	11.24	11.34	11.31		
pH	SU	5.18	5.00	4.96	4.98	4.96		
Conductivity	uS/cm	.088	.086	.087	.086	.086		
~~Eh~~ ORP	mV	274	199	201	295	310		
DO	mg/L	10.24	10.56	10.51	10.63	10.56		
Turbidity	NTUs	240	199	34	15	1.3		
Time	HR	1025	1035	1045	1055	1105		

Field Parameters	Units	Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								

WELL DEVELOPMENT DATA SHEET

Project Name:	CAMP BONNEVILLE - LANDFILL 4	Well Number:	MW02B
Project/Task No.:	53-F00722323.00/03100	Well Diameter:	2"
Date:	7/3/01	Screen Interval:	65'-75' btoc
Weather:	mostly sunny 70°F	Measuring Point (MP):	top of casing
Samplers:	John Rapp	Depth to bottom:	75.10' btoc
Purge Method:	surge block / bailer / pump	Depth to water:	35.42' btoc
Final Purge Volume:	~~475~~ gallons	Feet of Water:	40'
Water Disposal	labeled drum	Gallons per Casing Foot:	.16 gal/ft
Elevation of MP:		(2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Elevation of Water:		**Meter Information:**	**Model** / **Calib. Date**
Comments:	all parameters allowed to stabalize over 7-day period. Not able to achieve NTUs < 5. Final 4 readings from 7/5 shown.	pH: 3.98	YSI 600XL / 7/3/01
		Eh:	
		Conductivity: 4.52	
		DO Meter:	
		Turbidity:	
		Temperature:	
		Other:	

Field Parameters	Units	0 Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature	°C	12.22	12.36	12.18	12.15	11.59	11.68	11.74
pH	SU	5.25	5.54	5.32	5.30	5.39	5.51	5.31
Conductivity	uS/cm	.181	.202	.217	.204	.187	.192	.187
~~Eh~~ ORP	mV	189	183	160	160	157	166	168
DO	mg/L	3.92	4.04	2.11	2.02	4.09	3.02	1.37
Turbidity	NTUs	669	148	85	78	140	155	152
Time	HR	1540	1550	1600	1610	1625	1635	1645
		7/3/01 →						

Field Parameters	Units	Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature		11.70	12.02	11.93	11.81	11.76	11.77	11.78
pH		5.30	5.29	5.35	5.28	5.35	3.38	5.40
Conductivity		.185	.188	.186	.102	.111	.115	.123
~~Eh~~ ORP		171	191	187	237	235	236	227.5
DO		1.53	1.43	1.91	1.97	2.10	3.30	5.26
Turbidity		163	1310	315	172	108	95	88
Time	HR	1655	1715	1730	1515	1600	1630	1700
		7/3/01 →			7/5/01	7/5/01	7/5/01	7/5/01

WELL DEVELOPMENT DATA SHEET

Project Name:	Camp Bonneville - Landfill 4	Well Number:	MW03A
Project/Task No.:	53-F0072323.00/03100	Well Diameter:	2"
Date:	7/9/01	Screen Interval:	44'-49' btoc
Weather:	sunny warm 70°F	Measuring Point (MP):	top of casing
Samplers:	A. Rapp	Depth to bottom:	49.02' btoc
Purge Method:	Stainless steel bailer + pump	Depth to water:	29.97' btoc
Final Purge Volume:	~55 gallons	Feet of Water:	~20'
Water Disposal	labeled drum	Gallons per Casing Foot:	1 vol = ~3.25 gal
Elevation of MP:		(2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Elevation of Water:		**Meter Information:**	**Model** / **Calib. Date**
Comments:		pH:	YSI 600XL / 7/9/01
		Eh:	
		Conductivity:	
		DO Meter:	
		Turbidity:	
		Temperature:	
		Other:	

Field Parameters	Units	0 Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature	°C	11.00	11.32	11.20	11.01	11.35	11.42	11.41
pH	SU	5.30	5.13	5.06	5.01	4.76	4.87	4.88
Conductivity	µS/cm	.147	.030	.029	.029	.029	.029	.029
Eh ORP	mV	248	264	270	282	297	305	310
DO	mg/L	11.40	10.80	10.64	10.33	10.49	10.66	10.66
Turbidity	NTUs	1454	357	251	1727	181	218	51
Time	HR	1110	1115	1125	1135	1145	1155	1205

Field Parameters	Units	Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature		11.49	11.51					
pH		4.87	4.88					
Conductivity		.029	.029					
Eh ORP		317	326					
DO		10.65	10.56					
Turbidity		46	3.5					
Time		1215	1225					

WELL DEVELOPMENT DATA SHEET

Project Name:	CAMP BONNEVILLE - LANDFILL 4	Well Number:	MW03B
Project/Task No.:	53-F0072323.00/3100	Well Diameter:	2"
Date:	7/9/01	Screen Interval:	53'-63' btoc
Weather:	sunny warm 75°F	Measuring Point (MP):	top of casing
Samplers:	John Rapp	Depth to bottom:	63.03' btoc
Purge Method:	stainless steel bailer/pump	Depth to water:	27.12' btoc
Final Purge Volume:	55 gal	Feet of Water:	~35'
Water Disposal	labeled drum	Gallons per Casing Foot:	vol = 5.6 gal
Elevation of MP:		(2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Elevation of Water:		**Meter Information:**	**Model** / **Calib. Date**
Comments:		pH:	YSI 600XL / 7/9/01
		Eh:	
		Conductivity:	
		DO Meter:	
		Turbidity:	
		Temperature:	
		Other:	

Field Parameters	Units	0 Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature	°C	11.05	11.34	11.30	11.73	11.70	11.74	11.76
pH	SU	5.59	5.23	5.03	5.00	4.83	4.74	4.74
Conductivity	uS/cm	.571	.683	.556	.283	.261	.241	.226
~~Eh~~ ORP	mV	266	258	238	222	236	241	245
DO	mg/L	8.76	6.70	8.07	11.67	11.81	11.89	11.78
Turbidity	NTUs	174	1338	1734	188	42	35	2.7
Time	HR	1315	1330	1400	1415	1430	1445	1500

Field Parameters	Units	Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								

WELL DEVELOPMENT DATA SHEET

Project Name:	Camp Bonneville - Landfill 4	Well Number:	L4-MW07B
Project/Task No.:	337528711.00000	Well Diameter:	2"
Date:	December 23, 2002	Screen Interval:	~~46-56'~~ 49-59'
Weather:	Clear, cold 38°F	Measuring Point (MP):	top of casing
Samplers:	J. Klapp	Depth to bottom:	59.4'
Purge Method:	Hand Bail	Depth to water:	40.32'
Final Purge Volume:	~ 20 gallons	Feet of Water:	~19'
Water Disposal	Steel Drum	Gallons per Casing Foot:	0.16 Gal/Ft
Elevation of MP:		(2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Elevation of Water:		**Meter Information:**	**Model** / **Calib. Date**
Comments:		pH:	YSI 6820 / 12-23-02
		Eh:	
		Conductivity:	
		DO Meter:	
		Turbidity:	
		Temperature:	
		Other:	

Field Parameters	Units	0 Volume	1 Volume	2 Volume	3 Volume	4 Volume	5 Volume	Volume
perature	°C	8.65	9.16	9.21	9.16	8.95	8.96	
pH	SU	6.01	6.67	6.73	6.73	6.84	6.98	
Conductivity	us/cm	0.438	0.497	0.415	0.369	0.353	0.340	
~~Eh~~ ORP	mV	177.5	165.8	184.8	204.4	213.9	222.1	
DO	mg/L	0.15	0.87	1.40	1.02	1.32	1.87	
Turbidity	NTU	141	203	Ø	Ø	Ø	Ø	
Time	24-HR	1230	1255	1315	1340	1355	1410	

Field Parameters	Units	Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								

GROUNDWATER SAMPLING DATA SHEET

Project Name:	Camp Bonneville-Landfill 4 GW Sampling	**Sample Number:**	GW01MW04A
Project Number:	53-F0072323.00 03100	Station Number:	MW04A
Date:	7/25/01	Well Diameter:	2"
Weather:	cloudy ~65°F	Screen Interval:	36' - 46' btoc
Samplers:	John Rapp and Larry Namba	Measuring Point:	top of casing
Purge Method:	Redi-Flo 2 Grundfos Pump	Depth to water:	27.22' btoc
Sample Method:	Redi-Flo 2 Grundfos Pump	Depth to bottom:	46.09' btoc
Tubing Type:	1/4 inch ID poly	Depth to NAPL:	NA
Pump Intake Depth:	~40' btoc	NAPL thickness:	NA
Water Disposal/quantity:	Labeled drum/	**Meter Information:**	Calibration Date
QA/QC Samples:		Model	
Duplicate:	NA	Temp.: QED Micropurge	7/25/01
Replicate:	NA	pH: "	"
MS/MSD:	NA	Conductivity: "	"
Blank:	NA	ORP "	"
Containers:		DO "	"
Analysis	Type / No. of Primary / No. of MS/MSD	Turbidity: "	"
See Back	- / - / -	**Comments:**	
		slow recharging well collect ½ sample @1430, 2nd ½ @ ~1830	

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	10.87	12.32	13.06	13.34	14.24	14.37	14.38
pH	SU	5.33	5.32	5.36	5.28	5.34	5.35	5.36
Conductivity	uS/cm	.050	.047	.044	.042	.039	.035	.035
ORP	mV	193	183	178	177	175	169	171
DO	mg/l	5.50	4.20	4.01	4.17	4.25	6.26	5.27
Turbidity	NTU	10.7	16.2	41.9	27.9	44.4	42.2	29.9
Time	HR	0950	0955	1000	1005	1010	1015	1020
Water Level	ft. btoc	29.85	31.33	31.95	32.96	33.40	34.80	35.64
Flow Rate	ml/min	.2	.2	.2	.2	.2	.2	.2

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature	°C	14.75	14.76	14.76				
pH	SU	5.36	5.37	5.36				
Conductivity	uS/cm	.035	.035	.035				
ORP	mV	175	170	171				
DO	mg/l	5.08	5.12	5.16				
Turbidity	NTU	42.9	55.1	38.6				
Time	HR	1025	1030	1035				1800
Water Level	ft. btoc	36.7	37.42	38.56				
Flow Rate	ml/min	.2	.2	.2				

WELL DEVELOPMENT DATA SHEET

Project Name: Camp Bonneville - Landfill 4
Project/Task No.: 53-F00723 23.00/03100
Date: 7/10/01
Weather: sunny warm 70°F
Samplers: J. Rapp
Purge Method: ~~~40 gal~~ pump
Final Purge Volume: ~40 gal
Water Disposal labeled drum
Elevation of MP:
Elevation of Water:

Well Number: MW05A
Well Diameter: 2"
Screen Interval: 31' - 36' btoc
Measuring Point (MP): top of casing
Depth to bottom: 36.40' btoc
Depth to water: 24.54' btoc
Feet of Water: ~12'
Gallons per Casing Foot: 1 vol = ~2 gal
(2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)

Meter Information:

	Model	Calib. Date
pH:	YSI 600XL	7/10/01
Eh:		
Conductivity:		
DO Meter:		
Turbidity:		
Temperature:		
Other:		

Comments: MW05A purged until dry, allow to recharge and repeat pumping. Unable to achieve NTUs < 5. pumping rate = ~1 gal/min

Field Parameters	Units	0 Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature	°C	10.43	10.35	10.34	10.25	10.28	10.32	10.30
pH	SU	5.41	5.35	5.17	5.23	5.34	5.31	5.27
Conductivity	uS/cm	.036	.035	.033	.033	.033	.034	.033
~~Eh~~ ORP	mV	384	282	306	307	304	318	342
DO	mg/L	11.61	11.57	11.26	11.80	11.58	11.43	11.21
Turbidity	NTUs	1700	131	269	>1000	>1000	69	72
Time	HR	1250	1320	1340	1400	1420	1440	1500

Field Parameters	Units	Volume	Volume	Volume	Volume	Volume	Volume	Volume
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								

GROUNDWATER SAMPLING DATA SHEET

Project Name:	Camp Bonneville-Landfill 4 GW Sampling	**Sample Number:**	GW01MW01A
Project Number:	53-F0072323.00 03100	Station Number:	MW01A
Date:	7/24/01	Well Diameter:	2"
Weather:	cloudy, cool ~65°F	Screen Interval:	20' - 30' btoc
Samplers:	John Rapp and Larry Namba	Measuring Point:	toc
Purge Method:	Redi-Flo 2 Grundfos Pump	Depth to water:	16.60' btoc
Sample Method:	Redi-Flo 2 Grundfos Pump	Depth to bottom:	30.05' btoc
Tubing Type:	1/4 inch ID poly	Depth to NAPL:	NA
Pump Intake Depth:	25' btoc	NAPL thickness:	NA
Water Disposal/quantity:	Labeled drum/	**Meter Information:**	Calibration Date
QA/QC Samples:		Model	
Duplicate:	NA	Temp.: QED Micropurge	7/24/01
Replicate:	NA	pH: "	"
MS/MSD:	NA	Conductivity: "	"
Blank:	NA	ORP "	"
		DO "	"
		Turbidity: "	"

Containers: Analysis	Type	No. of Primary	No. of MS/MSD
See Back	-	-	-

Comments:

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	~~25~~ 30 Minutes	~~30~~ 40 Minutes
Temperature	°C	11.47	12.36	12.93	13.49	13.32	13.12	12.48
pH	SU	5.10	5.10	5.14	5.15	5.12	5.06	4.78
Conductivity	uS/cm	.095	.087	.085	.084	.081	.075	.069
ORP	mV	206	206	206	208	209	216	236
DO	mg/l	12.42	11.24	10.55	10.07	10.09	9.82	10.76
Turbidity	NTU	18.2	11.1	11.8	10.4	7.7	5.0	25.1
Time	HR	0941	0946	0950	0955	1000	1010	1020
Water Level	ft. btoc	16.74	17.54	18.20	18.19	17.90	18.05	20.75
Flow Rate	ml/min	2.25	.25	.3	.3	.3	.2	.3

Field Parameters	Units	~~35~~ 45 Minutes	~~40~~ 50 Minutes	~~45~~ 55 Minutes	~~50~~ 65 Minutes	~~55~~ 75 Minutes	60 Minutes	Sample
Temperature	°C	11.86	12.17	12.24	12.25	12.25		
pH	SU	4.72	4.79	4.80	4.79	4.80		
Conductivity	uS/cm	.067	.066	.064	.064	.065		
ORP	mV	238	236	236	241	234		
DO	mg/l	9.82	9.81	9.75	9.59	9.78		
Turbidity	NTU	12.1	6.1	6.6	10.7	18.6		
Time	HR	1025	1030	1035	1045	1055		1100
Water Level	ft. btoc	19.65	19.50	19.50	21.5	22.5		
Flow Rate	ml/min	.3	.35	.35	.3	.3		

GROUNDWATER SAMPLING DATA SHEET

Project Name:	Camp Bonneville-Landfill 4 GW Sampling	**Sample Number:**	GW01MW01B
Project Number:	53-F0072323.00 03100	Station Number:	MW01B
Date:	7/24/01	Well Diameter:	2"
Weather:	cloudy, cool 60-65°F	Screen Interval:	46' - 56' btoc
Samplers:	John Rapp and Larry Namba	Measuring Point:	top of casing
Purge Method:	Redi-Flo 2 Grundfos Pump	Depth to water:	13.71' btoc
Sample Method:	Redi-Flo 2 Grundfos Pump	Depth to bottom:	55.96' btoc
Tubing Type:	1/4 inch ID poly	Depth to NAPL:	NA
Pump Intake Depth:	51' btoc	NAPL thickness:	NA
Water Disposal/quantity:	Labeled drum/	**Meter Information:**	Calibration Date
QA/QC Samples:		Model	
Duplicate:	NA	Temp.: QED Micropurge	7/24/01
Replicate:	NA	pH: "	"
MS/MSD:	NA	Conductivity: "	"
Blank:		ORP "	"
		DO "	"
		Turbidity: "	"

Containers: Analysis	Type	No. of Primary	No. of MS/MSD
See Back	-	-	-

Comments:

Field Parameters	Units	**0** Minutes	**5** Minutes	**10** Minutes	**15** Minutes	**20** Minutes	**25** Minutes	**30** Minutes
Temperature	°C	10.89	11.24	11.52	11.74	11.73	11.72	11.77
pH	SU	5.06	4.93	4.96	4.95	5.02	5.01	4.96
Conductivity	uS/cm	.028	.027	.027	.027	.027	.027	.028
ORP	mV	213	219	220	220	218	220	220
DO	mg/l	13.76	10.29	9.39	9.16	9.04	9.06	9.01
Turbidity	NTU	129	35	10.7	7.3	6.2	6.0	5.7
Time	HR	1155	1200	1205	1210	1215	1220	1225
Water Level	ft. btoc	14.10	14.19	14.20	14.21	14.21	14.24	14.27
Flow Rate	ml/min	.6	.5	.4	.3	.3	.3	.2

Field Parameters	Units	**35** Minutes	~~40~~ **45** Minutes	~~45~~ **50** Minutes	~~50~~ **60** Minutes	**55** Minutes	**60** Minutes	**Sample**
Temperature	°C	11.79	11.79	11.87	11.80			
pH	SU	4.96	4.95	4.92	4.96			
Conductivity	uS/cm	.027	.027	.027	.027			
ORP	mV	224	225	225	226			
DO	mg/l	8.99	9.01	9.86	9.91			
Turbidity	NTU	5.3	5.1	5.5	5.7			
Time	HR	1230	1240	1245	1255			1245
Water Level	ft. btoc	14.29	14.27	14.25	14.25			
Flow Rate	ml/min	.3	.3	.3	.3			

GROUNDWATER SAMPLING DATA SHEET

Project Name:	Camp Bonneville-Landfill 4 GW Sampling	**Sample Number:**	GW01MW02A
Project Number:	53-F0072323.00 03100	Station Number:	MW02A
Date:	7/24/01	Well Diameter:	2"
Weather:	cloudy 60-65 °F	Screen Interval:	30.8'-40.8' btoc
Samplers:	John Rapp and Larry Namba	Measuring Point:	top of casing
Purge Method:	Redi-Flo 2 Grundfos Pump	Depth to water:	27.47' btoc
Sample Method:	Redi-Flo 2 Grundfos Pump	Depth to bottom:	40.5' btoc
Tubing Type:	1/4 inch ID poly	Depth to NAPL:	NA
Pump Intake Depth:	45' btoc	NAPL thickness:	NA
Water Disposal/quantity:	Labeled drum/	**Meter Information:**	Calibration Date
QA/QC Samples:		Model	
Duplicate:	GW501MW02A @ 1800	Temp.: QED Micropurge	7/24/01
Replicate:	GW01MW02A (USACE LAB)	pH: "	"
MS/MSD:	NA	Conductivity: "	"
Blank:	NA	ORP "	"

Containers: Analysis	Type	No. of Primary	No. of MS/MSD	DO "	"
See Back	-	-	-	Turbidity: "	"
				Comments:	

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	10.87	12.32	13.06	13.34	13.84	13.73	13.74
pH	SU	4.81	4.78	4.74	4.63	4.68	4.62	4.61
Conductivity	uS/cm	.086	.081	.080	.078	.075	.072	.072
ORP	mV	198	212	218	227	228	234	235
DO	mg/l	13.47	9.57	9.46	9.29	9.07	9.25	9.46
Turbidity	NTU	39	39.3	42.2	23.8	18.8	18.4	9.2
Time	HR	1650	1655	1700	1705	1710	1715	1720
Water Level	ft. btoc	27.49	27.51	28.01	28.98	29.07	29.08	29.09
Flow Rate	ml/min	.3	.3	.3	.3	.3	.3	.3

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature	°C	13.79						
pH	SU	4.62						
Conductivity	uS/cm	.072						
ORP	mV	218						
DO	mg/l	9.47						
Turbidity	NTU	7.2						
Time	HR	1725						1745
Water Level	ft. btoc	29.10						
Flow Rate	ml/min	.3						

GROUNDWATER SAMPLING DATA SHEET

Project Name:	Camp Bonneville-Landfill 4 GW Sampling	**Sample Number:**	GW01MW02B
Project Number:	53-F0072323.00 03100	Station Number:	MW02B
Date:	7/25/01	Well Diameter:	2"
Weather:	cloudy, cool ~65°F	Screen Interval:	65' - 75' btoc
Samplers:	John Rapp and Larry Namba	Measuring Point:	top of casing
Purge Method:	Redi-Flo 2 Grundfos Pump	Depth to water:	31.60'
Sample Method:	Redi-Flo 2 Grundfos Pump	Depth to bottom:	75' btoc
Tubing Type:	1/4 inch ID poly	Depth to NAPL:	NA
Pump Intake Depth:	~ 70' btoc	NAPL thickness:	NA
Water Disposal/quantity:	Labeled drum/	**Meter Information:**	Calibration Date
QA/QC Samples:		Model	
Duplicate:		Temp.: QED Micropurge	7/25/01
Replicate:		pH: "	"
MS/MSD:	GW01MW02B	Conductivity: "	"
Blank:		ORP "	"
		DO "	"
		Turbidity: "	"

Containers: Analysis	Type	No. of Primary	No. of MS/MSD
See Back	-	-	-

Comments:

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	11.63	12.49	12.93	13.24	13.26	13.65	14.06
pH	SU	4.88	4.95	4.93	5.03	5.06	5.13	4.99
Conductivity	uS/cm	.057	.059	.055	.056	.057	.058	.057
ORP	mV	203	196	197	191	191	187	197
DO	mg/l	7.58	7.74	10.96	2.87	2.49	1.39	1.15
Turbidity	NTU	71.5	16.4	23.6	41.4	47.1	66.4	183
Time	HR	1055	1100	1105	1110	1115	1120	1125
Water Level	ft. btoc	35.45	37.85	38.56	38.91	39.12	41.20	41.55
Flow Rate	ml/min	.4	.4	.3	.3	.3	.3	.3

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature	°C	13.99	14.03	14.16	13.97	14.04	14.02	
pH	SU	4.95	4.97	4.93	4.75	4.81	4.81	
Conductivity	uS/cm	.057	.058	.062	.067	.068	.068	
ORP	mV	194	191	198	200	200	200	
DO	mg/l	1.12	1.03	1.00	1.05	1.01	1.07	
Turbidity	NTU	222	300	359	200	109	58	
Time	HR	1130	1135	1140	1145	1150	1155	1245
Water Level	ft. btoc	41.50	41.51	42.31	43.60	44.80	46.60	
Flow Rate	ml/min	.3	.3	.4	.4	.3	.3	

GROUNDWATER SAMPLING DATA SHEET

Project Name:	Camp Bonneville-Landfill 4 GW Sampling	**Sample Number:**	GW01MW03A
Project Number:	53-F0072323.00 03100	Station Number:	MW03A
Date:	7/26/01	Well Diameter:	2"
Weather:	sunny 75°F	Screen Interval:	44'- 49' btoc
Samplers:	John Rapp and Larry Namba	Measuring Point:	top of casing
Purge Method:	Redi-Flo 2 Grundfos Pump	Depth to water:	30.54' btoc
Sample Method:	Redi-Flo 2 Grundfos Pump	Depth to bottom:	49.02' btoc
Tubing Type:	1/4 inch ID poly	Depth to NAPL:	NA
Pump Intake Depth:	46.5' btoc	NAPL thickness:	NA
Water Disposal/quantity:	Labeled drum/	**Meter Information:**	Calibration Date
QA/QC Samples:		Model	
Duplicate:	NA	Temp.: QED Micropurge	7/26/01
Replicate:	NA	pH: "	"
MS/MSD:	NA	Conductivity: "	"
Blank:		ORP "	"
		DO "	"
		Turbidity: "	"

Containers: Analysis	Type	No. of Primary	No. of MS/MSD
See Back	-	-	-

Comments:

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	12.05	12.60	13.52	13.71	13.37	13.34	
pH	SU	5.30	5.11	5.04	5.01	5.01	4.99	
Conductivity	uS/cm	.024	.024	.024	.024	.024	.024	
ORP	mV	166	174	183	195	196	201	
DO	mg/l	9.63	8.69	8.17	8.31	8.39	8.44	
Turbidity	NTU	50.6	40.3	16.4	3.3	4.2	2.4	
Time	HR	1600	1605	1610	1615	1620	1625	
Water Level	ft. btoc	32.63	32.11	32.05	32.05	32.05	32.05	
Flow Rate	ml/min	.35	.3	.35	.35	.35	.35	

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature	°C							
pH	SU							
Conductivity	uS/cm							
ORP	mV							
DO	mg/l							
Turbidity	NTU							
Time								1630
Water Level	ft. btoc							
Flow Rate	ml/min							

GROUNDWATER SAMPLING DATA SHEET

Project Name:	Camp Bonneville-Landfill 4 GW Sampling	**Sample Number:**	GW01MW03B
Project Number:	53-F0072323.00 03100	Station Number:	MW03B
Date:	7/26/01	Well Diameter:	2"
Weather:	sunny 75°F	Screen Interval:	53' -63' btoc
Samplers:	John Rapp and Larry Namba	Measuring Point:	top of casing
Purge Method:	Redi-Flo 2 Grundfos Pump	Depth to water:	27.20' btoc
Sample Method:	Redi-Flo 2 Grundfos Pump	Depth to bottom:	63.03' btoc
Tubing Type:	1/4 inch ID poly	Depth to NAPL:	NA
Pump Intake Depth:		NAPL thickness:	NA
Water Disposal/quantity:	Labeled drum/	**Meter Information:**	Model / Calibration Date
QA/QC Samples:		Temp.:	QED Micropurge / 7/26/01
Duplicate:	NA	pH:	" / "
Replicate:	NA	Conductivity:	" / "
MS/MSD:	NA	ORP	" / "
Blank:	NA	DO	" / "
		Turbidity:	" / "

Containers: Analysis	Type	No. of Primary	No. of MS/MSD
See Back	-	-	-

Comments:

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	11.79	12.52	12.50	12.72	13.21	13.34	13.29
pH	SU	5.34	5.44	5.39	5.39	5.40	5.49	5.49
Conductivity	uS/cm	.182	.190	.166	.218	.236	.243	.236
ORP	mV	170	167	169	167	163	157	159
DO	mg/l	8.49	7.96	8.51	8.08	8.02	8.02	7.98
Turbidity	NTU	8.0	2.3	0.0	.4	<1	<1	<1
Time	HR	1235	1240	1245	1250	1255	1300	1305
Water Level	ft. btoc	28.99	29.98	32.80	33.95	34.70	34.90	35.15
Flow Rate	ml/min	.3	.3	.3	.3	.3	.3	.3

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature	°C	13.31	13.30					
pH	SU	5.48	5.49					
Conductivity	uS/cm	.236	.237					
ORP	mV	154	153					
DO	mg/l	7.96	8.00					
Turbidity	NTU	<1	<1					
Time	HR	1310	1315					1330
Water Level	ft. btoc	35.35	35.91					
Flow Rate	ml/min	.3	.3					

GROUNDWATER SAMPLING DATA SHEET

Project Name:	Camp Bonneville-Landfill 4 GW Sampling	**Sample Number:**	GW01MW04A
Project Number:	53-F0072323.00 03100	Station Number:	MW04A
Date:	7/25/01	Well Diameter:	2"
Weather:	cloudy ~65°F	Screen Interval:	36' -46' btoc
Samplers:	John Rapp and Larry Namba	Measuring Point:	top of casing
Purge Method:	Redi-Flo 2 Grundfos Pump	Depth to water:	27.22' btoc
Sample Method:	Redi-Flo 2 Grundfos Pump	Depth to bottom:	46.09' btoc
Tubing Type:	1/4 inch ID poly	Depth to NAPL:	NA
Pump Intake Depth:	~40' btoc	NAPL thickness:	NA
Water Disposal/quantity:	Labeled drum/	**Meter Information:**	Calibration Date
QA/QC Samples:		Model	
Duplicate:	NA	Temp.: QED Micropurge	7/25/01
Replicate:	NA	pH: "	"
MS/MSD:	NA	Conductivity: "	"
Blank:	NA	ORP "	"

Containers: Analysis	Type	No. of Primary	No. of MS/MSD
See Back	-	-	-

Comments: slow recharging well collect ½ sample @1430, 2nd ½ @ ~1830

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	10.87	12.32	13.06	13.34	14.24	14.37	14.38
pH	SU	5.33	5.32	5.36	5.28	5.34	5.35	5.36
Conductivity	uS/cm	.050	.047	.044	.042	.039	.035	.035
ORP	mV	193	183	178	177	175	169	171
DO	mg/l	5.50	4.20	4.01	4.17	4.25	6.26	5.27
Turbidity	NTU	10.7	16.2	41.9	27.9	44.4	42.2	29.9
Time	HR	0950	0955	1000	1005	1010	1015	1020
Water Level	ft. btoc	29.85	31.33	31.95	32.96	33.40	34.80	35.64
Flow Rate	ml/min	.2	.2	.2	.2	.2	.2	.2

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature	°C	14.75	14.76	14.76				
pH	SU	5.36	5.37	5.36				
Conductivity	uS/cm	.035	.035	.035				
ORP	mV	175	170	171				
DO	mg/l	5.08	5.12	5.16				
Turbidity	NTU	42.9	55.1	38.6				
Time	HR	1025	1030	1035				1800
Water Level	ft. btoc	36.7	37.42	38.56				
Flow Rate	ml/min	.2	.2	.2				

GROUNDWATER SAMPLING DATA SHEET

Project Name:	Camp Bonneville-Landfill 4 GW Sampling	**Sample Number:**	GW01MW05A
Project Number:	53-F0072323.00 03100	Station Number:	MW05A
Date:	7/26/01	Well Diameter:	2"
Weather:	mostly sunny ~70°F	Screen Interval:	31' - 36' btoc
Samplers:	John Rapp and Larry Namba	Measuring Point:	top of casing
Purge Method:	Redi-Flo 2 Grundfos Pump	Depth to water:	24.54' btoc
Sample Method:	Redi-Flo 2 Grundfos Pump	Depth to bottom:	36.40' btoc
Tubing Type:	1/4 inch ID poly	Depth to NAPL:	NA
Pump Intake Depth:		NAPL thickness:	NA
Water Disposal/quantity:	Labeled drum/	**Meter Information:**	Model / Calibration Date
QA/QC Samples:		Temp.:	QED Micropurge / 7/26/01
Duplicate:	NA	pH:	" / "
Replicate:	NA	Conductivity:	" / "
MS/MSD:	NA	ORP	" / "
Blank:	NA	DO	" / "
		Turbidity:	" / "

Containers: Analysis	Type	No. of Primary	No. of MS/MSD
See Back	-	-	-

Comments:

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	10.46	11.75	12.23	12.53	13.36	13.42	12.87
pH	SU	5.29	5.30	5.19	5.27	5.26	5.27	5.11
Conductivity	uS/cm	.034	.035	.035	.035	.034	.034	.034
ORP	mV	154	160	174	173	172	177	183
DO	mg/l	9.28	8.36	8.73	8.25	7.86	7.77	8.00
Turbidity	NTU	28.5	21.3	7.6	14.3	8.7	4.5	11.2
Time	HR	1105	1110	1115	1120	1125	1130	1135
Water Level	ft. btoc	28.91	29.45	30.01	30.15	29.66	29.20	29.75
Flow Rate	ml/min	.3	.3	.3	.3	.3	.3	.3

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature	°C	12.78	12.82	12.83				
pH	SU	5.07	5.07	5.06				
Conductivity	uS/cm	.034	.034	.034				
ORP	mV	192	192	192				
DO	mg/l	8.00	7.78	7.87				
Turbidity	NTU	1.4	5.6	0.6				
Time	HR	1140	1145	1150				1200
Water Level	ft. btoc	30.05	30.09	30.10				
Flow Rate	ml/min	.3	.3	.3				

GROUNDWATER SAMPLING DATA SHEET

Well Number:	MW01A	Sample Number:	GW02MW01A
Project Name:	CAMP BONNEVILLE LANDFILL 4	Project/Task:	53F0072323/03200
		Date:	10-23-01
Well Depth:	30.26	Measuring Point (MP):	TOC
Water Depth:	17.52	Elevation of MP:	
Feet of Water:	12.72	Elevation of Water:	
Gallons per Foot:	.16		
		Well Diameter:	2"
Well Volume:	2.04 gal		
Purge Volume: (PZ)	~~14.5 liters~~ 3.87 gallons		

Well Diameter	Gallons per casing foot
2 inches	0.16
4 inches	0.65

Purge Method:	Grundfos Pump	pH meter:	Horiba U-22
Sample Method:	" "	Eh meter:	
Water Disposal:	Drum	Conductivity meter:	
Weather:	Rain, 50°	D.O. Meter:	
Sampler(s):	DLewis	Calibration Date:	10-23-01

QA/QC Samples

Blind Duplicate

MS/MSD

Replicate

Blank

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	10.4	11.5	12.0	12.1	11.9	12.4	12.7
pH		6.60	5.46	5.29	5.20	5.19	5.12	5.07
Conductivity	ms/cm	.074	.070	.066	.062	.062	.063	.062
Eh	mV	378	342	320	298	274	260	242
DO	mg/l	8.65	6.26	6.58	6.28	6.10	5.65	6.24
Turbidity	NTU	7.5	5.7	1.6	0	0	0	0
Time		1721	1726	1731	1736	1741	1746	1751
Water Level	ft.	18.89	18.85	18.83	18.87	18.74	18.71	18.95
Flow Rate	ml/min	400	375	375	375	300	300	400

Field Parameters	Units	35 Minutes	Minutes	Minutes	Minutes	Minutes	Minutes	Sample
Temperature		12.4						
pH		5.12						
Conductivity		.064						
Eh		224						
DO		6.15						
Turbidity		0						
Time		1756						1800
Water Level		19.08						
Flow Rate		400						

GROUNDWATER SAMPLING DATA SHEET

GW02MW01B

Well Number:	MW01B	Sample Number:	~~GW02MW01B~~ (2)
Project Name:	CAMP BONNEVILLE LAND FILL 4	Project/Task:	53F0072323/03200
		Date:	10-24-01
Well Depth:	55.56	Measuring Point (MP):	TOC
Water Depth:	17.52	Elevation of MP:	
Feet of Water:	40.59	Elevation of Water:	
Gallons per Foot:	.16		
		Well Diameter:	2"
Well Volume:	6.49 gal		
Purge Volume:	2.64 gal		

Well Diameter	Gallons per casing foot
2 inches	0.16
4 inches	0.65

Purge Method:	grundfos pump	pH meter:	Horiba U-22
Sample Method:	" "	Eh meter:	
Water Disposal:	Drum	Conductivity meter:	
Weather:	rain, 43°	D.O. Meter:	
Sampler(s):	DLewis L Tamba	Calibration Date:	10-24-01

QA/QC Samples

Blind Duplicate

MS/MSD yes

Replicate

Blank

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	10.3	10.1	10.3	10.6	10.8	10.9	
pH		5.65	5.74	5.79	5.81	5.81	5.79	
Conductivity	ms/cm	.061	.067	.045	.036	.035	.034	
Eh	mV	~~@.067355~~	327	308	287	270	256	
DO	mg/L	~~@.045679~~	4.87	4.02	3.25	3.18	3.18	
Turbidity	NTU	7.3	5.3	2.2	0.5	0.2	0.2	
Time		0847	0852	0857	0902	0907	0912	~~0915~~ (2)
Water Level	ft.	15.21	15.28	15.31	15.33	15.35	15.37	
Flow Rate	ml/min	400	400	400	400	400	400	

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								0915
Water Level								
Flow Rate								

GROUNDWATER SAMPLING DATA SHEET

Well Number:	MW02A	Sample Number:	GW02MW02A
Project Name:	CAMP BONNEVILLE LAND FILL 4	Project/Task:	53F00723/03200
		Date:	10-24-01
Well Depth:	40.28	Measuring Point (MP):	TOC
Water Depth:	29.12	Elevation of MP:	
Feet of Water:	11.16	Elevation of Water:	
Gallons per Foot:	.16		
		Well Diameter:	2
Well Volume:	1.79 gal		
Purge Volume:	2.38 gal		

Well Diameter	Gallons per casing foot
2 inches	0.16
4 inches	0.65

Purge Method:	grundfos pump	pH meter:	Horiba U-22
Sample Method:	" "	Eh meter:	
Water Disposal:	Drum	Conductivity meter:	
Weather:	rain 45°	D.O. Meter:	
Sampler(s):	DLewis L Tamba	Calibration Date:	10-24-01

QA/QC Samples

Blind Duplicate

MS/MSD

Replicate

Blank

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	10.9	11.9	12.9	13.3	13.8	14.2	14.4
pH		6.00	5.81	5.71	5.66	5.68	5.72	5.73
Conductivity	ms/cm	.034	.037	.038	.039	.039	.040	.040
Eh	mV	~~245~~ 245	228	212	191	167	132	116
DO	mg/L	5.05	5.42	5.25	5.27	5.40	5.75	5.85
Turbidity	NTU	4.3	21.7	24.0	22.1	19.0	17.3	16.5
Time		1104	1109	1114	1119	1124	1129	1134
Water Level	ft.	29.54	29.48	29.47	29.48	29.47	29.48	29.48
Flow Rate	ml/min	300	300	300	300	300	300	300

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time		1139						1140
Water Level								
Flow Rate								

GROUNDWATER SAMPLING DATA SHEET

Well Number:	MW02B	Sample Number:	GW02MW02B
Project Name:	CAMP BONNEVILLE LAND FILL 4	Project/Task:	53F0072323/03200
		Date:	10-24-01
Well Depth:	74.56	Measuring Point (MP):	TOC
Water Depth:	32.58	Elevation of MP:	
Feet of Water:	41.98	Elevation of Water:	
Gallons per Foot:	.16		
		Well Diameter:	2"
Well Volume:	6.72		
Purge Volume:	1.32 gal		

Well Diameter	Gallons per casing foot
2 inches	0.16
4 inches	0.65

Purge Method:	grundfos pump	pH meter:	Horiba U-22
Sample Method:	" "	Eh meter:	
Water Disposal:	Drum	Conductivity meter:	
Weather:	rain, 45°	D.O. Meter:	
Sampler(s):	DLewis L Namba	Calibration Date:	10-24-01

QA/QC Samples

Blind Duplicate	GW502MW02B (time: 1630)
MS/MSD	
Replicate	
Blank	

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	11.0	11.2	11.4	11.6	11.6		
pH		5.63	5.60	5.62	5.62	5.62		
Conductivity	ms/cm	.061	.063	.062	.060	.060		
Eh	mV	537	495	457	415	374		
DO	mg/L	3.07	0.86	0.00	0.00	0.00		
Turbidity	NTU	38.6	13.2	7.1	6.6	5.2		
Time		1503	1508	1513	1518	1523	1530	
Water Level	ft.	33.77	34.19	34.25	34.17	34.16		
Flow Rate	ml/min	250	250	250	250	250		

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								1530
Water Level								
Flow Rate								

GROUNDWATER SAMPLING DATA SHEET

Well Number:	MW03A	Sample Number:	GW02MW03A
Project Name:	CAMP BONNEVILLE LAND FILL 4	Project/Task:	53F00723203200
		Date:	10-25-01
Well Depth:	~~30.30~~ 49.01	Measuring Point (MP):	TOC
Water Depth:	30.30	Elevation of MP:	
Feet of Water:	18.71	Elevation of Water:	
Gallons per Foot:	.16		
		Well Diameter:	2
Well Volume:	2.99gal		
Purge Volume:	1.19gal		

Well Diameter	Gallons per casing foot
2 inches	0.16
4 inches	0.65

Purge Method:	grundfos pump	pH meter:	Horiba U-22
Sample Method:	" "	Eh meter:	
Water Disposal:	Drum	Conductivity meter:	
Weather:	rain 45°	D.O. Meter:	
Sampler(s):	DLewis L Nanba	Calibration Date:	10-25-01

QA/QC Samples

Blind Duplicate

MS/MSD

Replicate

Blank

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	11.8	12.7	12.9	13.2	13.4		
pH		5.47	5.32	5.45	5.51	5.53		
Conductivity	ms/cm	.041	.037	.031	.029	.028		
Eh	mV	599	512	458	416	374		
DO	mg/l	8.41	5.54	4.11	3.43	3.26		
Turbidity	NTU	2.2	1.7	1.9	1.7	1.6		
Time		1515	1520	1525	1530	1535		
Water Level	ft.	31.27	31.35	31.29	31.30	31.31		
Flow Rate	ml/min	300	300	200	200	200		

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								1545
Water Level								
Flow Rate								

GROUNDWATER SAMPLING DATA SHEET

MW03B

Well Number:	~~GW02MW03B~~ (2)	Sample Number:	GW02MW03B
Project Name:	CAMP BONNEVILLE LAND FILL 4	Project/Task:	53F0072323/03200
		Date:	10-26-01
Well Depth:	61.95	Measuring Point (MP):	TOC
Water Depth:	27.62	Elevation of MP:	
Feet of Water:	34.33	Elevation of Water:	
Gallons per Foot:	.16	Well Diameter:	2"
Well Volume:	5.49 gal		
Purge Volume:	16.9 gal		

Well Diameter	Gallons per casing foot
2 inches	0.16
4 inches	0.65

Purge Method:	grundfoo pump	pH meter:	Horiba U-22
Sample Method:	" "	Eh meter:	
Water Disposal:	Drum	Conductivity meter:	
Weather:	rain 45°	D.O. Meter:	
Sampler(s):	DLewis L Tamba	Calibration Date:	10-26-01

QA/QC Samples

Blind Duplicate

MS/MSD

Replicate

Blank

Field Parameters	Units	0 Minutes	~~15~~ 3 Minutes	~~10~~ 6 Minutes	~~15~~ 9 Minutes	~~20~~ 12 Minutes	~~25~~ Minutes	~~30~~ Minutes
Temperature	°C	11.0	11.1	11.4	11.8	12.0		
pH		5.79	5.68	5.64	5.64	5.67		
Conductivity	ms/cm	.099	.109	.122	.122	.122		
Eh	mV	~~107553~~	529	493	470	438		
DO	mg/L	~~12~~ 5.99	4.13	2.86	2.75	1.77		
Turbidity	NTU	~~12~~ 9.7	8.9	8.6	9.3	10.7		
Time		12.22	1228	1231	1234	1237		
Water Level	ft.	29.50	29.56	29.87	29.95	30.02		
Flow Rate	ml/min	200	200	225	225	225		

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								1245
Water Level								
Flow Rate								

GROUNDWATER SAMPLING DATA SHEET

Well Number: MW04A
Project Name: Camp Bonneville Landfill 4
Well Depth: 46.51
Water Depth: 23.71
Feet of Water: 23.34
Gallons per Foot: .16
Well Volume: 3.73 gal
Purge Volume: 1.63 gal

Sample Number: GW02MW04A
Project/Task: 53F0072323/03200
Date: 10-26-01
Measuring Point (MP): TOC
Elevation of MP:
Elevation of Water:
Well Diameter: 2"

Well Diameter	Gallons per casing foot
2 inches	0.16
4 inches	0.65

Purge Method: grundfos pump
Sample Method: " "
Water Disposal: Drum
Weather: rain 45°
Sampler(s): D Lewis L Namba

pH meter: Horiba U-22
Eh meter:
Conductivity meter:
D.O. Meter:
Calibration Date: 10-26-01

QA/QC Samples

Blind Duplicate
MS/MSD
Replicate
Blank

Field Parameters	Units	0 Minutes	3 Minutes	6 Minutes	9 Minutes	12 Minutes	Minutes	Minutes
Temperature	°C	10.4	10.5	10.4	10.5	10.6		
pH		6.00	5.74 (22)	5.73	5.76	5.80		
Conductivity	ms/cm	.040	.041	.040	.040	.038		
Eh	mV							
DO	mg/l	6.85	4.44	3.08	2.36	1.83		
Turbidity	NTU	5.5	14.2	83.9	110.0	119.0		
Time		0916	0919	0922	0925	0928		
Water Level	ft.	29.76	30.07	30.07	30.07	30.07		
Flow Rate	ml/min	200	200	200	200	200		

Field Parameters	Units	Minutes	Minutes	Minutes	Minutes	Minutes	Minutes	Sample
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								0935
Water Level								
Flow Rate								

GROUNDWATER SAMPLING DATA SHEET

Well Number:	MW05A	Sample Number:	GW02MW05A
Project Name:	CAMP BONNEVILLE LAND FILL 4	Project/Task:	53F0072323/03200
		Date:	10-26-01
Well Depth:	36.70	Measuring Point (MP):	TOC
Water Depth:	24.29	Elevation of MP:	
Feet of Water:	12.41	Elevation of Water:	
Gallons per Foot:	~~1.99~~ .16	Well Diameter:	2"
Well Volume:	1.99 gal		
Purge Volume:	.63 gal		

Well Diameter	Gallons per casing foot
2 inches	0.16
4 inches	0.65

Purge Method:	grundfos pump	pH meter:	Horiba U-22
Sample Method:	" "	Eh meter:	
Water Disposal:	Drum	Conductivity meter:	
Weather:	Rain 45°	D.O. Meter:	
Sampler(s):	DLewis L Tamba	Calibration Date:	10/26/01

QA/QC Samples

Blind Duplicate

MS/MSD

Replicate

Blank RINSATE GW02MW1005A 3 6 9 12 15 18

Field Parameters	Units	0 Minutes	~~5~~ Minutes	~~10~~ Minutes	~~15~~ Minutes	~~20~~ Minutes	~~25~~ Minutes	~~30~~ Minutes
Temperature	°C	10.9	10.9	11.4	11.7	11.8	12.0	12.0
pH		5.45	5.38	5.45	5.56	5.61	5.67	5.70
Conductivity	ms/cm	.044	.040	.041	.041	.042	.041	.040
Eh	mV	551	507	466	433	410	389	366
DO	mg/L	10.00	8.74	6.68	5.18	4.51	3.96	3.52
Turbidity	NTU	19.2	19.2	18.0	17.6	18.4	17.4	15.6
Time		1647	1650	1653	1656	1659	1702	1705
Water Level	ft.	25.91	26.07	26.12	26.04	25.96	25.87	25.82
Flow Rate	ml/min	100	200	200	100	100	100	100

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								1710
Water Level								
Flow Rate								

GROUNDWATER SAMPLING DATA SHEET

Project Name: CAMP BONNEVILLE
Project/Task No.: 53F0072323.00/03200
Date: 1-21-02
Weather: 35° RAIN/SNOW
Samplers: D LEWIS / L NAMBA
Purge Method: GRUNDFOS PUMP
Sample Method: " "
Sampling Device: " "
Tubing Type: 1/4 in. POLY
Pump Intake Depth: 27.75'
Water Disposal/quantity: 2 gal.

Sample Number: GW03MW01A
Station Type: MONUMENT
Station Number: MW01A
Well Condition: OK
Well Diameter: 2"
Screen Interval:
Measuring Poi.. (MP): TOC
Elevation of MP:
Elevation of Water:
Depth to bottom: 30.26
Depth to water: 14.16
Depth to NAPL:
NAPL thickness:

Field Test Kit Results:
PID:
DO:
Alkalinity:
Ferrous Iron:
Other:

Meter Information: Model / Calib. Date
pH: HORIBA U-22 / 1-21-02
Eh:
Conductivity:
DO Meter:
Turbidity:
Temperature:
Other:

Containers:

Analysis	Type	#-Primary	#-MS/MSD

QA/QC Samples:
Duplicate:
Replicate:
MS/MSD:
Blank:

Comments: SLOW PRODUCER

Field Parameters	Units	0 Minutes	3 Minutes	6 Minutes	9 Minutes	12 Minutes	15 Minutes	18 Minutes
Temperature	°C	9.74	10.82	11.14	11.59	11.56	11.65	11.71
pH		5.26	5.24	5.43	5.52	5.52	5.55	5.60
Conductivity	ms/cm	.070	.067	.061	.059	.058	.057	.056
~~Eh~~ ORP	MV	266	218	182	159	148	127	112
DO	mg/L	7.72	7.65	7.66	7.68	7.69	7.70	7.68
Turbidity	NTU	35.4	17.0	8.2	5.9	4.6	2.6	1.4
Time		1541	1544	1547	1550	1553	1556	1559
Water Level	.01 ft.	15.41	15.49	15.47	15.48	15.48	15.48	15.48
Flow Rate	ml/min	150	150	150	140	140	140	140

Field Parameters	Units	21 Minutes	24 Minutes	27 Minutes	30 Minutes	33 Minutes	36 Minutes	Sample
Temperature		11.75	11.78					
pH		5.63	5.65					
Conductivity		.055	.055					
~~Eh~~ ORP		106	100					
DO		7.65	7.60					
Turbidity		1.1	0.9					
Time		1602	1605	1610				1610 ~~1705~~ (A2)
Water Level		15.48	15.48					
Flow Rate		140	140					

GROUNDWATER SAMPLING DATA SHEET

Project Name: CAMP BONNEVILLE
Project/Task No.: 53F0072323.00/03200
Date: 1-22-02
Weather: 35° RAIN/SNOW
Samplers: D LEWIS / L NAMBA
Purge Method: GRUNDFOS PUMP
Sample Method: " "
Sampling Device: " "
Tubing Type: 1/4 in. POLY
Pump Intake Depth: 53.05'
Water Disposal/quantity: ~~6.5 gal (includes decon)~~ 4.5 gal / 2 gal decon
Field Test Kit Results:
PID:
DO:
Alkalinity:
Ferrous Iron:
Other:

Sample Number: GW03MW01B
Station Type: MONUMENT
Station Number: MW01B
Well Condition: OK
Well Diameter: 2"
Screen Interval:
Measuring Poi.. (MP): TOC
Elevation of MP:
Elevation of Water:
Depth to bottom: 55.56
Depth to water: ~~55.56~~ 10.57
Depth to NAPL:
NAPL thickness:

Meter Information: Model / Calib. Date
pH: HORIBA U-22 / 1-22-02
Eh:
Conductivity:
DO Meter:
Turbidity:
Temperature:
Other:

QA/QC Samples:
Duplicate:
Replicate:
MS/MSD: GW03MW01B MS/MSD
Blank:
Comments: SLOW PRODUCER

Containers:

Analysis	Type	#-Primary	#-MS/MSD

Field Parameters	Units	0 Minutes	3 Minutes	6 Minutes	9 Minutes	12 Minutes	15 Minutes	18 Minutes
Temperature	°C	9.03	9.39	9.45	9.67	—	9.90	9.88
pH		5.02	5.07	5.28	5.50	5.79	5.84	6.00
Conductivity	ms/cm	.037	.034	.034	.033	—	.032	.032
~~Eh~~ ORP	MV	402	348	305	270	—	218	197
DO	mg/L	8.88	8.86	8.85	8.88	—	8.87	8.86
Turbidity	NTU	14.0	6.2	4.6	4.3	—	3.5	3.1
Time		0942	0945	0948	0951	0954	0957	1000
Water Level	.01 ft.	10.78	10.80	10.81	10.81	—	10.81	10.81
Flow Rate	ml/MIN	200	200	200	200	—	200	200

Field Parameters	Units	21 Minutes	24 Minutes	27 Minutes	30 Minutes	33 Minutes	36 Minutes	Sample
Temperature		10.04	10.06	10.09				
pH		6.13	6.20	6.28				
Conductivity		.032	.032	.032				
~~Eh~~ ORP		171	157	142				
DO		8.89	8.93	8.90				
Turbidity		2.9	2.9	2.8				
Time	~~1003~~ 1012	~~1006~~/1003	~~1009~~/1006	1003				1015
Water Level		10.81	10.81	10.81				
Flow Rate		200	200	200				

GROUNDWATER SAMPLING DATA SHEET

Project Name: CAMP BONNEVILLE
Project/Task No.: 53F0072323.00/03200
Date: 1-22-02
Weather: 38° RAIN/SNOW
Samplers: D LEWIS / L NAMBA
Purge Method: GRUNDFOS PUMP
Sample Method: " "
Sampling Device: " "
Tubing Type: 1/4 in. POLY
Pump Intake Depth: 37.75'
Water Disposal/quantity: 5.5 gal 2 gal decon

Sample Number: GW03MW02A
Station Type: MONUMENT
Station Number: MW02A
Well Condition: OK
Well Diameter: 2"
Screen Interval:
Measuring Poi.. (MP): TOC
Elevation of MP:
Elevation of Water:
Depth to bottom: 40.28
Depth to water: 23.69
Depth to NAPL:
NAPL thickness:

Field Test Kit Results:

PID:
DO:
Alkalinity:
Ferrous Iron:
Other:

Meter Information:

	Model	Calib. Date
pH:	HORIBA U-22	1-22-02
Eh:		
Conductivity:		
DO Meter:		
Turbidity:		
Temperature:		
Other:		

Containers:

Analysis	Type	#-Primary	#-MS/MSD

QA/QC Samples:

Duplicate:
Replicate:
MS/MSD:
Blank:

Comments: LEAKING INLET TO HORIBA, ADJUSTED MID-PURGE AND WATER LEVEL STARTED COMING UP.

Field Parameters	Units	0 Minutes	3 Minutes	6 Minutes	9 Minutes	12 Minutes	15 Minutes	18 Minutes
Temperature	°C	11.26	11.68	11.57	11.89	11.66	11.50	11.97
pH		5.84	5.41	5.37	5.71	5.90	5.99	6.12
Conductivity	ms/cm	.225	.192	.194	.182	.166	.168	.155
~~Eh~~ ORP	MV	377	305	283	249	214	195	173
DO	mg/L	9.49	9.45	9.45	9.10	9.19	8.96	8.99
Turbidity	NTU	12.2	36.0	32.4	12.3	0.2	0	0
Time		1542	1545	1548	1551	1554	1557	1600
Water Level	.01 ft.	24.70	24.70	24.70	24.70	24.70	24.10	24.07
Flow Rate	ml/min	150	150	150	150	150	300	300

Field Parameters	Units	21 Minutes	24 Minutes	27 Minutes	30 Minutes	33 Minutes	36 Minutes	Sample
Temperature		12.05	12.14	12.08	12.10	12.12	12.09	
pH		6.19	6.27	6.29	6.32	6.38	6.36	
Conductivity		.149	.139	.136	.134	.134	.133	
~~Eh~~ ORP		163	148	138	129	120	114	
DO		9.03	9.03	9.08	9.04	9.16	9.22	
Turbidity		0	0	0	0	0	0	
Time	~~1603~~	1603	1606	1609	1612	1615	1618	
Water Level		24.07	24.06	24.06	24.06	24.06	24.06	
Flow Rate		300	300	300	300	300	300	

GROUNDWATER SAMPLING DATA SHEET

Project Name: CAMP BONNEVILLE
Project/Task No.: 53F0072323.00/03200
Date: 1-22-02
Weather:
Samplers: D LEWIS / L NAMBA
Purge Method: GRUNDFOS PUMP
Sample Method: " "
Sampling Device: " "
Tubing Type: 1/4 in. POLY
Pump Intake Depth:
Water Disposal/quantity:

Sample Number: GW03MW02A (CONT)
Station Type: MONUMENT
Station Number: MW02A (CONT)
Well Condition: OK
Well Diameter: 2"
Screen Interval:
Measuring Poi.. (MP): TOC
Elevation of MP:
Elevation of Water:
Depth to bottom:
Depth to water:
Depth to NAPL:
NAPL thickness:

Field Test Kit Results:

PID:
DO:
Alkalinity:
Ferrous Iron:
Other:

Meter Information:

	Model	Calib. Date
pH:	HORIBA U-22	
Eh:		
Conductivity:		
DO Meter:		
Turbidity:		
Temperature:		
Other:		

Containers:

Analysis	Type	#-Primary	#-MS/MSD

QA/QC Samples:

Duplicate:
Replicate:
MS/MSD:
Blank:

Comments:

Field Parameters	Units	0 (39) Minutes	3 (42) Minutes	6 (45) Minutes	9 Minutes	12 Minutes	15 Minutes	18 Minutes
Temperature	°C	12.05	12.01	12.06				
pH		6.36	6.45	6.43				
Conductivity	ms/cm	.132	.132	.131				
~~Eh~~ ORP	mV	107	100	96				
DO	mg/L	9.23	9.20	9.16				
Turbidity	NTU	0	0	0				
Time		1621	1624	1627				
Water Level	.01 ft.	24.06	24.06	24.06				
Flow Rate	ml/min	300	300	300				

Field Parameters	Units	21 Minutes	24 Minutes	27 Minutes	30 Minutes	33 Minutes	36 Minutes	Sample
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								1645
Water Level								
Flow Rate								

GROUNDWATER SAMPLING DATA SHEET

Project Name: CAMP BONNEVILLE
Project/Task No.: 53F0072323.00/03200
Date: 1-23-02
Weather: 40° RAIN
Samplers: D LEWIS / L NAMBA
Purge Method: GRUNDFOS PUMP
Sample Method: " "
Sampling Device: " "
Tubing Type: ¼ in. POLY
Pump Intake Depth: 72.0
Water Disposal/quantity: 2gal 2gal decon

Sample Number: GW03MW02B
Station Type: MONUMENT
Station Number: MW02B
Well Condition: OK
Well Diameter: 2"
Screen Interval:
Measuring Poi.. (MP): TOC
Elevation of MP:
Elevation of Water:
Depth to bottom: 74.56
Depth to water: 26.59
Depth to NAPL:
NAPL thickness:

Field Test Kit Results:
PID:
DO:
Alkalinity:
Ferrous Iron:
Other:

Meter Information:

	Model	Calib. Date
pH:	HORIBA U-22	1-23-02
Eh:		
Conductivity:		
DO Meter:		
Turbidity:		
Temperature:		
Other:		

Containers:

Analysis	Type	#-Primary	#-MS/MSD

QA/QC Samples:
Duplicate: GW503MW02B (TIME: 1045)
Replicate:
MS/MSD:
Blank:

Comments:

Field Parameters	Units	0 Minutes	3 Minutes	6 Minutes	9 Minutes	12 Minutes	15 Minutes	18 Minutes
Temperature	°C	8.52	8.10	8.46	8.30	8.31	8.26	
pH		6.02	5.89	5.91	5.94	5.97	5.98	
Conductivity	ms/cm	.138	.129	.113	.108	.105	.101	
~~Eh~~ ORP	MV	93	76	66	57	50	43	
DO	mg/L	2.38	1.84	1.59	1.57	1.40	1.36	
Turbidity	NTU	40.5	21.2	13.4	2.3	1.6	0.7	
Time		1007	1010	1013	1016	1019	1022	
Water Level	.01 ft.	28.61	28.60	28.68	28.62	28.58	28.58	
Flow Rate	ml/MIN	400	100	100	80	80	80	

Field Parameters	Units	21 Minutes	24 Minutes	27 Minutes	30 Minutes	33 Minutes	36 Minutes	Sample
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								(1030)
Water Level							DUP	1045
Flow Rate								

GROUNDWATER SAMPLING DATA SHEET

Project Name: CAMP BONNEVILLE
Project/Task No.: 53F0072323.00/03200
Date: 1-24-02
Weather: 40° RAIN
Samplers: D LEWIS / L NAMBA
Purge Method: GRUNDFOS PUMP
Sample Method: " "
Sampling Device: " "
Tubing Type: 1/4 in. POLY
Pump Intake Depth: 46.50'
Water Disposal/quantity: 1 gal

Sample Number: GW03MW03A
Station Type: MONUMENT
Station Number: MW03A
Well Condition: OK
Well Diameter: 2"
Screen Interval:
Measuring Poi.. (MP): TOC
Elevation of MP:
Elevation of Water:
Depth to bottom: 49.01
Depth to water: 26.37
Depth to NAPL:
NAPL thickness:

Field Test Kit Results:
PID:
DO:
Alkalinity:
Ferrous Iron:
Other:

Meter Information: Model / Calib. Date
pH: HORIBA U-22 / 1-24-02
Eh:
Conductivity:
DO Meter:
Turbidity:
Temperature:
Other:

Containers:

Analysis	Type	#-Primary	#-MS/MSD

QA/QC Samples:
Duplicate:
Replicate:
MS/MSD:
Blank:

Comments: slow producer

Field Parameters	Units	0 Minutes	3 Minutes	6 Minutes	9 Minutes	12 Minutes	15 Minutes	18 Minutes
Temperature	°C	8.44	8.19	8.85	8.66	8.86	8.84	8.83
pH		7.57	6.18	6.11	6.15	6.19	6.21	6.22
Conductivity	ms/cm	.078	.063	.052	.052	.049	.049	.049
~~Eh~~ ORP	MV	130	111	95	87	74	66	60
DO	mg/L	8.08	7.21	6.89	6.90	6.85	6.90	6.93
Turbidity	NTU	0	0	0	0	0	0	0
Time		1123	1126	1129	1132	1135	1138	1141
Water Level	.01 ft.	26.76	26.75	26.81	26.81	26.81	26.81	26.81
Flow Rate	ml/MIN	100	100	100	100	100	100	100

Field Parameters	Units	21 Minutes	24 Minutes	27 Minutes	30 Minutes	33 Minutes	36 Minutes	Sample
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								1150
Water Level								
Flow Rate								

GROUNDWATER SAMPLING DATA SHEET

Project Name: CAMP BONNEVILLE
Project/Task No.: 53F0072323.00/03200
Date: 1-24-02
Weather: 40° RAIN
Samplers: D LEWIS / L NAMBA
Purge Method: GRUNDFOS PUMP
Sample Method: " "
Sampling Device: " "
Tubing Type: 1/4 in. POLY
Pump Intake Depth: 57.5
Water Disposal/quantity: 1gal 2gal decon

Sample Number: GW03MW03B
Station Type: MONUMENT
Station Number: MW03B
Well Condition: OK
Well Diameter: 2"
Screen Interval:
Measuring Poi.. (MP): TOC
Elevation of MP:
Elevation of Water:
Depth to bottom: 61.95
Depth to water: 24.23
Depth to NAPL:
NAPL thickness:

Field Test Kit Results:

PID:
DO:
Alkalinity:
Ferrous Iron:
Other:

Meter Information:

	Model	Calib. Date
pH:	HORIBA U-22	1-24-02
Eh:		
Conductivity:		
DO Meter:		
Turbidity:		
Temperature:		
Other:		

Containers:

Analysis	Type	#-Primary	#-MS/MSD

QA/QC Samples:

Duplicate:
Replicate:
MS/MSD:
Blank:

Comments: RAN PUMP AS SLOW AS POSSIBLE + STILL MAINTAIN A FLOW. WATER LEVEL STILL SLOWLY DROPPING

Field Parameters	Units	0 Minutes	3 Minutes	6 Minutes	9 Minutes	12 Minutes	15 Minutes	18 Minutes
Temperature	°C	8.91	8.31	7.74	7.79	7.91	7.78	7.92
pH		6.04	5.64	5.55	5.57	5.64	5.72	5.81
Conductivity	ms/cm	.144	.147	.148	.147	.147	.146	.144
~~Eh~~ ORP	MV	250	224	182	160	141	120	103
DO	mg/L	4.94	4.11	3.60	3.44	3.39	3.37	3.38
Turbidity	NTU	15.1	4.6	5.1	8.0	10.2	10.2	8.0
Time		1321	1324	1327	1330	1333	1336	1339
Water Level	.01 ft.	25.57	25.64	25.62	25.67	25.68	25.69	25.71
Flow Rate	ml/min	100	75	75	75	75	75	75

Field Parameters	Units	21 Minutes	24 Minutes	27 Minutes	30 Minutes	33 Minutes	36 Minutes	Sample
Temperature		7.82	7.85	7.85				
pH		5.88	5.95	5.98				
Conductivity		.143	.142	.142				
~~Eh~~ ORP		90	97	66				
DO		3.38	3.40	3.41				
Turbidity		7.0	4.8	3.9				
Time		1342	1345	1348				1355
Water Level		25.72	25.73	25.74				
Flow Rate		75	75	75				

GROUNDWATER SAMPLING DATA SHEET

Project Name: CAMP BONNEVILLE
Project/Task No.: 53F0072323.00/03200
Date: 1-23-02
Weather: 40° RAIN
Samplers: D LEWIS / L NAMBA
Purge Method: GRUNDFOS PUMP
Sample Method: " "
Sampling Device: " "
Tubing Type: ¼ in. POLY
Pump Intake Depth: 44.0
Water Disposal/quantity: 1.5gal 2gal Decon

Sample Number: GW03MW04A
Station Type: MONUMENT
Station Number: MW04A
Well Condition: OK
Well Diameter: 2"
Screen Interval:
Measuring Poi.. (MP): TOC
Elevation of MP:
Elevation of Water:
Depth to bottom: 46.51
Depth to water: 25.88
Depth to NAPL:
NAPL thickness:

Field Test Kit Results:

PID:
DO:
Alkalinity:
Ferrous Iron:
Other:

Meter Information:

	Model	Calib. Date
pH:	HORIBA U-22	1-23-02
Eh:		
Conductivity:		
DO Meter:		
Turbidity:		
Temperature:		
Other:		

Containers:

Analysis	Type	#-Primary	#-MS/MSD

QA/QC Samples:

Duplicate:
Replicate:
MS/MSD:
Blank:

Comments: RAN PUMP AS SLOW AS POSSIBLE + STILL KEEP FLOWING - SPUTTERING & DRIPPING - WATER LEVEL DROPPING SLIGHTLY

Field Parameters	Units	0 Minutes	3 Minutes	6 Minutes	9 Minutes	12 Minutes	15 Minutes	18 Minutes
Temperature	°C	~~10.9~~ 7.66	~~23.1~~ 8.08	8.67	8.69	9.06	9.18	9.00
pH		4.47	4.87	5.16	5.28	5.46	5.57	5.65
Conductivity	ms/cm	.055	.052	.051	.051	.050	.049	.048
~~Eh~~ ORP	mV	288	224	192	176	147	116	95
DO	mg/L	6.33	5.28	5.34	5.28	5.43	5.57	5.73
Turbidity	NTU	10.9	23.1	14.9	12.8	9.3	8.1	8.5
Time		1830	1833	1836	1839	1842	1845	1848
Water Level	.01 ft.	26.68	26.87	26.97	26.99	27.03	27.07	27.09
Flow Rate	ml/min	—	125	—	100	100	100	100

Field Parameters	Units	21 Minutes	24 Minutes	27 Minutes	30 Minutes	33 Minutes	36 Minutes	Sample
Temperature		8.99						
pH		5.71						
Conductivity		.047						
~~Eh~~ ORP		76						
DO		5.93						
Turbidity		8.0						
Time		1851						1900
Water Level		27.10						
Flow Rate		100						

GROUNDWATER SAMPLING DATA SHEET

Project Name: CAMP BONNEVILLE
Project/Task No.: 53F0072323.00/03200
Date: 1-25-02
Weather: 40° rain
Samplers: D LEWIS / L NAMBA
Purge Method: GRUNDFOS PUMP
Sample Method: " "
Sampling Device: " "
Tubing Type: 1/4 in. POLY
Pump Intake Depth: 34.20
Water Disposal/quantity: 1.5 gal 2 gal drum

Sample Number: GW03MW05A
Station Type: MONUMENT
Station Number: MW05A
Well Condition: OK
Well Diameter: 2"
Screen Interval:
Measuring Poi.. (MP): TOC
Elevation of MP:
Elevation of Water:
Depth to bottom: 36.70
Depth to water: 17.54
Depth to NAPL:
NAPL thickness:

Field Test Kit Results:
PID:
DO:
Alkalinity:
Ferrous Iron:
Other:

Meter Information:

	Model	Calib. Date
pH:	HORIBA U-22	1-25-02
Eh:		
Conductivity:		
DO Meter:		
Turbidity:		
Temperature:		
Other:		

Containers:

Analysis	Type	#-Primary	#-MS/MSD

QA/QC Samples:
Duplicate:
Replicate:
MS/MSD:
~~Blank~~ RINSATE: GW1003MW05A

Comments: Slow producer

Field Parameters	Units	0 Minutes	3 Minutes	6 Minutes	9 Minutes	12 Minutes	15 Minutes	18 Minutes
Temperature	°C	7.56	8.18	8.94	8.92	8.92	9.02	9.15
pH		5.46	5.29	5.58	5.72	5.89	6.04	6.17
Conductivity	ms/cm	.050	.047	.046	.045	.045	.046	.045
~~Eh~~ ORP	MV	047	322	285	229	200	166	140
DO	mg/L	7.70	7.14	7.27	7.33	7.27	7.22	7.17
Turbidity	NTU	0	0	0	0	0	0	0
Time		1035	1038	1041	1044	1047	1050	1053
Water Level	.01 ft.	18.19	18.37	18.42	18.41	18.41	18.41	18.41
Flow Rate	ml/min	100	100	100	100	100	100	100

Field Parameters	Units	21 Minutes	24 Minutes	27 Minutes	30 Minutes	33 Minutes	36 Minutes	Sample
Temperature		9.33	9.44	9.47				
pH		6.30	6.41	6.47				
Conductivity		.045	.045	.045				
~~Eh~~ ORP		9.33	9.44	9.47				
DO	(02)	7.11	7.12	7.06				
Turbidity		0	0	0				
Time		1056	1059	1102				1110
Water Level		18.41	18.41	18.41				
Flow Rate		100	100	100				

GROUNDWATER SAMPLING DATA SHEET

GW04MW01A

Round-4 Sampling Program

Page 1 of 1

Project Information

Project Name:	Camp Bonneville Landfill 4	Location:	Camp Bonneville Washington
Project/Task No.:	53-F00723.00 03200	Weather:	Sunny ~55°F
	4/23/02	Samplers:	DTB, RP, JR

Gauging and Purging Data

Station Number:	MW01A	Screen Interval:	
Station Type:	2" Well	Well Diameter: 2"	Annulus Diameter:
Well Condition:	OK	Gallons per Casing Foot: (2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Reference Point:	TOC	Elevation	Gallons per Annulus Foot: (8" annulus with 2" casing = 1.85 gal/ft; 6" annulus with 2" casing = 1.34 gal/ft)
Depth to Water: (ft)	16.18	Elevation	One Purge Volume:
Depth to Bottom:	30.22	Feet of Water: 14.04	Final Purge Volume:
Depth to LNAPL:		Thickness:	Purge Method:
LNAPL Description:			Water Disposal/Qty: 2.5 gallons

Containers

Analysis	Type	Primarty Qty	MS/MSD Qty
VOC, SVOC			—
TSS			—
Metals			—
TPH-Gx, TPH-Dx			—
Organic Herbs			—
Anions, Carbon			—
Carbonate, Nitrite CN, explosives			—

Meter Information

Horiba U-22 4/23/02
Model & Calibration Date

pH:
Eh:
Conductivity:
DO Meter:
Turbidity:
Temperature:
Other:

Sampling Data

Sample Name:	GW04MW01A
Sample Method:	low flow
Sampling Device:	
Tubing Depth:	27.75
Pump Intake Depth:	27.75

Field Test Kit Results:

PID:
DO:
Alkalinity:
Ferrous Iron:
Other:

QA/QC Samples:

Duplicate:
Replicate:
MS/MSD:
Blank:
Other:

Field Parameters Start time 12:00 end @ 12:30

Volume (gallons)	Temperature (°C)	pH (SU)	Conductivity (uS/cm)	Eh (mV)	DO (mg/L)	Turbidity (NTU)	Time (24 hr)	Water Level (Ft below TOC)	Flow Rate (L/min)
0	11.	5.18	.050		9.18	35.7	1200	17.39	275 ml/min
~~Temp~~ .5	11.73	5.32	0.050		9.0	33.0	1205	17.61	265 ml/min
1.5	11.81	5.36	0.047		8.97	6.0	1210	17.80	"
1.75	12.01	5.33	0.047		8.94	2.3	1215	17.76	"
	12.23	5.31	0.047		8.87	1.3	1220	17.79	"
	12.19	5.30	0.047		8.89	1.2	1225	17.80	"
2.5	12.29	5.29	0.47		8.89	0.3	1230	17.82	"

Comments

Water clear with mild opacity
Flow rate high due to inability to obtain stable suction

GROUNDWATER SAMPLING DATA SHEET

Round-4 Sampling Program

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Project Information

Project Name:	Camp Bonneville Landfill 4	Location:	Camp Bonneville Washington
Project/Task No.:	53-F0072323.00 03200	Weather:	Sunny ~55°F
Date:	4/23/02	Samplers:	DTB, RP, JR

Gauging and Purging Data

Station Number:	MW-01B	Screen Interval:	
Station Type:	2" Well	Well Diameter:	2" Annulus Diameter:
Well Condition:	Good	Gallons per Casing Foot: (2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Reference Point:	TOC Elevation	Gallons per Annulus Foot: (8" annulus with 2" casing = 1.85 gal/ft; 6" annulus with 2" casing = 1.34 gal/ft)	
Depth to Water:	12.68 Elevation	One Purge Volume:	
Depth to Bottom:	55.56 Feet of Water: 42.88	Final Purge Volume:	
Depth to LNAPL:	Thickness:	Purge Method:	Grundfos pump.
LNAPL Description:		Water Disposal/Qty:	4.25 gallons

Containers

Analysis	Type	Primarty Qty	MS/MSD Qty
VOC, SVOC			✓
TSS metals			✓
TPH-Gx, TPH-Dx			✓
Organic Herbs			✓
Anions, carbonate			✓
Carbon, Nitrite			✓
CN, Explosives			✓

Meter Information

Horiba-U22 4/23/02
Model & Calibration Date

pH:
Eh:
Conductivity:
DO Meter:
Turbidity:
Temperature:
Other:

Sampling Data

Sample Name:	GW04MW01B
Sample Method:	low flow
Sampling Device:	Grundfos pump.
Tubing Depth:	53.05
Pump Intake Depth:	53.05

Field Test Kit Results:

PID:	
DO:	
Alkalinity:	
Ferrous Iron:	
Other:	

QA/QC Samples:

Duplicate:	1 —
Replicate:	—
MS/MSD:	1
Blank:	—
Other:	—

Field Parameters

Volume (gallons)	Temperature (°C)	pH (SU)	Conductivity (uS/cm)	Eh (mV)	DO (mg/L)	Turbidity (NTU)	Time (24 hr)	Water Level (Ft below TOC)	Flow Rate ~~(L/min)~~ ml/min
0	12.10	5.77	0.033		9.62	25	1400	12.83	~~340~~
0.75	12.53	5.73	0.033		9.44	99	1405	12.83	190
1.5	12.21	5.64	0.033		9.63	6.9	1410	12.82	"
2.0	12.99	5.85	0.033		9.80	3.4	1415	12.80	145
2.5	12.161	5.75	0.032		9.53	1.3	1420	12.89	"
3.0	12.95	5.80	0.032		9.55	0.9	1425	12.91	200
3.50	12.73	5.87	0.032		9.75	-0.7	1430	12.90	"
3.75	12.87	5.91	0.032		9.20	-0.7	1435	12.90	"
4.25	12.360	5.84	0.032		9.98	-1.2	1440	12.91	"

Comments

GROUNDWATER SAMPLING DATA SHEET

Round-4 Sampling Program

Page 1 of _____

Project Information

Project Name:	Camp Bonneville Landfill 4	Location:	Camp Bonneville Washington
Project/Task No.:	53-F0072323.00 03200	Weather:	Cool & Sunny ~45°F
	4/24/02	Samplers:	DTB, RP, JR

Gauging and Purging Data

Station Number:	MW2A	Screen Interval:	
Station Type:		Well Diameter:	2" Annulus Diameter:
Well Condition:		Gallons per Casing Foot: (2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Reference Point:	Elevation	Gallons per Annulus Foot: (8" annulus with 2" casing = 1.85 gal/ft; 6" annulus with 2" casing = 1.34 gal/ft)	
Depth to Water:	24.46 Elevation	One Purge Volume:	
Depth to Bottom:	Feet of Water:	Final Purge Volume:	
Depth to LNAPL:	Thickness:	Purge Method:	
LNAPL Description:		Water Disposal/Qty:	25 gallons

Containers

Analysis	Type	Primarty Qty	MS/MSD Qty
VOC, SVOC			–
TSS, metals			–
TPH-Gx, TPH-Dx			–
Organic Herbs			–
Anions, Carbon			–
Carbonate, Nitrite			–
TCN, explosives			–

Meter Information

Horiba-U22 4/24/02 @ 8:35 AM
Model & Calibration Date

pH:	3.98
Eh:	
Conductivity:	4.61
DO Meter:	12.06
Turbidity:	~1.1
Temperature:	5.31
Other:	

Sampling Data

Sample Name:	GW04MW02A
Sample Method:	low flow
Sampling Device:	Grundfos pump
Tubing Depth:	
Pump Intake Depth:	37.75 ft.

Field Test Kit Results:

PID:	
DO:	
Alkalinity:	
Ferrous Iron:	
Other:	

QA/QC Samples: (call GW04 MW02)

Duplicate:	Yes
Replicate:	–
MS/MSD:	–
Blank:	–
Other:	–

Field Parameters

Volume (gallons)	Temperature (°C)	pH (SU)	Conductivity (uS/cm)	Eh (mV)	DO (mg/L)	Turbidity (NTU)	Time (24 hr)	Water Level (Ft below TOC)	Flow Rate (L/min)
0	11.65	5.59	0.095	244	11.42	75.8	1055	25.35	390 mL/min
	13.25	5.62	0.092	247	10.7	72.7	1100	25.30	400
	13.52	5.65	0.090	249	10.59	65	1105	25.35	360
	13.93	5.66	0.089	248	10.51	50.3	1110	25.32	"
25	13.99	5.69	0.090	249	10.53	33.1	1115	25.33	"
							~~1120~~		

Comments

Frequency 109Hz on converter.

GROUNDWATER SAMPLING DATA SHEET

Round-4 Sampling Program

Page 1 of 1

Project Information

Project Name:	Camp Bonneville Landfill 4	Location:	Camp Bonneville Washington
Project/Task No.:	53-F0072323.00 03200	Weather:	Cool & clear ~ 35°F
Date:	4/24/02	Samplers:	DTB, RP, JR

Gauging and Purging Data

Station Number:	MW 2B	Screen Interval:	
Station Type:	2" well	Well Diameter: 2"	Annulus Diameter:
Well Condition:	OK	Gallons per Casing Foot: (2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Reference Point: TOC	Elevation	Gallons per Annulus Foot: (8" annulus with 2" casing = 1.85 gal/ft; 6" annulus with 2" casing = 1.34 gal/ft)	
Depth to Water: 27.98	w/pump Elevation depth 26.17	One Purge Volume:	
Depth to Bottom: 75	Feet of Water: 47.02	Final Purge Volume:	
Depth to LNAPL:	Thickness:	Purge Method:	
LNAPL Description:		Water Disposal/Qty:	2.5 gallons

Containers

Analysis	Type	Primarty Qty	MS/MSD Qty
VOC SVOC			–
TSS, metals			–
TPH-GX, TPH-Dx			–
Organic Herbs			–
Anions carbon			–
Carbonate, Nitrite			–
CN, Explosives			

Meter Information

Horiba-U22 4/24/02 @ 8:35am
Model & Calibration Date

pH:	3.98
Eh:	
Conductivity:	4.61
DO Meter:	12.06
Turbidity:	-1.1
Temperature:	5.31
Other:	time 8:35am

Sampling Data

Sample Name:	GW04MW02B
Sample Method:	low flow
Sampling Device:	Grundfos pump
Tubing Depth:	
Pump Intake Depth:	72 ft.

Field Test Kit Results:

PID:	
DO:	
Alkalinity:	
Ferrous Iron:	
Other:	

QA/QC Samples:

Duplicate:	–
Replicate:	–
MS/MSD:	–
Blank:	–
Other:	–

Field Parameters

Volume (gallons)	Temperature (°C)	pH (SU)	Conductivity (uS/cm)	Eh (mV) ORP	DO (mg/L)	Turbidity (NTU)	Time (24 hr)	Water Level (Ft below TOC)	Flow Rate ~~(L/min)~~ ml/min
0	9.72	4.32	0.124	8.92	~~999*~~	999*	0850	28.08	430
0.01	9.86	4.89	0.072		4.04	999*	0855	28.08	270
0.5	10.14	4.92	0.060	210	3.13	999*	0900	29.79	270
0.75	11.14	5.05	0.049	216	9.95	999*	0905	30.79	
1.0	10.74	5.18	0.048	206	3.37	991	0910	30.29	100
1.25	10.52	5.29	0.048	198	3.03	477	0915		
1.5	10.77	5.45	0.047	193	2.99	246	0920	30.51	
2.0	10.9	5.63	0.047	190	3.04	88	0925	30.56	130
2.25	11.13	5.76	0.047	185	3.04	80.4	0930	30.56	
2.5	11.16	5.	0.047	181	3.03	54.5	0935		

Comments

* Flashing
Water silty - brown in colour.

GROUNDWATER SAMPLING DATA SHEET

Round-4 Sampling Program

Page 1 of _____

Project Information

Project Name:	Camp Bonneville Landfill 4	Location:	Camp Bonneville Washington
Project/Task No.:	53-F0072323.00 03200	Weather:	Sunny warming up
	4/25/02	Samplers:	DTB, RP, JR

Gauging and Purging Data

Station Number:	~~GW03~~ MW03A	Screen Interval:	
Station Type:		Well Diameter:	2" Annulus Diameter:
Well Condition:	OK	Gallons per Casing Foot: (2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Reference Point:	Elevation	Gallons per Annulus Foot: (8" annulus with 2" casing = 1.85 gal/ft; 6" annulus with 2" casing = 1.34 gal/ft)	
Depth to Water:	28.06 Elevation	One Purge Volume:	
Depth to Bottom:	Feet of Water:	Final Purge Volume:	
Depth to LNAPL:	Thickness:	Purge Method:	
LNAPL Description:		Water Disposal/Qty:	3 gallons

Containers

Analysis	Type	Primarty Qty	MS/MSD Qty
VOC, SVOC			
TSS, metals			
TPH-GX, TPH-Dx			
Organic Herbs			
Anions, Carbon			
Carbonate, Nitrite			
CN, Explosives			

Meter Information

Horiba U-22 4/25/02 @ 0820
Model & Calibration Date

pH:	3.98
Eh:	268
Conductivity:	4.55
DO Meter:	11.41
Turbidity:	-1.3
Temperature:	7.98
Other:	-

ng Data

Sample Name:	GW03-MW03A
Sample Method:	low flow
Sampling Device:	Grundfos pump
Tubing Depth:	
Pump Intake Depth:	

Field Test Kit Results:

PID:	—
DO:	—
Alkalinity:	—
Ferrous Iron:	—
Other:	

QA/QC Samples:

Duplicate:	—
Replicate:	—
MS/MSD:	—
Blank:	—
Other:	—

Field Parameters

Volume (gallons)	Temperature (°C)	pH (SU)	Conductivity (uS/cm)	Eh (mV)	DO (mg/L)	Turbidity (NTU)	Time (24 hr)	Water Level (Ft below TOC)	Flow Rate ~~(L/min)~~ ← mL/Min
0	12.28	5.53	0.030	222	12.6	18.2	1315	29.15	275
0.5	12.94	5.43	0.028	234	9.41	-2.4	1320	29.25	100
	13.76	5.37	0.028	247	9.06	-5.4	1325	29.91	"
1.0	13.88	5.48	0.028	242.	8.90	-6.1	1330	?	240
	13.89	5.53	0.028	245	8.93	-6.8	1335	29.?	170
2.1	14.00	5.49	0.028	248.	8.79	-7.2	1340		170

Comments

GROUNDWATER SAMPLING DATA SHEET

Round-4 Sampling Program

Page 1 of _____

Project Information

Project Name:	Camp Bonneville Landfill 4	Location:	Camp Bonneville, Washington
Project/Task No.:	53-F0072323.00 03200	Weather:	Sunny, clear skies
Date:	4/25/02	Samplers:	DTB, RP, JR

Gauging and Purging Data

Station Number:	MW3B	Screen Interval:	
Station Type:		Well Diameter: 2"	Annulus Diameter:
Well Condition:	OK	Gallons per Casing Foot: (2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Reference Point:	Elevation	Gallons per Annulus Foot: (8" annulus with 2" casing = 1.85 gal/ft; 6" annulus with 2" casing = 1.34 gal/ft)	
Depth to Water: 25.61 ~~25.64~~	Elevation	One Purge Volume:	
Depth to Bottom:	Feet of Water:	Final Purge Volume:	
Depth to LNAPL:	Thickness:	Purge Method:	
LNAPL Description:		Water Disposal/Qty:	2 gallons

Containers

Analysis	Type	Primarty Qty	MS/MSD Qty
VOC, SVOC			–
TSS, Metals			–
TPH-Gx, TPH-Dx			–
Organic Herbs			–
Anions, Carbon			–
Carbonates, Nitrite			–
CN, Explosives			–

Meter Information

Horiba U-22

Model & Calibration Date

pH:	
Eh:	
Conductivity:	
DO Meter:	
Turbidity:	
Temperature:	
Other:	

Sampling Data

Sample Name:	GW04MW3B
Sample Method:	low flow
Sampling Device:	Grundfos pump
Tubing Depth:	
Pump Intake Depth:	57.7 ft

Field Test Kit Results:

PID:	–
DO:	–
Alkalinity:	–
Ferrous Iron:	–
Other:	–

QA/QC Samples:

Duplicate:	–
Replicate:	–
MS/MSD:	–
Blank:	–
Other:	–

Field Parameters

Volume (gallons)	Temperature (°C)	pH (SU)	Conductivity (uS/cm)	Eh (mV)	DO (mg/L)	Turbidity (NTU)	Time (24 hr)	Water Level (Ft below TOC)	Flow Rate (L/min) ← mL/min
0	11.44	5.4	0.051	233	13.14	51.1	1020	25.46	100
0.25	10.66	5.59	0.090	227	7.81	37.9	1025	26.35	11 Same
	11.32	5.67	0.089	225	6.56	31.2	1030	26.92	11 Same
	11.79	5.71	0.088	221	6.28	21.3	1035	26.94	133
1.0	11.04	5.66	0.084	220	6.53	16.5	1040	26.96	125
	11.49	5.65	0.082	219	6.35	8.2	1045		"
1.75	11.83	5.59	0.081	221	6.31	5.1	1050	27.18	

Comments

Pumping at lowest pump setting - still drawing down parameters are stable.

GROUNDWATER SAMPLING DATA SHEET

Round-4 Sampling Program

Project Information

Project Name:	Camp Bonneville Landfill 4	Location:	Camp Bonneville Washington
Project/Task No.:	53-F0072323.00 03200	Weather:	Sunny ~ 65°F, clear skies
	4/24/02	Samplers:	DTB, RP, JR

Gauging and Purging Data

Station Number:	GMW04A	Screen Interval:	
Station Type:		Well Diameter:	2" Annulus Diameter:
Well Condition:	OK	Gallons per Casing Foot: (2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Reference Point:	TOC Elevation	Gallons per Annulus Foot: (8" annulus with 2" casing = 1.85 gal/ft; 6" annulus with 2" casing = 1.34 gal/ft)	
Depth to Water:	27.25 Elevation	One Purge Volume:	
Depth to Bottom:	Feet of Water:	Final Purge Volume:	
Depth to LNAPL:	Thickness:	Purge Method:	
LNAPL Description:		Water Disposal/Qty:	1.75 gall.

Containers

Analysis	Type	Primarty Qty	MS/MSD Qty
VOC, SVOC			–
TSS, metals			–
TPH-Gx, TPH-Dx			–
Organic Herbs			–
Anions, Carbon			–
Carbonate, Nitrite			–
CN, Explosives			–

Meter Information

Horiba U-22 4/24/02 @ 8:35am
Model & Calibration Date

pH:	3.98
Eh:	
Conductivity:	4.61
DO Meter:	12.06
Turbidity:	-1.1
Temperature:	5.31
Other:	

ing Data

Sample Name:	GW04 MW04A
Sample Method:	low flow
Sampling Device:	Grundfos pump
Tubing Depth:	
Pump Intake Depth:	44ft.

Field Test Kit Results:

PID:	–
DO:	–
Alkalinity:	–
Ferrous Iron:	–
Other:	–

QA/QC Samples:

Duplicate:	–
Replicate:	–
MS/MSD:	–
Blank:	–
Other:	–

Field Parameters

Volume (gallons)	Temperature (°C)	pH (SU)	Conductivity (uS/cm)	Eh (mV)	DO (mg/L)	Turbidity (NTU)	Time (24 hr)	Water Level (Ft below TOC)	Flow Rate (L/min)
0	12.65	5.61	0.089	233	11.72	51.1	1300	28.52	375
	11.57	5.73	0.035	239	7.18	147	1305	28.73	240
0.75	12.52	5.69	0.032	242	6.75	43.4	1310	28.98	170
	13.75	5.61	0.031	248	7.04	40	1315	29.20	"
	13.60	5.53	0.031	254	7.30	36.2	1320	29.22	"
1.5	13.76	5.48	0.031	256	7.49	34.8	1325		
1.75	13.92	5.46	0.030	257	7.68	30.9	1330		

Comments

GROUNDWATER SAMPLING DATA SHEET

Project Information

Round-4 Sampling Program

Project Name:	Camp Bonneville Landfill 4	Location:	Camp Bonneville Washington
Project/Task No.:	53-F0072323.00 03200	Weather:	Cool clear & Sunny ~40°F
Date:	4/25/02	Samplers:	DTB, RP, JR

Gauging and Purging Data

Station Number:	MW05A	Screen Interval:	
Station Type:		Well Diameter: 2"	Annulus Diameter:
Well Condition:	OK	Gallons per Casing Foot: (2" well: 0.16 gal/ft; 4" well: 0.65 gal/ft)	
Reference Point:	TOC Elevation	Gallons per Annulus Foot: (8" annulus with 2" casing = 1.85 gal/ft; 6" annulus with 2" casing = 1.34 gal/ft)	
Depth to Water:	23.22 Elevation	One Purge Volume:	
Depth to Bottom:	Feet of Water:	Final Purge Volume:	
Depth to LNAPL:	Thickness:	Purge Method:	
LNAPL Description:		Water Disposal/Qty:	2 gallons

Containers

Analysis	Type	Primarty Qty	MS/MSD Qty
VOC, SVOC			—
TSS, metals			—
TPH-Gx, TPH-Dx			—
Organic Herbs			—
Anions, Carbon			—
Carbonate, Nitrite			—
CN, Explosives			—

Meter Information

Horiba U-22 4/25/02 @ 8:20
Model & Calibration Date

pH:	3.98
Eh:	268
Conductivity:	4.55
DO Meter:	11.41
Turbidity:	~~0.01 NTU~~ -1.3
Temperature:	7.98
Other:	

Sampling Data

Sample Name:	GW04MW05A
Sample Method:	low flow
Sampling Device:	Grundfos pump.
Tubing Depth:	
Pump Intake Depth:	34.2 ft.

Field Test Kit Results:

PID:	—
DO:	—
Alkalinity:	—
Ferrous Iron:	—
Other:	

QA/QC Samples:

Duplicate:	—
Replicate:	—
MS/MSD:	
Blank:	
Other:	

Field Parameters

Volume (gallons)	Temperature (°C)	pH (SU)	Conductivity (uS/cm)	Eh (mV)	DO (mg/L)	Turbidity (NTU)	Time (24 hr)	Water Level (Ft below TOC)	Flow Rate (L/min) mL/min
0	8.27	4.5	0.291	240	11.53	17.5	0830	23.62	350
0.25	9.51	4.71	0.049	251	9.57	12.4	0835	24.75	315
0.5	10.49	4.81	0.044	249	9.33	5.2	0840	24.50	140
0.75	11.75	4.95	0.042	247	8.86	-1.2	0845	24.63	"
1.0	11.77	5.02	0.042	247	8.97	-2.4	0850		"
1.25	11.99	5.06	0.041	247	8.95	-3.7	0855	24.69	165
							0900		

Comments

GROUNDWATER SAMPLING DATA SHEET

Project Name:	Camp Bonneville-Landfill 4 GW Sampling	**Sample Number:**	GWOSMW02B
Project Number:	53-F0072323.00 03100	Station Number:	MW02B
Date:	January 8, 2003	Well Diameter:	2"
Weather:	clear, sunny, cold 35°F	Screen Interval:	62-72'
Samplers:	John Rapp and Larry Namba	Measuring Point:	top-of-casing
Purge Method:	Redi-Flo 2 Grundfos Pump	Depth to water:	29.82'
Sample Method:	Redi-Flo 2 Grundfos Pump	Depth to bottom:	~73'
Tubing Type:	1/4 inch ID poly	Depth to NAPL:	NA
Pump Intake Depth:	66'	NAPL thickness:	NA
Water Disposal/quantity:	Labeled drum/	**Meter Information:**	Calibration Date
QA/QC Samples:		YSI 6820 Model	
Duplicate:		Temp.: ~~QED Micropurge~~	1-8-03
Replicate:		pH: "	"
MS/MSD:		Conductivity: "	"
Blank:		ORP "	"
		DO "	"
		Turbidity: "	"

Containers: Analysis	Type	No. of Primary	No. of MS/MSD
See Back	-	-	-

Comments:

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	25 Minutes	30 Minutes
Temperature	°C	10.45	12.67	12.86	13.05	13.27		
pH	SU	5.76	5.48	5.49	5.48	5.47		
Conductivity	uS/cm	.027	.025	.026	.026	.025		
ORP	mV	264	242	241	242	245		
DO	~~%~~ mg/l	55.6	34.1	35.7	34.7	34.9		
Turbidity	NTU	9.9	9.1	6.9	4.8	4.2		
Time	24-HR	1355	1400	1405	1410	1415		
Water Level	ft. btoc	NR	NR	NR	NR	NR		
Flow Rate	ml/min	~300	~250	~250	~250	~250		

Field Parameters	Units	35 Minutes	40 Minutes	45 Minutes	50 Minutes	55 Minutes	60 Minutes	Sample
Temperature	°C							
pH	SU							
Conductivity	uS/cm							
ORP	mV							
DO	mg/l							
Turbidity	NTU							
Time								1430
Water Level	ft. btoc							
Flow Rate	ml/min							

GROUNDWATER SAMPLING DATA SHEET

Project Name: LANDFILL 4 - C. Bonneville
Project/Task No.: 337528?1.00000
Date: January 8, 2003
Weather: clear - cold 0°C
Samplers: JR/LN
Purge Method: pump
Sample Method: low flow
Sampling Device: grunfos
Tubing Type: HDPE
Pump Intake Depth: ~53'
Water Disposal/quantity: Steel Drum

Sample Number: GWC5MWC7B
Station Type: Monitor well
Station Number: MW07B
Well Condition: new
Well Diameter: 2"
Screen Interval: 49-59'
Measuring Point (MP): top of casing
Elevation of MP:
Elevation of Water:
Depth to bottom: ~59.4
Depth to water: 40.14'
Depth to NAPL: NA
NAPL thickness: NA

Field Test Kit Results:
PID:
DO:
Alkalinity:
Ferrous Iron:
Other:

Meter Information:

	Model	Calib. Date
pH:	YSI 6820	1-8-03
Eh:		
Conductivity:		
DO Meter:		
Turbidity:		
Temperature:		
Other:		

Containers:

Analysis	Type	#-Primary	#-MS/MSD

QA/QC Samples:
Duplicate:
Replicate:
MS/MSD:
Blank:

Comments:

Field Parameters	Units	0 Minutes	5 Minutes	10 Minutes	15 Minutes	20 Minutes	Minutes	Minutes
Temperature	°C	9.86	10.84	11.46	11.81	12.01		
pH	SU	6.58	6.62	6.67	6.63	6.60		
Conductivity	ms/cm	0.122	0.132	0.136	0.127	0.121		
Eh	mV	207	168	153.3	152.6	159.1		
DO	%	94.5	97.3	96.0	95.6	93.7		
Turbidity	NTUs	30.3	18.0	7.3	4.9	3.2		
Time	24-HR	0955	1000	1005	1010	1015		
Water Level								
Flow Rate	ml/min	~300	~300	~250	~250	~250		

Field Parameters	Units	Minutes	Minutes	Minutes	Minutes	Minutes	Minutes	Sample
Temperature								
pH								
Conductivity								
Eh								
DO								
Turbidity								
Time								1030
Water Level								
Flow Rate								

Severn Trent Laboratories
208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

Committed To Your Success

CHAIN OF CUSTODY RECORD

Report to:	Invoice to
Company: URS Corporation	Company:
Address: 1501 4th Ave, Suite 1400 Seattle, WA	Address:
Contact: Steve Wolfe	Contact:
Phone: 206.438.2700	Phone:
Fax:	PO/SO #:
Contract/ Quote #:	

ANALYSIS REQUESTED

8330 m

Lab use only
Due Date:

Temp. of coolers when received (C°):
1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: Larry Nanba / John Rapp

Sampler's Signature:

Proj. No.:

Project Name: Camp Bonneville Landfill 4 Demolition Area I

No./Type of Containers:

Matrix	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	8330 m	Lab Sample ID (Lab Use Only)
W	7/26	1630		✓	GW01MW03A					2	0004
	7/26	1330		✓	GW01MW03B					2	
	7/26	1200		✓	GW01MW05A					2	
	7/27	0830		✓	GW1001 MW03A					2	
	7/25	1800		✓	GW01MW04A					2	
	7/24	1130		✓	GW01MW06A					4	

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
[signature]	7/27/01	1300			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
			[signature]	7/28/01	1100

Remarks

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

Matrix: WW Wastewater W - Water S - Soil SD - Solid L - Liquid A - Air Bag C - Charcoal tube SL - Sludge O Oil

Container: VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

STL cannot accept verbal changes. Please Fax written changes to (802) 655-1248

Committed to Your Success 208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

CHAIN OF CUSTODY RECORD

Report to:
Company: URS Corporation
Address: 1501 4th Avenue, Suite 1400
Contact: Steve Wolfe
Phone: 206.438.2700
Fax:
Contract/ Quote #:

Invoice to
Company:
Address:
Contact:
Phone:
PO/SO #:

Lab use only
Due Date:

Temp. of coolers when received (C): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: Larry Namba / John Rapp
Sampler's Signature: Larry Namba

Project No.: DACA67-98-D-1005 D.O. 0054
Project Name: Camp Bonneville Landfill 4 - Demolition Area I

Continue

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No./Type of Containers: VOA	A/G 1 Lt.	250 ml	P/O	8330m Explosives Residue/PETN/Picric Acid/Nitroglycerine	Lab Sample ID (Lab Use Only)
W	7/24	1100		✓	GW01MW01A		2			✓	0003
(	(	1245		✓	GW01MW01B		2			✓	
)	)	1745		✓	GW01MW02A		2			✓	
)	)	1800		✓	GW501MW02A		2			✓	
)	7/25	1245		✓	GW01MW02B		6			✓	

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Larry Namba	7/24/01	1730			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
				07.26.01	1000

Remarks: Fed Ex Airbill 8267 8949 0038
GW01MW02B = MS/MSD

Client's delivery of samples constitutes acceptance of Severn Laboratories terms and conditions contained in the Price Schedule.

[1] Matrix WW - Wastewater W - Water S - Soil SD - Solid

Severn Trent Laboratories Knoxville

208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-12

CHAIN OF CUSTODY RECORD

Report to:	Invoice to
Company: URS Corporation	Company:
Address: 1501 4th Avenue, Ste 1400 Seattle, WA 98101	Address:
Contact: Steve Wolfe	Contact:
Phone: 206.438.2700	Phone:
Fax:	PO/SO #:
Contract/ Quote #:	

Sampler's Name

Sampler's Signature

Proj. No.

Project Name: Camp Bonneville Landfill 4, Demolition Area I

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No./Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	8330 m-Nitroguanidine	314.0 - Ammonium Perchlorate	Lab Sample ID (Lab Use Only)
W	7/26	1630		✓	~~GW01MW01A~~ GW01MW03A	✓	✓		✓	2	1	
W	7/26	1330		✓	GW01MW03B	✓			✓	2	1	
W	7/26	1200		✓	GW01MW05A	✓			✓	2	1	
W	7/27	0830		✓	GW1001MW03A	✓			✓	2	1	Receipt temp. 6°C
W	7/25	1800		✓	GW01MW04A	✓			✓	1	1	Custody Seals intact
W	7/24	1130		✓	GW01MW06A	✓			✓	4	4	Fedex # 829368824152
												MFH.07-28-01

Lab use only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y

Intact N / Y

Screened For Radioactivity ☐

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
[signature]	7/27/01	1300	Matthew J. Howard	07-28-01	09:30
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Remarks

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

[1] Matrix WW - Wastewater W - Water S - Soil SD - Solid L - Liquid A - Air Bag C - Charcoal tube SL - Sludge O - Oil

[2] Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

STL cannot accept verbal changes. Please Fax written changes to (802) 655-1248

2.5 0.0

URS Greiner Woodward Clyde

Chain of Custody

Contract

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Steve Wolfe
PHONE NO.: 206.438.2700

Page 1 of 2

Installation I.D.: Camp Bonneville
~~OTO~~ No.: DACA67-98-D-1005 / D.O. 0054
Site I.D.: LF4 Demo. Area 1
~~Zone I.D.~~
Sampling Co.: URS
Airbill Co./No.: Fed Ex / Airbill 826789490027
Shipping Cont'r No.:

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	8260A	160.2	8270C	Total - 6010B/6020/7470	Dissolved - 6010B/6020/7470	NWTPH-GX	NWTPH-Dx	8151A	300.0	TOC/DOC - 415.1	310.1	335.4	Remarks
GW01MW01A	07/24/01	1100	WR	ES	2	2	2	1	1	2	2	2	1	1	1	1	335.4 samples may need additional NaOH to adjust pH = >12
GW01MW01B		1245			2	2	2	1	1	2	2	2	1	1	1	1	
GW01MW02A		1745			2	2	2	1	1	2	2	2	1	1	1	1	
GW501MW02A	07/24/01	1800			2	2	2	1	1	2	2	2	1	1	1	1	
GW01MW02B (2)	07/~~24~~25/01	1245			6	6	6	3	3	5	6	6	3	3	3	3	ms/MSD - NWTPH-GX is missing 1 VOA - broke
GW01MW04A	07/25/01	1800			2	2	2	1	1	2	2	2	1	1	1	1	
GW01MW05A	07/26/01	1200			2	2	2	1	1	2	2	2	1	1	1	1	
GW01MW03A		~~1330~~ 1630			2	2	2	1	1	2	2	2	1	1	1	1	
GW01MW03B (2)		1330			2	2	2	1	1	2	2	2	1	1	1	1	
GW1001MW03A	7/27/01	0830		ER	2	2	2	1	1	2	2	2	1	1	1	1	
					A			B	B	A						D	Lab to split, filter and Preserve TOC/DOC

BOTTLE NUMBER FOR SAMPLE PAGE

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Remarks

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
Larry Hicks			Deborah Johnson	Analytical Resources, Inc
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.: SE02457
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: Date 7/28/01 Time 9:30

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

000003

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Steve Wolfe

PHONE NO.: 206.438.2700

Installation I.D.: Camp Bonneville
CTO No.:
Site I.D.: LF4 Demo. Area 1
Zone I.D.:
Sampling Co.: URS
Airbill Co./No.: Fed Ex 826789490027
Shipping Cont'r No.:

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	Analytical Methods: 8260A	NWTPH-Gx	8151A	8270 Base	Total 6010B/6020/7470							Remarks
Trip Blank	7/17/01	0800	WR	TB	✓	✓										
MGW01MW06A	7/24/01	1130	WR	ES	✓	✓	2	2	1							Preserved w/HCl

BOTTLE NUMBERS FROM SAMPLE LABEL

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify): A A B

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
Lucy Nd-	7/24/01	1300		Analytical Resources, Inc
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.: SE02457
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: Date 7/28/01 Time 9:30

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

000004

051099

URS Greiner

Chain of Custody

URS Greiner, Inc.
2401 4th Ave., Suite 1000
Seattle, WA 98121-1459
(206) 674-1800

C 2 - 4 Single sided —
P Steve has —

Page 1 of 1

Installation I.D.	CTO No.
Bonneville	

Site I.D.	Zone I.D.	Sampling Co.
Landfill 4	Demo Area 1	URS Corp

Airbill No.	Shipping Cont'r No.
8267 8952 2909	1 of 2 & 2 of 2

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	Bottle Numbers from Sample Label	Analytical Methods: 8330M (Expl. Residues (RDX/HMX/Picric Acid/Nitroglycerine)	Remarks
GW02MW01A	10/23/01	1800	W	ES	2		
GW02MW01B	10/24/01	0930	W	ES	6		MS/MSD
GW02MW02A	10/24/01	1140	W	ES	2		
GW02MW02B	10/24/01	1530	W	ES	2		
~~GW02~~							
GW502MW02B	10/24/01	1630	W	ES	2		

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

0008

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory:
	10/25/01	1200		STL Burlington
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time
	10/26/01	0940		

Matrix Types: A – Air; P – Product; S – Soil; T – Tissue; W – Water

Distribution: White = Accompanies Shipment; Green = Disposal Receipt; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy

Sample Types: ER – Equipment Rinsate; ES – Environmental Sample; FB – Field Blank; TB – Trip Blank

2/10/95

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., [illegible] 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206.438.2700

Page 1 of 1

Installation I.D.	CTO No.
Camp Bonneville	
Site I.D. / Zone I.D.	Sampling Co.
Landfill 4 / Demo Area 1	URS Corp.
Airbill Co./No.	Shipping Cont'r No.
Fed Ex 8267 8952 3217	1 & 2 of 2

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL: 8330m (Explosives Residue (RDX, Picric Acid, Nitroglycerine)	Indicate Any Condition That Would Affect Sample Analysis. Indicate Samples Containing Quantities for MS/MSD Analysis. Remarks
GW02MW03A	10/25/01	1545	W	ES	2 2	
GW02MW03B	10/26/01	1245			2 2	
GW02MW04A	10/26/01	0935			2 2	
~~GW02MW05A~~	~~10/26/01~~				~~2~~ ~~2~~	
GW02MW07A	10/23/01	1500			2	
GW002MW05A	10/26/01			ER	2 2	
					2 (2)	
GW02MW05A	10/26/01	1710	W	ES	2	
GW002MW05A	10/26/01	2045	W	ER	2	

0004

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
[signature]	10/26/01	1800	[signature] 10/29/01 0930	STL - Burlington
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature) [signature]	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

Chain of Custody Record & Laboratory Analysis Request

Page 1 of 1

Turn Around Requested: 5000

Analytical Resources, Incorporated
Analytical Chemists and Consultants
400 Ninth Avenue North
Seattle, WA 98109-4708
206-621-6490 206-621-7523 (fax)

Report to: WKS	Proj Name: Bonneville	Analyses Requested											Notes/Comments
Company:	Proj Number:												
Address:	Sampler:												
Seattle, WA													
Phone	Shipping Method:												
Fax	AirBill												
Sample ID	Sample Date / Sample Time / Sample Matrix / No Containers	8260 VOCs											
GWC2MWC7B	10/23 / 1600 / W / 2	X											2 amber liters

Relinquished: (Signature)	Relinquished: (Signature)	Relinquished: (Signature)	Special Instructions/Notes
Printed name: ELIZABETH JOSHI	Printed name:	Printed name:	
Company: ARI	Company:	Company:	
Date: 10/29/01 Time: 1400	Date: Time:	Date: Time:	
Received by: Jim Madison	Received by:	Received by:	
Printed name: Jim Madison	Printed name:	Printed name:	
Company: STL - Burlington	Company:	Company:	Number of Coolers:
Date: 11/30/01 Time: 0940	Date: Time: 0005	Date: Time:	Cooler Temp(s):
			COC Seals Intact?
			Bottles Intact?

* COC delivered via e-mail on 11/1/01
samples reached intact on 11/30/01

Committed To Your Success

208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

Page 1 of 2

CHAIN OF CUSTODY RECORD

Report to:	Invoice to
Company: URS Corporation	Company:
Address: 1501 4th Avenue, Ste 1400 Seattle, WA 98101	Address: Same
Contact: Lori Raschke	Contact:
Phone: 206.438.2700	Phone:
Fax:	PO/SO #:
Contract/ Quote #:	

Sampler's Name: Larry Namba/Dave Lewis

Sampler's Signature:

Proj. No.:

Project Name: Camp Bonneville - Landfill 4 Demo. Area 1

Lab Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y

Intact N / Y

Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No./Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	ANALYSIS REQUESTED: 8330 m (Nitroguanidine)	314 (Ammonium Perchlorate)	Lab Sample ID (Lab Use Only)
W	10/23	1800		✓	GW02MW01A	2			1	✓	✓	
	10/24	0915		✓	GW02MW01B	2			1	✓	✓	
	10/24	1140		✓	GW02MW02A ⊄AD	2			1	✓	✓	
	10/24	1530		✓	GW02MW02B ⊄AD	2			1	✓	✓	
	10/24	1630		✓	GW502MW02B	2			1	✓	✓	Rec'd temp. 3°c
	10/25	1545		✓	GW02MW03A	2			1	✓	✓	custody Seals intact
	10/26	1245		✓	GW02MW03B	2			1	✓	✓	Fed-ex# 8267 8952 3228
	10/26	0935		✓	GW02MW04A	2			1	✓	✓	MFH.10-29-01
	~~10/25~~			✓	~~GW02MW05A~~	~~2~~			~~1~~	✓	✓	
	10/23	1500		✓	GW02MW07A	2			1	✓	✓	

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Larry Namba	10/26/01	1800	Matthew F. Howard	10-29-01	09:00
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Remarks: Fed Ex Airbill # 8267 8952 3228

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

[1] Matrix: WW - Wastewater W - Water S - Soil SD - Solid L - Liquid A - Air Bag C - Charcoal tube SL - Sludge O - Oil

[2] Container: VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other _____

STL cannot accept verbal changes. Please Fax written changes to (802) 655-1248

Committed To Your Success

Severn Trent Laboratories
208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

Page 2 of 2

CHAIN OF CUSTODY RECORD

Report to:	Invoice to
Company: URS Corporation	Company: Same
Address: 1501 4th Avenue, Ste 1400 Seattle, WA 98101	Address:
Contact: Lori Raschke	Contact:
Phone: 206.438.2700	Phone:
Fax:	PO/SO #:
Contract/ Quote #:	

Sampler's Name: Larry Nanba/Dave Lewis

Sampler's Signature: Larry Nanba

Proj. No.

Project Name

No./Type of Containers[2]

ANALYSIS REQUESTED: 8330M (Nitroguanidine) / 314 (Ammonium Perchlorate)

Lab use only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y

Intact N / Y

Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	Lab Sample ID (Lab Use Only)
W	10/23	1600		✓	GW02MW07B	2			✓	
W	10/26			✓	GW1002MW05A	2			1	
W	10/26	1710		✓	GW02MW05A	2			1	
W	10/26	2045		✓	GW1002MW1005A	2			1	

Rec'd temp. 3°C
Custody Seals intact
Fedex # 8267 8952 3228
MFH. 10-29-01

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Larry Nanba	10/26/01	1800	Matthew F. Howard	10-29-01	09:00
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Remarks: Fed Ex Airbill # 8267 8952 3228

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

[1] Matrix: WW - Wastewater W - Water S - Soil SD - Solid L - Liquid A - Air Bag C - Charcoal tube SL - Sludge O - Oil

[2] Conte: VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wid uth P/O - Plastic or other _____

STL cannot accept verbal changes. Please Fax written anges to (802) 655

URS Greiner

Chain of Custody

URS Gr[illegible]er, Inc.
2401 4th Ave., Suite 1000
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206.438.2700

Installation I.D.: Camp Bonneville | CTO No.: Landfill 4

Site I.D.: Demolition Area 1 | Zone I.D. | Sampling Co.: URS Corp.

Airbill No.: Fed Ex 8267 8952 3340 | Shipping Cont'r No.: 1 of 1

Sample Number	Sample Collection: Date (mm/dd/yy)	Time (24 Hr.)	Matrix Type	Sample Type	Analytical Methods: 8330m (Explosives)	8330m (Explosives - Risk Limit Check)	SIM (Low-Level Explosives)	Indicate Any Condition That Would Affect Sample Analysis. Indicate Samples Containing Quantities for MS/MSD Analysis. Remarks
GW02MW0028	10/24/01	1530	W	ES	2	2	1	

BOTTLE NUMBERS FROM SAMPLE LABEL: 1 = 4 oz. Amber Jar; 2 = 40 ml VOA; 3 = Soil Vial HDPE

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory
[signature]	10/25/01	1200		USACE - Quality Assurance Laboratory
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Contract No.: LIMS - 6401
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A – Air; P – Product; S – Soil; T – Tissue; W – Water | Distribution: White – Accompanies Shipment; Green – Disposal Receipt; Canary – Lab Copy; Pink – Field Copy; Goldenrod – URS Sample Control Copy

Sample Types: ER – Equipment Rinsate; ES – Environmental Sample; FB – Field Blank; TB – Trip Blank

2/10/95

USACE

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206 438 2700

Installation I.D.	CTO No.
Camp Bonneville	
Site I.D. / Zone I.D.	Sampling Co.
Landfill 4 / Demo. Area 1	URS Corp.
Airbill Co./No.	Shipping Cont'r No.
Fed Ex 8267 8952 3239	

Sample Number	Sample Collection Date (mm/dd/yy)	Time (24 Hr.)	Matrix Type	Sample Type
GW02MW01A	10/23/01	1800	W	ES
GW02MW01B	10/24/01	0915	W	ES
GW02MW02A	10/24/01	1140	W	ES
GW02MW02B	10/24/01	1530	W	ES
~~GW02M~~ ⓔ				
GW502MW02B	10/24/01	1630	W	ES

Analytical Methods / BOTTLE NUMBERS FROM SAMPLE LABEL

Sample Number	8260B (VOC)	160.2 (Total Susp. Solids)	8270C (SVOC)	6010/200.8/1470 (Total)	6010/200.8/7470 (Dissolved)	NWTPH-Gx	NWTPH-Dx	8151A (organochlorine herb)	300.0	SM2320	160.2	335.2	Remarks
	40ml VOA	1 LTR AGB	1 LTR AGB	1 LTR HDPE	1 LTR HDPE	40ml VOA	1 LTR AGB	1 LTR AGB	1 LTR OJ	1 LTR OJ	1 LTR OJ	500ml HDPE	
GW02MW01A	3	2	2	1	1	2	2	2	1	1	1	1	
GW02MW01B	3[9]	2[6]	2[6]	3	3	2[6]	2[6]	2[6]	3	3	3	3	(ms/msd)
GW02MW02A	3	2	2	1	1	2	2	2	1	1	1	1	
GW02MW02B	~~9~~ 3	~~6~~ 2	~~6~~ 2	~~3~~ 1	~~3~~ 1	~~6~~ 2	~~6~~ 2	~~6~~ 2	~~3~~ 1	~~3~~ 1	~~3~~ 1	~~3~~ 1	ms/msd ⓔ
GW502MW02B	3	2	2	1	1	2	2	2	1	1	1	1	

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

	A			B	B	A						D	

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
[signature]	10/25/01	1200	[signature] 10/26/01 1020	Analytical Resources, Inc.
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

URS Greiner

Chain of Custody

URS Greiner, Inc.
2401 4th Ave., Suite 1000
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206.438.2700

Installation I.D.		CTO No.
Camp Bonneville		
Site I.D. Landfill 4	Zone I.D. Demo. Area 1	Sampling Co. URS Corp.
Airbill No. 8267 8952 3239		Shipping Cont'r No.

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL: TOC - 415.1/353.2	DOC - 415.1	Remarks
GW02MW01A	10/23/01	1800	W	ES	2	2	
GW02MW01B	10/24/01	0915			6	6	(MS/MSD)
GW02MW02A	10/24/01	1140			2	2	
GW02MW02B	10/24/01	1530			2	2	
GW50ZMW02B	10/24/01	1630			2	2	

Analytical Methods

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify): C C

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory:
	10/25/01	1200	10/26/01 1080	ARI
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A – Air; P – Product; S – Soil; T – Tissue; W – Water

Distribution: White = Accompanies Shipment; Green = Disposal Receipt; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy

Sample Types: ER – Equipment Rinsate; ES – Environmental Sample; FB – Field Blank; TB – Trip Blank

600000

2/10/95

#1 -2.0 -#2 -- #3 -#4 -#5

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206.438.2700

Installation I.D.: Camp Bonneville	CTO No.:
Site I.D.: Landfill 4 / Zone I.D.: Demo. Area 1	Sampling Co.: URS Corp.
Airbill Co./No.: Fed Ex - 8267 8952 3206	Shipping Cont'r No.: 1 of 2 / 2 of 2 — 1-5 of 5

Sample Number	Sample Collection: Date (mm/dd/yy)	Sample Collection: Time (24 Hr.)	Matrix Type	Sample Type
GW02MW03A	10/25/01	1545	W	ES
GW02MW03B	10/26/01	1245		
GW02MW04A	10/26/01	0935		
~~GW02MW05A~~	~~10/26/01~~			
GW02MW07A	10/23/01	1500	W	ES
GW10G2MW05A				ER
~~GW02MW06~~	10/26/01		W	ES

Analytical Methods / Bottle Numbers from Sample Label

Sample Number	8260B (VOC)	1602 (Total Susp. Solids)	8270C (SVOC)	6010/7000/7470 (Total)	6010/7000/7470 (Dissolved)	NWTPH-Gx	NWTPH-Dx	8151A (Organochlorine Herb.)	300.0	SM 2320	Tested (1)	335.2
GW02MW03A	3	1	2	1	1	2	2	2	1	1		1
GW02MW03B	3	1	2	1	1	2	2	2	1	1		1
GW02MW04A	3	1	2	1	1	2	2	2	1	1		1
~~GW02MW05A~~	3	1	2	1	1	2	2	2	1	1		1 (2)
GW02MW07A	2		2	1		2 (3)		2				
GW10G2MW05A												
~~GW02MW06~~	3	1	2	1	1	2	2	2	1	1		1 (3)
	40ml VOA	1 LTR HDPE	1 LTR AGB	1 LTR HDPE	1 LTR HDPE	40ml VOA + 1 LTR AGB (3)	1 LTR AGB	1 LTR AGB	1 LTR OJ	1 LTR OJ		500ml HDPE
Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):	A			B	B	A						D

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Remarks

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
[signature]	10/26/01	1800	[signature] 10/27/01 9:30	Analytical Resources, Inc.
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

020000

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206.438.2700

Installation I.D.	CTO No.
Camp Bonneville	
Site I.D. / Zone I.D.	Sampling Co.
Landfill 4 / Demo. Area 1	URS Corp
Airbill Co./No.	Shipping Cont'r No.
Fed Ex - 8267 8952 3206	1 - 5 of 5

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	Analytical Methods: TOC-415.1/353.2	Analytical Methods: DOC-415.1	Indicate Any Condition That Would Affect Sample Analysis. / Indicate Samples Containing Quantities for MS/MSD Analysis / Remarks
GW02MW03A	10/25/01	1545	W	ES	2	2	
GW02MW03B	10/26/01	1245			2	2	
GW02MW04A	10/26/01	0935			2	2	
~~GW02MW05A~~	~~10/26/01~~				~~2~~	~~2~~	
GW02MW07A	10/23/01	1500					
GW1002MW05A	10/26/01	~~1500~~ 0		ER	~~2~~	~~2~~	

BOTTLE NUMBERS FROM SAMPLE LABEL

			C	C

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
[signature]	10/26/01	1800	[signature] 10/27/01 9:30	Analytical Resources, Inc
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
400 Ninth Avenue North
Seattle, WA 98109-4708
206-621-6490 206-621-7523 (fax)

Page 1 of 2

Turn Around Requested: As Per Contract

Report to: Lori Raschke	Proj Name: Bonneville	Analyses Requested										Notes/Comm
Company: URS Corp.	Proj Number: 53-F0072323											
Address: 1501 4th Ave., Ste 1400	Sampler: Dave Lewis											
Seattle, WA 98101												
Phone: 206.438.2700	Shipping Method: Hand carry											
Fax:	AirBill:											

Sample ID	Sample Date	Sample Time	Sample Matrix	No Containers	8260B	160.2	8270 C	Total 6010/200.8/7470	Dissolved 6010/200.8/7470	NWTPH-Gx	NWTPH-Dx	8151A	300.0	SM2320	
GW02MW05A	10/26/01	1710	WR		3	1	2	1	1	2	2	2	1	1	
GW1002MW05A	10/26/01	2045	WR		3	1	2	1	1	2	2	2	1	1	
					HCl			HNO3	HNO3	HCl					

Relinquished: (Signature)	Relinquished: (Signature)	Relinquished: (Signature)	Special Instructions/Notes
Printed name: Larry Nambe	Printed name:	Printed name:	
Company: URS	Company:	Company:	
Date: 10/27/01 Time: 1245 +0000	Date: Time:	Date: Time:	
Received by:	Received by:	Received by:	
Printed name: S.D. DUNNIGAN	Printed name:	Printed name:	
Company: ARI	Company:	Company:	Number of Coolers: III
Date: 10/27/01 Time: 1245	Date: Time:	Date: Time:	Cooler Temp(s): 5° C COC Seals Intact? NA Bottles Intact? OK

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
Analytical Chemists and Consultants
400 Ninth Avenue North
Seattle, WA 98109-4708
206-621-6490 206-621-7523 (fax)

Page 2 of 2 Turn Around Requested: As Per Contract

| | | |

Committed To Your Success. 208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

CHAIN OF CUSTODY RECORD

Report to:	Invoice to
Company: URS Incorporated	Company:
Address: 1501 4th Avenue Suite 1400	Address:
Contact: Lori Raschke	Contact: Same
Phone: 206.438.2700	Phone:
Fax: 206.438.2699	PO/SO #:
Contract/ Quote #:	

ANALYSIS REQUESTED

Lab use only
Due Date:

Temp. of coolers when received (C°):

1	2	3	4	5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: L. Namba / D. Lewis

Sampler's Signature: L. Namba

Proj. No.: 53-F0072323

Project Name: Camp Bonneville - Landfill 4, Demo. Area 1

No./Type of Containers[2]

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	250 ml	P/O	8330m Explosives Residue / PETN Picric Acid / Nitroglycerine	Lab Sample ID (Lab Use Only)
W	1/21/02	1600		✓	GW03 MW01A		2			✓	
W	1/22	1645		✓	GW03 MW02A		2			✓	
W	1/22	1015		✓	GW03 MW01B		6			✓	MS/MSD

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
L. Namba	1/23/02	1600			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Remarks: FedEx Airbill # 8267 8952 6672

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

[1] Matrix WW - Wastewater W - Water S - Soil SD - Solid L - Liquid A - Air Bag C - Charcoal tube SL - Sludge O - Oil

[2] Conta VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide outh P/O - Plastic or other _____

STL cannot accept verbal changes. Please Fax written changes to (802) 655

U. Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206.438.2700

Installation I.D.: Camp Bonneville

~~GTO~~ No.: 53-F0072323

Site I.D.: Landfill 4

Zone I.D.: Demo. Area 1

Sampling Co.: URS Corp

Airbill Co./No.: 8267 8952 6694

Shipping Cont'r No.:

Analytical Methods: 8330m - Explosives Residue / PETN / Picric Acid / Nitroglycerine

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL	Remarks
GW03MW03A	01/24/02	1150	WR		2	
GW03MW03B	01/24/02	1355	WR		2	
GW03MW05A	01/25/02	1110	WR		2	
GW1003MW05A	01/25/02	1430	WR		2	

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
[signature]	01/25/02	1700		STL - Burlington
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

Severn Trent Laboratories, Inc. — Committed To Your Success
208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

CHAIN OF CUSTODY RECORD

Report to:	Invoice to
Company: URS Corporation	Company:
Address: 1501 4th Avenue Suite 1400	Address: Same
Contact: Lori Raschke	Contact:
Phone: 206.438.2700	Phone:
Fax: 206.438.2699	PO/SO #:
Contract/ Quote #:	

Sampler's Name: L. Namba / D. Lewis

Sampler's Signature:

Proj. No.: 53F0072323

Project Name: Camp Bonneville - Landfill 4 Demo. Area 1

Lab use only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y

Intact N / Y

Screened For Radioactivity ☐

ANALYSIS REQUESTED: 8330 m - Explosives Residue (PETN / Picric Acid / Nitroglycerine)

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No./Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	8330 m	Lab Sample ID (Lab Use Only)
W	1/23/02	0950		✓	GW03MW07A		2			✓	
W	1/23	0930		✓	GW03MW07B		2			✓	
W	1/23	1030		✓	GW03MW02B		2			✓	
W	1/23	1450		✓	GW503MW02B		2			✓	
W	1/23	1900		✓	GW03MW04A		2			✓	

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
L. Namba	1/24/02	1730			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Remarks: Fed Ex Airbill 8267 8952 6823 ② 6801

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

[1] Matrix: WW - Wastewater W - Water S - Soil SD - Solid L - Liquid A - Air Bag C - Charcoal tube SL - Sludge O - Oil

[2] Conta... VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wid... ...th P/O - Plastic or other _____

STL cannot accept verbal changes. Please Fax written ...anges to (802) 655

Committed To Your Success 208 South Park Drive, Suite 1, Colchester, VT 05446 Tel. (802) 655-1203

CHAIN OF CUSTODY RECORD

Report to:
Company: URS Corporation
Address: 1501 4th Avenue
Suite 1400
Contact: Lori Rasehke
Phone: 206.438.2700
Fax: 206.438.2699
Contract/ Quote #:

Invoice to
Company:
Address:
Contact: Same
Phone:
PO/SO #:

ANALYSIS REQUESTED

Lab Only
Due Date:

Temp. of coolers when received (C°):
1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: L. Namba / D. Lewis
Sampler's Signature:

Proj. No.: 53-F0072323
Project Name: Camp Bonneville - Landfill 4, Demo. Area 1

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No./Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	8330 m - Nitroguanidine	314 - Ammonium Perchlorate	Lab Sample ID (Lab Use Only)
W	1/21	1610		✓	GW03MW01A	2			1	✓	✓	
W	1/22	1015		✓	GW03MW01B	6			2	✓	✓	MS/MSD
W	1/22	1645		✓	GW03MW02A	2			1	✓	✓	

Rec'd temp. 2°C
Custody seals intact
Fed-Ex 8267 8952 6683
M.F.H. 01-25-02

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
[signature]	1/23/02	1600	Matthew J. Howard	01/25	08:40
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Remarks: Fed Ex Airbill 8267 8952 6683

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

[1] Matrix WW - Wastewater W - Water S - Soil SD - Solid L - Liquid A - Air Bag C - Charcoal tube SL - Sludge O - Oil

[2] Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

STL cannot accept verbal changes. Please Fax written changes to (802) 655-1248

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206.438.2700

Installation I.D.: Camp Bonneville

~~GTO~~ No.: 53F0072323

Site I.D.: Land All 4

Zone I.D.: Demo. Area 1

Sampling Co.: URS Corp.

Airbill Co./No.: 8267 8952 6709

Shipping Cont'r No.:

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	Analytical Methods: 8330M - Nitroguanidine	Analytical Methods: 314 - Ammonium Perchlorate	Remarks
GW03MW03A	01/24/02	1150	WR		2	1	
GW03MW03B	01/24/02	1355	WR		2	1	
GW03MW05A	01/25/02	1110	WR		2	1	
GW003MW05A	01/25/02	1430	WR		2	1	Rec'd temp 3°c Custody Seals intact Fedex # 826989526709 MFH-01-26-02

BOTTLE NUMBERS FROM SAMPLE LABEL

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
	01/25/02	1700	Matthew T. Howard 01-26-02 09:30	STL - Knoxville
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

Committed To Your Success 208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

CHAIN OF CUSTODY RECORD

Report to:
Company: URS Corporation
Address: 1501 4th Avenue Suite 1400
Contact: Lori Raschke
Phone: 206.438.2700
Fax: 206.438.2699
Contract/ Quote #:

Invoice to
Company:
Address: Same
Contact:
Phone:
PO/SO #:

Lab use only Due date:

Temp. of coolers when received (C°): 1 2 3 4 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Sampler's Name: L. Namba / D. Lewis
Sampler's Signature:

Proj. No.: 53F0072323
Project Name: Camp Bonneville - Landfill 4 Demo. Area 1

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No./Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	8330 m - Nitroguanidine	314 - Ammonium Perchlorate	Lab Sample ID (Lab Use Only)
W	1/23/02	0950		✓	GW03MW07A	2			1	✓	✓	
W	1/23	0930		✓	GW03MW07B	2			1	✓	✓	
W	1/23	1030		✓	GW03MW02B	2			1	✓	✓	
W	1/23	1450		✓	GW503MW02B	2			1	✓	✓	
W	1/23	1900		✓	GW03MW04A	2			1	✓	✓	
W												Rec'd temp. 3°
												custody seals intact
												Fed-ex # 8267 8952 6812
												MP#-01-28-02

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
[signature]	1/24/02	1730	Matthew J. Howard	01-28-02	09:15
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Remarks: Fed Ex Airbill 8267 8952 6812

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

[1] Matrix WW - Wastewater W - Water S - Soil SD - Solid L - Liquid A - Air Bag C - Charcoal tube SL - Sludge O - Oil

[2] Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other _____

STL cannot accept verbal changes. Please Fax written changes to (802) 655-1248

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke
PHONE NO.: 206.438.2700

Installation I.D.	~~OTO No.~~
Camp Bonneville	53-F0072323
Site I.D. / **Zone I.D.**	**Sampling Co.**
Landfill 4 / Demo Area 1	URS Corp.
Airbill Co./No.	**Shipping Cont'r No.**
8267 8952 6661	

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type
GW03MW01A	01/21/02	1610	WR	
GW03MW01B	01/22/02	1015	WR	
GW03MW02A	01/22/02	1645	WR	
012102TRIP01	01/21/02	1000	WR	TB

Analytical Methods

8260 B	NWTPH-Gx	8270 C	NWTPH-Dx	8151 A	160.2	200.8/6010B/Hg 7470 Total	200.8/6010B/Hg 7470 Dissolved	335.2	4151.1/353.2	4151.1 (Dissolved)	300	Remarks
3	3	2	2	2	1	1	1	1	1	1	1	
6	6	6	6	6	2	2	2	2	2	2	2	MS/MSD
3	3	2	2	2	1	1	1	1	1	1	1	
2	2											
A	A											
A	A					B	B	B	E	C		

BOTTLE NUMBERS FROM SAMPLE LABEL

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
	01/23/02	1600		Analytical Resources Incorporated
Relinquished by: (Signature)	**Date**	**Time**	**Received by:** (Signature)	**Laboratory Contract No.:**
	01/24/02	10:30		
Relinquished by: (Signature)	**Date**	**Time**	**Received by Lab:** (Signature)	**Samples Disposed by:** / **Date** / **Time**

Matrix Types: **A** - Air; **PR** - Product; **SD** - Sediment; **SL** - Soil; **TI** - Tissue; **WR** - Water

Distribution: **White** = Accompanies Shipment; **Canary** = Lab Copy; **Pink** = Field Copy; **Green** = URSGWC Sample Control Copy

Sample Types: **ER** - Equipment Rinsate; **ES**- Environmental Sample; **FB** - Field Blank; **TB** - Trip Blank

051099

Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke
PHONE NO.: 206.438.2700

Installation I.D.: Camp Bonneville
CTO No: 53-F0072323
Site I.D.: Landfill 4
Zone I.D.: Demo Area 1
Sampling Co.: URS
Airbill Co./No.: 8267 8952 6661
Shipping Cont'r No.:

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL: Analytical Methods SM2320	Remarks
GW03MW01A	01/21/02	1610	WR		1	
GW03MW01B	01/22/02	1015	WR		2	MS/MSD
GW03MW02A	01/22/02	1645	WR		1	

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
Tammy Nash	01/23/02	1600		Analytical Resources Incorporated
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
[signature]	1/24/02	10:30		
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206.438.2700

Installation I.D.: Camp Bonneville
~~GTO No.~~: 53-F007Z323
Site I.D.: Landfill 4
Zone I.D.: Demo. Area 1
Sampling Co.: URS Corp.
Airbill Co./No.: 8267 8952 6797
Shipping Cont'r No.:

Sample Number	Sample Collection Date (mm/dd/yy)	Time (24 Hr.)	Matrix Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL: 8260B	NWTPH-Gx	8270C	NWTPH-Dx	8151A	160.2	200.8/6010B (Hg 7470 Dissolved)	200.8/6010B/Hg 7470	335.2	415.1/3532	415.1 (Dissolved)	300	Remarks
GW03MW07A	01/23/02	0950	WR		2		2		2		1						change ID to GW03MW08A per Steve W. 1/25/02
GW03MW07B	01/23/02	0930	WR														Not received 1/25/2002
~~01/23/0~~	01/10/02																
012302TRIP02	~~01/23/02~~	0900	WR	TB	2	2											
GW03MW02B	01/23/02	1030	WR		3	3	2	2	2	1	1	1	1	1	1	1	
GW503MW02B	01/23/02	1450	WR		3	3	2	2	2	1	1	1	1	1	1	1	
GW03MW04A	01/23/02	1900	WR		3	3	2	2	2	1	1	1	1	1	1	1	

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

A	A					B	B	D	C	C			

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
[signature]	1/24/02	1730	[signature] 1/25/02	Analytical Resources, Incorporated
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

2.5, 1.5 5, 3.0

Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke
PHONE NO.: 206.438.2700

Installation I.D.: Camp Bonneville
~~CTO~~ No.: 53-F0072323
Site I.D.: Landfill 4
Zone I.D.: Demo. Area1
Sampling Co.: URS Corp.
Airbill Co./No.: 8267 8952 6797
Shipping Cont'r No.:

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL	Analytical Methods: SM2320	Remarks
GW03MW07A	01/23/02	0950	WR				
GW03MW07B	01/23/02	0930	WR				
012302TRIP02	01/10/02	0900	WR	TB			
GW03MW02B	01/23/02	1030	WR		1		
~~GW03MW02~~							~~e~~ (R)
GW03MW02B	01/23/02	1450	WR		1		
GW03MW04A	~~01~~ 01/23/02	1900	WR		1		

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
[signature]	1/24/02	1730	[signature] 1/25/02	Analytical Resources, Incorporated
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

EB18

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206.438.2700

Installation I.D.: Camp Bonneville
~~OTO~~ No.: 53-F0072323
Site I.D.: Landfill 4
Zone I.D.: Demo. Area 1
Sampling Co.: URS Corp.
Airbill Co./No.: Handcarry
Shipping Cont'r No.:

Sample Number	Sample Collection Date (mm/dd/yy)	Time (24 Hr.)	Matrix Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL: 8260 B	NWTPH-Gx	8270 C	NWTPH-Dx	8151 A	160.2	Total 200.8/6010B/Hg 7470	Dissolved 200.8/6010B/Hg 7470	335.2	415.1/353.2	415.1 (Dissolved)	300	Remarks
GW03MW03A	01/24/02	1150	WR		3	3	2	2	2	1	1	1	1	1	1	1	
GW03MW03B	01/24/02	1355	WR		3	3	2	2	2	1	1	1	1	1	1	1	
GW03MW05A	01/25/02	1110	WR		3	3	2	2	2	1	1	1	1	1	1	1	
GW003MW05A	01/25/02	1430	WR		3	3	2	2	2	1	1	1	1	1	1	1	
012502TRIP03	01/10/02	~~1000~~ 1200	WR	TB	2	2											Trip Blank Note: Trip Blank was collected from Safeway Purified Water. None other available lab grade water.
Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):					A	A					B	B	D	C	C		

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Relinquished by Sampler: (Signature)	Date: 1/26/02	Time: 1000	Received by: (Signature)	Laboratory Name: Analytical Resources Incorporated
Relinquished by: (Signature)	Date	Time	Received by: (Signature) 1/26/02 1005	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

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EDIB

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206.438.2700

Installation I.D.	~~CTO~~ No.
Camp Bonneville	53-F0072323
Site I.D. / Zone I.D.	Sampling Co.
Landfill 4 / Demo. Area 1	URS Corp.
Airbill Co./No.	Shipping Cont'r No.
Hand carry	

Analytical Methods: SM2320

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL	Remarks
GW03MW03A	01/24/02	1150	WR		1	
GW03MW03B	01/24/02	1355	WR		1	
GW03MW05A	01/25/02	1110	WR		1	
GW1003MW05A	01/25/02	1430	WR		1	

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
	1/26/01	1000	1/26/02 1005	Analytical Resources Incorporated
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

000016

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raschke
PHONE NO.: 206-438-2700

Installation I.D.: Camp Bonneville
~~CTO No.~~: 53-F0072323
Site I.D.: Landfill 4
Zone I.D.: Demo Area 1
Sampling Co.: URS Corp
Airbill Co./No.: 8267 8952 6661
Shipping Cont'r No.:

Sample Number	Sample Collection Date (mm/dd/yy)	Time (24 Hr.)	Matrix Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL
GW04MW01A	04/23/02	1230	WR	ES	
GW04MW01B	04/23/02	1450			
GW04MW02B	4/24/02	0935			
GW04MW02A		1130			
GW504MW02 GW04MW99B		1230			
GW04MW04A		1345		↓	
042402TRIP01	↓	1100	↓	TB	

Sample Number	Analytical Methods: 8260B	NWTPH-Gx	8270C	NWTPH-Dx	8151A	160.2	dissolved 200.8/6010B/7470	total 200.8/6010B/7470	335.2	4[illegible]5.1	353.2	4[illegible]5.1 (dissolved)	300.	Remarks
GW04MW01A	3	3	2	2	2	1	1	1	1	1	1	1		
GW04MW01B	6	6	4	4	4	2	2	2	2	2	2	2		MS/MSD.
GW04MW02B	3	3	2	2	2	1	1	1	1	1	1	1		
GW04MW02A	3	3	2	2	2	1	1	1	1	1	1	1		
GW504MW02 GW04MW99B	3	3	2	2	2	1	1	1	1	1	1	1		
GW04MW04A	3	3	2	2	2	1	1	1	1	1	1	1		
042402TRIP01	1	1												
Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):	A	A					B	B	D	C	C			

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Remarks

	Date	Time		
Relinquished by Sampler: (Signature) K Prochazka	4/24/02	1800	Received by: (Signature)	Laboratory Name:
Relinquished by: (Signature)	Date	Time	Received by: (Signature) 4/25/02 10:45	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

Fed Ex # 150[illegible]3314

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave.. [illegible] 808
Seattle, WA 9[illegible] 1459
(206) 674-1800

CONTACT: Lori Raschke

PHONE NO.: 206-438-2700

Page 1 of 1

Installation I.D.	GTO No.
Camp Bonneville	53-F0072323.00
Site I.D. / Zone I.D.	Sampling Co.
Landfill 4 / Demo Area 1	URS Corp.
Airbill Co./No.	Shipping Cont'r No.
8267 8952 6	

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type
GW04MW9	4/25/02	1200	WR	ES
GW04MW5A		0900	WR	ES
GW04MW3B		1050	WR	ES
GW04MW3A		1345	WR	ES
GT0004MW3B	4/25/02	1300	WR	ES
↑ W				
per client 4/26/02 SS				
"0" per client 4/30/02 SS				

Analytical Methods	8260B	NWTPH-Gx	8270C	NWTPH-Dx	8151A	160.2 dissolved 200.8/6010B/7470	160.2 total 200.8/6010B/7470	335.2	415.1/3532	415.1 (dissolved)	300	Indicate Any Condition That Would Affect Sample Analysis. Indicate Samples Containing Quantities for MS/MSD Analysis. Remarks
BOTTLE NUMBERS FROM SAMPLE LABEL	3	3	2		2		1	1	1	1	1	1	
	3	3	2	2	2	1	1	1	1	1	1	1	
	3	3	2	2	2	1	1	1	1	1	1	1	
	3	3	2	2	2	1	1	1	1	1	1	1	
	3	3	2	2	2	1	1	1	1	1	1	1	
													* More samples to arrive Saturday 4/27/02 via Fed Ex.
	A	A					6						*5 containers in shipment
	A	A					B	B	D	C	C		

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
R Prochaska	4/25/02	4pm	D Caldwell	
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
			M Fleming/ART 4/26/02 10:45	
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

000003

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.
208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

CHAIN OF CUSTODY RECORD

Report to:
Company: URS Corp
Address: 1501 4th Ave Ste 1400
Seattle WA 98101
Contact: Lori Raschke
Phone: 206 438 2700
Fax: 206 438 2699
Contract/ Quote:

Invoice to:
Company: Same
Address:
Contact:
Phone:
Fax:

Sampler's Name: Renee Prochazka, David Beede
Sampler's Signature: RProchazka

Proj. No.: 53-F0072323
Project Name: Camp Bonneville.

ANALYSIS REQUESTED: 8330M

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	8330M	Lab/Sample ID (Lab Use Only)
W	4/25	0900			GW04MW57		2			X	
		0950			GW04MW3B		2			X	
		1300			GW1004MW3B		2			X	
		1345			GW04MW34		2			X	
		1200			GW04MW9A		2			X	
↓	↓	1100			GW04MW9B		2			X	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
RProchazka	4/25	4pm	D. Caldwell		
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
				4/26/02	0980
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag Charcoal Tube SL - Sludge O - Oil
[2]Contain... VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other _____

STL cannot accept ve... changes. Please Fax written ... es to (802) 655-1248

L8234 (0700)

STL Burlington

Severn Trent Laboratories, Inc.
208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

CHAIN OF CUSTODY RECORD

Report to:
Company: URS Corporation
Address: 1501 4th Ave Ste 1400
Seattle, WA 98101-1616
Contact: Lori Raschke
Phone: 206-438-2700
Fax: 206-438-2699
Contract/ Quote:

Invoice to:
Company: Same
Address:
Contact:
Phone:
Fax:

Sampler's Name: David Beeck, Renee Prockazka
Sampler's Signature: R Prockazka

Proj. No.: 53F0072373
Project Name: Camp Bonneville-landfill 4

ANALYSIS REQUESTED: 8330M

Lab Use Only
Due Date:
Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5
Custody Seal N / Y
Intact N / Y
Screened For Radioactivity ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	8330M	Lab/Sample ID (Lab Use Only)
W	4/23	1230			GW04MW01A		2			✓	
W	4/23	1450			GW04MW01B		4			✓	MS/MSD
W	4/24	0935			GW04MW02B		2			✓	
W	4/24	1130			GW04MW02A		2			✓	
W	4/24	1230			GW04MW05B		2			✓	
W	4/24	1345			GW04MW04A		2			✓	
W	4/24	0900			GW04MW09A		2			✓	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
R Prockazka	4/24/02	6PM		4/24	1800
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
				4/26/02	0930
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks: Fed Ex Airbill #150878314 8267 8952 6801

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other _____

STL cannot accept verbal changes. Please Fax written changes to (802) 655-1248

TL-8234 (0700)

STL-Knoxville

TRENT SERVICES

Severn Trent Laboratories, Inc.
208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

CHAIN OF CUSTODY RECORD

Report to:
Company: URS Corporation
Address: 1501 4th Ave Ste 1400
Seattle, WA 98101
Contact: 206-438-2700
Phone: 206-438-2699
Fax: Lori Raschke
Contract/
Quote:

Invoice to:
Company: Same
Address:
Contact:
Phone:
Fax:

Sampler's Name: David Beede, Renee Prochzka
Sampler's Signature: RProchzka

Proj. No.: 53-F0072325
Project Name: Camp Bonneville - Landfill 4 Demo Area 1

Analysis Requested: 8330M, 314

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal Intact: N / Y

Screened For Radioactivity: ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	Lab/Sample ID (Lab Use Only)
W	4/23	1230			GW04MW01A	~~2~~				
W	|	1450			GW04MW01B	4				MS/MSD.
W	|	1230			GW04MW01A				1	
W	|	1450			GW04MW01B				2	
W	4/24	0935			GW04MW02B	2			1	Recd temp. 4°C
W	|	1130			GW04MW02A	2			1	Custody Seals Intact
W	|	1230			GW04MW05B	2			1	Fedex #833122139703
W	|	1345			GW04MW04A	2			1	8353 4546 8394
~~W~~	~~4/24~~	~~1400~~			~~GW04MW09A (taken @ 0900)~~					MFH-04-26-02

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
RProchzka	4/24/02	6pm	[illegible]	4/24	1800
Relinquished by: (Signature)	Date	Time	Received by: (Signature) Matthew J. Howard	4/26/02	09:00
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks: Fed Ex # 150878314

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other _____

STL cannot accept verbal changes. Please Fax written changes to (802) 655-124

STL-8234 (0700)

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.
208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

CHAIN OF CUSTODY RECORD

Report to:
Company: URS Corp.
Address: 1501 4th Ave, Suite 1400
Seattle WA 98101
Contact: Lori Raschke
Phone: 206 438 2700
Fax: 206 438 2699
Contract/ Quote:

Invoice to:
Company: Same as "Report to"
Address:
Contact:
Phone:
Fax:

Sampler's Name: Renee Procházka, David Beede
Sampler's Signature:

Proj. No.: 53-F0073ZB
Project Name: Camp Bonneville

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal Intact: N / Y / N / Y

Screened For Radioactivity: ☐

Matrix[1]	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	No/Type of Containers[2] VOA	A/G 1 Lt.	250 ml	P/O	ANALYSIS REQUESTED 8330M	314	Lab/Sample ID (Lab Use Only)
W	4/25	0900			GW04MW5A	2			1	X	X	
W		1050			GW04MW3B	2			1	X	X	
W		1300			GW1004MW3B	2			1	X	X	
W		1345			GW04MW3A	2			1	X	X	Rec'd temp. 4°C
W		1200			GW04MW9A	2			1	X	X	Custody Seals Intact
W		1100			GW04MW9B	2			1	X	X	Fedex#8331 2213 9703
												8353 4546 8394
												MFH.04-26-02

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
R Procházka	4/25/02	4pm	D Caldwell		
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
			Matthew J. Howard	4/26/02	0900
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time

Remarks: fed Ex #150878314

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

[1]Matrix WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
[2]Container VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P/O - Plastic or other

STL cannot accept verbal changes. Please Fax written changes to (802) 655-1248

STL-8234 (0700)

SEVERN TRENT SERVICES

Severn Trent Laboratories, Inc.
208 South Park Drive, Suite 1, Colchester, VT 05446 Tel: (802) 655-1203

Call 206 463-6223 with questions.

1 cooler only

CHAIN OF CUSTODY RECORD

Report to:	Invoice to:
Company: D.M.D., Inc.	Company:
Address: 13706 SW Caster Rd. Vashon, WA 98070	Address:
Contact: R. Farlow	Contact:
Phone: 206 463-6223	Phone:
Fax: 206 463-4013	Fax:
Contract/ Quote:	

Sampler's Name | Sampler's Signature

Lab Use Only
Due Date:

Temp. of coolers when received (C°): 1 | 2 | 3 | 4 | 5

Custody Seal N / Y
Intact N / Y

Screened For Radioactivity ☐

Proj. No. | Project Name: Camp Bonneville, Landfill 4 | No/Type of Containers²: 19 total

Matrix¹	Date	Time	Comp	Grab	Identifying Marks of Sample(s)	VOA	A/G 1 Lt.	500 ml	P/O	Lab/Sample ID (Lab Use Only)
H_2O					Explos. A PE 4-21-02		2			
"					Explos. B " "		2			
"					Nitroguanidine A PE 4-21-02	2				
"					Nitroguanidine B PE "	2				
"					Perchlorate A PE 4-21-02			1		
"					Perchlorate B " "			1		
"					SVOCs PE 4-21-02			2		
"					Herbicides PE "			2		
"					VOAs PE "	3				
"					Metals, Total PE "				1	
"					Metals, Dissolved PE "				1	

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Date	Time
R. Farlow	4-22-02	10:00 am		4/23/02	9am
Relinquished by: (Signature)	Date	Time	Received by: (Signature	Date	Time
Relinquished by: (Signature)	Date	Time	Received by: (Signature	Date	Time

Remarks: Do not identify as PEs when sending to labs.

Client's delivery of samples constitutes acceptance of Severn Trent Laboratories terms and conditions contained in the Price Schedule.

¹Matrix: WW - Wastewater W - Water S - Soil L - Liquid A - Air bag C - Charcoal Tube SL - Sludge O - Oil
²Containe: VOA - 40 ml vial A/G - Amber / Or Glass 1 Liter 250 ml - Glass wide mouth P - Plastic or other _____

STL cannot accept verba nges.
Please Fax written ch to
(802) 655-1248

STL-8234 (0700)

U. Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Leri Rascke

PHONE NO.: 206.438.2700

Installation I.D.		CTO No.
Camp Bonneville		
Site I.D.	Zone I.D.	Sampling Co.
Landfill 4	Demo Area 1	URS Corp.
Airbill Co./No.		Shipping Cont'r No.
Fed Ex/810854064830		1 of 1

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL: Nitroguanidine - 8330N	Perchlorate Ion - 314	Remarks
GW05MW02B	01/08/03	1430	WR	ES	2	1	
GW05MW07B	01/08/03	1030	WR	ES	6	3	MS/MSD
GW05MW10	01/08/03	0800	WR	ES	2	1	
GW505MW07B	01/08/03	1045	WR	ES	2	1	
GW1005MW07B	01/08/03	1130	WR	ES	2	1	

Analytical Methods

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Remarks

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
John Rump	1/9/03	1700		STL - Knoxville
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800

CONTACT: Lori Raecke

PHONE NO.: 206.438.2700

Installation I.D.: Camp Bonneville
CTO No.:
Site I.D.: Land Grid 4
Zone I.D.: Demo Area 1
Sampling Co.: URS Corp.
Airbill Co./No.: FedEx/810854064941
Shipping Cont'r No.:

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	BOTTLE NUMBERS FROM SAMPLE LABEL	Remarks
GW05MW02B	01/08/02	1430	WR	ES	2	
GW05MW07B	01/08/02	1030	WR	ES	6	MS/MSD
GW05MW10	01/08/02	0800	WR	ES	2	
GW505MW07B	01/08/02	1045	WR	ES	2	
GW1005MW07B	01/08/02	1130	WR	ES	2	

Analytical Methods: EX: Residue-TPEH/Propionic Acid/Nitro. Glycerin By 8330m

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

	Date	Time		
Relinquished by Sampler: (Signature)	01/08/02	1700	Received by: (Signature)	Laboratory Name: STL - Burlington
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

URS Greiner Woodward Clyde

Chain of Custody

URS Greiner Woodward Clyde
2401 4th Ave., Suite 808
Seattle, WA 98121-1459
(206) 674-1800
206.438.2700

CONTACT: Loci Rascke

PHONE NO.: 206.438.2700

Installation I.D.	CTO No.
Bonneville	—

Site I.D.	Zone I.D.	Sampling Co.
Landfill 4	Demo Area 1	URS Corp

Airbill Co./No.	Shipping Cont'r No.
Handcarry	

Sample Number	Sample Collection Date (mm/dd/yy)	Sample Collection Time (24 Hr.)	Matrix Type	Sample Type	Bottle Numbers from Sample Label	Analytical Methods: 8260B	8270C	200.8/6010B/7470 Total	200.8/6010B/7470 Dissolved	NWTPH-Gx	NWTPH-Dx	8151A (Acidic)	160.1/300.0/SM2320 (Total)	415.1/353.2	415.1 (Dissolved)	335.2	Remarks
GW05MW02B	01/08/03	1430	WR	ES	3	2	1	1	3	2	2	1	1	1	1	2	~~2~~
GW05MW07B	01/08/03	1030	WR	ES	6	4	2	2	6	4	4	2	2	2	2		MS/MSD
GW05MW10	01/08/03	0800	WR	ES	3	-	-	-	-	-	-	-	-	-	-		
GW505MW07B	01/08/03	1045	WR	ES	3	2	1	1	3	2	2	1	1	1	1		
GW1005MW07B	01/08/03	1130	WR	ES	3	2	1	1	3	2	2	1	1	1	1		
Trip Blank	01/03/03	0800	WR	TB	3	-	-	-	2	-	-	-	-	-	-		

Indicate Any Condition That Would Affect Sample Analysis.

Indicate Samples Containing Quantities for MS/MSD Analysis

Preservation: A = HCL to pH < 2; B = HNO_3 to pH < 2; C = H_2SO_4 to pH < 2; D = NaOH to pH > 12; E = Other (Specify):

A		B	B	A				C	C	D		

Relinquished by Sampler: (Signature)	Date	Time	Received by: (Signature)	Laboratory Name:
[signature]	01/09/03	0800		Analytical Resources, Inc
Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Laboratory Contract No.:
Relinquished by: (Signature)	Date	Time	Received by Lab: (Signature)	Samples Disposed by: / Date / Time

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water

Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Green = URSGWC Sample Control Copy

Sample Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

051099

Appendix C
Slug Test Procedures and Methodology Memorandum

1.0 Rationale for Performing Slug Tests

A recharge test was performed in two shallow wells at Landfill 4 (L4-MW01A and L4-MW05A) to assess how quickly the groundwater levels in the shallow wells would recover. The depth to groundwater was measured, after which the two wells were bailed dry. The water level was then periodically measured to evaluate how quickly the water levels returned to their original elevation. Based on the results of the recharge test, the hydraulic conductivity of the alluvial soils was estimated according to the method described by Hvorslev (1951). Using this method, hydraulic conductivity is derived according to the following equation:

$$K = r^2 \times \ln(L/R)/2 \times L \times T_o,$$

where:

K = hydraulic conductivity in ft/sec

r = radius of well screen in feet

ln R = natural log of radius of well screen

L = length of well screen in feet

T_o = length of time for the water level to recover to 37 percent of the initial change (in seconds)

Hydraulic conductivities were estimated to be 1.6×10^{-6} cm/sec for well L4-MW01A and 3.5×10^{-5} cm/sec for well L4-MW05A. Because recharge tests were not performed in the weathered bedrock, the hydraulic conductivity could not be estimated.

To more accurately estimate hydraulic conductivity in the alluvial soil and weathered bedrock, rising and falling head slug tests will be performed in three of the five shallow wells and all three deeper wells at Landfill 4. The hydraulic conductivity values will permit calculation of groundwater velocities in the alluvial soil and weathered bedrock.

Rising and falling head slug tests offer several advantages when compared to other aquifer testing methods, such as pumping tests (EPA 1993). At hazardous waste sites slug tests do not require the removal, management, and disposal of contaminated groundwater. Slug tests can be used in hydrogeologic units with a wide range of permeabilities. In addition, slug tests are relatively inexpensive in terms of manpower, equipment, and site set-up, which permits multiple tests for characterization of aquifer characteristics.

Although slug tests do offer advantages over other aquifer testing methods, there are also disadvantages or limitations to this type of test (USGS 1979, Freeze and Cherry 1979). Very high or low permeabilities typically require instrumentation, such as transducers and data loggers, to measure groundwater level changes. The hydraulic conductivity values derived from slug tests are only applicable to a small volume of the aquifer in the vicinity of the well in which the test is performed. In addition, the slug used must be large enough to displace an adequate volume of water to produce meaningful results. Slug test data are also dependent on the construction of the well and may be affected by bridging, leaky casing joints, entrapped air, fractured casing, a damaged or enhanced zone of flow around the well, and the anisotropy of the formation (Walton 1991).

2.0 Field Methods

As stated above, rising and falling head slug tests will be performed in three of the five existing shallow wells and all three deeper wells at Landfill 4. All of the wells to be tested are constructed with two-inch diameter casing. Two slug tests will be performed in each well to provide additional statistical confidence of the results. The shallow wells proposed for slug testing are L4-MW01A, L4-MW02A, and L4-MW05, which have screened interval lengths of 10 feet, 10 feet, and five feet, respectively. Wells L4-MW01A and L4-MW5A are proposed because the recharge tests were performed in these wells and it will be useful to compare those results with those obtained from the slug tests. Well L4-MW02A was selected since this well is in a downgradient direction, contained elevated concentrations of contaminants, and provides adequate geographic spacing from the other two shallow wells proposed for the slug tests. The soil observed in the boring logs was similar for all of the shallow monitoring wells.

Prior to conducting the slug tests, the depth of each well to be tested will be measured to evaluate if fines have accumulated in the bottom of the well casing and affected the screened interval in the well. The groundwater elevations will then be measured with an electrical sounder as described in the Final Management Plan (URS 2001). The sounder will be rinsed with distilled water between wells. Assuming that fines have not accumulated in the well casing, a calibrated pressure transducer will be placed in the center of the screened interval of the well to be tested. If fines have accumulated in the water column, the transducer will be placed a minimum of two feet above the fines. The transducer will be connected to a two-channel Aquistar DL-2 data logger. Because the data logger to be used has two channels, the slug tests in wells L4-MW01A and well L4-MW02A will be conducted simultaneously. Similarly, slug tests in deeper wells L4-MW01B and L4-MW02B will also be conducted simultaneously. These wells are approximately 250 feet apart and the tests should not interfere with one another. The slug, transducer, and transducer cable will be cleaned prior to use in each well by washing in a solution of tap water and Alconox, and rinsing with deionized water. A new length of nylon rope will be connected to the slug for each well.

The slugs to be used for the shallow wells will be either a 3-foot long or 6-foot long, one-inch diameter polyvinyl chloride (PVC) pipe, sealed at each end with no openings and filled with sand to ensure that the buoyancy effect of the slug is overcome. The theoretical water level change for this size slug in the wells is estimated to be approximately 0.75 feet for the 3-foot slug and 1.5 feet for the 6-foot slug, discounting the affects created by the slotted screen. Both sizes of slugs will be evaluated. Because of the suspected more rapid recharge rates of the deeper wells, a 6-foot slug will be used. The falling head slug test will be conducted by lowering the slug into the well with a length of nylon rope and simultaneously activating the transducer. Water level versus time data will be recorded using the data logger connected to the transducer. For the first 10 minutes of the tests, groundwater level measurements will be collected at 0.5-second intervals. From 10 minutes to 30 minutes, groundwater data will be collected at 1-second intervals. From 30 minutes to 60 minutes, groundwater data will be collected at 5-second intervals. For the remaining portion of the test, groundwater data will be collected at 30-second intervals. The test will be terminated when the groundwater level returns to at least 90 percent of the pre-test level. A laptop computer will be used in the field, which will be connected to the data logger. The data will be viewed in real-time, enabling evaluation of the groundwater level-

time curve. The rising head slug test will be conducted by quickly withdrawing the slug from the well and measuring the rate of water level recovery with similar intervals of data collection.

3.0 Data Analysis

Data will be analyzed in accordance with either the Bouwer and Rice method or the method of Cooper et al. The data from one well in the shallow water-bearing zone and one well from the deeper water-bearing zone will be evaluated using both methods. Based on the results of this analysis, the most appropriate analysis method will be selected and the data from the remaining wells (2 shallow and 2 deep wells) will be evaluated using the selected method.

According to the Bouwer and Rice (1976) method, hydraulic conductivity is given as:

$$K = [r_c]^2/2L \times \ln[R_e/r_w] \times 1/t \times \ln[y_o/y_t] \quad \textbf{[1]}$$

where:

K = hydraulic conductivity (feet per minute)

r_c = radius of casing (feet)

R_e = effective radius over which drawdown or recovery occurs (feet)

L = screen length (feet)

r_w = radial distance of undisturbed portion of aquifer from center of well (feet)

y_o = head of water displaced by the slug at start of the test (feet)

y_t = head of water in the well at time t during the test (feet)

t = time at which y_t is taken (minutes)

To calculate hydraulic conductivity, a plot of ln $[y_t]$ versus t is made. The slope of the straight line portion of the curve is used to evaluate $(1/t \times \ln[y_o/y_t])$ in Equation [1]. The effective radius, R_e, is estimated from:

$$\ln[R_e/r_w] = [1.1/\ln(H/r_w)] + [A + B\ln[(D-H)/r_w]/(L/r_w)] \quad \textbf{[2]}$$

where:

H = height of water table above well bottom (feet)

D = height of water table above impermeable barrier (feet)

A,B = dimensionless coefficient obtained from Figure 3 of Bouwer and Rice (1976)

For a situation in which D>>H, the above equation may be approximated by:

$$\ln[R_e/r_w] = [1.1/\ln(H/r_w) + (A + 6B)/(L/r_w)]^{-1} \quad \textbf{[3]}$$

Equation (1) is based on the following assumptions:

- The rise or decline of the water table around the well is negligible.
- Flow above the water table (in the capillary zone) is negligible.
- Head losses as water enters or leaves the well are negligible.

- The aquifer is homogeneous and isotropic.

According to the Cooper, et al. method (Cooper et al. 1967), hydraulic conductivity (K) is calculated by the relationship:

$$K=T/b,$$

Where:

T = aquifer transmissivity

b = aquifer thickness

$$\text{and } T = 1.0r^2_c/t_{1,}$$

Where,

t_1 = vertical-time axis

r^2_c = well casing radius

A plot of the ratio of the measured head to the head after injection (or removal) of the slug is made as a function of time. This relationship is plotted on semi-logarithmic paper. These curves are compared to type curves, with the objective of finding the closest fit between the type curves and the curves derived from the field data.

Assumptions with the Cooper et al. method of determining hydraulic conductivity include:

- The method is applicable to fully penetrating or fully screened wells
- The aquifer is uniformly porous
- The aquifer has uniform thickness
- The aquifer is overlain and underlain by aquicludes (confined aquifer)
- The response to insertion and removal of slug is instantaneous

4.0 Reporting of Results

At a minimum, results will be reported in tabular form and graphically. Tables will include well name, hydraulic conductivity (for Bouwer and Rice method), and transmissivity (for Cooper et al. method). Transmissivity (T) will be converted to conductivity (K) so that the results from the two methods can be directly compared. Graphs will be provided showing data points and solution curves.

Appendix D
Data Quality Comparison to Data Quality Objectives and Explanation For Quality Control Exceedances and Laboratory Data Summary Tables

1.0 CHEMICAL DATA QUALITY ASSESSMENT, JULY 2001

1.1 Summary

The following subsections are based on the results of the data validation, the USACE laboratory split samples, and PE samples. These subsections provide an evaluation of the chemical data for representativeness, accuracy, analytical precision, comparability, and completeness. Representativeness was evaluated by examining chain-of-custody (COC) documentation and verifying that the requested sample analyses were performed within allowable holding times. Accuracy was evaluated by reviewing the recovery of compounds added to the samples and blanks [surrogates matrix spike/matrix spike duplicate (MS/MSD), laboratory control spike/laboratory control spike duplicate (LCS/LCSD), and, performance evaluation (PE) samples]. Precision was evaluated by comparison of results for primary, field duplicate, and laboratory duplicate analyses, LCS/LCSD, and MS/MSD. Comparability was evaluated by examining the laboratory practical quantitation limits (PQLs). Completeness was evaluated by calculating the percentage of acceptable data.

The laboratories provided Environmental Protection Agency (EPA) Contract Laboratory Program-type or comparable deliverables for all submittals. Documentation provided by the laboratories was sufficient to allow validation and evaluation of the data. Qualified data are presented in Table 1-1.

1.2 Representativeness

Chain of Custody and Holding Times

COC forms indicated that samples were maintained under proper chain of custody. The forms were signed upon release by the sampling team and upon receipt by the laboratory. All samples were preserved properly and analyzed within the holding times. The samples were sealed in plastic bags and packed in coolers with ice. Laboratory measurement of temperature blank bottles (one per cooler) indicated temperatures within the range of 1.0°C – 3.5°C for all samples received by Analytical Resources Inc. (ARI). Samples GW1001MW03A, GW01MW06A, and GW01MW06B arrived at Severn Trent Laboratories (STL)-Burlington at 10°C. Qualifiers were not added to the data because sample GW1001MW03A is an equipment rinsate sample and samples GW01MW06A and GW01MW06B were PE samples that contained significant concentrations of target analytes.

1.3 Accuracy

Initial and Continuing Calibration

The laboratories performed initial multi-point calibrations for all target and surrogate compounds as required. Instrument tuning standards, initial calibrations (ICAL), and continuing calibration verifications (CCV) were analyzed at the proper frequency and at the appropriate concentrations

required by the methods. Each day samples were analyzed, the laboratory analyzed calibration standards at a concentration equivalent to the mid-range initial calibration standard. The continuing calibration standards were analyzed at the beginning and end of the analytical sequence with the exception of the semivolatile organic compounds (SVOC) analysis. Although the SVOC post-analytical sequence CCV was not reported, all other SVOC quality control (QC), including the surrogate and internal standard recoveries, were in compliance throughout the analytical sequence, and the data are acceptable.

Calibration acceptance criteria were reported as the relative response factors (RRF), relative standard deviations (RSD) and/or the coefficients of determination (r) for the ICAL, and as percent difference (% D) for the CCV. The mean % RSD for target volatile organic compounds (VOCs) was ≤ 15% and no RSD was ≥ 30%. Therefore, the ICAL for VOCs met both the overall project and method criteria. The RSDs for five VOCs were above the specified limit of ≤ 15% in the ICAL; however, of these compounds, only two (methylene chloride and dichlorodifluoromethane) were detected in the samples. The data reviewer qualified methylene chloride in sample GW01MW06A (20% RSD) and dichlorodifluoromethane in sample GW01MW02B (16% RSD ICAL; 20% RSD CCV) as estimated (denoted by "J"). Calibration data for other VOCs were acceptable. Calibrations for all other analyses were acceptable based on criteria established in the Management Plan.

Blanks

Method blanks were used to check for laboratory contamination and instrument bias. The laboratory analyzed at least one method blank for each analysis and for each batch per method requirements. Acetone was detected in one of two VOC method blanks at 3.2 µg/L, a concentration lower than the 5.0 µg/L PQL. Acetone was also detected in the rinsate blank at 11 µg/L and in seven samples at levels above the PQL. All detected acetone is "B"-qualified to indicate potential bias from background contamination. The concentration of acetone found in the method blank was not subtracted from the sample concentrations.

A trip blank, prepared by the laboratory, was shipped to the field with the sample bottles and returned with the coolers containing samples submitted for analysis of VOCs, and gasoline range total petroleum hydrocarbons (TPH-Gx). The trip blank was used to evaluate cross-contamination that may have occurred during field activities or during sample transport. Target analytes were not detected in the trip blank and no data were qualified. The rinsate sample, GW1001MW03B, contained sodium at 80 µg/L.

Surrogate Recovery

Each sample analyzed for organic compounds was spiked with surrogates (system monitoring compounds). Because sample characteristics affect the percent recoveries of the target compounds as well as the spiked compounds, the surrogate recoveries are a measure of accuracy for the overall analysis of each individual sample. No data for this sampling activity required qualification based on surrogate performance.

Matrix Spike/Matrix Spike Duplicate

MS/MSD samples were analyzed to assess the ability of the laboratories to recover the target compounds from the sample matrix. One MS/MSD sample pair was analyzed for each analysis as required. Spiking compounds were added to sample GW01MW02B, the sample designated for MS/MSD. Spikes for metals and explosives analyses included all the target analytes. Spikes for other analyses included selected compounds.

Data were evaluated for recovery of target compounds and relative percent differences (RPD) between the compound recoveries in the MS and MSD. All recoveries and associated RPDs for MS/MSDs were within specification with the exception of antimony. Antimony exhibited a recovery of 31% in the total metals analysis. This recovery had no effect on the data because antimony was not detected in either the filtered or unfiltered samples.

Laboratory Control Spike/Laboratory Control Spike Duplicate

LCS samples were used to monitor the laboratories' day-to-day performance of routine analytical methods, independent of matrix effects and to assess laboratory accuracy for the target compounds. LCS samples were also used to identify any background contamination of the analytical system that may have lead to the reporting of elevated concentration levels or false-positive measurements. LCS duplicates were used to evaluate the precision of the analytical system.

The laboratories analyzed at least one LCS per sample batch per analytical method. This met the method frequency requirements for LCS. All LCS data reviewed were within laboratory control limits.

Performance Evaluation Samples

PE samples were used to assess the accuracy of the analytical methods and the performance of the laboratory. These samples were prepared with a composition and analyte concentration similar to the composition and concentration that was anticipated in the groundwater samples. PE samples were prepared and analyzed by an independent laboratory (DMD, Inc.) and were submitted to the analytical laboratories (ARI and STL) as unknown samples from the field. The samples were analyzed in the same manner as all environmental samples. One PE sample each was submitted and analyzed for selected herbicides, VOCs, SVOCs, and metals. Two PE samples each were submitted for explosives residues, nitroguanidine, and perchlorate ion.

The overall analytical performance for the submitted PE samples is acceptable. One VOC, (1,2,4- trichlorobenzene), was reported at 33% recovery. Higher boiling compounds such as 1,2,4-trichlorobenzene are generally poor performers for purge and trap analysis, and this result is not atypical. Table 2 presents the PE sample data and calculated percent recoveries.

1.4 Precision

Second Column Confirmation

Second column confirmations, performed on analyses employing gas chromatography (GC) and high performance liquid chromatography (HPLC), were within specified limits with the exception of three detected compounds. RDX in sample GW01MW03B, 2,4-dinitrotoluene in sample GW01MW02B, and 1,3-dinitrobenzene in sample GW01MW06B were "J"-qualified (estimated) due to poor second column confirmation.

Field Duplicates

One field duplicate was collected to verify acceptable field sampling techniques and the representativeness of the sample aliquots. RPD were in compliance with QC requirements except the RPDs for total chromium (50%), total iron (113%), total sodium (25%), alkalinity (45%) and sulfate (40%) that exceeded the QC criteria of ± 20%. Concentrations of total chromium, alkalinity chloride, and sulfate are less than five times the PQLs for these analytes and may be expected to have higher RPD values. In addition, unfiltered samples contain solids and are expected to be more heterogeneous than filtered samples, possibly resulting in elevated RPD values. Table 3 contains the results of the field duplicate sample evaluation.

USACE QA Laboratory Samples

Two split samples, collected from monitoring wells L4-MW02A and L4-MW02B, were sent to the United Stated Army Corps of Engineers (USACE) quality assurance (QA) Laboratory for analysis of the target compounds and analytes. The data provide independent verification of field sampling techniques, the representativeness of the sample aliquots and the comparability of analytical procedures between laboratories. Results indicate that acceptable precision was obtained for sample concentrations greater than five times the PQL. The USACE split sample data can be found in Table 4.

Laboratory Duplicate

The RPD for all laboratory duplicate samples including MS/MSD pairs, LCS/LCSD pairs, and sample duplicates was within the control limits with the exception of laboratory duplicate RPDs for chromium and zinc which were 67% and 22%, respectively (QC criteria ± 20%). All detected concentrations of chromium and zinc were therefore qualified as estimated ("J"-flagged).

1.5 Comparability

Comparability is the degree to which the data from one study can be compared to data from other similar studies, reference values (such as background), reference materials, and screening criteria. ARI and STL laboratories followed the EPA and USACE-approved analytical methods delineated in the Management Plan with minor exceptions. The metals analysis was changed from SW-846 method 6020 (inductively coupled plasma [ICP]/mass spectrometer [MS]) to EPA method 200.8 (ICP/MS), a method that is generally used for tap water and that has more rigorous QC criteria. The laboratory inadvertently substituted SM 2320 for EPA method 310.1 for the determination of alkalinity, and EPA 335.2 replaced EPA 335.4 for total cyanide analysis. There

is essentially no practical difference in the substituted methods compared to those specified in the Management Plan. The methods used are different in name due to their application in different regulatory monitoring programs and not to technical differences. Both methods for alkalinity apply the same titration technique as the determinative step. Similarly, the two methods for total cyanide analysis use distillation and colorimetric determinations. Results from the application of the two methods used do not impact the data quality.

Compounds detected below the PQL are considered estimates by the laboratories, and are qualified with a "J". With the exception of MCPA and MCPP, all other reported PQLs for target compounds and analytes are within the project-required quantitation limits. PQLs for MCPA and MCPP were based on the poor instrument response of these compounds. ARI will review their SOP for herbicide analysis and will obtain lower quantitation limits for the remaining three groundwater monitoring events. Table 5 contains a comparison of the required PQLs required in the Management Plan with the laboratories' achieved PQLs.

PQLs provided by the laboratories exceeded the screening criteria for some compounds. With the exception of explosives residues, target compounds that were detected below the PQL were reported as estimated (denoted by "J") because the concentrations were less than the lowest calibration standard. Analytes whose screening criteria are lower than the laboratory PQLs are indicated by an asterisk (*) Table 4-13.

1.6 Completeness

Completeness for this sampling event is 100 percent based on completion of 122 of the 122 analyses requested on the COCs.

Appendix D
Data Quality Comparison to Data Quality Objectives & Explanation for Quality Control Exceedences and Laboratory Data Summary Tables

Table 1-1
SUMMARY OF QUALIFIED DATA, JULY 2001

Sample ID	Lab ID	Analysis	Analyte	Qualifier	Rationale for Qualification*
GW01MW02B	DK51E	VOC	Dichlorodifluoromethane	J	ICAL/CCV
	460220	Explosives	2,4-Dinitrotoluene	J	2nd column confirmation
GW01MW03B	460723	Explosives	RDX	J	2nd column confirmation
GW01MW06A	DK51	VOC	Methylene chloride	J	ICAL
GW01MW06B	460492	Explosives	1,3-Dinitrobenzene	J	2nd column confirmation
GW01MW01B GW01MW02A GW501MW02A GW01MW02B GW01MW03A GW01MW03B GW01MW05A GW1001MW03B	DK51B DK51C DK51D DK51E DK51H DK51I DK51G DK51J	VOC	Acetone	B	Method blank contamination
All samples	DK51A – DK 51J	Total Metals	Chromium, Zinc (detected analytes only)	J	Laboratory Duplicate RPD

Notes:

CCV - continuing calibration verification
ICAL - initial calibration
ID - identification
J - The analyte was positively identified; the associated numerical value is an estimate of the concentration of the analyte in the | sample.
B -.The analyte was detected in the associated method blank
RPD - relative percent difference
VOC - volatile organic compounds

Table 1-2
SUMMARY OF PERFORMANCE EVALUATION SAMPLES, JULY 2001

Compound/Analyte	PE Sample GW01MW06A Concentration	Known Concentration	Recovery (%)	PE Sample GW01MW06B Concentration	Known Concentration	Recovery (%)	QC Criteria (Recovery, %)[1]
Explosives and Propellants (µg/L)							
1,3,5-Trinitrobenzene	10	10	100	53	50	106	
1,3-Dinitrobenzene	46	40	115	12 J	10	120	
2,4,6-Trinitrotoluene	6.0	5	118	22	20	110	
2,4-Dinitrotoluene	41	40	103	NA	NA	NA	
2,6-Dinitrotoluene	NA	NA	NA	69	50	138	
2-Amino-4,6-dinitrotoluene	26	20	130	69	60	115	
2-Nitrotoluene	41	40	103	10	10	103	
3-Nitrotoluene	70	60	117	11	10	110	
4-Amino-2,6-dinitrotoluene	45	40	113	21	20	105	16% - 129%
4-Nitrotoluene	12	12	120	22	20	110	
HMX	18	20	90	89	100	89	
Nitrobenzene	12	10	120	NA	NA	NA	
Nitroglycerin	17	10	170	11	30	37	
PETN	19	20	95	100	100	100	
Picric Acid	12	10	120	52	50	104	
RDX	45	40	113	22	20	110	
Tetryl	27	30	90	62	60	103	
Nitroguanidine	100	89	112	50	45	111	See footnote 2
Perchlorate ion	32.5	30	108	58.8	60	98	70% - 130%

Table 1-2 (Continued)
SUMMARY OF PERFORMANCE EVALUATION SAMPLES, JULY 2001

Compound/Analyte	PE Sample GW01MW06A Concentration	Known Concentration	Recovery (%)	PE Sample GW01MW06B Concentration	Known Concentration	Recovery (%)	QC Criteria (Recovery, %)
VOCs (µg/L)							
1,2,4-Trichlorobenzene	6.6	20	33	—	—	—	51% - 130%
cis-1,2-Dichloroethene	9.3	10	93	—	—	—	
Tetrachloroethene	3	4	75	—	—	—	
Toluene	18	20	90	—	—	—	
Trichloroethene	5.7	6	95	—	—	—	
Vinyl chloride	3.2	4	80	—	—	—	
SVOCs (µg/L)							
Butylbenzylphthalate	46	40	115	—	—	—	16% - 129%
Crysene	9.1	10	91	—	—	—	
Diethylphthalate	33	40	82.5	—	—	—	
Dimethylphthalate	17	20	85	—	—	—	
Di-n-butylphthalate	37	60	62	—	—	—	
n-Nitrosodiphenylamine[1]	18	20	90	—	—	—	
Phenanthrene	29	40	73	—	—	—	
Pyrene	19	20	95	—	—	—	

Table 1-2 (Continued)
SUMMARY OF PERFORMANCE EVALUATION SAMPLES, JULY 2001

Compound/Analyte	PE Sample GW01MW06A Concentration	Known Concentration	Recovery (%)	PE Sample GW01MW06B Concentration	Known Concentration	Recovery (%)	QC Criteria (Recovery, %)
Herbicides (µg/L)							
2,4,5-TP (Silvex)	56	50	112	—	—	—	10-126
2,4,5-T	44	40	110	—	—	—	
2,4-D	76	80	95	—	—	—	
Total Metals (µg/L)							
Arsenic	5.8	5	116	—	—	—	59-125
Barium	208	200	104	—	—	—	
Lead	12	10	120	—	—	—	
Mercury	1.1	1	110	—	—	—	

Notes:

[1]QC criteria for % Recovery are equivalent to 3sd performance ranges for commercial reference materials containing similar classes of chemicals.
[2]Nitroguanidine QA criteria for % recovery are performance based and are equal to 3 standard deviations of 20 consecutively analyzed laboratory control spikes.
[3] – Diphenylamine and n-nitrosodiphenylamine cannot be distinguished analytically. PE Samples contain diphenylamine ; however, the laboratory reports n-nitrosodiphenylamine
% - percent
(µ/L) - micrograms per liter
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
J - data validation qualifier indicating that the analyte was positively identified but the associated numerical value is estimated.
- not applicable
PE - performance evaluation
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
SVOCs - semivolatile organic compounds
VOCs - volatile organic compounds

Table 1-3
SUMMARY OF FIELD DUPLICATE PRECISION, JULY 2001

Compound/Analyte[1]	PQL (µg/L)	GW04MW02A Primary Sample (µg/L)	GW504MW02A Duplicate Sample (µg/L)	RPD (%)	QC Criteria[2]
Explosives and Propellants, Total					
HMX	0.25	2.5	2.5	0	≤ 50%
RDX	0.25	44	36	20	
Perchlorate ion	5	136	183	29	
Metals, Total					
Calcium	50	1,470	1,220	19	≤ 20%
Chromium	5	10	6	50*	
Iron	20	180	50	113	
Magnesium	20	480	410	16	
Selenium	0.5	0.6	0.5 U	NC	
Sodium	50	7,770	6,010	25	
Metals, Dissolved					
Calcium, dissolved	50	1,270	1,260	0.8	≤ 20%
Magnesium, dissolved	20	410	420	2.4	
Selenium, dissolved	0.5	0.6	0.6	0	
Sodium, dissolved	50	5,710	6,000	5	
Water Quality Parameters (mg/L)					
Alkalinity	1	3.1	4.9	45*	≤ 20%
Hardness (calculated)	0.3	5.65	4.73	18	
Total Suspended Solids	1	2.6	1 U	NC	
Chloride	1	2.3	1.8	24*	
Nitrate, as N	0.01	0.3	0.3	0	
Sulfate	2.5	15.5	10.3	40*	

Notes:

[1] - VOCs, SVOCs, herbicides, nitrite, cyanide, TOC, and DOC were not detected in the field duplicate sample above the PQL
[2] - QC Criteria for RPD presented in this table are taken from the Management Plan criteria for laboratory duplicate samples
* - analytes detected at less than 5X the PQL may be expected to have higher RPD values.
(%) - percent
(µg/L) - micrograms per liter
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazine
mg/L – milligrams per liter
NC – not calculated
PQL - practical quantitation limits
QC - quality control
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine

Table 1-4
SUMMARY OF URS/USACE DUPLICATE PRECISION, JULY 2001

Compound/Analyte[2]	PQL (µg/L)	USACE Sample GW01MW02A (µg/L)	URS Sample GW01MW02A[1] (µg/L)	RPD (%)
Explosives and Propellants (µg/L)				
HMX	1.6	2.8	2.5	11.3
RDX	1.3	32.9	40	19.5
1,3,5-Trinitrobenzene	0.35	0.1 J	0.25 U	nc
2,4-Dinitrotoluene	0.24	0.03 JC	0.25 U	nc
2,6-Dinitrotoluene	0.15	0.1 JC	0.25 U	nc
Metals, Total (µg/L)				
Barium	2.5	1.2 J	3 U	nc
Calcium	300	1,200	1,345	11.4
Chromium	10	8.0 J	8	0
Iron	120	66 J	115	54.1*
Magnesium	120	440	445	1.1
Nickel	10	5.8 J	10 U	nc
Potassium	300	210 J	500 U	nc
Sodium	400	6,610	6,890	4.2
Metals, Dissolved (µg/L)				
Barium	2.5	0.60 J	3 U	nc
Calcium	300	1,100	1,265	14.0
Magnesium	120	390	415	6.2
Nickel	10	5.7 J	10 U	nc
Potassium	300	190 J	500 U	nc
Sodium	400	5,560	5,855	5.2
Water Quality Parameters (mg/L)				
Total Suspended solids	10	10 U	2.6	nc
Chloride	5.0	3.3 J	2.05	46.7*
Nitrate/Nitrite	0.10	0.40	0.3	28.6*
Sulfate	20	8.7 J	12.9	38.9*
Dissolved organic carbon	0.25	0.12 J	1.5 U	nc
Total Organic Carbon	0.25	0.31	1.5 U	nc
Explosives and Propellants				
HMX	1.6	3.2 C	1.7	61.2*
RDX	1.3	94.5	120	23.8
2,4-Dinitrotoluene	0.24	0.40 C	0.3	28.6*

Notes:

***** - analytes detected at less than 5 times the PQL may be expected to have higher RPD values.
C – result was not confirmed due to matrix interference
[1] - The URS concentration presented is the average of concentrations detected in samples GW01MW002A/GW501MW002A
[2] - VOCs, VOCs (C6-C9), SVOCs, TPH-G (C6 – C12), TPH-D (C12-C24), TPH-Dx (C24-C30), herbicides, cyanide, nitroguanidine, mercury, and total suspended solids were not detected in the USACE samples. The USACE QA Laboratory did not analyze samples for alkalinity or perchlorate.
[3] – The USACE QA Laboratory analyzed sample GW01MW02B for explosives only(%) - percent
(µg/L) - micrograms per liter
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazine
mg/L – milligrams per liter
NC – not calculated
PQL - practical quantitation limits
QC - quality control
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine.

Table 1-5
COMPARISON OF REQUIRED PQLs WITH LABORATORY PQLs
July 2001

Matrix	Method or Analyte	Required Practical Quantitation Limits	Achieved Practical Quantitation Limits
Water	Explosives and propellants	0.25 µg/L – 20 µg/L	0.25 to 20 µg/L
Water	VOCs	1 µg/L – 5 µg/L	1 to 5 µg/L,
Water	SVOCs	1 µg/L – 10 µg/L	1 to 10 µg/L
Water	Herbicides	0.3 µg/L – 10 µg/L (MCPA/MCPP 75 µg/L)	0.28 to 10 µg/L (MCCP/MCPA 1200 µg/L)
Water	Metals	0.1 µg/L – 500 µg/L	0.1 to 500 µg/L
Water	TPH-Gx	0.35 mg/L	0.25 mg/L
Water	TPH-Dx	10 mg/L	0.25 mg/L
Water	Alkalinity	5 mg/L	1.0 mg/L
Water	TSS	1.0 mg/L	1.0 mg/L
Water	Chloride	2 mg/L	0.1 mg/L
Water	Cyanide	0.005 mg/L	0.005 mg/L
Water	Nitrate, nitrite	0.050 mg/L	0.1 mg/L
Water	Sulfate	10 mg/L	0.1 mg/L
Water	TOC/DOC	1.5/1.5 mg/L	1.5 mg/L
Water	Hardness	1.0 mg/L	0.2 mg/L

Notes:

DOC - dissolved organic carbon
µg/L - micrograms per liter
mg/L - milligrams per liter
PQL – practical quantitation limit
SVOC - semivolatile organic compounds
TOC - total organic carbon
TPH-Dx - total petroleum hydrocarbons (TPH)-diesel fraction
TPH-Gx - TPH-gasoline fraction
TSS - total suspended solids

2.0 CHEMICAL DATA QUALITY ASSESSMENT – OCTOBER 2001

2.1 Summary

The following subsections are based on the results of the data validation, the USACE laboratory split samples, and PE samples. These subsections provide an evaluation of the chemical data for representativeness, accuracy, analytical precision, comparability, and completeness. Representativeness was evaluated by examining chain-of-custody (COC) documentation and verifying that the requested sample analyses were performed within allowable holding times. Accuracy was evaluated by reviewing the recovery of compounds added to the samples and blanks [surrogates matrix spike/matrix spike duplicate (MS/MSD), laboratory control spike/laboratory control spike duplicate (LCS/LCSD), and, performance evaluation (PE) samples]. Precision was evaluated by comparison of results for primary, field duplicate, and laboratory duplicate analyses, LCS/LCSD, and MS/MSD. Comparability was evaluated by examining the laboratory practical quantitation limits (PQLs). Completeness was evaluated by calculating the percentage of acceptable data.

The laboratories provided Environmental Protection Agency (EPA) Contract Laboratory Program-type or comparable deliverables for all submittals. Documentation provided by the laboratories was sufficient to allow validation and evaluation of the data. Qualified data are presented in Table 1.

2.2 Representativeness

Chain of Custody and Holding Times

COC forms indicated that samples were maintained under proper chain of custody. The forms were signed upon release by the sampling team and upon receipt by the laboratory. All samples were preserved properly and analyzed within the holding times. The samples were sealed in plastic bags and packed in coolers with ice. Laboratory measurement of temperature blank bottles (one per cooler) indicated temperatures within the range of 2°C – 8°C for all samples received by Analytical Resources Inc. (ARI) and Severn Trent Laboratories (STL). URS was informed when the laboratories received samples. Inconsistencies between the COCs and the sample bottle labels were discussed and corrections were made.

2.3 Accuracy

Initial and Continuing Calibration

The laboratories performed initial multi-point calibrations for all target and surrogate compounds as required. Instrument tuning standards, initial calibrations (ICAL), and continuing calibration verifications (CCV) were analyzed at the proper frequency and at the appropriate concentrations required by the methods. Each day samples were analyzed, the laboratory analyzed calibration standards at a concentration equivalent to the mid-range initial calibration standard. The continuing calibration standards were analyzed at the beginning and end of the analytical sequence with the exception of the semivolatile organic compound (SVOC) analysis. Although

the SVOC post-analytical sequence CCV was not reported, all other SVOC quality control (QC), including the surrogate and internal standard recoveries, were in compliance throughout the analytical sequence, and the data are acceptable.

Calibration acceptance criteria were reported as the relative response factors (RRF), relative standard deviations (RSD) and/or the coefficients of determination (r) for the ICAL, and as percent difference (% D) for the CCV. The mean % RSD for all target volatile organic compounds (VOCs) was ≤ 15% and no RSD was > 30%. Therefore, the ICAL met the overall project and method criteria. The RSD for several compounds was above the specified limit of ≤ 15 %; however, of these compounds, only two (vinyl chloride and dichlorodifluoromethane) were detected in the samples. The RSD for vinyl chloride was 23% in the ICAL. Vinyl chloride was qualified as estimated (denoted by "J") in sample GW02MW07A for exceeding the ICAL criteria. The RSD for dichlorodifluoromethane was 17% and 27% in two ICALS and the %D was 71%, 45%, and 25% in three CCVs. Dichlorodifluoromethane was qualified as estimated (denoted by "J") in samples GW02MW02B and GW502MW02B. Calibration data for other VOCs and for all other analyses were acceptable, based on criteria established in the Management Plan.

Blanks

Method blanks were used to check for laboratory contamination and instrument bias. The laboratory analyzed at least one method blank for each analysis and for each batch per method requirements. No target compounds or analytes were detected above the PQLs. Copper was detected at the PQL (2 µg/L) in the equipment rinsate blank analysis for total metals. The concentration of copper found in the equipment rinsate blank was not subtracted from the sample concentrations.

Trip blanks, prepared by the laboratory, were shipped to the field with the sample bottles and returned with the coolers containing samples submitted for analysis of VOCs. The trip blanks were used to evaluate cross-contamination that may have occurred during field activities or during sample transport. Target analytes were not detected in the trip blanks and no data were qualified.

Surrogate Recovery

Each sample analyzed for organic compounds was spiked with surrogates (system monitoring compounds). Because sample characteristics affect the percent recoveries of the target compounds as well as the spiked compounds, the surrogate recoveries are a measure of accuracy for overall analysis of each individual sample. No data for this sampling activity required qualification based on surrogate performance.

Matrix Spike/Matrix Spike Duplicate

MS/MSD samples were analyzed to assess the ability of the laboratories to recover the target compounds from the sample matrix. One MS/MSD sample pair was analyzed for each analysis as required. Spiking compounds were added to sample GW02MW01B, the sample designated for MS/MSD. Spikes for VOCs, metals, and explosives analyses included all the target analytes. Spikes for other analyses included selected compounds.

Data were evaluated for recovery of target compounds and relative percent difference (RPD) between the compound recoveries in the MS and MSD. All recoveries and associated RPDs for MS/MSDs were within project specification.

Laboratory Control Spike/Laboratory Control Spike Duplicate

LCS samples were used to monitor the laboratories' day-to-day performance of routine analytical methods, independent of matrix effects and to assess laboratory accuracy for the target compounds. LCS samples were also used to identify any background contamination of the analytical system that may have lead to the reporting of elevated concentration levels or false-positive measurements. LCS duplicates were used to evaluate the precision of the analytical system.

The laboratories analyzed at least one LCS per sample batch per analytical method. This met the method frequency requirements for LCS. All LCS data reviewed were within project control limits.

Performance Evaluation Samples

PE samples were used to assess the accuracy of the analytical methods and the performance of the laboratory. These samples were prepared with a composition and analyte concentration similar to the composition and concentration that was anticipated in the groundwater samples. PE samples were prepared and analyzed by an independent laboratory (DMD, Inc.) and were submitted to the analytical laboratories (ARI and STL) as unknown samples from the field. The samples were analyzed in the same manner as all environmental samples. One PE sample each was submitted and analyzed for selected herbicides, VOCs, SVOCs, and metals. Two PE samples each were submitted for explosives residues, nitroguanidine, and perchlorate ion. Table 2 presents the PE sample data and calculated percent recoveries.

Reported concentrations for the PE analytes agreed relatively well with known concentrations, with the exception of nitroglycerin reported at 370% recovery in one PE sample. Samples with moderate amounts of other highly responsive, closely eluting target analytes may potentially interfere with or "bury" nitroglycerin in overlapping chromatographic peaks resulting in inaccurate quantitation. The data reviewer qualified the nitroglycerin concentration in PE sample GW02MW07A as estimated, indicating that not all criteria for identification were met due to possible interference. Nitroglycerin was not detected in the field samples.

2.4 Precision

Second Column Confirmation

Second column confirmations, performed on analyses employing gas chromatography (GC) and high performance liquid chromatography (HPLC), were within specified limits with the exception of four detected compounds. Nitroglycerin, 2,4,6-trinitrotoluene, and 2-nitrotoluene in sample GW02MW07A and 2,4-dinitrotoluene in sample GW02MW02B were "J"-qualified (estimated) due to poor second column confirmation.

Field Duplicates

One field duplicate was collected to verify acceptable field sampling techniques and the representativeness of the sample aliquots. All RPD were in compliance with QC requirements for laboratory duplicates except the RPDs for total iron (71%), total chromium (29%), total suspended solids (61%), and sulfate (26%). Unfiltered samples contain solids and are expected to be more varied in composition than filtered samples, possibly resulting in elevated RPD values. Table 3 contains the results of the field duplicate sample evaluation. The sample data are not qualified for field duplicate RPD noncompliance because other associated QC results are compliant.

USACE QA Laboratory Samples

A split sample, collected from monitoring well L4-MW02B, was sent to the United States Army Corps of Engineers (USACE) Quality Assurance Laboratory for analysis of explosives, nitroguanidine, and perchlorate ion. The data provide independent verification of the field sampling techniques, the representativeness of the sample aliquots and the comparability of analytical procedures between laboratories. Results indicate that acceptable precision was obtained for sample concentrations greater than five times the PQL. Table 4 includes the USACE split sample data.

Laboratory Duplicate

The RPD for all laboratory duplicate samples including MS/MSD pairs, LCS/LCSD pairs, and sample duplicates was within the control limits. No data are qualified based on noncompliant laboratory duplicate RPD.

2.5 Comparability

Comparability is the degree to which the data from one study can be compared to data from other similar studies, reference values (such as background), reference materials, and screening criteria. ARI and STL laboratories followed the EPA-approved analytical methods delineated in the Management Plan with minor exceptions. The analysis of low-concentration metals (arsenic, lead, selenium, thallium) was changed from SW-846 Method 6020 (inductively coupled plasma [ICP]/mass spectrometer [MS]) to EPA Method 200.8 (ICP/MS). The alkalinity analysis was changed from EPA method 310.1 to SM 2320, and the total cyanide analysis was changed from EPA 335.4 to EPA 335.2. However, there is essentially no practical or technical difference in the substituted methods compared to those specified in the Management Plan. The methods used are different in name due to their application in different regulatory monitoring determinations and results from the application of the substituted methods have been concluded not to impact the data quality.

PQLs for 4-chloro-2-methylphenoxy acetic acid (MCPA) and 2-methyl 40-chlorophenoxy propionic acid (MCPP) reported for the samples collected during the first groundwater monitoring event were based on the poor instrument response of these compounds. ARI reviewed their standard operating procedure (SOP) for herbicide analysis and was able to obtain lower quantitation limits. PQLs for MCPA and MCPP were reduced from 1,200 µg/L to 50

µg/L. Table 5 provides a comparison of the PQLs required in the Management Plan with the laboratories' achieved PQLs.

Laboratory PQLs met the requirements of the Management Plan with the exception of two metals and five SVOC compounds. PQLs for iron and magnesium were raised in response to a new method detection limit (MDL) study. Laboratory PQLs for five polar SVOCs (2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, benzoic acid, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate) were higher than the PQLs reported in the first groundwater monitoring; however, SVOCs were not detected in either the July 2000 or the current groundwater monitoring. The slightly elevated PQLs for these target analytes do not impact the data quality.

Samples collected during the July 2001 groundwater monitoring for analysis of SVOCs, herbicides, and diesel range total petroleum hydrocarbons (TPH-Dx) were contained in 1 liter bottles; however, ARI used only 500 ml from each bottle. Removal of only 500 ml from the bottles prevented the laboratory from rinsing out the bottles with appropriate solvent. It is unknown what effect, if any, this method modification would have on the sample results. For the October 2001 groundwater monitoring, ARI again used a 500 ml aliquot. The SVOCs were extracted using continuous liquid-liquid extraction instead of separatory funnel shakeout. For the remaining groundwater monitoring, samples will be collected in 500 ml bottles, the entire sample will be used, and the bottles will be rinsed with the appropriate solvent.

PQLs achieved by the laboratories exceeded the screening criteria for some compounds. Target compounds (except explosives residues) that were detected below the PQL were reported as estimated (denoted by "J") because the concentrations were less than the lowest calibration standard. Analytes whose screening criteria are lower than the laboratory PQLs are indicated by an asterisk (*) on Table 4-13.

2.6 Completeness

Completeness for this sampling event is 100 percent based on completion of 129 of the 129 analyses requested on the COCs.

Appendix D
Data Quality Comparison to Data Quality Objectives & Explanation for Quality Control Exceedences and Laboratory Data Summary Tables

Table 2-1
SUMMARY OF QUALIFIED DATA
OCTOBER 2001

Sample ID	Lab ID	Analysis	Analyte	Qualifier	Rationale for Qualification
GW02MW02B D	469455	Explosives	2,4-Dinitrotoluene	J	2nd column confirmation
GW02MW07A	469552		Nitroglycerin 2,4,6-Trinitrotoluene 2-Nitrotoluene		
GW02MW07A	DT50F	VOC	Vinyl chloride	J	ICAL
GW02MW02B	DT39D		Dichlorodifluoroethane		
GW502MW02B	DT39E				

* See Section 3.4 for discussion of qualified data

Notes:
D – data from a diluted sample
ICAL - initial calibration
ID - identification
J - The analyte was positively identified; the associated numerical value is an estimate of the concentration of the analyte in the |sample.
VOC - volatile organic compounds

Table 2-2
SUMMARY OF PERFORMANCE EVALUATION SAMPLES, OCTOBER 2001

Compound/Analyte	PE Sample GW02MW07A Concentration	Known Concentration	Recovery (%)	PE Sample GW02MW07B Concentration	Known Concentration	Recovery (%)	QC Criteria (Recovery, %)[1]
Explosives and Propellants (µg/L)							
1,3,5-Trinitrobenzene	—	—	—	—	—	—	16% - 129%
1,3-Dinitrobenzene	19	20	95	—	—	—	
2,4,6-Trinitrotoluene	3.4 *J*	5.0	68	—	—	—	
2,4-Dinitrotoluene	18	20	90	—	—	—	
2,6-Dinitrotoluene	—	—	—	12	10	120	
2-Amino-4,6-dinitrotoluene	—	—	—	—	—	—	
2-Nitrotoluene	9 *J*	10	90	—	—	—	
3-Nitrotoluene	—	—	—	—	—	—	
4-Amino-2,6-dinitrotoluene	22	20	110	—	—	—	
4-Nitrotoluene	—	—	—	20	20	100	
HMX	—	—	—	8.3	10	83	
Nitrobenzene	—	—	—	10	10	100	
Nitroglycerin	37 *J*	10	370	9	15	60	
PETN	13	15	87	—	—	—	
Picric Acid	5.2	5.0	104	8.8	10	88	
RDX	—	—	—	20	20	100	
Tetryl	6.9	10	69	20	20	100	
Nitroguanidine	190	300	63	20	30	67	See footnote 2
Perchlorate ion	29.3	30	98	57.5	60	96	70% - 130%
VOCs (µg/L)							
1,2,4-Trichlorobenzene	13	20	65	—	—	—	51% - 130%
Tetrachloroethene	3.3	4.0	83	—	—	—	
Toluene	8.6	10	86	—	—	—	
Trichloroethene	4.6	6.0	77	—	—	—	
Vinyl chloride	4.4 *J*	4.0	110	—	—	—	
SVOCs (µg/L)							
Butylbenzylphthalate	33	30	110	—	—	—	16% - 129%
Diethylphthalate	19	20	95	—	—	—	
n-Nitrosodiphenylamine[3]	6.1	10	61	—	—	—	
Phenanthrene	13	15	87	—	—	—	
Pyrene	16	20	80	—	—	—	
Herbicides (µg/L)							
2,4,5-TP (Silvex)	7.1	10	71	—	—	—	10% – 126%
2,4,5-T	18	30	60	—	—	—	
2,4-D	22	40	55	—	—	—	
Total Metals (µg/L)							
Arsenic	4.9	5.0	98	—	—		59% - 125%
Barium	50	50	100	—	—		
Lead	10	10	100	—	—		
Mercury	1.2	1.0	120	—	—		

Table 2-2 (Continued)
SUMMARY OF PERFORMANCE EVALUATION SAMPLES, OCTOBER 2001

Notes:

[1]QC criteria for % Recovery are equivalent to 3sd performance ranges for commercial reference materials containing similar classes of chemicals.
[2]Nitroguanidine QA criteria for % recovery are performance based and are equal to 3 standard deviations of 20 consecutively analyzed laboratory control spikes.
[3]Diphenylamine and n-nitrosodiphenylamine can not be distinguished analytically. PE samples are spiked with diphenylamine; however, the laboratory reports n-nitrosodiphenylamine
% - percent
(µ/L) - micrograms per liter
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
J - data validation qualifier indicating that the analyte was positively identified but the associated numerical value is estimated.
— - not applicable
PE - performance evaluation
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
SVOCs - semivolatile organic compounds
VOCs - volatile organic compounds

Table 2-3
SUMMARY OF FIELD DUPLICATE PRECISION – OCTOBER 2001

Compound/Analyte[1]	PQL (µg/L)	GW02MW02B Primary Sample (µg/L)	GW502MW02B Duplicate Sample (µg/L)	RPD (%)	QC Criteria[2]
Explosives and Propellants, Total					
2,4-Dinitrotoluene	0.25	0.46	0.48	4.3	≤ 50%
2-Nitrotoluene	0.25	0.26	0.25 U	nc	
HMX	0.25	2.2	2.2	0	
RDX	0.25	120	120	0	
Perchlorate ion	5	206	205	0.5	
Volatile Organic Compounds					
1,1,2-trichloro-1,2,2-trifluoroethane	2	83	81	2.4	≤ 30%
1,1,1-Trichloroethane	1	200	210	4.9	
1,1-Dichloroethane	1	33	31	6.3	
1,1-Dichloroethene	1	34	35	2.9	
Dichlorodifluoromethane	1	120	120	0	
Metals, Total					
Barium	3	6	7	15	≤ 20%
Calcium	50	2,310	2,410	4.2	
Chromium	5	15	20	29*	
Copper	2	2 U	3	nc	
Iron	50	180	380	71	
Magnesium	50	1,100	1,160	5.3	
Nickel	10	10	10	0	
Potassium	500	770	820	6.3	
Sodium	50	3,830	4,470	15	
Zinc	6	8	7	13	
Metals, Dissolved					
Arsenic	0.2	0.2	0.2	0	≤ 20%
Barium	3	6	6	0	
Calcium	50	2,350	2,310	1.7	
Magnesium	50	1,090	1,100	0.91	
Potassium	500	800	810	1.2	
Sodium	50	3,740	3,680	1.6	
Water Quality Parameters (mg/L)					
Alkalinity	1	5.9	5.2	13	≤ 20%
Hardness (calculated)	0.3	10.3	10.8	4.7	--
Total Suspended Solids	1	4	7.5	61	≤ 20%

Table 2-3 (Continued)
SUMMARY OF FIELD DUPLICATE PRECISION – OCTOBER 2001

Compound/Analyte[1]	PQL (µg/L)	GW02MW02B Primary Sample (µg/L)	GW502MW02B Duplicate Sample (µg/L)	RPD (%)	QC Criteria[2]
Chloride	0.1	6.8	7.1	4.3	
Nitrate, as N	0.1	0.7	0.7	0	
Sulfate	0.1	2	2.6	26	

Notes:
[1] - SVOCs, herbicides, nitrite, cyanide, TOC, and DOC were not detected in the field duplicate sample above the PQL
[2] - QC Criteria for RPD presented in this table are taken from the Management Plan criteria for laboratory duplicate samples
* - analytes detected at less than 5X the PQL may be expected to have higher RPD values.
(%) - percent
(µg/L) - micrograms per liter
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazine
(mg/L) – milligrams per liter
nc – not calculated
PQL - practical quantitation limit
QC - quality control
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
U – the analyte was undetected above the reporting limit

Table 2-4
SUMMARY OF URS/USACE DUPLICATE PRECISION, OCTOBER 2001

Compound/Analyte1	PQL (µg/L)	USACE Sample GW02MW02B (µg/L)	URS Sample GW02MW02B2 (µg/L)	RPD (%)
Explosives				
HMX	1.6		2.2	
RDX	1.3		120	
1,3,5-Trinitrobenzene	0.35		U	nc
2,4-Dinitrotoluene	0.24		0.47	
2,6-Dinitrotoluene	0.15		U	nc

Notes:

***** - analytes detected at less than 5 times the PQL may be expected to have higher RPD values.
1 – the USACE laboratory analyzed sample GW01MW02B for explosives and propellants only USACE did not analyze for perchlorate ion.
2 - the URS concentration presented is the average of concentrations detected in samples GW02MW002B/GW502MW002B.
(%) - percent
(µg/L) - micrograms per liter
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazine
nc – not calculated
PQL - practical quantitation limits
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
RPD - relative percent difference
U – the analyte was undetected above the reporting limit

Table 2-5
COMPARISON OF REQUIRED PQLs WITH ACHIEVED PQLs
OCTOBER 2001

Matrix	Method or Analyte	Required Practical Quantitation Limits	Achieved Practical Quantitation Limits
Water	Explosives and propellants	0.25 µg/L to 20 µg/L	0.25 µg/L to 20 µg/L
Water	VOCs	1 µg/L to 5 µg/L	1 µg/L to 5 µg/L
Water	SVOCs	1 µg/L to 10 µg/L	1 µg/L to 10 µg/L
Water	Herbicides	0.3 µg/L to 10 µg/L (1200 µg/L for MCPA and MCPP)	0.056 µg/L to 2 µg/L (50 µg/L for MCPA and MCPP)
Water	Metals (general) Iron/Magnesium	0.1 µg/L to 500 µg/L 20µg/L /20µg/L	0.1 to 500 µg/L 50µg/L /50µg/L
Water	TPH-Gx	0.35 mg/L	0.25 mg/L
Water	TPH-Dx	10 mg/L	0.25 mg/L
Water	Alkalinity	5 mg/L	1.0 mg/L
Water	TSS	1.0 mg/L	1.0 mg/L
Water	Chloride	2 mg/L	0.1 mg/L
Water	Cyanide	0.005 mg/L	0.005 mg/L
Water	Nitrate, nitrite	0.050 mg/L	0.1 mg/L
Water	Sulfate	10 mg/L	0.1 mg/L
Water	TOC/DOC	1.5/1.5 mg/L	1.5/1.5 mg/L
Water	Hardness (calculated)	1.0 mg/L	0.3 mg/L

Notes:

BOLD indicates a change from the July groundwater monitoring
DOC - dissolved organic carbon
µg/L - micrograms per liter
mg/L - milligrams per liter
PQL – practical quantitation limit
SVOC - semivolatile organic compounds
TOC - total organic carbon
TPH-Dx - total petroleum hydrocarbons (TPH)-diesel fraction
TPH-Gx - TPH-gasoline fraction
TSS - total suspended solids

3.0 CHEMICAL DATA QUALITY ASSESSMENT-JANUARY 2002

3.1 Summary

The following subsections are based on the results of the data validation and PE samples. These subsections provide an evaluation of the chemical data for representativeness, accuracy, analytical precision, comparability, and completeness. Representativeness was evaluated by examining chain-of-custody (COC) documentation and verifying that the requested sample analyses were performed within allowable holding times. Accuracy was evaluated by reviewing the recovery of compounds added to the samples and blanks [surrogates matrix spike/matrix spike duplicate (MS/MSD), laboratory control spike/laboratory control spike duplicate (LCS/LCSD), and, performance evaluation (PE) samples]. Precision was evaluated by comparison of results for primary, field duplicate, and laboratory duplicate analyses, LCS/LCSD, and MS/MSD. Comparability was evaluated by examining the laboratory practical quantitation limits (PQLs). Completeness was evaluated by calculating the percentage of acceptable data.

The laboratories provided Environmental Protection Agency (EPA) Contract Laboratory Program-type or comparable deliverables for all submittals. Documentation provided by the laboratories was sufficient to allow validation and evaluation of the data. Qualified data are presented in Table 1.

3.2 Representativeness

Chain of Custody and Holding Times

COC forms indicated that samples were maintained under proper chain of custody. The forms were signed upon release by the sampling team and upon receipt by the laboratory. All samples were preserved properly and analyzed within the holding times. The samples were sealed in plastic bags and packed in coolers with ice. Laboratory measurement of temperature blank bottles (one per cooler) indicated temperatures within the range of 0.5°C – 3.0°C for all samples received by Analytical Resources Inc. (ARI) and Severn Trent Laboratories (STL). URS was informed when the laboratories received samples. Inconsistencies between the COCs and the sample bottle labels were discussed and corrections were made.

3.3 Accuracy

Initial and Continuing Calibration

The laboratories performed initial multi-point calibrations for all target and surrogate compounds as required. Instrument tuning standards, initial calibrations (ICAL) and continuing calibration verifications (CCV) were analyzed at the proper frequency and at the appropriate concentrations required by the methods. Each day samples were analyzed, the laboratory analyzed calibration standards at a concentration equivalent to the mid-range initial calibration standard. The continuing calibration standards were analyzed at the beginning and end of the analytical sequence with the exception of the SVOC analysis. Although the semivolatile organic compounds (SVOC) post-analytical sequence CCV was not reported, all other SVOC quality

control (QC), including the surrogate and internal standard recoveries, were in compliance throughout the analytical sequence, and the data are acceptable.

Calibration acceptance criteria were reported as the relative response factors (RRF), relative standard deviations (RSD) and/or the coefficients of determination (r) for the ICAL, and as percent difference (% D) for the CCV. The mean RSD for target volatile organic compounds (VOCs) was ≤ 15 % and no RSD was ≥ 30%. Therefore the calibration for VOCs met both the overall method and project calibration criteria. The RSD for several compounds was above the specified limit of ≤ 15 %; however, of these compounds, only dichlorodifluoromethane was detected in the samples. Dichlorodifluoromethane (RSD = 19%) was "J"-qualified as estimated in samples GW03MW02B and GW503MW02B for exceeding the ICAL criteria. Calibration data for other VOCs were acceptable.

Calibrations for all other analyses were acceptable based on criteria established in the Management Plan.

Blanks

Method blanks were used to check for laboratory contamination and instrument bias. The laboratory analyzed at least one method blank for each analysis and for each batch per method requirements. No target analytes or compounds were detected above the PQLs in the method blanks.

Calcium (2 µg/L), iron (70 µg/L), and lead (3 µg/L) were detected in the equipment rinsate blank for total metals. Sodium (130 µg/L) was detected in the equipment rinsate blank for dissolved metals. The concentrations of calcium, lead, and sodium found in the rinsate blank do not affect the sample data because the calcium and sodium concentrations are much greater in the samples than in the rinsate and lead was not detected in any site sample.

Trip blanks, prepared by the laboratory, were shipped to the field with the sample bottles and returned with the coolers containing samples submitted for analysis of VOCs, and gasoline range total petroleum hydrocarbons (TPH-Gx). The trip blanks were used to evaluate cross-contamination that may have occurred during field activities or during sample transport. Acetone, a common laboratory contaminant, was detected at 2.2 µg/L in one of three trip blanks (012502Trip03) at a concentration below the reporting limit (5 µg/L). Acetone was also reported in two site samples GW03MW01A (3.9 µg/L) and GW03MW02A (3.3 µg/L). These detections could be attributed to blank background. No data were qualified.

Surrogate Recovery

Each sample analyzed for organic compounds was spiked with surrogates (system monitoring compounds). Because sample characteristics affect the percent recoveries of the target compounds as well as the spiked compounds, the surrogate recoveries are a measure of accuracy for overall analysis of each individual sample. No data for this sampling activity required qualification based on surrogate performance.

Matrix Spike/Matrix Spike Duplicate

MS/MSD samples were analyzed to assess the ability of the laboratories to recover the target compounds from the sample matrix. One MS/MSD sample pair was analyzed for each analysis

as required. Spiking compounds were added to sample GW03MW01B, the sample designated for MS/MSD. Spikes for metals and explosives analyses included all the target analytes. Spikes for other analyses included selected compounds.

Data were evaluated for recovery of target compounds and relative percent difference (RPD) between the compound recoveries in the MS and MSD. All recoveries and associated RPDs for MS/MSDs were within specification.

Laboratory Control Spike/Laboratory Control Spike Duplicate

LCS samples were used to monitor the laboratories' day-to-day performance of routine analytical methods, independent of matrix effects and to assess laboratory accuracy for the target compounds. LCS samples were also used to identify any background contamination of the analytical system that may have lead to the reporting of elevated concentration levels or false-positive measurements. LCS duplicates were used to evaluate the precision of the analytical system.

The laboratories analyzed at least one LCS and one LCSD per sample preparation batch per analytical method. This met the method frequency requirements for LCS. All LCS data reviewed were within laboratory control limits.

Performance Evaluation Samples

PE samples were used to assess the accuracy of the analytical methods and the performance of the laboratory. These samples were prepared with a composition and analyte concentration similar to the composition and concentration that was anticipated in the groundwater samples. PE samples were prepared and analyzed by an independent laboratory (DMD, Inc.) and were submitted to the analytical laboratories (ARI and STL) as unknown samples from the field. The samples were analyzed in the same manner as all environmental samples. One PE sample each was submitted and analyzed for selected herbicides, VOCs, SVOCs, and metals. Two PE samples each were submitted for explosives residues, nitroguanidine, and perchlorate ion.

Reported concentrations for the PE analytes agreed with known concentrations, with the exception of nitroglycerin reported at 490% recovery in one PE sample. Samples with moderate amounts of other highly responsive, closely eluting target analytes may potentially interfere with or "bury" nitroglycerin in overlapping chromatographic peaks resulting in inaccurate quantitation. Table 2 presents the PE sample data and calculated percent recoveries.

3.4 Precision

Second Column Confirmation

Second column confirmations, performed on analyses employing gas chromatography (GC) and high performance liquid chromatography (HPLC), were within specified limits with the exception of 2,4-dinitrotoluene in samples GW03MW02B and GW503MW02B and 2,4-dinitrotoluene, 2,4,6-trinitrotoluene, nitroglycerin and picric acid in sample GW03MW08A. These compounds were "J"-qualified as estimated due to poor second column confirmation.

Field Duplicates

One field duplicate was collected to verify acceptable field sampling techniques and the representativeness of the sample aliquots. All RPD were in compliance with QC requirements except the RPDs for total iron (50%), dissolved iron (28.6%), alkalinity (25.6%), chloride (60.9%), and total suspended solids (85.7%). Concentrations of total and dissolved iron and total suspended solids were less than five times the PQLs for these analytes and may be expected to have higher RPD values. In addition, unfiltered samples contain solids and are expected to be more heterogeneous than filtered samples, possibly resulting in elevated RPD values. Table 3 contains the results of the field duplicate sample evaluation. The sample data are not qualified for field duplicate RPD noncompliance because other associated QC results are compliant.

Laboratory Duplicate

The RPD for all laboratory duplicate samples including MS/MSD pairs, LCS/LCSD pairs, and sample duplicates was within the control limits. No data are qualified based on laboratory duplicate RPD.

3.5 Comparability

Comparability is the degree to which the data from one study can be compared to data from other similar studies, reference values (such as background), reference materials, and screening criteria. ARI and STL laboratories followed the EPA-approved analytical methods delineated in the Management Plan with minor exceptions. The analysis of low-concentration metals (arsenic, lead, selenium, thallium) was changed from SW-846 Method 6020 (inductively coupled plasma [ICP]/mass spectrometer [MS]) to EPA Method 200.8 (ICP/MS). The alkalinity analysis was changed from EPA method 310.1 to SM 2320, and the total cyanide analysis was changed from EPA 335.4 to EPA 335.2. EPA Method 353.2 (rather than EPA Method 300) was used to analyze nitrate and nitrite. This method extends the allowable holding time by using preserved samples. In this sampling event, EPA Method 325.2 was used for chloride analysis and EPA Method 375.2 was used for sulfate analysis. There is essentially no practical or technical difference in the substituted methods compared to those specified in the Management Plan. The methods used are different in name due to their application in different regulatory monitoring determinations and results from the application of the substituted methods do not impact the data quality. The substituted methods will continue to be used for all groundwater monitoring to maintain analytical consistency.

Project PQL requirements presented in the Management Plan were based on screening criteria and on the laboratories' technical abilities. Laboratory PQLs met the requirements of the Management Plan with the exception of two metals and five SVOCs. The PQLs for iron and magnesium were raised in October 2001 in response to a new method detection limit (MDL) study. The PQLs for 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, benzoic acid, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate were also raised during that reporting period. The reported limits for these SVOCs were adjusted downward by the data reviewer based on the performance of the instrument detection limit check standard. In addition, based on PE sample data, the reviewer raised the PQL for n-nitrosodiphenylamine from 1 µg/L to 3 µg/L in all samples. None of the PQL changes affect the data usability. Table 4 provides a comparison of the PQLs required in the Management Plan with the laboratories' achieved PQLs.

Samples collected during the July 2001 and October 2001, groundwater monitoring for analysis of SVOCs, herbicides, and diesel range total petroleum hydrocarbons (TPH-Dx) were contained in 1 liter bottles; however, ARI used only 500 ml from each bottle. It is unknown what effect, if any, this method modification would have on the sample results. For this groundwater monitoring event, samples were collected in 500ml bottles, the entire sample was used, and the bottles were rinsed with the appropriate solvent.

PQLs achieved by the laboratories exceeded the screening criteria for some compounds. With the exception of explosives residues, target compounds that were detected below the PQL were reported as estimated (denoted by "J") because the detected concentrations were less than the lowest calibration standard. Analytes whose screening criteria are lower than the laboratory PQLs are indicated by an asterisk (*) on Table 4-13.

3.6 Completeness

Completeness for this sampling event is 100 % percent based on completion of 126 of the 126 analyses requested on the COCs.

Appendix D

Data Quality Comparison to Data Quality Objectives & Explanation for Quality Control Exceedences and Laboratory Data Summary Tables

Table 3-1
SUMMARY OF QUALIFIED DATA, JANUARY 2002

Sample ID	Lab ID	Analysis	Analyte	Qualifier	Rationale for Qualification
GW03MW02B	475625	Explosives	2,4-Dinitrotoluene	J	2nd column confirmation
GW503MW02B	475626				
GW03MW08A	475623		2,4-Dinitrotoluene Nitroglycerin Picric Acid 2,4,6-Trinitrotoluene		
GW03MW02B	EB10B	VOCs	Dichlorodifluoromethane	J	ICAL
GW503MW02B	EB10C				

Notes:

ICAL - initial calibration
ID - identification
J - The analyte was positively identified; the associated numerical value is an estimate of the concentration of the analyte in the sample.
VOC - volatile organic compounds

Table 3-2
SUMMARY OF PERFORMANCE EVALUATION SAMPLES, JANUARY 2002

Compound/Analyte	PE Sample GW03MW08A Concentration	Known Concentration	Recovery (%)	PE Sample GW03MW08B Concentration	Known Concentration	Recovery (%)	QC Criteria (Recovery, %)[1]
Explosives and Propellants (µg/L)							
1,3,5-Trinitrobenzene	—	—	—	—	—	—	16% - 129%
1,3-Dinitrobenzene	20	20	100	—	—	—	
2,4,6-Trinitrotoluene	4.3 *J*	5.0	86	—	—	—	
2,4-Dinitrotoluene	9 *J*	10	90	—	—	—	
2,6-Dinitrotoluene	—	—	—	10	10	100	
2-Amino-4,6-dinitrotoluene	—	—	—	—	—	—	
2-Nitrotoluene	9.3	10	93	—	—	—	
3-Nitrotoluene	—	—	—	—	—	—	
4-Amino-2,6-dinitrotoluene	21	20	105	—	—	—	
4-Nitrotoluene	—	—	—	15	15	100	
HMX	—	—	—	8.6	10	86	
Nitrobenzene	—	—	—	15	15	100	
Nitroglycerin	49 *J*	10	490	8.9	15	59	
PETN	12	15	80	—	—	—	
Picric Acid	5.3 *J*	5.0	106	10	10	100	
RDX	—	—	—	19	20	95	
Tetryl	7.6	10	76	18	20	90	
Nitroguanidine	49	50	98	30	30	100	See footnote 2
Perchlorate ion	31.1	30	104	67.2	60	112	70% - 130%
VOCs (µg/L)							
1,2,4-Trichlorobenzene	12	20	60	—	—	—	51% - 130%
Tetrachloroethene	2.9	4.0	73	—	—	—	
Toluene	8.6	10	86	—	—	—	
Trichloroethene	4.7	6.0	78	—	—	—	
Vinyl chloride	3.8	4.0	95	—	—	—	

Table 3-2 (Continued)
SUMMARY OF PERFORMANCE EVALUATION SAMPLES, JANUARY 2002

Compound/Analyte	PE Sample GW03MW08A Concentration	Known Concentration	Recovery (%)	PE Sample GW03MW08B Concentration	Known Concentration	Recovery (%)	QA Criteria (Recovery, %)[1]
SVOCs (µg/L)							
Butylbenzylphthalate	33	30	110	—	—	—	
Diethylphthalate	15	20	75	—	—	—	16% - 129%
N-Nitrosodiphenylamine[3]	2.9	10	29	—	—	—	
Phenanthrene	13	15	87	—	—	—	
Pyrene	20	20	100	—	—	—	
Herbicides (µg/L)							
2,4,5-TP (Silvex)	8.5	10	85	—	—	—	
2,4,5-T	26	30	87	—	—	—	10% – 126%
2,4-D	35	40	88	—	—	—	
Total Metals (µg/L)							
Arsenic	4.8	5.0	96	—	—	—	
Barium	53	50	106	—	—	—	59% - 125%
Lead	10	10	100	—	—	—	
Mercury	0.7	1.0	70	—	—	—	

Notes:

[1]QC criteria for % Recovery are equivalent to 3sd performance ranges for commercial reference materials containing similar classes of chemicals.
[2]Nitroguanidine QA criteria for % recovery are performance based and are equal to 3 standard deviations of 20 consecutively analyzed laboratory control spikes.
[3]Diphenylamine and n-nitrosodiphenylamine can not be distinguished analytically. PE samples are spiked with diphenylamine; however, the laboratory reports n-nitrosodiphenylamine
% - percent
(µ/L) - micrograms per liter
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
J - data validation qualifier indicating that the analyte was positively identified but the associated numerical value is estimated.
— - not applicable
PE - performance evaluation
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
SVOCs - semivolatile organic compounds
VOCs - volatile organic compounds

Table 3-3
JANUARY 2002

Compound/Analyte[1]	PQL (µg/L)	GW03MW02B Primary Sample (µg/L)	GW503MW02B Duplicate Sample (µg/L)	RPD (%)	QC Criteria[2]
Explosives and Propellants, Total					
2,4-Dinitrotoluene	0.25	0.49	0.48	2.1	≤ 50%
HMX	0.25	2.6	2.5	3.9	
RDX	0.25	110	110	0	
Perchlorate ion	5	227	226	0.44	
Volatile Organic Compounds					
1,1,2-Trichloro-1,2,2-trifluoroethane	2	86	83	3.5	≤ 30%
1,1,1-Trichloroethane	1	230	220	4.4	
1,1-Dichloroethane	1	32	30	6.5	
1,1-Dichloroethene	1	35	33	5.9	
Dichlorodifluoromethane	1	100	100	0	
Metals, Total					
Barium	3	4	4	0	≤ 20%
Calcium	50	2110	1,920	9.4	
Chromium	5	21	18	15.4	
Iron	50	200	120	50*	
Magnesium	50	1050	940	11.1	
Nickel	10	10	10	0	
Sodium	50	3,000	2,780	7.6	
Metals, Dissolved					
Barium	3	4	4	0	≤ 20%
Calcium	50	2,110	2,080	1.4	
Iron	50	80	60	28.6*	
Magnesium	50	1,040	1,040	0	
Nickel	10	10	10	0	
Sodium	50	3,070	3,030	1.31	
Zinc	6	7	6 U	NC	
Water Quality Parameters (mg/L)					
Alkalinity	1	3.4	4.4	25.6*	≤ 20%
Hardness (calculated)	0.3	9.59	8.67	10.1	
Total Suspended Solids	1	3.0	1.2	85.7*	
Chloride	1	6.0	3.2	60.9*	
Nitrate, as N	0.01	0.82	0.84	2.4	
Sulfate	2.5	3.1	2.6	17.5	

Notes:

[1] - SVOCs, herbicides, nitrite, cyanide, TOC, and DOC were not detected in the field duplicate sample above the PQL
[2] – QC Criteria for RPD presented in this table are taken from the Management Plan criteria for laboratory duplicate samples
* - analytes detected at less than 5X the PQL may be expected to have higher RPD values.
(%) - percent
(µg/L) - micrograms per liter
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazine
mg/L – milligrams per liter
NC – not calculated
PQL - practical quantitation limits
QC - quality control
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine

Table 3-4
COMPARISON OF REQUIRED PQLs WITH ACHIEVED PQLs
JANUARY 2002

Matrix	Method or Analyte	Required Practical Quantitation Limits	Achieved Practical Quantitation Limits
Water	Explosives and propellants	0.25 µg/L to 20 µg/L	0.25 µg/L to 20 µg/L
Water	VOCs	1 µg/L to 5 µg/L	1 µg/L to 5 µg/L
Water	SVOCs	1 µg/L to 10 µg/L	1 µg/L to 10 µg/L
Water	Herbicides	0.3 µg/L to 10 µg/L (1200 µg/L for MCPA and MCPP)	0.056 µg/L to 2 µg/L (50 µg/L for MCPA and MCPP)
Water	Metals (general) Iron/Magnesium	0.1 µg/L to 500 µg/L 20µg/L /20µg/L	0.1 to 500 µg/L 50µg/L /50µg/L
Water	TPH-Gx	0.35 mg/L	0.25 mg/L
Water	TPH-Dx	10 mg/L	0.25 mg/L
Water	Alkalinity	5 mg/L	1.0 mg/L
Water	TSS	1.0 mg/L	1.0 mg/L
Water	Chloride	2 mg/L	1.0 mg/L
Water	Cyanide	0.005 mg/L	0.005 mg/L
Water	Nitrate, nitrite	0.050 mg/L	0.01 mg/L
Water	Sulfate	10 mg/L	2.5 mg/L
Water	TOC/DOC	1.5/1.5 mg/L	1.5/1.5 mg/L
Water	Hardness (calculated)	1.0 mg/L	0.3 mg/L

Notes:

BOLD indicates a change from the October groundwater monitoring
DOC - dissolved organic carbon
µg/L - micrograms per liter
mg/L - milligrams per liter
PQL – practical quantitation limit
SVOC - semivolatile organic compounds
TOC - total organic carbon
TPH-Dx - total petroleum hydrocarbons (TPH)-diesel fraction
TPH-Gx - TPH-gasoline fraction
TSS - total suspended solids

4.0 CHEMICAL DATA QUALITY ASSESSMENT – APRIL 2002

4.1 Summary

The following subsections are based on the results of the data validation and PE samples. These subsections provide an evaluation of the chemical data for representativeness, accuracy, analytical precision, comparability, and completeness. Representativeness was evaluated by examining chain-of-custody (COC) documentation and verifying that the requested sample analyses were performed within allowable holding times. Accuracy was evaluated by reviewing the recovery of compounds added to the samples and blanks [surrogates matrix spike/matrix spike duplicate (MS/MSD), laboratory control spike/laboratory control spike duplicate (LCS/LCSD), and, performance evaluation (PE) samples]. Precision was evaluated by comparison of results for primary, field duplicate, and laboratory duplicate analyses, LCS/LCSD, and MS/MSD. Comparability was evaluated by examining the laboratory practical quantitation limits (PQLs). Completeness was evaluated by calculating the percentage of acceptable data.

The laboratories provided Environmental Protection Agency (EPA) Contract Laboratory Program-type or comparable deliverables for all submittals. Documentation provided by the laboratories was sufficient to allow validation and evaluation of the data. Qualified data are presented in Table 1.

4.2 Representativeness

Chain of Custody and Holding Times

COC forms indicated that samples were maintained under proper chain of custody. The forms were signed upon release by the sampling team and upon receipt by the laboratory. All samples were preserved properly and analyzed within the holding times. The samples were sealed in plastic bags and packed in coolers with ice. Laboratory measurement of temperature blank bottles (one per cooler) indicated temperatures within the range of 1.5°C – 7°C for all samples received by Analytical Resources, Inc. (ARI) and Severn Trent Laboratories (STL). URS was informed when the laboratories received samples. Inconsistencies between the COCs and the sample bottle labels were discussed and corrections were made.

Field duplicate sample GW504MW02A was incorrectly designated GW504MW02B. Form 1s, provided in the appendix to this report, have been hand corrected and the following text and tables refer to the field duplicate as GW504MW02A.

4.3 Accuracy

Initial and Continuing Calibration

The laboratories performed initial multi-point calibrations for all target and surrogate compounds as required. Instrument tuning standards, initial calibrations (ICAL), and continuing calibration verifications (CCV) were analyzed at the proper frequency and at the appropriate concentrations required by the methods. Each day samples were analyzed, the laboratory analyzed calibration

standards at a concentration equivalent to the mid-range initial calibration standard. The continuing calibration standards were analyzed at the beginning and end of the analytical sequence with the exception of the volatile organic compound (VOC) and semivolatile organic compound (SVOC) analyses. Although the VOC and SVOC post-analytical sequence CCV was not reported, other VOC and SVOC quality control (QC), including the surrogate and internal standard recoveries, were in compliance throughout the analytical sequence, and the data were acceptable.

Calibration acceptance criteria were reported as the relative response factors (RRF), relative standard deviations (RSD) and/or the coefficients of determination (r) for the ICALs, and as percent differences (% D) for the CCVs. The mean RSD for target VOCs was ≤ 15% and no RSD was ≥ 30%. Therefore the ICAL for VOCs met the overall criteria for both the method and the project. The RSDs for several VOCs were above the specified limit of ≤ 15 % in the ICAL; however, these compounds were not detected in the samples and no data were qualified based on the ICAL. Dichlorodifluoromethane was "J"-qualified as estimated in sample GW04MW02B (23% D) for exceeding the CCV criteria (20% D). Calibration data for other VOCs were acceptable based on criteria established in the Management Plan.

The ICAL for herbicides meets both the method and project criteria; however, in the CCV, four herbicides exceeded the CCV criteria of ≤ 15% D. Data were not qualified because herbicides were not detected in the field samples. Calibrations for all other analyses were acceptable based on criteria established in the Management Plan.

Blanks

Method blanks were used to check for laboratory contamination and instrument bias. The laboratory analyzed at least one method blank for each analysis and for each batch per method requirements. Sodium was detected above the PQL at 50 µg/L in the method blank for dissolved metals. No other target analytes or compounds were detected above the PQLs in the method blanks.

A rinsate blank was also submitted for analysis. Rinsate data did not require qualification with the following exception. A positive result was reported for picric acid at 0.86 µg/L. The laboratory noted that this result could be a false positive. The chromatographic peak identified as picric acid was marginally within the retention time window on the primary column, but it was not consistent with the expected elution time. The chromatographic peak used to confirm picric acid was marginally outside the retention time window on the CN column, but it encompassed the expected elution time of picric acid. In addition, the spectra for picric acid did not exhibit a strong pattern match to the spectra in the calibration standard. Therefore, the detection limit was for picric acid in the rinsate was raised to the reported concentration of 0.86 µg/L.

Acetone (4.1J µg/L) was detected in the equipment rinsate blank analyzed for VOCs. Acetone was not detected in any of the site samples. Chromium (7 µg/L) and iron (200 µg/L) were detected in the equipment rinsate blank analyzed for total metals. The concentrations of chromium and iron detected in the rinsate blank were not subtracted from the site sample concentrations because the relationship of the rinsate blank to the primary sample concentrations is unknown.

A trip blank, prepared by the laboratory, was shipped to the field with the sample bottles and returned with the cooler containing samples submitted for analysis of VOCs and gasoline-range total petroleum hydrocarbons (TPH-Gx). The trip blank was used to evaluate cross-contamination that may have occurred during field activities or during sample transport. Target analytes were not detected in the trip blank and no data were qualified.

Surrogate Recovery

Each sample analyzed for organic compounds was spiked with surrogates (system monitoring compounds). Because sample characteristics affect the percent recoveries of the target compounds as well as the spiked compounds, the surrogate recoveries are a measure of accuracy for overall analysis of each individual sample. No data for this sampling activity required qualification based on surrogate performance.

Matrix Spike/Matrix Spike Duplicate

MS/MSD samples were analyzed to assess the ability of the laboratories to recover the target compounds from the sample matrix. One MS/MSD sample pair was analyzed for each analysis as required. Spiking compounds were added to sample GW04MW01B, the sample designated for MS/MSD. Spikes for metals and explosives analyses included all the target analytes. Spikes for other analyses included selected compounds.

Data were evaluated for recovery of target compounds and relative percent difference (RPD) between the compound recoveries in the MS and MSD. All recoveries and associated RPDs for MS/MSDs were within specification.

Laboratory Control Spike/Laboratory Control Spike Duplicate

LCS samples were used to monitor the laboratories' day-to-day performance of routine analytical methods, independent of matrix effects and to assess laboratory accuracy for the target compounds. LCS samples were also used to identify any background contamination of the analytical system that may have lead to the reporting of elevated concentration levels or false-positive measurements. LCS duplicates were used to evaluate the precision of the analytical system.

The laboratories analyzed at least one LCS per sample batch per analytical method. This met the method frequency requirements for LCS. All LCS data reviewed were within laboratory control limits except dichlorodifluoromethane (132% recovery) in one of four LCSs analyzed for VOCs.

Performance Evaluation Samples

PE samples were used to assess the accuracy of the analytical methods and the performance of the laboratory. These samples were prepared with a composition and analyte concentration similar to the composition and concentration that was anticipated in the groundwater samples. PE samples were prepared and analyzed by an independent laboratory (DMD, Inc.) and were submitted to the analytical laboratories (ARI and STL) as unknown samples from the field. The samples were analyzed in the same manner as all environmental samples. One PE sample each was submitted and analyzed for selected herbicides, VOCs, SVOCs, and metals. Two PE

samples each were submitted for explosives residues, nitroguanidine, and perchlorate ion. Table 2 presents the PE sample data and calculated percent recoveries.

Reported concentrations for the PE analytes agreed with known concentrations, with the exception of nitroglycerin, vinyl chloride, and mercury. Although site samples were maintained on ice at approximately 4°C during the sampling of the monitoring wells, the PE samples were reportedly left under unknown temperature conditions. It is probable that the low recoveries of vinyl chloride (18 %) and mercury (20 %), the most sensitive of the VOCs and metals, are attributable to poor handling of the PE samples and not to unacceptable laboratory performance.

Nitroglycerin was detected below the laboratory reporting limits (5 µg/L) in both PE samples. Although the primary column used for analysis of the explosives PE samples indicated positive detection, the confirmation column showed interferences of nitroglycerin with RDX and/or tetryl. Samples with moderate amounts of other highly responsive, closely eluting target analytes may potentially interfere with or "bury" nitroglycerin in overlapping chromatographic peaks resulting in inaccurate quantitation. The data reviewer qualified nitroglycerin concentrations in both samples as "NJ" indicating that not all criteria for identification were met due to possible interferences, however, the presence of nitroglycerin is possible and the concentrations are estimated. Nitroglycerin was not detected in the field samples

4.4 Precision

Second Column Confirmation

Second column confirmations, performed on analyses employing gas chromatography (GC) and high performance liquid chromatography (HPLC), were within specified limits with the exception of nitroglycerin (mentioned above) and two explosives compounds. 2,4-dinitrotoluene in sample GW04MW02B, two compounds in sample GW04MW09A (2,4-dinitrotoluene, 2,4,6-trinitrotoluene), and 2,4,6-trinitrotoluene in sample GW04MW09B were "J"-qualified as estimated due to poor second column confirmation.

Field Duplicates

One field duplicate was collected to verify acceptable field sampling techniques and the representativeness of the sample aliquots. All RPD were in compliance with QC requirements except the RPDs for total iron (103 %), dissolved iron (22%), total copper (40%), dissolved nickel (67%), and total suspended solids (95 %). Concentrations of total copper, dissolved iron, and dissolved nickel are less than five times the PQLs for these analytes and may be expected to have higher RPD values. In addition, unfiltered samples contain solids and are expected to be more heterogeneous than filtered samples, possibly resulting in elevated RPD values. Table 3 contains the results of the field duplicate sample evaluation. The sample data are not qualified for field duplicate RPD noncompliance because other associated QC results are compliant.

Laboratory Duplicate

The RPD for all laboratory duplicate samples including MS/MSD pairs, LCS/LCSD pairs, and sample duplicates was within the control limits. No data are qualified based on laboratory duplicate RPD.

4.5 Comparability

Comparability is the degree to which the data from one study can be compared to data from other similar studies, reference values (such as background), reference materials, and screening criteria. ARI and STL laboratories followed the EPA-approved analytical methods delineated in the Management Plan with minor exceptions. The analysis of low-concentration metals (arsenic, lead, selenium, thallium) was changed from SW-846 Method 6020 (inductively coupled plasma [ICP]/mass spectrometer [MS]) to EPA Method 200.8 (ICP/MS). The alkalinity analysis was changed from EPA method 310.1 to SM 2320, and the total cyanide analysis was changed from EPA 335.4 to EPA 335.2. In the January 2002 and April 2002 sampling events, EPA Method 353.2 (rather than EPA Method 300) was used to analyze nitrate and nitrite. This method extends the allowable holding time by using preserved samples. EPA Method 325.2 was used for chloride analysis and EPA Method 375.2 was used for sulfate analysis. Essentially, there is no practical or technical difference in the substituted methods compared to those specified in the Management Plan. The methods used are different in name due to their application in different regulatory monitoring programs and data from the application of the substituted methods do not impact the data quality.

Project PQL requirements presented in the Management Plan were based on screening criteria and on the laboratories' technical abilities. Laboratory PQLs met the requirements of the Management Plan with the exception of two metals and five SVOCs. The PQLs for iron and magnesium were raised in October 2001 in response to a new method detection limit (MDL) study. The PQLs for 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol, benzoic acid, bis(2-ethylhexyl)phthalate, and di-n-octylphthalate were also raised during that reporting period. The reported limits for these SVOCs were adjusted downward by the data reviewer based on the performance of the instrument detection limit check standard. In addition, based on PE sample data, the reviewer raised the PQL for n-nitrosodiphenylamine from 1 µg/L to 2 µg/L in all samples.

None of the PQL changes affect the data usability. Table 4 provides a comparison of the PQLs required in the Management Plan with the laboratories' achieved PQLs.

PQLs achieved by the laboratories exceeded the screening criteria for some compounds. With the exception of explosives residues, target compounds that were detected below the PQL were reported as estimated (denoted by "J") because the detected concentrations were less than the lowest calibration standard. Analytes whose screening criteria are lower than the laboratory PQLs are indicated by an asterisk (*) on Table 4-13.

4.6 Completeness

Completeness for this sampling event is 100 percent based on completion of all the analyses requested on the COCs.

Table 4-1
SUMMARY OF QUALIFIED DATA, APRIL 2002

Sample ID	Lab ID	Analysis	Analyte	Qualifier	Rationale for Qualification
GW04MW02B	EH80C	VOC	Dichlorodifluoromethane	J	CCV
GW04MW02B	485176	Explosives	2,4-Dinitrotoluene	J	2nd column confirmation
GW04MW09A	485172		2,4-Dinitrotoluene 2,4,6-Trinitrotoluene		
GW04MW09B	485173		2,4,6-Trinitrotoluene		
GW04MW09A GW04MW09B	48517248 5173		Nitroglycerin	NJ	Compound identification and quantitation
GW1004MW3B	485170		Picric acid	0.86 U	

Notes:

CCV - continuing calibration verification
ID - identification
J - The analyte was positively identified; the associated numerical value is an estimate of the concentration of the analyte in the |sample.
NJ – not all criteria for identification were met; however, the presence of the compound is possible The reported concentrations are estimated.
VOC - volatile organic compound
U – The analyte was undetected above the reporting limit

Table 4-2
SUMMARY OF PERFORMANCE EVALUATION SAMPLES, APRIL 2002

Compound/Analyte	PE Sample GW04MW09A Concentration	Known Concentration	Recovery (%)	PE Sample GW04MW09B Concentration	Known Concentration	Recovery (%)	QC Criteria (Recovery, %)[1]
Explosives and Propellants (µg/L)							
1,3,5-Trinitrobenzene	—	—	—	—	—	—	
1,3-Dinitrobenzene	—	—	—	—	—	—	
2,4,6-Trinitrotoluene	4.6 *J*	4.0	115	2.4 *J*	2.0	120	
2,4-Dinitrotoluene	5.0 *J*	5.0	100	9.4	10	94	
2,6-Dinitrotoluene	—	—	—	—	—	—	
2-Amino-4,6-dinitrotoluene	—	—	—	—	—	—	
2-Nitrotoluene	—	—	—	—	—	—	
3-Nitrotoluene	—	—	—	—	—	—	
4-Amino-2,6-dinitrotoluene	—	—	—	—	—	—	16% - 129%
4-Nitrotoluene	—	—	—	—	—	—	
HMX	3.9	4.0	98	8.4	10	**84**	
Nitrobenzene	—	—	—	—	—	—	
Nitroglycerin	4.5	5.0	90	4.7	10	47	
PETN	—	—	—	—	—	—	
Picric Acid	4.6	4.0	115	—	—	—	
RDX	26	30	87	18	20	90	
Tetryl	—	—	—	4.8	5.0	96	
Nitroguanidine	53	50	106	22	20	110	See footnote 2
Perchlorate ion	31.4	30	105	62.7	60	105	70% - 130%

Table 4-2 (Continued)
SUMMARY OF PERFORMANCE EVALUATION SAMPLES, APRIL 2002

Compound/Analyte	PE Sample GW04MW09 Concentration	Known Concentration	Recovery (%)	PE Sample GW04MW09B Concentration	Known Concentration	Recovery (%)	QA Criteria (Recovery, %)[1]
VOCs (µg/L)							
Tetrachloroethene	3.4	4.0	85	—	—	—	51%-130%
Toluene	6.6	10	66	—	—	—	
Trichloroethene	5.0	6.0	83	—	—	—	
Vinyl chloride	0.7 J	4.0	18	—	—	—	
SVOCs (µg/L)							
Butylbenzylphthalate	19	20	95	—	—	—	
Diphenylamine[3]	4.2	10	42	—	—	—	16% - 129%
Phenanthrene	9	10	90	—	—	—	
Herbicides (µg/L)							
2,4,5-TP (Silvex)	6.4	5.0	128	—	—	—	10% – 126%
2,4-D	21	20	105	—	—	—	
Total Metals (µg/L)							
Arsenic	2.4	2.0	120	4.8	5.0	96	59% - 125%
Barium	14	15	93	49	50	98	
Lead	6	5.0	120	11	10	110	
Mercury	0.1	0.5	20	1.4	1.0	140	

Table 4-2 (Continued)
SUMMARY OF PERFORMANCE EVALUATION SAMPLES, APRIL 2002

Notes:

[1]QC criteria for % Recovery are equivalent to 3sd performance ranges for commercial reference materials containing similar classes of chemicals.
[2]Nitroguanidine QA criteria for % recovery are performance based and are equal to 3 standard deviations of 20 consecutively analyzed laboratory control spikes.
[3]Diphenylamine and n-nitrosodiphenylamine can not be distinguished analytically. PE samples are spiked with diphenylamine; however, the laboratory reports n-nitrosodiphenylamine
% - percent
(µ/L) - micrograms per liter
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
J - data validation qualifier indicating that the analyte was positively identified but the associated numerical value is estimated.
— - not applicable
PE - performance evaluation
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
SVOCs - semivolatile organic compounds
VOCs - volatile organic compounds

Table 4-3
SUMMARY OF FIELD DUPLICATE PRECISION
APRIL 2002

Compound/Analyte[1]	PQL (µg/L)	GW04MW02A Primary Sample (µg/L)	GW504MW02A Duplicate Sample (µg/L)	RPD (%)	QC Criteria[2]
Explosives and Propellants, Total					
HMX	0.25	1.9	2.0	5.1	≤ 50%
RDX	0.25	24	26	8	
Perchlorate ion	5	104	130	22.2	
Metals, Total					
Barium	3	4	3 U	NC	≤ 20%
Calcium	50	1270	1250	1.6	
Chromium	5	23	19	19.1	
Copper	2	3	2	40*	
Iron	50	1000	320	103	
Magnesium	50	400	380	5.1	
Nickel	10	10	10 U	NC	
Selenium	0.5	0.6	0.5	18.2	
Sodium	50	7990	7820	2.2	
Zinc	6	6 U	49	NC	
Metals, Dissolved					
Calcium	50	1320	1290	2.3	≤ 20%
Chromium	5	7	8	13.3	
Iron	50	100	80	22.2*	
Magnesium	50	400	390	2.5	
Nickel	10	10	20	66.7*	
Selenium	0.5	0.6	0.5	18.2	
Sodium	50	8240	7830	5.1	
Water Quality Parameters (mg/L)					
Alkalinity	1	2.3	1.9	19.1	≤ 20%
Hardness (calculated)	0.3	4.8	4.7	2.7	
Total Suspended Solids	1	11	3.9	95.3	
Chloride	1	1.8	1.7	5.7	
Nitrate, as Nitrogen	0.01	0.39	0.34	13.7	
Sulfate	2.5	19	17	11.1	

Notes:

[1] - VOCs, SVOCs, herbicides, nitrite, cyanide, TOC, and DOC were not detected in the field duplicate sample above the PQL
[2] - QC Criteria for RPD presented in this table are taken from the Management Plan criteria for laboratory duplicate samples
* - analytes detected at less than 5X the PQL may be expected to have higher RPD values.
(%) - percent
(µg/L) - micrograms per liter
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazine
(mg/L) – milligrams per liter
NC – not calculated
PQL - practical quantitation limits
QC - quality control
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
RPD – relative percent difference

Table 4-4
COMPARISON OF REQUIRED PQLs WITH ACHIEVED PQLs
APRIL 2002

Matrix	Method or Analyte	Required Practical Quantitation Limits	Achieved Practical Quantitation Limits
Water	Explosives and propellants	0.25 µg/L to 20 µg/L	0.25 µg/L to 20 µg/L
Water	VOCs	1 µg/L to 5 µg/L	1 µg/L to 5 µg/L
Water	SVOCs	1 µg/L to 10 µg/L	1 µg/L to 10 µg/L
Water	Herbicides	0.3 µg/L to 10 µg/L (1200 µg/L for MCPA and MCPP)	0.056 µg/L to 2 µg/L (50 µg/L for MCPA and MCPP)
Water	Metals (general) Iron/Magnesium	0.1 µg/L to 500 µg/L 20µg/L /20µg/L	0.1 to 500 µg/L 50µg/L /50µg/L
Water	TPH-Gx	0.35 mg/L	0.25 mg/L
Water	TPH-Dx	10 mg/L	0.25 mg/L
Water	Alkalinity	5 mg/L	1.0 mg/L
Water	TSS	1.0 mg/L	1.0 mg/L
Water	Chloride	2 mg/L	1.0 mg/L
Water	Cyanide	0.005 mg/L	0.005 mg/L
Water	Nitrate, nitrite	0.050 mg/L	0.01 mg/L
Water	Sulfate	10 mg/L	2.5
Water	TOC/DOC	1.5/1.5 mg/L	1.5/1.5 mg/L
Water	Hardness (calculated)	1.0 mg/L	0.3 mg/L

Notes:

(µg/L) - micrograms per liter
(mg/L) – milligrams per liter
DOC - dissolved organic carbon
PQL – practical quantitation limit
SVOC - semivolatile organic compounds
TOC - total organic carbon
TPH-Dx - total petroleum hydrocarbons (TPH)-diesel fraction
TPH-Gx - TPH-gasoline fraction
TSS - total suspended solids

5.0 CHEMICAL DATA QUALITY ASSESSMENT – JANUARY 2003

5.1 Summary

The following subsections are based on the results of the data validation and performance evaluation (PE) samples. These subsections provide an evaluation of the chemical data for representativeness, accuracy, analytical precision, comparability, and completeness. Representativeness was evaluated by examining chain-of-custody (COC) documentation and verifying that the requested sample analyses were performed within allowable holding times. Accuracy was evaluated by reviewing the recovery of compounds added to the samples and blanks [surrogates matrix spike/matrix spike duplicate (MS/MSD), laboratory control spike/laboratory control spike duplicate (LCS/LCSD), and PE samples]. Precision was evaluated by comparison of results for primary, field duplicate, and laboratory duplicate analyses, LCS/LCSD, and MS/MSD. Comparability was evaluated by examining the laboratory practical quantitation limits (PQLs). Completeness was evaluated by calculating the percentage of acceptable data.

The laboratories provided Environmental Protection Agency (EPA) Contract Laboratory Program-type or comparable deliverables for all submittals. Documentation provided by the laboratories was sufficient to allow validation and evaluation of the data. Qualified data are presented in Table 5-1.

5.2 Representativeness

Chain of Custody and Holding Times

COC forms indicated that samples were maintained under proper chain of custody. The forms were signed upon release by the sampling team and upon receipt by the laboratories. All samples were preserved properly and analyzed within the holding times. The samples were sealed in plastic bags and packed in coolers with ice. Laboratory measurement of temperature blank bottles (one per cooler) indicated temperatures within the range of 1.5°C – 3.5°C for all samples received by Analytical Resources, Inc. (ARI) and Severn Trent Laboratories (STL). URS was informed when the laboratories received samples. There were no inconsistencies between the COCs and the sample bottle labels.

5.3 Accuracy

Initial and Continuing Calibration

The laboratories performed initial multi-point calibrations for all target and surrogate compounds as required. Instrument tuning standards, initial calibrations (ICAL), and continuing calibration verifications (CCV) were analyzed at the proper frequency and at the appropriate concentrations required by the methods. Each day samples were analyzed, the laboratory analyzed calibration standards at a concentration equivalent to the mid-range initial calibration standard. The continuing calibration standards were analyzed at the beginning and end of the analytical sequence and after every 10 samples with the exception of the volatile organic compound (VOC)

and semivolatile organic compound (SVOC) analyses. Although the VOC and SVOC quality control (QC), including the surrogate and internal standard recoveries, were in compliance throughout the anlaytical sequence, and the data were acceptable.

Calibration acceptance criteria were reported as the relative response factors (RRF), relative standard deviations (RSD) and/or the coefficients of determination (r) for the ICALs, and as percent differences (% D) for the CCVs. The mean RSD for target compounds was ≤ 15% and no RSD was ≥ 30%. Therefore the ICALs for the VOCs and SVOCs met the overall criteria for both the method and the project. The RSDs for two VOCs were above the specified limit of ≤ 15% in the ICAL; however, these compounds were not detected in the samples and no VOC data were qualitified based on the ICAL. CCV data for VOCs and SVOCs were also acceptable based on criteria established in the Management Plan.

The ICAL for herbicides meets both the method and project criteria; however, three herbicide compounds exceeded the CCV criteria of ≤ 15%. Data were not qualitified because herbicide compounds were not detected in the field samples. Calibrations for all other anlayses were acceptable based on criteria established inthe Management Plan.

Blanks

Method blanks were used to check for laboratory contamination and instrument bias. The laboratory analyzed at least one method blank for each analysis and for each batch per method requirements. The SVOC method blank contained bis-2-(ethylhexyl) phthalate (1.3 µg/L). No other target analytes or compounds were detected above the PQLs in the method blanks.

Acetone (4.0J µg/L), 2-butanone (14 µg/L) and nitrate 0.053 mg/L) were detected in the equipment rinsate blank. Neither 2-butanone nor acetone were detected in any of the site samples. The concentrations of acetone, 2-butanone and nitrate detected in the rinsate blank were not subtracted from the site sample concentrations because the relationship of a rinsate blank to the primary sample concentrations is unknown.

A trip blank, prepared by the laboratory, was shipped to the field with the sample bottles and returned with the cooler containing samples submitted for analysis of VOCs and gasoline-range total petroleum hydrocarbons (TPH-Gx). The trip blank was used to evaluate cross-contamination that may have occurred during field activities or during sample transport. Target analytes were not detected in the trip blank and no data were qualified.

Surrogate Recovery

Each sample analyzed for organic compounds was spiked with surrogates (system monitoring compounds). Because sample characteristics affect the percent recoveries of the target compounds as well as the spiked compounds, the surrogate recoveries are a measure of accuracy for overall analysis of each individual sample. No data required qualification based on surrogate performance.

Matrix Spike/Matrix Spike Duplicate

MS/MSD samples were analyzed to assess the ability of the laboratories to recover the target compounds from the sample matrix. One MS/MSD sample pair was analyzed for each analysis

as required. Spiking compounds were added to sample GW05MW07B, the sample designated for MS/MSD. Spikes for explosives, nitroguanidine, perchlorate ion, and metals included all the target compounds and analytes. Spikes for other anlayses included selected compounds and analytes.

Data were evaluated for recovery of target compounds and relative percent difference (RPD) between the compound recoveries in the MS and MSD. All recoveries and associated RPDs for MS/MSDs were within specification.

Laboratory Control Spike/Laboratory Control Spike Duplicate

LCS samples were used to monitor the laboratories' day-to-day performance of routine analytical methods, independent of matrix effects and to assess laboratory accuracy for the target compounds. LCS samples were also used to identify any background contamination of the analytical system that may have lead to the reporting of elevated concentration levels or false-positive measurements. LCS duplicates were used to evaluate the precision of the analytical system.

The laboratories analyzed at least one LCS per sample batch per analytical method. This met the method frequency requirements for LCS. All LCS data reviewed were within laboratory control limits.

Performance Evaluation Samples

PE samples were used to assess the accuracy of the analytical methods and the performance of the laboratory. These samples were prepared with a composition and analyte concentration similar to the composition and concentration that was anticipated in the groundwater samples. PE samples were prepared and analyzed by an independent laboratory (DMD, Inc.) and were submitted to the analytical laboratories (ARI and STL) as unknown samples from the field. The samples were analyzed in the same manner as all environmental samples. One PE sample each was submitted and analyzed for selected VOCs, explosives residues, nitroguanidine, and perchlorate ion. Table 5-2 presents the PE sample data and calculated percent recoveries. The reported concentrations were acceptable.

5.4 Precision

Second Column Confirmation

Second column confirmations, performed on analyses employing gas chromatography (GC) and high performance liquid chromatography (HPLC), were within specified limits with one exception. 2,4,6-trinitrotoluene in sample GW05MW02B was "J"-qualified as estimated due to poor second column confirmation.

Field Duplicate

One field duplicate (GW505MW07B) was collected to verify acceptable field sampling techniques and the representativeness of the sample aliquots. All RPD were in compliance with QC requirements except the RPDs for total arsenic (29 %), dissolved arsenic (29%), and total chromium (25%). Concentrations of total arsenic, dissolved arsenic, and total chromium are less

than five times the PQLs for these analytes and may be expected to have higher RPD values. Table 5-3 contains the results of the field duplicate sample evaluation. The sample data are not qualified for field duplicate RPD noncompliance because other associated QC results are compliant.

Laboratory Duplicate

The RPDs for all laboratory duplicate samples including MS/MSD pairs, LCS/LCSD pairs, and sample duplicates were within the control limits. No data were qualified based on laboratory duplicate RPD.

5.5 Comparability

Comparability is the degree to which the data from one study can be compared to data from other similar studies, reference values (such as background), reference materials, and screening criteria. ARI and STL laboratories followed the EPA-approved analytical methods delineated in the Management Plan with minor exceptions. The analysis of low-concentration metals (arsenic, lead, selenium, thallium) was changed from SW-846 Method 6020 (inductively coupled plasma [ICP]/mass spectrometer [MS]) to EPA Method 200.8 (ICP/MS). The alkalinity analysis was changed from EPA method 310.1 to SM 2320 and the total cyanide analysis was changed from EPA 335.4 to EPA 335.2. EPA Method 353.2 (rather than EPA Method 300) was used to analyze nitrate and nitrite. This method extends the allowable holding time by using preserved samples. EPA Method 325.2 was used for chloride analysis and EPA Method 375.2 was used for sulfate analysis. Essentially, there is no practical or technical difference in the substituted methods compared to those specified in the Management Plan. The methods used are different in name due to their application in different regulatory monitoring programs and data from the application of the substituted methods do not impact the data quality or usability.

Project PQL requirements presented in the Management Plan were based on screening criteria and on the laboratories' technical abilities. Laboratory PQLs met the requirements of the Management Plan with the exception of three metals (iron, sodium, magnesium) three SVOCs (2,4-dinitrophenol; 4-6-dinitro-2-methylphenol; benzoic acid), and TSS. Based on the performance of the instrument detection limit standard, the data reviewer adjusted the PQL reported by the laboratory for these SVOCs downward to the required PQL.

Percholate ion was detected below the reporting limit in monitoring well L4-MW07B. The lowest calibration standard for perchlorate ion is 4 µg/L. The concentrations of samples collected from L4-MW-07B (GW05MW07B, GW505MW07B) are within the verifiable linear calibration range and are considered valid with no qualification. Due to unacceptable response in the instrument detetion limit standard, the reviewer raised the PQL for N-nitrosodi-n-propylamine to 5 µg/L.

None of the PQL changes affect the data usability. Table 5-4 provides a comparison of the PQLs required in the Management Plan with the laboratories' achieved PQLs.

PQLs achieved by the laboratories exceeded the screening criteria for some compounds. With the exception of explosives residues, target compounds that were detected below the PQL were reported as estimated (denoted by "J") because the detected concentrations were less than the

lowest calibration standard. Analytes whose screening criteria are lower than the laboratory PQLs are indicated by an asterisk (*) on Table 4-13.

5.6 Completeness

Completeness for this sampling event is 100 percent based on completion of all the analyses requested on the COCs.

Table 5-1
SUMMARY OF QUALIFIED DATA, JANUARY 2003

Sample ID	Lab ID	Analysis	Analyte	Qualifier	Rationale for Qualification
GW05MW02B	514220	Explosives	2,4,6-Trinitrotoluene	J	2nd column confirmation

Notes:

ID - identification
J - The analyte was positively identified; the associated numerical value is an estimate of the concentration of the analyte in the |sample.

Table 5-2
SUMMARY OF PERFORMANCE EVALUATION SAMPLES, JANUARY 2003

Compound/Analyte	PE Sample GW05MW10A Concentration	Known Concentration	Recovery (%)	QC Criteria (Recovery, %)[1]
Explosives and Propellants (µg/L)				
1,3,5-Trinitrobenzene	—	—	—	16% - 129%
1,3-Dinitrobenzene	—	—	—	
2,4,6-Trinitrotoluene	5.6	5.0	112	
2,4-Dinitrotoluene	8.7	10	87	
2,6-Dinitrotoluene	—	—	—	
2-Amino-4,6-dinitrotoluene	—	—	—	
2-Nitrotoluene	—	—	—	
3-Nitrotoluene	—	—	—	
4-Amino-2,6-dinitrotoluene	—	—	—	
4-Nitrotoluene	—	—	—	
HMX	4.2	5.0	84	
Nitrobenzene	—	—	—	
Nitroglycerin	13	15	87	
PETN	—	—	—	
Picric Acid	6.4	5.0	128	
RDX	9.7	10	97	
Tetryl	8.5	10	85	
Nitroguanidine	28	30	93	See footnote 2
Perchlorate ion	31	30	100	70% - 130%
VOCs (µg/L)				
Tetrachloroethene	3.2	4.0	80	51% - 130%
Toluene	10	10	100	
Trichloroethene	5.1	6.0	85	
Vinyl chloride	5.2	4.0	130	

Notes:
[1]QC criteria for % Recovery are equivalent to 3sd performance ranges for commercial reference materials containing similar classes of chemicals.
[2]Nitroguanidine QA criteria for % recovery are performance based and are equal to 3 standard deviations of 20 consecutively analyzed laboratory control spikes.
% - percent
(µ/L) - micrograms per liter
HMX - octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine
— - not applicable
PE - performance evaluation
RDX - hexahydro-1,3,5-trinitro-1,3,5-triazine
VOCs - volatile organic compounds

Table 5-3
SUMMARY OF FIELD DUPLICATE PRECISION
JANUARY 2003

Compound/Analyte[1]	PQL (µg/L)	GW05MW07B Primary Sample (µg/L)	GW505MW07B Duplicate Sample (µg/L)	RPD (%)	QC Criteria[2]
Explosives and Propellants, Total					
Perchlorate ion	5	4.9	4.8	2.1	≤ 50%
Metals, Total					
Arsenic	0.2	0.3	0.5	29*	≤ 20%
Calcium	50	7270	7510	3.2	
Chromium	5	9	7	25*	
Iron	50	110	90	20*	
Magnesium	50	4790	5000	4.3	
Potassium	500	1540	1510	2.0	
Sodium	500	8720	8680	0.5	
Metals, Dissolved					
Arsenic	0.2	0.4	0.3	29*	≤ 20%
Calcium	50	7210	6730	6.9	
Magnesium	50	4780	4420	7.8	
Nickel	10	10	10 U	NC	
Sodium	500	8980	8210	9.0	
Water Quality Parameters (mg/L)					
Alkalinity	1	38	40	5.1	≤ 20%
Hardness (calculated)	0.3	38	39	2.6	
Total Suspended Solids	2.5	2.8	2.5 U	NC	
Chloride	1	15	14	6.9	
Nitrate, as Nitrogen	0.01	0.16	0.13	21	
Sulfate	2.5	2.6	2.5 U	NC	

Notes:
[1] - VOCs, SVOCs, TPH-Gx, TPH-Dx, herbicides, nitrite, cyanide, TOC, and DOC were not detected in the field duplicate sample above the PQL
[2] - QC Criteria for RPD presented in this table are taken from the Management Plan criteria for laboratory duplicate samples
* - analytes detected at less than 5X the PQL may be expected to have higher RPD values.
(%) - percent
(µg/L) - micrograms per liter
(mg/L) – milligrams per liter
NC – not calculated
PQL - practical quantitation limits
QC - quality control
RPD – relative percent difference

Table 5-4
COMPARISON OF REQUIRED PQLs WITH ACHIEVED PQLs
JANUARY 2003

Matrix	Method or Analyte	Required Practical Quantitation Limits	Achieved Practical Quantitation Limits
Water	Explosives and propellants	0.25 µg/L to 20 µg/L	0.25 µg/L to 20 µg/L
Water	VOCs	1 µg/L to 5 µg/L	1 µg/L to 5 µg/L
Water	SVOCs	1 µg/L to 10 µg/L	1 µg/L to 10 µg/L
Water	Herbicides	0.3 µg/L to 10 µg/L (1200 µg/L for MCPA and MCPP)	0.050 µg/L to 1.1 µg/L (100 µg/L-110 µg/L for MCPA and MCPP)
Water	Metals (general) Iron/Magnesium/Sodium	0.1 µg/L to 500 µg/L 20 µg/L /20 µg/L/50	0.1 to 500 µg/L 50 µg/L /50 µg/L/500 µg/L
Water	TPH-Gx	0.35 mg/L	0.25 mg/L
Water	TPH-Dx	10 mg/L	0.25 mg/L
Water	Alkalinity	5 mg/L	1.0 mg/L
Water	TSS	1.0 mg/L	2.5 mg/L
Water	Chloride	2 mg/L	1.0 mg/L
Water	Cyanide	0.005 mg/L	0.005 mg/L
Water	Nitrate, nitrite	0.050 mg/L	0.01 mg/L
Water	Sulfate	10 mg/L	2.5
Water	TOC/DOC	1.5/1.5 mg/L	1.5/1.5 mg/L
Water	Hardness (calculated)	1.0 mg/L	0.3 mg/L

Notes:

(µg/L) - micrograms per liter
(mg/L) – milligrams per liter
DOC - dissolved organic carbon
PQL – practical quantitation limit
SVOC - semivolatile organic compounds
TOC - total organic carbon
TPH-Dx - total petroleum hydrocarbons (TPH)-diesel fraction
TPH-Gx - TPH-gasoline fraction
TSS - total suspended solids
VOC - volatile organic compounds

Table D-1
EXPLOSIVE COMPOUNDS AND PROPELLANTS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-1A				MW-1B			
Sample ID	GW01MW01A	GW02MW01A	GW03MW01A	GW04MW01A	GW01MW01B	GW02MW01B	GW03MW01B	GW04MW01B
	Total	Total	Total	Total	Total	Total	Total	Total
Date Sampled	7/24/2001	10/23/2001	1/21/2002	4/23/2002	7/24/2001	10/24/2001	1/22/2002	4/23/2002
Compound (ug/L):								
1,3,5-Trinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitroglycerin**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
PETN	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Picric acid	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Tetryl	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Perchlorate ion**	5 U	5 U	**6.5**	5 U	5 U	5 U	5 U	5 U
Nitroguanidine	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U

Table D-1
EXPLOSIVE COMPOUNDS AND PROPELLANTS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-2A						
Sample ID	GW01MW02A	GW501MW02A	GW02MW02A	GW02MW02A	GW03MW02A	GW04MW02A	GW504MW02A
	Total	Total - Dup	Total	Dissolved	Total	Total	Total - Dup
Date Sampled	7/24/2001	7/24/2001	10/24/2001	10/24/2001	1/22/2002	4/24/2002	4/24/2002
Compound (ug/L):							
1,3,5-Trinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	**2.5**	**2.5**	**2.4**	**2.4**	**2.1**	**1.9**	**2**
Nitrobenzene	0.25 U	U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitroglycerin**	5 U	5 U	5 U	5 U	5 U	5 U	5 U
PETN	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Picric acid	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	**44** D	**36** D	**36** D	**36** D	**25** D	**24** D	**26** D
Tetryl	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Perchlorate ion**	**136**	**183**	**193**	NA	**138**	**104** U	**130** U
Nitroguanidine	20 U	20 U	20 U	20 U	20 U	20 U	20 U

Table D-1
EXPLOSIVE COMPOUNDS AND PROPELLANTS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-2B							
Sample ID	GW01MW02B	GW02MW02B	GW502MW02B	GW02MW02B	GW03MW02B	GW503MW02B	GW04MW02B	GW05MW02B
	Total	Total	Total - Dup	Dissolved	Total	Total - Dup	Total	Total
Date Sampled	7/25/2001	10/24/2001	10/24/2001	10/24/2001	1/23/2002	1/23/2002	4/24/2002	1/8/2003
Compound (ug/L):								
1,3,5-Trinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	**0.3** *J*
2,4-Dinitrotoluene**	**0.3** *J*	**0.46**	**0.48**	**0.47** *J*	**0.49** *J*	**0.48** *J*	**0.41** *J*	**0.47**
2,6-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	**0.26**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	**1.7**	**2.2**	**2.2**	**2.3**	**2.6**	**2.5**	**2.6**	**2.9**
Nitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitroglycerin**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
PETN	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Picric acid	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	**120** D	**120** D	**120** D	**120** D	**110** D	**110** D	**110** D	**110** D
Tetryl	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Perchlorate ion**	**199**	**206**	**205**	NA	**227**	**226**	**241**	**251**
Nitroguanidine	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U

Table D-1
EXPLOSIVE COMPOUNDS AND PROPELLANTS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-3A				MW-3B			
Sample ID	GW01MW03A	GW02MW03A	GW03MW03A	GW04MW03A	GW01MW03B	GW02MW03B	GW03MW03B	GW04MW03B
	Total	Total	Total	Total	Total	Total	Total	Total
Date Sampled	7/26/2001	10/25/2001	1/24/2002	4/25/2002	7/26/2001	10/26/2001	1/24/2002	4/25/2002
Compound (ug/L):								
1,3,5-Trinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	**0.25**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitroglycerin**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
PETN	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Picric acid	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	6.6	6.6	6.7	7.4	**0.6 *J***	1.2	1.8	2.7
Tetryl	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Perchlorate ion**	91.5	94.3	102	106	15.5	16.9	22.1	29.3
Nitroguanidine	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U

Table D-1
EXPLOSIVE COMPOUNDS AND PROPELLANTS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-4A				MW-5A			
Sample ID	GW01MW04A	GW02MW04A	GW03MW04A	GW04MW04A	GW01MW05A	GW02MW05A	GW03MW05A	GW04MW05A
	Total	Total	Total	Total	Total	Total	Total	Total
Date Sampled	7/25/2001	10/26/2001	1/25/2002	4/25/2002	7/26/2001	10/26/2001	1/25/2002	4/25/2002
Compound (ug/L):								
1,3,5-Trinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U	**0.28**	**0.31**	**0.39**	**0.27**
Nitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitroglycerin**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
PETN	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Picric acid	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	**0.82**	**0.78**	**0.63**	**0.54**	**5.2**	**5**	**4.6**	**4.4**
Tetryl	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Perchlorate ion**	**13.2**	**14.7**	**14**	**15.8**	**63.8**	**57.9**	**57.4**	**54.7**
Nitroguanidine	20 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U

Table D-1
EXPLOSIVE COMPOUNDS AND PROPELLANTS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-7B		Rinsate				
Sample ID	GW05MW07B	GW505MW07B	GW1001MW03A	GW1002MW05A	GW1003MW05A	GW1004MW03B	GW1005MW07B
	Total	Total-Dup	Total	Total	Total	Total	Total
Date Sampled	1/8/2003	1/8/2003	7/27/2001	10/26/2001	1/25/2002	4/25/2002	1/8/2003
Compound (ug/L):							
1,3,5-Trinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitroglycerin**	5 U	5 U	5 U	5 U	5 U	5 U	5 U
PETN	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Picric acid	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.86 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Tetryl	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Perchlorate ion**	**4.9**	**4.8**	5 U	5 U	5 U	5 U	5 U
Nitroguanidine	20 U	20 U	20 U	20 U	20 U	20 U	20 U

Table D-1
EXPLOSIVE COMPOUNDS AND PROPELLANTS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well / Sample ID / Date Sampled	Method Blank				
	Total July 2001	Total/Dissolved October 2001	Total January 2002	Total March 2002	Total January 2003
Compound (ug/L):					
1,3,5-Trinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
1,3-Dinitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4,6-Trinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,4-Dinitrotoluene**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2,6-Dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Amino-4,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
2-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
3-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Amino-2,6-dinitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
4-Nitrotoluene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
HMX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitrobenzene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Nitroglycerin**	5 U	5 U	5 U	5 U	5 U
PETN	10 U	10 U	10 U	10 U	10 U
Picric acid	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
RDX	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Tetryl	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Perchlorate ion**	5 U	5 U	5 U	5 U	5 U
Nitroguanidine	20 U	20 U	20 U	20 U	20 U

Table D-1
EXPLOSIVE COMPOUNDS AND PROPELLANTS IN GROUNDWATER
LANDFILL 4-DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Notes:
Detected compounds/analytes are **bold**. Detected compounds/analytes above screening criteria are **bold and underlined.**
Data review qualifiers are *italicized.*

** : Laboratory reporting limit exceeds the screening concentration for one or more screening criteria.
D : The concentration of this analyte is taken from the analysis of a diluted sample.
MW : Monitoring Well
NA: Not analyzed
Tetryl: trinitrophenylmethylnitramine
U : Compounds/analytes not detected above the level of the associated value.
ug/L : micrograms per liter

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-1A			
Sample ID	GW01MW01A	GW02MW01A	GW03MW01A	GW04MW01A
Date Sampled	7/24/2001	10/23/2001	1/21/2002	4/23/2002
Compound (ug/L)				
1,1,1,2-Tetrachloroethane**	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane**	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane**	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2,-trifluoroethane	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene**	1 U	1 U	1 U	1 U
1,1-Dichloropropene	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane**	3 U	3 U	3 U	3 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane**	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)**	1 U	1 U	1 U	1 U
1,2-Dichloropropane**	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U
2-Butanone (methyl ethyl ketone)	5 U	5 U	5 U	5 U
2-Chlorotoluene	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U
4-Chlorotoluene	1 U	1 U	1 U	1 U
4-Isopropyltoluene (p-cumene)	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U
Acetone	5 U	5 U	**3.9** J	5 U
Benzene**	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U
Bromodichloromethane**	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U
Bromomethane**	1 U	1 U	1 U	1 U
Carbon disulfide	1 U	1 U	1 U	1 U
Carbon tetrachloride**	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U
Chloroethane (ethyl chloride)	1 U	1 U	1 U	1 U
Chloroform**	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	1 U	1 U	1 U	1 U
Dibromochloromethane**	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Dibromomethane (methylene bromide)	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U
Ethylene dibromide (1,2-dibromoethane)**	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	5 U	5 U	5 U	5 U
Isopropylbenzene (cumene)	1 U	1 U	1 U	1 U
m,p-Xylene	1 U	1 U	1 U	1 U
Methyl Iodide (iodomethane)	1 U	1 U	1 U	1 U
Methylene chloride	2 U	2 U	2 U	2 U
Naphthalene	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U
n-Propylbenzene**	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U
Tetrachloroethene**	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Vinyl chloride**	1 U	1 U	1 U	1 U

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-1B			
Sample ID	GW01MW01B	GW02MW01B	GW03MW01B	GW04MW01B
Date Sampled	7/24/2001	10/24/2001	1/22/2002	4/23/2002
Compound (ug/L)				
1,1,1,2-Tetrachloroethane**	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane**	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane**	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2,-trifluoroethane	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene**	1 U	1 U	1 U	1 U
1,1-Dichloropropene	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane**	3 U	3 U	3 U	3 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane**	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)**	1 U	1 U	1 U	1 U
1,2-Dichloropropane**	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U
2-Butanone (methyl ethyl ketone)	5 U	5 U	5 U	5 U
2-Chlorotoluene	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U
4-Chlorotoluene	1 U	1 U	1 U	1 U
4-Isopropyltoluene (p-cumene)	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U
Acetone	8.5 B	5 U	5 U	5 U
Benzene**	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U
Bromodichloromethane**	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U
Bromomethane**	1 U	1 U	1 U	1 U
Carbon disulfide	1 U	1 U	1 U	1 U
Carbon tetrachloride**	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U
Chloroethane (ethyl chloride)	1 U	1 U	1 U	1 U
Chloroform**	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	1 U	1 U	1 U	1 U
Dibromochloromethane**	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Dibromomethane (methylene bromide)	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U
Ethylene dibromide (1,2-dibromoethane)**	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	5 U	5 U	5 U	5 U
Isopropylbenzene (cumene)	1 U	1 U	1 U	1 U
m,p-Xylene	1 U	1 U	1 U	1 U
Methyl Iodide (iodomethane)	1 U	1 U	1 U	1 U
Methylene chloride	2 U	2 U	2 U	2 U
Naphthalene	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U
n-Propylbenzene**	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U
Tetrachloroethene**	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Vinyl chloride**	1 U	1 U	1 U	1 U

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-2A					
Sample ID	GW01MW02A	GW501MW02A	GW02MW02A	GW03MW02A	GW04MW02A	GW504MW02A
Date Sampled	7/24/2001	7/24/2001	10/24/2001	1/22/2002	4/24/2002	4/24/2002
Compound (ug/L)						
1,1,1,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2,-trifluoroethane	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene**	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane**	3 U	3 U	3 U	3 U	3 U	3 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane**	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)**	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane**	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (methyl ethyl ketone)	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U
4-Isopropyltoluene (p-cumene)	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	8.3 B	7.2 B	5 U	3.3 J	5 U	5 U
Benzene**	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane**	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane**	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride**	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane (ethyl chloride)	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform**	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane**	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane (methylene bromide)	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Ethylene dibromide (1,2-dibromoethane)**	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene (cumene)	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Iodide (iodomethane)	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	2 U	2 U	2 U	2 U	2 U	2 U
Naphthalene	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene**	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene**	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride**	1 U	1 U	1 U	1 U	1 U	1 U

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-2B						
Sample ID	GW01MW02B	GW02MW02B	GW502MW02B	GW03MW02B	GW503MW02B	GW04MW02B	GW05MW02B
Date Sampled	7/25/2001	10/24/2001	10/24/2001	1/23/2002	1/23/2002	4/24/2002	1/8/2003
Compound (ug/L)							
1,1,1,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	290 D	200 D	210 D	230 D	220 D	210 D	160
1,1,2,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2,-trifluoroethane	91	83	81	86	83	69	32
1,1-Dichloroethane	29	33	31	32	30	29	30
1,1-Dichloroethene**	36	34	35	35	33	28	23
1,1-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane**	3 U	3 U	3 U	3 U	3 U	3 U	3 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane**	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (methyl ethyl ketone)	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Isopropyltoluene (p-cumene)	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	11 B	5 U	5 U	5 U	5 U	5 U	5 U
Benzene**	0.7 J	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane (ethyl chloride)	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	120 J	120 J	120 J	100 J	100 J	100 J	39
Dibromomethane (methylene bromide)	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Ethylene dibromide (1,2-dibromoethane)**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene (cumene)	1 U	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Iodide (iodomethane)	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Naphthalene	5 U	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene**	1.1	1 U	0.8 J	1 U	1 U	0.8 J	0.6 J
Toluene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	0.5 J	1 U	1 U	1 U	1 U	1 U	9.8 UJ
Trichlorofluoromethane	0.8 J	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride**	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-3A			
Sample ID	GW01MW03A	GW02MW03A	GW03MW03A	GW04MW03A
Date Sampled	7/26/2001	10/25/2001	1/24/2002	4/25/2002
Compound (ug/L)				
1,1,1,2-Tetrachloroethane**	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane**	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane**	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2,-trifluoroethane	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene**	1 U	1 U	1 U	1 U
1,1-Dichloropropene	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane**	3 U	3 U	3 U	3 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane**	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)**	1 U	1 U	1 U	1 U
1,2-Dichloropropane**	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U
2-Butanone (methyl ethyl ketone)	5 U	5 U	5 U	5 U
2-Chlorotoluene	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U
4-Chlorotoluene	1 U	1 U	1 U	1 U
4-Isopropyltoluene (p-cumene)	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U
Acetone	7.1 B	5 U	5 U	5 U
Benzene**	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U
Bromodichloromethane**	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U
Bromomethane**	1 U	1 U	1 U	1 U
Carbon disulfide	1 U	1 U	1 U	1 U
Carbon tetrachloride**	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U
Chloroethane (ethyl chloride)	1 U	1 U	1 U	1 U
Chloroform**	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	1 U	1 U	1 U	1 U
Dibromochloromethane**	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Dibromomethane (methylene bromide)	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U
Ethylene dibromide (1,2-dibromoethane)**	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	5 U	5 U	5 U	5 U
Isopropylbenzene (cumene)	1 U	1 U	1 U	1 U
m,p-Xylene	1 U	1 U	1 U	1 U
Methyl Iodide (iodomethane)	1 U	1 U	1 U	1 U
Methylene chloride	2 U	2 U	2 U	2 U
Naphthalene	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U
n-Propylbenzene**	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U
Tetrachloroethene**	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Vinyl chloride**	1 U	1 U	1 U	1 U

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-3B			
Sample ID	GW01MW03B	GW02MW03B	GW03MW03B	GW04MW03B
Date Sampled	7/26/2001	10/26/2001	1/24/2002	4/25/2002
Compound (ug/L)				
1,1,1,2-Tetrachloroethane**	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane**	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane**	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2,-trifluoroethane	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene**	1 U	1 U	1 U	1 U
1,1-Dichloropropene	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane**	3 U	3 U	3 U	3 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane**	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)**	1 U	1 U	1 U	1 U
1,2-Dichloropropane**	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U
2-Butanone (methyl ethyl ketone)	5 U	5 U	5 U	5 U
2-Chlorotoluene	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U
4-Chlorotoluene	1 U	1 U	1 U	1 U
4-Isopropyltoluene (p-cumene)	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U
Acetone	13 B	5 U	5 U	5 U
Benzene**	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U
Bromodichloromethane**	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U
Bromomethane**	1 U	1 U	1 U	1 U
Carbon disulfide	1 U	1 U	1 U	1 U
Carbon tetrachloride**	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U
Chloroethane (ethyl chloride)	1 U	1 U	1 U	1 U
Chloroform**	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	1 U	1 U	1 U	1 U
Dibromochloromethane**	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Dibromomethane (methylene bromide)	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U
Ethylene dibromide (1,2-dibromoethane)**	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	5 U	5 U	5 U	5 U
Isopropylbenzene (cumene)	1 U	1 U	1 U	1 U
m,p-Xylene	1 U	1 U	1 U	1 U
Methyl Iodide (iodomethane)	1 U	1 U	1 U	1 U
Methylene chloride	2 U	2 U	2 U	2 U
Naphthalene	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U
n-Propylbenzene**	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U
Tetrachloroethene**	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Vinyl chloride**	1 U	1 U	1 U	1 U

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-4A			
Sample ID	GW01MW04A	GW02MW04A	GW03MW04A	GW04MW04A
Date Sampled	7/25/2001	10/26/2001	1/23/2002	4/25/2002
Compound (ug/L)				
1,1,1,2-Tetrachloroethane**	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane**	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane**	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2,-trifluoroethane	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U
1,1-Dichloroethene**	1 U	1 U	1 U	1 U
1,1-Dichloropropene	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane**	3 U	3 U	3 U	3 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane**	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)**	1 U	1 U	1 U	1 U
1,2-Dichloropropane**	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U
2-Butanone (methyl ethyl ketone)	5 U	5 U	5 U	5 U
2-Chlorotoluene	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U
4-Chlorotoluene	1 U	1 U	1 U	1 U
4-Isopropyltoluene (p-cumene)	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U
Acetone	5 U	5 U	5 U	5 U
Benzene**	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U
Bromodichloromethane**	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U
Bromomethane**	1 U	1 U	1 U	1 U
Carbon disulfide	1 U	1 U	1 U	1 U
Carbon tetrachloride**	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U
Chloroethane (ethyl chloride)	1 U	1 U	1 U	1 U
Chloroform**	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	1 U	1 U	1 U	1 U
Dibromochloromethane**	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U
Dibromomethane (methylene bromide)	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U
Ethylene dibromide (1,2-dibromoethane)**	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	5 U	5 U	5 U	5 U
Isopropylbenzene (cumene)	1 U	1 U	1 U	1 U
m,p-Xylene	1 U	1 U	1 U	1 U
Methyl Iodide (iodomethane)	1 U	1 U	1 U	1 U
Methylene chloride	2 U	2 U	2 U	2 U
Naphthalene	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U
n-Propylbenzene**	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U
Tetrachloroethene**	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U
Vinyl chloride**	1 U	1 U	1 U	1 U

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-5A				MW-7B	
Sample ID	GW01MW05A	GW02MW05A	GW03MW05A	GW04MW05A	GW05MW07B	GW505MW07B
Date Sampled	7/26/2001	10/26/2001	1/25/2002	4/25/2002	1/8/2003	1/8/2003
Compound (ug/L)						
1,1,1,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2,-trifluoroethane	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene**	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane**	3 U	3 U	3 U	3 U	3 U	3 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane**	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)**	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane**	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (methyl ethyl ketone)	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U
4-Isopropyltoluene (p-cumene)	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	5.8 B	5 U	5 U	5 U	5 U	5 U
Benzene**	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane**	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane**	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride**	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane (ethyl chloride)	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform**	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane**	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane (methylene bromide)	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Ethylene dibromide (1,2-dibromoethane)**	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene (cumene)	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Iodide (iodomethane)	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	2 U	2 U	2 U	2 U	2 U	2 U
Naphthalene	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene**	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene**	0.7 J	0.6 J	0.6 J	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride**	1 U	1 U	1 U	1 U	1 U	1 U

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well / Sample ID / Date Sampled	Trip Blank					
	7/27/2001	10/24, 10/26/01	1/25/2002	1/21, 1/23/02	4/24/2002	1/8/2003
Compound (ug/L)						
1,1,1,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2,-trifluoroethane	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene**	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane**	3 U	3 U	3 U	3 U	3 U	3 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane**	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)**	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane**	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (methyl ethyl ketone)	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U
4-Isopropyltoluene (p-cumene)	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	5 U	5 U	2.2 J	5 U	5 U	5 U
Benzene**	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane**	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane**	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride**	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane (ethyl chloride)	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform**	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane**	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane (methylene bromide)	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Ethylene dibromide (1,2-dibromoethane)**	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene (cumene)	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Iodide (iodomethane)	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	2 U	2 U	2 U	2 U	2 U	2 U
Naphthalene	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene**	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene**	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride**	1 U	1 U	1 U	1 U	1 U	1 U

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	Rinsate				
Sample ID	GW1001MW03B	GW1002MW05A	GW1003MW05A	GW1004MW03B	GW1005MW07B
Date Sampled	7/27/2001	10/26/2001	1/25/2002	4/25/2002	1/8/2003
Compound (ug/L)					
1,1,1,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane**	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2,-trifluoroethane	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene**	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane**	3 U	3 U	3 U	3 U	3 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane**	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)**	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane**	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U
2-Butanone (methyl ethyl ketone)	5 U	5 U	5 U	5 U	14
2-Chlorotoluene	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	1 U	1 U	1 U	1 U	1 U
4-Isopropyltoluene (p-cumene)	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U
Acetone	11 B	5 U	5 U	4.1 J	4 MJ
Benzene**	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane**	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U
Bromomethane**	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride**	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U
Chloroethane (ethyl chloride)	1 U	1 U	1 U	1 U	1 U
Chloroform**	1 U	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane**	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U
Dibromomethane (methylene bromide)	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U
Ethylene dibromide (1,2-dibromoethane)**	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene (cumene)	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	1 U	1 U	1 U	1 U	1 U
Methyl Iodide (iodomethane)	1 U	1 U	1 U	1 U	1 U
Methylene chloride	2 U	2 U	2 U	2 U	2 U
Naphthalene	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene**	1 U	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene**	1 U	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U
Vinyl chloride**	1 U	1 U	1 U	1 U	1 U

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	Method Blank					
Sample ID						
Date Sampled	August 4, 2001	August 6, 2001	October 2001	January 2002	April 2002	January 2003
Compound (ug/L)						
1,1,1,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,1-Trichloroethane	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2,2-Tetrachloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloroethane**	1 U	1 U	1 U	1 U	1 U	1 U
1,1,2-Trichloro-1,2,2,-trifluoroethane	2 U	2 U	2 U	2 U	2 U	2 U
1,1-Dichloroethane	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloroethene**	1 U	1 U	1 U	1 U	1 U	1 U
1,1-Dichloropropene	1 U	1 U	1 U	1 U	1 U	1 U
1,2,3-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
1,2,3-Trichloropropane**	3 U	3 U	3 U	3 U	3 U	3 U
1,2,4-Trichlorobenzene	5 U	5 U	5 U	5 U	5 U	5 U
1,2,4-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dibromo-3-chloropropane**	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloroethane (EDC)**	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichloropropane**	1 U	1 U	1 U	1 U	1 U	1 U
1,3,5-Trimethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
2,2-Dichloropropane	1 U	1 U	1 U	1 U	1 U	1 U
2-Butanone (methyl ethyl ketone)	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U
2-Hexanone	5 U	5 U	5 U	5 U	5 U	5 U
4-Chlorotoluene	1 U	1 U	1 U	1 U	1 U	1 U
4-Isopropyltoluene (p-cumene)	1 U	1 U	1 U	1 U	1 U	1 U
4-Methyl-2-pentanone (MIBK)	5 U	5 U	5 U	5 U	5 U	5 U
Acetone	3.2 J	5 U	5 U	5 U	5 U	5 U
Benzene**	1 U	1 U	1 U	1 U	1 U	1 U
Bromobenzene	1 U	1 U	1 U	1 U	1 U	1 U
Bromochloromethane	1 U	1 U	1 U	1 U	1 U	1 U
Bromodichloromethane**	1 U	1 U	1 U	1 U	1 U	1 U
Bromoform	1 U	1 U	1 U	1 U	1 U	1 U
Bromomethane**	1 U	1 U	1 U	1 U	1 U	1 U
Carbon disulfide	1 U	1 U	1 U	1 U	1 U	1 U
Carbon tetrachloride**	1 U	1 U	1 U	1 U	1 U	1 U
Chlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U
Chloroethane (ethyl chloride)	1 U	1 U	1 U	1 U	1 U	1 U
Chloroform**	1 U	1 U	1 U	1 U	1 U	1 U
Chloromethane	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
cis-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U	1 U
Dibromochloromethane**	1 U	1 U	1 U	1 U	1 U	1 U
Dichlorodifluoromethane	1 U	1 U	1 U	1 U	1 U	1 U
Dibromomethane (methylene bromide)	1 U	1 U	1 U	1 U	1 U	1 U
Ethylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Ethylene dibromide (1,2-dibromoethane)**	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	5 U	5 U	5 U	5 U	5 U	5 U
Isopropylbenzene (cumene)	1 U	1 U	1 U	1 U	1 U	1 U
m,p-Xylene	1 U	1 U	1 U	1 U	1 U	1 U
Methyl Iodide (iodomethane)	1 U	1 U	1 U	1 U	1 U	1 U
Methylene chloride	2 U	2 U	2 U	2 U	2 U	2 U
Naphthalene	5 U	5 U	5 U	5 U	5 U	5 U
n-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
n-Propylbenzene**	1 U	1 U	1 U	1 U	1 U	1 U
o-Xylene	1 U	1 U	1 U	1 U	1 U	1 U
sec-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Styrene	1 U	1 U	1 U	1 U	1 U	1 U
tert-Butylbenzene	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene**	1 U	1 U	1 U	1 U	1 U	1 U
Toluene	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,2-Dichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
trans-1,3-Dichloropropene**	1 U	1 U	1 U	1 U	1 U	1 U
Trichloroethene	1 U	1 U	1 U	1 U	1 U	1 U
Trichlorofluoromethane	1 U	1 U	1 U	1 U	1 U	1 U
Vinyl chloride**	1 U	1 U	1 U	1 U	1 U	1 U

Table D-2
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Notes:
Detected compounds/analytes are **bold**. Detected compounds/analytes above screening criteria are **bold and underlined.**
Data review qualifiers are *italicized.*

** : Laboratory reporting limit exceeds the screening concentration for one or more screening criteria.
B : This analyte was detected in the associated method blank.
D : The concentration of this analyte is taken from the analysis of a diluted sample.
J : The associated numerical value is an estimated quantity because it is less than the lowest calibration standard.
J : The associated numerical value is an estimated quantity because the quality control criteria were not met.
MW : Monitoring Well
U : Compounds/analytes not detected above the level of the associated value.
ug/L : micrograms per liter

Table D-3
SEMIVOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-1A				MW-1B			
Sample ID	GW01MW01A	GW02MW01A	GW03MW01A	GW04MW01A	GW01MW01B	GW02MW01B	GW03MW01B	GW04MW01B
Date Sampled	7/24/2001	10/23/2001	1/21/2002	4/23/2002	7/24/2001	10/24/2001	1/22/2002	4/23/2002
Compounds (ug/L)								
1,2,4-Trichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2'-Oxybis(1-Chloropropane) [2]**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-Trichlorophenol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
2,4-Dimethylphenol	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
2,4-Dinitrophenol**	10 U	25 U	10 U	10 U	10 U	25 U	10 U	10 U
2,4-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorophenol	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylphenol (o-cresol)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Nitroaniline**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3-Nitroaniline	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
4,6-Dinitro-2-methylphenol	10 U	15 U	10 U	10 U	10 U	15 U	10 U	10 U
4-Bromophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Chloro-3-methylphenol	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
4-Chloroaniline	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
4-Chlorophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methylphenol (p-cresol)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Nitroaniline	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acenaphthylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Anthracene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[a]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[a]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[b]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[g,h,i]perylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[k]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzoic Acid	10 U	50 U	10 U	10 U	10 U	50 U	10 U	10 U
Benzyl Alcohol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Chloroethoxy)methane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
bis(2-Chloroethyl)ether**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
bis(2-Ethylhexyl)phthalate	1 U	4 U	1 U	1 U	1 U	4 U	1 U	1 U
Butylbenzylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbazole	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chrysene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibenz[a,h]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibenzofuran	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Diethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dimethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-butylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-octylphthalate	1 U	2 U	1 U	1 U	1 U	2 U	1 U	1 U
Fluoranthene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Fluorene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Hexachlorocyclopentadiene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Indeno[1,2,3-cd]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isophorone	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Nitrobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
N-Nitroso-di-n-propylamine**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
n-Nitrosodiphenylamine [2]	1 U	1 U	3 U	2 U	1 U	1 U	3 U	2 U
Pentachlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Phenol	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Pyrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Table D-3
SEMIVOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-2A					
Sample ID	GW01MW02A	GW501MW02A	GW02MW02A	GW03MW02A	GW04MW02A	GW504MW02A
Date Sampled	7/24/2001	7/24/2001	10/24/2001	1/22/2002	4/24/2002	4/24/2002
Compounds (ug/L)						
1,2,4-Trichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
2,2'-Oxybis(1-Chloropropane) [2]**	1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-Trichlorophenol	5 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	3 U	3 U	3 U	3 U	3 U	3 U
2,4-Dimethylphenol	3 U	3 U	3 U	3 U	3 U	3 U
2,4-Dinitrophenol**	10 U	10 U	25 U	10 U	10 U	10 U
2,4-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorophenol	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylphenol (o-cresol)	1 U	1 U	1 U	1 U	1 U	1 U
2-Nitroaniline**	5 U	5 U	5 U	5 U	5 U	5 U
2-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine**	5 U	5 U	5 U	5 U	5 U	5 U
3-Nitroaniline	6 U	6 U	6 U	6 U	6 U	6 U
4,6-Dinitro-2-methylphenol	10 U	10 U	15 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U
4-Chloro-3-methylphenol	2 U	2 U	2 U	2 U	2 U	2 U
4-Chloroaniline	3 U	3 U	3 U	3 U	3 U	3 U
4-Chlorophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U
4-Methylphenol (p-cresol)	1 U	1 U	1 U	1 U	1 U	1 U
4-Nitroaniline	5 U	5 U	5 U	5 U	5 U	5 U
4-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthene	1 U	1 U	1 U	1 U	1 U	1 U
Acenaphthylene	1 U	1 U	1 U	1 U	1 U	1 U
Anthracene	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[a]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[a]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[b]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[g,h,i]perylene	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[k]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U
Benzoic Acid	10 U	10 U	50 U	10 U	10 U	10 U
Benzyl Alcohol	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Chloroethoxy)methane	1 U	1 U	1 U	1 U	1 U	1 U
bis(2-Chloroethyl)ether**	2 U	2 U	2 U	2 U	2 U	2 U
bis(2-Ethylhexyl)phthalate	1 U	1 U	4 U	1 U	1 U	1 U
Butylbenzylphthalate	1 U	1 U	1 U	1 U	1 U	1 U
Carbazole	1 U	1 U	1 U	1 U	1 U	1 U
Chrysene**	1 U	1 U	1 U	1 U	1 U	1 U
Dibenz[a,h]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U
Dibenzofuran	1 U	1 U	1 U	1 U	1 U	1 U
Diethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U
Dimethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-butylphthalate	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-octylphthalate	1 U	1 U	2 U	1 U	1 U	1 U
Fluoranthene	1 U	1 U	1 U	1 U	1 U	1 U
Fluorene	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	2 U	2 U	2 U	2 U	2 U	2 U
Hexachlorocyclopentadiene	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane**	2 U	2 U	2 U	2 U	2 U	2 U
Indeno[1,2,3-cd]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U
Isophorone	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene**	1 U	1 U	1 U	1 U	1 U	1 U
Nitrobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
N-Nitroso-di-n-propylamine**	2 U	2 U	2 U	2 U	2 U	2 U
n-Nitrosodiphenylamine [2]	1 U	1 U	1 U	3 U	2 U	2 U
Pentachlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	1 U	1 U	1 U	1 U	1 U	1 U
Phenol	2 U	2 U	2 U	2 U	2 U	2 U
Pyrene	1 U	1 U	1 U	1 U	1 U	1 U

Table D-3
SEMIVOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-2B					
Sample ID	GW01MW02B	GW02MW02B	GW502MW02B	GW03MW02B	GW503MW02B	GW04MW02B
Date Sampled	7/25/2001	10/24/2001	10/24/2001	1/23/2002	1/23/2002	4/24/2002
Compounds (ug/L)						
1,2,4-Trichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
2,2'-Oxybis(1-Chloropropane) [2]**	1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-Trichlorophenol	5 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	3 U	3 U	3 U	3 U	3 U	3 U
2,4-Dimethylphenol	3 U	3 U	3 U	3 U	3 U	3 U
2,4-Dinitrophenol**	10 U	25 U	25 U	10 U	10 U	10 U
2,4-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorophenol	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylphenol (o-cresol)	1 U	1 U	1 U	1 U	1 U	1 U
2-Nitroaniline**	5 U	5 U	5 U	5 U	5 U	5 U
2-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine**	5 U	5 U	5 U	5 U	5 U	5 U
3-Nitroaniline	6 U	6 U	6 U	6 U	6 U	6 U
4,6-Dinitro-2-methylphenol	10 U	15 U	15 U	10 U	10 U	10 U
4-Bromophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U
4-Chloro-3-methylphenol	2 U	2 U	2 U	2 U	2 U	2 U
4-Chloroaniline	3 U	3 U	3 U	3 U	3 U	3 U
4-Chlorophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U
4-Methylphenol (p-cresol)	1 U	1 U	1 U	1 U	1 U	1 U
4-Nitroaniline	5 U	5 U	5 U	5 U	5 U	5 U
4-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthene	1 U	1 U	1 U	1 U	1 U	1 U
Acenaphthylene	1 U	1 U	1 U	1 U	1 U	1 U
Anthracene	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[a]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[a]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[b]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[g,h,i]perylene	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[k]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U
Benzoic Acid	10 U	50 U	50 U	10 U	10 U	10 U
Benzyl Alcohol	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Chloroethoxy)methane	1 U	1 U	1 U	1 U	1 U	1 U
bis(2-Chloroethyl)ether**	2 U	2 U	2 U	2 U	2 U	2 U
bis(2-Ethylhexyl)phthalate	1 U	4 U	4 U	1 U	1 U	1 U
Butylbenzylphthalate	1 U	1 U	1 U	1 U	1 U	1 U
Carbazole	1 U	1 U	1 U	1 U	1 U	1 U
Chrysene**	1 U	1 U	1 U	1 U	1 U	1 U
Dibenz[a,h]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U
Dibenzofuran	1 U	1 U	1 U	1 U	1 U	1 U
Diethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U
Dimethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-butylphthalate	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-octylphthalate	1 U	2 U	2 U	1 U	1 U	1 U
Fluoranthene	1 U	1 U	1 U	1 U	1 U	1 U
Fluorene	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	2 U	2 U	2 U	2 U	2 U	2 U
Hexachlorocyclopentadiene	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane**	2 U	2 U	2 U	2 U	2 U	2 U
Indeno[1,2,3-cd]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U
Isophorone	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene**	1 U	1 U	1 U	1 U	1 U	1 U
Nitrobenzene**	1 U	1 U	1 U	1 U	1 U	1 U
N-Nitroso-di-n-propylamine**	2 U	2 U	2 U	2 U	2 U	2 U
n-Nitrosodiphenylamine [2]	1 U	1 U	1 U	3 U	3 U	2 U
Pentachlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	1 U	1 U	1 U	1 U	1 U	1 U
Phenol	2 U	2 U	2 U	2 U	2 U	2 U
Pyrene	1 U	1 U	1 U	1 U	1 U	1 U

Table D-3
SEMIVOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-3A				MW-3B			
Sample ID	GW01MW03A	GW02MW03A	GW03MW03A	GW04MW03A	GW01MW03B	GW02MW03B	GW03MW03B	GW04MW03
Date Sampled	7/26/2001	10/25/2001	1/24/2002	4/25/2002	7/26/2001	10/26/2001	1/24/2002	4/25/2002
Compounds (ug/L)								
1,2,4-Trichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2'-Oxybis(1-Chloropropane) [2]**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-Trichlorophenol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
2,4-Dimethylphenol	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
2,4-Dinitrophenol**	10 U	25 U	10 U	10 U	10 U	25 U	10 U	10 U
2,4-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorophenol	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylphenol (o-cresol)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Nitroaniline**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3-Nitroaniline	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
4,6-Dinitro-2-methylphenol	10 U	15 U	10 U	10 U	10 U	15 U	10 U	10 U
4-Bromophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Chloro-3-methylphenol	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
4-Chloroaniline	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
4-Chlorophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methylphenol (p-cresol)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Nitroaniline	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acenaphthylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Anthracene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[a]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[a]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[b]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[g,h,i]perylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[k]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzoic Acid	10 U	50 U	10 U	10 U	10 U	50 U	10 U	10 U
Benzyl Alcohol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Chloroethoxy)methane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
bis(2-Chloroethyl)ether**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
bis(2-Ethylhexyl)phthalate	1 U	4 U	1 U	1 U	1 U	4 U	1 U	1 U
Butylbenzylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbazole	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chrysene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibenz[a,h]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibenzofuran	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Diethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dimethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-butylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-octylphthalate	1 U	2 U	1 U	1 U	1 U	2 U	1 U	1 U
Fluoranthene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Fluorene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Hexachlorocyclopentadiene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Indeno[1,2,3-cd]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isophorone	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Nitrobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
N-Nitroso-di-n-propylamine**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
n-Nitrosodiphenylamine [2]	1 U	1 U	3 U	2 U	1 U	1 U	3 U	2 U
Pentachlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Phenol	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Pyrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Table D-3
SEMIVOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-4A				MW-5A			
Sample ID	GW01MW04A	GW02MW04A	GW03MW04A	GW02MW04A	GW01MW05A	GW02MW05A	GW03MW05A	GW04MW05A
Date Sampled	7/25/2001	10/26/2001	1/23/2002	4/25/2002	7/26/2001	10/26/2001	1/25/2002	4/25/2002
Compounds (ug/L)								
1,2,4-Trichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,2'-Oxybis(1-Chloropropane) [2]**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2,4,5-Trichlorophenol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
2,4-Dimethylphenol	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
2,4-Dinitrophenol**	10 U	25 U	10 U	10 U	10 U	25 U	10 U	10 U
2,4-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Chlorophenol	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Methylphenol (o-cresol)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
2-Nitroaniline**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
3-Nitroaniline	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
4,6-Dinitro-2-methylphenol	10 U	15 U	10 U	10 U	10 U	15 U	10 U	10 U
4-Bromophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Chloro-3-methylphenol	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
4-Chloroaniline	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
4-Chlorophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Methylphenol (p-cresol)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
4-Nitroaniline	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Acenaphthene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Acenaphthylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Anthracene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[a]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[a]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[b]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[g,h,i]perylene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzo[k]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Benzoic Acid	10 U	50 U	10 U	10 U	10 U	50 U	10 U	10 U
Benzyl Alcohol	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
bis(2-Chloroethoxy)methane	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
bis(2-Chloroethyl)ether**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
bis(2-Ethylhexyl)phthalate	1 U	4 U	1 U	1 U	1 U	4 U	1 U	1 U
Butylbenzylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Carbazole	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chrysene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibenz[a,h]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dibenzofuran	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Diethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Dimethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-butylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Di-n-octylphthalate	1 U	2 U	1 U	1 U	1 U	2 U	1 U	1 U
Fluoranthene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Fluorene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Hexachlorocyclopentadiene	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Hexachloroethane**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Indeno[1,2,3-cd]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Isophorone	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Naphthalene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Nitrobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
N-Nitroso-di-n-propylamine**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
n-Nitrosodiphenylamine [2]	1 U	1 U	3 U	2 U	1 U	1 U	3 U	2 U
Pentachlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Phenanthrene	1 U	1 U	1 U	1 U	1 U	1 U	3 U	1 U
Phenol	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Pyrene	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U

Table D-3
SEMIVOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-7B		Rinsate				
Sample ID	GW05MW07B	GW505MW07B	GW1001MW03B	GW1002MW05A	GW1003MW05A	GW1004MW03B	GW1005MW07B
Date Sampled	1/8/2003	1/8/2003	7/27/2001	10/26/2001	1/25/2002	4/25/2002	1/8/2003
Compounds (ug/L)							
1,2,4-Trichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
2,2'-Oxybis(1-Chloropropane) [2]**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
2,4,5-Trichlorophenol	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
2,4,6-Trichlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
2,4-Dichlorophenol	3 U	3 U	3 U	3 U	3 U	3 U	3.3 U
2,4-Dimethylphenol	3 U	3 U	3 U	3 U	3 U	3 U	3.3 U
2,4-Dinitrophenol**	25 U	25 U	10 U	25 U	10 U	10 U	28 U
2,4-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
2,6-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
2-Chloronaphthalene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
2-Chlorophenol	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
2-Methylnaphthalene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
2-Methylphenol (o-cresol)	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
2-Nitroaniline**	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
2-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
3,3'-Dichlorobenzidine**	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
3-Nitroaniline	6 U	6 U	6 U	6 U	6 U	6 U	6.7 U
4,6-Dinitro-2-methylphenol	15 U	15 U	10 U	15 U	10 U	10 U	17 U
4-Bromophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
4-Chloro-3-methylphenol	2 U	2 U	2 U	2 U	2 U	2 U	2.2 U
4-Chloroaniline	3 U	3 U	3 U	3 U	3 U	3 U	3.3 U
4-Chlorophenyl-phenylether	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
4-Methylphenol (p-cresol)	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
4-Nitroaniline	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
4-Nitrophenol	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
Acenaphthene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Acenaphthylene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Anthracene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Benzo[a]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Benzo[a]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Benzo[b]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Benzo[g,h,i]perylene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Benzo[k]fluoranthene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Benzoic Acid	50 U	50 U	10 U	50 U	10 U	10 U	56 U
Benzyl Alcohol	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
bis(2-Chloroethoxy)methane	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
bis(2-Chloroethyl)ether**	2 U	2 U	2 U	2 U	2 U	2 U	2.2 U
bis(2-Ethylhexyl)phthalate	1 U	1 U	1 U	4 U	1 U	1 U	1.1 U
Butylbenzylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Carbazole	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Chrysene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Dibenz[a,h]anthracene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Dibenzofuran	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Diethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Dimethylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Di-n-butylphthalate	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Di-n-octylphthalate	1 U	1 U	1 U	2 U	1 U	1 U	1.1 U
Fluoranthene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Fluorene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Hexachlorobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Hexachlorobutadiene**	2 U	2 U	2 U	2 U	2 U	2 U	2.2 U
Hexachlorocyclopentadiene	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
Hexachloroethane**	2 U	2 U	2 U	2 U	2 U	2 U	2.2 U
Indeno[1,2,3-cd]pyrene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Isophorone	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Naphthalene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Nitrobenzene**	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
N-Nitroso-di-n-propylamine**	2 U	2 U	2 U	2 U	2 U	2 U	2.2 U
n-Nitrosodiphenylamine [2]	2 U	2 U	1 U	1 U	3 U	2 U	2.2 U
Pentachlorophenol**	5 U	5 U	5 U	5 U	5 U	5 U	5.6 U
Phenanthrene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U
Phenol	2 U	2 U	2 U	2 U	2 U	2 U	2.2 U
Pyrene	1 U	1 U	1 U	1 U	1 U	1 U	1.1 U

Table D-3
SEMIVOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	Method Blank				
Sample ID					
Date Sampled	July 2001	October 2001	January 2002	March 2002	January 2003
Compounds (ug/L)					
1,2,4-Trichlorobenzene	1 U	1 U	1 U	1 U	1 U
1,2-Dichlorobenzene	1 U	1 U	1 U	1 U	1 U
1,3-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U
1,4-Dichlorobenzene**	1 U	1 U	1 U	1 U	1 U
2,2'-Oxybis(1-Chloropropane) [2]**	1 U	1 U	1 U	1 U	1 U
2,4,5-Trichlorophenol	5 U	5 U	5 U	5 U	5 U
2,4,6-Trichlorophenol**	5 U	5 U	5 U	5 U	5 U
2,4-Dichlorophenol	3 U	3 U	3 U	3 U	3 U
2,4-Dimethylphenol	3 U	3 U	3 U	3 U	3 U
2,4-Dinitrophenol**	10 U	25 U	10 U	10 U	25 U
2,4-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U
2,6-Dinitrotoluene**	5 U	5 U	5 U	5 U	5 U
2-Chloronaphthalene	1 U	1 U	1 U	1 U	1 U
2-Chlorophenol	1 U	1 U	1 U	1 U	1 U
2-Methylnaphthalene	1 U	1 U	1 U	1 U	1 U
2-Methylphenol (o-cresol)	1 U	1 U	1 U	1 U	1 U
2-Nitroaniline**	5 U	5 U	5 U	5 U	5 U
2-Nitrophenol	5 U	5 U	5 U	5 U	5 U
3,3'-Dichlorobenzidine**	5 U	5 U	5 U	5 U	5 U
3-Nitroaniline	6 U	6 U	6 U	6 U	6 U
4,6-Dinitro-2-methylphenol	10 U	15 U	10 U	10 U	15 U
4-Bromophenyl-phenylether	1 U	1 U	1 U	1 U	1 U
4-Chloro-3-methylphenol	2 U	2 U	2 U	2 U	2 U
4-Chloroaniline	3 U	3 U	3 U	3 U	3 U
4-Chlorophenyl-phenylether	1 U	1 U	1 U	1 U	1 U
4-Methylphenol (p-cresol)	1 U	1 U	1 U	1 U	1 U
4-Nitroaniline	5 U	5 U	5 U	5 U	5 U
4-Nitrophenol	5 U	5 U	5 U	5 U	5 U
Acenaphthene	1 U	1 U	1 U	1 U	1 U
Acenaphthylene	1 U	1 U	1 U	1 U	1 U
Anthracene	1 U	1 U	1 U	1 U	1 U
Benzo[a]anthracene**	1 U	1 U	1 U	1 U	1 U
Benzo[a]pyrene**	1 U	1 U	1 U	1 U	1 U
Benzo[b]fluoranthene**	1 U	1 U	1 U	1 U	1 U
Benzo[g,h,i]perylene	1 U	1 U	1 U	1 U	1 U
Benzo[k]fluoranthene**	1 U	1 U	1 U	1 U	1 U
Benzoic Acid	10 U	50 U	10 U	10 U	50 U
Benzyl Alcohol	5 U	5 U	5 U	5 U	5 U
bis(2-Chloroethoxy)methane	1 U	1 U	1 U	1 U	1 U
bis(2-Chloroethyl)ether**	2 U	2 U	2 U	2 U	2 U
bis(2-Ethylhexyl)phthalate	1 U	4 U	1 U	1 U	1 U
Butylbenzylphthalate	1 U	1 U	1 U	1 U	1 U
Carbazole	1 U	1 U	1 U	1 U	1 U
Chrysene**	1 U	1 U	1 U	1 U	1 U
Dibenz[a,h]anthracene**	1 U	1 U	1 U	1 U	1 U
Dibenzofuran	1 U	1 U	1 U	1 U	1 U
Diethylphthalate	1 U	1 U	1 U	1 U	1 U
Dimethylphthalate	1 U	1 U	1 U	1 U	1 U
Di-n-butylphthalate	1 U	1 U	1 U	1 U	1 U
Di-n-octylphthalate	1 U	2 U	1 U	1 U	1 U
Fluoranthene	1 U	1 U	1 U	1 U	1 U
Fluorene	1 U	1 U	1 U	1 U	1 U
Hexachlorobenzene**	1 U	1 U	1 U	1 U	1 U
Hexachlorobutadiene**	2 U	2 U	2 U	2 U	2 U
Hexachlorocyclopentadiene	5 U	5 U	5 U	5 U	5 U
Hexachloroethane**	2 U	2 U	2 U	2 U	2 U
Indeno[1,2,3-cd]pyrene**	1 U	1 U	1 U	1 U	1 U
Isophorone	1 U	1 U	1 U	1 U	1 U
Naphthalene**	1 U	1 U	1 U	1 U	1 U
Nitrobenzene**	1 U	1 U	1 U	1 U	1 U
N-Nitroso-di-n-propylamine**	2 U	2 U	2 U	2 U	2 U
n-Nitrosodiphenylamine [2]	1 U	1 U	3 U	2 U	2 U
Pentachlorophenol**	5 U	5 U	5 U	5 U	5 U
Phenanthrene	1 U	1 U	1 U	1 U	1 U
Phenol	2 U	2 U	2 U	2 U	2 U
Pyrene	1 U	1 U	1 U	1 U	1 U

Table D-3
SEMIVOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Notes:
** : Laboratory reporting limit exceeds the screening concentration for one or more screening criteria.
1: bis(2-Choroisopropyl)ether = 2,2'-Oxybis(1-chloropropane).
2: n-Nitrosodiphenylamine can not be analytically distinguished from diphenylamine. The combined compound concentrations are reported as n-nitrosodiphenylamine.

MW : Monitoring Well
U : Compounds/analytes not detected above the level of the associated value.
ug/L : micrograms per liter

Table D-4
HERBICIDES IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-1A				MW-1B			
Sample ID	GW01MW01A	GW02MW01A	GW03MW01A	GW04MW01A	GW01MW01B	GW02MW01B	GW03MW01B	GW04MW01B
Date Sampled	7/24/2001	10/23/2001	1/21/2002	4/23/2002	7/24/2001	10/24/2001	1/22/2002	4/23/2002
Compound (ug/L)								
2,4,5-TP (Silvex)	0.28 U	0.056 U	0.06 U	0.06 U	0.28 U	0.056 U	0.056 U	0.056 U
2,4,5-T	0.6 U	0.12 U	0.13 U	0.13 U	0.6 U	0.12 U	0.12 U	0.12 U
Dinoseb	0.5 U	0.1 U	0.11 U	0.11 U	0.5 U	0.1 U	0.1 U	0.1 U
Dicamba	0.7 U	0.14 U	0.15 U	0.15 U	0.7 U	0.14 U	0.14 U	0.14 U
2,4-D	1.5 U	0.3 U	0.32 U	0.32 U	1.5 U	0.3 U	0.3 U	0.3 U
2,4-DB	10 U	2 U	2.1 U	2.1 U	10 U	2 U	2 U	2 U
Dalapon	2 U	0.4 U	0.43 U	0.43 U	2 U	0.4 U	0.4 U	0.4 U
MCPA**	1,200 U	50 U	53 U	53 U	1,200 U	50 U	50 U	50 U
Dichloroprop	3.1 U	0.62 U	0.66 U	0.66 U	3.1 U	0.62 U	0.62 U	0.62 U
MCPP**	1,200 U	50 U	53 U	53 U	1,200 U	50 U	50 U	50 U

Table D-4
HERBICIDES IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-2A					
Sample ID	GW01MW02A	GW501MW02A	GW02MW02A	GW03MW02A	GW04MW02A	GW504MW02A
Date Sampled	7/24/2001	7/24/2001	10/24/2001	1/22/2002	4/24/2002	4/24/2002
Compound (ug/L)						
2,4,5-TP (Silvex)	0.28 U	0.28 U	0.056 U	0.058 U	0.058 U	0.058 U
2,4,5-T	0.6 U	0.6 U	0.12 U	0.12 U	0.12 U	0.12 U
Dinoseb	0.5 U	0.5 U	0.1 U	0.1 U	0.1 U	0.1 U
Dicamba	0.7 U	0.7 U	0.14 U	0.14 U	0.14 U	0.14 U
2,4-D	1.5 U	1.5 U	0.3 U	0.31 U	0.31 U	0.31 U
2,4-DB	10 U	10 U	2 U	2.1 U	2.1 U	2.1 U
Dalapon	2 U	2 U	0.4 U	0.41 U	0.41 U	0.41 U
MCPA**	1,200 U	1,200 U	50 U	52 U	52 U	52 U
Dichloroprop	3.1 U	3.1 U	0.62 U	0.64 U	0.64 U	0.64 U
MCPP**	1,200 U	1,200 U	50 U	52 U	52 U	52 U

Table D-4
HERBICIDES IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-2B					
Sample ID	GW01MW02B	GW02MW02B	GW502MW02B	GW03MW02B	GW503MW02B	GW04MW02B
Date Sampled	7/25/2001	10/24/2001	10/24/2001	1/23/2002	1/23/2002	4/24/2002
Compound (ug/L)						
2,4,5-TP (Silvex)	0.28 U	0.056 U	0.056 U	0.056 U	0.061 U	0.061 U
2,4,5-T	0.6 U	0.12 U	0.12 U	0.12 U	0.13 U	0.13 U
Dinoseb	0.5 U	0.1 U	0.1 U	0.1 U	0.11 U	0.11 U
Dicamba	0.7 U	0.14 U	0.14 U	0.14 U	0.15 U	0.15 U
2,4-D	1.5 U	0.3 U	0.3 U	0.3 U	0.33 U	0.33 U
2,4-DB	10 U	2 U	2 U	2 U	2.2 U	2.2 U
Dalapon	2 U	0.4 U	0.4 U	0.4 U	0.43 U	0.43 U
MCPA**	1,200 U	50 U	50 U	50 U	54 U	54 U
Dichloroprop	3.1 U	0.62 U	0.62 U	0.62 U	0.67 U	0.67 U
MCPP**	1,200 U	50 U	50 U	50 U	54 U	54 U

Table D-4
HERBICIDES IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-3A				MW-3B			
Sample ID	GW01MW03A	GW02MW03A	GW03MW03A	GW04MW03A	GW01MW03B	GW02MW03B	GW03MW03B	GW04MW03B
Date Sampled	7/26/2001	10/25/2001	1/24/2002	4/25/2002	7/26/2001	10/26/2001	1/24/2002	4/25/2002
Compound (ug/L)								
2,4,5-TP (Silvex)	0.28 U	0.056 U	0.058 U	0.058 U	0.28 U	0.056 U	0.057 U	0.057 U
2,4,5-T	0.6 U	0.12 U	0.12 U	0.12 U	0.6 U	0.12 U	0.12 U	0.12 U
Dinoseb	0.5 U	0.1 U	0.1 U	0.1 U	0.5 U	0.1 U	0.1 U	0.1 U
Dicamba	0.7 U	0.14 U	0.14 U	0.14 U	0.7 U	0.14 U	0.14 U	0.14 U
2,4-D	1.5 U	0.3 U	0.31 U	0.31 U	1.5 U	0.3 U	0.31 U	0.31 U
2,4-DB	10 U	2 U	2.1 U	2.1 U	10 U	2 U	2 U	2 U
Dalapon	2 U	0.4 U	0.41 U	0.41 U	2 U	0.4 U	0.41 U	0.41 U
MCPA**	1,200 U	50 U	52 U	52 U	1,200 U	50 U	51 U	51 U
Dichloroprop	3.1 U	0.62 U	0.64 U	0.64 U	3.1 U	0.62 U	0.63 U	0.63 U
MCPP**	1,200 U	50 U	52 U	52 U	1,200 U	50 U	51 U	51 U

Table D-4
HERBICIDES IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-4A				MW-5A			
Sample ID	GW01MW04A	GW02MW04A	GW03MW04A	GW03MW04A	GW01MW05A	GW02MW05A	GW03MW05A	GW04MW05A
Date Sampled	7/25/2001	10/26/2001	1/23/2002	4/25/2002	7/26/2001	10/26/2001	1/25/2002	4/25/2002
Compound (ug/L)								
2,4,5-TP (Silvex)	0.28 U	0.056 U	0.061 U	0.058 U	0.28 U	0.056 U	0.06 U	0.058 U
2,4,5-T	0.6 U	0.12 U	0.13 U	0.12 U	0.6 U	0.12 U	0.13 U	0.12 U
Dinoseb	0.5 U	0.1 U	0.11 U	0.1 U	0.5 U	0.1 U	0.11 U	0.1 U
Dicamba	0.7 U	0.14 U	0.15 U	0.14 U	0.7 U	0.14 U	0.15 U	0.14 U
2,4-D	1.5 U	0.3 U	0.33 U	0.31 U	1.5 U	0.3 U	0.32 U	0.31 U
2,4-DB	10 U	2 U	2.2 U	2.1 U	10 U	2 U	2.2 U	2.1 U
Dalapon	2 U	0.4 U	0.43 U	0.41 U	2 U	0.4 U	0.43 U	0.41 U
MCPA**	1,200 U	50 U	54 U	52 U	1,200 U	50 U	54 U	52 U
Dichloroprop	3.1 U	0.62 U	0.67 U	0.64 U	3.1 U	0.62 U	0.67 U	0.64 U
MCPP**	1,200 U	50 U	54 U	52 U	1,200 U	50 U	54 U	52 U

Table D-4
HERBICIDES IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-07B		Rinsate			
Sample ID	GW05MW07B	GW501MW07B	GW1001MW03B	GW1002MW05A	GW1003MW05A	GW1004MW05A
Date Sampled	1/8/03	1/8/03	7/27/2001	10/26/2001	1/25/2002	4/25/2002
Compound (ug/L)						
2,4,5-TP (Silvex)	0.05 U	0.053 U	0.28 U	0.056 U	0.077 U	0.054 U
2,4,5-T	0.05 U	0.053 U	0.6 U	0.12 U	0.16 U	0.054 U
Dinoseb	0.07 Y	0.21 U	0.5 U	0.1 U	0.14 U	0.22 U
Dicamba	0.1 U	0.11 U	0.7 U	0.14 U	0.19 U	0.11 U
2,4-D	0.2 U	0.21 U	1.5 U	0.3 U	0.41 U	0.22 U
2,4-DB	1.0 U	1.1 U	10 U	2 U	2.7 U	1.1 U
Dalapon	0.4 U	0.42 U	2 U	0.4 U	0.55 U	0.43 U
MCPA**	100 U	110 U	1,200 U	50 U	68 U	110 U
Dichloroprop	0.2 U	0.21 U	3.1 U	0.62 U	0.85 U	0.22 U
MCPP**	100 U	110 U	1,200 U	50 U	68 U	110 U

Table D-4
HERBICIDES IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well / Sample ID / Date Sampled	Method Blank				
	July 2001	October 2001	January 2002	March 2002	January 2003
Compound (ug/L)					
2,4,5-TP (Silvex)	0.28 U	0.056 U	0.056 U	0.056 U	0.05 U
2,4,5-T	0.6 U	0.12 U	0.12 U	0.12 U	0.05 U
Dinoseb	0.5 U	0.1 U	0.1 U	0.1 U	0.2 U
Dicamba	0.7 U	0.14 U	0.14 U	0.14 U	0.1 U
2,4-D	1.5 U	0.3 U	0.3 U	0.3 U	0.2 U
2,4-DB	10 U	2 U	2 U	2 U	1.0 U
Dalapon	2 U	0.4 U	0.4 U	0.4 U	0.4 U
MCPA**	1,200 U	50 U	50 U	50 U	100 U
Dichloroprop	3.1 U	0.62 U	0.62 U	0.62 U	0.2 U
MCPP**	1,200 U	50 U	50 U	50 U	100 U

Notes:
2,4,5-TP : 2-(2,4,5-trichlorophenoxy)propionic acid
2,4,5-T : 2,4,5-trichlorophenoxyacetic acid
2,4-D : 2,4-dichlorophenoxyacetic acid
2,4-DB : 4-(2,4-dichlorophenoxy)butyric acid
MCPA : 2-methyl-4-chlorophenoxyacetic acid
MCPP : (2-methyl-4-chlorophenoxy)-2-propionic acid

** : Laboratory reporting limit exceeds the screening concentration for one or more screening criteria.
MW : Monitoring Well
U : Compounds/analytes not detected above the level of the associated value.
ug/L : micrograms per liter

Table D-5
METALS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-1A				MW-1B			
Sample ID	GW01MW01A	GW02MW01A	GW03MW01A	GW04MW01A	GW01MW01B	GW02MW01B	GW03MW01B	GW04MW01B
Date Sampled	7/24/2001	10/23/2001	1/21/2002	4/23/2002	7/24/2001	10/24/2001	1/22/2002	4/23/2002
Total Metals (ug/L)								
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.2 U	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	4	6	3 U	3 U	3 U	3 U	3 U	3 U
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	4,630	3,940	2,400	2,250	2,040	1,990	1,960	2,020
Chromium (total)	25 J	21	13	11	7 J	10	5 U	5 U
Copper	2 U	4	2 U	2 U	2 U	2 U	2 U	2 U
Iron	200	580	250	160	70	80	50 U	50 U
Lead**	1 U	1	1 U	1	1 U	1 U	1 U	1 U
Magnesium	1,780	1,650	990	920	1,090	1,100	1,090	1,090
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10	20	10 U	10 U	10 U	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	8,550	6,090	4,520	2,680	1,240	1,290	1,290	1,260
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	7 J	12	6 U	6 U	6 U	7	6 U	6 U
Dissolved Metals (ug/L)								
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	4	3	3 U	3 U	3 U	3 U	3 U	3 U
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	5,060	4,010	2,440	2,370	2,210	1,970	2,050	2,090
Chromium (total)	12	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Iron	110	50 U	50 U	50 U	40	50 U	50 U	50 U
Lead**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	1,910	1,620	1,000	980	1,150	1,140	1,150	1,130
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	40	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	9,010	6,440	4,680	2,910	1,310	1,340	1,400	1,320
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6 U
TPH-Gasoline (mg/L)								
Gasoline Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TPH-Diesel (mg/L)								
Diesel Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Motor Oil Range Hydrocarbons	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Water Quality Parameters (mg/L)								
Alkalinity (as $CaCO_3$)	15	13	10	8.3	11	12	11	10
Carbonate (mg/L $CaCO_3$)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bicarbonate (as $CaCO_3$)	15	13	10	8.3	11	12	11	10
Total Suspended Solids	2.6	4.2	3.6	2.3	1.1 U	1 U	1 U	1 U
Chloride	1.7	1.3	2.2	1.5	1.3	1.1	2.5	1.4
Total Cyanide	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Nitrate as N	0.1 U	0.1 U	0.029	0.056	0.1 U	0.1 U	0.01 U	0.071
Nitrite as N	0.1 U	0.1 U	0.01 U	0.01 U	0.1 U	0.1 U	0.01 U	0.01 U
Sulfate	19.5	13.2	8.3	6.9	0.5	0.4	2.5 U	2.5 U
Total Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Dissolved Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
pH	5.85	6.05	5.65	5.47	5.82	5.96	5.93	5.76

Table D-5
METALS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-2A					
Sample ID	GW01MW02A	GW501MW02A	GW02MW02A	GW03MW02A	GW04MW02A	GW504MW02A
Date Sampled	7/24/2001	7/24/2001	10/24/2001	1/22/2002	4/24/2002	4/24/2002
Total Metals (ug/L)						
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	4	3 U
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	1,470	1,220	980	1,400	1,270	1,250
Chromium (total)	10 J	6 J	41	26	23	19
Copper	2 U	2 U	3	2 U	3	2
Iron	180	50	700	280	1,000	320
Lead**	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	480	410	380	450	400	380
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10 U	10 U	30	20	10	10 U
Potassium	500 U	500 U	500 U	500 U	500 U	500 U
Selenium	0.6	0.5 U	0.5 U	0.6	0.6	0.5
Silver**	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	7,770	6,010	4,000	10,100	7,990	7,820
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	6 U	6 U	6 U	8	6 U	49
Dissolved Metals (ug/L)						
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	3 U	3 U
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	1,270	1,260	960	1,370	1,320	1,290
Chromium (total)	5 U	5 U	10	12	7	8
Copper	2 U	2 U	2 U	2 U	2 U	2 U
Iron	20 U	20 U	80	110	100	80
Lead**	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	410	420	360	460	400	390
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10 U	10 U	20	20	10	20
Potassium	500 U	500 U	500 U	500 U	500 U	500 U
Selenium	0.6	0.6	0.5 U	0.5 U	0.6	0.5
Silver**	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	5,710	6,000	3,910	10,200	8,240	7,830
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	6 U	6 U	6 U	6	6 U	6 U
TPH-Gasoline (mg/L)						
Gasoline Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TPH-Diesel (mg/L)						
Diesel Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U		
Motor Oil Range Hydrocarbons	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Water Quality Parameters (mg/L)						
Alkalinity (as $CaCO_3$)	3.1	4.9	3.7	4.3	2.3	1.9
Carbonate (mg/L $CaCO_3$)	1 U	1 U	1 U	1 U	1 U	1 U
Bicarbonate (as $CaCO_3$)	3.1	4.9	3.7	4.3	2.3	1.9
Total Suspended Solids	2.6	1 U	8.4	2.2	11	3.9
Chloride	2.3	1.8	1	2.7	1.8	1.7
Total Cyanide	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Nitrate as N	0.3	0.3	0.3	0.36	0.39	0.34
Nitrite as N	0.1 U	0.1 U	0.1 U	0.01 U	0.01 U	0.01 U
Sulfate	15.5	10.3	5.3	19	19	17
Total Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Dissolved Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
pH	5.25	5.27	5.65	5.66	5.21	5.23

Table D-5
METALS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-2B					
Sample ID	GW01MW02B	GW02MW02B	GW502MW02B	GW03MW02B	GW503MW02B	GW04MW02B
Date Sampled	7/25/2001	10/24/2001	10/24/2001	1/23/2002	1/23/2002	4/24/2002
Total Metals (ug/L)						
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	2.5	0.2 U	0.2 U	0.2 U	0.2 U	0.3
Barium	93	6	7	4	4	15
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	9,020	2,310	2,410	2,110	1,920	2,460
Chromium (total)	18 J	15	20	21	18	33
Copper	16	2 U	3	2 U	2 U	9
Iron	10,400	180	380	200	120	4,970
Lead**	12	1 U	1 U	1 U	1 U	1
Magnesium	6,410	1,100	1,160	1,050	940	1,850
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10 U	10	10	10	10	20
Potassium	4,230	770	820	500 U	500 U	1,000
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	13,000	3,830	4,470	3,000	2,780	2,250
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	41 J	8	7	6 U	6 U	18
Dissolved Metals (ug/L)						
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.2 U	0.2	0.2	0.2 U	0.2 U	0.2 U
Barium	8	6	6	4	4	3 U
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	1,460	2,350	2,310	2,110	2,080	1,920
Chromium (total)	5 U	5 U	5 U	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2 U	2 U	2 U
Iron	20 U	50 U	50 U	80	60	110
Lead**	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	540	1,090	1,100	1,040	1,040	900
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10 U	10 U	10 U	10	10	20
Potassium	2,670	800	810	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	11,500	3,740	3,680	3,070	3,030	2,340
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	6 U	6 U	6 U	7	6 U	6 U
TPH-Gasoline (mg/L)						
Gasoline Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TPH-Diesel (mg/L)						
Diesel Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Motor Oil Range Hydrocarbons	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Water Quality Parameters (mg/L)						
Alkalinity (as $CaCO_3$)	15	5.9	5.2	3.4	4.4	3.5
Carbonate (mg/L $CaCO_3$)	1 U	1 U	1 U	1 U	1 U	1 U
Bicarbonate (as $CaCO_3$)	15	5.9	5.2	3.4	4.4	3.5
Total Suspended Solids	970	4	7.5	3	1.2	89
Chloride	17.3	6.8	7.1	6	3.2	3.4
Total Cyanide	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Nitrate as N	0.5	0.7	0.7	0.82	0.84	0.82
Nitrite as N	0.1 U	0.1 U	0.1 U	0.01 U	0.01 U	0.01 U
Sulfate	16.9	2	2.6	3.1	2.6	2.5
Total Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Dissolved Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
pH	5.9	5.76	5.82	5.54	5.57	5.36

Table D-5
METALS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-3A				MW-3B			
Sample ID	GW01MW03A	GW02MW03A	GW03MW03A	GW04MW03A	GW01MW03B	GW02MW03B	GW03MW03B	GW04MW03B
Date Sampled	7/26/2001	10/25/2001	1/24/2002	4/25/2002	7/26/2001	10/26/2001	1/24/2002	4/25/2002
Total Metals (ug/L)								
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2	0.3	0.2 U
Barium	3 U	3 U	3 U	3 U	15	8	9	12
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	1,670	1,590	1,570	1,470	5,450	3,970	3,800	3,470
Chromium (total)	5 U	18	18	9	5 U	33	65	62
Copper	2 U	3	2 U	2 U	2 U	4	4	4
Iron	210	100	2,180	130	230	450	1,110	1,580
Lead**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1
Magnesium	670	720	740	650	1,990	1,790	1,810	1,640
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10 U	10	10	10 U	10 U	20	40	40
Potassium	500 U	500 U	500 U	500 U	9,350	3,090	2,100	1,700
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.6	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	1,530	1,450	1,480	1,250	26,500	10,400	8,320	5,700
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	7 J	6 U	6 U	6 U	9 J	10	6 U	16
Dissolved Metals (ug/L)								
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	15	7	7	5
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	1,800	1,550	1,610	1,650	6,400	4,190	4,160	3,570
Chromium (total)	5 U	8	5 U	5 U	5 U	5	7	7
Copper	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Iron	20 U	50	50 U	50 U	20 U	50	90	70
Lead**	1 U	3	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	700	710	760	740	2,250	1,820	1,930	1,580
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10 U	10	10 U	10 U	10 U	10 U	20	20
Potassium	500 U	500 U	500 U	500 U	10,600	3,270	2,210	1,500
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	1,700	1,430	1,570	1,420	28,200	11,100	9,010	6,740
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	6 U	6 U	6 U	6 U	6 U	6 U	6 U	6
TPH-Gasoline (mg/L)								
Gasoline Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TPH-Diesel (mg/L)								
Diesel Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Motor Oil Range Hydrocarbons	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Water Quality Parameters (mg/L)								
Alkalinity (as $CaCO_3$)	9.9	7.4	8.1	6.6	45	13	13	11
Carbonate (mg/L $CaCO_3$)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bicarbonate (as $CaCO_3$)	9.9	7.4	8.1	6.6	45	13	13	11
Total Suspended Solids	8.4	1 U	1.1	1.7	4.3	8.2	17	10
Chloride	1.4	1.2	1 U	1.3	26.5	12.1	9.5	8
Total Cyanide	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Nitrate as N	0.1	0.1	0.14	0.13	0.1 U	1.1	0.77	0.54
Nitrite as N	0.1 U	0.1 U	0.01 U	0.01 U	0.1 U	0.1 U	0.01 U	0.01 U
Sulfate	0.3	0.2	2.5 U	2.5 U	24.8	7.6	7.8	6.1
Total Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Dissolved Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
pH	5.62	5.8	5.83	5.52	6.31	5.93	5.94	5.56

Table D-5
METALS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-4A				MW-5A			
Sample ID	GW01MW04A	GW02MW04A	GW03MW04A	GW04MW04A	GW01MW05A	GW02MW05A	GW03MW05A	GW04MW05A
Date Sampled	7/25/2001	10/26/2001	1/23/2002	4/25/2002	7/26/2001	10/26/2001	1/25/2002	4/25/2002
Total Metals (ug/L)								
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.2	0.2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	10	8	5	11	3	4	3	4
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	2,700	1,940	1,630	1,740	3,170	2,700	2,210	2,260
Chromium (total)	18 J	34	47	23	11 J	27	29	16
Copper	7	9	4	9	2 U	12	2 U	2
Iron	2,730	2,350	1,440	3,430	320	400	160	380
Lead**	1 U	1 U	1 U	1	1 U	1 U	1 U	1 U
Magnesium	1,330	960	760	1,020	990	980	950	880
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10 U	20	30	10	10 U	20	20	10
Potassium	720	800	550	900	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	2,230	2,050	1,710	1,420	1,790	1,710	1,790	1,670
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	12 J	8	6 U	11	12 J	40	7	18
Dissolved Metals (ug/L)								
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	3 U	3 U	4	3 U
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	2,800	1,730	1,560	1,610	2,750	2,490	2,290	2,190
Chromium (total)	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Iron	20 U	50 U	60	50 U	20 U	50 U	50 U	50 U
Lead**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	920	610	590	570	1,000	960	970	940
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10 U	10 U	10	10 U	10 U	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	2,620	2,050	1,780	1,580	1,770	1,680	1,900	1,740
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	6 U	6 U	6 U	6 U	6 U	6 U	7	6 U
TPH-Gasoline (mg/L)								
Gasoline Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TPH-Diesel (mg/L)								
Diesel Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Motor Oil Range Hydrocarbons	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Water Quality Parameters (mg/L)								
Alkalinity (as $CaCO_3$)	9.7	9.1	8.3	7.1	13	11	11	9.3
Carbonate (mg/L $CaCO_3$)	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bicarbonate (as $CaCO_3$)	9.7	9.1	8.3	7.1	13	11	11	9.3
Total Suspended Solids	58	75	22	11	4.7	9.2	1.7	1.9
Chloride	1.2	1	0.1 U	1.3	1.5	1.3	1 U	1.4
Total Cyanide	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Nitrate as N	0.2	0.1 U	0.059	0.047	0.1	0.2	0.22	0.2
Nitrite as N	0.1 U	0.1 U	0.01 U	0.01 U	0.1 U	0.1 U	0.01 U	0.01 U
Sulfate	1.6	1.3	2.5 U	2.5 U	0.3	0.2	3.1	2.5 U
Total Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Dissolved Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
pH	5.88	6.06	5.98	5.96	5.89	6.11	5.79	5.56

Table D-5
METALS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	MW-07B		Rinsate				
Sample ID	GW05MW07B	GW505MW07B	GW1001MW03B	GW1002MW05A	GW1003MW05A	GW1004MW03B	GW1005MW07B
Date Sampled	1/8/2003	1/8/2003	7/27/2001	10/26/2001	1/25/2002	4/25/2002	1/8/2003
Total Metals (ug/L)							
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.3	0.4	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	7,270	7,510	50 U	50 U	60	50 U	50 U
Chromium (total)	9	7	5 U	5 U	5 U	7	5 U
Copper	2 U	2 U	2 U	2	2 U	2 U	2 U
Iron	110	90	20 U	50 U	70	200	50 U
Lead**	1 U	1 U	1 U	1 U	3	1 U	1 U
Magnesium	4,790	5,000	20 U	50 U	50 U	50 U	50 U
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Potassium	1,540	1,510	500 U	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	8,720	8,680	80	50 U	50 U	50 U	500 U
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	6 U	6 U	6 U	6 U	6 U	6 U	6 U
Dissolved Metals (ug/L)							
Antimony**	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.4	0.3	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Beryllium	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Calcium	7,210	6,730	50 U	50 U	50 U	50 U	50 U
Chromium (total)	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Iron	50 U	50 U	20 U	50 U	50 U	50 U	50 U
Lead**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Magnesium	4,780	4,420	20 U	50 U	50 U	50 U	50 U
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10	10 U	10 U	10 U	10 U	10 U	10 U
Potassium	1,470	1,420	500 U	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U	3 U	3 U
Sodium	8,980	8,210	50 U	50 U	130	50 U	500 U
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	6 U	6 U	6 U	6 U	6 U	6 U	6 U
TPH-Gasoline (mg/L)							
Gasoline Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TPH-Diesel (mg/L)							
Diesel Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Motor Oil Range Hydrocarbons	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Water Quality Parameters (mg/L)							
Alkalinity (as $CaCO_3$)	38	40	2.5	2.7	1 U	1 U	1 U
Carbonate (mg/L $CaCO_3$)	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Bicarbonate (as $CaCO_3$)	38	40	2.5	2.7	1 U	1 U	1 U
Total Suspended Solids	2.8	2.5 U	1 U	1 U	1 U	1.9	2.5 U
Chloride	15	14	1.5	0.1 U	1.3	1 U	1 U
Total Cyanide	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Nitrate as N	0.16	0.13	0.1	0.1 U	0.01 U	0.01 U	0.053
Nitrite as N	0.01 U	0.01 U	0.1 U	0.1 U	0.01 U	0.01 U	0.01 U
Sulfate	2.6	2.5 U	0.3	0.1 U	2.5 U	2.5 U	2.5 U
Total Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Dissolved Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
pH			--	6.47	5.53	5.55	

Table D-5
METALS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well	Method Blank				
Sample ID					
Date Sampled	July 2001	October 2001	January 2002	March 2002	January 2003
Total Metals (ug/L)					
Antimony**	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	3 U
Beryllium	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U
Calcium	50 U	50 U	50 U	50 U	50 U
Chromium (total)	5 U	5 U	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2	2 U
Iron	20 U	50 U	50 U	50 U	50 U
Lead**	1 U	1 U	1 U	1 U	1 U
Magnesium	20 U	50 U	50 U	50 U	50 U
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10 U	10 U	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U
Sodium	50 U	50 U	50 U	50 U	500 U
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	6 U	6 U	6 U	6 U	6 U
Dissolved Metals (ug/L)					
Antimony**	50 U	50 U	50 U	50 U	50 U
Arsenic**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Barium	3 U	3 U	3 U	3 U	3 U
Beryllium	1 U	1 U	1 U	1 U	1 U
Cadmium**	2 U	2 U	2 U	2 U	2 U
Calcium	50 U	50 U	50 U	50 U	50 U
Chromium (total)	5 U	5 U	5 U	5 U	5 U
Copper	2 U	2 U	2 U	2 U	2 U
Iron	20 U	50 U	50 U	50 U	50 U
Lead**	1 U	1 U	1 U	1 U	1 U
Magnesium	20 U	50 U	50 U	50 U	50 U
Mercury**	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	10 U	10 U	10 U	10 U	10 U
Potassium	500 U	500 U	500 U	500 U	500 U
Selenium	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Silver**	3 U	3 U	3 U	3 U	3 U
Sodium	50 U	50 U	50 U	50 U	500 U
Thallium**	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Zinc	6 U	6 U	6 U	6 U	6 U
TPH-Gasoline (mg/L)					
Gasoline Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
TPH-Diesel (mg/L)					
Diesel Range Hydrocarbons	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Motor Oil Range Hydrocarbons	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U
Water Quality Parameters (mg/L)					
Alkalinity (as $CaCO_3$)	1 U	1 U	1 U	1 U	1 U
Carbonate (mg/L $CaCO_3$)	1 U	1 U	1 U	1 U	1 U
Bicarbonate (as $CaCO_3$)	1 U	1 U	1 U	1 U	1 U
Total Suspended Solids	1 U	1 U	1 U	1 U	1 U
Chloride	0.1 U	0.1 U	1 U	1 U	1 U
Total Cyanide	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Nitrate as N	0.1 U	0.1 U	0.01 U	0.01 U	0.01 U
Nitrite as N	0.1 U	0.1 U	0.01 U	0.01 U	0.01 U
Sulfate	0.1 U	0.1 U	2.5 U	2.5 U	2.5 U
Total Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
Dissolved Organic Carbon	1.5 U	1.5 U	1.5 U	1.5 U	1.5 U
pH	NA	NA	NA	NA	NA

Table D-5
METALS IN GROUNDWATER
LANDFILL 4 - DEMOLITION AREA 1, CAMP BONNEVILLE, WASHINGTON

Well / Sample ID / Date Sampled	Trip Blank July 2001	October 2001	January 2002	April 2002	January 2003
Total Metals (ug/L)					
Antimony**	NA	NA	NA	NA	NA
Arsenic**	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA	NA
Cadmium**	NA	NA	NA	NA	NA
Calcium	NA	NA	NA	NA	NA
Chromium (total)	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA
Lead**	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA
Mercury**	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA
Silver**	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA
Thallium**	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA
Dissolved Metals (ug/L)					
Antimony**	NA	NA	NA	NA	NA
Arsenic**	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA	NA
Cadmium**	NA	NA	NA	NA	NA
Calcium	NA	NA	NA	NA	NA
Chromium (total)	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA
Iron	NA	NA	NA	NA	NA
Lead**	NA	NA	NA	NA	NA
Magnesium	NA	NA	NA	NA	NA
Mercury**	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA
Potassium	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA
Silver**	NA	NA	NA	NA	NA
Sodium	NA	NA	NA	NA	NA
Thallium**	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA
TPH-Gasoline (mg/L)					
Gasoline Range Hydrocarbons	0.25 U	NA	0.25 U	0.25 U	0.25 U
TPH-Diesel (mg/L)					
Diesel Range Hydrocarbons	NA	NA	NA	NA	NA
Motor Oil Range Hydrocarbons	NA	NA	NA	NA	NA
Water Quality Parameters (mg/L)					
Alkalinity (as $CaCO_3$)	NA	NA	NA	NA	NA
Carbonate (mg/L $CaCO_3$)	NA	NA	NA	NA	NA
Bicarbonate (as $CaCO_3$)	NA	NA	NA	NA	NA
Total Suspended Solids	NA	NA	NA	NA	NA
Chloride	NA	NA	NA	NA	NA
Total Cyanide	NA	NA	NA	NA	NA
Nitrate as N	NA	NA	NA	NA	NA
Nitrite as N	NA	NA	NA	NA	NA
Sulfate	NA	NA	NA	NA	NA
Total Organic Carbon	NA	NA	NA	NA	NA
Dissolved Organic Carbon	NA	NA	NA	NA	NA
pH	NA	NA	NA	NA	NA

Notes:
MW : Monitoring Well
U : Compounds/analytes not detected above the level of the associated value.
µg/L.l - microgram per liter
mg/L - milligram per liter
** - Laboratory reporting limit exceeds the screening concentration for one or more screening criteria.

Appendix E
Data Validation Reports

DATA VALIDATION REPORT

EXPLOSIVES, NITROGUANIDINE, and PERCHLORATE ANALYSES

Eleven groundwater samples and a rinsate blank were collected between July 24, 2001 and July 27, 2001. The samples were submitted to Severn Trent Laboratories in Colchester, Vermont for analysis of explosive organic compounds and to Severn Trent Laboratories in Knoxville, Tennessee for analysis of nitroguanidine and perchlorate as follows:

Field Sample ID	Matrix	Analyses
GW01MW01A	Ground Water	Explosives compounds (SW-846 Method 8330 HPLC) Nitroguanidine (SW-846 Method 8330 mod.) Perchlorate (USEPA Method 314.0)
GW01MW01B		
GW01MW01BMS		
GW01MW01BMSD		
GW01MW02A		
GW01MW02B		
GW501MW02B		
GW01MW02AD		(Dissolved) Explosives, Nitroguanidine
GW01MW02BD		
GW01MW03A		Explosives, Nitroguanidine, Perchlorate
GW01MW03B		
GW01MW04A		
GW01MW05A		
GW01MW06A	Performance Evaluation Samples	
GW01MW06B		
GW1001MW05A/B	Rinsate	

The data packages were validated according to the procedures identified in the EPA *Functional Guidelines for Evaluating Organics Analyses* EPA, 1994 (EPA-540/R-94/0121), as applicable to the USACE Shell and the site specific *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* (Management Plan) prepared for the Seattle District U.S. Army Corps of Engineers (USACE) by URS in May 2001. Quality control measurements are evaluated against the performance criteria presented in the USACE Management Plan. Raw data were reviewed for completeness and accuracy of transcription to the data summary forms. Approximately 10% of the results reported in each of the samples and QC analyses were recalculated and verified for the target compounds. The data are acceptable with the qualifications noted in the review.

EXPLOSIVES ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA CLP-type, or comparable, deliverables for all data submittals.

SAMPLE HANDLING / HOLDING TIMES: Within specification

Samples GW100MW03A, GW01MW06A and GW01MW06B were received at the laboratory at 10° C. Sample GW1001MW03A is a field rinsate sample. GW01MW06A and GW01MW06B are performance evaluation samples that displayed significant concentrations of target analytes. Based on professional judgement, no data flags were applied.

Technical requirements for maximum sample holding time prior to explosives analysis are established in the Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No results required qualification due to sample handling and holding conditions.

INITIAL CALIBRATION: Acceptable.

Initial multi-point calibrations were established for all target and surrogate compounds. The concentrations of the calibration standards bracketed the expected target compound concentrations, allowing for dilution. All relative standard deviations (RSDs) were acceptable at $\leq 20\%$.

CONTINUING CALIBRATION: Acceptable.

A continuing calibration verification (CCV) standard was analyzed prior to the analysis of sample extracts as specified by the project Management Plan. All percent differences (%Ds) were $\leq 15\%$, as specified.

BLANKS: Acceptable.

One method (preparation) blank was analyzed with each analytical batch, as required. No target compounds were detected above the project required quantitation limits. No data required qualification.

A rinsate blank was also submitted for analyses. No target compounds were detected in the rinsate blank. No data required qualification.

SURROGATE COMPOUND RECOVERIES: Acceptable.

Surrogate 1,2-dinitribenzene was added to all samples, including method and rinsate blanks. Criteria for evaluation of 1,2-dinitrobenzene are 50%-150% recovery. All recoveries were within the specified limits.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES: Within specification.

One MS/MSD analysis was performed, as required. All MS/MSD recoveries were within the QC limits of 50%-140% and all relative percent differences (RPDs) were ≤ 60%, as specified. No data required qualification due to MS/MSD measurement performance.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES: Within specification.

A laboratory control sample (spiked water blank) was analyzed for the selected target compounds. All LCS recoveries were within the specified limits (60%-120%). No data required qualification due to LCS measurement performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.

Target compound identifications were reviewed and were acceptable.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS: Acceptable

Nitroglycerin concentrations reported by the laboratory for the performance evaluation (PE) samples were inaccurate due to interference from other compounds and incomplete peak integration. The laboratory was contacted. The chromatographic peaks were manually re-integrated and recalculated with acceptable results.

Sample data were recalculated for 10% of the target compounds and for all the PE compounds. Various compounds displayed greater than 40% D between the concentrations reported from the primary and secondary columns, indicating positive detection of the compounds and estimated concentrations. These compounds were flagged "J, Q2" in the associated samples.

Several compounds exceeded the calibration range of the instrument and were flagged "E" by the laboratory and "J, Q1" by the data reviewer. These samples were reanalyzed at diluted concentrations and the results from the dilutions should be used for the affected compounds.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. Chromatograms were examined for abrupt retention time shifts, elevated baselines, and high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA: Acceptable

Field Generated Quality Control Samples: In addition to field blanks (rinsate / trip), a blind sample split (GW01MW02A/GW501MW02A) was submitted for analysis with acceptable results.

Independent Reference Material: Two double-blind reference materials (GW01MW06A and GW01MW06B) were submitted for an independent assessment of accuracy. The resulting data are acceptable. Compounds evaluated include 1,3,5-trinitrobenzene, 1,3-dinitrobenzene, 2,4,6-trinitrobenzene, and 2,4-dinitrotoluene. Accuracy for these compounds was in the range of 90%-130% for sample GW01MW06A and 37%-138% for sample GW01MW06B.

OVERALL ASSESSMENT: Acceptable

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are at the specified limits. Ten percent of the sample data were recalculated to verify results and were found to be acceptable. Analytical performance is within specified limits, and the data quality is sufficient for its intended purposes.

SUMMARY OF QUALIFIED DATA

Sample ID	Compound	Concentration and Qualifier	Rationale
GW01MW02A	RDX	44 J, Q1	Exceeded Calibration Range.
GW501MW02A		36 J, Q1	Use diluted concentration.
GW01MW02B		120 J, Q1	
GW01MW06A	RDX	45 J, Q1	
	1,3-Dinitrobenzene	46 J, Q1	
	Tetryl	27 J, Q1	
	4-Amino-2,6-dinitrotoluene	45 J, Q1	
	2-Amino-4,6-dinitrotoluene	26 J, Q1	
	2,4-Dinitrotolune	41 J, Q1	
	2-Nitrotoluene	41 J, Q1	
	3-Nitrotoluene	70 J, Q1	
GW01MW06B	HMX	89 J, Q1	
	RDX	22 J, Q1	
	Picric Acid	52 J, Q1	
	1,3,5-Trinitrobenzene	53 J, Q1	
	Tetryl	62 J, Q1	
	2,4,6-Trinitrotoluene	22 J, Q1	
	4-Amino-2,6-dinitrotoluene	21 J, Q1	
	2-Amino-4,6-dinitrotoluene	69 J, Q1	
	2,6-Dinitrotolune	69 J, Q1	
	4-Nitrotoluene	22 J, Q1	
GW01MW02B	2,4-Dinitrotolune	0.3 J, Q2	Dual column imprecision
GW01MW03B	RDX	0.6 J, Q2	
GW01MW06B	1,3-Dinitrobenzene	12 J, Q2	

NITROGUANIDINE ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA CLP- type, or comparable, deliverables for all sample submittals.

SAMPLE HANDLING / HOLDING TIMES: Within specification.

All samples were analyzed within 40 days of sample collection. No results required qualification due to sample handling and holding conditions.

INITIAL CALIBRATION Within specification.

Initial multi-point calibrations were established for all target and surrogate compounds. All %RSDs were ≤ 20%, as required. A mid-level, second source standard was analyzed immediately after the ICAL. The recoveries were within the QC limits of 85%-115%.

CONTINUING CALIBRATION Within specification.

A mid-level standard was analyzed daily before sample analysis, after every 10 samples, and at the end of the analytical sequence. All %D for continuing calibrations were ≤ 15%.

BLANKS: Acceptable.

One method blank was analyzed with each sample batch, as required. Nitroguanidine was not detected in the method blanks. A rinsate blank was also submitted for analysis. Nitroguanidine was not detected in the rinsate blank. No results required qualification.

SURROGATE COMPOUND RECOVERIES: Within specification.

Surrogate 1-chloro-3-nitrobenzene was added to all samples, including the method blanks. All recoveries were within the laboratory-established QC limits (53%-133%). No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES
Within specification.

One MS/MSD analysis was performed, as required. The recovery limits are performance-based and are equal to 4 standard deviations of 20 consecutively analyzed LCSs. All MS/MSD recoveries were within QC limits of 60%-140% and RPDs were within QC limits of 0%-25%. No data required qualification based on MS/MSD performance.

LABORATORY DUPLICATE: Within specification.

One laboratory duplicate was analyzed for each analytical batch as required. The % recovery limits and RPDs are performance-based and are equal to 4 standard deviations of 20 consecutively analyzed LCSs. RPDs for the laboratory duplicate samples were within the QC limits of 0%-25%. No data required qualification based on laboratory duplicate performance.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES Within specification

One LCS was analyzed for each analytical batch. The recovery limits are performance-based and are equal to 3 standard deviations of 20 consecutively analyzed LCSs. LCS recoveries were within the QC limits of 60%-140% and RPDs were within the QC limits of 0%-25%. No data required qualification based on LCS performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.

All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for all target compounds are within acceptable limits.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS: Acceptable

Raw data were examined to verify the correct calculation of sample results. The required quantitation levels were achieved. Positive results were confirmed using a second column. No false positives were identified. Ten percent of the data were recalculated. All calculations were acceptable.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA: Acceptable

Field Generated Quality Control Samples: In addition to field blanks (rinsate/trip), a blind sample split (GW01MW02A/GW501MW02A) was submitted for analysis with acceptable results.

Independent Reference Material: Two double blind reference materials (GW01MW06A and GW01MW06B) were submitted for an independent assessment of accuracy. The recoveries were 112% and 111% respectively. Analytical performance on the submitted reference material is acceptable.

OVERALL ASSESSMENT: Acceptable

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits for nitroguanidine. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are at the specified limits. Ten percent of the sample data were recalculated to verify the results and were found to be acceptable. Analytical performance is within specified limits and the data quality is sufficient for its intended purposes.

SUMMARY OF QUALIFIED DATA

The data do not require qualification.

PERCHLORATE ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA CLP-type, or comparable, deliverables for all sample submittals.

SAMPLE HANDLING / HOLDING TIMES: Within specification.

Technical requirements for maximum sample holding time prior to perchlorate analysis are established in the Management Plan as 28 days. All samples were analyzed within the specified holding time.

INITIAL CALIBRATION: Within specification.

A five-point calibration was performed. All relative standard deviations (RSD) were ≤ 15%, as required.

INITIAL CALIBRATION CHECK STANDARD: Within specification.

An initial calibration check standard was analyzed at the beginning of each analytical sequence and immediately after the instrument performance check standard. All recoveries were ≤ 25% as required.

CONTINUING CALIBRATION STANDARD AND END CALIBRATION STANDARD: Within specification.

Mid and high level standards were analyzed as required in the Management Plan. All recoveries were within the QC limits (± 15% of the known concentration).

BLANKS : Within specification.

One laboratory reagent blank (LRB) was analyzed for each analytical batch as required in the Management Plan. One rinsate blank was also analyzed with these samples. The method and rinsate blanks were free of contamination.

LABORATORY FORTIFIED MATRIX (LFM): Within specification.

LFM samples were analyzed for the target analytes at the required frequency (at least one sample per matrix per preparation batch). All results were within the QC limits (± 20% of the known concentration).

DUPLICATE SAMPLE ANALYSES: Within specification.

Laboratory duplicate samples were analyzed for perchlorate at the required frequency (at least one sample per matrix per preparation batch). The RPD for the duplicate pairs were ≤ 15%, as required.

OTHER PERFORMANCE DATA: Acceptable

Field Generated Quality Control Samples: In addition to field (rinsate / trip) blanks, one blind duplicate pair (GW01MW02A/GW501MW02A) was submitted for analysis with acceptable results.

Independent Reference Material. Two double blind reference materials (GW01MW06A and GW01MW06B) were submitted for an independent assessment of accuracy. The recoveries were 98% and108% respectively.

OVERALL ASSESSMENT OF THE DATA: Acceptable

All deliverables required by the project are present and the data packages are complete. Recommended sample holding times were met for all samples. The initial and continuing calibration requirements were met in all analytical runs. Analytical performance on a double blind independent reference material was evaluated and determined to be acceptable. Ten percent of the sample data were recalculated to verify the results and were found to be acceptable. The data meet the project's data quality objectives.

SUMMARY OF QUALIFIED DATA

All QC criteria were met. No data qualification was required.

Propellants and high explosives were analyzed by SW846 M.8330 (mod.) and method 314. Two (single-blind) reference materials were submitted for analysis with the field samples. The reference materials were independently evaluated for accuracy. Results (in µg/L) of the analyses of the two submittals are summarized here:

	MW06A		MW06B	
Parameter	Known value	Reported value	Known value	Reported value
Nitrobenzene	10	12		0.25 U
1,3-Dinitrobenzene	40	46	10	12
1,3,5-Trinitrobenzene	10	10	50	53
2-Nitrotoluene	40	41	10	10
3-Nitrotoluene	60	70	10	11
4-Nitrotoluene	10	12	20	22
2,4-Dinitrotoluene	40	41		0.25 U
2,6-Dinitrotoluene		0.25 U	50	69
2,4,6-Trinitrotoluene (TNT)	5	6.0	20	22
2-Amino-4,6-dinitrotoluene	20	26	60	69
4-Amino-2,6-dinitrotoluene	40	45	20	21
HMX	20	18	100	89
RDX	40	45	20	22
PETN	20	19	100	100
Picric acid	10	12	50	52
Tetryl	30	27	60	62
Nitroglycerin	10	17	30	11
Nitroguanidine	100	89	50	45
Perchlorate (as ammonium)	30	32.5	60	58.8

Reported results agreed relatively well with known values, with the exception of nitroglycerin. Follow-up inquiries with the project laboratory resulted in a resubmittal of data for nitroglycerin in samples MW06A and MW06B (adjusted from 5.0 µg/L) due to interferences from overlapping chromatographic peaks (RDX and TNT). In the presence of elevated levels of RDX and TNT, nitroglycerin (a poor responder) can be "buried". Many project samples reported presence of RDX, which may interfere with the analysis of nitroglycerin. This identifies a limitation in the applied method, especially for samples with moderate amounts of highly responsive target analytes potentially interfering with (or burying) other closely eluting target analytes. The method, as applied, would benefit from higher resolution separations in order to avoid interferences from overlapping chemicals.

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August 15, 2001

Mr. John Kearns
URS Corporation
849 International Drive
Suite 320
Linthicum, MD 21090

Re: Laboratory Project No. 21015
Case: 21015; SDG: BON001

Dear Mr. Kearns:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on July 26, 28, and August 1, 2001. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 07/26/01 ETR No: 83969		
460216	GW01MW01A	07/24/01	Water
460217	GW01MW01B	07/24/01	Water
460218	GW01MW02A	07/24/01	Water
460219	GW501MW02A	07/24/01	Water
460220	GW01MW02B	07/25/01	Water
460220MS	GW01MW02BMS	07/25/01	Water
460220MD	GW01MW02BMSD	07/25/01	Water
	Received: 07/28/01 ETR No: 84007		
460487	GW01MW03A	07/26/01	Water
460488	GW01MW05A	07/26/01	Water
460489	GW1001MW03A	07/27/01	Water
460490	GW01MW04A	07/25/01	Water
460491	GW01MW06A	07/24/01	Water
460492	GW01MW06B	07/27/01	Water
	Received: 08/01/01 ETR No: 84051		
460723	GW01MW03B	07/26/01	Water

0001-A

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW01A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460216

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I701

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/03/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW01B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460217

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I711

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/03/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW02A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460218

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I721

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.5	
121-82-4	RDX	~~44~~	~~E~~ J, Q
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

Q - exceeds linear range, use diluted result

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW02ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460218D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 06AUG010920-I301

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/07/01

Injection Volume: 200.0(uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	~~2.6~~	~~D~~
121-82-4	RDX	44	D
88-89-1	Picric acid	0.75	U
99-35-4	1,3,5-Trinitrobenzene	0.75	U
99-65-0	1,3-Dinitrobenzene	0.75	U
98-95-3	Nitrobenzene	0.75	U
479-45-8	Tetryl	0.75	U
55-63-0	Nitroglycerin	15	U
118-96-7	2,4,6-Trinitrotoluene	0.75	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.75	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.75	U
606-20-2	2,6-Dinitrotoluene	0.75	U
121-14-2	2,4-Dinitrotoluene	0.75	U
88-72-2	2-Nitrotoluene	0.75	U
99-99-0	4-Nitrotoluene	0.75	U
99-08-1	3-Nitrotoluene	0.75	U
78-11-5	PETN	30	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW501MW02A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460219

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I751

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.5	
121-82-4	RDX	~~36~~	~~E~~ J, Q
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

Q - exceeds linear range, use diluted result

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW501MW02ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460219D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 06AUG010920-I311

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/07/01

Injection Volume: 200.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	~~2.4~~	~~D~~
121-82-4	RDX	36	D
88-89-1	Picric acid	0.50	U
99-35-4	1,3,5-Trinitrobenzene	0.50	U
99-65-0	1,3-Dinitrobenzene	0.50	U
98-95-3	Nitrobenzene	0.50	U
479-45-8	Tetryl	0.50	U
55-63-0	Nitroglycerin	10	U
118-96-7	2,4,6-Trinitrotoluene	0.50	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.50	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.50	U
606-20-2	2,6-Dinitrotoluene	0.50	U
121-14-2	2,4-Dinitrotoluene	0.50	U
88-72-2	2-Nitrotoluene	0.50	U
99-99-0	4-Nitrotoluene	0.50	U
99-08-1	3-Nitrotoluene	0.50	U
78-11-5	PETN	20	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW02B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460220

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I761

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
2691-41-0	HMX	1.7		J, Q_1
121-82-4	RDX	120	E	
88-89-1	Picric acid	0.25	U	
99-35-4	1,3,5-Trinitrobenzene	0.25	U	
99-65-0	1,3-Dinitrobenzene	0.25	U	
98-95-3	Nitrobenzene	0.25	U	
479-45-8	Tetryl	0.25	U	
55-63-0	Nitroglycerin	5.0	U	
118-96-7	2,4,6-Trinitrotoluene	0.25	U	
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U	
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U	
606-20-2	2,6-Dinitrotoluene	0.25	U	
121-14-2	2,4-Dinitrotoluene	0.30		J, Q_2
88-72-2	2-Nitrotoluene	0.25	U	
99-99-0	4-Nitrotoluene	0.25	U	
99-08-1	3-Nitrotoluene	0.25	U	
78-11-5	PETN	10	U	

Q_1 - exceeds linear range, use diluted result

Q_2 - 74% D

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW02BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460220D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 06AUG010920-I321

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/07/01

Injection Volume: 200.0(uL) Dilution Factor: 8.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	~~2.0~~	~~U~~
121-82-4	RDX	120	D
88-89-1	Picric acid	2.0	U
99-35-4	1,3,5-Trinitrobenzene	2.0	U
99-65-0	1,3-Dinitrobenzene	2.0	U
98-95-3	Nitrobenzene	2.0	U
479-45-8	Tetryl	2.0	U
55-63-0	Nitroglycerin	40	U
118-96-7	2,4,6-Trinitrotoluene	2.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	2.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	2.0	U
606-20-2	2,6-Dinitrotoluene	2.0	U
121-14-2	2,4-Dinitrotoluene	2.0	U
88-72-2	2-Nitrotoluene	2.0	U
99-99-0	4-Nitrotoluene	2.0	U
99-08-1	3-Nitrotoluene	2.0	U
78-11-5	PETN	80	U

C

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW03A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460487

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I791

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	6.6	J,Q 8
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

Q - 7 40% D2 8

FC M 1

EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW1001MW03A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

RINSATE

Matrix: (soil/water) WATER Lab Sample ID: 460489

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I811

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW03B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460723

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 30JUL011127-I901

% Moisture: _____ decanted: (Y/N)___ Date Received: 08/01/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:08/01/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/01/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
2691-41-0	HMX	0.25	U	J,Q
121-82-4	RDX	0.60		
88-89-1	Picric acid	0.25	U	
99-35-4	1,3,5-Trinitrobenzene	0.25	U	
99-65-0	1,3-Dinitrobenzene	0.25	U	
98-95-3	Nitrobenzene	0.25	U	
479-45-8	Tetryl	0.25	U	
55-63-0	Nitroglycerin	5.0	U	
118-96-7	2,4,6-Trinitrotoluene	0.25	U	
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U	
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U	
606-20-2	2,6-Dinitrotoluene	0.25	U	
121-14-2	2,4-Dinitrotoluene	0.25	U	
88-72-2	2-Nitrotoluene	0.25	U	
99-99-0	4-Nitrotoluene	0.25	U	
99-08-1	3-Nitrotoluene	0.25	U	
78-11-5	PETN	10	U	

Q - 740%D

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW04A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460490

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I821

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.82	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW05A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460488

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I801

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.28	
121-82-4	RDX	5.2	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW06A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460491

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I831

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
2691-41-0	HMX	18		
121-82-4	RDX	~~45~~	~~E~~	J,Q
88-89-1	Picric acid	12		
99-35-4	1,3,5-Trinitrobenzene	10		
99-65-0	1,3-Dinitrobenzene	~~45~~	~~E~~	J,Q
98-95-3	Nitrobenzene	12		
479-45-8	Tetryl	~~27~~	~~E~~	J,Q
55-63-0	Nitroglycerin	17		
118-96-7	2,4,6-Trinitrotoluene	5.9		
1946-51-0	4-Amino-2,6-dinitrotoluene	~~45~~	~~E~~	J,Q
35572-78-2	2-Amino-4,6-dinitrotoluene	~~25~~	~~E~~	J,Q
606-20-2	2,6-Dinitrotoluene	0.25	U	
121-14-2	2,4-Dinitrotoluene	~~40~~	~~E~~	J,Q
88-72-2	2-Nitrotoluene	~~40~~	~~E~~	J,Q
99-99-0	4-Nitrotoluene	12		
99-08-1	3-Nitrotoluene	~~69~~	~~E~~	J,Q
78-11-5	PETN	19		

RA 8/27/01

Q- exceeds linear range, use diluted result

FORM I EXPLOSIVES

0080

KBW 8/24/01

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW06ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460491D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 06AUG010920-I331

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/07/01

Injection Volume: 200.0(uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	~~18~~	~~D~~
121-82-4	RDX	45	D
88-89-1	Picric acid	~~10~~	~~D~~
99-35-4	1,3,5-Trinitrobenzene	~~9.9~~	~~D~~
99-65-0	1,3-Dinitrobenzene	46	D
98-95-3	Nitrobenzene	~~12~~	~~D~~
479-45-8	Tetryl	27	D
55-63-0	Nitroglycerin	~~20~~	~~U~~
118-96-7	2,4,6-Trinitrotoluene	~~5.8~~	~~D~~
1946-51-0	4-Amino-2,6-dinitrotoluene	45	D
35572-78-2	2-Amino-4,6-dinitrotoluene	26	D
606-20-2	2,6-Dinitrotoluene	~~1.0~~	~~U~~
121-14-2	2,4-Dinitrotoluene	41	D
88-72-2	2-Nitrotoluene	41	D
99-99-0	4-Nitrotoluene	~~12~~	~~D~~
99-08-1	3-Nitrotoluene	70	D
78-11-5	PETN	~~40~~	~~U~~

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW06B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460492

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I841

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q	
2691-41-0	HMX	~~87~~	~~E~~	J,Q
121-82-4	RDX	~~22~~	~~E~~	
88-89-1	Picric acid	~~56~~	~~E~~	
99-35-4	1,3,5-Trinitrobenzene	~~51~~	~~E~~	
99-65-0	1,3-Dinitrobenzene	12		J,Q_2
98-95-3	Nitrobenzene	0.25	U	
479-45-8	Tetryl	~~55~~	~~E~~	J,Q
55-63-0	Nitroglycerin	11		
118-96-7	2,4,6-Trinitrotoluene	~~22~~	~~E~~	J,Q
1946-51-0	4-Amino-2,6-dinitrotoluene	~~22~~	~~E~~	
35572-78-2	2-Amino-4,6-dinitrotoluene	~~67~~	~~E~~	
606-20-2	2,6-Dinitrotoluene	~~66~~	~~E~~	
121-14-2	2,4-Dinitrotoluene	0.25	U	
88-72-2	2-Nitrotoluene	10		
99-99-0	4-Nitrotoluene	~~21~~	~~E~~	J,Q
99-08-1	3-Nitrotoluene	11		
78-11-5	PETN	100		

RATORJE/

Q - exceeds linear range, use diluted results

Q_2 - 740xD

FORM I EXPLOSIVES

0097

KBM 9/24/01

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW06BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460492D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 06AUG010920-I341

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/07/01

Injection Volume: 200.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	89	D
121-82-4	RDX	22	D
88-89-1	Picric acid	52	D
99-35-4	1,3,5-Trinitrobenzene	53	D
99-65-0	1,3-Dinitrobenzene	~~13~~	~~D~~
98-95-3	Nitrobenzene	~~1.2~~	~~U~~
479-45-8	Tetryl	62	D
55-63-0	Nitroglycerin	~~25~~	~~U~~
118-96-7	2,4,6-Trinitrotoluene	22	D
1946-51-0	4-Amino-2,6-dinitrotoluene	21	D
35572-78-2	2-Amino-4,6-dinitrotoluene	69	D
606-20-2	2,6-Dinitrotoluene	69	D
121-14-2	2,4-Dinitrotoluene	~~1.2~~	~~U~~
88-72-2	2-Nitrotoluene	~~10~~	~~D~~
99-99-0	4-Nitrotoluene	22	D
99-08-1	3-Nitrotoluene	~~11~~	~~D~~
78-11-5	PETN	~~95~~	~~D~~

VOLATILE ORGANIC COMPOUND ANALYSES

Volatile organic compound (VOC) analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8260B (HRGC/MS). Twelve samples, consisting of nine groundwaters, a rinsate blank, transport blank, and a double-blind reference material, were submitted for analyses. Hydrochloric acid (HCl) perservative was employed. Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated VOC results.

SAMPLE HANDLING / HOLDING TIMES: Within specification.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.0 - 3.5 °C upon receipt.

Samples were preserved upon collection by adjustment of pH $\leq$ 2 with conc. HCl. Technical requirements for maximum sample holding time prior to VOC's analysis are established in the Project Management Plan as 7 days for analysis. All analyses were performed within the specified holding times. No results required qualification due to sample handling and holding conditions.

GC/MS TUNE CHECK: Within specification.
4-Bromofluorobenzene (50 µg/L BFB) was analyzed as a surrogate compound in each and every sample and checked for instrument tune performance at the beginning of each twelve- hour calibration period as required for instrument Finn5. Three checks were performed for these analyses. All ion abundances and relative ion abundances met U.S. EPA CLP acceptance criteria. Mass spectral plots and listings were compared, and transcription of mass data to the GC/MS tuning and mass calibration summaries was checked. No errors were found.

All criteria were met and all sample analyses and calibrations were performed within the twelve-hour instrument tune check period.

INITIAL CALIBRATION

Initial multi-point calibrations were established for all target and surrogate compounds at concentrations of 1, 5, 10, 50, 100 and 200 µg/L. The minimum RRF (relative response factor) requirement for SPCC's was met for all calibrations, and the performance for CCC's was also within specification. All target analyte and CCC RSD's were within method specification (< 15%), with the exception of methylene chloride (20%), bromoform (17%), bromobenzene (17%), 1,2-dibromo-3-chloropropane (16%) and dichlorodifluoromethane (16%). Methylene chloride was found in the double-blind reference material, and dichlorodifluoromethane was reported in GW01MW02B. The results for the two analytes are "J" qualified as estimates.

No ICV's were reported. No action is required, and no data requires further qualification.

CONTINUING CALIBRATION

A continuing calibration verification (CCV) at 50 µg/L was analyzed prior to and following the analysis of sample extracts as specified by the Project Management Plan. With the exception of acrolein (CCV RRF = 0.07), all relative response factors were greater than 0.10, as specified; and, with a few exceptions, all %D were less than 20%, as specified. The %D exceptions are for bromomethane (24% & 28%), trichlorofluoromethane (21%), iodomethane (24%), and dichlorodifluoromethane (22%).

Due to %D deviation for dichlorodifluoromethane in the post-sequence CCV, the positive hit in GW01MW02B is "J" qualified as an estimate. No other data required qualification due to CCV performance.

BLANKS: Acceptable.

Two method (preparation) blanks were analyzed with the project samples, as required. Acetone was detected in one of the blanks at 3.2 µg/L, less than the 5.0 µg/L PRQL. All positive hits for acetone are "B" qualified to indicate potential bias from background contamination. No other results required qualification.

A field blank (equipment rinsate/transport) and a separate transport blank analysis were both performed. Results are reported in the attached Table. Acetone was reported in the rinsate blank at 11 µg/L. All positive hits for acetone are consequently "B" qualified to indicate potential bias from background contamination (consistent with the results of the method blank analyses). All other reported results indicated nondetects or levels less than the project required quantitation limits.

SURROGATE COMPOUND RECOVERIES: Within specification.

Project-specified surrogate compounds were added to all samples, including method and field blanks, at

concentrations of 50 µg/L.

Criteria for evaluation are as follows:

d_4-1,2-dichloroethane	81-134%	d_8-toluene	81-137%
4-bromofluorobenzene	83-124%	d4-1,2-dichlorobenzene	88-128%

All recoveries are within specification. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES

One MS/MSD analysis was performed, as required. All target analytes were spiked into GW01MW02B. Recoveries ranged from 54% to 126%, with RPDs ranging from 0.2% to 61%. 2-Chloroethylvinylether showed essentially no recovery in either the MS or MSD, requiring qualification of all analyte nondetects as nonuseable with the "R" qualifier code. The greatest RPD was associated with 1,1,1-trichloroethane, which presented a native concentration of 290 µg/L - interfering with the assessment of the 50 µg/L spike recovery. All other target analytes detected in project samples showed MS/MSD performance within specification - recoveries = 70 - 130% and RPDs $\leq$ 30%.

Two laboratory control sample (spiked water blank; LCS and LCS duplicate) pairs were analyzed [total of four analyses] for all target analytes at an equivalent spike concentration of 50 µg/L. Analyte recoveries ranged from 74% to 127% with an RPD range of 0.4% to 26%. Recoveries for target analytes detected in project samples all fell within project specifications (80 - 120%). *It is noted that recoveries for 2-chloroethylvinylether ranged from 104% to 106% in the two LCS/LCSD pairs.*

INTERNAL STANDARDS PERFORMANCE: Within specification.

Four internal standards (IS) were added to all samples at a concentration of 50 µg/L. Retention times (RT) for all internal standards in all analyses are within the specified window of ± 30 seconds of the continuing calibration internal standard RT. All internal standard (IS) areas for all sample extracts were verified for accuracy and determined to be correct. The specified acceptance limit for internal standard areas in sample extracts is 0.5 to 2 times the area of the 12-hour continuing calibration standard. Internal standards performance were all within specification.

Internal standard areas were checked at random and found to be accurate. No results required qualification due to internal standards performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.

All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for all target compounds are within acceptable limits (± 0.06 relative retention time units of the standard). Ion relative abundances on mass spectra for reported compounds were checked against library reference spectra and were found to be acceptable. Spectra were provided for all reported positive and tentative identifications.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS

Target compound lower limits of quantitation are based on on-column amounts of 5 ng for most analytes and 10-25 ng for selected others. The algorithm for calculation of target analyte concentrations was checked and found to be correct. All lower limits of quantitation for chemicals of concern are within the project required quantitation limits (PRQL's), as summarized in the attached results Table.

Specified internal standards, quantitation ions, and RRF's were checked for all sample results and determined to be correct. All target analyte responses were determined by an automated/computerized routine, and no manual reintegrations were found. All sample volume and concentration calculations were checked for each sample and determined to be correct.

TENTATIVELY IDENTIFIED COMPOUNDS

No tentatively identified compound (TIC) reports were found in the deliverables package. None were requested.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. RIC's were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to field (rinsate / trip) blanks, a blind sample split was submitted for analysis (duplicate/split pair = GW01MW02A / GW501MW02A). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either of the two samples, with the exception of acetone at 8.3 µg/L and 7.2 µg/L.

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW01MW06A. Analytes evaluated include vinyl chloride, *cis*-dichloroethylene, trichloroethylene, tetrachloroethylene, toluene and 1,2,4-trichlorobenzene. With the exception of trichlorobenzene, accuracies were in the range of 75% - 95%. The trichlorobenzene reovery was reported at 33%, whereas the split sample verification analysis (performed independently) of the reference material showed a recovery of 75%. Higher-boiling compounds, such as trichlorobenzene and naphthalene, are generally poor performers for purge-and-trap analyses, and this result is not atypical for this analytical method. Analytical performance on the submitted reference material is considered acceptable.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits for the chemicals of potential

concern. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are at the specified limits. Analytical performance is generally within specified limits, and the data quality, with associated qualifiers, is sufficient for its intended purposes.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Sample Date	Lab I.D.	Chloro-methane 74-87-3	Bromo-methane 74-83-9	Vinyl chloride 75-01-4	Chloro-ethane 75-00-3	Methylene chloride 75-09-2	Acetone 67-64-1	Carbon disulfide 75-15-0	1,1-Dichloro-ethene 75-35-4
GW01MW01A	grd water	7/24/2001	0112786-DK51A	1 U	1 U	1 U	1 U	2 U	5 U	1 U	1 U
GW01MW01B	grd water	7/24/2001	0112787-DK51B	1 U	1 U	1 U	1 U	2 U	**8.5 B**	1 U	1 U
GW01MW02A	grd water	7/24/2001	0112788-DK51C	1 U	1 U	1 U	1 U	2 U	**8.3 B**	1 U	1 U
GW501MW02A	grd water, split of MW02A	7/24/2001	0112789-DK51D	1 U	1 U	1 U	1 U	2 U	**7.2 B**	1 U	1 U
GW01MW02B	grd water	7/25/2001	0112790-DK51E	1 U	1 U	1 U	1 U	2 U	**11 B**	1 U	**36**
GW01MW04A	grd water	7/25/2001	0112791-DK51F	1 U	1 U	1 U	1 U	2 U	5 U	1 U	1 U
GW01MW05A	grd water	7/26/2001	0112792-DK51G	1 U	1 U	1 U	1 U	2 U	**5.8 B**	1 U	1 U
GW01MW03A	grd water	7/26/2001	0112793-DK51H	1 U	1 U	1 U	1 U	2 U	**7.1 B**	1 U	1 U
GW01MW03B	grd water	7/26/2001	0112794-DK51I	1 U	1 U	1 U	1 U	2 U	**13 B**	1 U	1 U
GW1001MW03B	rinsate blank	7/27/2001	0112795-DK51J	1 U	1 U	1 U	1 U	2 U	**11 B**	1 U	1 U
GW01MW06A	ref mtl	7/24/2001	0112796-DK51K	1 U	1 U	**3.2 (80%)**	1 U	**9.5 J**	**16 B**	1 U	1 U
Transport Blank	trnspt blk	7/27/2001	0112807-DK51V	1 U	1 U	1 U	1 U	2 U	5 U	1 U	1 U
PRQL (µg/L)				*1*	*1*	*1*	*1*	*2*	*5*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	1,1-Dichloro-ethane 75-34-3	*trans*-1,2-Dichloro-ethene 156-60-5	*cis*-1,2-Dichloro-ethene 156-59-2	Chloroform 67-66-3	1,2-Dichloro-ethane 107-06-2	2-Butanone (MEK) 78-93-3	1,1,1-Trichloro-ethane 71-55-6	Carbon tetrachloride 56-23-5
GW01MW01A	grd water	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
GW01MW01B	grd water	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
GW01MW02A	grd water	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
GW501MW02A	grd water, split of MW02A	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
GW01MW02B	grd water	**29**	1 U	1 U	1 U	1 U	5 U	**290**	1 U
GW01MW04A	grd water	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
GW01MW05A	grd water	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
GW01MW03A	grd water	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
GW01MW03B	grd water	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
GW1001MW03B	rinsate blank	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
GW01MW06A	ref mtl	1 U	1 U	**9.3 (93%)**	1 U	1 U	5 U	1 U	1 U
Transport Blank	trnspt blk	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*5*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Vinyl acetate 108-05-4	Bromodichloro-methane 75-27-4	1,2-Dichloro-propane 78-87-5	*cis*-1,3-Dichloro-propene 10061-01-5	Trichloro-ethene 79-01-6	Dibromochloro-methane 124-48-1	1,1,2-Trichloro-ethane 79-00-5	Benzene 71-43-2
GW01MW01A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW01MW01B	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW01MW02A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW501MW02A	grd water, split of MW02A	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW01MW02B	grd water	5 U	1 U	1 U	1 U	**0.5 J**	1 U	1 U	**0.7 J**
GW01MW04A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW01MW05A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW01MW03A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW01MW03B	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1001MW03B	rinsate blank	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW01MW06A	ref mtl	5 U	1 U	1 U	1 U	**5.7 (95%)**	1 U	1 U	1 U
Transport Blank	trnspt blk	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)			*1*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	*trans*-1,3-Dichloropropene 10061-02-6	2-Chloroethylvinylether 110-75-8	Bromoform 75-25-2	4-Methyl-2-pentanone (MIBK) 108-10-1	2-Hexanone 591-78-6	Tetrachloroethene 127-18-4	1,1,2,2-Tetrachloroethane 79-34-5	Toluene 108-88-3	Chlorobenzene 108-90-7
GW01MW01A	grd water	1 U	R	1 U	5 U	5 U	1 U	1 U	1 U	1 U
GW01MW01B	grd water	1 U	R	1 U	5 U	5 U	1 U	1 U	1 U	1 U
GW01MW02A	grd water	1 U	R	1 U	5 U	5 U	1 U	1 U	1 U	1 U
GW501MW02A	grd water, split of MW02A	1 U	R	1 U	5 U	5 U	1 U	1 U	1 U	1 U
GW01MW02B	grd water	1 U	R	1 U	5 U	5 U	**1.1**	1 U	1 U	1 U
GW01MW04A	grd water	1 U	R	1 U	5 U	5 U	1 U	1 U	1 U	1 U
GW01MW05A	grd water	1 U	R	1 U	5 U	5 U	**0.7 J**	1 U	1 U	1 U
GW01MW03A	grd water	1 U	R	1 U	5 U	5 U	1 U	1 U	1 U	1 U
GW01MW03B	grd water	1 U	R	1 U	5 U	5 U	1 U	1 U	1 U	1 U
GW1001MW03B	rinsate blank	1 U	R	1 U	5 U	5 U	1 U	1 U	1 U	1 U
GW01MW06A	ref mtl	1 U	R	1 U	5 U	5 U	**3.0 (75%)**	1 U	**18 (90%)**	1 U
Transport Blank	trnspt blk	1 U	R	1 U	5 U	5 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*		*1*	*5*	*5*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Ethyl-benzene 100-41-4	Styrene 100-42-5	Trichloro-fluoromethane 75-69-4	1,1,2-Trichloro-1,2,2-trifluoroethane 76-13-1	*m,p* - Xylenes 108-38-3	*o* -Xylene 95-47-6	1,2-Dichloro-benzene 95-50-1	1,3-Dichloro-benzene 541-73-1	1,4-Dichloro-benzene 106-46-7
GW01MW01A	grd water	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
GW01MW01B	grd water	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
GW01MW02A	grd water	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
GW501MW02A	grd water, split of MW02A	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
GW01MW02B	grd water	1 U	1 U	**0.8 J**	**91**	1 U	1 U	1 U	1 U	1 U
GW01MW04A	grd water	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
GW01MW05A	grd water	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
GW01MW03A	grd water	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
GW01MW03B	grd water	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
GW1001MW03B	rinsate blank	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
GW01MW06A	ref mtl	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
Transport Blank	trnspt blk	1 U	1 U	1 U	2 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*1*		*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Acrolein 107-02-8	Methyl-iodide 74-88-4	Bromo-ethane 74-96-4	Acrylo-nitrile 107-13-1	1,1-Dichloro-propene 563-58-6	Dibromo-methane 74-95-3	1,1,1,2-Tetra-chloroethane 630-20-6	1,2-Dibromo-3-chloropropane 96-12-8	1,2,3-Trichloro-propane 96-18-4	*trans*-1,4-Dichloro-2-butene 110-57-6
GW01MW01A	grd water	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
GW01MW01B	grd water	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
GW01MW02A	grd water	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
GW501MW02A	grd water, split of MW02A	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
GW01MW02B	grd water	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
GW01MW04A	grd water	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
GW01MW05A	grd water	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
GW01MW03A	grd water	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
GW01MW03B	grd water	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
GW1001MW03B	rinsate blank	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
GW01MW06A	ref mtl	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
Transport Blank	trnspt blk	50 U	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U	5 U
PRQL (µg/L)			*1*			*1*	*1*	*1*	*5*	*3*	

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	1,3,5-Trimethyl-benzene 108-67-8	1,2,4-Trimethyl-benzene 95-63-6	Hexachloro-butadiene 87-68-3	Ethylene dibromide (1,2-dibromoethane) 106-93-4	Bromochloro-methane 74-97-5	Dichlorodifluoro-methane 75-71-8	2,2-Dichloro-propane 590-20-7	1,3-Dichloro-propane 142-28-9
GW01MW01A	grd water	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
GW01MW01B	grd water	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
GW01MW02A	grd water	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
GW501MW02A	grd water, split of MW02A	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
GW01MW02B	grd water	1 U	1 U	5 U	1 U	1 U	**120 J**	1 U	1 U
GW01MW04A	grd water	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
GW01MW05A	grd water	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
GW01MW03A	grd water	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
GW01MW03B	grd water	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
GW1001MW03B	rinsate blank	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
GW01MW06A	ref mtl	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Transport Blank	trnspt blk	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*5*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Isopropyl-benzene 98-82-8	n-Propyl-benzene 103-65-1	Bromo-benzene 108-86-1	2-Chloro-toluene 95-49-8	4-Chloro-toluene 106-43-4	*t*-Butyl-benzene 98-06-6	*s*-Butyl-benzene 135-98-8	4-Isopropyl-toluene (p-cumene) 99-87-6	n-Butyl-benzene 104-51-8	1,2,4-Trichloro-benzene 120-82-1
GW01MW01A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW01MW01B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW01MW02A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW501MW02A	grd water, split of MW02A	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW01MW02B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW01MW04A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW01MW05A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW01MW03A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW01MW03B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW1001MW03B	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW01MW06A	ref mtl	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**6.6 (33%)**
Transport Blank	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Naphthalene 91-20-3	1,2,3-Trichloro-benzene 87-61-6
GW01MW01A	grd water	5 U	5 U
GW01MW01B	grd water	5 U	5 U
GW01MW02A	grd water	5 U	5 U
GW501MW02A	grd water, split of MW02A	5 U	5 U
GW01MW02B	grd water	5 U	5 U
GW01MW04A	grd water	5 U	5 U
GW01MW05A	grd water	5 U	5 U
GW01MW03A	grd water	5 U	5 U
GW01MW03B	grd water	5 U	5 U
GW1001MW03B	rinsate blank	5 U	5 U
GW01MW06A	ref mtl	5 U	5 U
Transport Blank	trnspt blk	5 U	5 U
PRQL (µg/L)		*5*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

SEMIVOLATILE ORGANIC COMPOUND ANALYSES

Semivolatile organic compound (SVOC) analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8270C (HRGC/MS). Eleven samples, consisting of nine groundwaters, a rinsate blank and a double-blind reference material, were submitted for analyses. No chemical perservative was employed. Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. With one exception, documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated SVOC results. The documentation was deficient in the presentation of a post analytical sequence continuing calibration verification check.

SAMPLE HANDLING / HOLDING TIMES: Within specification.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.0 - 3.5 °C upon receipt.

Technical requirements for maximum sample holding time prior to SVOC's analysis are established in the Project Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No results required qualification due to sample handling and holding conditions.

GC/MS TUNE CHECK: Within specification.
Decafluorotriphenylphosphine (25 ng/µL DFTPP) was analyzed at the beginning of each twelve- hour calibration period as required for instrument Finn8. Two checks were performed for these analyses. All ion abundances and relative ion abundances met U.S. EPA CLP acceptance criteria. Mass spectral plots and listings were compared, and transcription of mass data to the GC/MS tuning and mass calibration summaries was checked. No errors were found.

All criteria were met and all sample analyses and calibrations were performed within the twelve-hour instrument tune check period.

INITIAL CALIBRATION: Acceptable.
Initial multi-point calibrations were established for all target and surrogate compounds at concentrations of 5, 10, 25, 40 and 80 ng/µL. The minimum RRF (relative response factor) requirement of 0.05 was met for all calibrations, and the RSD specification for linearity of ≤ 30% was also met for all calibrations, with the exception of 2,4-dinitrophenol (%RSD = 33). The mean %RSD for all analytes is 8.7% with seven analytes exceeding or equivalent to 15%. Initial calibration performance is within acceptance limits.

An initial calibration verification (ICV) at 25 ng/µL (an alternate source from the initial cali.) was analyzed following the initial calibration. All recoveries were within the 70 - 130% specification, with the exception of 2,2'-oxybis(chloropropane) [at 147%], which was not detected in project samples. No action is required, and no data requires qualification.

CONTINUING CALIBRATION: Acceptable.
A continuing calibration verification (CCV) at 25 ng/µL was analyzed prior to the analysis of sample extracts as specified by the Project Management Plan. A post-sequence CCV was not reported. All relative response factors were greater than 0.05, as specified; and all %D were less than 20%, as specified.

The reported CCV was within specification, however, a post-sequence check was not presented.

BLANKS: Acceptable.
One method (preparation) blank was analyzed with the project samples, as required. No analytes were detected above the project required lower quantitation limits. No results required qualification.

A field blank (equipment rinsate/transport) analysis was performed on 1 submission. All reported results indicated nondetects or levels less than the project required quantitation limit for all analytes.

SURROGATE COMPOUND RECOVERIES: Acceptable.
Project-specified surrogate compounds were added to all samples, including method and field blanks. Surrogate compounds were added at the following amounts: 12.5 µg for neutrals and 18.7 µg for acidic organic compounds; to 500 mL water samples prior to extraction.

Criteria for evaluation are as follows:

d_5-nitrobenzene	42-112%	2-fluorophenol	39-113%
2-fluorobiphenyl	37-105%	2,4,6-tribromophenol	42-130%
d_{14}-*p*-terphenyl	40-131%	d_4-2-chlorophenol	44-109%
d_5-phenol	36-111%	d_4-1,2-dichlorobenzene	30-100%

All recoveries are within specification, with the exception of tribromophenol in the following samples:

GW01MW01A @ 31%R	GW01MW03B @ 35%
GW01MW02B-MS @ 28%	GW01MW04A @ 28%

Corrective action or data qualification is required when more than one surrogate per fraction is noncompliant. Only one surrogate fell outside specification. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:

Within specification.

One MS/MSD analysis was performed, as required. Matrix spike compounds are selected analytes spiked into GW01MW02B. Performance was evaluated by comparison of recoveries to the following criteria.

MS / MSD Project Advisory Criteria

Parameter	Recovery range (%)	Relative percent difference (RPD)
phenol	12 - 110	42 %
2-chlorophenol	27 - 123	40 %
1,4-dichlorobenzene	36 - 97	28 %
N-nitroso-di-n-propylamine	41 - 116	38 %
1,2,4-trichlorobenzene	39 - 98	28 %
4-chloro-3-methylphenol	23 - 97	42 %
acenaphthene	46 - 118	31 %
4-nitrophenol	10 - 80	50 %
pentachlorophenol	9 - 103	50 %
pyrene	26 - 127	31 %

All MS/MSD recoveries and associated RPD's were within specification. No data required qualification due to MS / MSD measurement performance.

A laboratory control sample (spiked water blank) was analyzed for the selected target analytes [above] at an equivalent spike concentration of 25 (neutrals) and 37.5 µg/L. Analyte recoveries ranged from 60% to 102%, all within specification.

INTERNAL STANDARDS PERFORMANCE: Within specification.

Seven internal standards (IS) were added to all sample extracts at a concentration of 20 ng/µL. Retention times (RT) for all internal standards in all analyses are within the specified window of ± 30 seconds of the continuing calibration internal standard RT. All internal standard (IS) areas for all sample extracts were verified for accuracy and determined to be correct. The specified acceptance limit for internal standard areas in sample extracts is 0.5 to 2 times the area of the 12-hour continuing calibration standard. Internal standards performance were all within specification.

Internal standard areas were checked at random and found to be accurate. No results required qualification due to internal standards performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.
All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for all target compounds are within acceptable limits (± 0.06 relative retention time units of the standard). Ion relative abundances on mass spectra for reported compounds were checked against library reference spectra and were found to be acceptable. Spectra were provided for all reported positive and tentative identifications.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS
Target compound lower limits of quantitation are based on on-column amounts of 1 ng for neutrals and 2-5 ng for substituted phenols. The algorithm for calculation of target analyte concentrations was checked and found to be correct. All lower limits of quantitation for chemicals of concern are within the project required quantitation limits (PRQL's), as summarized in the attached results Table.

Specified internal standards, quantitation ions, and RRF's were checked for all sample results and determined to be correct. All target analyte responses were determined by an automated/computerized routine, and no manual reintegrations were found. All sample volume and concentration calculations were checked for each sample and determined to be correct.

TENTATIVELY IDENTIFIED COMPOUNDS
No additional compounds were found nor reported at levels greater than the specified reporting limit (> 10% IS's response).

SYSTEM PERFORMANCE: Within specification.
No signs of degraded system performance were observed. RIC's were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to field (rinsate / trip) blanks, a blind sample split was submitted for analysis (duplicate/split pair = GW01MW02A / GW501MW02A). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either of the two samples.

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW01MW06A. Analytes evaluated include dimethylphthalate, diethylphthalate, diphenylamine,

phenanthrene, di-n-butylphthalate, pyrene, butylbenzylphthalate and chrysene. Accuracies were in the range of 62% - 115%. Recoveries tended to be slightly lower than independent verification analysis of the same materials. Follow-up investigations suggest that some losses may be attributed to the analysis of 500-mL aliquots taken from the full one-liter glass sample container. Verification analysis on a split sample was accomplished by consuming the entire contents of a one-liter sample, which was followed by a rinsing of the sample container with the extraction solvent. While the performance on the reference material is considered acceptable, greater recoveries should be expected by extraction of the entire sample and rinsing of the sample container with the extraction solvent. It is recommended that entire samples be extracted as submitted along with the subsequent rinsing of the sample container to maximize analyte recoveries.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. No chemicals of concern were reported in site samples. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are at the specified limits. Analytical performance is within specified limits, and the data quality is sufficient for its intended purposes.

CHLOROPHENOXYHERBICIDES ANALYSES

Chlorophenoxyherbicides analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8151A (HRGC/ECD). Samples (500 mL.) were spiked with surrogate (2,4-dichlorophenylacetic acid), extracted with diethyl ether, hydrolyzed and derivatized with diazomethane prior to gas chromatographic analysis. Gas chromatographic analysis was performed on dual columns - a DB-5 and a DB-608. Eleven samples, consisting of nine groundwaters, a rinsate blank and a double-blind reference material, were submitted for analyses. No chemical perservative was employed. Principal contaminants of concern have been identified as 2,4-D, 2,4,5-T and 2,4,5-TP (Silvex). Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures as a guideline identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated herbicides results.

SAMPLE HANDLING / HOLDING TIMES: Within specification.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.0 - 3.5 °C upon receipt.

Technical requirements for maximum sample holding time prior to herbicides analysis are established in the Project Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No results required qualification due to sample handling and holding conditions.

INITIAL CALIBRATION: Within specification.
Initial multi-point calibrations were established for all target and surrogate compounds at concentrations of 0.01, 0.025, 0.05, 0.10, 0.20 and 0.40 ng/μL. A combination of linear and quadratic fits were employed for the various analytes. RSD's for linear fits were all $\leq$ 20%, whereas the quadratic fits all

exhibited $r^2 > 0.999$ on both the primary and secondary (confirmation) columns. Initial calibration performance is within acceptance limits.

CONTINUING CALIBRATION: Within specification.
Four continuing calibration verification (CCV) runs were performed at 0.025 - 0.5 ng/µL prior to and following the analysis of sample extracts as specified by the Project Management Plan. All responses were within 15% of the known values, as specified.

BLANKS: Acceptable.
One method (preparation) blank was analyzed with the project samples, as required. No analytes were detected above the reported lower quantitation limits. No results required qualification.

A field blank (equipment rinsate/transport) analysis was performed on 1 submission. All reported results indicated nondetects at the reported lower quantitation limits for all analytes.

SURROGATE COMPOUND RECOVERIES: Within specification.
Dichlorophenylacetic acid (6.2 µg to 500 mL.) was added as a surrogate to all samples, including method and field blanks. Surrogate recoveries ranged from 77% to 97%, well within the specified limits (40% - 140%). No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:
Within specification.
One MS/MSD analysis was performed, as required. Matrix spike compounds added to GW01MW02B were 2,4,5-TP (Silvex), Dicamba and 2,4-D at concentrations of 1-4 µg/L. Recoveries ranged from 58% to 80%, with an RPD range of 0.0% - 6.5%. All MS/MSD recoveries and associated RPD's were within specification (R = 40-140% with RPD $\leq$ 50%). No data required qualification due to MS / MSD measurement performance.

A laboratory control sample (spiked water blank) was analyzed for selected target analytes [same as for the MS/MSD, above] at an equivalent spike concentration of 1-4 µg/L. Analyte recoveries ranged from 65% to 85%, all within specification (R = 50-130%).

TARGET COMPOUND IDENTIFICATION: Acceptable.
Retention time windows were generally within $\pm$ 7 secs of the initial and continuing calibration verifications. No analyte responses were observed nor reported in project samples at the reported lower quantitation limits.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS
Target compound lower limits of quantitation are based on on-column amounts represented by the lowest calibration point in the initial calibration. With the exception of MCPA and MCPP, all other

lower limits of quantitation for chemicals of concern are within the project required quantitation limits (PRQL's), as summarized in the attached results Table. MCPA and MCPP lower quantitation limits are based on a generally poor response of the two target analytes. Both analytes were reported with a lower quantitation limit 16x greater than specified in the Project Management Plan.

SYSTEM PERFORMANCE: Within specification.
No signs of degraded system performance were observed. Chromatograms were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to a field rinsate blank, a blind sample split was submitted for analysis (duplicate/split pair = GW01MW02A / GW501MW02A). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either of the two samples.

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW01MW06A. Analytes evaluated include 2,4-D, 2,4,5-T and 2,4,5-TP (Silvex). Accuracies were in the range of 95% - 112%. Analytical performance on the double-blind reference material is considered acceptable.

OVERALL ASSESSMENT
All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. No chemicals of concern were reported in site samples. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are at the specified limits, with two exceptions (the two exceptions are not identifed as project chemicals of concern). Analytical performance is within specified limits, and the data quality is sufficient for its intended purposes.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Sample Date	Lab I.D.	TPH (mg/L; ppm) Gasoline-range	Diesel-range	Range	Phenol 108-95-2	*bis* (2-Chloroethyl) ether 111-44-4	2-Chloro-phenol 95-57-8	1,3-Dichloro-benzene 541-73-1
GW01MW01A	grd water	7/24/2001	0112786-DK51A	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U	1 U
GW01MW01B	grd water	7/24/2001	0112787-DK51B	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U	1 U
GW01MW02A	grd water	7/24/2001	0112788-DK51C	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U	1 U
GW501MW02A	grd water, split of MW02A	7/24/2001	0112789-DK51D	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U	1 U
GW01MW02B	grd water	7/25/2001	0112790-DK51E	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U	1 U
GW01MW04A	grd water	7/25/2001	0112791-DK51F	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U	1 U
GW01MW05A	grd water	7/26/2001	0112792-DK51G	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U	1 U
GW01MW03A	grd water	7/26/2001	0112793-DK51H	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U	1 U
GW01MW03B	grd water	7/26/2001	0112794-DK51I	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U	1 U
GW1001MW03B	rinsate blank	7/27/2001	0112795-DK51J	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U	1 U
GW01MW06A	ref mtl	7/24/2001	0112796-DK51K	0.25 U			2 U	2 U	1 U	1 U
Transport Blank	transport blk		0112807-DK51V	0.25 U						
PRQL (µg/L)				*0.35*	*10*	*20*	*2*	*2*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	1,4-Dichloro-benzene 106-46-7	Benzyl alcohol 100-51-6	1,2-Dichloro-benzene 95-50-1	2-Methyl-phenol 95-48-7	2,2'-Oxy*bis*-(chloropropane) 108-60-1	4-Methyl-phenol 106-44-5	N-Nitroso-di-n-propylamine 621-64-7	Hexachloro-ethane 67-72-1	Nitro-benzene 98-95-3	Isophorone 78-59-1	2-Nitro-phenol 88-75-5
GW01MW01A	grd water	1 U	5 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	5 U
GW01MW01B	grd water	1 U	5 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	5 U
GW01MW02A	grd water	1 U	5 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	5 U
GW501MW02A	grd water, split of MW02A	1 U	5 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	5 U
GW01MW02B	grd water	1 U	5 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	5 U
GW01MW04A	grd water	1 U	5 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	5 U
GW01MW05A	grd water	1 U	5 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	5 U
GW01MW03A	grd water	1 U	5 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	5 U
GW01MW03B	grd water	1 U	5 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	5 U
GW1001MW03B	rinsate blank	1 U	5 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	5 U
GW01MW06A	ref mtl	1 U	5 U	1 U	1 U	1 U	1 U	2 U	2 U	1 U	1 U	5 U
Transport Blank	transport blk											
PRQL (µg/L)		*1*	*5*	*1*	*2*	*1*	*1*	*2*	*2*	*1*	*1*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	2,4-Dimethyl-phenol 105-67-9	Benzoic acid 65-85-0	*bis* (2-Chloro-ethoxy)methane 111-91-1	2,4-Dichloro-phenol 120-83-2	1,2,4-Trichloro-benzene 120-82-1	Naphthalene 91-20-3	4-Chloro-aniline 106-47-8	Hexachloro-butadiene 87-68-3	4-Chloro-3-methylphenol 59-50-7	2-Methyl-naphthalene 91-57-6
GW01MW01A	grd water	3 U	10 U	1 U	3 U	1 U	1 U	3 U	2 U	2 U	1 U
GW01MW01B	grd water	3 U	10 U	1 U	3 U	1 U	1 U	3 U	2 U	2 U	1 U
GW01MW02A	grd water	3 U	10 U	1 U	3 U	1 U	1 U	3 U	2 U	2 U	1 U
GW501MW02A	grd water, split of MW02A	3 U	10 U	1 U	3 U	1 U	1 U	3 U	2 U	2 U	1 U
GW01MW02B	grd water	3 U	10 U	1 U	3 U	1 U	1 U	3 U	2 U	2 U	1 U
GW01MW04A	grd water	3 U	10 U	1 U	3 U	1 U	1 U	3 U	2 U	2 U	1 U
GW01MW05A	grd water	3 U	10 U	1 U	3 U	1 U	1 U	3 U	2 U	2 U	1 U
GW01MW03A	grd water	3 U	10 U	1 U	3 U	1 U	1 U	3 U	2 U	2 U	1 U
GW01MW03B	grd water	3 U	10 U	1 U	3 U	1 U	1 U	3 U	2 U	2 U	1 U
GW1001MW03B	rinsate blank	3 U	10 U	1 U	3 U	1 U	1 U	3 U	2 U	2 U	1 U
GW01MW06A	ref mtl	3 U	10 U	1 U	3 U	1 U	1 U	3 U	2 U	2 U	1 U
Transport Blank	transport blk										
PRQL (µg/L)		*3*	*10*	*1*	*3*	*1*	*1*	*3*	*2*	*2*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Hexachloro-cyclopentadiene 77-47-4	2,4,6-Trichloro-phenol 88-06-2	2,4,5-Trichloro-phenol 95-95-4	2-Chloro-naphthalene 91-58-7	2-Nitro-aniline 88-74-4	Dimethyl-phthalate 131-11-3	Acenaph-thylene 208-96-8	3-Nitro-aniline 99-09-2	Acenaphthene 83-32-9	2,4-Dinitro-phenol 51-28-5
GW01MW01A	grd water	5 U	5 U	5 U	1 U	5 U	1 U	1 U	6 U	1 U	10 U
GW01MW01B	grd water	5 U	5 U	5 U	1 U	5 U	1 U	1 U	6 U	1 U	10 U
GW01MW02A	grd water	5 U	5 U	5 U	1 U	5 U	1 U	1 U	6 U	1 U	10 U
GW501MW02A	grd water, split of MW02A	5 U	5 U	5 U	1 U	5 U	1 U	1 U	6 U	1 U	10 U
GW01MW02B	grd water	5 U	5 U	5 U	1 U	5 U	1 U	1 U	6 U	1 U	10 U
GW01MW04A	grd water	5 U	5 U	5 U	1 U	5 U	1 U	1 U	6 U	1 U	10 U
GW01MW05A	grd water	5 U	5 U	5 U	1 U	5 U	1 U	1 U	6 U	1 U	10 U
GW01MW03A	grd water	5 U	5 U	5 U	1 U	5 U	1 U	1 U	6 U	1 U	10 U
GW01MW03B	grd water	5 U	5 U	5 U	1 U	5 U	1 U	1 U	6 U	1 U	10 U
GW1001MW03B	rinsate blank	5 U	5 U	5 U	1 U	5 U	1 U	1 U	6 U	1 U	10 U
GW01MW06A	ref mtl	5 U	5 U	5 U	1 U	5 U	**17 (85%)**	1 U	6 U	1 U	10 U
Transport Blank	transport blk										
PRQL (µg/L)		*5*	*5*	*5*	*1*	*5*	*1*	*1*	*6*	*1*	*10*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
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units = µg/L

Field I.D.	Comments	4-Nitro-phenol 100-02-7	Dibenzo-furan 132-64-9	2,6-Dinitro-toluene 606-20-2	2,4-Dinitro-toluene 121-14-2	Diethyl-phthalate 84-66-2	4-Chlorophenyl-phenylether 7005-72-3	Fluorene 86-73-7	4-Nitro-aniline 100-01-6	4,6-Dinitro-2-methylphenol 534-52-1	* N-Nitroso-diphenylamine 86-30-6	4-Bromophenyl-phenylether 101-55-3
GW01MW01A	grd water	5 U	1 U	5 U	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U
GW01MW01B	grd water	5 U	1 U	5 U	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U
GW01MW02A	grd water	5 U	1 U	5 U	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U
GW501MW02A	grd water, split of MW02A	5 U	1 U	5 U	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U
GW01MW02B	grd water	5 U	1 U	5 U	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U
GW01MW04A	grd water	5 U	1 U	5 U	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U
GW01MW05A	grd water	5 U	1 U	5 U	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U
GW01MW03A	grd water	5 U	1 U	5 U	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U
GW01MW03B	grd water	5 U	1 U	5 U	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U
GW1001MW03B	rinsate blank	5 U	1 U	5 U	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U
GW01MW06A	ref mtl	5 U	1 U	5 U	5 U	**33 (83%)**	1 U	1 U	5 U	10 U	**18 (90%)**	1 U
Transport Blank	transport blk											
PRQL (µg/L)		*5*	*1*	*5*	*5*	*1*	*1*	*1*	*5*	*10*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

* Summation of N-nitrosodiphenylamine and diphenylamine.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Hexachloro-benzene 118-74-1	Pentachloro-phenol 87-86-5	Phenanthrene 85-01-8	Carbazole 86-74-8	Anthracene 120-12-7	Di-n-butyl-phthalate 84-74-2	Fluoranthene 206-44-0	Pyrene 129-00-0	Butylbenzyl-phthalate 85-68-7	3,3'-Dichloro-benzidine 91-94-1	Benzo(a)-anthracene 56-55-3
GW01MW01A	grd water	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
GW01MW01B	grd water	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
GW01MW02A	grd water	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
GW501MW02A	grd water, split of MW02A	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
GW01MW02B	grd water	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
GW01MW04A	grd water	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
GW01MW05A	grd water	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
GW01MW03A	grd water	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
GW01MW03B	grd water	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
GW1001MW03B	rinsate blank	1 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U	1 U
GW01MW06A	ref mtl	1 U	5 U	**29 (73%)**	1 U	1 U	**37 (62%)**	1 U	**19 (95%)**	**46 (115%)**	5 U	1 U
Transport Blank	transport blk											
PRQL (µg/L)		*1*	*5*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*5*	

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
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units = µg/L

Field I.D.	Comments	*bis* (2-Ethylhexyl)-phthalate 117-81-7	Chrysene 218-01-9	Di-n-octyl-phthalate 117-84-0	Benzo(b)-fluoranthene 205-99-2	Benzo(k)-fluoranthene 207-08-9	Benzo(a)-pyrene 50-32-8	Indeno(1,2,3-cd)pyrene 193-39-5	Dibenz(a,h)-anthracene 53-70-3	Benzo(g,h,i)-perylene 191-24-2	2,4,5-TP (Silvex) 93-72-1	2,4,5-T 93-76-5
GW01MW01A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 U	0.60 U
GW01MW01B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 U	0.60 U
GW01MW02A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 U	0.60 U
GW501MW02A	grd water, split of MW02A	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 U	0.60 U
GW01MW02B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 U	0.60 U
GW01MW04A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 U	0.60 U
GW01MW05A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 U	0.60 U
GW01MW03A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 U	0.60 U
GW01MW03B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 U	0.60 U
GW1001MW03B	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 U	0.60 U
GW01MW06A	ref mtl	1 U	**9.1 (91%)**	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.28 U	0.60 U
Transport Blank	transport blk										**56 (112%)**	**44 (110%)**
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*0.3*	*0.6*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Dinoseb 88-85-7	Dicamba 1918-00-9	2,4-D 94-75-7	2,4-DB 94-82-6	Dalapon 75-99-0	MCPA 94-74-6	Dichloroprop 120-36-5	MCPP 93-65-2
GW01MW01A	grd water	0.50 U	0.70 U	1.5 U	10 U	2.0 U	1200 U	3.1 U	1200 U
GW01MW01B	grd water	0.50 U	0.70 U	1.5 U	10 U	2.0 U	1200 U	3.1 U	1200 U
GW01MW02A	grd water	0.50 U	0.70 U	1.5 U	10 U	2.0 U	1200 U	3.1 U	1200 U
GW501MW02A	grd water, split of MW02A	0.50 U	0.70 U	1.5 U	10 U	2.0 U	1200 U	3.1 U	1200 U
GW01MW02B	grd water	0.50 U	0.70 U	1.5 U	10 U	2.0 U	1200 U	3.1 U	1200 U
GW01MW04A	grd water	0.50 U	0.70 U	1.5 U	10 U	2.0 U	1200 U	3.1 U	1200 U
GW01MW05A	grd water	0.50 U	0.70 U	1.5 U	10 U	2.0 U	1200 U	3.1 U	1200 U
GW01MW03A	grd water	0.50 U	0.70 U	1.5 U	10 U	2.0 U	1200 U	3.1 U	1200 U
GW01MW03B	grd water	0.50 U	0.70 U	1.5 U	10 U	2.0 U	1200 U	3.1 U	1200 U
GW1001MW03B	rinsate blank	0.50 U	0.70 U	1.5 U	10 U	2.0 U	1200 U	3.1 U	1200 U
GW01MW06A	ref mtl	0.50 U	0.70 U	**76 (95%)**	10 U	2.0 U	1200 U	3.1 U	1200 U
Transport Blank	transport blk								
PRQL (µg/L)		*2*	*0.7*	*1.5*	*10*	*2*	*75*	*3.1*	*75*

Comprehensive validation performed for analytes reported in blind ref. material.

METALS ANALYSES

Metals analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP's are identified as U.S. EPA SW-846 Methods 6010B / 7000 (all metals analyzed by 6010B (ICP-AES); with the exception of As, Pb, Se and Tl, which were analyzed by 200.8 (ICP-MS) and Hg by 7470A (CVAA)). Twenty-one samples were submitted for analyses - ten pairs were submitted for the analysis of both dissolved and total metals; the remaining sample was a double-blind reference material for independent evaluation of accuracy for selected analytes (As, Ba, Hg & Pb). Samples for determination of dissolved metals were field-filtered using an in-line, nitrocellulose, 0.45 µm cartridge filter assembly. All samples were preserved upon collection with HNO_3 to pH $\leq$ 2. The target metal analytes are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Inorganics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/013]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan for As, Ba, Hg & Pb.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated metals results.

SAMPLE HANDLING / HOLDING TIMES: Within specification.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.0 - 3.5 °C upon receipt.

Technical requirements for maximum sample holding time prior to metals analysis are established in the Project Management Plan as 28 days for mercury and 6 months for other metals, from time of collection to time of analysis. All samples were analyzed within 14 days of the time from sample collection. All analyses were performed within the specified holding times.

CALIBRATION: Within specification.
Initial Calibration. Initial instrumental calibrations were performed daily using at least the minimum required number of data points to establish the analytical curve for each method: a blank and one

standard for ICP-AES analyses, a blank and four standards for ICP-MS analyses, and a blank and six standards for mercury (CVAA) analyses. Correlation coefficients for all ICP-MS and CVAA initial calibrations are ≥0.995, as required.

Initial Calibration Verification. Initial calibration verification checks (ICV's) were performed immediately after initial instrumental calibrations during all ICP (AES & MS) and CVAA analytical runs, as required. All ICV recoveries are within acceptance limits (90-110% for ICP and 80-120% for mercury).

Continuing Calibration Verification. Continuing calibration verification standards (CCV's) were analyzed at the required frequency for all ICP and CVAA analytical runs (at the beginning and end of each run; at a frequency of ≥10% or every two hours, whichever is more frequent). All CCV recoveries are within acceptance limits (90-110% for ICP and 80-120% for CVAA).

Calibration Check Sample. A check sample at a concentration of 2x the project required quantitation level was analyzed following initial calibrations and found to range from 92% to 110%. While control limits are unspecified in the Project Management Plan, the performance is considered reasonable and acceptable.

ICP-MS Quantitation. Seven internal/check standards (lithium, scandium, germanium, yttrium, indium, terbium and bismuth) were added to all samples analyzed, including standards and blanks. Internal standard performance for all samples analyzed was found to be within specification (60-125% of the response of the calibration blank).

CALIBRATION, PREPARATION, and FIELD BLANKS: Within specification.

Initial/Continuing Calibration Blanks. Initial calibration blanks (ICB's) were analyzed immediately after ICV's, and continuing calibration blanks (CCB's) were analyzed immediately after CCV's during all ICP-AES, ICP-MS, and CVAA analytical runs, as required.

The Project Management Plan specifies that ICB's and CCB's are less than the lower quantitation limit for each reported analyte. All ICB's and CCB's were within specification. All ICB and CCB results were verified by examination of raw data.

Preparation / Method Blanks. Preparation blanks were analyzed for all target analytes at the required frequency (once per preparation batch). No analytes were reported above the project required quantitation limit.

Equipment Rinsate Blanks. Two equipment rinsate blanks were collected and analyzed. No analytes, with the exception of sodium, were detected above the project required quantitation limit.

INTERFERENCE CHECK SAMPLE: Within specification.
ICP (AES & MS) interference check solutions (ICS) were analyzed for the target analytes at the beginning of each analytical run. Recoveries for the target analytes of concern were within acceptance limits (80-120%).

LABORATORY CONTROL SAMPLE: Within specification.
Laboratory control samples (LCS) were analyzed at the required frequency (at least one sample per matrix per preparation batch). Two aqueous LCS's (spiked blanks) were analyzed. All target analytes are within project acceptance limits (80-120% recovery) for all reported analyses of the aqueous LCS.

DUPLICATE SAMPLE ANALYSES: Within specification.
Laboratory duplicate samples were analyzed for the target analytes at the required frequency (at least one sample per matrix per preparation batch). Results of all duplicate analyses greater than the IDL are within project acceptance limits (±20% RPD) for all analytes of concern (As, Ba, Hg & Pb).
Chromium and zinc RPDs for the "totals" analyses were 67% and 22%, respectively. All associated hits (greater than the PRQL's for Cr and Zn) were qualified as estimates with the "J" qualifier code.

MATRIX SPIKE SAMPLE ANALYSES
Matrix spike samples were analyzed for the target analytes at the required frequency (at least one sample per matrix per preparation batch). Project-specified acceptance limits for matrix spike recovery are 75-125% and are applicable only to those samples in which the sample concentration does not exceed 4 times the spike concentration. All water sample matrix spike recoveries were acceptable for those analytes of concern identified above (As, Ba, Hg & Pb), and no associated results were rejected or required qualification.

Antimony exhibited a recovery of 31% in the "totals" analyses; which had no effect on the data as no Sb was detected in either filtered or nonfiltered samples.

ICP SERIAL DILUTION & POST-DIGESTION SPIKES
None performed.

SAMPLE RESULT VERIFICATION
Sample quantitation and transcription to the reporting form (Form I) was verified for at least 10% of the analytes for each sample, including QC samples. No significant errors were detected.
Results for all target analytes are within the linear range of the instrument. No significant anomalies were noted in the raw data. All raw data are legible and complete.

OTHER PERFORMANCE DATA

Field Quality Control Sample Analyses. Two blind splits were taken and submitted for analyses. These splits were generated from homogenized composites for both nonfiltered and filtered samples at MW02A. Results are presented in the attached Table. RPD's were less than or equal to 5%.

Blind Reference Material. A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW01MW06A. Analytes evaluated include As, Ba, Hg and Pb. Accuracies were in the range of 104% - 120%.

OVERALL ASSESSMENT OF THE DATA

All deliverables required by the project are present and data packages are complete. Recommended sample holding times were met for all analytes in all samples. Initial calibration and continuing calibration requirements were met for all analytes in all analytical runs. Reporting limits for all analytes in all samples are at or below the Project Required Quantitation Levels (PRQL's). Analytical performance on a double-blind independent reference material was evaluated for selected analytes of concern and determined to be acceptable. Few problems were encountered and the data as qualified meet the project's data quality objectives.

Camp Bonneville . anded Site Investigation
Landfill 4, Demolition Area 1
Metals & Conventionals Results

values as µg/L.

Field I.D.	Comments	Sample Date	Lab I.D.	Sb 7440-36-0	As 7440-38-2	Ba 7440-39-3	Be 7440-41-7	Cd 7440-43-9	Ca 7440-70-2	Cr 7440-47-3	Cu 7440-50-8	Fe 7439-89-6
GW01MW01A	grd water, total metals	7/24/2001	0112786-DK51A	50 U	0.2 U	**4**	1 U	2 U	**4630**	**25 J**	2 U	**200**
GW01MW01A (D)	grd water, dissolved metals	7/24/2001	0112797-DK51L	50 U	0.2 U	**4**	1 U	2 U	**5060**	**12**	2 U	**110**
GW01MW01B	grd water, total metals	7/24/2001	0112787-DK51B	50 U	0.2 U	3 U	1 U	2 U	**2040**	**7 J**	2 U	**70**
GW01MW01B (D)	grd water, dissolved metals	7/24/2001	0112798-DK51M	50 U	0.2 U	3 U	1 U	2 U	**2210**	5 U	2 U	**40**
GW01MW02A	grd water, total metals	7/24/2001	0112788-DK51C	50 U	0.2 U	3 U	1 U	2 U	**1470**	**10 J**	2 U	**180**
GW01MW02A (D)	grd water, dissolved metals	7/24/2001	0112799-DK51N	50 U	0.2 U	3 U	1 U	2 U	**1270**	5 U	2 U	20 U
GW501MW02A	split of MW02A, total metals	7/24/2001	0112789-DK51D	50 U	0.2 U	3 U	1 U	2 U	**1220**	**6 J**	2 U	**50**
GW501MW02A (D)	split of MW02A (D), dissolved metals	7/24/2001	0112800-DK51O	50 U	0.2 U	3 U	1 U	2 U	**1260**	5 U	**2**	20 U
GW01MW02B	grd water, total metals	7/25/2001	0112790-DK51E	50 U	**2.5**	**93**	1 U	2 U	**9020**	**18 J**	**16**	**10400**
GW01MW02B (D)	grd water, dissolved metals	7/25/2001	0112801-DK51P	50 U	0.2 U	**8**	1 U	2 U	**1460**	5 U	2 U	20 U
GW01MW04A	grd water, total metals	7/25/2001	0112791-DK51F	50 U	**0.2**	**10**	1 U	2 U	**2700**	**18 J**	**7**	**2730**
GW01MW04A (D)	grd water, dissolved metals	7/25/2001	0112802-DK51Q	50 U	0.2 U	3 U	1 U	2 U	**2800**	5 U	2 U	20 U
GW01MW05A	grd water, total metals	7/26/2001	0112792-DK51G	50 U	0.2 U	**3**	1 U	2 U	**3170**	**11 J**	2 U	**320**
GW01MW05A (D)	grd water, dissolved metals	7/26/2001	0112803-DK51R	50 U	0.2 U	3 U	1 U	2 U	**2750**	5 U	2 U	20 U
GW01MW03A	grd water, total metals	7/26/2001	0112793-DK51H	50 U	0.2 U	3 U	1 U	2 U	**1670**	5 U	2 U	**210**
GW01MW03A (D)	grd water, dissolved metals	7/26/2001	0112804-DK51S	50 U	0.2 U	3 U	1 U	2 U	**1800**	5 U	2 U	**20 U**
GW01MW03B	grd water, total metals	7/26/2001	0112794-DK51I	50 U	0.2 U	**15**	1 U	2 U	**5450**	5 U	2 U	**230**
GW01MW03B (D)	grd water, dissolved metals	7/26/2001	0112805-DK51T	50 U	0.2 U	**15**	1 U	2 U	**6400**	5 U	2 U	20 U
GW1001MW03B	rinsate blk, total metals	7/27/2001	0112795-DK51J	50 U	0.2 U	3 U	1 U	2 U	50 U	5 U	2 U	20 U
GW1001MW03B (D)	rinsate blk, dissolved metals	7/27/2001	0112806-DK51U	50 U	0.2 U	3 U	1 U	2 U	50 U	5 U	2 U	20 U
GW01MW06A	ref mtl, total metals	7/24/2001	0112796-DK51K	50 U	**5.8 (116%)**	**208 (104%)**	1 U	2 U	50 U	5 U	2 U	20 U
PRQL (µg/L)				*50*	*1*	*3*	*1*	*2*	*50*	*5*	*2*	*20*

Comprehensive validation performed for As, Ba, Hg & Pb.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Metals & Conventionals Results

values as µg/L.

Field I.D.	Comments	Pb 7439-92-1	Mg 7439-95-4	Hg 7439-97-6	Ni 7440-02-(	K 7440-09-7	Se 7782-49-2	Ag 7440-22-4	Na 7440-23-5	Tl 7440-28-0	Zn 7440-66-6	Alkalinity mg/L $CaCO_3$
GW01MW01A	grd water, total metals	1 U	**1780**	0.1 U	**10**	500 U	0.5 U	3 U	**8550**	0.2 U	**7 J**	**15**
GW01MW01A (D)	grd water, dissolved metals	1 U	**1910**	0.1 U	**40**	500 U	0.5 U	3 U	**9010**	0.2 U	6 U	
GW01MW01B	grd water, total metals	1 U	**1090**	0.1 U	10 U	500 U	0.5 U	3 U	**1240**	0.2 U	6 U	**11**
GW01MW01B (D)	grd water, dissolved metals	1 U	**1150**	0.1 U	10 U	500 U	0.5 U	3 U	**1310**	0.2 U	6 U	
GW01MW02A	grd water, total metals	1 U	**480**	0.1 U	10 U	500 U	**0.6**	3 U	**7770**	0.2 U	6 U	**3.1**
GW01MW02A (D)	grd water, dissolved metals	1 U	**410**	0.1 U	10 U	500 U	**0.6**	3 U	**5710**	0.2 U	6 U	
GW501MW02A	split of MW02A, total metals	1 U	**410**	0.1 U	10 U	500 U	0.5 U	3 U	**6010**	0.2 U	6 U	**4.9**
GW501MW02A (D)	split of MW02A (D), dissolved metals	1 U	**420**	0.1 U	10 U	500 U	**0.6**	3 U	**6000**	0.2 U	6 U	
GW01MW02B	grd water, total metals	**12**	**6410**	0.1 U	10 U	**4230**	0.5 U	3 U	**13000**	0.2 U	**41 J**	**15**
GW01MW02B (D)	grd water, dissolved metals	1 U	**540**	0.1 U	10 U	**2670**	0.5 U	3 U	**11500**	0.2 U	6 U	
GW01MW04A	grd water, total metals	1 U	**1330**	0.1 U	10 U	**720**	0.5 U	3 U	**2230**	0.2 U	**12 J**	**9.7**
GW01MW04A (D)	grd water, dissolved metals	1 U	**920**	0.1 U	10 U	500 U	0.5 U	3 U	**2620**	0.2 U	6 U	
GW01MW05A	grd water, total metals	1 U	**990**	0.1 U	10 U	500 U	0.5 U	3 U	**1790**	0.2 U	**12 J**	**13**
GW01MW05A (D)	grd water, dissolved metals	1 U	**1000**	0.1 U	10 U	500 U	0.5 U	3 U	**1770**	0.2 U	6 U	
GW01MW03A	grd water, total metals	1 U	**670**	0.1 U	10 U	500 U	0.5 U	3 U	**1530**	0.2 U	**7 J**	**9.9**
GW01MW03A (D)	grd water, dissolved metals	1 U	**700**	0.1 U	10 U	500 U	0.5 U	3 U	**1700**	0.2 U	6 U	
GW01MW03B	grd water, total metals	1 U	**1990**	0.1 U	10 U	**9350**	0.5 U	3 U	**26500**	0.2 U	**9 J**	**45**
GW01MW03B (D)	grd water, dissolved metals	1 U	**2250**	0.1 U	10 U	**10600**	0.5 U	3 U	**28200**	0.2 U	6 U	
GW1001MW03B	rinsate blk, total metals	1 U	20 U	0.1 U	10 U	500 U	0.5 U	3 U	**80**	0.2 U	6 U	**2.5**
GW1001MW03B (D)	rinsate blk, dissolved metals	1 U	20 U	0.1 U	10 U	500 U	0.5 U	3 U	50 U	0.2 U	6 U	
GW01MW06A	ref mtl, total metals	**12 (120%)**	20 U	**1.1 (110%)**	10 U	500 U	0.5 U	3 U	50 U	0.2 U	6 U	
PRQL (µg/L)		*1*	*20*	*0.1*	*10*	*500*	*2*	*3*	*50*	*1*	*6*	*5*

Comprehensive validation performed for As, Ba, Hg & Pb.

Camp Bonneville . anded Site Investigation
Landfill 4, Demolition Area 1
Metals & Conventionals Results

values as µg/L.

Field I.D.	Comments	Carbonate mg/L $CaCO_3$	Bicarbonate mg/L $CaCO_3$	total suspended solids mg/L	Chloride mg/L	total Cyanide mg/L	Nitrate mg-N/L	Nitrite mg-N/L	Sulfate mg/L	TOC mg/L	DOC mg/L
GW01MW01A	grd water, total metals	1 U	1 U	**2.6**	**1.7**	0.005 U	0.1 U	0.1 U	**19.5**	1.5 U	1.5 U
GW01MW01A (D)	grd water, dissolved metals										
GW01MW01B	grd water, total metals	1 U	**11**	1.1 U	**1.3**	0.005 U	0.1 U	0.1 U	**0.5**	1.5 U	1.5 U
GW01MW01B (D)	grd water, dissolved metals										
GW01MW02A	grd water, total metals	1 U	**3.1**	**2.6**	**2.3**	0.005 U	**0.3**	0.1 U	**15.5**	1.5 U	1.5 U
GW01MW02A (D)	grd water, dissolved metals										
GW501MW02A	split of MW02A, total metals	1 U	**4.9**	1 U	**1.8**	0.005 U	**0.3**	0.1 U	**10.3**	1.5 U	1.5 U
GW501MW02A (D)	split of MW02A (D), dissolved metals										
GW01MW02B	grd water, total metals	1 U	**15**	**970**	**17.3**	0.005 U	**0.5**	0.1 U	**16.9**	1.5 U	1.5 U
GW01MW02B (D)	grd water, dissolved metals										
GW01MW04A	grd water, total metals	1 U	**9.7**	**58**	**1.2**	0.005 U	**0.2**	0.1 U	**1.6**	1.5 U	1.5 U
GW01MW04A (D)	grd water, dissolved metals										
GW01MW05A	grd water, total metals	1 U	**13**	**4.7**	**1.5**	0.005 U	**0.1**	0.1 U	**0.3**	1.5 U	1.5 U
GW01MW05A (D)	grd water, dissolved metals										
GW01MW03A	grd water, total metals	1 U	**9.9**	**8.4**	**1.4**	0.005 U	**0.1**	0.1 U	**0.3**	1.5 U	1.5 U
GW01MW03A (D)	grd water, dissolved metals										
GW01MW03B	grd water, total metals	1 U	**45**	**4.3**	**26.5**	0.005 U	0.1 U	0.1 U	**24.8**	1.5 U	1.5 U
GW01MW03B (D)	grd water, dissolved metals										
GW1001MW03B	rinsate blk, total metals	1 U	**2.5**	1 U	**1.5**	0.005 U	**0.1**	0.1 U	**0.3**	1.5 U	1.5 U
GW1001MW03B (D)	rinsate blk, dissolved metals										
GW01MW06A	ref mtl, total metals										
PRQL (µg/L)		*1*		*1*	*2*	*0.005*	*0.05*	*0.05*	*10*	*1.5*	*1.5*

Comprehensive validation performed for As, Ba, Hg & Pb.

DATA VALIDATION REPORT

EXPLOSIVES, NITROGUANIDINE AND PERCHLORATE ANALYSES

Eleven groundwater samples and a rinsate blank were collected between October 23, 2001 and October 26, 2001. The samples were submitted to Severn Trent Laboratories in Colchester, Vermont for analysis of explosive organic compounds and to Severn Trent Laboratories in Knoxville, Tennessee for analysis of nitroguanidine and perchlorate as follows:

Field Sample ID	Matrix	Analyses
GW02MW01A	Ground Water	Explosives compounds (SW-846 Method 8330 HPLC) Nitroguanidine (SW-846 Method 8330 mod.) Perchlorate (USEPA Method 314.0)
GW02MW01B		
GW02MW01BMS		
GW02MW01BMSD		
GW02MW02A		
GW02MW02B		
GW502MW02B		
GW02MW02AD		(Dissolved) Explosives, Nitroguanidine
GW02MW02BD		
GW02MW03A		Explosives, Nitroguanidine, Perchlorate
GW02MW03B		
GW02MW04A		
GW02MW05A		
GW02MW07A	Performance Evaluation Samples	
GW02MW07B		
GW1002MW05A	Rinsate	

The data packages were validated according to the procedures identified in the EPA *Functional Guidelines for Evaluating Organics Analyses* EPA, 1994 (EPA-540/R-94/0121), as applicable to the USACE Shell and the site specific *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* (Management Plan) prepared by URS in May 2001 for the Seattle District U.S. Army Corps of Engineers (USACE). Raw data were reviewed for completeness and accuracy of transcription to the data summary forms. Approximately 10% of the results reported in each of the samples and QC analyses were recalculated and verified for the target compounds. The data are acceptable with the qualifications noted in the review.

EXPLOSIVES ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA CLP-type, or comparable, deliverables for all data submittals. The documentation provided by the laboratory was sufficient to allow validation of the associated data.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.

Technical requirements for maximum sample holding time prior to explosives analysis are established in the Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No data required qualification due to sample handling and holding conditions. Additional analyses for dissolved explosives were performed on samples 2A and 2B. These samples were identified as GW02MW02AD and GW02MW02BD.

INITIAL CALIBRATION: Acceptable.

Initial multi-point calibrations were established for all target and surrogate compounds. The concentrations of the calibration standards bracketed the expected target compound concentrations, allowing for dilution. All percent relative standard deviations (%RSDs) were acceptable at ≤ 20 percent.

CONTINUING CALIBRATION: Acceptable.

A continuing calibration verification (CCV) standard was analyzed prior to the analysis of sample extracts as specified by the Management Plan. All percent differences (%Ds) were ≤ 15 percent, as specified.

BLANKS: Acceptable.

Two method (preparation) blanks were analyzed with the project samples, as required. No target compounds were detected in the method blanks. No data required qualification.

A rinsate blank was also submitted for analyses. No target compounds were detected in the rinsate blank. No data required qualification.

SURROGATE COMPOUND RECOVERIES: Acceptable.

Surrogate 1,2-dinitrobenzene was added to all samples, including method and rinsate blanks. Criteria for evaluation of 1,2-dinitrobenzene are 50%-150% recovery. Recoveries were within specified limits.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES: Within specification.

One MS/MSD analysis was performed, as required. All MS/MSD recoveries were within the QC limits, (50%-140%) and all relative percent differences (RPDs) were ≤60 percent, as specified. No data required qualification due to MS/MSD measurement performance.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES: Within specification.

A laboratory control sample (spiked water blank) was analyzed for the selected target compounds. All LCS recoveries were within the QC limits (60%-120%). No data required qualification due to LCS measurement performance.

TARGET COMPOUND IDENTIFICATION: Acceptable

Target compound identifications were reviewed and were found to be acceptable.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS: Within specification

Sample data were recalculated for 10% of the target compounds and QC samples. All data calculations were acceptable. Various compounds displayed greater than 40% D between the primary column and secondary column indicating positive detection of the compounds and estimated concentrations. These compound concentrations were flagged "J, g" in the associated samples.

Concentrations of several compounds exceeded the calibration range of the instrument and were flagged "E" by the laboratory and "J, q" by the reviewer. These samples were reanalyzed at dilutions and the results from the dilutions should be used for the affected compounds.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. Chromatograms were examined for abrupt retention time shifts, elevated baselines, and/or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA: Acceptable

Field Generated Quality Control Samples: One rinsate and one blind duplicate pair (W02MW02B and GW502MW02B) were submitted. The resulting data are acceptable.

Independent Reference Material: Two double blind reference materials (GW02MW07A and GW02MW07B) were submitted for an independent assessment of accuracy. The resulting data are acceptable.

OVERALL ASSESSMENT: Acceptable

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. Performance on the double blind reference material is acceptable. Ten percent of the data calculations were verified and found to be correct. The lower quantitation levels achieved are at the specified limits. Analytical performance is within specified limits and the data quality is sufficient for its intended purposes.

SUMMARY OF QUALIFIED DATA

Sample ID	Compound	Qualifier	Rationale
GW02MW02A	RDX	J, q	Exceeded calibration range. Use diluted concentration.
GW02MW02AD			
GW02MW02B			
GW502MW02B			
GW02MW02BD			
GW02MW02BD	2,4-Dinitrotoluene	J, g	Dual column imprecision
GW02MW07A	Nitroglycerin 2,4,6-Trinitrotoluene 2-Nitrotoluene		
GW02MW07A	4-Amino-2,6-dinitrotoluene	J, q	Exceeded Calibration Range. Use diluted concentration.
GW02MW07B	Tetryl 4-Nitrotoluene		

NITROGUANIDINE ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA CLP- type, or comparable, deliverables for all data submittals. The documentation provided by the laboratory was sufficient to allow validation of the associated data.

SAMPLE HANDLING / HOLDING TIMES: Within specification.

All samples were analyzed within 40 days of sample collection. Samples were received by the laboratory at 3 °C. The recommended preservation temperature is 4 °C ± 2 °C. No data required qualification due to sample handling and holding conditions. The laboratory noted that sample GW02MW01A was received labeled as GW02MW02A and sample GW02MW01B was received labeled as GW02MW01A. This error does not impact the quality of the data. Additional analyses for dissolved nitroguanidine were performed on samples GW02MW02A and GW02MW02B. These samples were identified as GW02MW02AD and GW02MW02BD.

INITIAL CALIBRATION: Within specification.

Initial multi-point calibrations were established for all target and surrogate compounds. %RSDs were ≤ 20 percent, as required. A mid-level, second source standard was also analyzed immediately after the ICAL. All recoveries were within the QC limits of 85%-115 %.

CONTINUING CALIBRATION: Within specification.

A mid-level standard was analyzed daily before sample analysis, after every 10 samples, and at the end of the analytical sequence. %Ds for the continuing calibrations were ≤ 15%.

BLANKS: Acceptable.

One method blank was analyzed for each analytical batch as required in the Management Plan. Nitroguanidine was not detected in the method blanks. A rinsate blank was also submitted for analysis. Nitroguanidine was not detected in the rinsate blank. No data required qualification.

SURROGATE COMPOUND RECOVERIES: Within specification.

Surrogate 1-chloro-3-nitrobenzene was added to all samples, including the method blanks. All recoveries were within the laboratory established QC limits (53%-133%). No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:
Within specification

One MS/MSD analysis was performed, as required. The spike recovery limits are performance-based and are equal to 4 standard deviations of 20 consecutively analyzed LCSs. All MS/MSD recoveries were within the QC limits of 60%-140% and RPDs were within the QC limits of ± 0%-25%. No data required qualification based on MS/MSD performance.

LABORATORY DUPLICATE: Within specification.

One laboratory duplicate was analyzed for each analytical batch as required. The RPD QC limits are performance-based and are equal to 4 standard deviations of 20 consecutively analyzed LCSs. RPDs for the laboratory duplicate samples were within the QC limits of ± 0%-25%. No data required qualification based on laboratory duplicate performance.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES: Within specification

One LCS was analyzed for each analytical batch. The recovery limits are performance-based and are equal to 3 standard deviations of 20 consecutively analyzed LCSs. All LCS recoveries were within the QC limits of 60%-140% and RPDs were within the QC limits of 0%-25%. No data required qualification based on LCS performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.

All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for nitroguanidine were within acceptable limits.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS: Acceptable

Raw data were examined to verify the correct calculation of sample results. Positive results were confirmed using a second column. No false positives were identified. The required quantitation level was achieved. Ten percent of the sample data were recalculated. All data calculations were acceptable.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA: Acceptable

Field Generated Quality Control Samples: One rinsate and one blind duplicate pair (GW02MW02B/ GW502MW02B) were submitted. Nitroguanidine was not detected in these samples. The resulting data were acceptable.

Independent Reference Material: Two double blind reference materials (GW02MW07A and GW02MW07B) were submitted for an independent assessment of accuracy. The resulting data were acceptable.

OVERALL ASSESSMENT: Acceptable

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits for the nitroguanidine. Performance for the double blind reference material is acceptable. The lower quantitation levels achieved are at the specified limits. Ten percent of the data calculations were verified and found to be acceptable. Analytical performance is within specified limits and the data quality is sufficient for its intended purposes.

SUMMARY OF QUALIFIED DATA

No data qualification was required.

PERCHLORATE ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA CLP-type, or comparable, deliverables for all sample submittals. The documentation provided by the laboratory was sufficient to allow validation of the associated data.

SAMPLE HANDLING / HOLDING TIMES: Within specification.

Technical requirements for maximum sample holding time prior to perchlorate analysis are established in the Management Plan as 28 days. All samples were analyzed within the specified holding time.

INITIAL CALIBRATION (ICAL): Within specification.

A five point calibration was performed. The correlation coefficient was greater than 0.995, as required.

INSTRUMENT PERFORMANCE CHECK STANDARD (IPCS) AT MCT:
Within specification

An IPCS was analyzed immediately after the initial calibration and at the beginning of each analytical sequence. %Ds were ≤ 20%, as specified.

INITIAL CALIBRATION CHECK STANDARD (ICCS): Within specification.

An ICCS was analyzed at the beginning of each analytical sequence and immediately after the IPCS. Recoveries were ≤ 25%, as specified.

CONTINUING CAILIBRATION STANDARD AND END CALIBRATION CHECK STANDARD (CCCS): Within specification.

Mid and high level standards were analyzed as required in the Management Plan. Recoveries were within the QC limits (± 15% of the known concentration).

BLANKS: Within specification.

One laboratory reagent blank (LRB) was analyzed for each analytical batch as required in the Management Plan. One rinsate blank was also analyzed with these samples. The method and rinsate blanks were free of contamination.

LABORATORY FORTIFIED MATRIX (LFM): Within specification.

LFM samples were analyzed for perchlorate at the required frequency (at least one sample per matrix per preparation batch). All results were within the QC limits (± 20% of the known concentration).

DUPLICATE SAMPLE ANALYSES: Within specification.

Laboratory duplicate samples were analyzed for perchlorate at the required frequency (at least one sample per matrix per preparation batch). The RPDs for the duplicate pairs ≤ 15%, as specified.

OTHER PERFORMANCE DATA: Acceptable

Field Generated Quality Control Samples: One blind duplicate pair (GW02MW02B/ GW502MW02B) was submitted for analysis. The resulting data were acceptable.

Independent Reference Material: Two double-blind reference samples (GW02MW07A and GW02MW07B) were submitted for an independent assessment of accuracy. The resulting data were acceptable.

OVERALL ASSESSMENT OF THE DATA:

All deliverables required by the project are present and data packages are complete. Recommended sample holding times were met for all samples. The initial and continuing calibration requirements were met in all analytical runs. Analytical performance for the double blind independent reference material was evaluated and determined to be acceptable. Ten percent of the sample data were recalculated. All data calculations were found to be acceptable. The data meet the project's data quality objectives.

SUMMARY OF QUALIFIED DATA:

All QC criteria were met. No data qualifiers were required.

VOLATILE ORGANIC COMPOUND ANALYSES

Volatile organic compound (VOC) analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8260B (HRGC/MS). Fourteen samples, consisting of nine groundwaters, a rinsate blank, 3 transport blanks, and a double-blind reference material, were submitted for analyses. Hydrochloric acid (HCl) perservative was employed. Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated VOC results.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 2.0 - 8.0 °C upon receipt. No adverse effect on sample results is expected.

Samples were preserved upon collection by adjustment of pH ≤ 2 with conc. HCl. Technical requirements for maximum sample holding time prior to VOC's analysis are established at 14 days for analysis of preserved samples. All analyses were performed within the required holding times. (GW02MW07A was analyzed outside the apparent holding time by 2 days. This has no effect on the data since this sample is a double-blind reference material.) No results required qualification due to sample handling and holding conditions.

GC/MS TUNE CHECK: Within specification.
4-Bromofluorobenzene (50 µg/L BFB) was analyzed as a surrogate compound in each and every sample and checked for instrument tune performance at the beginning of each twelve-hour calibration period as required for instrument Finn3. Seven checks were performed and reported for these analyses. All ion abundances and relative ion abundances met U.S. EPA CLP acceptance criteria. Mass

spectral plots and listings were compared, and transcription of mass data to the GC/MS tuning and mass calibration summaries was checked. No errors were found.

All criteria were met and all sample analyses and calibrations were performed within the twelve-hour instrument tune check period.

INITIAL CALIBRATION

Initial multi-point calibrations were established for all target and surrogate compounds at concentrations of 1, 2, 5, 10, 50, 100 and 200 µg/L (on 10/17/01* & 11/7/01**). The minimum RRF (relative response factor) requirement for SPCC's was met for all calibrations, and the performance for CCC's was also within specification. Initial calibration average %RSDs are reported at 12%* and 8%**, within method acceptance limits. All target analyte and CCC RSD's were within method specification (< 15%), with the exception of vinylchloride (23%**), bromoethane (16%*), iodomethane (26%*), 2-chloroethylvinylether (18%*), trans-1,3-dichloropropene (17%*), 2-hexanone (19%*), chlorodibromomethane (20%*), bromoform (26%* & 16%**), trans-1,4-dichloro-2-butene (19%*), *t*-butylbenzene (16%*), 1,2-dibromo-3-chloropropane (18%*) and dichlorodifluoromethane (17%* & 27%**). Vinylchloride was reported in GW02MW07A, and dichlorodifluoromethane was reported in GW02MW02B and GW502MW02B. The results for both analytes are "J" qualified as estimates. No other sample results required qualification due to reported nondetects.

No ICV's were reported. No action is required, and no data requires further qualification.

CONTINUING CALIBRATION

Continuing calibration verifications (CCV) at 50 µg/L were analyzed prior to and following the analysis of sample extracts as specified by the Project Management Plan. All relative response factors were greater than 0.10, as specified; and, with the following exceptions, all %D were less than 20%, as specified. The %D exceptions are for 1,1,2-trichloro-1,2,2-trifluoroethane (25%), carbon disulfide (21%), acetone (58% & 57%), bromoform (24% & 23%), acrylonitrile (28% & 29%), 2-butanone (44% & 46%), 4-methyl-2-pentanone (30% & 26%), 2-hexanone (29% & 24%), 1,1,2,2-tetrachloroethane (27%), 1,2,3-trichloropropane (31%), trans-1,4-dichloro-2-butene (30%), 1,2-dibromo-3-chloropropane (37% & 31%), iodomethane (35% & 25%) and dichlorodifluoromethane (71%, 45% & 25%). No data required further qualification due to deviations from specification for associated CCV-sample groups based on nondetected analytes in associated samples, or results were previously qualified due to initial calibration deviations.

No additional data required qualification due to CCV performance.

BLANKS: Within specification.

Five method (preparation) blanks were analyzed with the project samples, as required. No target analytes were reported above the project required quantitation limits. No results required qualification.

Three transport blank analyses were performed. Results are reported in the attached Table. No target analytes were detected.

SURROGATE COMPOUND RECOVERIES: Within specification.
Project-specified surrogate compounds were added to all samples, including method and field blanks, at concentrations of 50 µg/L.

Criteria for evaluation are as follows:

d_4-1,2-dichloroethane	81-134%	d_8-toluene	81-137%
4-bromofluorobenzene	83-124%	d4-1,2-dichlorobenzene	88-128%

All recoveries are within specification. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES: Acceptable.
Two sets of MS/MSD analyses were performed, as required. All target analytes were spiked into GW02MW01B and GW02MW03B. Recoveries ranged from 60% to 133%, with RPDs ranging from 0.0% to 20%. 2-Chloroethylvinylether showed essentially no recovery in either the MS or MSD, requiring qualification of all analyte nondetects as nonuseable with the "R" qualifier code. 2-Chloroethylvinylether hydrolyzes in the trapping device under acidic conditions (all samples are at pH 2).

Two laboratory control sample (spiked water blank; LCS and LCS duplicate) pairs and two LCSs were analyzed [total of six analyses] for all target analytes at an equivalent spike concentration of 50 µg/L. Analyte recoveries ranged from 61% to 159% with an RPD range of 0.0% to 22%. Recoveries for target analytes detected in project samples all fell within project specifications (80 - 120%). *It is noted that recoveries for 2-chloroethylvinylether ranged from 84% to 109% in the six LCSs (pH is neutral).*

INTERNAL STANDARDS PERFORMANCE: Within specification.
Four internal standards (IS) were added to all samples at a concentration of 50 µg/L. Retention times (RT) for all internal standards in all analyses are within the specified window of ± 30 seconds of the continuing calibration internal standard RT. All internal standard (IS) areas for all sample extracts were verified for accuracy and determined to be correct. The specified acceptance limit for internal standard areas in sample extracts is 0.5 to 2 times the area of the 12-hour continuing calibration standard. Internal standards performance were all within specification.

Internal standard areas were checked at random and found to be accurate. No results required qualification due to internal standards performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.

All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for all target compounds are within acceptable limits (± 0.06 relative retention time units of the standard). Ion relative abundances on mass spectra for reported compounds were checked against library reference spectra and were found to be acceptable. Spectra were provided for all reported positive and tentative identifications.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS

Target compound lower limits of quantitation are based on on-column amounts of 5 ng for most analytes and 10-25 ng for selected others. The algorithm for calculation of target analyte concentrations was checked and found to be correct. All lower limits of quantitation for chemicals of concern are within the project required quantitation limits (PRQL's), as summarized in the attached results Table.

Specified internal standards, quantitation ions, and RRF's were checked for all sample results and determined to be correct. All target analyte responses were determined by an automated/computerized routine, and no manual reintegrations were found. All sample volume and concentration calculations were checked for each sample and determined to be correct.

TENTATIVELY IDENTIFIED COMPOUNDS

No tentatively identified compound (TIC) reports were found in the deliverables package. None were requested.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. RIC's were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to field (rinsate / trip) blanks, a blind sample split was submitted for analysis (duplicate/split pair = GW02MW02B / GW502MW02B). Analytical results for the sample split are presented in the results Table. Six analytes were detected, and all exhibited less than 6.3 RPD (relative percent difference).

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW02MW07A. Analytes evaluated include vinyl chloride, trichloroethylene, tetrachloroethylene, toluene and 1,2,4-trichlorobenzene. Accuracies were in the range of 65% - 110%. Analytical performance on the submitted reference material is considered acceptable.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits for the chemicals of potential concern. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are at the specified limits. Analytical performance is generally within specified limits, and the data quality, with associated qualifiers, is sufficient for its intended purposes.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Sample Date	Lab I.D.	Chloro-methane 74-87-3	Bromo-methane 74-83-9	Vinyl chloride 75-01-4	Chloro-ethane 75-00-3	Methylene chloride 75-09-2	Acetone 67-64-1
GW02MW01A	grd water	10/23/01	0118869-DT39A	1 U	1 U	1 U	1 U	2 U	5 U
GW02MW01B	grd water	10/24/01	0118870-DT39B	1 U	1 U	1 U	1 U	2 U	5 U
GW02MW02A	grd water	10/24/01	0118871-DT39C	1 U	1 U	1 U	1 U	2 U	5 U
GW02MW02B	grd water	10/24/01	0118872-DT39D	1 U	1 U	1 U	1 U	2 U	5 U
GW502MW02B	grd water, split of MW02B	10/24/01	0118873-DT39E	1 U	1 U	1 U	1 U	2 U	5 U
GW02MW03A	grd water	10/25/01	0118930-DT50A	1 U	1 U	1 U	1 U	2 U	5 U
GW02MW03B	grd water	10/26/01	0118931-DT50B	1 U	1 U	1 U	1 U	2 U	5 U
GW02MW04A	grd water	10/26/01	0118932-DT50C	1 U	1 U	1 U	1 U	2 U	5 U
GW02MW05A	grd water	10/26/01	0118933-DT50D	1 U	1 U	1 U	1 U	2 U	5 U
GW1002MW05A	rinsate blank	10/26/01	0118934-DT50E	1 U	1 U	1 U	1 U	2 U	5 U
GW02MW07A	ref mtl	10/23/01	0118935-DT50F	1 U	1 U	**4.4 J (110%)**	1 U	**3.3**	5 U
Transport Blank	trnspt blk	10/24/01	0118879-DT39K	1 U	1 U	1 U	1 U	2 U	5 U
Transport Blank (X)	trnspt blk	10/26/01	0118941-DT50L	1 U	1 U	1 U	1 U	2 U	5 U
Transport Blank	trnspt blk	10/26/01	0118942-DT50M	1 U	1 U	1 U	1 U	2 U	5 U
PRQL (µg/L)				*1*	*1*	*1*	*1*	*2*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Carbon disulfide 75-15-0	1,1-Dichloro-ethene 75-35-4	1,1-Dichloro-ethane 75-34-3	*trans*-1,2-Dichloro-ethene 156-60-5	*cis*-1,2-Dichloro-ethene 156-59-2	Chloroform 67-66-3	1,2-Dichloro-ethane 107-06-2
GW02MW01A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW01B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW02A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW02B	grd water	1 U	**34**	**33**	1 U	1 U	1 U	1 U
GW502MW02B	grd water, split of MW02B	1 U	**35**	**31**	1 U	1 U	1 U	1 U
GW02MW03A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW03B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW04A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW05A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1002MW05A	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW07A	ref mtl	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Transport Blank	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Transport Blank (X)	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Transport Blank	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	2-Butanone (MEK) 78-93-3	1,1,1-Trichloro-ethane 71-55-6	Carbon tetrachloride 56-23-5	Vinyl acetate 108-05-4	Bromodichloro-methane 75-27-4	1,2-Dichloro-propane 78-87-5	*cis*-1,3-Dichloro-propene 10061-01-5
GW02MW01A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW02MW01B	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW02MW02A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW02MW02B	grd water	5 U	**200**	1 U	5 U	1 U	1 U	1 U
GW502MW02B	grd water, split of MW02B	5 U	**210**	1 U	5 U	1 U	1 U	1 U
GW02MW03A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW02MW03B	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW02MW04A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW02MW05A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW1002MW05A	rinsate blank	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW02MW07A	ref mtl	5 U	1 U	1 U	5 U	1 U	1 U	1 U
Transport Blank	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U	1 U
Transport Blank (X)	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U	1 U
Transport Blank	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U	1 U
PRQL (µg/L)		*5*	*1*	*1*		*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville L anded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Trichloro-ethene 79-01-6	Dibromochloro-methane 124-48-1	1,1,2-Trichloro-ethane 79-00-5	Benzene 71-43-2	*trans*-1,3-Dichloro-propene 10061-02-6	2-Chloroethyl-vinylether 110-75-8	Bromoform 75-25-2
GW02MW01A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW02MW01B	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW02MW02A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW02MW02B	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW502MW02B	grd water, split of MW02B	1 U	1 U	1 U	1 U	1 U	R	1 U
GW02MW03A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW02MW03B	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW02MW04A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW02MW05A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW1002MW05A	rinsate blank	1 U	1 U	1 U	1 U	1 U	R	1 U
GW02MW07A	ref mtl	**4.6 (77%)**	1 U	1 U	1 U	1 U	R	1 U
Transport Blank	trnspt blk	1 U	1 U	1 U	1 U	1 U	R	1 U
Transport Blank (X)	trnspt blk	1 U	1 U	1 U	1 U	1 U	R	1 U
Transport Blank	trnspt blk	1 U	1 U	1 U	1 U	1 U	R	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*		*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	4-Methyl-2-pentanone (MIBK) 108-10-1	2-Hexanone 591-78-6	Tetrachloro-ethene 127-18-4	1,1,2,2-Tetra-chloroethane 79-34-5	Toluene 108-88-3	Chloro-benzene 108-90-7	Ethyl-benzene 100-41-4	Styrene 100-42-5
GW02MW01A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW01B	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW02A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW02B	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW502MW02B	grd water, split of MW02B	5 U	5 U	**0.8 J**	1 U	1 U	1 U	1 U	1 U
GW02MW03A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW03B	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW04A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW05A	grd water	5 U	5 U	**0.6 J**	1 U	1 U	1 U	1 U	1 U
GW1002MW05A	rinsate blank	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW07A	ref mtl	5 U	5 U	**3.3 (83%)**	1 U	**8.6 (86%)**	1 U	1 U	1 U
Transport Blank	trnspt blk	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
Transport Blank (X)	trnspt blk	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
Transport Blank	trnspt blk	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*5*	*5*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville L..panded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Trichloro-fluoromethane 75-69-4	1,1,2-Trichloro-1,2,2-trifluoroethane 76-13-1	*m,p* -Xylenes 108-38-3	*o* -Xylene 95-47-6	1,2-Dichloro-benzene 95-50-1	1,3-Dichloro-benzene 541-73-1	1,4-Dichloro-benzene 106-46-7	Acrolein 107-02-8
GW02MW01A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW02MW01B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW02MW02A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW02MW02B	grd water	1 U	**83**	1 U	1 U	1 U	1 U	1 U	50 U
GW502MW02B	grd water, split of MW02B	1 U	**81**	1 U	1 U	1 U	1 U	1 U	50 U
GW02MW03A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW02MW03B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW02MW04A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW02MW05A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW1002MW05A	rinsate blank	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW02MW07A	ref mtl	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
Transport Blank	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
Transport Blank (X)	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
Transport Blank	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
PRQL (µg/L)		*1*		*1*	*1*	*1*	*1*	*1*	

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Methyl-iodide 74-88-4	Bromo-ethane 74-96-4	Acrylo-nitrile 107-13-1	1,1-Dichloro-propene 563-58-6	Dibromo-methane 74-95-3	1,1,1,2-Tetra-chloroethane 630-20-6	1,2-Dibromo-3-chloropropane 96-12-8	1,2,3-Trichloro-propane 96-18-4
GW02MW01A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW02MW01B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW02MW02A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW02MW02B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW502MW02B	grd water, split of MW02B	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW02MW03A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW02MW03B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW02MW04A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW02MW05A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW1002MW05A	rinsate blank	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW02MW07A	ref mtl	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
Transport Blank	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
Transport Blank (X)	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
Transport Blank	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
PRQL (µg/L)		*1*			*1*	*1*	*1*	*5*	*3*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville ... anded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	*trans*-1,4-Dichloro-2-butene 110-57-6	1,3,5-Trimethyl-benzene 108-67-8	1,2,4-Trimethyl-benzene 95-63-6	Hexachloro-butadiene 87-68-3	Ethylene dibromide (1,2-dibromoethane) 106-93-4	Bromochloro-methane 74-97-5
GW02MW01A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW02MW01B	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW02MW02A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW02MW02B	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW502MW02B	grd water, split of MW02B	5 U	1 U	1 U	5 U	1 U	1 U
GW02MW03A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW02MW03B	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW02MW04A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW02MW05A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW1002MW05A	rinsate blank	5 U	1 U	1 U	5 U	1 U	1 U
GW02MW07A	ref mtl	5 U	1 U	1 U	5 U	1 U	1 U
Transport Blank	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U
Transport Blank (X)	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U
Transport Blank	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U
PRQL (µg/L)			*1*	*1*	*5*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Dichlorodifluoro-methane 75-71-8	2,2-Dichloro-propane 590-20-7	1,3-Dichloro-propane 142-28-9	Isopropyl-benzene 98-82-8	n-Propyl-benzene 103-65-1	Bromo-benzene 108-86-1	2-Chloro-toluene 95-49-8	4-Chloro-toluene 106-43-4
GW02MW01A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW01B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW02A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW02B	grd water	**120 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW502MW02B	grd water, split of MW02B	**120 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW03A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW03B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW04A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW05A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1002MW05A	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW07A	ref mtl	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Transport Blank	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Transport Blank (X)	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Transport Blank	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville L. anded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	*t*-Butyl-benzene 98-06-6	*s*-Butyl-benzene 135-98-8	4-Isopropyl-toluene (p-cumene) 99-87-6	n-Butyl-benzene 104-51-8	1,2,4-Trichloro-benzene 120-82-1	Naphthalene 91-20-3	1,2,3-Trichloro-benzene 87-61-6
GW02MW01A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW02MW01B	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW02MW02A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW02MW02B	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW502MW02B	grd water, split of MW02B	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW02MW03A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW02MW03B	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW02MW04A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW02MW05A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW1002MW05A	rinsate blank	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW02MW07A	ref mtl	1 U	1 U	1 U	1 U	**13 (65%)**	5 U	5 U
Transport Blank	trnspt blk	1 U	1 U	1 U	1 U	5 U	5 U	5 U
Transport Blank (X)	trnspt blk	1 U	1 U	1 U	1 U	5 U	5 U	5 U
Transport Blank	trnspt blk	1 U	1 U	1 U	1 U	5 U	5 U	5 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*5*	*5*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

SEMIVOLATILE ORGANIC COMPOUND ANALYSES

Semivolatile organic compound (SVOC) analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8270C (HRGC/MS). Eleven samples, consisting of nine groundwaters, a rinsate blank and a double-blind reference material, were submitted for analyses. No chemical perservative was employed. Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. With one exception, documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated SVOC results. The documentation was deficient in the presentation of an initial calibration verification check.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 2.0 - 8.0 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to SVOC's analysis are established in the Project Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No results required qualification due to sample handling and holding conditions.

GC/MS TUNE CHECK: Within specification.
Decafluorotriphenylphosphine (25 ng/µL DFTPP) was analyzed at the beginning of each twelve- hour calibration period as required for instrument Finn4. Three checks were performed for these analyses plus one check associated with the initial calibrations on 10/17/01. All ion abundances and relative ion abundances met U.S. EPA CLP acceptance criteria. Mass spectral plots and listings were compared, and transcription of mass data to the GC/MS tuning and mass calibration summaries was checked. No

errors were found.

All criteria were met and all sample analyses and calibrations were performed within the twelve-hour instrument tune check period.

INITIAL CALIBRATION: Acceptable.
Initial multi-point calibrations were established for all target and surrogate compounds at concentrations of 5, 10, 25, 40 and 80 ng/µL. The minimum RRF (relative response factor) requirement of 0.05 was met for all calibrations, and the RSD specification for linearity of ≤ 30% was also met for all calibrations. The mean %RSD for all analytes is 9.3% with thirteen analytes exceeding or equivalent to 15%. Initial calibration performance is within acceptance limits.

An initial calibration verification (ICV) was not reported. An instrument detection limit standard (IDL) at 1 ng/µL (5 ng/µL for PCP) was presented for 10/17/01 and 10/30/01. The 10/17/01 run followed the initial calibration run sequence. All analytes exhibited acceptable response in the IDL; the nitrophenols showed recoveries of 10-20% and 2,4-dinitrophenol showed no response at 1 ng. Nitrophenols and benzoic acid lower reporting limits are determined to be acceptable down to 5 ng/µL, which allows a lowering of the lab reporting limits (from 10 to 50 µg/L) to 5-10 µg/L for benzoic acid, 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol. No action is required, and no data requires qualification.

CONTINUING CALIBRATION: Acceptable.
A continuing calibration verification (CCV) at 25 ng/µL was analyzed prior to the analysis of sample extracts as specified by the Project Management Plan (a total of two CCVs were analyzed). A post-sequence CCV was reported for 11/06/01. All relative response factors were greater than 0.05, as specified; and all %D were less than 20%, as required for specified chemicals. Analytes with %D > 20% are benzyl alcohol, 2,2'-oxybis(1-chloropropane), 2,4-dinitrophenol, benzoic acid and 4,6-dinitro-2-methylphenol; which is within acceptable limits for these analytes.

The reported CCVs were within specification.

BLANKS: Within specification.
One method (preparation) blank was analyzed with each group of project samples, as required (two groups and two MB were analyzed). No analytes were detected above one-half the project required lower quantitation limits. No results required qualification.

A field blank (equipment rinsate) analysis was performed on 1 submission. All reported results indicated nondetects or levels less than the project required quantitation limit for all analytes.

SURROGATE COMPOUND RECOVERIES: Acceptable.

Project-specified surrogate compounds were added to all samples, including method and field blanks. Surrogate compounds were added at the following amounts: 12.5 µg for neutrals and 18.7 µg for acidic organic compounds; to 500 mL water samples prior to extraction.

Criteria for evaluation are as follows:

d_5-nitrobenzene	42-112%	2-fluorophenol	39-113%
2-fluorobiphenyl	37-105%	2,4,6-tribromophenol	42-130%
d_{14}-*p*-terphenyl	40-131%	d_4-2-chlorophenol	44-109%
d_5-phenol	36-111%	d_4-1,2-dichlorobenzene	30-100%

All recoveries are within specification, with the exception of tribromophenol in GW02MW03B (39%) and 2-fluorophenol in GW02MW01B-matrix spike (35%).

Corrective action or data qualification is required when more than one surrogate per fraction is noncompliant. Only one surrogate fell outside specification for two samples, one of which was a matrix spike analysis. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:

Within specification.

One MS/MSD analysis was performed, as required. Matrix spike compounds are selected analytes spiked at 25 µg/L into GW02MW01B. Performance was evaluated by comparison of recoveries to the following criteria.

MS / MSD Project Advisory Criteria

Parameter	Recovery range (%)	Relative percent difference (RPD)
phenol	12 - 110	42 %
2-chlorophenol	27 - 123	40 %
1,4-dichlorobenzene	36 - 97	28 %
N-nitroso-di-n-propylamine	41 - 116	38 %
1,2,4-trichlorobenzene	39 - 98	28 %
4-chloro-3-methylphenol	23 - 97	42 %
acenaphthene	46 - 118	31 %
4-nitrophenol	10 - 80	50 %
pentachlorophenol	9 - 103	50 %
pyrene	26 - 127	31 %

All MS/MSD recoveries and associated RPD's were within specification. No data required qualification due to MS / MSD measurement performance.

A laboratory control sample (spiked water blank) and duplicate were analyzed for the selected target analytes [above] at an equivalent spike concentration of 25 µg/L. Analyte recoveries ranged from 52% to 109%, all within specification.

INTERNAL STANDARDS PERFORMANCE: Within specification.
Seven internal standards (IS) were added to all sample extracts at a concentration of 20 ng/µL. Retention times (RT) for all internal standards in all analyses are within the specified window of ± 30 seconds of the continuing calibration internal standard RT. All internal standard (IS) areas for all sample extracts were verified for accuracy and determined to be correct. The specified acceptance limit for internal standard areas in sample extracts is 0.5 to 2 times the area of the 12-hour continuing calibration standard. Internal standards performance were all within specification.

Internal standard areas were checked at random and found to be accurate. No results required qualification due to internal standards performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.
All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for all target compounds are within acceptable limits (± 0.06 relative retention time units of the standard). Ion relative abundances on mass spectra for reported compounds were checked against library reference spectra and were found to be acceptable. No target analytes were reported in project samples. One chemical was reported as a non-target analyte in GW02MW02B; a tentative hit for hexahydro-1,3,5-trinitro-1,3,5-triazine or RDX.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS
Target compound lower limits of quantitation are based on on-column amounts of 1 ng for neutrals and 2-5 ng for substituted phenols. The algorithm for calculation of target analyte concentrations was checked and found to be correct. All lower limits of quantitation for chemicals of concern are within the project required quantitation limits (PRQL's), as summarized in the attached results Table. Some reported limits for polar analytes (benzoic acid, 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol) were adjusted downward by the reviewer based on acceptable performance of the IDL check standard.

Specified internal standards, quantitation ions, and RRF's were checked for all sample results and determined to be correct. All target analyte responses were determined by an automated/computerized routine, and no manual reintegrations were found. All sample volume and concentration calculations were checked for each sample and determined to be correct.

TENTATIVELY IDENTIFIED COMPOUNDS
Only one additional compound in one sample was reported at levels greater than the specified reporting limit (> 10% IS's response). RDX was reported as a tentatively identified compound in GW02MW02B.

SYSTEM PERFORMANCE: Within specification.
No signs of degraded system performance were observed. RIC's were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable

and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to a field (rinsate / trip) blank, a blind sample split was submitted for analysis (duplicate/split pair = GW02MW02B / GW502MW02B). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either of the two samples.

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW02MW07A. Analytes evaluated include diethylphthalate, diphenylamine, phenanthrene, di- pyrene and butylbenzylphthalate. Accuracies were in the range of 61% - 110%. Performance is determined to be acceptable.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. No chemicals of concern were reported in site samples. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are at the specified limits. Analytical performance is within specified limits, and the data quality is sufficient for its intended purposes.

CHLOROPHENOXYHERBICIDES ANALYSES

Chlorophenoxyherbicides analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8151A (HRGC/ECD). Samples (500 mL.) were spiked with surrogate (2,4-dichlorophenylacetic acid), extracted with diethyl ether, hydrolyzed and derivatized with diazomethane prior to gas chromatographic analysis. Gas chromatographic analysis was performed on dual columns - a DB-5 and a DB-608. Eleven samples, consisting of nine groundwaters, a rinsate blank and a double-blind reference material, were submitted for analyses. No chemical perservative was employed. Principal contaminants of concern have been identified as 2,4-D, 2,4,5-T and 2,4,5-TP (Silvex). Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures as a guideline identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated herbicides results.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 2.0 - 8.0 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to herbicides analysis are established in the Project Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No results required qualification due to sample handling and holding conditions.

INITIAL CALIBRATION: Within specification.
Initial multi-point calibrations were established for all target and surrogate compounds at concentrations of 0.01, 0.025, 0.05, 0.10, 0.20 and 0.40 ng/µL. A combination of linear and quadratic fits were

employed for the various analytes. RSD's for linear fits were all $\leq$ 20%, whereas the quadratic fits all exhibited $r^2 > 0.999$ on both the primary and secondary (confirmation) columns. Initial calibration performance is within acceptance limits.

CONTINUING CALIBRATION: Acceptable.
Five continuing calibration verification (CCV) runs were performed at 0.025 - 0.5 ng/µL (25 ng/µL for MCPA & MCPP) prior to and following the analysis of sample extracts as specified by the Project Management Plan. With the exception of Dalapon on the primary column (%D = 20 & 23), all responses were within 15% of the known values, as specified. The deviation for Dalapon has no effect on the data, since no Dalapon was detected.

BLANKS: Within specification.
One method (preparation) blank was analyzed with the project samples, as required. No analytes were detected above the reported lower quantitation limits. No results required qualification.

A field blank (equipment rinsate/transport) analysis was performed on 1 submission. All reported results indicated nondetects at the reported lower quantitation limits for all analytes.

SURROGATE COMPOUND RECOVERIES: Within specification.
Dichlorophenylacetic acid (6.2 µg in 500 mL.) was added as a surrogate to all samples, including method and field blanks. Surrogate recoveries ranged from 63% to 115%, well within the specified limits (40% - 140%). No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:
Within specification.
One MS/MSD analysis was performed, as required. Matrix spike compounds added to GW02MW01B were 2,4,5-TP (Silvex), Dicamba and 2,4-D at concentrations of 0.5-2 µg/L. Recoveries ranged from 56% to 78%, with an RPD range of 6.9% - 14%. All MS/MSD recoveries and associated RPD's were within specification (R = 40-140% with RPD $\leq$ 50%). No data required qualification due to MS / MSD measurement performance.

A laboratory control sample (spiked water blank) and duplicate were analyzed for selected target analytes [same as for the MS/MSD, above] at an equivalent spike concentration of 0.5-2 µg/L. Analyte recoveries ranged from 77% to 118%, all within specification (R = 50-130%). RPDs ranged from 19% to 23%.

TARGET COMPOUND IDENTIFICATION: Acceptable.
Retention time windows were generally within $\pm$ 7 secs of the initial and continuing calibration verifications. No analyte responses were observed nor reported in project samples at the reported lower quantitation limits.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS

Target compound lower limits of quantitation are based on on-column amounts represented by the lowest calibration point in the initial calibration. All lower limits of quantitation for chemicals of concern are less than the project required quantitation limits (PRQL's), as summarized in the attached results Table.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. Chromatograms were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to a field rinsate blank, a blind sample split was submitted for analysis (duplicate/split pair = GW02MW02B / GW502MW02B). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either of the two samples.

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW02MW07A. Analytes evaluated include 2,4-D, 2,4,5-T and 2,4,5-TP (Silvex). Accuracies were in the range of 55% - 71%. Analytical performance on the double-blind reference material is considered acceptable.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. No chemicals of concern were reported in site samples. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are less than the specified limits. Analytical performance is within specified limits, and the data quality is sufficient for its intended purposes.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Sample Date	Lab I.D.	TPH (mg/L; ppm) Gasoline-range	Diesel-range	Motor Oil / Lubricant	Phenol 108-95-2	*bis* (2-Chloroethyl) ether 111-44-4
GW02MW01A	grd water	10/23/01	0118869-DT39A	0.25 U	0.25 U	0.50 U	2 U	2 U
GW02MW01B	grd water	10/24/01	0118870-DT39B	0.25 U	0.25 U	0.50 U	2 U	2 U
GW02MW02A	grd water	10/24/01	0118871-DT39C	0.25 U	0.25 U	0.50 U	2 U	2 U
GW02MW02B	grd water	10/24/01	0118872-DT39D	0.25 U	0.25 U	0.50 U	2 U	2 U
GW502MW02B	grd water, split of MW02B	10/24/01	0118873-DT39E	0.25 U	0.25 U	0.50 U	2 U	2 U
GW02MW03A	grd water	10/25/01	0118930-DT50A	0.25 U	0.25 U	0.50 U	2 U	2 U
GW02MW03B	grd water	10/26/01	0118931-DT50B	0.25 U	0.25 U	0.50 U	2 U	2 U
GW02MW04A	grd water	10/26/01	0118932-DT50C	0.25 U	0.25 U	0.50 U	2 U	2 U
GW02MW05A	grd water	10/26/01	0118933-DT50D	0.25 U	0.25 U	0.50 U	2 U	2 U
GW1002MW05A	rinsate blank	10/26/01	0118934-DT50E	0.25 U	0.25 U	0.50 U	2 U	2 U
GW02MW07A	ref mtl	10/23/01	0118935-DT50F				2 U	2 U
PRQL (µg/L)				*0.35*	*10*	*20*	*2*	*2*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	2-Chloro-phenol 95-57-8	1,3-Dichloro-benzene 541-73-1	1,4-Dichloro-benzene 106-46-7	Benzyl alcohol 100-51-6	1,2-Dichloro-benzene 95-50-1	2-Methyl-phenol 95-48-7	2,2'-Oxybis-(chloropropane) 108-60-1	4-Methyl-phenol 106-44-5	N-Nitroso-di-n-propylamine 621-64-7
GW02MW01A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW02MW01B	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW02MW02A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW02MW02B	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW502MW02B	grd water, split of MW02B	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW02MW03A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW02MW03B	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW02MW04A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW02MW05A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW1002MW05A	rinsate blank	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW02MW07A	ref mtl	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
PRQL (µg/L)		*1*	*1*	*1*	*5*	*1*	*2*	*1*	*1*	*2*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Hexachloro-ethane 67-72-1	Nitro-benzene 98-95-3	Isophorone 78-59-1	2-Nitro-phenol 88-75-5	2,4-Dimethyl-phenol 105-67-9	Benzoic acid 65-85-0	*bis* (2-Chloro-ethoxy)methane 111-91-1	2,4-Dichloro-phenol 120-83-2	1,2,4-Trichloro-benzene 120-82-1
GW02MW01A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW02MW01B	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW02MW02A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW02MW02B	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW502MW02B	grd water, split of MW02B	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW02MW03A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW02MW03B	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW02MW04A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW02MW05A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW1002MW05A	rinsate blank	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW02MW07A	ref mtl	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
PRQL (µg/L)		*2*	*1*	*1*	*5*	*3*	*10*	*1*	*3*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville E..panded Site Investigation
Landfill 4, Demolition Area 1
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units = µg/L

Field I.D.	Comments	Naphthalene 91-20-3	4-Chloro-aniline 106-47-8	Hexachloro-butadiene 87-68-3	4-Chloro-3-methylphenol 59-50-7	2-Methyl-naphthalene 91-57-6	Hexachloro-cyclopentadiene 77-47-4	2,4,6-Trichloro-phenol 88-06-2	2,4,5-Trichloro-phenol 95-95-4
GW02MW01A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW02MW01B	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW02MW02A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW02MW02B	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW502MW02B	grd water, split of MW02B	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW02MW03A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW02MW03B	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW02MW04A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW02MW05A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW1002MW05A	rinsate blank	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW02MW07A	ref mtl	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
PRQL (µg/L)		*1*	*3*	*2*	*2*	*1*	*5*	*5*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	2-Chloro-naphthalene 91-58-7	2-Nitro-aniline 88-74-4	Dimethyl-phthalate 131-11-3	Acenaph-thylene 208-96-8	3-Nitro-aniline 99-09-2	Acenaphthene 83-32-9	2,4-Dinitro-phenol 51-28-5	4-Nitro-phenol 100-02-7	Dibenzo-furan 132-64-9	2,6-Dinitro-toluene 606-20-2
GW02MW01A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW02MW01B	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW02MW02A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW02MW02B	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW502MW02B	grd water, split of MW02B	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW02MW03A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW02MW03B	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW02MW04A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW02MW05A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW1002MW05A	rinsate blank	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW02MW07A	ref mtl	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
PRQL (µg/L)		*1*	*5*	*1*	*1*	*6*	*1*	*10*	*5*	*1*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

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units = µg/L

Field I.D.	Comments	2,4-Dinitro-toluene 121-14-2	Diethyl-phthalate 84-66-2	4-Chlorophenyl-phenylether 7005-72-3	Fluorene 86-73-7	4-Nitro-aniline 100-01-6	4,6-Dinitro-2-methylphenol 534-52-1	* N-Nitroso-diphenylamine 86-30-6	4-Bromophenyl-phenylether 101-55-3	Hexachloro-benzene 118-74-1
GW02MW01A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U	1 U
GW02MW01B	grd water	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U	1 U
GW02MW02A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U	1 U
GW02MW02B	grd water	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U	1 U
GW502MW02B	grd water, split of MW02B	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U	1 U
GW02MW03A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U	1 U
GW02MW03B	grd water	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U	1 U
GW02MW04A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U	1 U
GW02MW05A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U	1 U
GW1002MW05A	rinsate blank	5 U	1 U	1 U	1 U	5 U	10 U	1 U	1 U	1 U
GW02MW07A	ref mtl	5 U	**19 (95%)**	1 U	1 U	5 U	10 U	**6.1 (61%)**	1 U	1 U
PRQL (µg/L)		*5*	*1*	*1*	*1*	*5*	*10*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

* Summation of N-nitrosodiphenylamine and diphenylamine.

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TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Pentachloro-phenol 87-86-5	Phenanthrene 85-01-8	Carbazole 86-74-8	Anthracene 120-12-7	Di-n-butyl-phthalate 84-74-2	Fluoranthene 206-44-0	Pyrene 129-00-0	Butylbenzyl-phthalate 85-68-7	3,3'-Dichloro-benzidine 91-94-1
GW02MW01A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW02MW01B	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW02MW02A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW02MW02B	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW502MW02B	grd water, split of MW02B	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW02MW03A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW02MW03B	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW02MW04A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW02MW05A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW1002MW05A	rinsate blank	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW02MW07A	ref mtl	5 U	**13 (87%)**	1 U	1 U	1 U	1 U	**16 (80%)**	**33 (110%)**	5 U
PRQL (µg/L)		*5*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

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units = µg/L

Field I.D.	Comments	Benzo(a)-anthracene 56-55-3	*bis* (2-Ethylhexyl)-phthalate 117-81-7	Chrysene 218-01-9	Di-n-octyl-phthalate 117-84-0	Benzo(b)-fluoranthene 205-99-2	Benzo(k)-fluoranthene 207-08-9	Benzo(a)-pyrene 50-32-8	Indeno(1,2,3-cd)pyrene 193-39-5	Dibenz(a,h)-anthracene 53-70-3
GW02MW01A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW01B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW02A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW02B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW502MW02B	grd water, split of MW02B	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW03A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW03B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW04A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW05A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1002MW05A	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW02MW07A	ref mtl	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)			*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

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units = µg/L

Field I.D.	Comments	Benzo(g,h,i)-perylene 191-24-2	2,4,5-TP (Silvex) 93-72-1	2,4,5-T 93-76-5	Dinoseb 88-85-7	Dicamba 1918-00-9	2,4-D 94-75-7	2,4-DB 94-82-6	Dalapon 75-99-0	MCPA 94-74-6	Dichloroprop 120-36-5
GW02MW01A	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW02MW01B	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW02MW02A	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW02MW02B	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW502MW02B	grd water, split of MW02B	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW02MW03A	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW02MW03B	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW02MW04A	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW02MW05A	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW1002MW05A	rinsate blank	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW02MW07A	ref mtl	1 U	**7.1 (71%)**	**18 (60%)**	0.10 U	0.14 U	**22 (55%)**	2.0 U	0.40 U	50 U	0.62 U
PRQL (µg/L)		*1*	*0.3*	*0.6*	*2*	*0.7*	*1.5*	*10*	*2*	*75*	*3.1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville .. anded Site Investigation
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units = µg/L

Field I.D.	Comments	MCPP 93-65-2
GW02MW01A	grd water	50 U
GW02MW01B	grd water	50 U
GW02MW02A	grd water	50 U
GW02MW02B	grd water	50 U
GW502MW02B	grd water, split of MW02B	50 U
GW02MW03A	grd water	50 U
GW02MW03B	grd water	50 U
GW02MW04A	grd water	50 U
GW02MW05A	grd water	50 U
GW1002MW05A	rinsate blank	50 U
GW02MW07A	ref mtl	50 U
PRQL (µg/L)		*75*

Comprehensive validation performed for analytes reported in blind ref. material.

METALS ANALYSES

Metals analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP's are identified as U.S. EPA SW-846 Methods 6010B / 7000 (all metals analyzed by 6010B (ICP-AES); with the exception of As, Pb, Se and Tl, which were analyzed by 200.8 (ICP-MS) and Hg by 7470A (CVAA)). Twenty-one samples were submitted for analyses - ten pairs were submitted for the analysis of both dissolved and total metals; the remaining sample was a double-blind reference material for independent evaluation of accuracy for selected analytes (As, Ba, Hg & Pb). Samples for determination of dissolved metals were field-filtered using an in-line, nitrocellulose, 0.45 µm cartridge filter assembly. All samples were preserved upon collection with HNO_3 to pH $\leq$ 2. The target metal analytes are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Inorganics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/013]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan for As, Ba, Hg & Pb.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated metals results.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 $\pm$ 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 2.0 - 8.0 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to metals analysis are established in the Project Management Plan as 28 days for mercury and 6 months for other metals, from time of collection to time of analysis. All samples were analyzed within 14 days of sample collection. All analyses were performed within the specified holding times.

CALIBRATION: Within specification.
Initial Calibration. Initial instrumental calibrations were performed daily using at least the minimum

required number of data points to establish the analytical curve for each method: a blank and one standard for ICP-AES analyses, a blank and four standards for ICP-MS analyses, and a blank and six standards for mercury (CVAA) analyses. Correlation coefficients for all ICP-MS and CVAA initial calibrations are ≥0.995, as required.

Initial Calibration Verification. Initial calibration verification checks (ICV's) were performed immediately after initial instrumental calibrations during all ICP (AES & MS) and CVAA analytical runs, as required. All ICV recoveries are within acceptance limits (90-110% for ICP and 80-120% for mercury).

Continuing Calibration Verification. Continuing calibration verification standards (CCV's) were analyzed at the required frequency for all ICP and CVAA analytical runs (at the beginning and end of each run; at a frequency of ≥10% or every two hours, whichever is more frequent). All CCV recoveries are within acceptance limits (90-110% for ICP and 80-120% for CVAA).

Calibration Check Sample. A check sample at a concentration of 1-2x the project required quantitation level was analyzed following initial calibrations and found to range from 92% to 110%. While control limits are unspecified in the Project Management Plan, the performance is considered reasonable and acceptable.

ICP-MS Quantitation. Seven internal/check standards (lithium, scandium, germanium, yttrium, indium, terbium and bismuth) were added to all samples analyzed, including standards and blanks. Internal standard performance for all samples analyzed was found to be within specification (60-125% of the response of the calibration blank).

CALIBRATION, PREPARATION, and FIELD BLANKS: Within specification.

Initial/Continuing Calibration Blanks. Initial calibration blanks (ICB's) were analyzed immediately after ICV's, and continuing calibration blanks (CCB's) were analyzed immediately after CCV's during all ICP-AES, ICP-MS, and CVAA analytical runs, as required.

The Project Management Plan specifies that ICB's and CCB's are less than the lower quantitation limit for each reported analyte. All ICB's and CCB's were within specification. All ICB and CCB results were verified by examination of raw data.

Preparation / Method Blanks. Two preparation blanks were analyzed for all target analytes at the required frequency (once per preparation batch). No analytes were reported above the project required quantitation limit.

Equipment Rinsate Blanks. Two equipment rinsate blanks were collected and analyzed. No

analytes, with the exception of copper at the lower reporting limit, were detected above the project required quantitation limit.

INTERFERENCE CHECK SAMPLE: Within specification.
ICP (AES & MS) interference check solutions (ICS) were analyzed for the target analytes at the beginning of each analytical run. Recoveries for the target analytes of concern were within acceptance limits (80-120%).

LABORATORY CONTROL SAMPLE: Within specification.
Laboratory control samples (LCS) were analyzed at the required frequency (at least one sample per matrix per preparation batch). Two aqueous LCS's (spiked blanks) were analyzed. All target analytes are within project acceptance limits (80-120% recovery) for all reported analyses of the aqueous LCS.

DUPLICATE SAMPLE ANALYSES: Within specification.
Laboratory duplicate samples (GW02MW01B, total and dissolved) were analyzed for the target analytes at the required frequency (at least one sample per matrix per preparation batch). Results of all duplicate analyses greater than the IDL are within project acceptance limits (±20% RPD).

MATRIX SPIKE SAMPLE ANALYSES
Matrix spike samples were analyzed for the target analytes at the required frequency (at least one sample per matrix per preparation batch). Project-specified acceptance limits for matrix spike recovery are 75-125% and are applicable only to those samples in which the sample concentration does not exceed 4 times the spike concentration. All water sample matrix spike recoveries were acceptable for all reported analytes, and no associated results were rejected or required qualification.

ICP SERIAL DILUTION & POST-DIGESTION SPIKES
None performed.

SAMPLE RESULT VERIFICATION
Sample quantitation and transcription to the reporting form (Form I) was verified for at least 10% of the analytes for each sample, including QC samples. No significant errors were detected.
Results for all target analytes are within the linear range of the instrument. No significant anomalies were noted in the raw data. All raw data are legible and complete.

OTHER PERFORMANCE DATA
Field Quality Control Sample Analyses. Two blind splits were taken and submitted for analyses. These splits were generated from homogenized composites for both nonfiltered and filtered samples at MW02B. Results are presented in the attached Table. RPD's were less than or equal to 5% for dissolved species. Greater variability was demonstrated for total metals where iron exhibited a 71%

RPD. This indicates higher heterogeneity associated with particulate matter.

Blind Reference Material. A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW02MW07A. Analytes evaluated include As, Ba, Hg and Pb. Accuracies were in the range of 98% - 120%.

OVERALL ASSESSMENT OF THE DATA

All deliverables required by the project are present and data packages are complete. Recommended sample holding times were met for all analytes in all samples. Initial calibration and continuing calibration requirements were met for all analytes in all analytical runs. Reporting limits for all analytes in all samples are at or below the Project Required Quantitation Levels (PRQL's), with the exception of some of the major cations. Analytical performance on a double-blind independent reference material was evaluated for selected analytes of concern and determined to be acceptable. Few problems were encountered and the data as qualified meet the project's data quality objectives.

Conventional parameters in water for this project, the associated analytical methods, and lower reporting limits are as follows:

Parameter	Method	Lower reporting limit
Carbonate (alkalinity)	SM 2320	1.0 mg/L
Bicarbonate (alkalinity)	SM 2320	1.0 mg/L
Total Suspended Solids	EPA 160.2	1.0 - 4.0 mg/L
Chloride	EPA 300.0	0.1 mg/L
Total Cyanide	EPA 335.2	0.005 mg/L
Nitrate	EPA 300.0	0.1 mg-N/L
Nitrite	EPA 300.0	0.1 mg-N/L
Sulfate	EPA 300.0	0.1 - 0.4 mg/L
Total Organic Carbon	EPA 415.1	1.5 mg/L
Dissolved Organic Carbon	EPA 415.1	1.5 mg/L

Analytical methods applied are the same as those used for the first quarter's monitoring. Lower reporting limit requirements were generally achieved. Alkalinity was reported at levels with 5x lower limits (1 mg/L vs. 5 mg/L[specified]), chloride was reported at 0.1 mg/L vs. a 2 mg/L specification, nitrate/nitrite was 2x greater than specified, and sulfate was one-hundredth of the level specified (0.1 mg/L vs. 10 mg/L[specified]). All quality control performance measurements were within specification for all parameters. Method blank, MS/MSD, LCS, and replicate analysis results are all within acceptable limits.

Holding times were within specification, with the exception of nitrate and nitrite. The method-specified 48-hour holding time allows for the differentiation of nitrate and nitrite; however, ARI received samples outside the maximum recommended holding time (more than three days from collection). The holding time exceedance precludes species differentiation, because any nitrite in the samples would have been oxidized to nitrate. The maximum recommended holding time for nitrate plus nitrite is 28 days. All samples were analyzed well within this holding time; therefore, the reported nitrate can be interpreted as nitrite plus nitrate.

With the last exception, no conventional parameter results should have any limitations placed on their use for this project.

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Field I.D.	Comments	Sample Date	Lab I.D.	Sb 7440-36-0	As 7440-38-2	Ba 7440-39-3	Be 7440-41-7	Cd 7440-43-9	Ca 7440-70-2	Cr 7440-47-3
GW02MW01A	grd water, total metals	10/23/01	0118869-DT39A	50 U	**0.2**	**6**	1 U	2 U	**3940**	**21**
GW02MW01A (D)	grd water, dissolved metals	10/23/01	0118874-DT39F	50 U	0.2 U	**3**	1 U	2 U	**4010**	5 U
GW02MW01B	grd water, total metals	10/24/01	0118870-DT39B	50 U	0.2 U	3 U	1 U	2 U	**1990**	**10**
GW02MW01B (D)	grd water, dissolved metals	10/24/01	0118875-DT39G	50 U	0.2 U	3 U	1 U	2 U	**1970**	5 U
GW02MW02A	grd water, total metals	10/24/01	0118871-DT39C	50 U	0.2 U	3 U	1 U	2 U	**980**	**41**
GW02MW02A (D)	grd water, dissolved metals	10/24/01	0118876-DT39H	50 U	0.2 U	3 U	1 U	2 U	**960**	**10**
GW02MW02B	grd water, total metals	10/24/01	0118872-DT39D	50 U	0.2 U	**6**	1 U	2 U	**2310**	**15**
GW02MW02B (D)	grd water, dissolved metals	10/24/01	0118877-DT39I	50 U	**0.2**	**6**	1 U	2 U	**2350**	5 U
GW502MW02B	split of MW02B, total metals	10/24/01	0118873-DT39E	50 U	0.2 U	**7**	1 U	2 U	**2410**	**20**
GW502MW02B (D)	split of MW02B (D), dissolved metals	10/24/01	0118878-DT39J	50 U	**0.2**	**6**	1 U	2 U	**2310**	5 U
GW02MW03A	grd water, total metals	10/25/01	0118930-DT50A	50 U	0.2 U	3 U	1 U	2 U	**1590**	**18**
GW02MW03A (D)	grd water, dissolved metals	10/25/01	0118936-DT50G	50 U	0.2 U	3 U	1 U	2 U	**1550**	**8**
GW02MW03B	grd water, total metals	10/26/01	0118931-DT50B	50 U	**0.2**	**8**	1 U	2 U	**3970**	**33**
GW02MW03B (D)	grd water, dissolved metals	10/26/01	0118937-DT50H	50 U	0.2 U	**7**	1 U	2 U	**4190**	**5**
GW02MW04A	grd water, total metals	10/26/01	0118932-DT50C	50 U	**0.2**	**8**	1 U	2 U	**1940**	**34**
GW02MW04A (D)	grd water, dissolved metals	10/26/01	0118938-DT50I	50 U	0.2 U	3 U	1 U	2 U	**1730**	5 U
GW02MW05A	grd water, total metals	10/26/01	0118933-DT50D	50 U	0.2 U	**4**	1 U	2 U	**2700**	**27**
GW02MW05A (D)	grd water, dissolved metals	10/26/01	0118939-DT50J	50 U	0.2 U	3 U	1 U	2 U	**2490**	5 U
GW1002MW05A	rinsate blk, total metals	10/26/01	0118934-DT50E	50 U	0.2 U	3 U	1 U	2 U	50 U	5 U
GW1002MW05A (D)	rinsate blk, dissolved metals	10/26/01	0118940-DT50K	50 U	0.2 U	3 U	1 U	2 U	50 U	5 U
GW02MW07A	ref mtl, total metals	10/23/01	0118935-DT50F	50 U	**4.9 (98%)**	**50 (100%)**	1 U	2 U	50 U	5 U
PRQL (µg/L)				*50*	*1*	*3*	*1*	*2*	*50*	*5*

Comprehensive validation performed for As, Ba, Hg & Pb.

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values as µg/L.

Field I.D.	Comments	Cu 7440-50-8	Fe 7439-89-6	Pb 7439-92-1	Mg 7439-95-4	Hg 7439-97-6	Ni 7440-02-0	K 7440-09-7	Se 7782-49-2	Ag 7440-22-4	Na 7440-23-5
GW02MW01A	grd water, total metals	**4**	**580**	**1**	**1650**	0.1 U	**20**	500 U	0.5 U	3 U	**6090**
GW02MW01A (D)	grd water, dissolved metals	2 U	50 U	1 U	**1620**	0.1 U	10 U	500 U	0.5 U	3 U	**6440**
GW02MW01B	grd water, total metals	2 U	**80**	1 U	**1100**	0.1 U	10 U	500 U	0.5 U	3 U	**1290**
GW02MW01B (D)	grd water, dissolved metals	2 U	50 U	1 U	**1140**	0.1 U	10 U	500 U	0.5 U	3 U	**1340**
GW02MW02A	grd water, total metals	**3**	**700**	1 U	**380**	0.1 U	**30**	500 U	0.5 U	3 U	**4000**
GW02MW02A (D)	grd water, dissolved metals	2 U	**80**	1 U	**360**	0.1 U	**20**	500 U	0.5 U	3 U	**3910**
GW02MW02B	grd water, total metals	2 U	**180**	1 U	**1100**	0.1 U	**10**	**770**	0.5 U	3 U	**3830**
GW02MW02B (D)	grd water, dissolved metals	2 U	50 U	1 U	**1090**	0.1 U	10 U	**800**	0.5 U	3 U	**3740**
GW502MW02B	split of MW02B, total metals	**3**	**380**	1 U	**1160**	0.1 U	**10**	**820**	0.5 U	3 U	**4470**
GW502MW02B (D)	split of MW02B (D), dissolved metals	2 U	50 U	1 U	**1100**	0.1 U	10 U	**810**	0.5 U	3 U	**3680**
GW02MW03A	grd water, total metals	**3**	**100**	1 U	**720**	0.1 U	**10**	500 U	0.5 U	3 U	**1450**
GW02MW03A (D)	grd water, dissolved metals	2 U	**50**	**3**	**710**	0.1 U	**10**	500 U	0.5 U	3 U	**1430**
GW02MW03B	grd water, total metals	**4**	**450**	1 U	**1790**	0.1 U	**20**	**3090**	0.5 U	3 U	**10400**
GW02MW03B (D)	grd water, dissolved metals	2 U	**50**	1 U	**1820**	0.1 U	10 U	**3270**	0.5 U	3 U	**11100**
GW02MW04A	grd water, total metals	**9**	**2350**	1 U	**960**	0.1 U	**20**	**800**	0.5 U	3 U	**2050**
GW02MW04A (D)	grd water, dissolved metals	2 U	50 U	1 U	**610**	0.1 U	10 U	500 U	0.5 U	3 U	**2050**
GW02MW05A	grd water, total metals	**12**	**400**	1 U	**980**	0.1 U	**20**	500 U	0.5 U	3 U	**1710**
GW02MW05A (D)	grd water, dissolved metals	2 U	50 U	1 U	**960**	0.1 U	10 U	500 U	0.5 U	3 U	**1680**
GW1002MW05A	rinsate blk, total metals	**2**	50 U	1 U	50 U	0.1 U	10 U	500 U	0.5 U	3 U	50 U
GW1002MW05A (D)	rinsate blk, dissolved metals	2 U	50 U	1 U	50 U	0.1 U	10 U	500 U	0.5 U	3 U	50 U
GW02MW07A	ref mtl, total metals	**2**	50 U	**10 (100%)**	50 U	**1.2 (120%)**	10 U	500 U	0.5 U	3 U	50 U
PRQL (µg/L)		*2*	*20*	*1*	*20*	*0.1*	*10*	*500*	*2*	*3*	*50*

Comprehensive validation performed for As, Ba, Hg & Pb.

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Field I.D.	Comments	Tl 7440-28-0	Zn 7440-66-6	Alkalinity mg/L $CaCO_3$	Carbonate mg/L $CaCO_3$	Bicarbonate mg/L $CaCO_3$	total suspended solids mg/L	Chloride mg/L	total Cyanide mg/L
GW02MW01A	grd water, total metals	0.2 U	**12**	**13**	1 U	**13**	**4.2**	**1.3**	0.005 U
GW02MW01A (D)	grd water, dissolved metals	0.2 U	6 U						
GW02MW01B	grd water, total metals	0.2 U	**7**	**12**	1 U	**12**	1.0 U	**1.1**	0.005 U
GW02MW01B (D)	grd water, dissolved metals	0.2 U	6 U						
GW02MW02A	grd water, total metals	0.2 U	6 U	**3.7**	1 U	**3.7**	**8.4**	**1.0**	0.005 U
GW02MW02A (D)	grd water, dissolved metals	0.2 U	6 U						
GW02MW02B	grd water, total metals	0.2 U	**8**	**5.9**	1 U	**5.9**	**4.0**	**6.8**	0.005 U
GW02MW02B (D)	grd water, dissolved metals	0.2 U	6 U						
GW502MW02B	split of MW02B, total metals	0.2 U	**7**	**5.2**	1 U	**5.2**	**7.5**	**7.1**	0.005 U
GW502MW02B (D)	split of MW02B (D), dissolved metals	0.2 U	6 U						
GW02MW03A	grd water, total metals	0.2 U	6 U	**7.4**	1 U	**7.4**	1 U	**1.2**	0.005 U
GW02MW03A (D)	grd water, dissolved metals	0.2 U	6 U						
GW02MW03B	grd water, total metals	0.2 U	**10**	**13**	1 U	**13**	**8.2**	**12.1**	0.005 U
GW02MW03B (D)	grd water, dissolved metals	0.2 U	6 U						
GW02MW04A	grd water, total metals	0.2 U	**8**	**9.1**	1 U	**9.1**	**75**	**1.0**	0.005 U
GW02MW04A (D)	grd water, dissolved metals	0.2 U	6 U						
GW02MW05A	grd water, total metals	0.2 U	**40**	**11**	1 U	**11**	**9.2**	**1.3**	0.005 U
GW02MW05A (D)	grd water, dissolved metals	0.2 U	6 U						
GW1002MW05A	rinsate blk, total metals	0.2 U	6 U	**2.7**	1 U	**2.7**	1 U	0.1 U	0.005 U
GW1002MW05A (D)	rinsate blk, dissolved metals	0.2 U	6 U						
GW02MW07A	ref mtl, total metals	0.2 U	6 U						
PRQL (µg/L)		*1*	*6*	*5*	*1*		*1*	*2*	*0.005*

Comprehensive validation performed for As, Ba, Hg & Pb.

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Field I.D.	Comments	Nitrate mg-N/L	Nitrite mg-N/L	Sulfate mg/L	TOC mg/L	DOC mg/L
GW02MW01A	grd water, total metals	0.1 U	0.1 U	**13.2**	1.5 U	1.5 U
GW02MW01A (D)	grd water, dissolved metals					
GW02MW01B	grd water, total metals	0.1 U	0.1 U	**0.4**	1.5 U	1.5 U
GW02MW01B (D)	grd water, dissolved metals					
GW02MW02A	grd water, total metals	**0.3**	0.1 U	**5.3**	1.5 U	1.5 U
GW02MW02A (D)	grd water, dissolved metals					
GW02MW02B	grd water, total metals	**0.7**	0.1 U	**2.0**	1.5 U	1.5 U
GW02MW02B (D)	grd water, dissolved metals					
GW502MW02B	split of MW02B, total metals	**0.7**	0.1 U	**2.6**	1.5 U	1.5 U
GW502MW02B (D)	split of MW02B (D), dissolved metals					
GW02MW03A	grd water, total metals	**0.1**	0.1 U	**0.2**	1.5 U	1.5 U
GW02MW03A (D)	grd water, dissolved metals					
GW02MW03B	grd water, total metals	**1.1**	0.1 U	**7.6**	1.5 U	1.5 U
GW02MW03B (D)	grd water, dissolved metals					
GW02MW04A	grd water, total metals	0.1 U	0.1 U	**1.3**	1.5 U	1.5 U
GW02MW04A (D)	grd water, dissolved metals					
GW02MW05A	grd water, total metals	**0.2**	0.1 U	**0.2**	1.5 U	1.5 U
GW02MW05A (D)	grd water, dissolved metals					
GW1002MW05A	rinsate blk, total metals	0.1 U	0.1 U	0.1 U	1.5 U	1.5 U
GW1002MW05A (D)	rinsate blk, dissolved metals					
GW02MW07A	ref mtl, total metals					
PRQL (µg/L)		*0.05*	*0.05*	*10*	*1.5*	*1.5*

Comprehensive validation performed for As, Ba, Hg & Pb.

DATA VALIDATION REPORT

EXPLOSIVES, NITROGUANIDINE, AND PERCHLORATE ANALYSES

Nine groundwater samples and a rinsate blank were collected between January 23, 2002 and January 26, 2002. The samples were submitted to Severn Trent Laboratories in Colchester, Vermont for analysis of explosive organic compounds and to Severn Trent Laboratories in Knoxville, Tennessee for analysis of nitroguanidine and perchlorate as follows:

Field Sample ID	Matrix	Analyses
GW03MW01A	Ground Water	Explosives compounds (SW-846 Method 8330 HPLC) Nitroguanidine (SW-846 Method 8330 mod.) Perchlorate (USEPA Method 314.0)
GW03MW02A		
GW03MW01B		
GW03MW01BMS		
GW03MW01BMSD		
GW03MW02B		
GW503MW02B		
GW03MW03A		
GW03MW03B		
GW03MW04A		
GW03MW05A		
GW1003MW05A	Rinsate	
GW03MW08A	Performance Evaluation Samples	
GW03MW08B		

The data packages were validated according to the procedures identified in the EPA *Functional Guidelines for Evaluating Organics Analyses* EPA, 1999 (EPA-540/R-99/008), as applicable to the USACE Shell and the site specific *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* (Management Plan) prepared for the Seattle District U.S. Army Corps of Engineers (USACE) by URS in May 2001. Raw data were reviewed for completeness and accuracy of transcription to the data summary forms. Approximately 10% of the results reported in each of the samples and quality control (QC) analyses were recalculated and verified for the target compounds. The data are acceptable with the qualifications noted in the review.

EXPLOSIVES ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA Contract Laboratory Program (CLP)-type, or comparable, deliverables for all data submittals. The documentation provided by the laboratory was sufficient to allow validation of the associated data.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.

Technical requirements for maximum sample holding time prior to explosives analysis are established in the Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No data required qualification due to sample handling and holding conditions.

INITIAL CALIBRATION: Acceptable.

Initial multi-point calibrations were established for all target and surrogate compounds. The concentrations of the calibration standards bracketed the expected target compound concentrations, allowing for dilution. All percent relative standard deviations (%RSDs) were acceptable at ≤ 20%.

CONTINUING CALIBRATION: Acceptable.

A continuing calibration verification (CCV) was analyzed prior to the analysis of sample extracts as specified by the USACE Management Plan. Percent differences (%Ds) were ≤ 15%, as specified.

BLANKS: Acceptable.

One method (preparation) blank was analyzed with each analytical batch, as required. No target compounds were detected in the method blanks. No data required qualification.

A rinsate blank was also submitted for analysis. No target compounds were detected in the rinsate blank. No data required qualification.

SURROGATE COMPOUND RECOVERIES: Acceptable.

Surrogate 1,2-dinitrobenzene was added to all samples, including method and rinsate blanks. Criteria for evaluation of 1,2-dinitrobenzene are 50%-150% recovery. All recoveries were within specified control limits.

MATRIX SPIKE/MATRIX SPIKE DUPLICATE (MS/MSD) ANALYSES: Within specification.

One MS/MSD analysis was performed, as required. All MS/MSD recoveries were within the QC limits (50%-140 %) and all relative percent differences (RPDs) were ≤ 60%, as specified. No data required qualification due to MS/MSD measurement performance.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES: Within specification.

A laboratory control sample (spiked water blank) was analyzed for the selected target compounds. All LCS recoveries were within the QC limits (60%-120%). No data required qualification due to LCS measurement performance.

TARGET COMPOUND IDENTIFICATION: Acceptable

Target compound identifications were reviewed and were acceptable.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS: Acceptable

Sample data were recalculated for 10% of the target compounds and for all the PE compounds. All calculations were acceptable. Various compounds displayed greater than 40% D between the concentrations reported from the primary and secondary columns indicating positive detection of the compounds and approximate concentrations. These compounds were flagged "J,g" in the associated samples.

The laboratory achieved the project-required quantitation limits. Several compounds exceeded the calibration range of the instrument and were flagged "E" by the laboratory and "J, q" by the data reviewer. These samples were reanalyzed at diluted concentrations and the results from the dilutions should be used for the affected compounds.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. Chromatograms were examined for abrupt retention time shifts, elevated baselines, and/or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA: Acceptable

Field Generated Quality Control Samples: One rinsate and one blind duplicate pair (GW03MW02B and GW503MW02B) were submitted for analysis. The resulting data are acceptable.

Independent Reference Material: Two double blind reference samples (GW03MW08A and GW03MW08B) were submitted for an independent assessment of accuracy. The resulting data are acceptable. Accuracy for the evaluation compounds (with the exception of nitroglycerin) was in the range of 76% to 112%. The reported concentration of nitroglycerin (49 µg/L) in the reference material was greater than the known concentration of nitroglycerin, possibly due to the low concentration of the reference material at10µg/L (PQL 5µg/L).

OVERALL ASSESSMENT: Acceptable

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. Performance on the double blind reference sample is acceptable. Ten percent of the sample data were recalculated to verify the results and were found to be acceptable. All data calculations were acceptable. Analytical performance is within specified limits and the data quality is sufficient for its intended purposes.

SUMMARY OF QUALIFIED DATA

Sample ID	Compound	Qualifier	Rationale
GW03MW02A	RDX	25 J, q	Exceeded calibration range. Use diluted concentration.
GW03MW02B		110 J, q	
GW503MW02B		110 J, q	
GW03MW08A	4-Amino-2,6-dinitrotoluene	21 J, q	
GW03MW02B	2,4-Dinitrotoluene	0.49 J, g	Dual column imprecision
GW503MW02B		0.48 J, g	
GW03MW08A		9 J, g	
GW03MW08A	Picric Acid	5.3 J, g	
	Nitroglycerin	49 J, g	
	2,4-6-Trinitrotoluene	4.3 J, g	

NITROGUANIDINE ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA CLP-type, or comparable, deliverables for all data submittals. The documentation provided by the laboratory was sufficient to allow validation of the associated data.

SAMPLE HANDLING / HOLDING TIMES: Within specification.

All samples were analyzed within 40 days of sample collection. Samples were received by the laboratory at 3 °C. The recommended preservation temperature is 4 °C ± 2 °C. Data do not require qualification based on sample handling and holding conditions. The field samplers incorrectly labeled samples 8A and 8B as 7A and 7B. This error does not affect the data quality.

INITIAL CALIBRATION: Within specification.

Initial multi-point calibrations were established for all target and surrogate compounds. All relative standard deviations (%RSDs) were ≤ 20% as required. A mid-level, second source standard was also analyzed immediately after the ICAL. All recoveries were within the QC limits of 85%-115%.

CONTINUING CALIBRATION: Within specification.

A mid-level standard was analyzed daily before sample analysis, after every 10 samples, and at the end of the analytical sequence. All continuing calibration percent differences (%Ds) were ≤ 15%.

BLANKS: Acceptable.

One method blank was analyzed with each sample batch, as required. Nitroguanidine was not detected in the method blanks. A rinsate blank was also submitted for analysis. Nitroguanidine was not detected in the rinsate blank. No data required qualification.

SURROGATE COMPOUND RECOVERIES: Within specification.

Surrogate 1-chloro-3-nitrobenzene was added to all samples, including the method blanks. All recoveries were within the laboratory established QC limits (53%-133%). No data required qualification based on surrogate performance.

MS/MSD ANALYSES: Within specification.

One MS/MSD analysis was performed, as required. The recovery limits are performance-based and are equal to 4 standard deviations of 20 consecutively analyzed LCSs. All MS/MSD recoveries were within the QC limits of 60%-140% Rec. and RPDs were within the QC limits of ± 0%-25%. No data required qualification based on MS/MSD performance.

LABORATORY DUPLICATE: Within specification.

One laboratory duplicate was analyzed for each analytical batch as required. The RPD QC limits are performance-based and are equal to 4 standard deviations of 20 consecutively analyzed LCSs. RPDs for the laboratory duplicate samples were within the QC limits of ± 0%-25%. No data required qualification based on laboratory duplicate performance.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES: Within specification

One LCS was analyzed for each analytical batch. The recovery limits are performance-based and are equal to 3 standard deviations of 20 consecutively analyzed LCSs. LCS recoveries were within the QC limits of 60%-140% and RPDs were within the QC limits of ± 0%-25%. No data required qualification based on LCS performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.

All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for all target compounds are within acceptable limits.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS: Acceptable

Raw data were examined to verify the correct calculation of sample results. Positive results were confirmed using a second column. No false positives or negatives were identified. The required quantitation level was achieved. Ten percent of the sample data were recalculated. All calculations were acceptable.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA: Acceptable

Field Generated Quality Control Samples: One rinsate and one blind duplicate pair (GW03MW02B/ GW503MW02B) were submitted. Nitroguanidine was not detected in these samples. The resulting data are acceptable.

Independent Reference Material: Two double blind reference samples (GW03MW08A and GW03MW08B) were submitted for an independent assessment of accuracy. The resulting data are acceptable.

OVERALL ASSESSMENT: Acceptable

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits for nitroguanidine. Performance for the double blind reference sample is acceptable. Ten percent of the sample data were recalculated to verify the results and were found to be acceptable. The lower quantitation levels achieved are at the specified limits. Analytical performance is within specified limits and the data quality is sufficient for its intended purposes.

SUMMARY OF QUALIFIED DATA

No data qualification were required.

PERCHLORATE ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA CLP-type, or comparable, deliverables for all sample submittals. The documentation provided by the laboratory was sufficient to allow validation of the associated data.

SAMPLE HANDLING / HOLDING TIMES: Within specification.

Technical requirements for maximum sample holding time prior to perchlorate analysis are established in the Management Plan as 28 days. All samples were analyzed within the specified holding time. The field samplers incorrectly labeled samples 8A and 8B as 7A and 7B. This error does not affect the data quality.

INITIAL CALIBRATION (ICAL): Within specification.

A five point calibration was performed. The correlation coefficient was greater than 0.995, as specified.

INSTRUMENT PERFORMANCE CHECK STANDARD (IPCS) AT MATRIX CONDUCTIVITY THRESHOLD (MCT): Within specification.

An IPCS was analyzed immediately after the initial calibration and at the beginning of each analytical sequence. %Ds were ≤ 20%.

INITIAL CALIBRATION CHECK STANDARD (ICCS): Within specification.

An ICCS was analyzed at the beginning of each analytical sequence and immediately after the IPCS. All recoveries were ≤ 25%, as required.

CONTINUING CAILIBRATION STANDARD AND END CALIBRATION CHECK STANDARD (CCCS): Within specification.

Mid and high level standards were analyzed as required in the Management Plan. All recoveries were within the QC limits (±15% of the known concentration).

BLANKS : Within specification.

One laboratory reagent blank (LRB) was analyzed for each analytical batch as required in the Management Plan. One rinsate blank was also analyzed with these samples. The method and rinsate blanks were free of contamination.

LABORATORY FORTIFIED MATRIX (LFM): Within specification.

LFM samples were analyzed for perchlorate at the required frequency (at least one sample per matrix per preparation batch). All results were within the QC limits (± 20% of the known concentration).

DUPLICATE SAMPLE ANALYSES: Within specification.

Laboratory duplicate samples were analyzed for perchlorate at the required frequency (at least one sample per matrix per preparation batch). The RPDs for the duplicate pairs were ≤ 15%, as required.

OTHER PERFORMANCE DATA: Acceptable

Field Generated Quality Control Samples: One blind duplicate pair (GW03MW02B and GW503MW02B) was submitted for analysis. The resulting data are acceptable.

Independent Reference Material: Two double blind reference samples (GW03MW08A and GW03 MW08B) were submitted for an independent assessment of accuracy. The resulting data are acceptable.

OVERALL ASSESSMENT OF THE DATA: Acceptable

All deliverables required by the project are present and data packages are complete. Recommended sample holding times were met for all samples. The initial and continuing calibration requirements were met in all analytical runs. Analytical performance for the double blind independent reference sample was evaluated and determined to be acceptable. Ten percent of the sample data were recalculated to verify the results and were found to be acceptable. The data meet the project's data quality objectives.

SUMMARY OF QUALIFIED DATA

All QC criteria were met. No data qualification was required.

VOLATILE ORGANIC COMPOUND ANALYSES

Volatile organic compound (VOC) analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8260B (HRGC/MS). Thirteen samples, consisting of nine groundwaters, a rinsate blank, 2 transport blanks, and a double-blind reference material, were submitted for analyses. Hydrochloric acid (HCl) preservative was employed. Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Acceptable.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated VOC results. No ICVs or post-sequence CCVs were reported.

SAMPLE HANDLING / HOLDING TIMES: Within specification.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 0 - 4.0 °C upon receipt. No adverse effect on sample results is expected.

Samples were preserved upon collection by adjustment of pH ≤ 2 with conc. HCl. Technical requirements for maximum sample holding time prior to VOC's analysis are established at 14 days for analysis of preserved samples. All analyses were performed within the required holding times. No results required qualification due to sample handling and holding conditions.

GC/MS TUNE CHECK: Within specification.
4-Bromofluorobenzene (50 µg/L BFB) was analyzed as a surrogate compound in each and every sample and checked for instrument tune performance at the beginning of each twelve-hour calibration period as required for instrument Finn3. Six checks were performed and reported for these analyses. All ion abundances and relative ion abundances met U.S. EPA CLP acceptance criteria. Mass spectral plots and listings were compared, and transcription of mass data to the GC/MS tuning and mass calibration summaries was checked. No errors were found.

All criteria were met and all sample analyses and calibrations were performed within the twelve-hour instrument tune check period.

INITIAL CALIBRATION

Initial multi-point calibrations were established for all target and surrogate compounds at concentrations of 1, 2, 5, 10, 50, 100 and 200 µg/L (on 1/23/02). The minimum RRF (relative response factor) requirement for SPCC's was met for all calibrations, and the performance for CCC's was also within specification. Some analytes showed minimal responses at 1 and 2 µg/L, and responses were determined using the upper 5 data points. Initial calibration average %RSDs is reported at 11.6%, within method acceptance limits. All target analyte and CCC RSD's were within method specification (< 15%), with the exception of acetone (22%), bromodichloromethane (17%), 2-chloroethylvinylether (16%), cis-1,3-dichloropropene (21%), trans-1,3-dichloropropene (25%), chlorodibromomethane (25%), 1,2-dibromoethane (17%), bromoform (27%), trans-1,4-dichloro-2-butene (16%) and dichlorodifluoromethane (19%). Dichlorodifluoromethane was reported in GW03MW02B and GW503MW02B. The results in both samples are "J" qualified as estimates. No other sample results required qualification.

No ICV's were reported. No action is required, and no data requires further qualification.

CONTINUING CALIBRATION

Continuing calibration verifications (CCV) at 50 µg/L were analyzed prior to the analysis of samples. No post-sequence CCVs were reported. All relative response factors were greater than 0.10, as specified; and, with the following exceptions, all %D were less than 20%, as specified. The %D exceptions are for acrolein (31%), 1,1,2-trichloro-1,2,2-trifluoroethane (23%), vinyl acetate (27%), trans-1,4-dichloro-2-butene (24%), 2-chlorotoluene (23%), 1,2,4-trichlorobenzene (24%), 1,2-dibromo-3-chloropropane (21% & 22%), naphthalene (22% & 26%) and 1,2,3-trichlorobenzene (23%). No data required further qualification due to deviations from specification for associated CCV-sample groups based on nondetected analytes in associated samples, or results were previously qualified due to initial calibration deviations.

No additional data required qualification due to CCV performance.

BLANKS: Within specification.

Four method (preparation) blanks were analyzed with the project samples, as required. No target analytes were reported above the project required quantitation limits. No results required qualification.

Two transport and one rinsate blank analyses were performed. Results are reported in the attached Table. Acetone was reported (2.2 µg/L) below the quantitation limit (5 µg/L) in one of the transport blanks. Acetone was also reported at about the same level in two site samples (GW03MW01A [3.9

µg/L J] & GW03MW02A [3.3 µg/L J]), which could be attributed to blank background.

SURROGATE COMPOUND RECOVERIES: Within specification.
Project-specified surrogate compounds were added to all samples, including method and field blanks, at concentrations of 50 µg/L.

Criteria for evaluation are as follows:

d_4-1,2-dichloroethane	81-134%	d_8-toluene	81-137%
4-bromofluorobenzene	83-124%	d_4-1,2-dichlorobenzene	88-128%

All recoveries are within specification. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES: Acceptable.
One MS/MSD analysis was performed, as required. All target analytes were spiked into GW03MW01B. Recoveries ranged from 71% to 125%, with RPDs ranging from 0.7% to 15%. 2-Chloroethylvinylether showed essentially no recovery in either the MS or MSD, requiring qualification of all analyte nondetects as nonuseable with the "R" qualifier code. 2-Chloroethylvinylether hydrolyzes in the trapping device under acidic conditions (all samples are at pH 2). No other results required qualification.

Two laboratory control sample (spiked water blank; LCS and LCS duplicate) pairs were analyzed [total of four analyses] for all target analytes at an equivalent spike concentration of 50 µg/L (250 µg/L for ketones). Analyte recoveries ranged from 64% to 121% with an RPD range of 0.0% to 12%. Recoveries for target analytes detected in project samples all fell within project specifications (80 - 120%), with the exception of 1,1,2-trichlorotrifluoroethane (121%) and dichlorodifluoromethane (71 % & 72%). *It is noted that recoveries for 2-chloroethylvinylether ranged from 86% to 96% in the four LCSs (pH is neutral).* No additional qualification of results is required.

INTERNAL STANDARDS PERFORMANCE: Within specification.
Four internal standards (IS) were added to all samples at a concentration of 50 µg/L. Retention times (RT) for all internal standards in all analyses are within the specified window of ± 30 seconds of the continuing calibration internal standard RT. All internal standard (IS) areas for all sample extracts were verified for accuracy and determined to be correct. The specified acceptance limit for internal standard areas in sample extracts is 0.5 to 2 times the area of the 12-hour continuing calibration standard. Internal standards performances were all within specification.

Internal standard areas were checked at random and found to be accurate. No results required qualification due to internal standards performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.

All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for all target compounds are within acceptable limits (± 0.06 relative retention time units of the standard). Ion relative abundances on mass spectra for reported compounds were checked against library reference spectra and were found to be acceptable. Spectra were provided for all reported positive and tentative identifications.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS

Target compound lower limits of quantitation are based on on-column amounts of 5 ng for most analytes and 10-25 ng for selected others. The algorithm for calculation of target analyte concentrations was checked and found to be correct. All lower limits of quantitation for chemicals of concern are within the project required quantitation limits (PRQL's), as summarized in the attached results Table.

Specified internal standards, quantitation ions, and RRF's were checked for all sample results and determined to be correct. All target analyte responses were determined by an automated/computerized routine, and no manual reintegrations were apparent. All sample volume and concentration calculations were checked for each sample and determined to be correct.

TENTATIVELY IDENTIFIED COMPOUNDS

No tentatively identified compound (TIC) reports were found in the deliverables package. None were requested.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. RIC's were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to field (rinsate / trip) blanks, a blind sample split was submitted for analysis (duplicate/split pair = GW03MW02B / GW503MW02B). Analytical results for the sample split are presented in the results Table. Five analytes were detected, and all exhibited less than 6.5 RPD (relative percent difference).

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW03MW08A. Analytes evaluated include vinyl chloride, trichloroethylene, tetrachloroethylene, toluene and 1,2,4-trichlorobenzene. Accuracies were in the range of 60% - 95%. Analytical performance on the submitted reference material is considered acceptable.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete (exceptions

include the lack of reported ICV and post-sequence CCVs). All performance indicators were either within specification or within acceptable limits for the chemicals of potential concern. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are at the specified limits. Analytical performance is generally within specified limits, and the data quality, with associated qualifiers, is sufficient for its intended purposes.

SEMIVOLATILE ORGANIC COMPOUND ANALYSES

Semivolatile organic compound (SVOC) analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8270C (HRGC/MS). Eleven samples, consisting of nine groundwaters, a rinsate blank and a double-blind reference material, were submitted for analyses. No chemical preservative was employed. Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Acceptable.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. With two exceptions, documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated SVOC results. The documentation was deficient in the presentation of an initial calibration verification check and post-sequence CCV checks.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 0 - 4.0 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to SVOC's analysis are established in the Project Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No results required qualification due to sample handling and holding conditions.

GC/MS TUNE CHECK: Within specification.
Decafluorotriphenylphosphine (25 ng/µL DFTPP) was analyzed at the beginning of each twelve- hour calibration period as required for instrument Finn8. Two checks (2/6/02 & 2/7/02) were performed for these analyses plus one check associated with the initial calibration on 1/28/02. All ion abundances and relative ion abundances met U.S. EPA CLP acceptance criteria. Mass spectral plots and listings were compared, and transcription of mass data to the GC/MS tuning and mass calibration summaries was

checked. No errors were found.

All criteria were met and all sample analyses and calibrations were performed within the twelve-hour instrument tune check period.

INITIAL CALIBRATION: Acceptable.
Initial multi-point calibrations were established for all target and surrogate compounds at concentrations of 5, 10, 25, 40 and 80 ng/µL. The minimum RRF (relative response factor) requirement of 0.05 was met for all calibrations, and the RSD specification for linearity of ≤ 30% was also met for all calibrations. The mean %RSD for all analytes is 7.6% with three analytes exceeding or equivalent to 15%. Initial calibration performance is within acceptance limits.

An initial calibration verification (ICV) was not reported. An instrument detection limit standard (IDL) at 1 ng/µL (5 ng/µL for PCP) was presented for 1/28/02 and 2/05/02; following the initial calibration run sequence. All analytes exhibited acceptable response in the IDLs; nitrophenols and benzoic acid lower reporting limits are determined to be acceptable down to 5 ng/µL, which allows a lowering of the lab reporting limits (from 15 to 50 µg/L) to 10 µg/L for benzoic acid, 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol; and from 2 - 4 µg/L for di-n-octylphthalate and *bis*(2-ethylhexyl)phthalate to 1 µg/L. No action is required, and no data requires qualification.

CONTINUING CALIBRATION: Acceptable.
A continuing calibration verification (CCV) at 25 ng/µL was analyzed prior to the analysis of sample extracts as specified by the Project Management Plan (a total of two CCVs were analyzed). No post-sequence CCVs were reported. All relative response factors were greater than 0.05, as specified; and all %D were less than 20%, as required for specified chemicals. Analytes with %D > 20% are 2-methylnaphthalene, hexachlorocyclopentadiene, 2,4-dinitrophenol, pyrene, butylbenzylphthalate and benzo(k)fluoranthene; which is within acceptable limits for these analytes.

The reported CCVs were within specification.

BLANKS: Within specification.
One method (preparation) blank was analyzed with each group of project samples, as required (two groups and two MBs were analyzed). No analytes were detected above one-half the project required lower quantitation limits. No results required qualification.

A field blank (equipment rinsate) analysis was performed on 1 submission. All reported results indicated nondetects or levels less than the project required quantitation limit for all analytes.

SURROGATE COMPOUND RECOVERIES: Acceptable.

Project-specified surrogate compounds were added to all samples, including method and field blanks. Surrogate compounds were added at the following amounts: 12.5 µg for neutrals and 18.7 µg for acidic organic compounds; to 500 mL water samples prior to extraction.

Criteria for evaluation are as follows:

d_5-nitrobenzene	42-112%	2-fluorophenol	39-113%
2-fluorobiphenyl	37-105%	2,4,6-tribromophenol	42-130%
d_{14}-*p*-terphenyl	40-131%	d_4-2-chlorophenol	44-109%
d_5-phenol	36-111%	d_4-1,2-dichlorobenzene	30-100%

All recoveries are within specification, with the exception of d_{14}-*p*-terphenyl in GW503MW02B (137%).

Corrective action or data qualification is required when more than one surrogate per fraction is noncompliant. Only one surrogate fell outside specification for one sample. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:

Within specification.

One MS/MSD analysis was performed, as required. Matrix spike compounds are selected analytes spiked at 25 µg/L (37.5 µg/L for phenols) into GW03MW01B. Performance was evaluated by comparison of recoveries to the following criteria.

MS / MSD Project Advisory Criteria

Parameter	Recovery range (%)	Relative percent difference (RPD)
phenol	12 - 110	42 %
2-chlorophenol	27 - 123	40 %
1,4-dichlorobenzene	36 - 97	28 %
N-nitroso-di-n-propylamine	41 - 116	38 %
1,2,4-trichlorobenzene	39 - 98	28 %
4-chloro-3-methylphenol	23 - 97	42 %
acenaphthene	46 - 118	31 %
4-nitrophenol	10 - 80	50 %
pentachlorophenol	9 - 103	50 %
pyrene	26 - 127	31 %

All MS/MSD recoveries and associated RPD's were within specification. No data required qualification due to MS / MSD measurement performance.

A laboratory control sample (spiked water blank; LCS) and two LCS/LCS-dup. pairs were analyzed for the selected target analytes [above] at an equivalent spike concentration of 25/37.5 µg/L. Analyte recoveries ranged from 65% to 111%, all within specification.

INTERNAL STANDARDS PERFORMANCE: Within specification.
Seven internal standards (IS) were added to all sample extracts at a concentration of 20 ng/µL. Retention times (RT) for all internal standards in all analyses are within the specified window of ± 30 seconds of the continuing calibration internal standard RT. All internal standard (IS) areas for all sample extracts were verified for accuracy and determined to be correct. The specified acceptance limit for internal standard areas in sample extracts is 0.5 to 2 times the area of the 12-hour continuing calibration standard. Internal standards performances were all within specification.

Internal standard areas were checked at random and found to be accurate. No results required qualification due to internal standards performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.
All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for all target compounds are within acceptable limits (± 0.06 relative retention time units of the standard). Ion relative abundances on mass spectra for reported compounds were checked against library reference spectra and were found to be acceptable. No target analytes were reported in project samples, with the exception of the [double-blind] reference material. One chemical was reported as a non-target analyte in GW03MW02B; a tentative hit for hexahydro-1,3,5-trinitro-1,3,5-triazine or RDX.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS
Target compound lower limits of quantitation are based on on-column amounts of 1 ng for neutrals and 2-5 ng for substituted phenols. The algorithm for calculation of target analyte concentrations was checked and found to be correct. All lower limits of quantitation for chemicals of concern are within the project required quantitation limits (PRQL's), as summarized in the attached results Table. Some reported limits for polar analytes (benzoic acid, 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol) and *bis*(2-ethylhexyl)phthalate and di-n-octylphthalate were adjusted downward by the reviewer based on acceptable performance of the IDL check standard and method blanks.

Specified internal standards, quantitation ions, and RRF's were checked for all sample results and determined to be correct. All target analyte responses were determined by an automated/computerized routine, and no manual reintegrations were apparent. All sample volume and concentration calculations were checked for each sample and determined to be correct.

TENTATIVELY IDENTIFIED COMPOUNDS
Only one additional compound in one sample was reported at levels greater than the specified reporting limit (> 10% IS's response). RDX was reported as a tentatively identified compound in GW03MW02B.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. RIC's were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to a field (rinsate / trip) blank, a blind sample split was submitted for analysis (duplicate/split pair = GW03MW02B / GW503MW02B). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either of the two samples.

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW03MW08A. Analytes evaluated include diethylphthalate, diphenylamine, phenanthrene, pyrene and butylbenzylphthalate. Accuracies were in the range of 75% - 110%, with the exception of diphenylamine at 29%. Diphenylamine is the most basic and labile of the analytes evaluated in the reference material. Assuming the recoveries to be consistent at $\leq$10 µg/L in all project samples, the actual lower reporting limit for project samples may be closer to 3 µg/L rather than 1 µg/L, as reported. No detections for diphenylamine are reported for site samples. Lower reporting limits for diphenylamine/N-nitrosodiphenylamine are adjusted upward by the reviewer from 1 µg/L to 3 µg/L. Performance is determined to be acceptable.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. No chemicals of concern were reported in site samples. Performance on the double-blind reference material is acceptable, however the lower reporting limits for diphenylamine/N-nitrosodiphenylamine were adjusted upward to reflect the low recoveries reported for the analyte. The lower quantitation levels achieved are at the specified limits, with the exception of diphenylamine (consequent to low recoveries reported in the double-blind reference material). Analytical performance is within specified limits, and the data quality is sufficient for its intended purposes.

CHLOROPHENOXYHERBICIDES ANALYSES

Chlorophenoxyherbicides analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8151A (HRGC/ECD). Samples (500 mL.) were spiked with surrogate (2,4-dichlorophenylacetic acid), extracted with diethyl ether, hydrolyzed and derivatized with diazomethane prior to gas chromatographic analysis. Gas chromatographic analysis was performed on dual columns - a DB-5 and a DB-608. Eleven samples, consisting of nine groundwaters, a rinsate blank and a double-blind reference material, were submitted for analyses. No chemical preservative was employed. Principal contaminants of concern have been identified as 2,4-D, 2,4,5-T and 2,4,5-TP (Silvex). Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated herbicides results.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 $\pm$ 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 0 - 4.0 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to herbicides analysis are established in the Project Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No results required qualification due to sample handling and holding conditions.

INITIAL CALIBRATION: Within specification.
Initial multi-point calibrations were established [2/06/02 & 2/12/02] for all target and surrogate compounds at concentrations of 0.01, 0.025, 0.05, 0.10, 0.20 and 0.40 ng/µL. A combination of

linear and quadratic fits was employed for the various analytes. RSD's for linear fits were all $\leq 20\%$, whereas the quadratic fits all exhibited $r^2 > 0.999$ on both the primary and secondary (confirmation) columns. Initial calibration performance is within acceptance limits.

CONTINUING CALIBRATION: Acceptable.
Five continuing calibration verification (CCV) runs were performed at 0.025 - 0.5 ng/µL (25 ng/µL for MCPA & MCPP) prior to and following the analysis of sample extracts as specified by the Project Management Plan. With the exception of Dicamba on the secondary column (%D = 18, 22 & 25), Dalapon on the primary column (%D = 21) and Silvex (2,4,5-TP) on the secondary column (%D = 19 & 21), all responses were within 15% of the known values, as specified. The deviations for Dicamba and Dalapon have no effect on the data, since none were detected. The Silvex deviation has no effect on the detection in the double-blind reference material, since the value was reported from the response on the primary column.

BLANKS: Within specification.
Three method (preparation) blanks were analyzed with the project samples. No analytes were detected above the reported lower quantitation limits. No results required qualification.

A field blank (equipment rinsate/transport) analysis was performed on 1 submission. All reported results indicated nondetects at the reported lower quantitation limits for all analytes.

SURROGATE COMPOUND RECOVERIES: Within specification.
Dichlorophenylacetic acid (6.2 µg in 500 mL.) was added as a surrogate to all samples, including method and field blanks. Surrogate recoveries ranged from 77% to 93%, well within the specified limits (40% - 140%). No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:
Within specification.
One MS/MSD analysis was performed, as required. Matrix spike compounds added to GW03MW01B were 2,4,5-TP (Silvex), Dicamba and 2,4-D at concentrations of 0.5-2 µg/L. Recoveries ranged from 53% to 74%, with an RPD range of 2.9% - 12%. All MS/MSD recoveries and associated RPD's were within specification (R = 40-140% with RPD $\leq$ 50%). No data required qualification due to MS / MSD measurement performance.

Two laboratory control sample (spiked water blank; LCS) and duplicate (LCSD) pairs and an LCS were analyzed for selected target analytes [same as for the MS/MSD, above] at an equivalent spike concentration of 0.5-2 µg/L. Analyte recoveries ranged from 60% to 80%, all within specification (R = 50-130%). RPDs ranged from 0% to 5.1%.

TARGET COMPOUND IDENTIFICATION: Acceptable.

Retention time windows were generally within ± 7 seconds of the initial and continuing calibration verifications. No analyte responses were observed nor reported in project samples at the reported lower quantitation limits.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS
Target compound lower limits of quantitation are based on on-column amounts represented by the lowest calibration point in the initial calibration. All lower limits of quantitation for chemicals of concern are less than the project-required quantitation limits (PRQL's), as summarized in the attached results Table.

SYSTEM PERFORMANCE: Within specification.
No signs of degraded system performance were observed. Chromatograms were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to a field rinsate blank, a blind sample split was submitted for analysis (duplicate/split pair = GW03MW02B / GW503MW02B). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either of the two samples.

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW03MW08A. Analytes evaluated include 2,4-D, 2,4,5-T and 2,4,5-TP (Silvex). Accuracies were in the range of 85% - 88%. Analytical performance on the double-blind reference material is considered acceptable.

OVERALL ASSESSMENT
All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. No chemicals of concern were reported in site samples. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are less than the specified limits. Analytical performance is within specified limits, and the data quality is sufficient for its intended purposes.

METALS ANALYSES

Metals analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP's are identified as U.S. EPA SW-846 Methods 6010B / 7000 (all metals analyzed by 6010B (ICP-AES); with the exception of As, Pb, Se and Tl, which were analyzed by 200.8 (ICP-MS) and Hg by 7470A (CVAA)). Twenty-one samples were submitted for analyses - ten pairs were submitted for the analysis of both dissolved and total metals (of which one pair is a rinsate blank set); the remaining sample was a double-blind reference material for independent evaluation of accuracy for selected analytes (As, Ba, Hg & Pb). Samples for determination of dissolved metals were field-filtered using an in-line, nitrocellulose, 0.45 µm cartridge filter assembly. All samples were preserved upon collection with HNO_3 to pH $\leq$ 2. The target metal analytes are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Inorganics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/013]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan for As, Ba, Hg & Pb.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated metals results.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 $\pm$ 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 0 - 4.0 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to metals analysis are established in the Project Management Plan as 28 days for mercury and 6 months for other metals, from time of collection to analysis. All samples were analyzed within 12 days of sample collection. All analyses were performed within the specified holding times.

CALIBRATION: Within specification.

Initial Calibration. Initial instrumental calibrations were performed daily using at least the minimum required number of data points to establish the analytical curve for each method: a blank and one standard for ICP-AES analyses, a blank and four standards for ICP-MS analyses, and a blank and six standards for mercury (CVAA) analyses. Correlation coefficients for all ICP-MS and CVAA initial calibrations are ≥0.995, as required (actually reported as > 0.9997).

Initial Calibration Verification. Initial calibration verification checks (ICV's) were performed immediately after initial instrumental calibrations during all ICP (AES & MS) and CVAA analytical runs, as required. All ICV recoveries are within acceptance limits (90-110% for ICP and 80-120% for mercury).

Continuing Calibration Verification. Continuing calibration verification standards (CCV's) were analyzed at the required frequency for all ICP and CVAA analytical runs (at the beginning and end of each run; at a frequency of ≥10% or every two hours, whichever is more frequent). All CCV recoveries are within acceptance limits (90-110% for ICP and 80-120% for CVAA).

Calibration Check Sample. A check sample at a concentration of 2x the project required quantitation level was analyzed following initial calibrations and found to range from 92% to 114%, with the exception of silver which reported 70%. While control limits are unspecified in the Project Management Plan, the performance is considered reasonable and acceptable.

ICP-MS Quantitation. Seven internal/check standards (lithium, scandium, germanium, yttrium, indium, terbium and bismuth) were added to all samples analyzed, including standards and blanks. Internal standard performance for all samples analyzed was found to be within specification (60-125% of the response of the calibration blank).

CALIBRATION, PREPARATION, and FIELD BLANKS: Acceptable.

Initial/Continuing Calibration Blanks. Initial calibration blanks (ICB's) were analyzed immediately after ICV's, and continuing calibration blanks (CCB's) were analyzed immediately after CCV's during all ICP-AES, ICP-MS, and CVAA analytical runs, as required.

The Project Management Plan specifies that ICB's and CCB's are less than the lower quantitation limit for each reported analyte. All ICB's and CCB's were within specification. All ICB and CCB results were verified by examination of raw data.

Preparation / Method Blanks. Two preparation blanks were analyzed for all target analytes at the required frequency (once per preparation batch). No analytes were reported above the project required quantitation limit.

Equipment Rinsate Blanks. Two equipment rinsate blanks were collected and analyzed. Calcium, iron and lead were reported just above the lower reporting limits in the total metals rinsate blank, and sodium was reported at 130 µg/L in the filtered sample. These low levels of background contamination have little, if any (with the possible exception of iron), effect on the data since calcium and sodium sample concentrations are significantly greater than rinsate levels and lead was not detected in any other samples.

INTERFERENCE CHECK SAMPLE: Within specification.
ICP (AES & MS) interference check solutions (ICS) were analyzed for the target analytes at the beginning of each analytical run. Recoveries for the target analytes of concern were within acceptance limits (80-120%).

LABORATORY CONTROL SAMPLE: Within specification.
Laboratory control samples (LCS) were analyzed at the required frequency (at least one sample per matrix per preparation batch). Two aqueous LCS's (spiked blanks) were analyzed. All target analytes are within project acceptance limits (80-120% recovery) for all reported analyses of the aqueous LCS (recoveries ranged from 93% to 112%).

DUPLICATE SAMPLE ANALYSES: Within specification.
Laboratory duplicate samples (GW03MW01A, total and dissolved) were analyzed for the target analytes at the required frequency (at least one sample per matrix per preparation batch). Results of all duplicate analyses greater than the IDL are within project acceptance limits (±20% RPD).

MATRIX SPIKE SAMPLE ANALYSES
Matrix spike samples were analyzed for the target analytes at the required frequency (at least one sample per matrix per preparation batch). Project-specified acceptance limits for matrix spike recovery are 75-125% and are applicable only to those samples in which the sample concentration does not exceed 4 times the spike concentration. All water sample matrix spike (two samples) recoveries were acceptable for all reported analytes, and no associated results were rejected or required qualification.

ICP SERIAL DILUTION & POST-DIGESTION SPIKES
None performed.

SAMPLE RESULT VERIFICATION
Sample quantitation and transcription to the reporting form (Form I) was verified for at least 10% of the analytes for each sample, including QC samples. No errors were detected.
Results for all target analytes are within the linear range of the instrument. No significant anomalies were noted in the raw data. All raw data are legible and complete.

OTHER PERFORMANCE DATA

Field Quality Control Sample Analyses. Two blind splits were taken and submitted for analyses. A split sample was generated for each of the nonfiltered and filtered samples at MW02B. Results are presented in the attached Table. RPD's were less than or equal to 5% for dissolved species, with the exception of iron at 28% RPD. Slightly greater variability was demonstrated for total metals where iron exhibited a 53% RPD and chromium at 15% RPD. This indicates higher heterogeneity associated with particulate matter.

Blind Reference Material. A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW03MW08A. Analytes evaluated include As, Ba, Hg and Pb. Accuracies were in the range of 96% - 106%, with the exception of mercury at 70%. All recoveries are determined to be within acceptable limits.

OVERALL ASSESSMENT OF THE DATA

All deliverables required by the project are present and data packages are complete. Recommended sample holding times were met for all analytes in all samples. Initial calibration and continuing calibration requirements were met for all analytes in all analytical runs. Reporting limits for all analytes in all samples are at or below the Project Required Quantitation Levels (PRQL's), with the exception of some of the major cations. Analytical performance on a double-blind independent reference material was evaluated for selected analytes of concern and determined to be acceptable. Few problems were encountered and the data as qualified meet the project's data quality objectives.

Conventional parameters in water for this project, the associated analytical methods, and lower reporting limits are as follows:

Parameter	Method	Lower reporting limit
Carbonate (alkalinity)	SM 2320	1.0 mg/L
Bicarbonate (alkalinity)	SM 2320	1.0 mg/L
Total Suspended Solids	EPA 160.2	1.0 - 1.2 mg/L
Chloride	EPA 300.0	1.0 mg/L
Total Cyanide	EPA 335.2	0.005 mg/L
Nitrate	EPA 353.2	0.01 mg-N/L
Nitrite	EPA 353.2	0.01 mg-N/L
Sulfate	EPA 300.0	2.5 mg/L
Total Organic Carbon	EPA 415.1	1.5 mg/L
Dissolved Organic Carbon	EPA 415.1	1.5 mg/L

Analytical methods applied are the same as those used for the first and second quarter's monitoring, with the exception of the use of method 353.2 for nitrate/nitrite. Lower reporting limit requirements were achieved for some analytes. Alkalinity was reported at levels with 5x lower limits (1 mg/L vs. 5 mg/L[specified]), chloride was reported at 1 mg/L vs. a 2 mg/L specification, nitrate/nitrite was one-fifth the level specified, and sulfate was one-quarter of the level specified (2.5 mg/L vs. 10 mg/L[specified]). All quality control performance measurements were within specification for all parameters. Method blank, MS/MSD, LCS, and replicate analysis results are all within acceptable limits.

Holding times were within specification, with the exception of nitrate and nitrite in three samples. The method-specified 48-hour holding time allows for the differentiation of nitrate and nitrite. Samples were analyzed on the same day as received with the exception of samples GW03MW01A, GW03MW01B and GW03MW02A. Holding times for these samples were exceeded by 1-2 days. Holding time exceedance precludes species differentiation because any nitrite in the samples would have been oxidized to nitrate. The maximum recommended holding time for nitrate plus nitrite is 28 days. All samples were analyzed well within this holding time and therefore, the reported nitrate can be interpreted as nitrate plus nitrite.

With the last exception, no conventional parameter results should have any limitations placed on their use for this project.

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Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
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values as µg/L.

Field I.D.	Comments	Sample Date	Lab I.D.	Sb 7440-36-0	As 7440-38-2	Ba 7440-39-3	Be 7440-41-7	Cd 7440-43-9	Ca 7440-70-2	Cr 7440-47-3
GW03MW01A	grd water, total metals	1/21/02	021058-EB00A	50 U	0.2 U	3 U	1 U	2 U	**2400**	**13**
GW03MW01A (D)	grd water, dissolved metals	1/21/02	021062-EB00E	50 U	0.2 U	3 U	1 U	2 U	**2440**	5 U
GW03MW01B	grd water, total metals	1/22/02	021059-EB00B	50 U	0.2 U	3 U	1 U	2 U	**1960**	5 U
GW03MW01B (D)	grd water, dissolved metals	1/22/02	021063-EB00F	50 U	0.2 U	3 U	1 U	2 U	**2050**	5 U
GW03MW02A	grd water, total metals	1/22/02	021060-EB00C	50 U	0.2 U	3 U	1 U	2 U	**1400**	**26**
GW03MW02A (D)	grd water, dissolved metals	1/22/02	021064-EB00G	50 U	0.2 U	3 U	1 U	2 U	**1370**	**12**
GW03MW02B	grd water, total metals	1/23/02	021127-EB10B	50 U	0.2 U	**4**	1 U	2 U	**2110**	**21**
GW03MW02B (D)	grd water, dissolved metals	1/23/02	021131-EB10F	50 U	0.2 U	**4**	1 U	2 U	**2110**	5 U
GW503MW02B	split of MW02B, total metals	1/23/02	021128-EB10C	50 U	0.2 U	**4**	1 U	2 U	**1920**	**18**
GW503MW02B (D)	split of MW02B (D), dissolved metals	1/23/02	021132-EB10G	50 U	0.2 U	**4**	1 U	2 U	**2080**	5 U
GW03MW03A	grd water, total metals	1/24/02	021154-EB18A	50 U	0.2 U	3 U	1 U	2 U	**1570**	**18**
GW03MW03A (D)	grd water, dissolved metals	1/24/02	021159-EB18F	50 U	0.2 U	3 U	1 U	2 U	**1610**	5 U
GW03MW03B	grd water, total metals	1/24/02	021155-EB18B	50 U	**0.3**	**9**	1 U	2 U	**3800**	**65**
GW03MW03B (D)	grd water, dissolved metals	1/24/02	021160-EB18G	50 U	0.2 U	**7**	1 U	2 U	**4160**	**7**
GW03MW04A	grd water, total metals	1/23/02	021129-EB10D	50 U	0.2 U	**5**	1 U	2 U	**1630**	**47**
GW03MW04A (D)	grd water, dissolved metals	1/23/02	021133-EB10H	50 U	0.2 U	3 U	1 U	2 U	**1560**	5 U
GW03MW05A	grd water, total metals	1/25/02	021156-EB18C	50 U	0.2 U	**3**	1 U	2 U	**2210**	**29**
GW03MW05A (D)	grd water, dissolved metals	1/25/02	021161-EB18H	50 U	0.2 U	**4**	1 U	2 U	**2290**	5 U
GW1003MW05A	rinsate blk, total metals	1/25/02	021157-EB18D	50 U	0.2 U	3 U	1 U	2 U	**60**	5 U
GW1003MW05A (D)	rinsate blk, dissolved metals	1/25/02	021162-EB18I	50 U	0.2 U	3 U	1 U	2 U	50 U	5 U
GW03MW08A	ref mtl, total metals	1/23/02	021126-EB10A	50 U	**4.8 (96%)**	**53 (106%)**	1 U	2 U	50 U	5 U
PRQL (µg/L)				*50*	*1*	*3*	*1*	*2*	*50*	*5*

Comprehensive validation performed for As, Ba, Hg & Pb.

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values as µg/L.

Field I.D.	Comments	Cu 7440-50-8	Fe 7439-89-6	Pb 7439-92-1	Mg 7439-95-4	Hg 7439-97-6	Ni 7440-02-0	K 7440-09-7	Se 7782-49-2	Ag 7440-22-4	Na 7440-23-5
GW03MW01A	grd water, total metals	2 U	**250**	1 U	**990**	0.1 U	10 U	500 U	0.5 U	3 U	**4520**
GW03MW01A (D)	grd water, dissolved metals	2 U	50 U	1 U	**1000**	0.1 U	10 U	500 U	0.5 U	3 U	**4680**
GW03MW01B	grd water, total metals	2 U	50 U	1 U	**1090**	0.1 U	10 U	500 U	0.5 U	3 U	**1290**
GW03MW01B (D)	grd water, dissolved metals	2 U	50 U	1 U	**1150**	0.1 U	10 U	500 U	0.5 U	3 U	**1400**
GW03MW02A	grd water, total metals	2 U	**280**	1 U	**450**	0.1 U	**20**	500 U	**0.6**	3 U	**10100**
GW03MW02A (D)	grd water, dissolved metals	2 U	**110**	1 U	**460**	0.1 U	**20**	500 U	0.5 U	3 U	**10200**
GW03MW02B	grd water, total metals	2 U	**200**	1 U	**1050**	0.1 U	**10**	500 U	0.5 U	3 U	**3000**
GW03MW02B (D)	grd water, dissolved metals	2 U	**80**	1 U	**1040**	0.1 U	**10**	500 U	0.5 U	3 U	**3070**
GW503MW02B	split of MW02B, total metals	2 U	**120**	1 U	**940**	0.1 U	**10**	500 U	0.5 U	3 U	**2780**
GW503MW02B (D)	split of MW02B (D), dissolved metals	2 U	**60**	1 U	**1040**	0.1 U	**10**	500 U	0.5 U	3 U	**3030**
GW03MW03A	grd water, total metals	2 U	**2180**	1 U	**740**	0.1 U	**10**	500 U	0.5 U	3 U	**1480**
GW03MW03A (D)	grd water, dissolved metals	2 U	50 U	1 U	**760**	0.1 U	10 U	500 U	0.5 U	3 U	**1570**
GW03MW03B	grd water, total metals	**4**	**1110**	1 U	**1810**	0.1 U	**40**	**2100**	**0.6**	3 U	**8320**
GW03MW03B (D)	grd water, dissolved metals	2 U	**90**	1 U	**1930**	0.1 U	**20**	**2210**	0.5 U	3 U	**9010**
GW03MW04A	grd water, total metals	**4**	**1440**	1 U	**760**	0.1 U	**30**	**550**	0.5 U	3 U	**1710**
GW03MW04A (D)	grd water, dissolved metals	2 U	**60**	1 U	**590**	0.1 U	**10**	500 U	0.5 U	3 U	**1780**
GW03MW05A	grd water, total metals	2 U	**160**	1 U	**950**	0.1 U	**20**	500 U	0.5 U	3 U	**1790**
GW03MW05A (D)	grd water, dissolved metals	2 U	50 U	1 U	**970**	0.1 U	10 U	500 U	0.5 U	3 U	**1900**
GW1003MW05A	rinsate blk, total metals	2 U	**70**	**3**	50 U	0.1 U	10 U	500 U	0.5 U	3 U	50 U
GW1003MW05A (D)	rinsate blk, dissolved metals	2 U	50 U	1 U	50 U	0.1 U	10 U	500 U	0.5 U	3 U	**130**
GW03MW08A	ref mtl, total metals	2 U	50 U	**10 (100%)**	50 U	**0.7 (70%)**	10 U	500 U	0.5 U	3 U	50 U
PRQL (µg/L)		*2*	*20*	*1*	*20*	*0.1*	*10*	*500*	*2*	*3*	*50*

Comprehensive validation performed for As, Ba, Hg & Pb.

Camp Bonneville Expanded Site Investigation
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values as µg/L.

Field I.D.	Comments	Tl 7440-28-0	Zn 7440-66-6	Alkalinity mg/L $CaCO_3$	Carbonate mg/L $CaCO_3$	Bicarbonate mg/L $CaCO_3$	total suspended solids mg/L	Chloride mg/L	total Cyanide mg/L
GW03MW01A	grd water, total metals	0.2 U	6 U	**10**	1 U	**10**	**3.6**	**2.2**	0.005 U
GW03MW01A (D)	grd water, dissolved metals	0.2 U	6 U						
GW03MW01B	grd water, total metals	0.2 U	6 U	**11**	1 U	**11**	1.0 U	**2.5**	0.005 U
GW03MW01B (D)	grd water, dissolved metals	0.2 U	6 U						
GW03MW02A	grd water, total metals	0.2 U	**8**	**4.3**	1 U	**4.3**	**2.2**	**2.7**	0.005 U
GW03MW02A (D)	grd water, dissolved metals	0.2 U	**6**						
GW03MW02B	grd water, total metals	0.2 U	6 U	**3.4**	1 U	**3.4**	**3.0**	**6.0**	0.005 U
GW03MW02B (D)	grd water, dissolved metals	0.2 U	**7**						
GW503MW02B	split of MW02B, total metals	0.2 U	6 U	**4.4**	1 U	**4.4**	**1.2**	**3.2**	0.005 U
GW503MW02B (D)	split of MW02B (D), dissolved metals	0.2 U	6 U						
GW03MW03A	grd water, total metals	0.2 U	6 U	**8.1**	1 U	**8.1**	**1.1**	1 U	0.005 U
GW03MW03A (D)	grd water, dissolved metals	0.2 U	6 U						
GW03MW03B	grd water, total metals	0.2 U	6 U	**13**	1 U	**13**	**17**	**9.5**	0.005 U
GW03MW03B (D)	grd water, dissolved metals	0.2 U	6 U						
GW03MW04A	grd water, total metals	0.2 U	6 U	**8.3**	1 U	**8.3**	**22**	1 U	0.005 U
GW03MW04A (D)	grd water, dissolved metals	0.2 U	6 U						
GW03MW05A	grd water, total metals	0.2 U	**7**	**11**	1 U	**11**	**1.7**	1 U	0.005 U
GW03MW05A (D)	grd water, dissolved metals	0.2 U	**7**						
GW1003MW05A	rinsate blk, total metals	0.2 U	6 U	1 U	1 U	1 U	1 U	**1.3**	0.005 U
GW1003MW05A (D)	rinsate blk, dissolved metals	0.2 U	6 U						
GW03MW08A	ref mtl, total metals	0.2 U	6 U						
PRQL (µg/L)		*1*	*6*	*5*	*1*		*1*	*2*	*0.005*

Comprehensive validation performed for As, Ba, Hg & Pb.

Camp Bonneville anded Site Investigation
Landfill 4, Demolition Area 1
Metals & Conventionals Results

values as µg/L.

Field I.D.	Comments	Nitrate mg-N/L	Nitrite mg-N/L	Sulfate mg/L	TOC mg/L	DOC mg/L
GW03MW01A	grd water, total metals	**0.03**	0.01 U	**8.3**	1.5 U	1.5 U
GW03MW01A (D)	grd water, dissolved metals					
GW03MW01B	grd water, total metals	0.01 U	0.01 U	2.5 U	1.5 U	1.5 U
GW03MW01B (D)	grd water, dissolved metals					
GW03MW02A	grd water, total metals	**0.36**	0.01 U	**19**	1.5 U	1.5 U
GW03MW02A (D)	grd water, dissolved metals					
GW03MW02B	grd water, total metals	**0.82**	0.01 U	**3.1**	1.5 U	1.5 U
GW03MW02B (D)	grd water, dissolved metals					
GW503MW02B	split of MW02B, total metals	**0.84**	0.01 U	**2.6**	1.5 U	1.5 U
GW503MW02B (D)	split of MW02B (D), dissolved metals					
GW03MW03A	grd water, total metals	**0.14**	0.01 U	2.5 U	1.5 U	1.5 U
GW03MW03A (D)	grd water, dissolved metals					
GW03MW03B	grd water, total metals	**0.77**	0.01 U	**7.8**	1.5 U	1.5 U
GW03MW03B (D)	grd water, dissolved metals					
GW03MW04A	grd water, total metals	**0.06**	0.01 U	2.5 U	1.5 U	1.5 U
GW03MW04A (D)	grd water, dissolved metals					
GW03MW05A	grd water, total metals	**0.22**	0.01 U	**3.1**	1.5 U	1.5 U
GW03MW05A (D)	grd water, dissolved metals					
GW1003MW05A	rinsate blk, total metals	0.01 U	0.01 U	2.5 U	1.5 U	1.5 U
GW1003MW05A (D)	rinsate blk, dissolved metals					
GW03MW08A	ref mtl, total metals					
PRQL (µg/L)		*0.05*	*0.05*	*10*	*1.5*	*1.5*

Comprehensive validation performed for As, Ba, Hg & Pb.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Sample Date	Lab I.D.	Chloro-methane 74-87-3	Bromo-methane 74-83-9	Vinyl chloride 75-01-4	Chloro-ethane 75-00-3	Methylene chloride 75-09-2	Acetone 67-64-1
GW03MW01A	grd water	1/21/02	021058-EB00A	1 U	1 U	1 U	1 U	2 U	**3.9 J**
GW03MW01B	grd water	1/22/02	021059-EB00B	1 U	1 U	1 U	1 U	2 U	5 U
GW03MW02A	grd water	1/22/02	021060-EB00C	1 U	1 U	1 U	1 U	2 U	**3.3 J**
GW03MW02B	grd water	1/23/02	021127-EB10B	1 U	1 U	1 U	1 U	2 U	5 U
GW503MW02B	grd water, split of MW02B	1/23/02	021128-EB10C	1 U	1 U	1 U	1 U	2 U	5 U
GW03MW03A	grd water	1/24/02	021154-EB18A	1 U	1 U	1 U	1 U	2 U	5 U
GW03MW03B	grd water	1/24/02	021155-EB18B	1 U	1 U	1 U	1 U	2 U	5 U
GW03MW04A	grd water	1/23/02	021129-EB10D	1 U	1 U	1 U	1 U	2 U	5 U
GW03MW05A	grd water	1/25/02	021156-EB18C	1 U	1 U	1 U	1 U	2 U	5 U
GW1003MW05A	rinsate blank	1/25/02	021157-EB18D	1 U	1 U	1 U	1 U	2 U	5 U
GW03MW08A	ref mtl	1/23/02	021126-EB10A	1 U	1 U	**3.8 (95%)**	1 U	**3.9**	5 U
012102TRIP01	trnspt blk	1/22/02	021061-EB00D	1 U	1 U	1 U	1 U	2 U	5 U
012502TRIP03	trnspt blk	1/10/02	021158-EB18E	1 U	1 U	1 U	1 U	2 U	**2.2 J**
PRQL (µg/L)				*1*	*1*	*1*	*1*	*2*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Carbon disulfide 75-15-0	1,1-Dichloro-ethene 75-35-4	1,1-Dichloro-ethane 75-34-3	*trans*-1,2-Dichloro-ethene 156-60-5	*cis*-1,2-Dichloro-ethene 156-59-2	Chloroform 67-66-3	1,2-Dichloro-ethane 107-06-2
GW03MW01A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW01B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW02A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW02B	grd water	1 U	**35**	**32**	1 U	1 U	1 U	1 U
GW503MW02B	grd water, split of MW02B	1 U	**33**	**30**	1 U	1 U	1 U	1 U
GW03MW03A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW03B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW04A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW05A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1003MW05A	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW08A	ref mtl	1 U	1 U	1 U	1 U	1 U	1 U	1 U
012102TRIP01	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U
012502TRIP03	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	2-Butanone (MEK) 78-93-3	1,1,1-Trichloro-ethane 71-55-6	Carbon tetrachloride 56-23-5	Vinyl acetate 108-05-4	Bromodichloro-methane 75-27-4	1,2-Dichloro-propane 78-87-5	*cis*-1,3-Dichloro-propene 10061-01-5
GW03MW01A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW03MW01B	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW03MW02A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW03MW02B	grd water	5 U	**230**	1 U	5 U	1 U	1 U	1 U
GW503MW02B	grd water, split of MW02B	5 U	**220**	1 U	5 U	1 U	1 U	1 U
GW03MW03A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW03MW03B	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW03MW04A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW03MW05A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW1003MW05A	rinsate blank	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW03MW08A	ref mtl	5 U	1 U	1 U	5 U	1 U	1 U	1 U
012102TRIP01	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U	1 U
012502TRIP03	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U	1 U
PRQL (µg/L)		*5*	*1*	*1*		*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville E...panded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Trichloro-ethene 79-01-6	Dibromochloro-methane 124-48-1	1,1,2-Trichloro-ethane 79-00-5	Benzene 71-43-2	*trans*-1,3-Dichloro-propene 10061-02-6	2-Chloroethyl-vinylether 110-75-8	Bromoform 75-25-2
GW03MW01A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW03MW01B	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW03MW02A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW03MW02B	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW503MW02B	grd water, split of MW02B	1 U	1 U	1 U	1 U	1 U	R	1 U
GW03MW03A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW03MW03B	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW03MW04A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW03MW05A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW1003MW05A	rinsate blank	1 U	1 U	1 U	1 U	1 U	R	1 U
GW03MW08A	ref mtl	**4.7 (78%)**	1 U	1 U	1 U	1 U	R	1 U
012102TRIP01	trnspt blk	1 U	1 U	1 U	1 U	1 U	R	1 U
012502TRIP03	trnspt blk	1 U	1 U	1 U	1 U	1 U	R	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*		*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	4-Methyl-2-pentanone (MIBK) 108-10-1	2-Hexanone 591-78-6	Tetrachloro-ethene 127-18-4	1,1,2,2-Tetra-chloroethane 79-34-5	Toluene 108-88-3	Chloro-benzene 108-90-7	Ethyl-benzene 100-41-4	Styrene 100-42-5
GW03MW01A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW01B	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW02A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW02B	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW503MW02B	grd water, split of MW02B	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW03A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW03B	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW04A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW05A	grd water	5 U	5 U	**0.6 J**	1 U	1 U	1 U	1 U	1 U
GW1003MW05A	rinsate blank	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW08A	ref mtl	5 U	5 U	**2.9 (73%)**	1 U	**8.6 (86%)**	1 U	1 U	1 U
012102TRIP01	trnspt blk	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
012502TRIP03	trnspt blk	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*5*	*5*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Trichloro-fluoromethane 75-69-4	1,1,2-Trichloro-1,2,2-trifluoroethane 76-13-1	*m,p*-Xylenes 108-38-3	*o*-Xylene 95-47-6	1,2-Dichloro-benzene 95-50-1	1,3-Dichloro-benzene 541-73-1	1,4-Dichloro-benzene 106-46-7	Acrolein 107-02-8
GW03MW01A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW03MW01B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW03MW02A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW03MW02B	grd water	1 U	**86**	1 U	1 U	1 U	1 U	1 U	50 U
GW503MW02B	grd water, split of MW02B	1 U	**83**	1 U	1 U	1 U	1 U	1 U	50 U
GW03MW03A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW03MW03B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW03MW04A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW03MW05A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW1003MW05A	rinsate blank	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW03MW08A	ref mtl	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
012102TRIP01	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
012502TRIP03	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
PRQL (µg/L)		*1*		*1*	*1*	*1*	*1*	*1*	

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Methyl-iodide 74-88-4	Bromo-ethane 74-96-4	Acrylo-nitrile 107-13-1	1,1-Dichloro-propene 563-58-6	Dibromo-methane 74-95-3	1,1,1,2-Tetra-chloroethane 630-20-6	1,2-Dibromo-3-chloropropane 96-12-8	1,2,3-Trichloro-propane 96-18-4
GW03MW01A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW03MW01B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW03MW02A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW03MW02B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW503MW02B	grd water, split of MW02B	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW03MW03A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW03MW03B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW03MW04A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW03MW05A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW1003MW05A	rinsate blank	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW03MW08A	ref mtl	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
012102TRIP01	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
012502TRIP03	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
PRQL (µg/L)		*1*			*1*	*1*	*1*	*5*	*3*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville E...panded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	*trans*-1,4-Dichloro-2-butene 110-57-6	1,3,5-Trimethyl-benzene 108-67-8	1,2,4-Trimethyl-benzene 95-63-6	Hexachloro-butadiene 87-68-3	Ethylene dibromide (1,2-dibromoethane) 106-93-4	Bromochloro-methane 74-97-5
GW03MW01A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW03MW01B	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW03MW02A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW03MW02B	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW503MW02B	grd water, split of MW02B	5 U	1 U	1 U	5 U	1 U	1 U
GW03MW03A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW03MW03B	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW03MW04A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW03MW05A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW1003MW05A	rinsate blank	5 U	1 U	1 U	5 U	1 U	1 U
GW03MW08A	ref mtl	5 U	1 U	1 U	5 U	1 U	1 U
012102TRIP01	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U
012502TRIP03	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U
PRQL (µg/L)			*1*	*1*	*5*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Dichlorodifluoro-methane 75-71-8	2,2-Dichloro-propane 590-20-7	1,3-Dichloro-propane 142-28-9	Isopropyl-benzene 98-82-8	n-Propyl-benzene 103-65-1	Bromo-benzene 108-86-1	2-Chloro-toluene 95-49-8	4-Chloro-toluene 106-43-4
GW03MW01A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW01B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW02A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW02B	grd water	**100 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW503MW02B	grd water, split of MW02B	**100 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW03A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW03B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW04A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW05A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1003MW05A	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW08A	ref mtl	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
012102TRIP01	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
012502TRIP03	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	*t*-Butyl-benzene 98-06-6	*s*-Butyl-benzene 135-98-8	4-Isopropyl-toluene (p-cumene) 99-87-6	n-Butyl-benzene 104-51-8	1,2,4-Trichloro-benzene 120-82-1	Naphthalene 91-20-3	1,2,3-Trichloro-benzene 87-61-6
GW03MW01A	grd water	1 U	1 U	1 U	1 U	5 U ✓	5 U ✓	5 U ✓
GW03MW01B	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW03MW02A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW03MW02B	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW503MW02B	grd water, split of MW02B	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW03MW03A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW03MW03B	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW03MW04A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW03MW05A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW1003MW05A	rinsate blank	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW03MW08A	ref mtl	1 U	1 U	1 U	1 U	**12 (60%)**	5 U	5 U
012102TRIP01	trnspt blk	1 U	1 U	1 U	1 U	5 U	5 U	5 U
012502TRIP03	trnspt blk	1 U	1 U	1 U	1 U	5 U	5 U	5 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*5*	*5*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Sample Date	Lab I.D.	TPH (mg/L; ppm) Gasoline-range	Diesel-range	Motor Oil / Lubricant	Phenol 108-95-2	*bis* (2-Chloroethyl) ether 111-44-4
GW03MW01A	grd water	1/21/02	021058-EB00A	0.25 U	0.25 U	0.50 U	2 U	2 U
GW03MW01B	grd water	1/22/02	021059-EB00B	0.25 U	0.25 U	0.50 U	2 U	2 U
GW03MW02A	grd water	1/22/02	021060-EB00C	0.25 U	0.25 U	0.50 U	2 U	2 U
GW03MW02B	grd water	1/23/02	021127-EB10B	0.25 U	0.25 U	0.50 U	2 U	2 U
GW503MW02B	grd water, split of MW02B	1/23/02	021128-EB10C	0.25 U	0.25 U	0.50 U	2 U	2 U
GW03MW03A	grd water	1/24/02	021154-EB18A	0.25 U	0.25 U	0.50 U	2 U	2 U
GW03MW03B	grd water	1/24/02	021155-EB18B	0.25 U	0.25 U	0.50 U	2 U	2 U
GW03MW04A	grd water	1/23/02	021129-EB10D	0.25 U	0.25 U	0.50 U	2 U	2 U
GW03MW05A	grd water	1/25/02	021156-EB18C	0.25 U	0.25 U	0.50 U	2 U	2 U
GW1003MW05A	rinsate blank	1/25/02	021157-EB18D	0.25 U	0.25 U	0.50 U	2 U	2 U
012302TRIP02	trnspt blk	1/23/02	021130-EB10E	0.25 U				
012502TRIP03	trnspt blk	1/10/02	021158-EB18E	0.25 U				
GW03MW08A	ref mtl	1/23/02	021126-EB10A				2 U	2 U
PRQL (µg/L)				*0.35*	*10*	*20*	*2*	*2*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville . anded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	2-Chloro-phenol 95-57-8	1,3-Dichloro-benzene 541-73-1	1,4-Dichloro-benzene 106-46-7	Benzyl alcohol 100-51-6	1,2-Dichloro-benzene 95-50-1	2-Methyl-phenol 95-48-7	2,2'-Oxy*bis*-(chloropropane) 108-60-1	4-Methyl-phenol 106-44-5	N-Nitroso-di-n-propylamine 621-64-7
GW03MW01A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW03MW01B	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW03MW02A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW03MW02B	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW503MW02B	grd water, split of MW02B	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW03MW03A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW03MW03B	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW03MW04A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW03MW05A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW1003MW05A	rinsate blank	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
012302TRIP02	trnspt blk									
012502TRIP03	trnspt blk									
GW03MW08A	ref mtl	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
PRQL (µg/L)		*1*	*1*	*1*	*5*	*1*	*2*	*1*	*1*	*2*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Hexachloro-ethane 67-72-1	Nitro-benzene 98-95-3	Isophorone 78-59-1	2-Nitro-phenol 88-75-5	2,4-Dimethyl-phenol 105-67-9	Benzoic acid 65-85-0	*bis* (2-Chloro-ethoxy)methane 111-91-1	2,4-Dichloro-phenol 120-83-2	1,2,4-Trichloro-benzene 120-82-1
GW03MW01A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW03MW01B	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW03MW02A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW03MW02B	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW503MW02B	grd water, split of MW02B	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW03MW03A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW03MW03B	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW03MW04A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW03MW05A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW1003MW05A	rinsate blank	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
012302TRIP02	trnspt blk									
012502TRIP03	trnspt blk									
GW03MW08A	ref mtl	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
PRQL (µg/L)		*2*	*1*	*1*	*5*	*3*	*10*	*1*	*3*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville anded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Naphthalene 91-20-3	4-Chloro-aniline 106-47-8	Hexachloro-butadiene 87-68-3	4-Chloro-3-methylphenol 59-50-7	2-Methyl-naphthalene 91-57-6	Hexachloro-cyclopentadiene 77-47-4	2,4,6-Trichloro-phenol 88-06-2	2,4,5-Trichloro-phenol 95-95-4
GW03MW01A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW03MW01B	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW03MW02A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW03MW02B	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW503MW02B	grd water, split of MW02B	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW03MW03A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW03MW03B	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW03MW04A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW03MW05A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW1003MW05A	rinsate blank	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
012302TRIP02	trnspt blk								
012502TRIP03	trnspt blk								
GW03MW08A	ref mtl	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
PRQL (µg/L)		*1*	*3*	*2*	*2*	*1*	*5*	*5*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

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units = µg/L

Field I.D.	Comments	2-Chloro-naphthalene 91-58-7	2-Nitro-aniline 88-74-4	Dimethyl-phthalate 131-11-3	Acenaph-thylene 208-96-8	3-Nitro-aniline 99-09-2	Acenaphthene 83-32-9	2,4-Dinitro-phenol 51-28-5	4-Nitro-phenol 100-02-7	Dibenzo-furan 132-64-9	2,6-Dinitro-toluene 606-20-2
GW03MW01A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW03MW01B	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW03MW02A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW03MW02B	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW503MW02B	grd water, split of MW02B	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW03MW03A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW03MW03B	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW03MW04A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW03MW05A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW1003MW05A	rinsate blank	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
012302TRIP02	trnspt blk										
012502TRIP03	trnspt blk										
GW03MW08A	ref mtl	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
PRQL (µg/L)		*1*	*5*	*1*	*1*	*6*	*1*	*10*	*5*	*1*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

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units = µg/L

Field I.D.	Comments	2,4-Dinitro-toluene 121-14-2	Diethyl-phthalate 84-66-2	4-Chlorophenyl-phenylether 7005-72-3	Fluorene 86-73-7	4-Nitro-aniline 100-01-6	4,6-Dinitro-2-methylphenol 534-52-1	* N-Nitroso-diphenylamine 86-30-6	4-Bromophenyl-phenylether 101-55-3	Hexachloro-benzene 118-74-1
GW03MW01A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	3 U	1 U	1 U
GW03MW01B	grd water	5 U	1 U	1 U	1 U	5 U	10 U	3 U	1 U	1 U
GW03MW02A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	3 U	1 U	1 U
GW03MW02B	grd water	5 U	1 U	1 U	1 U	5 U	10 U	3 U	1 U	1 U
GW503MW02B	grd water, split of MW02B	5 U	1 U	1 U	1 U	5 U	10 U	3 U	1 U	1 U
GW03MW03A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	3 U	1 U	1 U
GW03MW03B	grd water	5 U	1 U	1 U	1 U	5 U	10 U	3 U	1 U	1 U
GW03MW04A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	3 U	1 U	1 U
GW03MW05A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	3 U	1 U	1 U
GW1003MW05A	rinsate blank	5 U	1 U	1 U	1 U	5 U	10 U	3 U	1 U	1 U
012302TRIP02	trnspt blk									
012502TRIP03	trnspt blk									
GW03MW08A	ref mtl	5 U	**15 (75%)**	1 U	1 U	5 U	10 U	**2.9 (29%)**	1 U	1 U
PRQL (µg/L)		*5*	*1*	*1*	*1*	*5*	*10*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

* Summation of N-nitrosodiphenylamine and diphenylamine.

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units = µg/L

Field I.D.	Comments	Pentachloro-phenol 87-86-5	Phenanthrene 85-01-8	Carbazole 86-74-8	Anthracene 120-12-7	Di-n-butyl-phthalate 84-74-2	Fluoranthene 206-44-0	Pyrene 129-00-0	Butylbenzyl-phthalate 85-68-7	3,3'-Dichloro-benzidine 91-94-1
GW03MW01A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW03MW01B	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW03MW02A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW03MW02B	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW503MW02B	grd water, split of MW02B	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW03MW03A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW03MW03B	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW03MW04A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW03MW05A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW1003MW05A	rinsate blank	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
012302TRIP02	trnspt blk									
012502TRIP03	trnspt blk									
GW03MW08A	ref mtl	5 U	**13 (87%)**	1 U	1 U	1 U	1 U	**20 (100%)**	**33 (110%)**	5 U
PRQL (µg/L)		*5*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

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units = µg/L

Field I.D.	Comments	Benzo(a)-anthracene 56-55-3	*bis* (2-Ethylhexyl)-phthalate 117-81-7	Chrysene 218-01-9	Di-n-octyl-phthalate 117-84-0	Benzo(b)-fluoranthene 205-99-2	Benzo(k)-fluoranthene 207-08-9	Benzo(a)-pyrene 50-32-8	Indeno(1,2,3-cd)pyrene 193-39-5	Dibenz(a,h)-anthracene 53-70-3
GW03MW01A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW01B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW02A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW02B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW503MW02B	grd water, split of MW02B	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW03A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW03B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW04A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW03MW05A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1003MW05A	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
012302TRIP02	trnspt blk									
012502TRIP03	trnspt blk									
GW03MW08A	ref mtl	1 U	1 U	**2.6**	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)			*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*

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units = µg/L

Field I.D.	Comments	Benzo(g,h,i)-perylene 191-24-2	2,4,5-TP (Silvex) 93-72-1	2,4,5-T 93-76-5	Dinoseb 88-85-7	Dicamba 1918-00-9	2,4-D 94-75-7	2,4-DB 94-82-6	Dalapon 75-99-0	MCPA 94-74-6	Dichloroprop 120-36-5
GW03MW01A	grd water	1 U	0.060 U	0.13 U	0.11 U	0.15 U	0.32 U	2.1 U	0.43 U	53 U	0.66 U
GW03MW01B	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW03MW02A	grd water	1 U	0.058 U	0.12 U	0.10 U	0.14 U	0.31 U	2.1 U	0.41 U	52 U	0.64 U
GW03MW02B	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW503MW02B	grd water, split of MW02B	1 U	0.061 U	0.13 U	0.11 U	0.15 U	0.33 U	2.2 U	0.43 U	54 U	0.67 U
GW03MW03A	grd water	1 U	0.058 U	0.12 U	0.10 U	0.14 U	0.31 U	2.1 U	0.41 U	52 U	0.64 U
GW03MW03B	grd water	1 U	0.057 U	0.12 U	0.10 U	0.14 U	0.31 U	2.0 U	0.41 U	51 U	0.63 U
GW03MW04A	grd water	1 U	0.061 U	0.13 U	0.11 U	0.15 U	0.33 U	2.2 U	0.43 U	54 U	0.67 U
GW03MW05A	grd water	1 U	0.060 U	0.13 U	0.11 U	0.15 U	0.32 U	2.2 U	0.43 U	54 U	0.67 U
GW1003MW05A	rinsate blank	1 U	0.077 U	0.16 U	0.14 U	0.19 U	0.41 U	2.7 U	0.55 U	68 U	0.85 U
012302TRIP02	trnspt blk										
012502TRIP03	trnspt blk										
GW03MW08A	ref mtl	1 U	**8.5 (85%)**	**26 (87%)**	0.10 U	0.14 U	**35 (88%)**	2.0 U	0.40 U	50 U	0.62 U
PRQL (µg/L)		*1*	*0.3*	*0.6*	*2*	*0.7*	*1.5*	*10*	*2*	*75*	*3.1*

Comprehensive validation performed for analytes reported in blind ref. material.

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units = µg/L

Field I.D.	Comments	MCPP 93-65-2
GW03MW01A	grd water	53 U
GW03MW01B	grd water	50 U
GW03MW02A	grd water	52 U
GW03MW02B	grd water	50 U
GW503MW02B	grd water, split of MW02B	54 U
GW03MW03A	grd water	52 U
GW03MW03B	grd water	51 U
GW03MW04A	grd water	54 U
GW03MW05A	grd water	54 U
GW1003MW05A	rinsate blank	68 U
012302TRIP02	trnspt blk	
012502TRIP03	trnspt blk	
GW03MW08A	ref mtl	50 U
PRQL (µg/L)		*75*

Comprehensive validation performed for analytes reported in blind ref. material.

DATA VALIDATION REPORT

EXPLOSIVES, NITROGUANIDINE AND PERCHLORATE ANALYSES

Eleven groundwater samples and one rinsate blank were collected between April 23, 2002 and April 25, 2002. The samples were submitted to Severn Trent Laboratories in Colchester, Vermont for analysis of explosive organic compounds and to Severn Trent Laboratories in Knoxville, Tennessee for analysis of nitroguanidine and perchlorate as follows:

Field Sample ID	Matrix	Analyses
GW04MW01A	Ground Water	Explosives compounds (SW-846 Method 8330 HPLC) Nitroguanidine (SW-846 Method 8330 mod.) Perchlorate (USEPA Method 314.0)
GW04MW01B		
GW04MW02A		
GW504MW02A		
GW04MW02B		
GW04MW03A		
GW04MW03B		
GW04MW04A		
GW04MW05A		
GW04MW09A	Performance Evaluation	
GW04MW09B		
GW1004MW03B	Rinsate	

The data packages were validated according to the procedures identified in the EPA *Functional Guidelines for Evaluating Organics Analyses* EPA, 1994 (EPA-540/R-94/0121), as applicable to the USACE Shell and the site specific *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* (Management Plan) prepared by URS in May 2001 for the Seattle District U.S. Army Corps of Engineers (USACE). Raw data were reviewed for completeness and accuracy of transcription to the data summary forms. Approximately 10% of the results reported in each of the samples and quality control (QC) analyses were recalculated and verified for the target compounds. The data are acceptable with the qualifications noted in the review.

EXPLOSIVES ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA Contract Laboratory Program (CLP)-type, or comparable, deliverables for all data submittals. The documentation provided by the laboratory was sufficient to allow validation of the associated data.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.

Technical requirements for maximum sample holding time prior to explosives analysis are established in the Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No data required qualification due to sample handling and holding conditions.

INITIAL CALIBRATION: Acceptable.

Initial multi-point calibrations were established for all target and surrogate compounds. The concentrations of the calibration standards bracketed the expected target compound concentrations, allowing for dilution. All percent relative standard deviations (%RSDs) were acceptable at ≤ 20 %.

CONTINUING CALIBRATION: Acceptable.

A continuing calibration verification (CCV) standard was analyzed prior to the analysis of sample extracts as specified by the Management Plan. All percent differences (%Ds) were ≤ 15 %, as specified.

BLANKS: Acceptable.

A method (preparation) blank was analyzed with each analytical batch, as required. No target compounds were detected in the method blanks. No data required qualification.

A rinsate blank was also submitted for analysis. Rinsate data did not require qualification, with the following exception. A positive result was reported for picric acid at 0.86 ug/L. The laboratory noted that this result could be a false positive. Although the chromatographic peak identified as picric acid was marginally within the retention time window on the LC18 column, it was inconsistent with the expected elution time. The peak used to confirm picric acid was marginally outside the retention time window on the CN column; however, it did encompass the expected elution time of picric acid. In addition, the spectra for picric acid in this sample did not exhibit a strong pattern match to the spectra of the picric acid in the calibration standard; therefore, picric acid is reported as undetected at the reported concentration.

SURROGATE COMPOUND RECOVERIES: Acceptable.

Surrogate 1,2-dinitrobenzene was added to all samples, including method and rinsate blanks. Criteria for evaluation of 1,2-dinitrobenzene are 50%-150% recovery. Recoveries were within specified limits.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES: Within specification.

One MS/MSD analysis was performed, as required. All MS/MSD recoveries were within the QC limits, (50%-140%) and all relative percent differences (RPDs) were ≤60 %, as specified. No data required qualification due to MS/MSD measurement performance.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES: Within specification.

A laboratory control sample (spiked water blank) was analyzed for the selected target compounds. All LCS recoveries were within the QC limits (60%-120%). No data required qualification due to LCS measurement performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.

Target compound identifications were reviewed and were found to be acceptable.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS: Within specification.

Sample data were recalculated for 10% of the target compounds and QC samples. All data calculations were acceptable. Various compounds displayed %Ds greater than 40% between the concentrations reported from the primary and secondary columns, indicating positive detection of the compounds and estimated concentrations. These compound concentrations were flagged "J, g" in the associated samples.

STL reported nitroglycerin as non-detected in all samples; however, both PE samples were spiked with nitroglycerin. The raw data for the PE samples indicate that nitroglycerin was detected in both samples at concentrations below the laboratory reporting limits. Nitroglycerin was identified on one of the two columns used for analysis, but the second column showed interference with RDX and/or tetryl. Based on the raw data review, nitroglycerin should be reported as 4.5 ug/L in PE sample GW04MW09A (spiked at 5 ug/L) and as 4.7 ug/L in PE sample GW04MW09B (spiked at 10 ug/L). Nitroglycerin concentrations in both samples are qualified "NJ" indicating that not all criteria for identification were met due to possible interferences, but the presence of nitroglycerin is possible and the concentrations are estimated.

The laboratory achieved the project-required quantitation limits; however, concentrations of several compounds exceeded the calibration range of the instrument and were flagged "E" by the laboratory and "J, q" by the reviewer. These samples were reanalyzed at dilutions and the results from the dilutions should be used for the affected compounds.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. Chromatograms were examined for abrupt retention time shifts, elevated baselines, and/or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA: Acceptable.

Field Generated Quality Control Samples: One blind duplicate pair (GW04MW02A and GW504MW02A) was submitted. The resulting data are acceptable.

Independent Reference Material: Two double blind reference samples (GW04MW09A and GW04 MW09B) were submitted for an independent assessment of accuracy. Accuracy for the reference compounds (with the exception of nitroglycerin) was in the range of 84% to 120%.

OVERALL ASSESSMENT: Acceptable.

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. Ten percent of the data calculations were verified and found to be correct. The lower quantitation levels achieved are at the specified limits. Analytical performance is within specified limits and the data quality is sufficient for its intended purposes.

SUMMARY OF QUALIFIED DATA

Sample ID	Compound	Qualifier	Rationale
GW04MW02A	RDX	J, q	Exceeded calibration range. Use diluted concentration.
GW04MW02B			
GW04MW09A			
GW504MW02A			
GW04MW02B	2,4-Dinitrotoluene	J, g	%D for primary and secondary columns ≥40%.
GW04MW09A	2,4,6-Trinitrotoluene 2,4-Dinitrotoluene		
GW04MW09B	2,4,6-Trinitrotoluene		
GW1004MW03B	Picric acid	U	Compound identification and quantitation uncertain due to possible interference
GW04MW09A	Nitroglycerin	NJ	
GW04MW09B			

NITROGUANIDINE ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA CLP- type, or comparable, deliverables for all data submittals. The documentation provided by the laboratory was sufficient to allow validation of the associated data.

SAMPLE HANDLING / HOLDING TIMES: Within specification.

All samples were analyzed within 40 days of sample collection. Samples were received by the laboratory at 4 °C. The recommended preservation temperature is 4 °C ± 2 °C. No data required qualification due to sample handling and holding conditions.

INITIAL CALIBRATION: Within specification.

Initial multi-point calibrations were established for all target and surrogate compounds. %RSDs were ≤ 20 %, as required. A mid-level, second source standard was also analyzed immediately after the ICAL. All recoveries were within the QC limits of 85%-115%.

CONTINUING CALIBRATION: Within specification.

A mid-level standard was analyzed daily before sample analysis, after every 10 samples, and at the end of the analytical sequence. %Ds for the continuing calibrations were ≤ 15%.

BLANKS: Acceptable.

One method blank was analyzed for each analytical batch as required in the Management Plan. Nitroguanidine was not detected in the method blanks. A rinsate blank was also submitted for analysis. Nitroguanidine was not detected in the rinsate blank. No data required qualification.

SURROGATE COMPOUND RECOVERIES: Within specification.

Surrogate 1-chloro-3-nitrobenzene was added to all samples, including the method blanks. All recoveries were within the laboratory established QC limits (53%-133%). No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:
Within specification.

One MS/MSD analysis was performed, as required. The spike recovery limits are performance-based and are equal to 4 standard deviations of 20 consecutively analyzed LCSs. All MS/MSD recoveries were within the QC limits of 60%-140% and RPDs were within the QC limits of ± 0%-25%. No data required qualification based on MS/MSD performance.

LABORATORY DUPLICATE: Within specification.

One laboratory duplicate was analyzed for each analytical batch as required. The RPD QC limits are performance-based and are equal to 4 standard deviations of 20 consecutively analyzed LCSs. RPDs for the laboratory duplicate samples were within the QC limits of ± 0%-25%. No data required qualification based on laboratory duplicate performance.

LABORATORY CONTROL SAMPLE (LCS) ANALYSES: Within specification.

One LCS was analyzed for each analytical batch. The recovery limits are performance-based and are equal to 3 standard deviations of 20 consecutively analyzed LCSs. All LCS recoveries were within the QC limits of 60%-140% and RPDs were within the QC limits of 0%-25%. No data required qualification based on LCS performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.

All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for nitroguanidine were within acceptable limits.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS: Acceptable.

Raw data were examined to verify the correct calculation of sample results. Positive results were confirmed using a second column. No false positives were identified. The required quantitation level was achieved. Ten percent of the sample data were recalculated. All data calculations were acceptable.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA: Acceptable.

Field Generated Quality Control Samples: One blind duplicate pair (GW04MW02A/ GW0504MW02A) was submitted. Nitroguanidine was not detected in these samples. The resulting data were acceptable.

Independent Reference Material: Two double blind reference samples (GW04MW09A and GW04 MW09B) were submitted for an independent assessment of accuracy. The resulting data (106% and 110% recoveries of nitroguanidine) are acceptable

OVERALL ASSESSMENT: Acceptable.

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits for the nitroguanidine. The lower quantitation levels achieved are at the specified limits. Ten percent of the data calculations were verified and found to be acceptable. Analytical performance is within specified limits and the data quality is sufficient for its intended purposes.

SUMMARY OF QUALIFIED DATA

No data qualification was required.

PERCHLORATE ANALYSES

DELIVERABLES: Complete.

The laboratory provided EPA CLP-type, or comparable, deliverables for all sample submittals. The documentation provided by the laboratory was sufficient to allow validation of the associated data.

SAMPLE HANDLING / HOLDING TIMES: Within specification.

Technical requirements for maximum sample holding time prior to perchlorate analysis are established in the Management Plan as 28 days. All samples were analyzed within the specified holding time.

INITIAL CALIBRATION (ICAL): Within specification.

A five point calibration was performed. The correlation coefficient was greater than 0.995, as required.

INSTRUMENT PERFORMANCE CHECK STANDARD (IPCS) AT MCT:
Within specification

An IPCS was analyzed immediately after the initial calibration and at the beginning of each analytical sequence. %Ds were ≤ 20%, as specified.

INITIAL CALIBRATION CHECK STANDARD (ICCS): Within specification.

An ICCS was analyzed at the beginning of each analytical sequence and immediately after the IPCS. Recoveries were ≤ 25%, as specified.

CONTINUING CAILIBRATION STANDARD AND END CALIBRATION CHECK STANDARD (CCCS): Within specification.

Mid and high level standards were analyzed as required in the Management Plan. Recoveries were within the QC limits (± 15% of the known concentration).

BLANKS: Within specification.

One laboratory reagent blank (LRB) was analyzed for each analytical batch as required in the Management Plan. One rinsate blank was also analyzed with these samples. The method and rinsate blanks were free of contamination.

LABORATORY FORTIFIED MATRIX (LFM): Within specification.

LFM samples were analyzed for perchlorate at the required frequency (at least one sample per matrix per preparation batch). All results were within the QC limits (± 20% of the known concentration).

DUPLICATE SAMPLE ANALYSES: Within specification.

Laboratory duplicate samples were analyzed for perchlorate at the required frequency (at least one sample per matrix per preparation batch). The RPDs for the duplicate pairs were ≤ 15%, as specified.

OTHER PERFORMANCE DATA: Acceptable.

Field Generated Quality Control Samples: One blind duplicate pair (GW04MW02A/ GW0504MW02A) was submitted for analysis. The resulting data were acceptable.

Independent Reference Material: Two double blind reference samples (GW04MW09A and GW04 MW09B) were submitted for an independent assessment of accuracy. The resulting data are acceptable with 105% recovery of perchlorate.

OVERALL ASSESSMENT OF THE DATA: Acceptable.

All deliverables required by the project are present and data packages are complete. Recommended sample holding times were met for all samples. The initial and continuing calibration requirements were met in all analytical runs. Ten percent of the sample data were recalculated. All data calculations were found to be acceptable. The data meet the project's data quality objectives.

SUMMARY OF QUALIFIED DATA:

All QC criteria were met. No data qualifiers were required.

VOLATILE ORGANIC COMPOUND ANALYSES

Volatile organic compound (VOC) analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8260B (HRGC/MS). Twelve samples, consisting of nine groundwaters, a rinsate blank, a transport blank, and a double-blind reference material, were submitted for analyses. Hydrochloric acid (HCl) preservative was employed. Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Acceptable.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated VOC results. No ICVs or post-sequence CCVs were reported.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.5 - 7.0 °C upon receipt. No adverse effect on sample results is expected.

Samples were preserved upon collection by adjustment of pH ≤ 2 with conc. HCl. Technical requirements for maximum sample holding time prior to VOC's analysis are established at 14 days for analysis of preserved samples. All analyses were performed within the required holding times. No results required qualification due to sample handling and holding conditions.

GC/MS TUNE CHECK: Within specification.
4-Bromofluorobenzene (50 µg/L BFB) was analyzed as a surrogate compound in each and every sample and checked for instrument tune performance at the beginning of each twelve-hour calibration period as required for instrument Finn3. Three checks were performed and reported for these analyses. All ion abundances and relative ion abundances met U.S. EPA CLP acceptance criteria. Mass spectral plots and listings were compared, and transcription of mass data to the GC/MS tuning and mass calibration summaries was checked. No errors were found.

All criteria were met and all sample analyses and calibrations were performed within the twelve-hour instrument tune check period.

INITIAL CALIBRATION: Acceptable.
Initial multi-point calibrations were established for all target and surrogate compounds at concentrations of 1, 2, 5, 10, 50, 100 and 200 µg/L (on 4/30/02). The minimum RRF (relative response factor) requirement for SPCC's was met for all calibrations, and the performance for CCC's was also within specification. Some analytes showed minimal responses at 1 and 2 µg/L, and responses were determined using the upper 5 data points. Initial calibration average %RSDs are reported at 10.2%, within method acceptance limits. All target analyte and CCC RSD's were within method specification (< 15%), with the exception of vinyl chloride (20%), bromodichloromethane (18%), 2-chloroethylvinylether (16%), cis-1,3-dichloropropene (20%), trans-1,3-dichloropropene (21%), chlorodibromomethane (21%), bromoform (22%), 1,4-dichlorobenzene (16%), and 1,2-dibromo-3-chloropropane (22%). No sample results required qualification since all deviations are associated with nondetected analytes.

No ICV's were reported. No action is required, and no data requires further qualification.

CONTINUING CALIBRATION
Continuing calibration verifications (CCV) at 50 µg/L were analyzed prior to the analysis of samples. No post-sequence CCVs were reported. All relative response factors were greater than 0.10, as specified; and, with the following exceptions, all %D were less than 20%, as specified. The %D exceptions are for chloromethane (23% on 5/1/02), acetone (26% & 31%), methylene chloride (22% on 5/1/02), 2-butanone (26% & 29%), 2-chloroethylvinylether (22% on 5/2/02), 1,2-dibromo-3-chloropropane (25% & 22%) and dichlorodifluoromethane (23% on 5/2/02).

Only dichlorodifluoromethane in GW04MW02B required qualification as an estimate with the "J" qualifier code. All other deviations are associated with nondetected analytes. No additional data required qualification due to CCV performance.

BLANKS: Within specification.
Two method (preparation) blanks were analyzed with the project samples, as required. No target analytes were reported above the project required quantitation limits. No results required qualification.

One transport and a rinsate blank analyses were performed. Results are reported in the attached Table. Acetone was reported (4.1 µg/L) below the quantitation limit (5 µg/L) in the rinsate blank.

SURROGATE COMPOUND RECOVERIES: Within specification.
Project-specified surrogate compounds were added to all samples, including method and field blanks, at

concentrations of 50 µg/L.

Criteria for evaluation are as follows:

d_4-1,2-dichloroethane	81-134%	d_8-toluene	81-137%
4-bromofluorobenzene	83-124%	d_4-1,2-dichlorobenzene	88-128%

All recoveries are within specification. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES: Acceptable. One MS/MSD analysis was performed, as required. All target analytes were spiked into GW04MW01B. Recoveries ranged from 47% to 132%, with RPDs ranging from 0.5% to 19%. 2-Chloroethylvinylether showed essentially no recovery in either the MS or MSD, requiring qualification of all analyte nondetects as nonuseable with the "R" qualifier code. 2-Chloroethylvinylether hydrolyzes in the trapping device under acidic conditions (all samples are at pH 2). MS/MSD recoveries for detected analytes were greater than 89%. No additional results required qualification.

Two laboratory control sample (spiked water blank; LCS and LCS duplicate) pairs were analyzed [total of four analyses] for all target analytes at an equivalent spike concentration of 50 µg/L (250 µg/L for ketones). Analyte recoveries ranged from 56% to 143% with an RPD range of 0.2% to 17%. Recoveries for those target analytes detected in project samples all fell within project specifications (80 - 120%), with the exception of dichlorodifluoromethane (132%). *It is noted that recoveries for 2-chloroethylvinylether ranged from 87% to 94% in the four LCSs (pH is neutral).* No additional qualification of results is required.

INTERNAL STANDARDS PERFORMANCE: Within specification.
Four internal standards (IS) were added to all samples at a concentration of 50 µg/L. Retention times (RT) for all internal standards in all analyses are within the specified window of ± 30 seconds of the continuing calibration internal standard RT. All internal standard (IS) areas for all sample extracts were verified for accuracy and determined to be correct. The specified acceptance limit for internal standard areas in sample extracts is 0.5 to 2 times the area of the 12-hour continuing calibration standard. Internal standards performance were all within specification.

Internal standard areas were checked at random and found to be accurate. No results required qualification due to internal standards performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.
All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for all target compounds are within acceptable limits (± 0.06 relative retention time units of the standard). Ion relative abundances on mass spectra for reported compounds were checked against library reference spectra and were found to be acceptable. Spectra were provided for all reported positive

and tentative identifications.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS
Target compound lower limits of quantitation are based on on-column amounts of 1-5 ng for most analytes and 10-25 ng for selected others. The algorithm for calculation of target analyte concentrations was checked and found to be correct. All lower limits of quantitation for chemicals of concern are within the project required quantitation limits (PRQL's), as summarized in the attached results Table.

Specified internal standards, quantitation ions, and RRF's were checked for all sample results and determined to be correct. All target analyte responses were determined by an automated/computerized routine, and no manual reintegrations were apparent. All sample volume and concentration calculations were checked for each sample and determined to be correct.

TENTATIVELY IDENTIFIED COMPOUNDS
No tentatively identified compound (TIC) reports were found in the deliverables package. None were requested.

SYSTEM PERFORMANCE: Within specification.
No signs of degraded system performance were observed. RIC's were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA
Field Generated Quality Control Samples: In addition to field (rinsate / trip) blanks, a blind sample split was submitted for analysis (duplicate/split pair = GW04MW02A / GW504MW02A). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either sample.

Independent Reference Material: A double-blind reference material (PE sample) was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW04MW09. Analytes evaluated include vinyl chloride, trichloroethylene, tetrachloroethylene and toluene. Accuracies were in the range of 18% - 85%. The PE sample was reportedly left for 3 days without cooling or icing in the field prior to repackaging for submission to the project laboratory for analysis. The temperature of the PE sample during the four days is unreported and unknown. Site samples were reportedly handled under different conditions and were maintained on ice and/or at approximately 4 °C. Three of the four analytes in the PE sample show acceptable performance, with the exception of vinyl chloride (which is the most sensitive of the four). The low accuracy reported for vinyl chloride in the double-blind reference material is attributed to probable mishandling of the PE sample in the field and not due to unacceptable laboratory performance. This does not adversely affect site sample results.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete (exceptions include the lack of reported ICV and post-sequence CCVs). All performance indicators were either within specification or within acceptable limits for the chemicals of potential concern. Performance on the double-blind reference material is considered acceptable, with the exception of poor accuracy reported for vinyl chloride due to probable mishandling of the PE sample in the field. The lower quantitation levels achieved are at the specified limits. Analytical performance is generally within specified limits, and the data quality, with associated qualifiers, is sufficient for its intended purposes.

SEMIVOLATILE ORGANIC COMPOUND ANALYSES

Semivolatile organic compound (SVOC) analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8270C (HRGC/MS). Eleven samples, consisting of nine groundwaters, a rinsate blank and a double-blind reference material, were submitted for analyses. No chemical perservative was employed. Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Acceptable.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. With two exceptions, documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated SVOC results. The documentation was deficient in the presentation of an initial calibration verification check and post-sequence CCV checks.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.5 - 7.0 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to SVOC's analysis are established in the Project Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No results required qualification due to sample handling and holding conditions.

GC/MS TUNE CHECK: Within specification.
Decafluorotriphenylphosphine (25 ng/µL DFTPP) was analyzed at the beginning of each twelve- hour calibration period as required for instrument Finn8. Two checks (5/6/02 & 5/7/02) were performed for these analyses plus one check associated with the initial calibration on 2/28/02. All ion abundances and relative ion abundances are within the acceptance range. Mass spectral plots and listings were compared, and transcription of mass data to the GC/MS tuning and mass calibration summaries was

checked. No errors were found.

All criteria were met and all sample analyses and calibrations were performed within the twelve-hour instrument tune check period.

INITIAL CALIBRATION: Acceptable.
Initial multi-point calibrations were established for all target and surrogate compounds at concentrations of 5, 10, 25, 40 and 80 ng/µL. The minimum RRF (relative response factor) requirement of 0.05 was met for all calibrations, and the RSD specification for linearity of ≤ 30% was also met for all calibrations. The mean %RSD for all analytes is 10.8% with twelve analytes exceeding or equivalent to 15%. Initial calibration performance is within acceptance limits.

An initial calibration verification (ICV) was not reported. An instrument detection limit standard (IDL) at 1 ng/µL (5 ng/µL for PCP) was presented for 2/28/02; following the initial calibration run sequence. All analytes exhibited acceptable response in the IDLs; di-n-octylphthalate and *bis*(2-ethylhexyl)phthalate reporting limits were reduced to 1 µg/L; and nitrophenols and benzoic acid lower reporting limits are determined to be acceptable down to 5 ng/µL, which allows a lowering of the lab reporting limits (from 15 to 50 µg/L) to 10 µg/L for benzoic acid, 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol. No action is required, and no data requires qualification.

CONTINUING CALIBRATION: Acceptable.
Continuing calibration verifications (CCV) at 25 ng/µL were analyzed prior to the analysis of sample extracts as specified by the Project Management Plan (a total of two CCVs were analyzed). No post-sequence CCVs were reported. All relative response factors were greater than 0.05, as specified; and all %D were less than 20%, as required for specified chemicals. Analytes with %D > 20% are 2,2'-oxybis(1-chloropropane), N-nitrosodi-n-propylamine, nitrobenzene, hexachlorocyclopentadiene, 2-nitroaniline, 2,4-dinitrophenol, and 4-nitrophenol; which is within acceptable limits for these analytes.

The reported CCVs were within specification.

BLANKS: Within specification.
One method (preparation) blank was analyzed with each group of project samples, as required (one group and one MB was analyzed). No analytes were detected above one-half the project required lower quantitation limits. No results required qualification.

A field blank (equipment rinsate) analysis was performed on 1 submission. All reported results indicated nondetects or levels less than the project required quantitation limit for all analytes.

SURROGATE COMPOUND RECOVERIES: Within specification.

Project-specified surrogate compounds were added to all samples, including method and field blanks. Surrogate compounds were added at the following amounts: 12.5 µg for neutrals and 18.7 µg for acidic organic compounds; to 500 mL water samples prior to extraction.

Criteria for evaluation are as follows:

d_5-nitrobenzene	42-112%	2-fluorophenol	39-113%
2-fluorobiphenyl	37-105%	2,4,6-tribromophenol	42-130%
d_{14}-*p*-terphenyl	40-131%	d_4-2-chlorophenol	44-109%
d_5-phenol	36-111%	d_4-1,2-dichlorobenzene	30-100%

All recoveries are within specification. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:

Within specification.

One MS/MSD analysis was performed, as required. Matrix spike compounds are selected analytes spiked at 25 µg/L (37.5 µg/L for phenols) into GW04MW01B. Performance was evaluated by comparison of recoveries to the following criteria.

MS / MSD Project Advisory Criteria

Parameter	Recovery range (%)	Relative percent difference (RPD)
phenol	12 - 110	42 %
2-chlorophenol	27 - 123	40 %
1,4-dichlorobenzene	36 - 97	28 %
N-nitroso-di-n-propylamine	41 - 116	38 %
1,2,4-trichlorobenzene	39 - 98	28 %
4-chloro-3-methylphenol	23 - 97	42 %
acenaphthene	46 - 118	31 %
4-nitrophenol	10 - 80	50 %
pentachlorophenol	9 - 103	50 %
pyrene	26 - 127	31 %

All MS/MSD recoveries and associated RPD's were within specification. No data required qualification due to MS / MSD measurement performance.

A laboratory control sample (spiked water blank; LCS) LCS/LCS-dup. pair was analyzed for the selected target analytes [above] at an equivalent spike concentration of 25/37.5 µg/L. Analyte recoveries ranged from 54% to 101%, all within specification.

INTERNAL STANDARDS PERFORMANCE: Within specification.

Seven internal standards (IS) were added to all sample extracts at a concentration of 20 ng/µL. Retention times (RT) for all internal standards in all analyses are within the specified window of ± 30 seconds of the continuing calibration internal standard RT. All internal standard (IS) areas for all sample

extracts were verified for accuracy and determined to be correct. The specified acceptance limit for internal standard areas in sample extracts is 0.5 to 2 times the area of the 12-hour continuing calibration standard. Internal standards performance were all within specification.

Internal standard areas were checked at random and found to be accurate. No results required qualification due to internal standards performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.
All compound identifications were reviewed and are acceptable. The relative retention times (RRT) for all target compounds are within acceptable limits (± 0.06 relative retention time units of the standard). Ion relative abundances on mass spectra for reported compounds were checked against library reference spectra and were found to be acceptable. No target analytes were reported in project samples, with the exception of the [double-blind] reference material.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS
Target compound lower limits of quantitation are based on on-column amounts of 1 ng for neutrals and 2-5 ng for substituted phenols. The algorithm for calculation of target analyte concentrations was checked and found to be correct. With one exception as noted below, all lower limits of quantitation for chemicals of concern are within the project required quantitation limits (PRQL's), as summarized in the attached results Table. Some reported limits for polar analytes (benzoic acid, 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol) and *bis*(2-ethylhexyl)phthalate and di-n-octylphthalate were adjusted downward by the reviewer based on acceptable performance of the IDL check standard and method blanks.

Specified internal standards, quantitation ions, and RRF's were checked for all sample results and determined to be correct. All target analyte responses were determined by an automated/computerized routine, and no manual reintegrations were apparent. All sample volume and concentration calculations were checked for each sample and determined to be correct.

TENTATIVELY IDENTIFIED COMPOUNDS
RDX was reported as a tentatively identified compound in GW04MW02B. Various siloxanes and an octadecanoic acid ester, which are typically associated with analytical system blanks, were reported in GW04MW01A & B.

SYSTEM PERFORMANCE: Within specification.
No signs of degraded system performance were observed. RIC's were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to a field (rinsate / trip) blank, a blind sample split was submitted for analysis (duplicate/split pair = GW04MW02A / GW504MW02A). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either of the two samples.

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW04MW09. Analytes evaluated include diphenylamine [not N-nitrosodiphenylamine], phenanthrene and butylbenzylphthalate. Accuracies were in the range of 42% - 95%, with diphenylamine the lowest at 42%. Diphenylamine is the most basic and labile of the analytes evaluated in the reference material. Assuming the recoveries to be consistent at $\leq$10 µg/L, the actual lower reporting limit for project samples may be closer to 2 µg/L rather than 1 µg/L, as reported for N-nitrosodiphenylamine. No detections for diphenylamine are reported for site samples. Lower reporting limits for diphenylamine are adjusted upward by the reviewer from 1 µg/L to 2 µg/L. N-Nitrosodiphenylamine lower reporting limits may be actually closer to the laboratory reported limit of 1 µg/L. Performance is determined to be acceptable.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. No chemicals of concern were reported in site samples. Performance on the double-blind reference material is acceptable, however the lower reporting limits for diphenylamine were adjusted upward to reflect the lower recovery reported for the analyte. The lower quantitation levels achieved are at the specified limits, with the exception of diphenylamine (consequent to lower recoveries reported in the double-blind reference material). Analytical performance is within specified limits, and the data quality is sufficient for its intended purposes.

CHLOROPHENOXYHERBICIDES ANALYSES

Chlorophenoxyherbicides analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8151A (HRGC/ECD). Samples (500 mL.) were spiked with surrogate (2,4-dichlorophenylacetic acid), extracted with diethyl ether, hydrolyzed and derivatized with diazomethane prior to gas chromatographic analysis. Gas chromatographic analysis was performed on dual columns - a DB-5 and a DB-608. Eleven samples, consisting of nine groundwaters, a rinsate blank and a double-blind reference material, were submitted for analyses. No chemical perservative was employed. Principal contaminants of concern have been identified as 2,4-D and 2,4,5-TP (Silvex). Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures as a guideline identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated herbicides results.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.5 - 7.0 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to herbicides analysis are established in the Project Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times, with the exception of a reanalysis for GW04MW04A due to a low surrogate recovery in the initial analysis. The holding time prior to extraction for the reanalysis was 16 days. No target analytes were reported above lower reporting limits in either of the two analyses for GW04MW04A. No results required qualification due to sample handling and holding conditions.

INITIAL CALIBRATION: Within specification.

Initial multi-point calibration was established [5/21/02] for all target and surrogate compounds at concentrations of 0.01, 0.025, 0.05, 0.10, 0.20 and 0.40 ng/µL. A combination of linear and quadratic fits were employed for the various analytes. RSD's for linear fits were all ≤ 20%, whereas the quadratic fits all exhibited $r^2 > 0.999$ on both the primary and secondary (confirmation) columns. Initial calibration performance is within acceptance limits.

CONTINUING CALIBRATION: Acceptable.

Five continuing calibration verification (CCV) runs were performed at 0.025 - 0.5 ng/µL (25 ng/µL for MCPA & MCPP) prior to and following the analysis of sample extracts as specified by the Project Management Plan. With the exception of 2,4-D on the primary (%D = 21, 20) and secondary (%D = 20, 21, 22) columns, 2,4,5-T on the secondary column (%D = 16), Dalapon on the primary column (%D = 21) and Silvex (2,4,5-TP) on the primary (%D = 16) and secondary (%D = 18, 19 & 17) columns, all responses were within 15% of the known values, as specified. The deviations have no adverse effect on the data, since no target analytes were detected in site samples, and the double-blind reference material was analyzed during a period when no deviations were reported.

BLANKS: Within specification.

Two method (preparation) blanks were analyzed with the project samples. No analytes were detected above the reported lower quantitation limits. No results required qualification.

A field blank (equipment rinsate/transport) analysis was performed on 1 submission. All reported results indicated nondetects at the reported lower quantitation limits for all analytes.

SURROGATE COMPOUND RECOVERIES

Dichlorophenylacetic acid (6.2 µg in 500 mL.) was added as a surrogate to all samples, including method and field blanks. Surrogate recoveries ranged from 55% to 117%, within the specified limits (40% - 140%); with the exception of the initial analysis of GW04MW04A which reported 32%. The sample was reextracted and reanalyzed with a surrogate recovery of 95%. No target analytes were reported in either analysis of MW04A. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:
Within specification.

One MS/MSD analysis was performed, as required. Matrix spike compounds added to GW04MW01B were 2,4,5-TP (Silvex), Dicamba and 2,4-D at concentrations of 0.5-2 µg/L. Recoveries ranged from 79% to 102%, with an RPD range of 4% - 14%. All MS/MSD recoveries and associated RPD's were within specification (R = 40-140% with RPD ≤ 50%). No data required qualification due to MS / MSD measurement performance.

One laboratory control sample (spiked water blank; LCS) and duplicate (LCSD) pair and an LCS

were analyzed for selected target analytes [same as for the MS/MSD, above] at an equivalent spike concentration of 0.5-2 µg/L. Analyte recoveries ranged from 57% to 98%, all within specification (R = 50-130%). RPDs ranged from 6% to 22%.

TARGET COMPOUND IDENTIFICATION: Acceptable.
Retention time windows were generally within ± 7 secs of the initial and continuing calibration verifications. No analyte responses were observed nor reported in project samples at the reported lower quantitation limits.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS
Target compound lower limits of quantitation are based on on-column amounts represented by the lowest calibration point in the initial calibration. All lower limits of quantitation for chemicals of concern are less than the project required quantitation limits (PRQL's), as summarized in the attached results Table.

SYSTEM PERFORMANCE: Within specification.
No signs of degraded system performance were observed. Chromatograms were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to a field rinsate blank, a blind sample split was submitted for analysis (duplicate/split pair = GW04MW02A / GW504MW02A). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either of the two samples.

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW04MW09. Analytes evaluated include 2,4-D and 2,4,5-TP (Silvex). Accuracies were in the range of 105% - 128%. Analytical performance on the double-blind reference material is considered acceptable.

OVERALL ASSESSMENT
All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. No chemicals of concern were reported in site samples. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are less than the specified limits. Analytical performance is within specified limits, and the data quality is sufficient for its intended purposes.

METALS ANALYSES

Metals analyses were performed by Analytical Resources, Inc. (ARI) of Seattle, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP's are identified as U.S. EPA SW-846 Methods 6010B / 7000 (all metals analyzed by 6010B (ICP-AES); with the exception of As, Pb, Se and Tl, which were analyzed by 200.8 (ICP-MS) and Hg by 7470A (CVAA)). Twenty-two samples were submitted for analyses - ten pairs were site samples submitted for the analysis of both dissolved and total metals (of which one pair is a rinsate blank set); the remaining pair was a double-blind reference material (two separate samples) for independent evaluation of accuracy for selected analytes (As, Ba, Hg & Pb). Samples for determination of dissolved metals were field-filtered using an in-line, nitrocellulose, 0.45 µm cartridge filter assembly. All samples were preserved upon collection with HNO_3 to pH $\leq$ 2. The target metal analytes are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Inorganics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/013]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated for all target analytes against the performance criteria presented in the Project Management Plan. In addition, independent assesssment of analytical accuracy is evaluated with the use of a double-blind reference material for As, Ba, Hg & Pb.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated metals results.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 $\pm$ 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.5 - 7.0 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to metals analysis are established in the Project Management Plan as 28 days for mercury and 6 months for other metals, from time of collection to analysis. All samples were analyzed within 13 days of sample collection. All analyses were performed within the specified holding times.

CALIBRATION: Within specification.

Initial Calibration. Initial instrumental calibrations were performed daily using at least the minimum required number of data points to establish the analytical curve for each method: a blank and one standard for ICP-AES analyses, a blank and four standards for ICP-MS analyses, and a blank and six standards for mercury (CVAA) analyses. Correlation coefficients for all ICP-MS and CVAA initial calibrations are ≥0.995, as required (actually reported as > 0.9997).

Initial Calibration Verification. Initial calibration verification checks (ICV's) were performed immediately after initial instrumental calibrations during all ICP (AES & MS) and CVAA analytical runs, as required. All ICV recoveries are within acceptance limits (90-110% for ICP and 80-120% for mercury).

Continuing Calibration Verification. Continuing calibration verification standards (CCV's) were analyzed at the required frequency for all ICP and CVAA analytical runs (at the beginning and end of each run; at a frequency of ≥10% or every two hours, whichever is more frequent). All CCV recoveries are within acceptance limits (90-110% for ICP and 80-120% for CVAA).

Calibration Check Sample. A check sample at a concentration of 2x the project required quantitation level was analyzed following initial calibrations and found to range from 80% to 125%, with the exception of potassium which reported 69%. While control limits are unspecified in the Project Management Plan, the performance is considered reasonable and acceptable.

ICP-MS Quantitation. Seven internal/check standards (lithium, scandium, germanium, yttrium, indium, terbium and bismuth) were added to all samples analyzed, including standards and blanks. Internal standard performance for all samples analyzed was found to be within specification (60-125% of the response of the calibration blank).

CALIBRATION, PREPARATION, and FIELD BLANKS: Acceptable.

Initial/Continuing Calibration Blanks. Initial calibration blanks (ICB's) were analyzed immediately after ICV's, and continuing calibration blanks (CCB's) were analyzed immediately after CCV's during all ICP-AES, ICP-MS, and CVAA analytical runs, as required.

The Project Management Plan specifies that ICB's and CCB's are less than the lower quantitation limit for each reported analyte. All ICB's and CCB's were within specification. All ICB and CCB results were verified by examination of raw data.

Preparation / Method Blanks. Two preparation blanks were analyzed for all target analytes at the required frequency (once per preparation batch). No analytes were reported above the project required quantitation limit.

Equipment Rinsate Blanks. An equipment rinsate blank pair (dissolved and total) was collected and analyzed. Chromium and iron were reported at 7 and 200 µg/L, respectively, in the dissolved metals (filtered) rinsate blank. These levels of background contamination could have an adverse effect on the data since some site sample concentrations compare to these concentrations.

INTERFERENCE CHECK SAMPLE: Within specification.
ICP (AES & MS) interference check solutions (ICS) were analyzed for the target analytes at the beginning of each analytical run. Recoveries for the target analytes of concern were within acceptance limits (80-120%).

LABORATORY CONTROL SAMPLE: Within specification.
Laboratory control samples (LCS) were analyzed at the required frequency (at least one sample per matrix per preparation batch). Two aqueous LCS's (spiked blanks) were analyzed. All target analytes are within project acceptance limits (80-120% recovery) for all reported analyses of the aqueous LCS (recoveries ranged from 93% to 112%).

DUPLICATE SAMPLE ANALYSES: Within specification.
Laboratory duplicate samples (GW04MW01B, total and dissolved) were analyzed for the target analytes at the required frequency (at least one sample per matrix per preparation batch). Results of all duplicate analyses greater than the IDL are within project acceptance limits (±20% RPD).

MATRIX SPIKE SAMPLE ANALYSES
Matrix spike samples were analyzed for the target analytes at the required frequency (at least one sample per matrix per preparation batch). Project-specified acceptance limits for matrix spike recovery are 75-125% and are applicable only to those samples in which the sample concentration does not exceed 4 times the spike concentration. All water sample matrix spike (two samples; dissolved and total - GW04MW01B) recoveries were acceptable for all reported analytes, and no associated results were rejected or required qualification.

ICP SERIAL DILUTION & POST-DIGESTION SPIKES
None performed.

SAMPLE RESULT VERIFICATION
Sample quantitation and transcription to the reporting form (Form I) was verified for at least 10% of the analytes for each sample, including QC samples. No errors were detected.
Results for all target analytes are within the linear range of the instrument. No significant anomalies were noted in the raw data. All raw data are legible and complete.

OTHER PERFORMANCE DATA

Field Quality Control Sample Analyses. Two blind splits were taken and submitted for analyses. These splits were generated from homogenized composites for both nonfiltered and filtered samples at MW02A. Results are presented in the attached Table. RPD's were less than or equal to 22% for dissolved species, with the exception of nickel which showed an RPD of 67% (10 *vs.* 20 ppb). Greater variability was demonstrated for total metals where iron exhibited a 100% RPD and zinc at 160% RPD. This indicates higher heterogeneity associated with presence of suspended solids.

Blind Reference Material. A double-blind reference material pair was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW04MW09 (total and dissolved). Analytes evaluated include As, Ba, Hg and Pb. Accuracies were in the range of 93% - 120%, with the exception of mercury which exhibited recoveries of 20% and 140%. The deviation for mercury is inconsistent with previous evaluations and lab QC data and may be related to probable mishandling of the reference material (PE sample). The PE sample was held at ambient temperature for approximately 3 days at the project site prior to submission to the project laboratory. Site samples were handled under different conditions and are not expected to be adversely impacted.

OVERALL ASSESSMENT OF THE DATA

All deliverables required by the project are present and data packages are complete. Recommended sample holding times were met for all analytes in all samples. Initial calibration and continuing calibration requirements were met for all analytes in all analytical runs. Reporting limits for all analytes in all samples are at or below the Project Required Quantitation Levels (PRQL's), with the exception of some of the major cations (iron and magnesium). Analytical performance on a double-blind independent reference material was evaluated for selected analytes of concern and determined to be acceptable for arsenic, barium and lead. Few problems were encountered and the data as qualified meet the project's data quality objectives.

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Field I.D.	Comments	Sample Date	Lab I.D.	Sb 7440-36-0	As 7440-38-2	Ba 7440-39-3	Be 7440-41-7	Cd 7440-43-9	Ca 7440-70-2	Cr 7440-47-3
GW04MW01A	grd water, total metals	4/23/02	025185-EH80A	50 U	0.2 U	3 U	1 U	2 U	**2250**	**11**
GW04MW01A (D)	grd water, dissolved metals	4/23/02	025192-EH80H	50 U	0.2 U	3 U	1 U	2 U	**2370**	5 U
GW04MW01B	grd water, total metals	4/23/02	025186-EH80B	50 U	0.2 U	3 U	1 U	2 U	**2020**	5 U
GW04MW01B (D)	grd water, dissolved metals	4/23/02	025193-EH80I	50 U	0.2 U	3 U	1 U	2 U	**2090**	5 U
GW04MW02A	grd water, total metals	4/24/02	025188-EH80D	50 U	0.2 U	**4**	1 U	2 U	**1270**	**23**
GW04MW02A (D)	grd water, dissolved metals	4/24/02	025195-EH80K	50 U	0.2 U	3 U	1 U	2 U	**1320**	**7**
GW504MW02A	split of MW02A, total metals	4/24/02	025189-EH80E	50 U	0.2 U	3 U	1 U	2 U	**1250**	**19**
GW504MW02A (D)	split of MW02A (D), dissolved metals	4/24/02	025196-EH80L	50 U	0.2 U	3 U	1 U	2 U	**1290**	**8**
GW04MW02B	grd water, total metals	4/24/02	025187-EH80C	50 U	**0.3**	**15**	1 U	2 U	**2460**	**33**
GW04MW02B (D)	grd water, dissolved metals	4/24/02	025194-EH80J	50 U	0.2 U	3 U	1 U	2 U	**1920**	5 U
GW04MW03A	grd water, total metals	4/25/02	025227-EH80Q	50 U	0.2 U	3 U	1 U	2 U	**1470**	**9**
GW04MW03A (D)	grd water, dissolved metals	4/25/02	025232-EH80V	50 U	0.2 U	3 U	1 U	2 U	**1650**	5 U
GW04MW03B	grd water, total metals	4/25/02	025226-EH80P	50 U	0.2 U	**12**	1 U	2 U	**3470**	**62**
GW04MW03B (D)	grd water, dissolved metals	4/25/02	025231-EH80U	50 U	0.2 U	**5**	1 U	2 U	**3570**	**7**
GW1004MW03B	rinsate blk, total metals	4/25/02	025228-EH80R	50 U	0.2 U	3 U	1 U	2 U	50 U	5 U
GW1004MW03B (D)	rinsate blk, dissolved metals	4/25/02	025233-EH80W	50 U	0.2 U	3 U	1 U	2 U	50 U	**7**
GW04MW04A	grd water, total metals	4/24/02	025190-EH80F	50 U	0.2 U	**11**	1 U	2 U	**1740**	**23**
GW04MW04A (D)	grd water, dissolved metals	4/24/02	025197-EH80M	50 U	0.2 U	3 U	1 U	2 U	**1610**	5 U
GW04MW05A	grd water, total metals	4/25/02	025225-EH80O	50 U	0.2 U	**4**	1 U	2 U	**2260**	**16**
GW04MW05A (D)	grd water, dissolved metals	4/25/02	025230-EH80T	50 U	0.2 U	3 U	1 U	2 U	**2190**	5 U
GW04MW09	ref mtl, total metals	4/25/02	025224-EH80N	50 U	**4.8 (96%)**	**49 (98%)**	1 U	2 U	50 U	5 U
GW04MW09 (D)	ref mtl, dissolved metals	4/25/02	025229-EH80S	50 U	**2.4 (120%)**	**14 (93%)**	1 U	2 U	50 U	5 U
PRQL (µg/L)				*50*	*1*	*3*	*1*	*2*	*50*	*5*

Comprehensive validation performed for As, Ba, Hg & Pb.

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Field I.D.	Comments	Cu 7440-50-8	Fe 7439-89-6	Pb 7439-92-1	Mg 7439-95-4	Hg 7439-97-6	Ni 7440-02-0	K 7440-09-7	Se 7782-49-2	Ag 7440-22-4	Na 7440-23-5
GW04MW01A	grd water, total metals	2 U	**160**	**1**	**920**	0.1 U	10 U	500 U	0.5 U	3 U	**2680**
GW04MW01A (D)	grd water, dissolved metals	2 U	50 U	1 U	**980**	0.1 U	10 U	500 U	0.5 U	3 U	**2910**
GW04MW01B	grd water, total metals	2 U	50 U	1 U	**1090**	0.1 U	10 U	500 U	0.5 U	3 U	**1260**
GW04MW01B (D)	grd water, dissolved metals	2 U	50 U	1 U	**1130**	0.1 U	10 U	500 U	0.5 U	3 U	**1320**
GW04MW02A	grd water, total metals	**3**	**1000**	1 U	**400**	0.1 U	**10**	500 U	**0.6**	3 U	**7990**
GW04MW02A (D)	grd water, dissolved metals	2 U	**100**	1 U	**400**	0.1 U	**10**	500 U	**0.6**	3 U	**8240**
GW504MW02A	split of MW02A, total metals	**2**	**320**	1 U	**380**	0.1 U	10 U	500 U	**0.5**	3 U	**7820**
GW504MW02A (D)	split of MW02A (D), dissolved metals	2 U	**80**	1 U	**390**	0.1 U	**20**	500 U	**0.5**	3 U	**7830**
GW04MW02B	grd water, total metals	**9**	**4970**	**1**	**1850**	0.1 U	**20**	**1000**	0.5 U	3 U	**2250**
GW04MW02B (D)	grd water, dissolved metals	2 U	**110**	1 U	**900**	0.1 U	**20**	500 U	0.5 U	3 U	**2340**
GW04MW03A	grd water, total metals	2 U	**130**	1 U	**650**	0.1 U	10 U	500 U	0.5 U	3 U	**1250**
GW04MW03A (D)	grd water, dissolved metals	2 U	50 U	1 U	**740**	0.1 U	10 U	500 U	0.5 U	3 U	**1420**
GW04MW03B	grd water, total metals	**4**	**1580**	**1**	**1640**	0.1 U	**40**	**1700**	0.5 U	3 U	**5700**
GW04MW03B (D)	grd water, dissolved metals	2 U	**70**	1 U	**1580**	0.1 U	**20**	**1500**	0.5 U	3 U	**6740**
GW1004MW03B	rinsate blk, total metals	2 U	50 U	1 U	50 U	0.1 U	10 U	500 U	0.5 U	3 U	50 U
GW1004MW03B (D)	rinsate blk, dissolved metals	2 U	**200**	1 U	50 U	0.1 U	10 U	500 U	0.5 U	3 U	50 U
GW04MW04A	grd water, total metals	**9**	**3430**	**1**	**1020**	0.1 U	**10**	**900**	0.5 U	3 U	**1420**
GW04MW04A (D)	grd water, dissolved metals	2 U	50 U	1 U	**570**	0.1 U	10 U	500 U	0.5 U	3 U	**1580**
GW04MW05A	grd water, total metals	**2**	**380**	1 U	**880**	0.1 U	**10**	500 U	0.5 U	3 U	**1670**
GW04MW05A (D)	grd water, dissolved metals	2 U	50 U	1 U	**940**	0.1 U	10 U	500 U	0.5 U	3 U	**1740**
GW04MW09	ref mtl, total metals	2 U	50 U	**11 (110%)**	50 U	**1.4 (140%)**	10 U	500 U	0.5 U	3 U	**450**
GW04MW09 (D)	ref mtl, dissolved metals	2 U	50 U	**6 (120%)**	50 U	**0.1 (20%)**	10 U	500 U	0.5 U	3 U	**400**
PRQL (µg/L)		*2*	*20*	*1*	*20*	*0.1*	*10*	*500*	*2*	*3*	*50*

Comprehensive validation performed for As, Ba, Hg & Pb.

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Field I.D.	Comments	Tl 7440-28-0	Zn 7440-66-6	Alkalinity mg/L $CaCO_3$	Carbonate mg/L $CaCO_3$	Bicarbonate mg/L $CaCO_3$	total suspended solids mg/L	Chloride mg/L	total Cyanide mg/L
GW04MW01A	grd water, total metals	0.2 U	6 U	**8.3**	1 U	**8.3**	**2.3**	**1.5**	0.005 U
GW04MW01A (D)	grd water, dissolved metals	0.2 U	6 U						
GW04MW01B	grd water, total metals	0.2 U	6 U	**10**	1 U	**10**	1 U	**1.4**	0.005 U
GW04MW01B (D)	grd water, dissolved metals	0.2 U	6 U						
GW04MW02A	grd water, total metals	0.2 U	6 U	**2.3**	1 U	**2.3**	**11**	**1.8**	0.005 U
GW04MW02A (D)	grd water, dissolved metals	0.2 U	6 U						
GW504MW02A	split of MW02A, total metals	0.2 U	**49**	**1.9**	1 U	**1.9**	**3.9**	**1.7**	0.005 U
GW504MW02A (D)	split of MW02A (D), dissolved metals	0.2 U	6 U						
GW04MW02B	grd water, total metals	0.2 U	**18**	**3.5**	1 U	**3.5**	**89**	**3.4**	0.005 U
GW04MW02B (D)	grd water, dissolved metals	0.2 U	6 U						
GW04MW03A	grd water, total metals	0.2 U	6 U	**6.6**	1 U	**6.6**	**1.7**	**1.3**	0.005 U
GW04MW03A (D)	grd water, dissolved metals	0.2 U	6 U						
GW04MW03B	grd water, total metals	0.2 U	**16**	**11**	1 U	**11**	**10**	**8.0**	0.005 U
GW04MW03B (D)	grd water, dissolved metals	0.2 U	**6**						
GW1004MW03B	rinsate blk, total metals	0.2 U	6 U	1 U	1 U	1 U	**1.9**	1 U	0.005 U
GW1004MW03B (D)	rinsate blk, dissolved metals	0.2 U	6 U						
GW04MW04A	grd water, total metals	0.2 U	**11**	**7.1**	1 U	**7.1**	**11**	**1.3**	0.005 U
GW04MW04A (D)	grd water, dissolved metals	0.2 U	6 U						
GW04MW05A	grd water, total metals	0.2 U	**18**	**9.3**	1 U	**9.3**	**1.9**	**1.4**	0.005 U
GW04MW05A (D)	grd water, dissolved metals	0.2 U	6 U						
GW04MW09	ref mtl, total metals	0.2 U	6 U						
GW04MW09 (D)	ref mtl, dissolved metals	0.2 U	6 U						
PRQL (µg/L)		*1*	*6*	*5*	*1*		*1*	*2*	*0.005*

Comprehensive validation performed for As, Ba, Hg & Pb.

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values as µg/L.

Field I.D.	Comments	Nitrate mg-N/L	Nitrite mg-N/L	Sulfate mg/L	TOC mg/L	DOC mg/L
GW04MW01A	grd water, total metals	**0.06**	0.01 U	**6.9**	1.5 U	1.5 U
GW04MW01A (D)	grd water, dissolved metals					
GW04MW01B	grd water, total metals	**0.07**	0.01 U	2.5 U	1.5 U	1.5 U
GW04MW01B (D)	grd water, dissolved metals					
GW04MW02A	grd water, total metals	**0.39**	0.01 U	**19**	1.5 U	1.5 U
GW04MW02A (D)	grd water, dissolved metals					
GW504MW02A	split of MW02A, total metals	**0.34**	0.01 U	**17**	1.5 U	1.5 U
GW504MW02A (D)	split of MW02A (D), dissolved metals					
GW04MW02B	grd water, total metals	**0.82**	0.01 U	**2.5**	1.5 U	1.5 U
GW04MW02B (D)	grd water, dissolved metals					
GW04MW03A	grd water, total metals	**0.13**	0.01 U	2.5 U	1.5 U	1.5 U
GW04MW03A (D)	grd water, dissolved metals					
GW04MW03B	grd water, total metals	**0.54**	0.01 U	**6.1**	1.5 U	1.5 U
GW04MW03B (D)	grd water, dissolved metals					
GW1004MW03B	rinsate blk, total metals	0.01 U	0.01 U	2.5 U	1.5 U	1.5 U
GW1004MW03B (D)	rinsate blk, dissolved metals					
GW04MW04A	grd water, total metals	**0.05**	0.01 U	2.5 U	1.5 U	1.5 U
GW04MW04A (D)	grd water, dissolved metals					
GW04MW05A	grd water, total metals	**0.20**	0.01 U	2.5 U	1.5 U	1.5 U
GW04MW05A (D)	grd water, dissolved metals					
GW04MW09	ref mtl, total metals					
GW04MW09 (D)	ref mtl, dissolved metals					
PRQL (µg/L)		*0.05*	*0.05*	*10*	*1.5*	*1.5*

Comprehensive validation performed for As, Ba, Hg & Pb.

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Volatile Organics

units = µg/L

Field I.D.	Comments	Sample Date	Lab I.D.	Chloro-methane 74-87-3	Bromo-methane 74-83-9	Vinyl chloride 75-01-4	Chloro-ethane 75-00-3	Methylene chloride 75-09-2	Acetone 67-64-1
GW04MW01A	grd water	4/23/02	025185-EH80A	1 U	1 U	1 U	1 U	2 U	5 U
GW04MW01B	grd water	4/23/02	025186-EH80B	1 U	1 U	1 U	1 U	2 U	5 U
GW04MW02A	grd water	4/24/02	025188-EH80D	1 U	1 U	1 U	1 U	2 U	5 U
GW504MW02A	grd water, split of MW02A	4/24/02	025189-EH80E	1 U	1 U	1 U	1 U	2 U	5 U
GW04MW02B	grd water	4/24/02	025187-EH10C	1 U	1 U	1 U	1 U	2 U	5 U
GW04MW03A	grd water	4/25/02	025227-EH80Q	1 U	1 U	1 U	1 U	2 U	5 U
GW04MW03B	grd water	4/25/02	025226-EH80P	1 U	1 U	1 U	1 U	2 U	5 U
GW1004MW03B	rinsate blank	4/25/02	025228-EH80R	1 U	1 U	1 U	1 U	2 U	**4.1 J**
GW04MW04A	grd water	4/24/02	025190-EH80F	1 U	1 U	1 U	1 U	2 U	5 U
GW04MW05A	grd water	4/25/02	025225-EH80O	1 U	1 U	1 U	1 U	2 U	5 U
GW04MW09	ref mtl	4/25/02	025224-EH80N	1 U	1 U	**0.7 J (18%)**	1 U	**2.9**	5 U
042402TRIP01	trnspt blk	4/24/02	025191-EH80G	1 U	1 U	1 U	1 U	2 U	5 U
PRQL (µg/L)				*1*	*1*	*1*	*1*	*2*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

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units = µg/L

Field I.D.	Comments	Carbon disulfide 75-15-0	1,1-Dichloro-ethene 75-35-4	1,1-Dichloro-ethane 75-34-3	*trans*-1,2-Dichloro-ethene 156-60-5	*cis*-1,2-Dichloro-ethene 156-59-2	Chloroform 67-66-3	1,2-Dichloro-ethane 107-06-2
GW04MW01A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW01B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW02A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW504MW02A	grd water, split of MW02A	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW02B	grd water	1 U	**28**	**29**	1 U	1 U	1 U	1 U
GW04MW03A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW03B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1004MW03B	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW04A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW05A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW09	ref mtl	1 U	1 U	1 U	1 U	1 U	1 U	1 U
042402TRIP01	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

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Volatile Organics

units = µg/L

Field I.D.	Comments	2-Butanone (MEK) 78-93-3	1,1,1-Trichloro-ethane 71-55-6	Carbon tetrachloride 56-23-5	Vinyl acetate 108-05-4	Bromodichloro-methane 75-27-4	1,2-Dichloro-propane 78-87-5	*cis*-1,3-Dichloro-propene 10061-01-5
GW04MW01A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW04MW01B	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW04MW02A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW504MW02A	grd water, split of MW02A	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW04MW02B	grd water	5 U	**210**	1 U	5 U	1 U	1 U	1 U
GW04MW03A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW04MW03B	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW1004MW03B	rinsate blank	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW04MW04A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW04MW05A	grd water	5 U	1 U	1 U	5 U	1 U	1 U	1 U
GW04MW09	ref mtl	5 U	1 U	1 U	5 U	1 U	1 U	1 U
042402TRIP01	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U	1 U
PRQL (µg/L)		*5*	*1*	*1*		*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Trichloro-ethene 79-01-6	Dibromochloro-methane 124-48-1	1,1,2-Trichloro-ethane 79-00-5	Benzene 71-43-2	*trans*-1,3-Dichloro-propene 10061-02-6	2-Chloroethyl-vinylether 110-75-8	Bromoform 75-25-2
GW04MW01A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW04MW01B	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW04MW02A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW504MW02A	grd water, split of MW02A	1 U	1 U	1 U	1 U	1 U	R	1 U
GW04MW02B	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW04MW03A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW04MW03B	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW1004MW03B	rinsate blank	1 U	1 U	1 U	1 U	1 U	R	1 U
GW04MW04A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW04MW05A	grd water	1 U	1 U	1 U	1 U	1 U	R	1 U
GW04MW09	ref mtl	**5.0 (83%)**	1 U	1 U	1 U	1 U	R	1 U
042402TRIP01	trnspt blk	1 U	1 U	1 U	1 U	1 U	R	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*		*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville E..panded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	4-Methyl-2-pentanone (MIBK) 108-10-1	2-Hexanone 591-78-6	Tetrachloro-ethene 127-18-4	1,1,2,2-Tetra-chloroethane 79-34-5	Toluene 108-88-3	Chloro-benzene 108-90-7	Ethyl-benzene 100-41-4	Styrene 100-42-5
GW04MW01A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW01B	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW02A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW504MW02A	grd water, split of MW02A	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW02B	grd water	5 U	5 U	**0.8 J**	1 U	1 U	1 U	1 U	1 U
GW04MW03A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW03B	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1004MW03B	rinsate blank	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW04A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW05A	grd water	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW09	ref mtl	5 U	5 U	**3.4 (85%)**	1 U	**6.6 (66%)**	1 U	1 U	1 U
042402TRIP01	trnspt blk	5 U	5 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*5*	*5*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Trichloro-fluoromethane 75-69-4	1,1,2-Trichloro-1,2,2-trifluoroethane 76-13-1	*m,p*-Xylenes 108-38-3	*o*-Xylene 95-47-6	1,2-Dichloro-benzene 95-50-1	1,3-Dichloro-benzene 541-73-1	1,4-Dichloro-benzene 106-46-7	Acrolein 107-02-8
GW04MW01A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW04MW01B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW04MW02A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW504MW02A	grd water, split of MW02A	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW04MW02B	grd water	1 U	**69**	1 U	1 U	1 U	1 U	1 U	50 U
GW04MW03A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW04MW03B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW1004MW03B	rinsate blank	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW04MW04A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW04MW05A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
GW04MW09	ref mtl	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
042402TRIP01	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	1 U	50 U
PRQL (µg/L)		*1*		*1*	*1*	*1*	*1*	*1*	

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville E..panded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Methyl-iodide 74-88-4	Bromo-ethane 74-96-4	Acrylo-nitrile 107-13-1	1,1-Dichloro-propene 563-58-6	Dibromo-methane 74-95-3	1,1,1,2-Tetra-chloroethane 630-20-6	1,2-Dibromo-3-chloropropane 96-12-8	1,2,3-Trichloro-propane 96-18-4
GW04MW01A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW04MW01B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW04MW02A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW504MW02A	grd water, split of MW02A	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW04MW02B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW04MW03A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW04MW03B	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW1004MW03B	rinsate blank	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW04MW04A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW04MW05A	grd water	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
GW04MW09	ref mtl	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
042402TRIP01	trnspt blk	1 U	2 U	1 U	1 U	1 U	1 U	5 U	3 U
PRQL (µg/L)		*1*			*1*	*1*	*1*	*5*	*3*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	*trans*-1,4-Dichloro-2-butene 110-57-6	1,3,5-Trimethyl-benzene 108-67-8	1,2,4-Trimethyl-benzene 95-63-6	Hexachloro-butadiene 87-68-3	Ethylene dibromide (1,2-dibromoethane) 106-93-4	Bromochloro-methane 74-97-5
GW04MW01A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW04MW01B	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW04MW02A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW504MW02A	grd water, split of MW02A	5 U	1 U	1 U	5 U	1 U	1 U
GW04MW02B	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW04MW03A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW04MW03B	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW1004MW03B	rinsate blank	5 U	1 U	1 U	5 U	1 U	1 U
GW04MW04A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW04MW05A	grd water	5 U	1 U	1 U	5 U	1 U	1 U
GW04MW09	ref mtl	5 U	1 U	1 U	5 U	1 U	1 U
042402TRIP01	trnspt blk	5 U	1 U	1 U	5 U	1 U	1 U
PRQL (µg/L)			*1*	*1*	*5*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville ..anded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	Dichlorodifluoro-methane 75-71-8	2,2-Dichloro-propane 590-20-7	1,3-Dichloro-propane 142-28-9	Isopropyl-benzene 98-82-8	n-Propyl-benzene 103-65-1	Bromo-benzene 108-86-1	2-Chloro-toluene 95-49-8	4-Chloro-toluene 106-43-4
GW04MW01A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW01B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW02A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW504MW02A	grd water, split of MW02A	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW02B	grd water	**100 J**	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW03A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW03B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1004MW03B	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW04A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW05A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW09	ref mtl	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
042402TRIP01	trnspt blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
Volatile Organics

units = µg/L

Field I.D.	Comments	*t*-Butyl-benzene 98-06-6	*s*-Butyl-benzene 135-98-8	4-Isopropyl-toluene (p-cumene) 99-87-6	n-Butyl-benzene 104-51-8	1,2,4-Trichloro-benzene 120-82-1	Naphthalene 91-20-3	1,2,3-Trichloro-benzene 87-61-6
GW04MW01A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW04MW01B	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW04MW02A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW504MW02A	grd water, split of MW02A	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW04MW02B	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW04MW03A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW04MW03B	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW1004MW03B	rinsate blank	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW04MW04A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW04MW05A	grd water	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW04MW09	ref mtl	1 U	1 U	1 U	1 U	5 U	5 U	5 U
042402TRIP01	trnspt blk	1 U	1 U	1 U	1 U	5 U	5 U	5 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*5*	*5*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Sample Date	Lab I.D.	TPH (mg/L; ppm) Gasoline-range	Diesel-range	Motor Oil / Lubricant	Phenol 108-95-2	*bis* (2-Chloroethyl) ether 111-44-4
GW04MW01A	grd water	4/23/02	025185-EH80A	0.25 U	0.25 U	0.50 U	2 U	2 U
GW04MW01B	grd water	4/23/02	025186-EH80B	0.25 U	0.25 U	0.50 U	2 U	2 U
GW04MW02A	grd water	4/24/02	025188-EH80D	0.25 U	0.25 U	0.50 U	2 U	2 U
GW504MW02A	grd water, split of MW02A	4/24/02	025189-EH80E	0.25 U	0.25 U	0.50 U	2 U	2 U
GW04MW02B	grd water	4/24/02	025187-EH10C	0.25 U	0.25 U	0.50 U	2 U	2 U
GW04MW03A	grd water	4/25/02	025227-EH80Q	0.25 U	0.25 U	0.50 U	2 U	2 U
GW04MW03B	grd water	4/25/02	025226-EH80P	0.25 U	0.25 U	0.50 U	2 U	2 U
GW1004MW03B	rinsate blank	4/25/02	025228-EH80R	0.25 U	0.25 U	0.50 U	2 U	2 U
GW04MW04A	grd water	4/24/02	025190-EH80F	0.25 U	0.25 U	0.50 U	2 U	2 U
GW04MW05A	grd water	4/25/02	025225-EH80O	0.25 U	0.25 U	0.50 U	2 U	2 U
GW04MW09	ref mtl	4/25/02	025224-EH80N				2 U	2 U
042402TRIP01	trnspt blk	4/24/02	025191-EH80G	0.25 U				
PRQL (µg/L)				*0.35*	*10*	*20*	*2*	*2*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	2-Chloro-phenol 95-57-8	1,3-Dichloro-benzene 541-73-1	1,4-Dichloro-benzene 106-46-7	Benzyl alcohol 100-51-6	1,2-Dichloro-benzene 95-50-1	2-Methyl-phenol 95-48-7	2,2'-Oxy*bis*-(chloropropane) 108-60-1	4-Methyl-phenol 106-44-5	N-Nitroso-di-n-propylamine 621-64-7
GW04MW01A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW04MW01B	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW04MW02A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW504MW02A	grd water, split of MW02A	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW04MW02B	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW04MW03A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW04MW03B	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW1004MW03B	rinsate blank	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW04MW04A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW04MW05A	grd water	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
GW04MW09	ref mtl	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U	2 U
042402TRIP01	trnspt blk									
PRQL (µg/L)		*1*	*1*	*1*	*5*	*1*	*2*	*1*	*1*	*2*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville . anded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Hexachloro-ethane 67-72-1	Nitro-benzene 98-95-3	Isophorone 78-59-1	2-Nitro-phenol 88-75-5	2,4-Dimethyl-phenol 105-67-9	Benzoic acid 65-85-0	*bis* (2-Chloro-ethoxy)methane 111-91-1	2,4-Dichloro-phenol 120-83-2	1,2,4-Trichloro-benzene 120-82-1
GW04MW01A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW04MW01B	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW04MW02A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW504MW02A	grd water, split of MW02A	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW04MW02B	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW04MW03A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW04MW03B	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW1004MW03B	rinsate blank	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW04MW04A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW04MW05A	grd water	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
GW04MW09	ref mtl	2 U	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U
042402TRIP01	trnspt blk									
PRQL (µg/L)		*2*	*1*	*1*	*5*	*3*	*10*	*1*	*3*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Naphthalene 91-20-3	4-Chloro-aniline 106-47-8	Hexachloro-butadiene 87-68-3	4-Chloro-3-methylphenol 59-50-7	2-Methyl-naphthalene 91-57-6	Hexachloro-cyclopentadiene 77-47-4	2,4,6-Trichloro-phenol 88-06-2	2,4,5-Trichloro-phenol 95-95-4
GW04MW01A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW04MW01B	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW04MW02A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW504MW02A	grd water, split of MW02A	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW04MW02B	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW04MW03A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW04MW03B	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW1004MW03B	rinsate blank	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW04MW04A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW04MW05A	grd water	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
GW04MW09	ref mtl	1 U	3 U	2 U	2 U	1 U	5 U	5 U	5 U
042402TRIP01	trnspt blk								
PRQL (µg/L)		*1*	*3*	*2*	*2*	*1*	*5*	*5*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville ... panded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	2-Chloro-naphthalene 91-58-7	2-Nitro-aniline 88-74-4	Dimethyl-phthalate 131-11-3	Acenaph-thylene 208-96-8	3-Nitro-aniline 99-09-2	Acenaphthene 83-32-9	2,4-Dinitro-phenol 51-28-5	4-Nitro-phenol 100-02-7	Dibenzo-furan 132-64-9	2,6-Dinitro-toluene 606-20-2
GW04MW01A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW04MW01B	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW04MW02A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW504MW02A	grd water, split of MW02A	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW04MW02B	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW04MW03A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW04MW03B	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW1004MW03B	rinsate blank	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW04MW04A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW04MW05A	grd water	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
GW04MW09	ref mtl	1 U	5 U	1 U	1 U	6 U	1 U	10 U	5 U	1 U	5 U
042402TRIP01	trnspt blk										
PRQL (µg/L)		*1*	*5*	*1*	*1*	*6*	*1*	*10*	*5*	*1*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	2,4-Dinitro-toluene 121-14-2	Diethyl-phthalate 84-66-2	4-Chlorophenyl-phenylether 7005-72-3	Fluorene 86-73-7	4-Nitro-aniline 100-01-6	4,6-Dinitro-2-methylphenol 534-52-1	* N-Nitroso-diphenylamine 86-30-6	4-Bromophenyl-phenylether 101-55-3	Hexachloro-benzene 118-74-1
GW04MW01A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	2 U	1 U	1 U
GW04MW01B	grd water	5 U	1 U	1 U	1 U	5 U	10 U	2 U	1 U	1 U
GW04MW02A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	2 U	1 U	1 U
GW504MW02A	grd water, split of MW02A	5 U	1 U	1 U	1 U	5 U	10 U	2 U	1 U	1 U
GW04MW02B	grd water	5 U	1 U	1 U	1 U	5 U	10 U	2 U	1 U	1 U
GW04MW03A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	2 U	1 U	1 U
GW04MW03B	grd water	5 U	1 U	1 U	1 U	5 U	10 U	2 U	1 U	1 U
GW1004MW03B	rinsate blank	5 U	1 U	1 U	1 U	5 U	10 U	2 U	1 U	1 U
GW04MW04A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	2 U	1 U	1 U
GW04MW05A	grd water	5 U	1 U	1 U	1 U	5 U	10 U	2 U	1 U	1 U
GW04MW09	ref mtl	5 U	1 U	1 U	1 U	5 U	10 U	**4.2 (42%)**	1 U	1 U
042402TRIP01	trnspt blk									
PRQL (µg/L)		*5*	*1*	*1*	*1*	*5*	*10*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

* Summation of N-nitrosodiphenylamine and diphenylamine.

Camp Bonneville ..anded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Pentachloro-phenol 87-86-5	Phenanthrene 85-01-8	Carbazole 86-74-8	Anthracene 120-12-7	Di-n-butyl-phthalate 84-74-2	Fluoranthene 206-44-0	Pyrene 129-00-0	Butylbenzyl-phthalate 85-68-7	3,3'-Dichloro-benzidine 91-94-1
GW04MW01A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW04MW01B	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW04MW02A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW504MW02A	grd water, split of MW02A	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW04MW02B	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW04MW03A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW04MW03B	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW1004MW03B	rinsate blank	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW04MW04A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW04MW05A	grd water	5 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW04MW09	ref mtl	5 U	**9 (90%)**	1 U	1 U	1 U	1 U	1 U	**19 (95%)**	5 U
042402TRIP01	trnspt blk									
PRQL (µg/L)		*5*	*1*	*1*	*1*	*1*	*1*	*1*	*1*	*5*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Benzo(a)-anthracene 56-55-3	*bis* (2-Ethylhexyl)-phthalate 117-81-7	Chrysene 218-01-9	Di-n-octyl-phthalate 117-84-0	Benzo(b)-fluoranthene 205-99-2	Benzo(k)-fluoranthene 207-08-9	Benzo(a)-pyrene 50-32-8	Indeno(1,2,3-cd)pyrene 193-39-5	Dibenz(a,h)-anthracene 53-70-3
GW04MW01A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW01B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW02A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW504MW02A	grd water, split of MW02A	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW02B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW03A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW03B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1004MW03B	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW04A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW05A	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW04MW09	ref mtl	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
042402TRIP01	trnspt blk									
PRQL (µg/L)			*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Benzo(g,h,i)-perylene 191-24-2	2,4,5-TP (Silvex) 93-72-1	2,4,5-T 93-76-5	Dinoseb 88-85-7	Dicamba 1918-00-9	2,4-D 94-75-7	2,4-DB 94-82-6	Dalapon 75-99-0	MCPA 94-74-6	Dichloroprop 120-36-5
GW04MW01A	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW04MW01B	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW04MW02A	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW504MW02A	grd water, split of MW02A	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW04MW02B	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW04MW03A	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW04MW03B	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW1004MW03B	rinsate blank	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW04MW04A	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW04MW05A	grd water	1 U	0.056 U	0.12 U	0.10 U	0.14 U	0.30 U	2.0 U	0.40 U	50 U	0.62 U
GW04MW09	ref mtl	1 U	**6.4 (128%)**	0.12 U	0.10 U	0.14 U	**21 (105%)**	2.0 U	0.40 U	50 U	0.62 U
042402TRIP01	trnspt blk										
PRQL (µg/L)		*1*	*0.3*	*0.6*	*2*	*0.7*	*1.5*	*10*	*2*	*75*	*3.1*

Comprehensive validation performed for analytes reported in blind ref. material.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	MCPP 93-65-2
GW04MW01A	grd water	50 U
GW04MW01B	grd water	50 U
GW04MW02A	grd water	50 U
GW504MW02A	grd water, split of MW02A	50 U
GW04MW02B	grd water	50 U
GW04MW03A	grd water	50 U
GW04MW03B	grd water	50 U
GW1004MW03B	rinsate blank	50 U
GW04MW04A	grd water	50 U
GW04MW05A	grd water	50 U
GW04MW09	ref mtl	50 U
042402TRIP01	trnspt blk	
PRQL (µg/L)		*75*

Comprehensive validation performed for analytes reported in blind ref. material.

EXPLOSIVE CHEMICALS ANALYSES

Explosive chemicals analyses were performed by Severn Trent Laboratories, Inc. (STL). Nitroguanidine and perchlorate were analyzed by STL Knoxville of Knoxville, Tennessee and the remaining analytes were analyzed by STL Burlington of Colchester, Vermont. All analyses were performed in accordance with the specifications and requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOPs are identified as SW-846 Method 8330 (HPLC-UV abs., modified) for all analytes, with the exception of perchlorate ion which was analyzed by US EPA Method 314.0 (ion chromatography - electroconductivity). Dual-column analyses (C-18 & CN) were performed for explosives, with the exception of nitroguanidine and perchlorate ion (single column only for these two analytes). Five samples, consisting of two groundwaters, a rinsate blank, a blind replicate and a double-blind reference material, were submitted for analyses. No chemical preservative was employed. Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Acceptable.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratories was sufficient to allow evaluation and validation of the associated results.

SAMPLE HANDLING / HOLDING TIMES & CONDITIONS

All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 2.0 - 2.5 °C upon receipt.

Technical requirements for maximum sample holding time prior to SVOC's analysis are established in the Project Management Plan as 7 days for extraction and 40 days for extract analysis. Perchlorate ion analyses were performed within two days of sample collection. All analyses were performed within the specified holding times. No results were qualified due to sample handling and holding conditions.

Chain-of-custody (C-O-C) documentation was complete, and all samples were received intact.

Custody seals were not found on either the transport coolers or the sample bottles. All samples were shipped to the laboratories via FedEx overnight. No other anomalies were apparent.

INITIAL CALIBRATION: Within specification.
Initial multi-point calibrations were established for all target and surrogate compounds with at least five concentrations and sometimes at six levels. External standard calibrations using linear response factors were accomplished for all analytes and surrogate compounds. Acceptable deviation, in terms of r^2, were all greater than 0.995 for all analytes. The lowest level standard was 1/2 the concentration of the lowest reporting limit for all analytes. Initial calibration performance is within acceptance limits.

Initial calibration verification (ICV) checks were all within the $\pm$ 15% difference specification for all analytes.

CONTINUING CALIBRATION: Within specification.
Continuing calibration verifications (CCV) were analyzed prior to, after every tenth sample, and at the end of sample sequences, as specified by the Project Management Plan. All responses were within the %D specification of less than 15%. Analyte retention times are within acceptable limits.

BLANKS: Within specification.
Initial and continuing calibration blanks were analyzed for all analytes and sample analytical groups. No target analytes were found. One method (preparation) blank was analyzed with each group of project samples for the organic analytes, as required (one group and one MB was analyzed). The perchlorate analyses were accompanied with a CCB (continuing calibration blank). No analytes were detected above one-half the project required lower quantitation limits. No results required qualification.

A field blank (equipment rinsate) analysis was performed on 1 submission. All reported results indicated nondetects or levels less than the project required quantitation limit for all analytes.

SURROGATE COMPOUND RECOVERIES: Within specification.
Surrogate compounds were added to all samples for the analysis of the organic analytes, including method and field blanks. Surrogate compounds are 1-chloro-3-nitrobenzene for the analysis of nitroguanidine and 1,2-dinitrobenzene for the remaining organic analytes. Project specification for acceptable performance is 50-150% recovery. All recoveries are within specification. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:
Within specification.
One MS/MSD analysis was performed for each analytical group, as required. All target analytes were spiked into GW05MW07B for evaluation of analytical recoveries. Explosive compounds were spiked at 4.0 µg/L, nitroglycerin and PETN at 80 µg/L, nitroguanidine at 100 µg/L and perchlorate at 5 µg/L.

All recoveries are within the range of 82 - 115%, within the 50 - 140% specification. RPDs (relative percent differences) are reported within the range of 0 - 10%, within the ≤ 50% project specification. All MS/MSD recoveries and associated RPD's are within specification. No data required qualification due to MS / MSD measurement performance.

Laboratory control samples (spiked water blank; LCS) were analyzed for all target analytes at spike concentrations of 4.0 µg/L, with the exception of nitroglycerin and PETN at 80 µg/L, nitroguanidine at 100 µg/L and perchlorate ion at 50 µg/L. An LCS-duplicate was also analyzed for all parameters with the exception of perchlorate and nitroguanidine. The range in RPDs for the LCS/LCS-duplicate pair was 0-5%. Analyte recoveries ranged from 83% to 115%, all within specification.

TARGET COMPOUND IDENTIFICATION, COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS: Acceptable.

All compound identifications were reviewed and are acceptable. The retention times for all target compounds are within acceptable limits (within ± 3 standard deviations of the mean determined from standard calibration runs). Dual column confirmation was performed for all organic analyte detections. RPDs were generally within 6% for dual-column quantitations, however TNT showed the largest deviation at 43%. TNT concentration in GW05MW02B should thus be considered an estimate and is assigned a "J" qualifier. The reported value (0.3 ppb) is slightly greater than the lower reporting limit (0.25 ppb). Perchlorate ion in two samples (GW05MW07B and GW505MW07B [sample and replicate pair]) were detected at just less than the project requested lower reporting limit of 5 ppb. The lowest calibration concentration for perchlorate is 4.0 ppb, and the two sample concentrations are within the verifiable linear calibration range. The two sample concentrations are considered valid with no qualification of results necessary. All lower reporting limits meat the project requirements. All (reported) lower reporting limits (RLs) are verified with the lowest calibration point at less than the requested RLs. All reported detections and nondetections are determined to be acceptable. .

All raw data were inspected and determined to be acceptable. The algorithms for determining concentrations were tested and determined to be correct.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. Chromatograms were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical systems appear to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: A **field** (rinsate) **blank** was submitted for analysis. Analytical results are presented in the results Table. No target analytes were detected. A **blind duplicate** or sample split was submitted for analysis (GW05MW07B and GW505MW07B [sample and duplicate pair]) with results presented in the attached table. One analyte was detected in both

samples. Perchlorate ion was detected in both samples at concentrations of 4.9 and 4.8 ppb, with an RPD of 2%.

Independent Reference Material: A double-blind reference material was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW05MW10. Analytes evaluated include HMX, RDX, picric acid, tetryl, nitroglycerin, TNT, 2,4-DNT, nitroguanidine and perchlorate ion. Accuracies are in the range of 84% - 128%. Performance is determined to be acceptable.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. Performance on the double-blind reference material is acceptable. The lower quantitation levels achieved are at the specified limits. Analytical performance is within specified limits, and the data quality is sufficient for its intended purposes.

D.M.D., Inc.

Camp Bonneville Expanded Site Investigation
Landfill 4 Demolition Area 1
Explosives in Groundwater - 01/03

units = µg/L (ppb)

Field I.D.	Comments	Sample Date	Lab I.D.	HMX 2691-41-0	RDX 121-82-4	Picric acid 88-89-1	1,3,5-Tri-nitrobenzene 99-35-4	1,3-Di-nitrobenzene 99-65-0	Nitro-benzene 98-95-3	Tetryl 479-45-8
GW05MW02B	grd water	1/8/2003	514220	**2.9**	**110**	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
GW05MW07B	grd water	1/8/2003	514221	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
GW05MW10	ref mtl	1/8/2003	514222	**4.2** *(84%)*	**9.7** *(97%)*	**6.4** *(128%)*	0.25 U	0.25 U	0.25 U	**8.5** *(85%)*
GW1005MW07B	rinsate blank	1/8/2003	514224	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
GW505MW07B	bld rep of MW07B	1/8/2003	514223	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
N/A	lab method blk	1/8/2003	EBLKW1	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
PRQL (µg/L)				*0.25*	*0.25*	*0.25*	*0.25*	*0.25*	*0.25*	*0.25*

D.M.D., Inc.

Camp Bonneville Expanded Site Investigation
Landfill 4 Demolition Area 1
Explosives in Groundwater - 01/03

units = µg/L (ppb)

Field I.D.	Comments	Sample Date	Lab I.D.	Nitro-glycerin 55-63-0	2,4,6-Tri-nitrotoluene 118-96-7	4-Amino-2,6-dinitrotoluene 1946-51-0	2-Amino-4,6-dinitrotoluene 35572-78-2	2,6-Di-nitrotoluene 606-20-2	2,4-Di-nitrotoluene 121-14-2
GW05MW02B	grd water	1/8/2003	514220	5.0 U	**0.30 J**	0.25 U	0.25 U	0.25 U	**0.47**
GW05MW07B	grd water	1/8/2003	514221	5.0 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
GW05MW10	ref mtl	1/8/2003	514222	**13** *(87%)*	**5.6** *(112%)*	0.25 U	0.25 U	0.25 U	**8.7** *(87%)*
GW1005MW07B	rinsate blank	1/8/2003	514224	5.0 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
GW505MW07B	bld rep of MW07B	1/8/2003	514223	5.0 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
N/A	lab method blk	1/8/2003	EBLKW1	5.0 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
PRQL (µg/L)				*5.0*	*0.25*	*0.25*	*0.25*	*0.25*	*0.25*

D.M.D., Inc.

Camp Bonneville Expanded Site Investigation
Landfill 4 Demolition Area 1
Explosives in Groundwater - 01/03

units = µg/L (ppb)

Field I.D.	Comments	Sample Date	Lab I.D.	2-Nitrotoluene 88-72-2	4-Nitrotoluene 99-99-0	3-Nitrotoluene 99-08-1	PETN 78-11-5	Nitroguanidine 556-88-7	Perchlorate (ion) 14797-73-0
GW05MW02B	grd water	1/8/2003	514220	0.25 U	0.25 U	0.25 U	10 U	20 U	**250**
GW05MW07B	grd water	1/8/2003	514221	0.25 U	0.25 U	0.25 U	10 U	20 U	**4.9**
GW05MW10	ref mtl	1/8/2003	514222	0.25 U	0.25 U	0.25 U	10 U	**28** *(93%)*	**31** *(100%)*
GW1005MW07B	rinsate blank	1/8/2003	514224	0.25 U	0.25 U	0.25 U	10 U	20 U	4.0 U
GW505MW07B	bld rep of MW07B	1/8/2003	514223	0.25 U	0.25 U	0.25 U	10 U	20 U	**4.8**
N/A	lab method blk	1/8/2003	EBLKW1	0.25 U	0.25 U	0.25 U	10 U	20 U	4.0 U
PRQL (µg/L)				*0.25*	*0.25*	*0.25*	*10*	*20*	*5.0*

VOLATILE ORGANIC COMPOUND ANALYSES

Volatile organic compound (VOC) analyses were performed by Analytical Resources, Inc. (ARI) of Tukwila, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8260B (HRGC/MS). Six samples, consisting of three groundwaters, a rinsate blank, a transport blank, and a double-blind reference material, were submitted for analyses. Hydrochloric acid (HCl) preservative was employed. Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Acceptable.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated VOC results. No ICV was reported, however, satisfactory performance on LCS/LCS-dup analyzed prior to project sample analyses may be substituted. A corrected Form I (for GW05MW02B) was generated and submitted by the laboratory upon request.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.5 - 3.5 °C upon receipt. No adverse effect on sample results is expected.

Samples were preserved upon collection by adjustment of pH ≤ 2 with conc. HCl. Technical requirements for maximum sample holding time prior to VOC's analysis are established at 14 days for analysis of preserved samples. All analyses were performed within the required holding times. No results required qualification due to sample handling and holding conditions.

GC/MS TUNE CHECK: Within specification.
4-Bromofluorobenzene (50 µg/L BFB) was analyzed as a surrogate compound in each and every sample and checked for instrument tune performance at the beginning of each twelve-hour calibration period as required for instrument NT3. Three checks were performed and reported for these analyses. All ion abundances and relative ion abundances met U.S. EPA CLP acceptance criteria. Mass spectral

plots and listings were compared, and transcription of mass data to the GC/MS tuning and mass calibration summaries was checked. No errors were found.

All criteria were met and all sample analyses and calibrations were performed within the twelve-hour instrument tune check period.

INITIAL CALIBRATION: Acceptable.
Initial multi-point calibrations were established for all target and surrogate compounds at concentrations of 1, 2, 5, 10, 50, 100 and 200 µg/L (on 1/16/03). The minimum RRF (relative response factor) requirement for SPCC's was met for all calibrations, and the performance for CCC's was also within specification. Some analytes showed minimal responses at 1 and 2 µg/L, and responses were determined using the upper 5 data points. Initial calibration average %RSDs are reported at 8.9%, within method acceptance limits. All target analyte and CCC RSD's were within method specification ($\leq$ 15%), with the exception of iodomethane (17%) and bromoform (18%). No sample results required qualification since all deviations are associated with nondetected analytes.

No ICV's were reported, however LCS/LCS-dup were analyzed between the CCV and [prior to] project samples. No action is required, and no data requires further qualification.

CONTINUING CALIBRATION: Acceptable.
Continuing calibration verifications (CCV) at 50 µg/L were analyzed prior to the analysis of samples [two analyzed with two analytical groups - one per group, as required]. No post-sequence CCVs were reported, however MS/MSD were analyzed following project samples. All relative response factors were greater than 0.10, as specified, with the exception of the ketones. Ketone RRFs were within the range of 0.03 - 0.10. RRF %D were less than 20% for all analytes, as specified. No data required qualification due to CCV performance.

BLANKS: Acceptable.
Two method (preparation) blanks were analyzed with the project samples, as required. No target analytes were reported above the project required quantitation limits. No results required qualification.

One transport and a rinsate blank analyses were performed. Results are reported in the attached Table. Acetone was reported (4.0 µg/L) below the quantitation limit (5 µg/L) and 2-butanone was reported at 14 µg/L in the rinsate blank. No acetone or butanone were detected in project samples. No results require qualification based on blanks performance.

SURROGATE COMPOUND RECOVERIES: Within specification.
Project-specified surrogate compounds were added to all samples, including method and field blanks, at concentrations of 50 µg/L.

Criteria for evaluation are as follows:

d_4-1,2-dichloroethane	81-134%	d_8-toluene	81-137%
4-bromofluorobenzene	83-124%	d_4-1,2-dichlorobenzene	88-128%

All recoveries are within specification. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES: Acceptable. One MS/MSD analysis was performed, as required. All target analytes were spiked into GW05MW07B. Recoveries ranged from 50% to 120%, with RPDs ranging from 1.6% to 10%. 2-Chloroethylvinylether showed essentially no recovery in either the MS or MSD, requiring qualification of all analyte nondetects as nonuseable with the "R" qualifier code. 2-Chloroethylvinylether hydrolyzes in the trapping device under acidic conditions (all samples are at pH 2). MS/MSD recoveries for detected analytes were $\geq$ 80%. No additional results required qualification.

Two laboratory control sample (spiked water blank; LCS and LCS duplicate) pairs were analyzed [total of four analyses] for all target analytes at an equivalent spike concentration of 50 µg/L (250 µg/L for ketones). LCS/LCS-dup's were analyzed following CCV and prior to project samples. Analyte recoveries ranged from 55% to 127% with an RPD range of 1.4% to 40%. Recoveries for those target analytes detected in project samples all fell within project specifications (80 - 120%). *It is noted that recoveries for 2-chloroethylvinylether ranged from 112% to 119% in the four LCSs (pH is neutral).* No additional qualification of results is required.

INTERNAL STANDARDS PERFORMANCE: Within specification.
Four internal standards (IS) were added to all samples at a concentration of 50 µg/L. Retention times (RT) for all internal standards in all analyses are within the specified window of ± 30 seconds of the continuing calibration internal standard RT. Internal standard (IS) areas for sample extracts were checked at random for verification of accuracy and determined to be correct. The specified acceptance limit for internal standard areas in sample extracts is 0.5 to 2 times the area of the 12-hour continuing calibration standard. Internal standards performance were all within specification. No results required qualification due to internal standards performance.

TARGET COMPOUND IDENTIFICATION
All compound identifications were reviewed and inconsistent reports were noted for an initial and reanalysis for sample GW05MW02B. An initial analysis was noted to possibly contain carryover from previous runs for trichloroethene (TCE). A subsequent analysis showed significantly less TCE (10 *vs.* 0.4 µg/L). Initial reports identified target analytes (carbon tetrachloride and 1,2-dichloroethane) that failed the mass spectral identification criteria. Subsequent review by the lab (following request for confirmation by the reviewer) resulted in the submission of a revised report for GW05MW02B. The relative retention times (RRT) for all target compounds are within acceptable limits (± 0.06 relative retention time units of the standard). Ion relative abundances on mass spectra for reported compounds

were checked against library reference spectra and were found to be acceptable. Spectra were provided for all reported positive and tentative identifications.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS

Target compound lower limits of quantitation are based on on-column amounts of 1-5 ng for most analytes and 10-25 ng for selected others. The algorithm for calculation of target analyte concentrations was checked and found to be correct. All lower limits of quantitation for chemicals of concern are within the project required quantitation limits (PRQL's), as summarized in the attached results Table.

Specified internal standards, quantitation ions, and RRF's were checked for all sample results and determined to be correct. All target analyte responses were determined by an automated/computerized routine, and no manual reintegrations were apparent. All sample volume and concentration calculations were checked for each sample and determined to be correct.

TENTATIVELY IDENTIFIED COMPOUNDS

No tentatively identified compound (TIC) reports were found in the deliverables package. None were requested. However, an independent review of mass spectral raw data files by the reviewer revealed the presence of trace concentrations of additional chemicals in GW05MW02B. Dichlorotrifluoroethane (a refrigerant), sulfur dichloride, thiophene and dichlorobutene were identified as TICs at 0.3 - 1.0 µg/L.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. RIC's were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to field (rinsate / trip) blanks, a blind sample split was submitted for analysis (duplicate/split pair = GW05MW07B / GW505MW07B). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either sample.

Independent Reference Material: A double-blind reference material (PE sample) was submitted for an independent assessment of accuracy. The results are presented in the attached Table as sample GW05MW10. Analytes evaluated include vinyl chloride, trichloroethylene, tetrachloroethylene and toluene. Accuracies were in the range of 80% - 130%. Analytical performance on the double-blind PE is considered acceptable.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete (exceptions include the lack of reported ICV and post-sequence CCVs). All performance indicators were either

within specification or within acceptable limits for the chemicals of potential concern. Performance on the double-blind reference material is considered acceptable. The lower quantitation levels achieved are at the specified limits. Analytical performance is generally within specified limits, and the data quality, with associated qualifiers, is sufficient for its intended purposes.

D.M.D., Inc.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Volatile Organics

units = µg/L

Field I.D.	Comments	Sample Date	Lab I.D.	Chloro-methane 74-87-3	Bromo-methane 74-83-9	Vinyl chloride 75-01-4	Chloro-ethane 75-00-3	Methylene chloride 75-09-2	Acetone 67-64-1	Carbon disulfide 75-15-0
GW05MW02B	grd water	1/8/2003	03186-FD27A	1 U	1 U	1 U	1 U	2 U	5 U	1 U
GW05MW07B	grd water	1/8/2003	03187-FD27B	1 U	1 U	1 U	1 U	2 U	5 U	1 U
GW05MW10	ref mtl	1/8/2003	03188-FD27C	1 U	1 U	*5.2 (**130%**)*	1 U	*2.8*	5 U	1 U
GW505MW07B	bld rep of MW07B	1/8/2003	03189-FD27D	1 U	1 U	1 U	1 U	2 U	5 U	1 U
GW1005MW07B	rinsate blank	1/8/2003	03190-FD27E	1 U	1 U	1 U	1 U	2 U	**4 J**	1 U
Trip blank		1/8/2003	03191-FD27F	1 U	1 U	1 U	1 U	2 U	5 U	1 U
N/A	lab method blk		03186-MB011603	1 U	1 U	1 U	1 U	2 U	5 U	1 U
N/A	lab method blk		03187-MB011703	1 U	1 U	1 U	1 U	2 U	5 U	1 U
PRQL (µg/L)				*1*	*1*	*1*	*1*	*2*	*5*	*1*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Volatile Organics

units = µg/L

Field I.D.	Comments	1,1-Dichloro-ethene 75-35-4	1,1-Dichloro-ethane 75-34-3	*trans*-1,2-Dichloro-ethene 156-60-5	*cis*-1,2-Dichloro-ethene 156-59-2	Chloroform 67-66-3	1,2-Dichloro-ethane 107-06-2	2-Butanone (MEK) 78-93-3
GW05MW02B	grd water	**20**	**28**	1 U	1 U	1 U	1 U	5 U
GW05MW07B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW05MW10	ref mtl	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW505MW07B	bld rep of MW07B	1 U	1 U	1 U	1 U	1 U	1 U	5 U
GW1005MW07B	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	**14**
Trip blank		1 U	1 U	1 U	1 U	1 U	1 U	5 U
N/A	lab method blk	1 U	1 U	1 U	1 U	1 U	1 U	5 U
N/A	lab method blk	1 U	1 U	1 U	1 U	1 U	1 U	5 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*	*5*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Volatile Organics

units = µg/L

Field I.D.	Comments	1,1,1-Trichloro-ethane 71-55-6	Carbon tetrachloride 56-23-5	Vinyl acetate 108-05-4	Bromodichloro-methane 75-27-4	1,2-Dichloro-propane 78-87-5	*cis*-1,3-Dichloro-propene 10061-01-5	Trichloro-ethene 79-01-6	Dibromochloro-methane 124-48-1
GW05MW02B	grd water	**150**	1 U	5 U	1 U	1 U	1 U	**0.4 J**	1 U
GW05MW07B	grd water	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
GW05MW10	ref mtl	1 U	1 U	5 U	1 U	1 U	1 U	*5.1 (**85%**)*	1 U
GW505MW07B	bld rep of MW07B	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
GW1005MW07B	rinsate blank	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
Trip blank		1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
N/A	lab method blk	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
N/A	lab method blk	1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*	*1*		*1*	*1*	*1*	*1*	*1*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Volatile Organics

units = µg/L

Field I.D.	Comments	1,1,2-Trichloro-ethane 79-00-5	Benzene 71-43-2	*trans*-1,3-Dichloro-propene 10061-02-6	2-Chloroethyl-vinylether 110-75-8	Bromoform 75-25-2	4-Methyl-2-pentanone (MIBK) 108-10-1	2-Hexanone 591-78-6	Tetrachloro-ethene 127-18-4
GW05MW02B	grd water	1 U	1 U	1 U	R	1 U	5 U	5 U	**0.5 J**
GW05MW07B	grd water	1 U	1 U	1 U	R	1 U	5 U	5 U	1 U
GW05MW10	ref mtl	1 U	1 U	1 U	R	1 U	5 U	5 U	*3.2 (**80%**)*
GW505MW07B	bld rep of MW07B	1 U	1 U	1 U	R	1 U	5 U	5 U	1 U
GW1005MW07B	rinsate blank	1 U	1 U	1 U	R	1 U	5 U	5 U	1 U
Trip blank		1 U	1 U	1 U	R	1 U	5 U	5 U	1 U
N/A	lab method blk	1 U	1 U	1 U	R	1 U	5 U	5 U	1 U
N/A	lab method blk	1 U	1 U	1 U	R	1 U	5 U	5 U	1 U
PRQL (µg/L)		*1*	*1*	*1*		*1*	*5*	*5*	*1*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Volatile Organics

units = µg/L

Field I.D.	Comments	1,1,2,2-Tetra-chloroethane 79-34-5	Toluene 108-88-3	Chloro-benzene 108-90-7	Ethyl-benzene 100-41-4	Styrene 100-42-5	Trichloro-fluoromethane 75-69-4	1,1,2-Trichloro-1,2,2-trifluoroethane 76-13-1	*m,p*-Xylenes 108-38-3	*o*-Xylene 95-47-6
GW05MW02B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	**20**	1 U	1 U
GW05MW07B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
GW05MW10	ref mtl	1 U	*10 (**100%**)*	1 U	1 U	1 U	1 U	2 U	1 U	1 U
GW505MW07B	bld rep of MW07B	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
GW1005MW07B	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
Trip blank		1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
N/A	lab method blk	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
N/A	lab method blk	1 U	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*		*1*	*1*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Volatile Organics

units = µg/L

Field I.D.	Comments	1,2-Dichloro-benzene 95-50-1	1,3-Dichloro-benzene 541-73-1	1,4-Dichloro-benzene 106-46-7	Acrolein 107-02-8	Methyl-iodide 74-88-4	Bromo-ethane 74-96-4	Acrylo-nitrile 107-13-1	1,1-Dichloro-propene 563-58-6	Dibromo-methane 74-95-3	1,1,1,2-Tetra-chloroethane 630-20-6
GW05MW02B	grd water	1 U	1 U	1 U	50 U	1 U	2 U	1 U	1 U	1 U	1 U
GW05MW07B	grd water	1 U	1 U	1 U	50 U	1 U	2 U	1 U	1 U	1 U	1 U
GW05MW10	ref mtl	1 U	1 U	1 U	50 U	1 U	2 U	1 U	1 U	1 U	1 U
GW505MW07B	bld rep of MW07B	1 U	1 U	1 U	50 U	1 U	2 U	1 U	1 U	1 U	1 U
GW1005MW07B	rinsate blank	1 U	1 U	1 U	50 U	1 U	2 U	1 U	1 U	1 U	1 U
Trip blank		1 U	1 U	1 U	50 U	1 U	2 U	1 U	1 U	1 U	1 U
N/A	lab method blk	1 U	1 U	1 U	50 U	1 U	2 U	1 U	1 U	1 U	1 U
N/A	lab method blk	1 U	1 U	1 U	50 U	1 U	2 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*1*		*1*			*1*	*1*	*1*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Volatile Organics

units = µg/L

Field I.D.	Comments	1,2-Dibromo-3-chloropropane 96-12-8	1,2,3-Trichloro-propane 96-18-4	*trans*-1,4-Dichloro-2-butene 110-57-6	1,3,5-Trimethyl-benzene 108-67-8	1,2,4-Trimethyl-benzene 95-63-6	Hexachloro-butadiene 87-68-3	Ethylene dibromide (1,2-dibromoethane) 106-93-4
GW05MW02B	grd water	5 U	3 U	5 U	1 U	1 U	5 U	1 U
GW05MW07B	grd water	5 U	3 U	5 U	1 U	1 U	5 U	1 U
GW05MW10	ref mtl	5 U	3 U	5 U	1 U	1 U	5 U	1 U
GW505MW07B	bld rep of MW07B	5 U	3 U	5 U	1 U	1 U	5 U	1 U
GW1005MW07B	rinsate blank	5 U	3 U	5 U	1 U	1 U	5 U	1 U
Trip blank		5 U	3 U	5 U	1 U	1 U	5 U	1 U
N/A	lab method blk	5 U	3 U	5 U	1 U	1 U	5 U	1 U
N/A	lab method blk	5 U	3 U	5 U	1 U	1 U	5 U	1 U
PRQL (µg/L)		*5*	*3*		*1*	*1*	*5*	*1*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Volatile Organics

units = µg/L

Field I.D.	Comments	Bromochloro-methane 74-97-5	Dichlorodifluoro-methane 75-71-8	2,2-Dichloro-propane 590-20-7	1,3-Dichloro-propane 142-28-9	Isopropyl-benzene 98-82-8	n-Propyl-benzene 103-65-1	Bromo-benzene 108-86-1	2-Chloro-toluene 95-49-8
GW05MW02B	grd water	1 U	**26**	1 U	1 U	1 U	1 U	1 U	1 U
GW05MW07B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW05MW10	ref mtl	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW505MW07B	bld rep of MW07B	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
GW1005MW07B	rinsate blank	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Trip blank		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
N/A	lab method blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
N/A	lab method blk	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*	*1*	*1*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Volatile Organics

units = µg/L

Field I.D.	Comments	4-Chloro-toluene 106-43-4	*t*-Butyl-benzene 98-06-6	*s*-Butyl-benzene 135-98-8	4-Isopropyl-toluene (p-cumene) 99-87-6	n-Butyl-benzene 104-51-8	1,2,4-Trichloro-benzene 120-82-1	Naphthalene 91-20-3	1,2,3-Trichloro-benzene 87-61-6
GW05MW02B	grd water	1 U	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW05MW07B	grd water	1 U	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW05MW10	ref mtl	1 U	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW505MW07B	bld rep of MW07B	1 U	1 U	1 U	1 U	1 U	5 U	5 U	5 U
GW1005MW07B	rinsate blank	1 U	1 U	1 U	1 U	1 U	5 U	5 U	5 U
Trip blank		1 U	1 U	1 U	1 U	1 U	5 U	5 U	5 U
N/A	lab method blk	1 U	1 U	1 U	1 U	1 U	5 U	5 U	5 U
N/A	lab method blk	1 U	1 U	1 U	1 U	1 U	5 U	5 U	5 U
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*5*	*5*	*5*

SEMIVOLATILE ORGANIC COMPOUND ANALYSES

Semivolatile organic compound (SVOC) analyses were performed by Analytical Resources, Inc. (ARI) of Tukwila, Washington, in accordance with the specifications and requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8270C (HRGC/MS). Three samples, consisting of two groundwaters and a rinsate blank, were submitted for analyses. No chemical perservative was employed. Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Acceptable.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. With two exceptions, documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated SVOC results. The documentation was deficient in the presentation of an initial calibration verification check and post-sequence CCV checks.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.5 - 3.5 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to SVOC's analysis are established in the Project Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No results required qualification due to sample handling and holding conditions.

GC/MS TUNE CHECK: Within specification.
Decafluorotriphenylphosphine (25 ng/µL DFTPP) was analyzed at the beginning of each twelve- hour calibration period as required for instrument Finn8. One check (1/15/03) was performed for these analyses plus one check associated with the initial calibration on 12/19/02. All ion abundances and relative ion abundances are within the acceptance range. Mass spectral plots and listings were compared, and transcription of mass data to the GC/MS tuning and mass calibration summaries was

checked. No errors were found.

All criteria were met and all sample analyses and calibrations were performed within the twelve-hour instrument tune check period.

INITIAL CALIBRATION: Acceptable.
Initial multi-point calibrations were established on 12/19/02 for all target and surrogate compounds at concentrations of 5, 10, 25, 40, 60 and 80 ng/µL. The minimum RRF (relative response factor) requirement of 0.05 was met for all analytes, and the RSD specification for linearity of ≤ 30% was also met for all calibrations. The mean %RSD for all analytes is 6.0% with no analytes exceeding or equivalent to 15%. An initial calibration verification (ICV) was not reported. Initial calibration performance is within acceptance limits.

An instrument detection limit standard at 1 ng/µL was run following the initial calibration on 12/19/02. Acceptable response was demonstrated for all analytes, with the exception of N-nitrosodipropylamine, benzoic acid, hexachlorocyclopentadiene, 3-nitroaniline, 2,4-dinitrophenol, 4,6-dinitro-2-methylphenol and 3,3'-dichlorobenzidine. These analytes showed low (less than 50% accuracy) to no response. This verifies lower reporting limits at 1 µg/L for all analytes, with the exception of the above, which are established at 5 µg/L. These limits do not consider any losses associated with sampling handling and extractions. Adjustment of lower reporting limits were made for three analytes in order to demonstrate achievement of project analytical goals. Reporting limits were lowered to the project required quantitation limits for the following: benzoic acid from 50 to 10 µg/L, 2,4-dinitrophenol from 25 to 10 µg/L, and 4,6-dinitro-2-methylphenol from 15 to 10 µg/L. The lower reporting limit for N-nitrosodi-n-propylamine was adjusted upward from 2 to 5 µg/L due to unacceptable response in the instrument detection limit check standard.

CONTINUING CALIBRATION: Acceptable.
A continuing calibration verification (CCV) at 25 ng/µL was analyzed prior to the analysis of sample extracts as specified by the Project Management Plan. No post-sequence CCVs were reported. All relative response factors were greater than 0.05, as specified; and %D were less than 20%, as required for specified chemicals. Analytes with %D > 20% are 2,2'-oxybis(1-chloropropane), 2-methylphenol, hexachloroethane, N-nitrosodi-n-propylamine, 4-methylphenol, and 4-nitrophenol; which is within acceptable limits for these analytes.

The reported CCVs were within specification.

BLANKS: Acceptable.
One method (preparation) blank was analyzed with each group of project samples, as required (one group and one MB was analyzed). No analytes were detected above the project required lower quantitation limits, with the exception of *bis*(2-ethylhexyl)phthalate. *bis*(2-Ethylhexyl)phthalate was

reported in the method blank at 1.3 µg/L. No results required qualification since phthalate esters were not detected in project samples.

A field blank (equipment rinsate) analysis was performed on 1 submission. All reported results indicated nondetects or levels less than the project required quantitation limit for all analytes.

SURROGATE COMPOUND RECOVERIES: Within specification.

Project-specified surrogate compounds were added to all samples, including method and field blanks. Surrogate compounds were added at the following amounts: 12.5 µg for neutrals and 18.7 µg for acidic organic compounds; to 500 mL water samples prior to extraction.

Criteria for evaluation are as follows:

d_5-nitrobenzene	42-112%	2-fluorophenol	39-113%
2-fluorobiphenyl	37-105%	2,4,6-tribromophenol	42-130%
d_{14}-*p*-terphenyl	40-131%	d_4-2-chlorophenol	44-109%
d_5-phenol	36-111%	d_4-1,2-dichlorobenzene	30-100%

All recoveries are within specification. No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:

Within specification.

One MS/MSD analysis was performed, as required. Matrix spike compounds are selected analytes spiked at 25 µg/L (37.5 µg/L for phenols) into GW05MW07B. Performance was evaluated by comparison of recoveries to the following criteria.

MS / MSD Project Advisory Criteria

Parameter	Recovery range (%)	Relative percent difference (RPD)
phenol	12 - 110	42 %
2-chlorophenol	27 - 123	40 %
1,4-dichlorobenzene	36 - 97	28 %
N-nitroso-di-n-propylamine	41 - 116	38 %
1,2,4-trichlorobenzene	39 - 98	28 %
4-chloro-3-methylphenol	23 - 97	42 %
acenaphthene	46 - 118	31 %
4-nitrophenol	10 - 80	50 %
pentachlorophenol	9 - 103	50 %
pyrene	26 - 127	31 %

All MS/MSD recoveries and associated RPD's were within specification. No data required qualification due to MS / MSD measurement performance.

A laboratory control sample (spiked water blank; LCS) LCS/LCS-dup. pair was analyzed for the selected target analytes [above] at an equivalent spike concentration of 25/37.5 µg/L. Analyte

recoveries ranged from 58% to 99%, all within specification.

INTERNAL STANDARDS PERFORMANCE: Within specification.
Seven internal standards (IS) were added to all sample extracts at a concentration of 20 ng/µL. Retention times (RT) for all internal standards in all analyses are within the specified window of ± 30 seconds of the continuing calibration internal standard RT. Verification of internal standard (IS) areas for all sample extracts were checked at random for accuracy and determined to be correct. The specified acceptance limit for internal standard areas in sample extracts is 0.5 to 2 times the area of the 12-hour continuing calibration standard. Internal standards performance were all within specification. No results required qualification due to internal standards performance.

TARGET COMPOUND IDENTIFICATION: Acceptable.
No target analytes, with the exception of spiked quality control analytes, were reported in project samples.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS
Target compound lower limits of quantitation are based on on-column amounts of 1 ng for neutrals and up to 5 ng for substituted phenols. The algorithm for calculation of target analyte concentrations was checked and found to be correct. With one exception, all lower limits of quantitation for chemicals of concern are within the project required quantitation limits (PRQL's), as summarized in the attached results Table. The verifiable lower reporting limit for N-nitrosodi-n-propylamine is 5 µg/L, which is greater than the 2 µg/L project specified limit.

Specified internal standards, quantitation ions, and RRF's were checked for all sample results and determined to be correct. All target analyte responses were determined by an automated/computerized routine, and no manual reintegrations were apparent. All sample volume and concentration calculations were checked for each sample and determined to be correct.

TENTATIVELY IDENTIFIED COMPOUNDS (TICs)
TICs were sought but not detected in project samples.

SYSTEM PERFORMANCE: Within specification.
No signs of degraded system performance were observed. RIC's were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA
Field Generated Quality Control Samples: In addition to a field (rinsate) blank, a blind sample split was submitted for analysis (duplicate/split pair = GW05MW07B / GW505MW07B). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either of the

two samples.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete, with the exception of an ICV and post sequence CCV. These two deviations are not expected to adversely affect data quality since the LCS/LCS-dup were within specification, and no target analytes were detected in project samples. All performance indicators were either within specification or within acceptable limits. No chemicals of concern were reported in site samples. The lower quantitation levels achieved are at the specified limits, with the exception of N-nitrosodi-n-propylamine. Analytical performance is within specified limits, and the data quality is sufficient for its intended purposes.

CHLOROPHENOXYHERBICIDES ANALYSES

Chlorophenoxyherbicides analyses were performed by Analytical Resources, Inc. (ARI) of Tukwila, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP is identified as SW-846 Method 8151A (HRGC/ECD). Samples (465-500 mL.) were spiked with surrogate (2,4-dichlorophenylacetic acid), extracted with diethyl ether, hydrolyzed and derivatized with diazomethane prior to gas chromatographic analysis. Gas chromatographic analysis was performed on dual columns - a DB-5 and a DB-608. Three samples, consisting of two groundwaters and a rinsate blank, were submitted for analyses. No chemical perservative was employed. Principal contaminants of concern have been identified as 2,4-D and 2,4,5-TP (Silvex). Validated results are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures as a guideline identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated herbicides results.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.5 - 3.5 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to herbicides analysis are established in the Project Management Plan as 7 days for extraction and 40 days for extract analysis. All analyses were performed within the specified holding times. No target analytes were reported above lower reporting limits in either of the two analyses for GW05MW07B. No results required qualification due to sample handling and holding conditions.

INITIAL CALIBRATION: Within specification.
Initial multi-point calibration was established [1/24/03] for all target and surrogate compounds at

concentrations of 0.01, 0.025, 0.05, 0.10, 0.20 and 0.40 ng/µL. A combination of linear and quadratic fits were employed for the various analytes. RSD's for linear fits were all ≤ 20%, whereas the quadratic fits all exhibited $r^2 > 0.999$ on both the primary and secondary (confirmation) columns. Initial calibration performance is within project acceptance limits.

CONTINUING CALIBRATION VERIFICATION: Acceptable.
Two continuing calibration verification (CCV) runs were performed at 0.025 - 0.5 ng/µL (25 ng/µL for MCPA & MCPP) prior to and following the analysis of sample extracts as specified by the Project Management Plan. With the exception of Dichloroprop on the primary (%D = 24, 25) column, Dicamba on the secondary column (%D = 19), Dinoseb on the secondary column (17%), and Silvex (2,4,5-TP) on the primary (%D = 17, 18) column, all responses were within 15% of the known values, as specified. The deviations have no adverse effect on the data, since no target analytes were detected in site samples.

BLANKS: Within specification.
One method (preparation) blank was analyzed with the project samples. No analytes were detected above the reported lower quantitation limits. No results required qualification.

A field blank (equipment rinsate) analysis was performed on 1 submission. All reported results indicated nondetects at the reported lower quantitation limits for all analytes.

SURROGATE COMPOUND RECOVERIES: Within specification.
Dichlorophenylacetic acid (6.2 µg in 500 mL.) was added as a surrogate to all samples, including method and field blanks. Surrogate recoveries ranged from 66% to 85%, within the specified limits (40% - 140%). No data required qualification based on surrogate performance.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS / MSD) ANALYSES:
Within specification.
One MS/MSD analysis was performed, as required. Matrix spike compounds added to GW05MW07B were 2,4,5-TP (Silvex), Dicamba and 2,4-D at concentrations of 0.5-2 µg/L. Recoveries ranged from 65% to 90%, with an RPD range of 2% - 6%. All MS/MSD recoveries and associated RPD's were within specification (R = 40-140% with RPD ≤ 50%). No data required qualification due to MS / MSD measurement performance.

One laboratory control sample (spiked water blank; LCS) and duplicate (LCSD) pair were analyzed for selected target analytes [same as for the MS/MSD, above] at an equivalent spike concentration of 0.5-2 µg/L. Analyte recoveries ranged from 53% to 84%, all within specification (R = 50-130%). RPDs ranged from 11% to 18%.

TARGET COMPOUND IDENTIFICATION: Acceptable.

Retention time windows were generally within ± 7 secs of the initial and continuing calibration verifications. No analyte responses were observed nor reported in project samples at the reported lower quantitation limits.

COMPOUND QUANTITATION and REPORTED QUANTITATION LEVELS

Target compound lower limits of quantitation are based on on-column amounts represented by the lowest calibration point in the initial calibration. All lower limits of quantitation for chemicals of concern are less than the project required quantitation limits (PRQL's), as summarized in the attached results Table; with the exception of MCPA and MCPP. The reporting limits are slightly elevated compared to the project goals.

SYSTEM PERFORMANCE: Within specification.

No signs of degraded system performance were observed. Chromatograms were examined for abrupt retention time shifts, elevated baselines, or high background levels. The analytical system appeared to be stable and within control during the course of these analyses.

OTHER PERFORMANCE DATA

Field Generated Quality Control Samples: In addition to a field rinsate blank, a blind sample split was submitted for analysis (duplicate/split pair = GW05MW07B / GW505MW07B). Analytical results for the sample split are presented in the results Table. No target analytes were detected in either of the two samples.

OVERALL ASSESSMENT

All deliverables required by the project are present and the data package is complete. All performance indicators were either within specification or within acceptable limits. No chemicals of concern were reported in site samples. The lower quantitation levels achieved are less than the specified limits for all analytes with the exception of two (MCPA and MCPP). Analytical performance is, with some minor exceptions, within specified limits, and the data quality is sufficient for its intended purposes.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Sample Date	Lab I.D.	TPH (mg/L; ppm) Gasoline-range	Diesel-range	Motor Oil / Lubricant	Phenol 108-95-2	*bis* (2-Chloroethyl) ether 111-44-4	2-Chloro-phenol 95-57-8
GW05MW07B	grd water	1/8/2003	03187-FD27B	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U
GW505MW07B	bld rep of MW07B	1/8/2003	03189-FD27D	0.25 U	0.25 U	0.50 U	2 U	2 U	1 U
GW1005MW07B	rinsate blank	1/8/2003	03190-FD27E	0.25 U	0.25 U	0.50 U	2.2 U	2.2 U	1.1 U
Trip blank		1/8/2003	03191-FD27F	0.25 U					
N/A	lab method blk		03187-MB011203		0.25 U	0.50 U			
N/A	lab method blk		03187-MB011303	0.25 U			2 U	2 U	1 U
N/A	lab method blk		03187-MB011703		0.25 U	0.50 U			
PRQL (µg/L)				*0.35*	*10*	*20*	*2*	*2*	*1*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	1,3-Dichloro-benzene 541-73-1	1,4-Dichloro-benzene 106-46-7	Benzyl alcohol 100-51-6	1,2-Dichloro-benzene 95-50-1	2-Methyl-phenol 95-48-7	2,2'-Oxy*bis*-(chloropropane) 108-60-1	4-Methyl-phenol 106-44-5	N-Nitroso-di-n-propylamine 621-64-7	Hexachloro-ethane 67-72-1
GW05MW07B	grd water	1 U	1 U	5 U	1 U	1 U	1 U	1 U	5 U	2 U
GW505MW07B	bld rep of MW07B	1 U	1 U	5 U	1 U	1 U	1 U	1 U	5 U	2 U
GW1005MW07B	rinsate blank	1.1 U	1.1 U	5.6 U	1.1 U	1.1 U	1.1 U	1.1 U	5.5 U	2.2 U
Trip blank										
N/A	lab method blk									
N/A	lab method blk	1 U	1 U	5 U	1 U	1 U	1 U	1 U	5 U	2 U
N/A	lab method blk									
PRQL (µg/L)		*1*	*1*	*5*	*1*	*2*	*1*	*1*	*2*	*2*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Nitro-benzene 98-95-3	Isophorone 78-59-1	2-Nitro-phenol 88-75-5	2,4-Dimethyl-phenol 105-67-9	Benzoic acid 65-85-0	*bis* (2-Chloro-ethoxy)methane 111-91-1	2,4-Dichloro-phenol 120-83-2	1,2,4-Trichloro-benzene 120-82-1	Naphthalene 91-20-3	4-Chloro-aniline 106-47-8
GW05MW07B	grd water	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U	1 U	3 U
GW505MW07B	bld rep of MW07B	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U	1 U	3 U
GW1005MW07B	rinsate blank	1.1 U	1.1 U	5.6 U	3.3 U	11.2 U	1.1 U	3.3 U	1.1 U	1.1 U	3.3 U
Trip blank											
N/A	lab method blk										
N/A	lab method blk	1 U	1 U	5 U	3 U	10 U	1 U	3 U	1 U	1 U	3 U
N/A	lab method blk										
PRQL (µg/L)		*1*	*1*	*5*	*3*	*10*	*1*	*3*	*1*	*1*	*3*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Hexachloro-butadiene 87-68-3	4-Chloro-3-methylphenol 59-50-7	2-Methyl-naphthalene 91-57-6	Hexachloro-cyclopentadiene 77-47-4	2,4,6-Trichloro-phenol 88-06-2	2,4,5-Trichloro-phenol 95-95-4	2-Chloro-naphthalene 91-58-7	2-Nitro-aniline 88-74-4	Dimethyl-phthalate 131-11-3
GW05MW07B	grd water	2 U	2 U	1 U	5 U	5 U	5 U	1 U	5 U	1 U
GW505MW07B	bld rep of MW07B	2 U	2 U	1 U	5 U	5 U	5 U	1 U	5 U	1 U
GW1005MW07B	rinsate blank	2.2 U	2.2 U	1.1 U	5.6 U	5.6 U	5.6 U	1.1 U	5.6 U	1.1 U
Trip blank										
N/A	lab method blk									
N/A	lab method blk	2 U	2 U	1 U	5 U	5 U	5 U	1 U	5 U	1 U
N/A	lab method blk									
PRQL (µg/L)		*2*	*2*	*1*	*5*	*5*	*5*	*1*	*5*	*1*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Acenaph-thylene 208-96-8	3-Nitro-aniline 99-09-2	Acenaphthene 83-32-9	2,4-Dinitro-phenol 51-28-5	4-Nitro-phenol 100-02-7	Dibenzo-furan 132-64-9	2,6-Dinitro-toluene 606-20-2	2,4-Dinitro-toluene 121-14-2	Diethyl-phthalate 84-66-2	4-Chlorophenyl-phenylether 7005-72-3
GW05MW07B	grd water	1 U	6 U	1 U	10 U	5 U	1 U	5 U	5 U	1 U	1 U
GW505MW07B	bld rep of MW07B	1 U	6 U	1 U	10 U	5 U	1 U	5 U	5 U	1 U	1 U
GW1005MW07B	rinsate blank	1.1 U	6.7 U	1.1 U	11.2 U	5.6 U	1.1 U	5.6 U	5.6 U	1.1 U	1.1 U
Trip blank											
N/A	lab method blk										
N/A	lab method blk	1 U	6 U	1 U	10 U	5 U	1 U	5 U	5 U	1 U	1 U
N/A	lab method blk										
PRQL (µg/L)		*1*	*6*	*1*	*10*	*5*	*1*	*5*	*5*	*1*	*1*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Fluorene 86-73-7	4-Nitro-aniline 100-01-6	4,6-Dinitro-2-methylphenol 534-52-1	* N-Nitroso-diphenylamine 86-30-6	4-Bromophenyl-phenylether 101-55-3	Hexachloro-benzene 118-74-1	Pentachloro-phenol 87-86-5	Phenanthrene 85-01-8	Carbazole 86-74-8
GW05MW07B	grd water	1 U	5 U	10 U	1 U	1 U	1 U	5 U	1 U	1 U
GW505MW07B	bld rep of MW07B	1 U	5 U	10 U	1 U	1 U	1 U	5 U	1 U	1 U
GW1005MW07B	rinsate blank	1.1 U	5.6 U	11.2 U	1.1 U	1.1 U	1.1 U	5.6 U	1.1 U	1.1 U
Trip blank										
N/A	lab method blk									
N/A	lab method blk	1 U	5 U	10 U	1 U	1 U	1 U	5 U	1 U	1 U
N/A	lab method blk									
PRQL (µg/L)		*1*	*5*	*10*	*1*	*1*	*1*	*5*	*1*	*1*

* Summation of N-nitrosodiphenylamine and diphenylamine.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Anthracene 120-12-7	Di-n-butyl-phthalate 84-74-2	Fluoranthene 206-44-0	Pyrene 129-00-0	Butylbenzyl-phthalate 85-68-7	3,3'-Dichloro-benzidine 91-94-1	Benzo(a)-anthracene 56-55-3	*bis* (2-Ethylhexyl)-phthalate 117-81-7	Chrysene 218-01-9	Di-n-octyl-phthalate 117-84-0
GW05MW07B	grd water	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U
GW505MW07B	bld rep of MW07B	1 U	1 U	1 U	1 U	1 U	5 U	1 U	1 U	1 U	1 U
GW1005MW07B	rinsate blank	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	5.6 U	1.1 U	1.1 U	1.1 U	1.1 U
Trip blank											
N/A	lab method blk										
N/A	lab method blk	1 U	1 U	1 U	1 U	1 U	5 U	1 U	**1.3**	1 U	1 U
N/A	lab method blk										
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*5*		*1*	*1*	*1*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	Benzo(b)-fluoranthene 205-99-2	Benzo(k)-fluoranthene 207-08-9	Benzo(a)-pyrene 50-32-8	Indeno(1,2,3-cd)pyrene 193-39-5	Dibenz(a,h)-anthracene 53-70-3	Benzo(g,h,i)-perylene 191-24-2	2,4,5-TP (Silvex) 93-72-1	2,4,5-T 93-76-5	Dinoseb 88-85-7	Dicamba 1918-00-9
GW05MW07B	grd water	1 U	1 U	1 U	1 U	1 U	1 U	0.050 U	0.050 U	0.070 U	0.10 U
GW505MW07B	bld rep of MW07B	1 U	1 U	1 U	1 U	1 U	1 U	0.053 U	0.053 U	0.21 U	0.11 U
GW1005MW07B	rinsate blank	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	1.1 U	0.054 U	0.054 U	0.22 U	0.11 U
Trip blank											
N/A	lab method blk										
N/A	lab method blk	1 U	1 U	1 U	1 U	1 U	1 U	0.050 U	0.050 U	0.20 U	0.10 U
N/A	lab method blk										
PRQL (µg/L)		*1*	*1*	*1*	*1*	*1*	*1*	*0.3*	*0.6*	*2*	*0.7*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
TPH, ABN's, and Chlorinated Herbicides

units = µg/L

Field I.D.	Comments	2,4-D 94-75-7	2,4-DB 94-82-6	Dalapon 75-99-0	MCPA 94-74-6	Dichloroprop 120-36-5	MCPP 93-65-2
GW05MW07B	grd water	0.20 U	1.0 U	0.40 U	100 U	0.20 U	100 U
GW505MW07B	bld rep of MW07B	0.21 U	1.1 U	0.42 U	110 U	0.21 U	110 U
GW1005MW07B	rinsate blank	0.22 U	1.1 U	0.43 U	110 U	0.22 U	110 U
Trip blank							
N/A	lab method blk						
N/A	lab method blk	0.20 U	1.0 U	0.40 U	100 U	0.20 U	100 U
N/A	lab method blk						
PRQL (µg/L)		*1.5*	*10*	*2*	*75*	*3.1*	*75*

METALS ANALYSES

Metals analyses were performed by Analytical Resources, Inc. (ARI) of Tukwila, Washington, in accordance with the requirements of the *Management Plan for Landfill 4 - Demolition Area 1, Expanded Site Investigation, Camp Bonneville, Washington* ("Project Management Plan" prepared for Seattle District U.S. Army Corps of Engineers by URS, May 2001) and referenced SOP's. The analytical SOP's are identified as U.S. EPA SW-846 Methods 6010B / 7000 (all metals analyzed by 6010B (ICP-AES); with the exception of As, Pb, Se and Tl, which were analyzed by 200.8 (ICP-MS) and Hg by 7470A (CVAA)). Six samples were submitted for analyses - three pairs were site samples submitted for the analysis of both dissolved and total metals (of which one pair is a rinsate blank set). Samples for determination of dissolved metals were field-filtered using an in-line, nitrocellulose, 0.45 µm cartridge filter assembly. All samples were preserved upon collection with HNO_3 to pH ≤ 2. The target metal analytes are presented in the attached Results Table with associated data qualifiers.

The analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Inorganics Analyses* (U.S. EPA, 1994 [EPA-540/R-94/013]), as applicable to the USACE Shell and the Project Management Plan. Quality control measurements are evaluated for all target analytes against the performance criteria presented in the Project Management Plan.

DELIVERABLES: Complete.
The laboratory provided U.S. EPA CLP-type, or comparable, deliverables for all sample submittals. Documentation provided by the laboratory was sufficient to allow evaluation and validation of the associated metals results.

SAMPLE HANDLING / HOLDING TIMES: Acceptable.
All samples were held either on ice or in refrigeration from collection/processing until the time of analysis. The project Management Plan specifies a 4 ± 2 °C sample holding temperature. Lab measurement of "temperature blank" bottles, one per cooler, showed temperatures to be in the range of 1.5 - 3.5 °C upon receipt. No adverse effect on sample results is expected.

Technical requirements for maximum sample holding time prior to metals analysis are established in the Project Management Plan as 28 days for mercury and 6 months for other metals, from time of collection to analysis. All samples were analyzed within 9 days of sample collection. All analyses were performed within the specified holding times.

CALIBRATION: Within specification.
Initial Calibration. Initial instrumental calibrations were performed daily using at least the minimum required number of data points to establish the analytical curve for each method: a blank and one

standard for ICP-AES analyses, a blank and four standards for ICP-MS analyses, and a blank and six standards for mercury (CVAA) analyses. Correlation coefficients for all ICP-MS and CVAA initial calibrations are ≥0.995, as required (actually reported as > 0.9994).

Initial Calibration Verification. Initial calibration verification checks (ICV's) were performed immediately after initial instrumental calibrations during all ICP (AES & MS) and CVAA analytical runs, as required. All ICV recoveries are within acceptance limits (90-110% for ICP and 80-120% for mercury).

Continuing Calibration Verification. Continuing calibration verification standards (CCV's) were analyzed at the required frequency for all ICP and CVAA analytical runs (at the beginning and end of each run; at a frequency of ≥10% or every two hours, whichever is more frequent). All CCV recoveries are within acceptance limits (90-110% for ICP and 80-120% for CVAA).

Calibration Check Sample. A check sample at a concentration of 2x the project required quantitation level was analyzed following initial calibrations and found to range from 91% to 122%, with the exception of copper which reported 65% (a separate test showed 96% - two test runs for each analyte). While control limits are unspecified in the Project Management Plan, the performance is considered reasonable and acceptable.

ICP-MS Quantitation. Seven internal/check standards (lithium, scandium, germanium, yttrium, indium, terbium and bismuth) were added to all samples analyzed, including standards and blanks. Internal standard performance for all samples analyzed was found to be within specification (60-125% of the response of the calibration blank).

CALIBRATION, PREPARATION, and FIELD BLANKS: Within specification.

Initial/Continuing Calibration Blanks. Initial calibration blanks (ICB's) were analyzed immediately after ICV's, and continuing calibration blanks (CCB's) were analyzed immediately after CCV's during all ICP-AES, ICP-MS, and CVAA analytical runs, as required.

The Project Management Plan specifies that ICB's and CCB's are less than the lower quantitation limit for each reported analyte. All ICB's and CCB's were within specification. Sodium showed some response in blanks, but the response was within specification. All ICB and CCB results were verified by examination of raw data.

Preparation / Method Blanks. Two preparation blanks were analyzed for all target analytes at the required frequency (once per preparation batch). Method blank results are presented in the attached Table. No analytes were reported above the project required quantitation limit.

Equipment Rinsate Blanks. An equipment rinsate blank pair (dissolved and total) was collected and analyzed. No analytes were detected above the project lower reporting limit.

INTERFERENCE CHECK SAMPLE: Within specification.
ICP (AES & MS) interference check solutions (ICS) were analyzed for the target analytes at the beginning of each analytical run. Recoveries for the target analytes of concern were within acceptance limits (80-120%).

LABORATORY CONTROL SAMPLE: Within specification.
Laboratory control samples (LCS) were analyzed at the required frequency (at least one sample per matrix per preparation batch). Two aqueous LCS's (spiked blanks) were analyzed. All target analytes are within project acceptance limits (80-120% recovery) for all reported analyses of the aqueous LCS (recoveries ranged from 85% to 115%).

DUPLICATE SAMPLE ANALYSES: Within specification.
Laboratory duplicate samples (GW05MW07B, total and dissolved) were analyzed for the target analytes at the required frequency (at least one sample per matrix per preparation batch). Results of all duplicate analyses greater than the IDL are within project acceptance limits (±20% RPD).

MATRIX SPIKE SAMPLE ANALYSES
Matrix spike samples were analyzed for the target analytes at the required frequency (at least one sample per matrix per preparation batch). Project-specified acceptance limits for matrix spike recovery are 75-125% and are applicable only to those samples in which the sample concentration does not exceed 4x the spike concentration. All water sample matrix spike (two samples; dissolved and total - GW05MW07B) recoveries were acceptable for all reported analytes, and no associated results were rejected or required qualification.

ICP SERIAL DILUTION: Within specification.
An ICP serial dilution was performed twice, as required. With the exception of major cations, metals were diluted to nondetectable levels. Major cation results showed less than 10% deviation.

SAMPLE RESULT VERIFICATION
Sample quantitation and transcription to the reporting form (Form I) was verified for at least 10% of the analytes for each sample, including QC samples. No errors were detected.
Results for all target analytes are within the linear range of the instrument. No significant anomalies were noted in the raw data. All raw data are legible and complete.

OTHER PERFORMANCE DATA
Field Quality Control Sample Analyses. Two blind splits were taken and submitted for analyses.

These splits were generated from homogenized composites for both nonfiltered and filtered samples at MW07B. Results are presented in the attached Table. RPD's were less than or equal to 7%.

OVERALL ASSESSMENT OF THE DATA

All deliverables required by the project are present and data packages are complete. Recommended sample holding times were met for all analytes in all samples. Initial calibration and continuing calibration requirements were met for all analytes in all analytical runs. Reporting limits for all analytes in all samples are at or below the Project Required Quantitation Levels (PRQL's), with the exception of iron (50 reported *vs.* 20 requested), magnesium (50 reported *vs.* 20 requested) and sodium (500 reported *vs.* 50 requested). Few problems were encountered and the data as qualified meet the project's data quality objectives.

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Metals & Conventionals Results

metals values as µg/L.

Field I.D.	Comments	Sample Date	Lab I.D.	Sb 7440-36-0	As 7440-38-2	Ba 7440-39-3	Be 7440-41-7	Cd 7440-43-9	Ca 7440-70-2
GW05MW07B	grd water; nonfiltered (total)	1/8/2003	03187-FD27B	50 U	**0.3**	3 U	1 U	2 U	**7270**
GW05MW07B	grd water; filtered (dissolved)	1/8/2003	03196-FD27G	50 U	**0.4**	3 U	1 U	2 U	**7210**
GW505MW07B	bld rep of MW07B; nonfiltered (total)	1/8/2003	03189-FD27D	50 U	**0.4**	3 U	1 U	2 U	**7510**
GW505MW07B	bld rep of MW07B; filtered (dissolved)	1/8/2003	03197-FD27H	50 U	**0.3**	3 U	1 U	2 U	**6730**
GW1005MW07B	rinsate blank; nonfiltered (total)	1/8/2003	03190-FD27E	50 U	0.2 U	3 U	1 U	2 U	50 U
GW1005MW07B	rinsate blank; filtered (dissolved)	1/8/2003	03198-FD27I	50 U	0.2 U	3 U	1 U	2 U	50 U
N/A	lab method blk; total		03189-FD27MB	50 U	0.2 U	3 U	1 U	2 U	50 U
N/A	lab method blk; dissolved		03197-FD27MB	50 U	0.2 U	3 U	1 U	2 U	50 U
PRQL (µg/L)				*50*	*1*	*3*	*1*	*2*	*50*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Metals & Conventionals Results

metals values as µg/L.

Field I.D.	Comments	Cr 7440-47-3	Cu 7440-50-8	Fe 7439-89-6	Pb 7439-92-1	Mg 7439-95-4	Hg 7439-97-6	Ni 7440-02-0	K 7440-09-7	Se 7782-49-2
GW05MW07B	grd water; nonfiltered (total)	**9**	2 U	**110**	1 U	**4790**	0.1 U	10 U	**1540**	0.5 U
GW05MW07B	grd water; filtered (dissolved)	5 U	2 U	50 U	1 U	**4780**	0.1 U	**10**	**1470**	0.5 U
GW505MW07B	bld rep of MW07B; nonfiltered (total)	**7**	2 U	**90**	1 U	**5000**	0.1 U	10 U	**1510**	0.5 U
GW505MW07B	bld rep of MW07B; filtered (dissolved)	5 U	2 U	50 U	1 U	**4420**	0.1 U	10 U	**1420**	0.5 U
GW1005MW07B	rinsate blank; nonfiltered (total)	5 U	2 U	50 U	1 U	50 U	0.1 U	10 U	500 U	0.5 U
GW1005MW07B	rinsate blank; filtered (dissolved)	5 U	2 U	50 U	1 U	50 U	0.1 U	10 U	500 U	0.5 U
N/A	lab method blk; total	5 U	2 U	50 U	1 U	50 U	0.1 U	10 U	500 U	0.5 U
N/A	lab method blk; dissolved	5 U	2 U	50 U	1 U	50 U	0.1 U	10 U	500 U	0.5 U
PRQL (µg/L)		*5*	*2*	*20*	*1*	*20*	*0.1*	*10*	*500*	*2*

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Metals & Conventionals Results

metals values as µg/L.

Field I.D.	Comments	Ag 7440-22-4	Na 7440-23-5	Tl 7440-28-0	Zn 7440-66-6	Alkalinity mg/L $CaCO_3$	Carbonate mg/L $CaCO_3$	Bicarbonate mg/L $CaCO_3$
GW05MW07B	grd water; nonfiltered (total)	3 U	**8720**	0.2 U	6 U	**38**	1 U	**38**
GW05MW07B	grd water; filtered (dissolved)	3 U	**8980**	0.2 U	6 U			
GW505MW07B	bld rep of MW07B; nonfiltered (total)	3 U	**8680**	0.2 U	6 U	**40**	1 U	**40**
GW505MW07B	bld rep of MW07B; filtered (dissolved)	3 U	**8210**	0.2 U	6 U			
GW1005MW07B	rinsate blank; nonfiltered (total)	3 U	500 U	0.2 U	6 U	1 U	1 U	1 U
GW1005MW07B	rinsate blank; filtered (dissolved)	3 U	500 U	0.2 U	6 U			
N/A	lab method blk; total	3 U	500 U	0.2 U	6 U			
N/A	lab method blk; dissolved	3 U	500 U	0.2 U	6 U			
PRQL (µg/L)		*3*	*50*	*1*	*6*	*5*	*1*	

Camp Bonneville Expanded Site Investigation
Landfill 4, Demolition Area 1 - Event 5
Metals & Conventionals Results

metals values as µg/L.

Field I.D.	Comments	total suspended solids mg/L	Chloride mg/L	total Cyanide mg/L	Nitrate mg-N/L	Nitrite mg-N/L	Sulfate mg/L	TOC mg/L	DOC mg/L
GW05MW07B	grd water; nonfiltered (total)	**2.8**	**15**	0.005 U	**0.16**	0.01 U	**2.6**	1.5 U	1.5 U
GW05MW07B	grd water; filtered (dissolved)								
GW505MW07B	bld rep of MW07B; nonfiltered (total)	2.5 U	**14**	0.005 U	**0.13**	0.01 U	2.5 U	1.5 U	1.5 U
GW505MW07B	bld rep of MW07B; filtered (dissolved)								
GW1005MW07B	rinsate blank; nonfiltered (total)	2.5 U	1 U	0.005 U	**0.053**	0.01 U	2.5 U	1.5 U	1.5 U
GW1005MW07B	rinsate blank; filtered (dissolved)								
N/A	lab method blk; total	1 U	1 U	0.005 U	0.010 U	0.010 U	2.5 U	1.5 U	1.5 U
N/A	lab method blk; dissolved								
PRQL (µg/L)		*1*	*2*	*0.005*	*0.05*	*0.05*	*10*	*1.5*	*1.5*

Appendix F
Petrographic Reports and Thin Section Photographs

Petrographic Report

Project: Expanded Site Inspection

Location: Landfill 4-Demolition Area 1, Camp Bonneville, Washington

Sample: Grain mount of cuttings L4-MW01B 64 ft bgs

Rock Name

Porphyritic Pyroxene Andesite

Macroscopic Description

Degree of Weathering: Fresh to slightly weathered (Grade I-II)[1]

Degree of Alteration: Most rock fragments exhibit some evidence of low-grade alteration

Structure: Filled and unfilled vesicles (<<1%), some apparent flow orientation of groundmass minerals

Discontinuities: Minor older filled discontinuities only

Thin Section Description

Textures: Porphyritic with pilotaxitic (unaltered)

Open Fractures: None

Filled Fractures: Minor microfractures filled with calcite

Alteration: Hydrothermal alteration over most of this sample. Note reaction rims Figure C-1(A) All minerals show some degree of alteration although twinning and local examples of zoning are apparent in larger plagioclase phenocrysts.

Mineral Composition

40% Plagioclase phenocrysts with sericite alteration

<<1% Zeolites

<1 % Altered pyroxene phenocrysts

<1% Chlorite

<1% Sericite

<1% Calcite

<1% Opaques

54% Fine-grained groundmass including plagioclase, opaques, pyroxene, chlorite

[1] Brown, 1981

Discussion

This rock has been subject to minor secondary hydrothermal alteration. Rock fragments locally have as evidenced by a fracture filled with zeolites and microfractures filled with calcite. All observed fractures were filled and no connection among vesicles was observed. Open fractures capable of transmitting groundwater were not observed. Zoning was observed in some of the plagioclase, however all of the phenocrysts had some degree of alteration. There is a relative lack of volcanic glass in these samples compared to L4-MW03B, 60.8 ft bgs and L4-MW03B 69 ft bgs. This change in glass content may be related to differences in the rock type or related to alteration of the glass in the weathering environment.

Petrographic Report

Project: Expanded Site Inspection

Location: Landfill 4-Demolition Area 1, Camp Bonneville, Washington

Sample: Grain mount of cuttings L4-MW01B 64 ft bgs

Rock Name

Porphyritic Pyroxene Andesite

Macroscopic Description

Degree of Weathering: Fresh (Grade I) [2]

Degree of Alteration: Low-grade hydrothermal alteration

Structure: Filled and unfilled vesicles (<1%), some apparent flow orientation of groundmass minerals

Discontinuities: Older filled discontinuities only

Thin Section Description

Textures: Porphyritic with pilotaxitic (unaltered) groundmass; intersertal texture where volcanic glass is present.

Open Fractures: None

Filled Fractures: Up to approximately 2.5 mm wide filled with zeolite minerals or calcite

Alteration: All minerals show some degree of hydrothermal alteration

Mineral Composition

40% Plagioclase phenocrysts with sericite alteration

5% Zeolites

[2] Brown 1981

4% Volcanic glass

<1 % Altered pyroxene phenocrysts

<1% Chlorite

<1% Sericite

<1% Calcite

50% Fine-grained groundmass including plagioclase, opaques, pyroxene, chlorite

Discussion

This rock has been subject to minor secondary hydrothermal alteration as evidenced by a fracture filled with zeolites and microfractures filled with calcite. All observed fractures were filled and no connection among vesicles was observed. Open fractures capable of transmitting groundwater were not observed. Note the presence of vein filling in Figure C-2. Euhedral zeolite minerals are present at the edge of the vein filling (A) and sheaf-like crystals are present in the interior of the vein (B). About 4% of the thin section has volcanic glass in the matrix. Zoning was observed in some of the plagioclase, however all of the phenocrysts had some degree of alteration. Much of the alteration appears related to normal magmatic processes. The phenocrysts probably crystallized in a magma chamber beneath the earth's surface and were partially resorbed during that time. At the surface, there was a period of cooling where the pilotaxitic texture was developed and apparently a more rapid period of cooling when the volcanic glass was formed. The lack of alteration of the volcanic glass is further evidence of the lack of significant groundwater flow through fractures in this rock.

Petrographic Report

Project: Expanded Site Inspection

Location: Landfill 4-Demolition Area 1, Camp Bonneville, Washington

Sample: Drill Core L4-MW03B 69 ft bgs

Rock Name

Porphyritic Pyroxene Andesite

Macroscopic Description

Degree of Weathering: Fresh (Grade I) [3]

Degree of Alteration: Low-grade propylitic alteration

Structure: Filled vesicles (<<1%), some apparent flow orientation of groundmass minerals

Discontinuities: Minor older filled discontinuities only

[3] Brown 1981

Thin Section Description

Textures: Porphyritic with pilotaxitic groundmass or intersertal where volcanic glass is present

Open Fractures: None

Filled Fractures: Minor microfractures filled with calcite

Alteration: Hydrothermal alteration over most of this sample. All minerals show some degree of minor alteration

Mineral Composition

40% Plagioclase phenocrysts with sericite alteration

25% Volcanic glass

<<1% Zeolites

<1 % Altered pyroxene phenocrysts

<1% Chlorite

<1% Sericite

<1% Calcite

<1% Opaques

34% Fine-grained groundmass including plagioclase, opaques, pyroxene, chlorite

Discussion

This rock has been subject to minor secondary hydrothermal alteration as evidenced by a fracture filled with zeolites and microfractures filled with calcite. All observed fractures were filled and no connection among vesicles was observed. Open fractures capable of transmitting groundwater were not observed. About 25% of the thin section has volcanic glass in the matrix. Zoning was observed in some of the plagioclase, however all of the phenocrysts had some degree of alteration. Much of the alteration appears related to normal magmatic processes. The phenocrysts probably crystallized in a magma chamber beneath the earth's surface and were partially resorbed during that time as shown in Figure C-3 (C). At the surface, there was a period of cooling where the pilotaxitic texture was developed (B) and apparently a more rapid period of cooling when the volcanic glass (A) was formed. The lack of alteration of the volcanic glass is further evidence of the lack of significant groundwater flow through fractures in this rock.

F0072323.00_01.cdr

Thin section view from boring L4-MW01B, 64 feet below ground surface.
Description of the thin section is in the text for Appendix F.



1 mm
Magnification 100X

Job No. 33752889

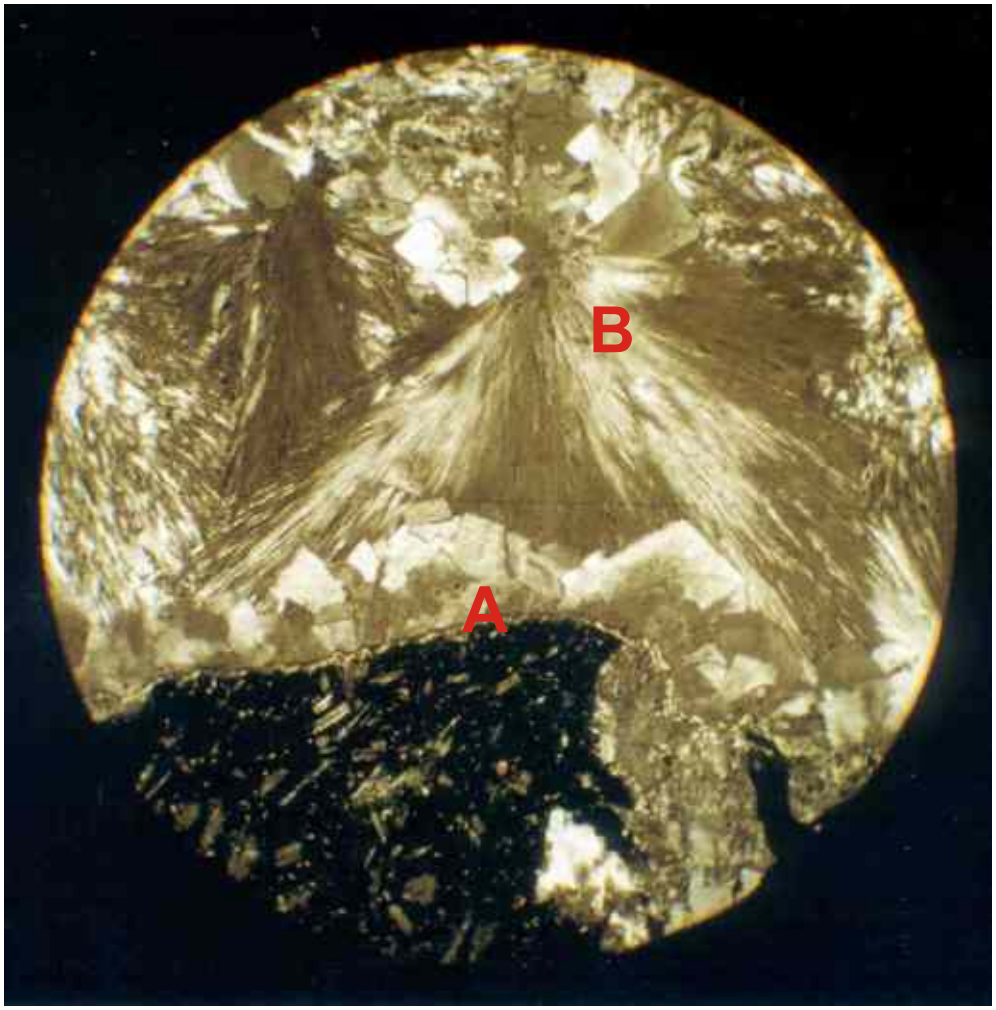
Figure F-1

URS

Landfill 4
Camp Bonneville, Washington

F0072323.00_01.cdr

Thin section view for boring L4-MW03B, 61 feet below ground surface.
Description of the thin section is in the text for Appendix F.



Job No. 33752889

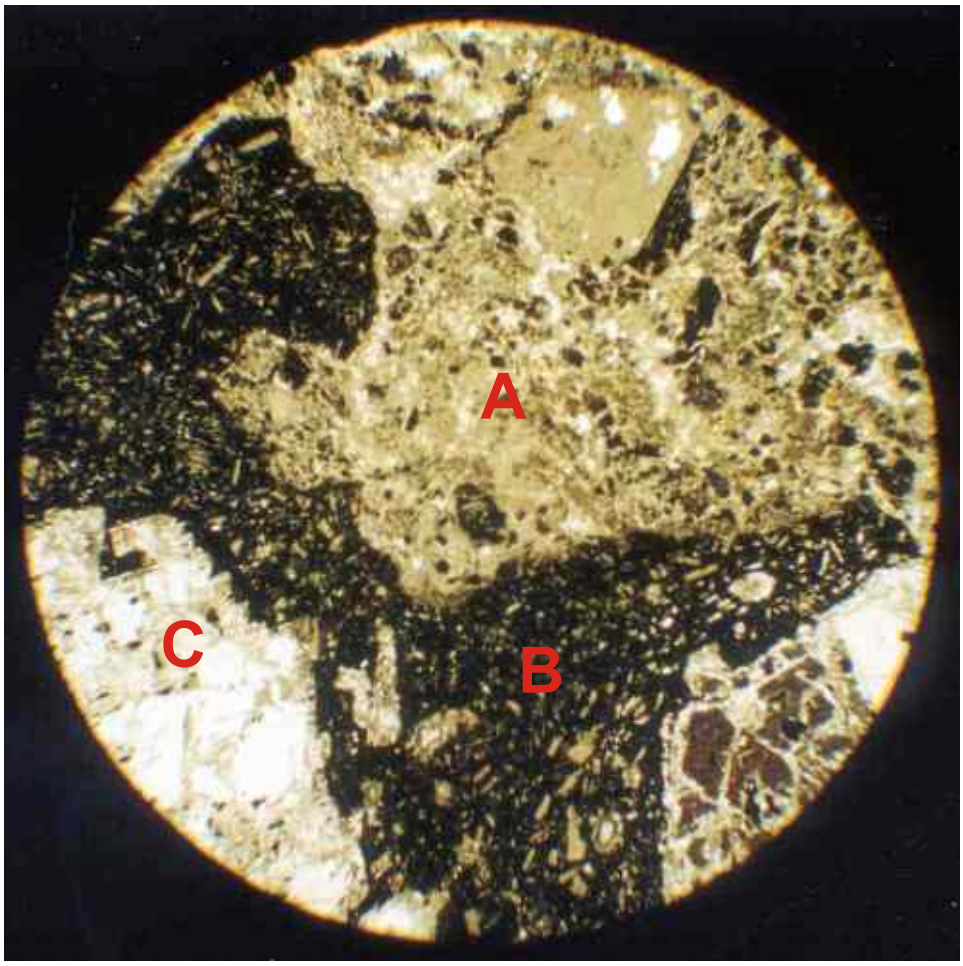
Figure F-2

URS

Landfill 4
Camp Bonneville, Washington

F0072323.00_01.cdr

Thin section view from boring L4-MW03B, 69 feet below ground surface.
Description of the thin section is in the text for Appendix F.



2.5 mm
Magnification 40X

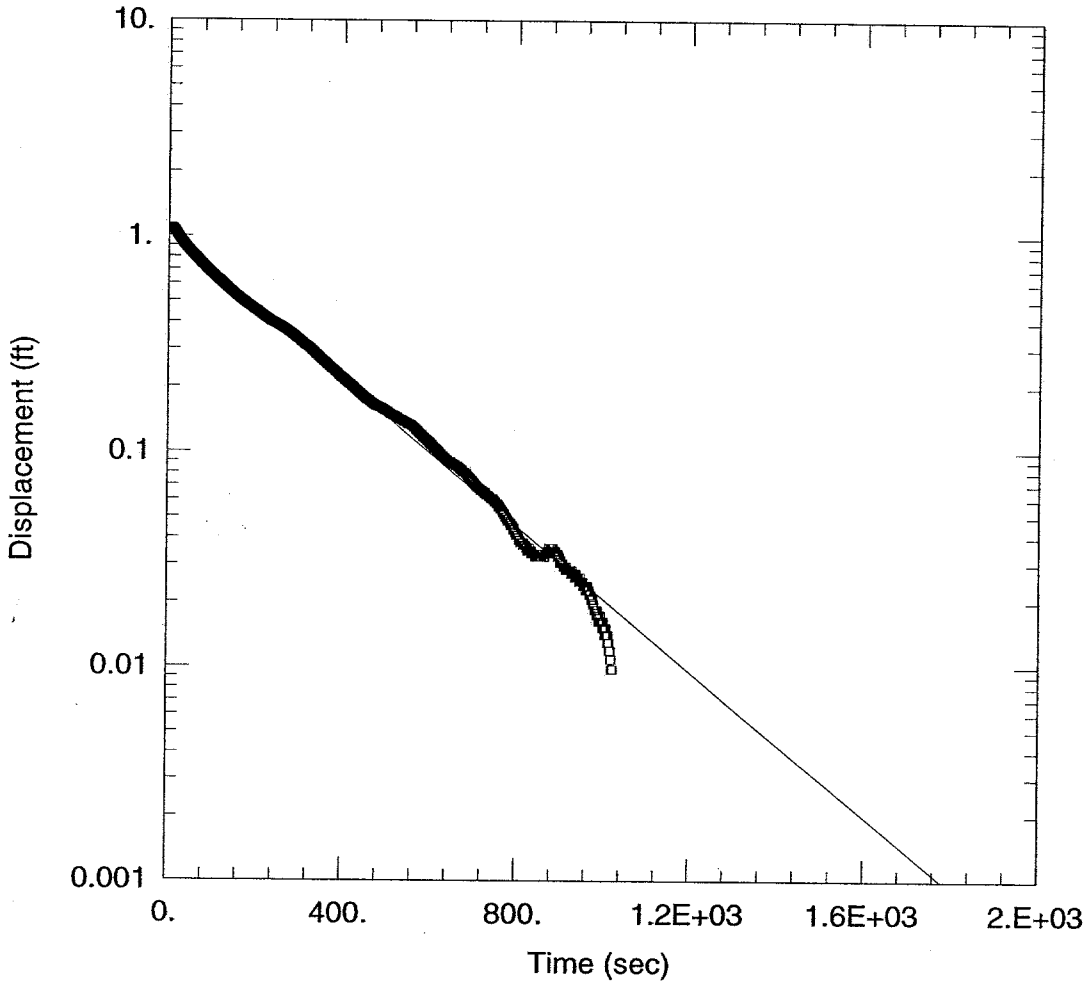
Job No.33752889

Figure F-3

URS

Landfill 4
Camp Bonneville, Washington

Appendix G
Slug Test Displacement/Time Curves



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1AF.AQT
Date: 10/21/02 Time: 08:42:05

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1A Falling Head
Test Date: 4/25/02

AQUIFER DATA

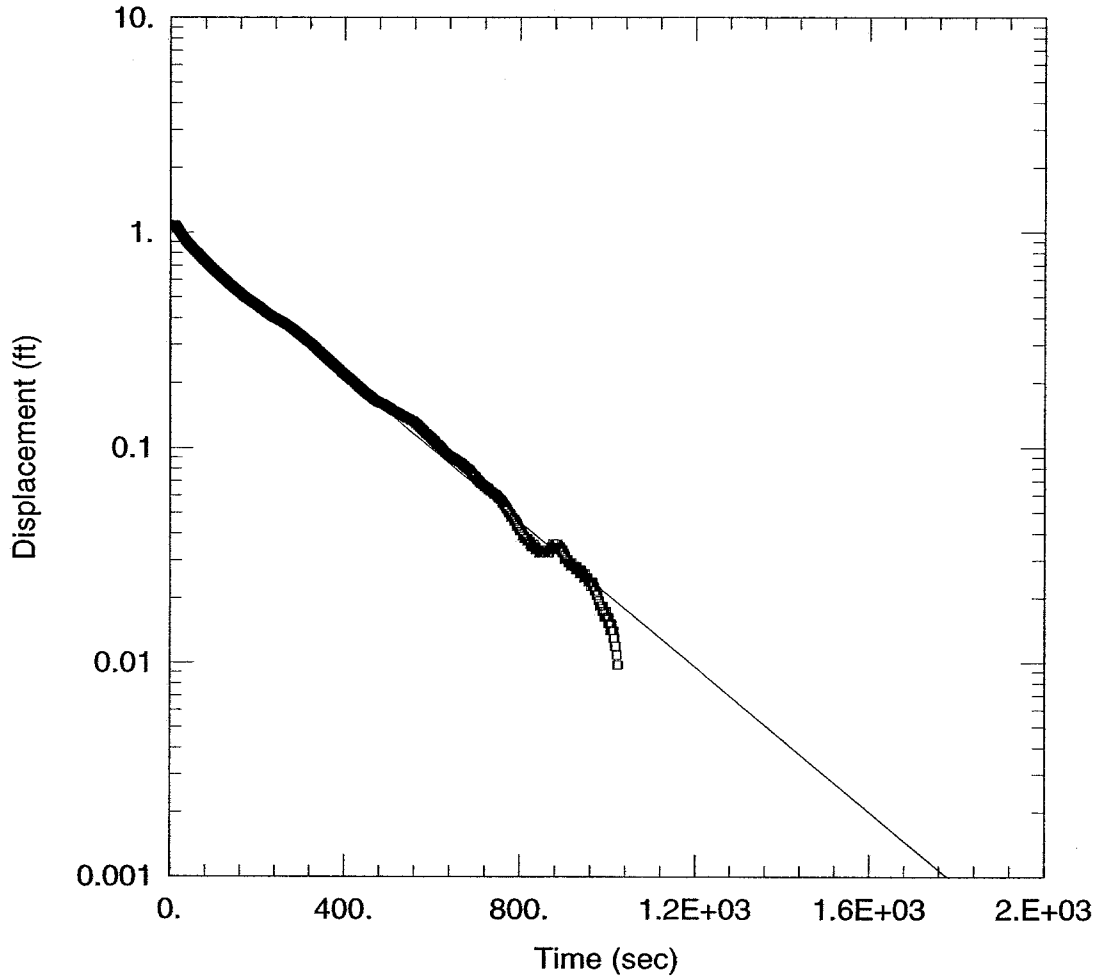
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.08 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0008837 cm/sec
y0 = 1.025 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1AF.AQT
Date: 10/21/02 Time: 08:42:29

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1A Falling Head
Test Date: 4/25/02

AQUIFER DATA

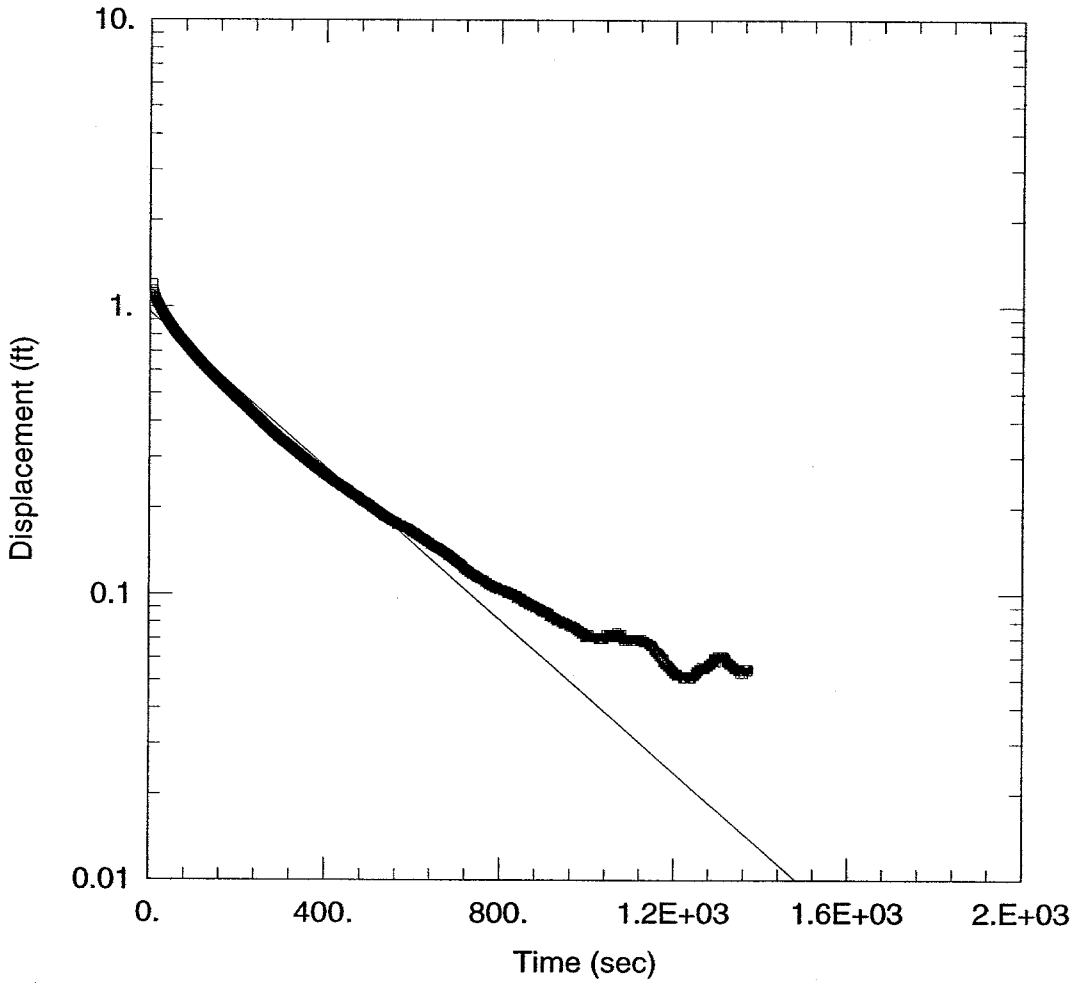
Saturated Thickness: 35. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.08 ft Water Column Height: 15. ft
Casing Radius: 0.1 ft Wellbore Radius: 0.3 ft
Screen Length: 10. ft Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined K = 0.001173 cm/sec
Solution Method: Hvorslev y0 = 1.025 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1AF2.AQT
Date: 10/21/02 Time: 08:56:04

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1A Falling 2
Test Date: 4/25/02

AQUIFER DATA

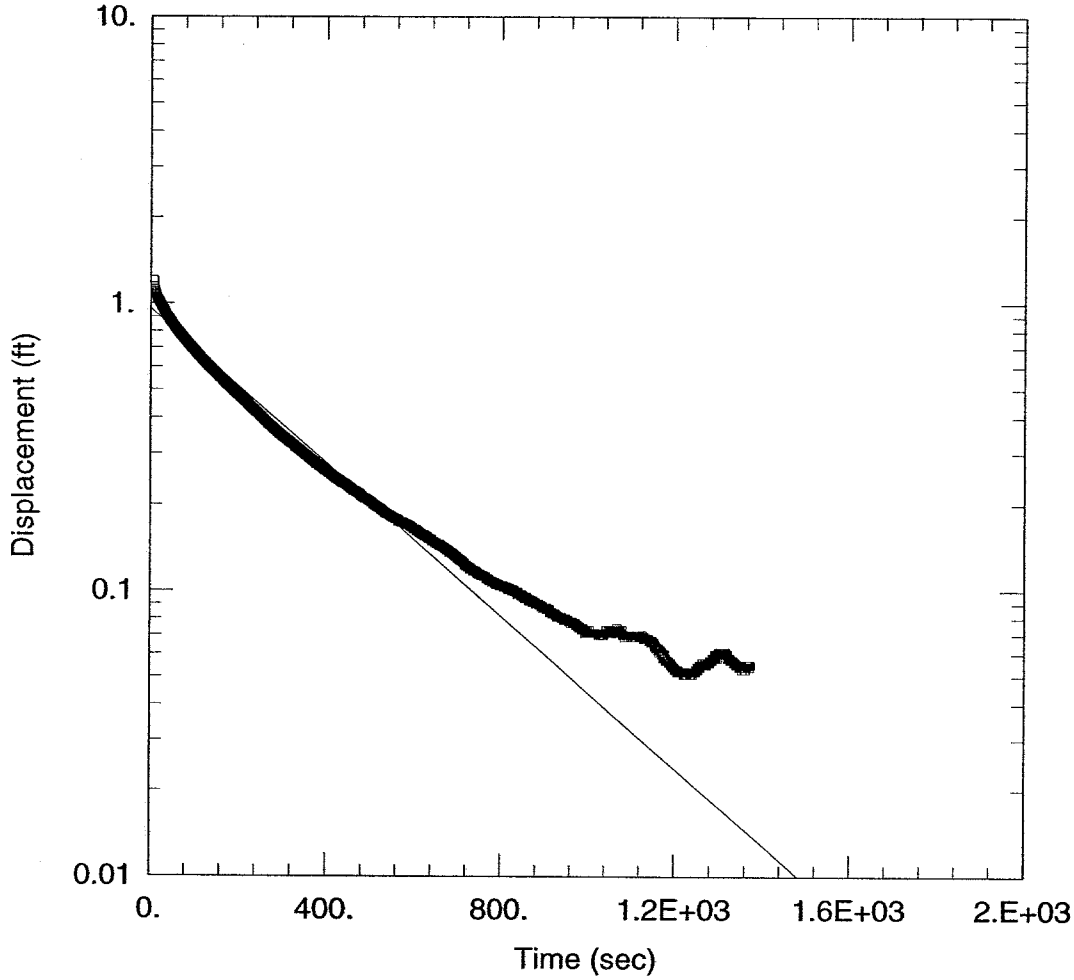
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.1 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0006984 cm/sec
y0 = 0.9592 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1AF2.AQT
Date: 10/21/02 Time: 08:56:25

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1A Falling 2
Test Date: 4/25/02

AQUIFER DATA

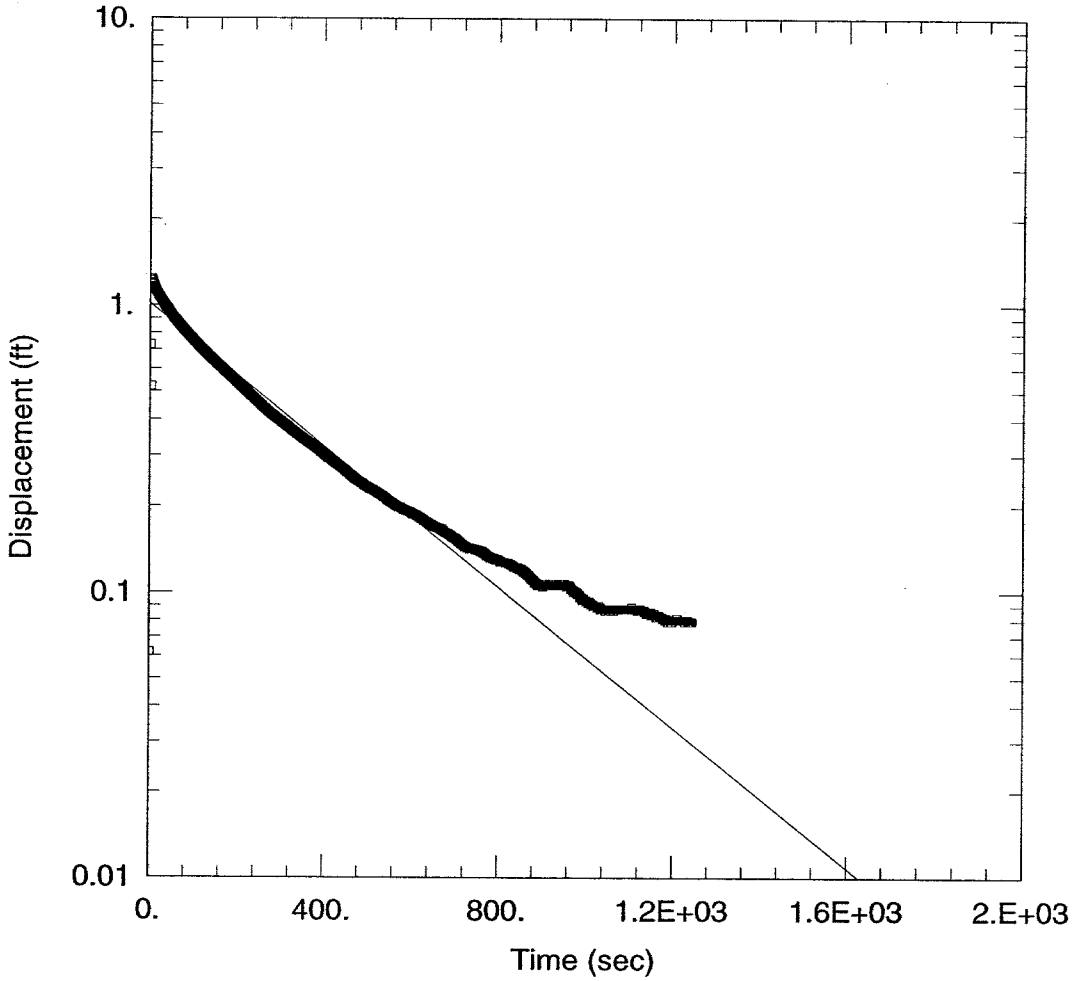
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.1 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.0009271 cm/sec
y0 = 0.9592 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1AR.AQT
Date: 10/21/02 Time: 08:59:26

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1A Rising Head
Test Date: 4/25/02

AQUIFER DATA

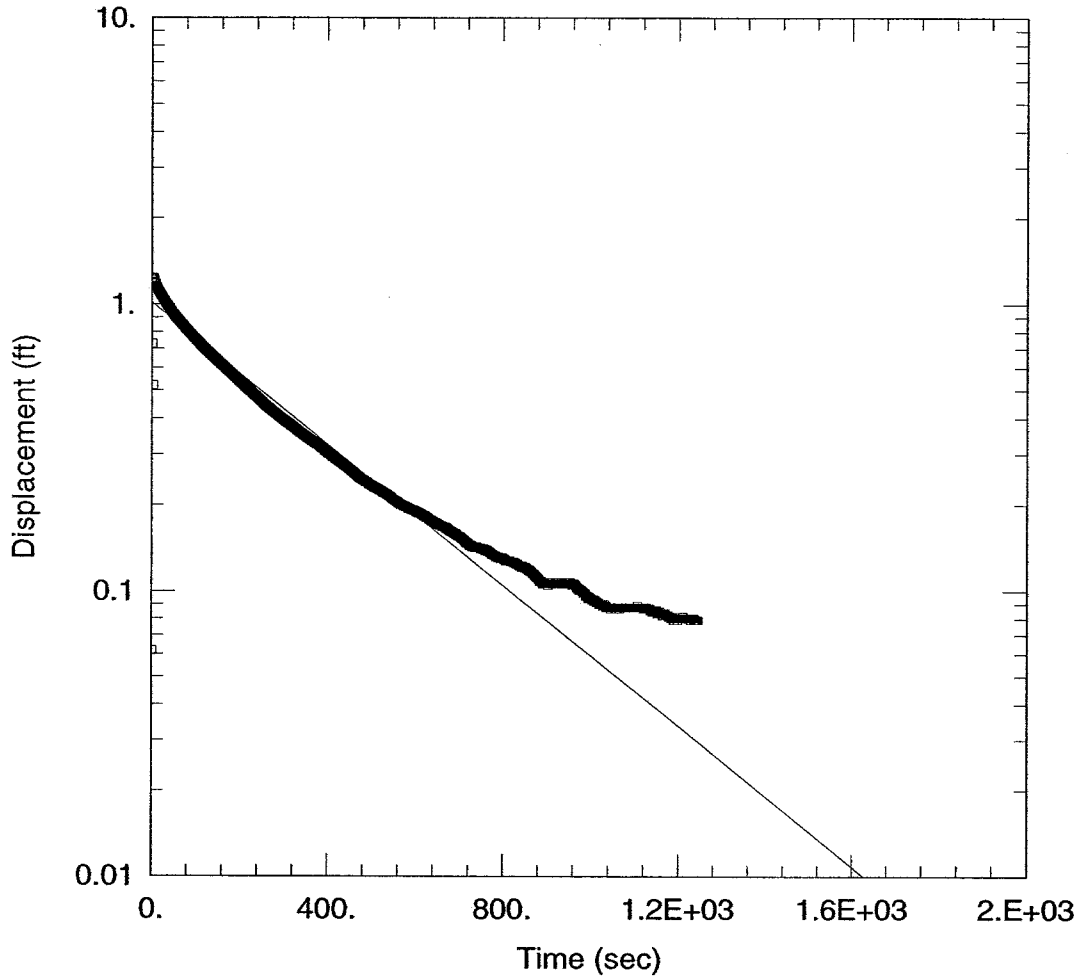
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.235 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0006433 cm/sec
y0 = 1.014 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1AR.AQT
Date: 10/21/02 Time: 08:59:45

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1A Rising Head
Test Date: 4/25/02

AQUIFER DATA

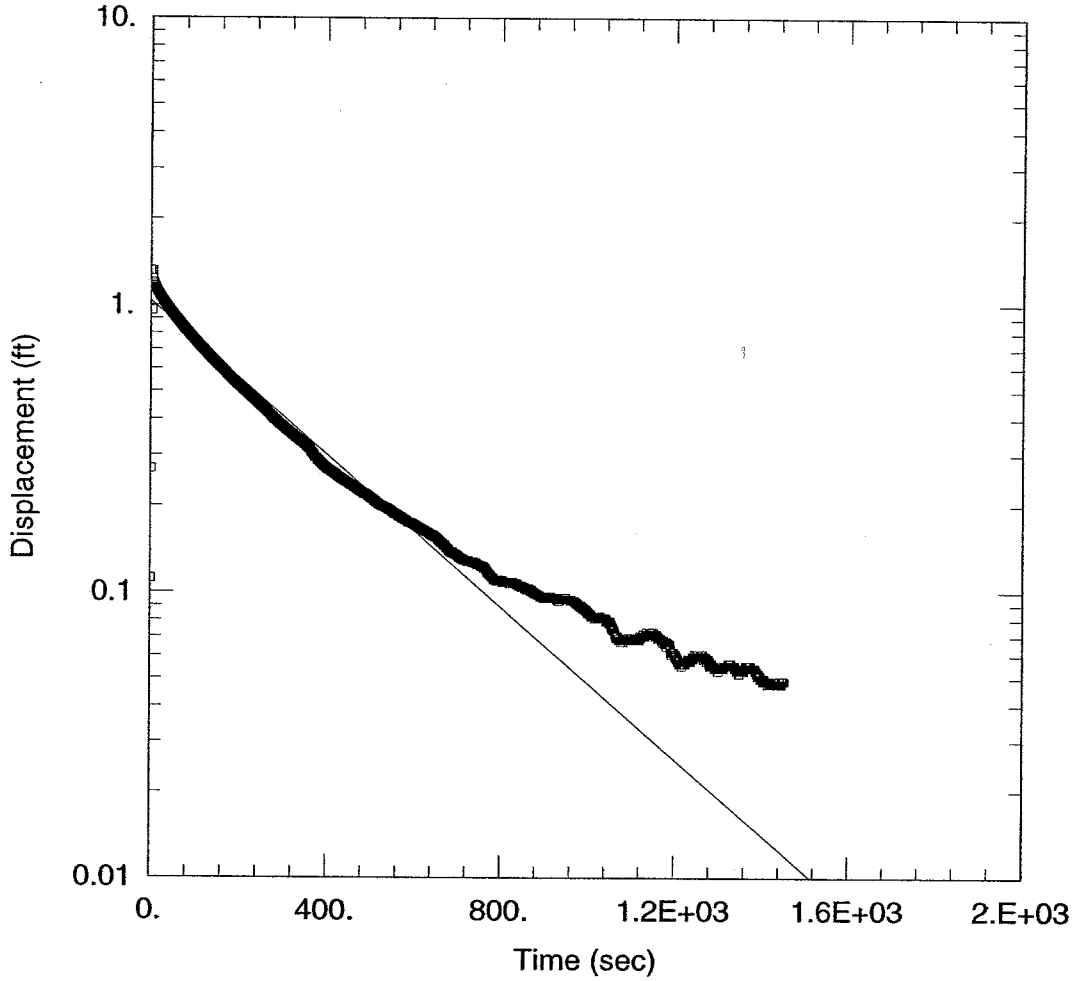
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.235 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.0008541 cm/sec
y0 = 1.014 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1AR2.AQT
Date: 10/21/02 Time: 09:03:05

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1A Rising 2
Test Date: 4/25/02

AQUIFER DATA

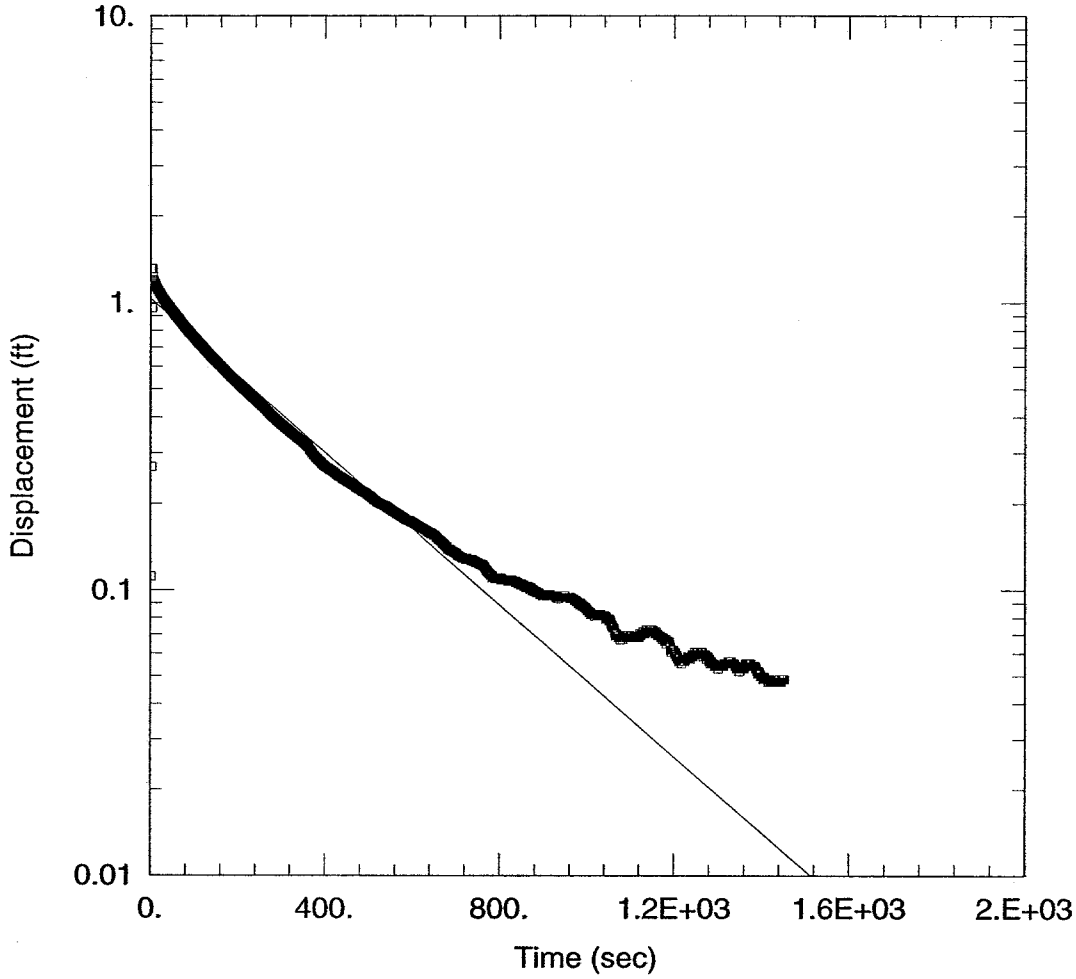
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.313 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.0006948 cm/sec
y0 = 1.031 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1AR2.AQT
Date: 10/21/02 Time: 09:03:26

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1A Rising 2
Test Date: 4/25/02

AQUIFER DATA

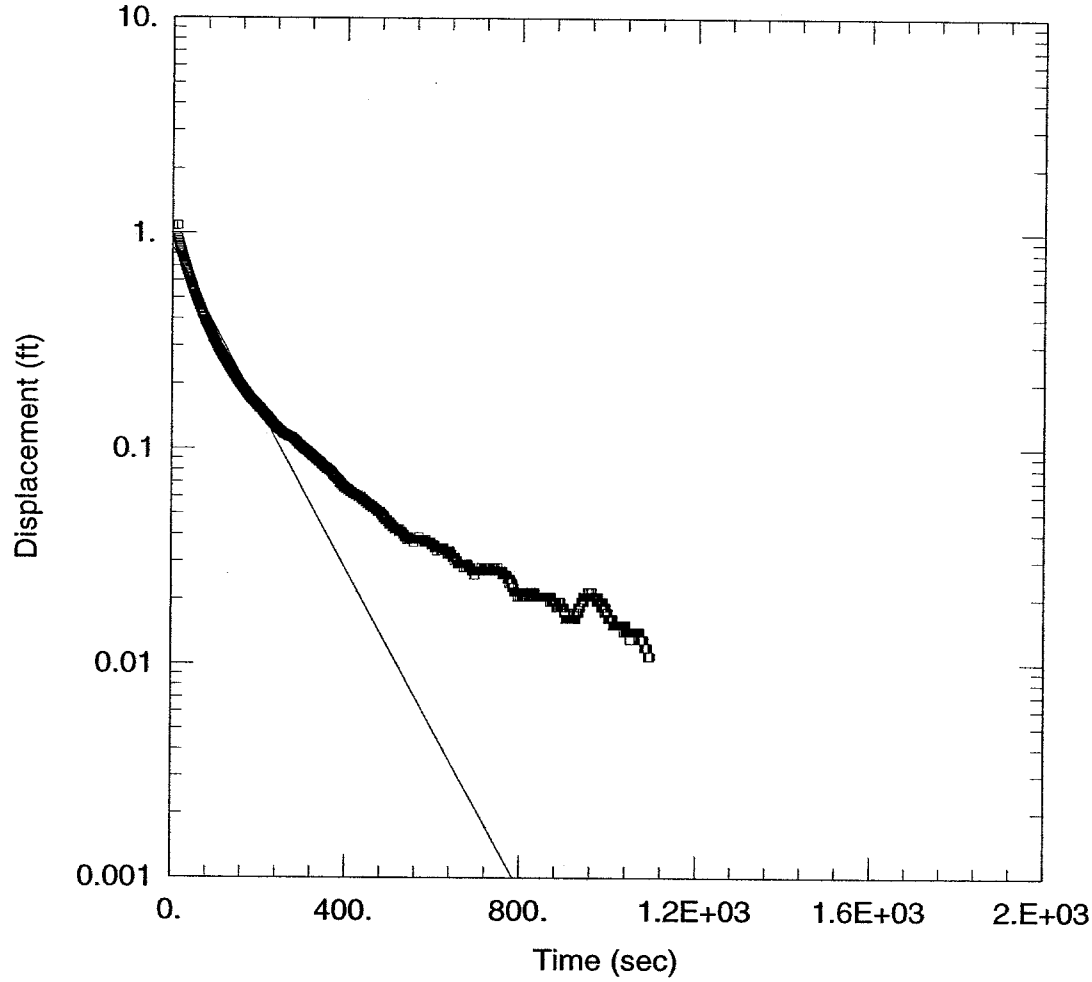
Saturated Thickness: 35. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.313 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.0009225 cm/sec
y0 = 1.031 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2AF.AQT
Date: 10/21/02 Time: 11:01:00

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2A Falling Head
Test Date: 4/25/02

AQUIFER DATA

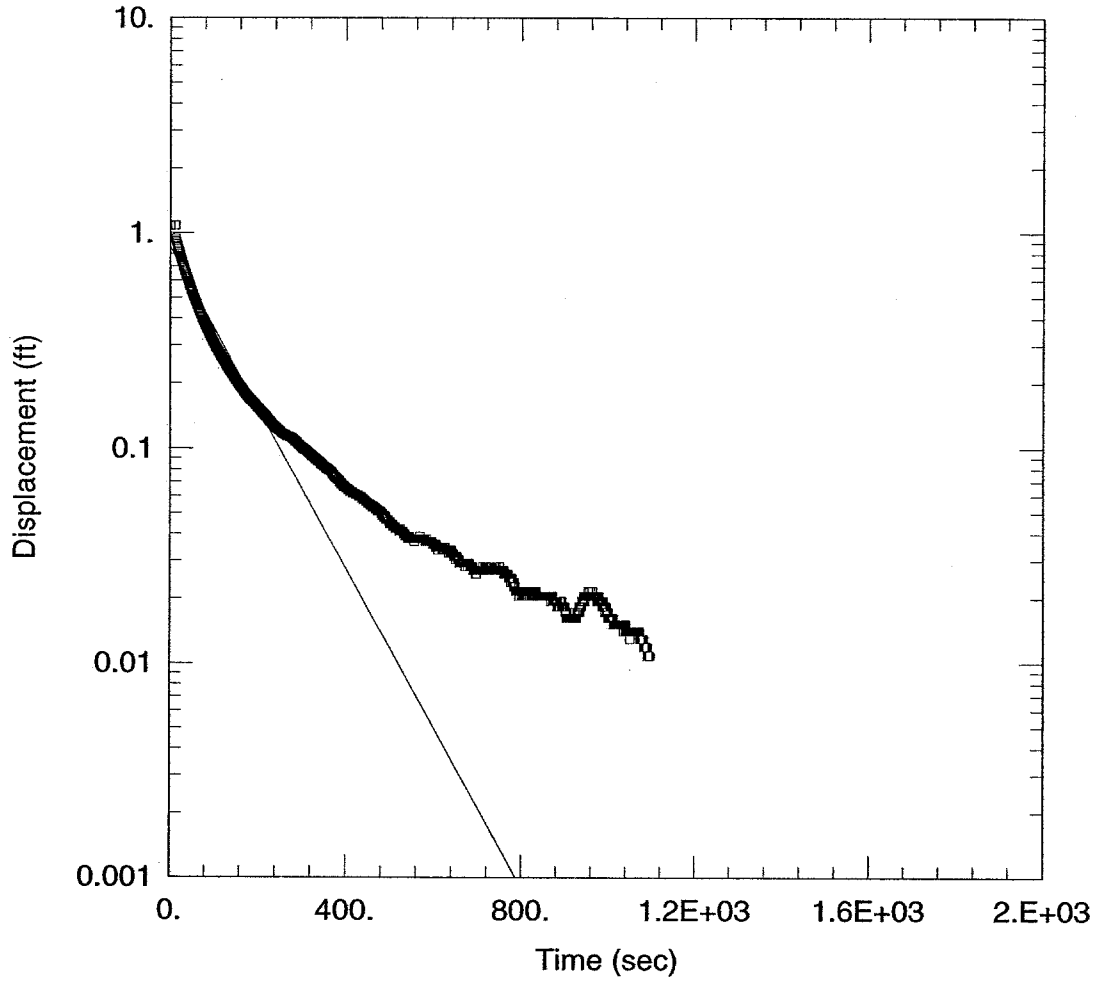
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.08 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.00195 cm/sec
y0 = 0.8615 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2AF.AQT
Date: 10/21/02 Time: 11:01:18

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2A Falling Head
Test Date: 4/25/02

AQUIFER DATA

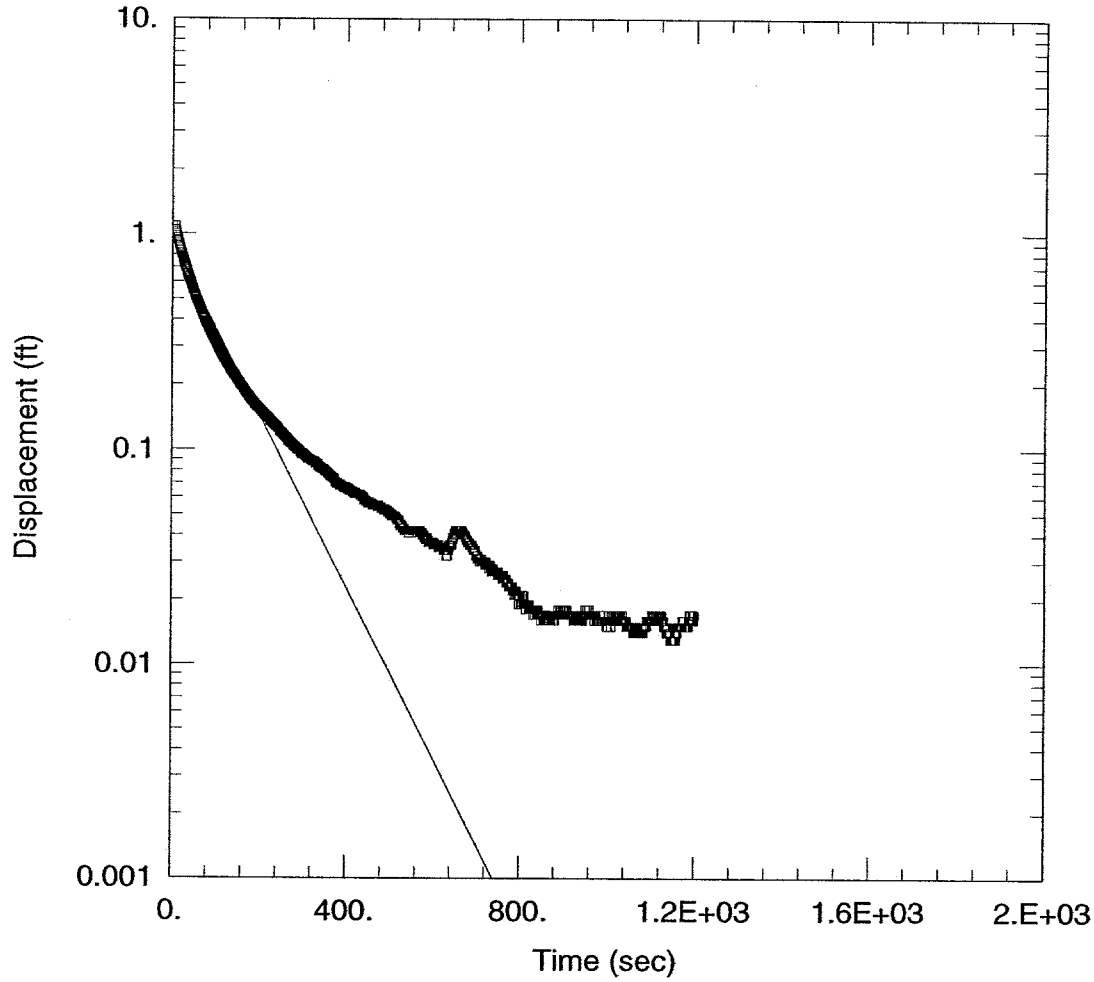
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.08 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.002583 cm/sec
y0 = 0.8604 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2AF2.AQT
Date: 10/21/02 Time: 11:02:46

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2A Falling 2
Test Date: 4/25/02

AQUIFER DATA

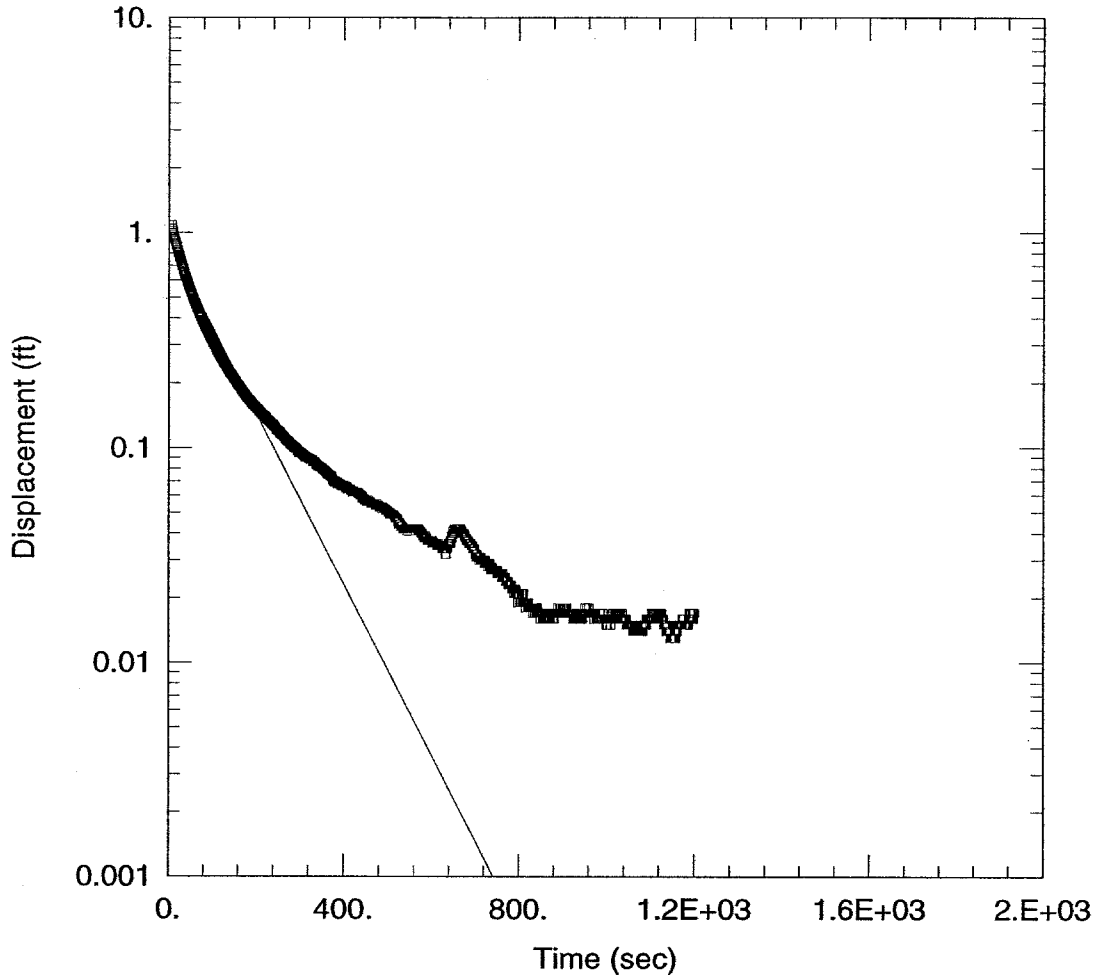
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.084 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.002088 cm/sec
y0 = 0.9179 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2AF2.AQT
Date: 10/21/02 Time: 11:03:06

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2A Falling 2
Test Date: 4/25/02

AQUIFER DATA

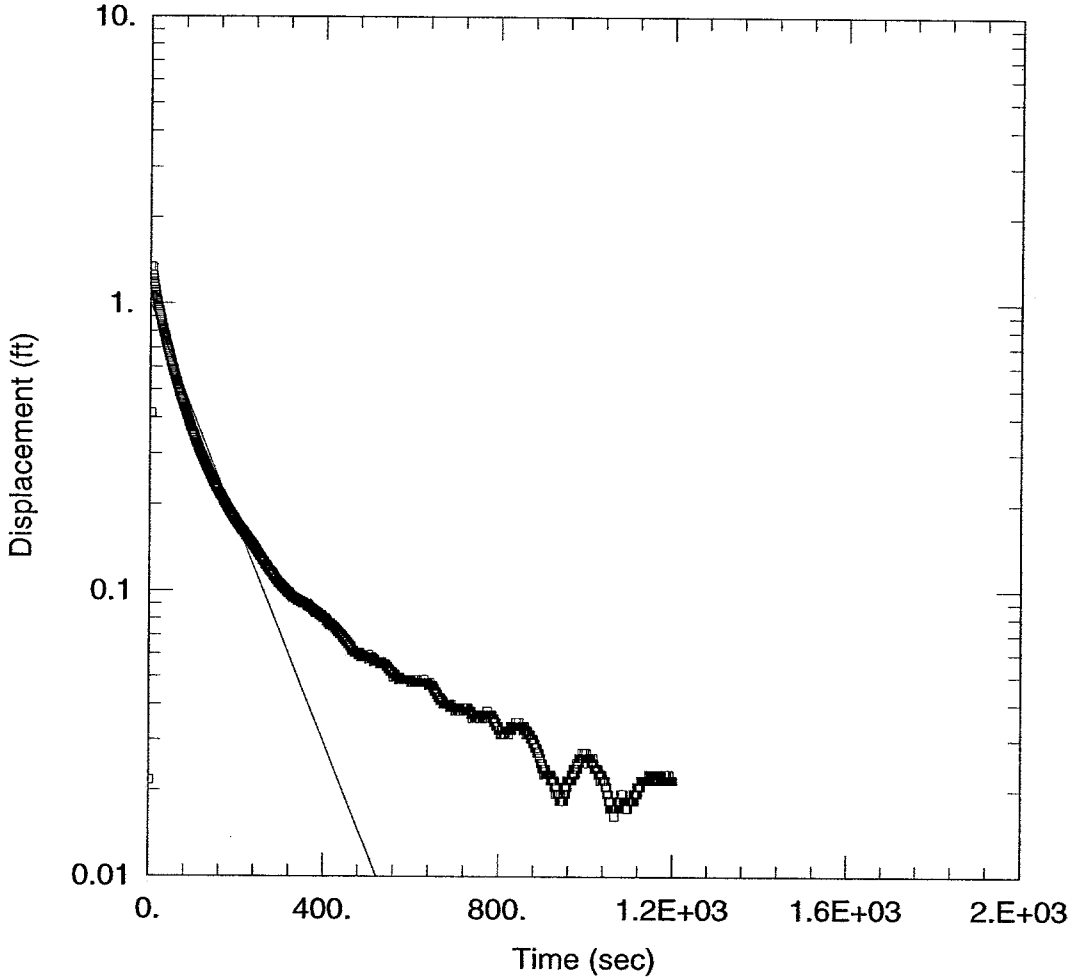
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.084 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.002767 cm/sec
y0 = 0.9168 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2AR.AQT
Date: 10/21/02 Time: 09:32:20

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2A Rising Head
Test Date: 4/25/02

AQUIFER DATA

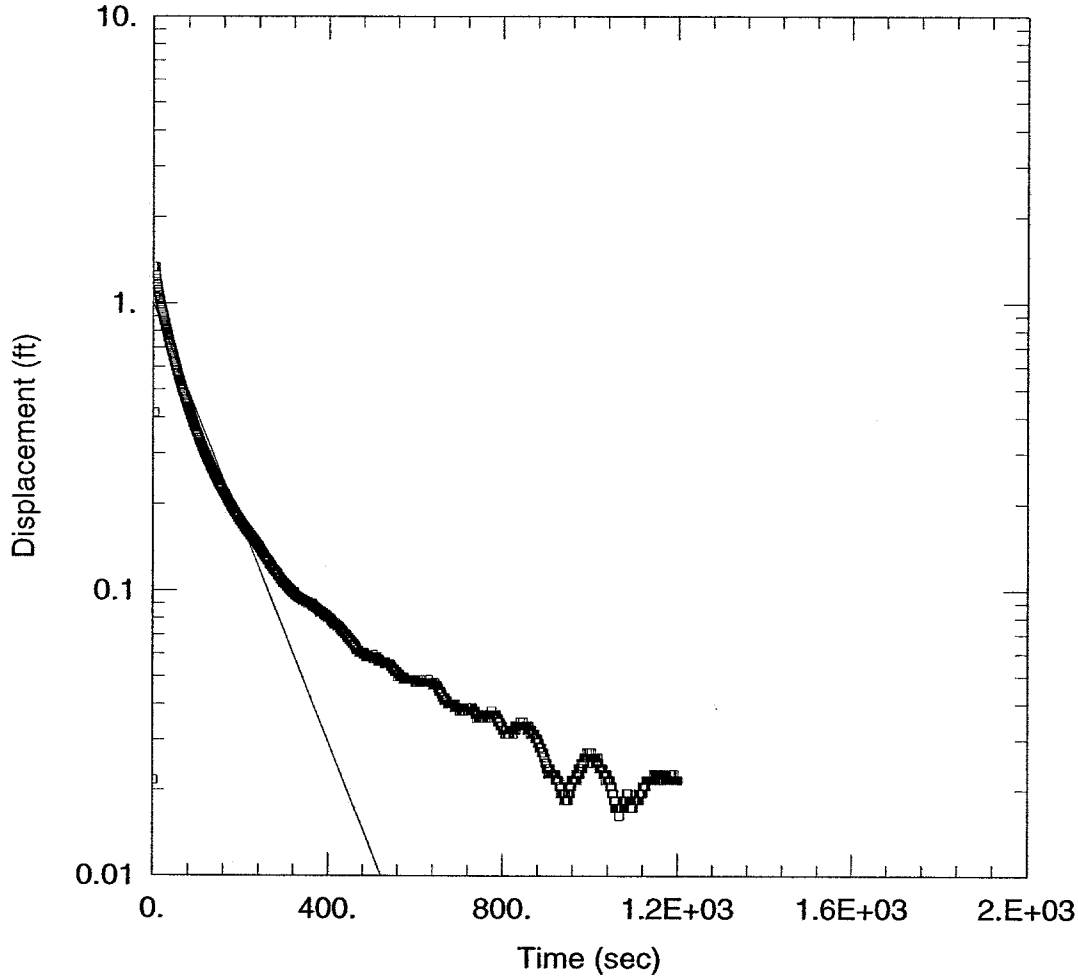
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.337 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.001996 cm/sec
y0 = 0.9987 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2AR.AQT
Date: 10/21/02 Time: 09:32:39

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2A Rising Head
Test Date: 4/25/02

AQUIFER DATA

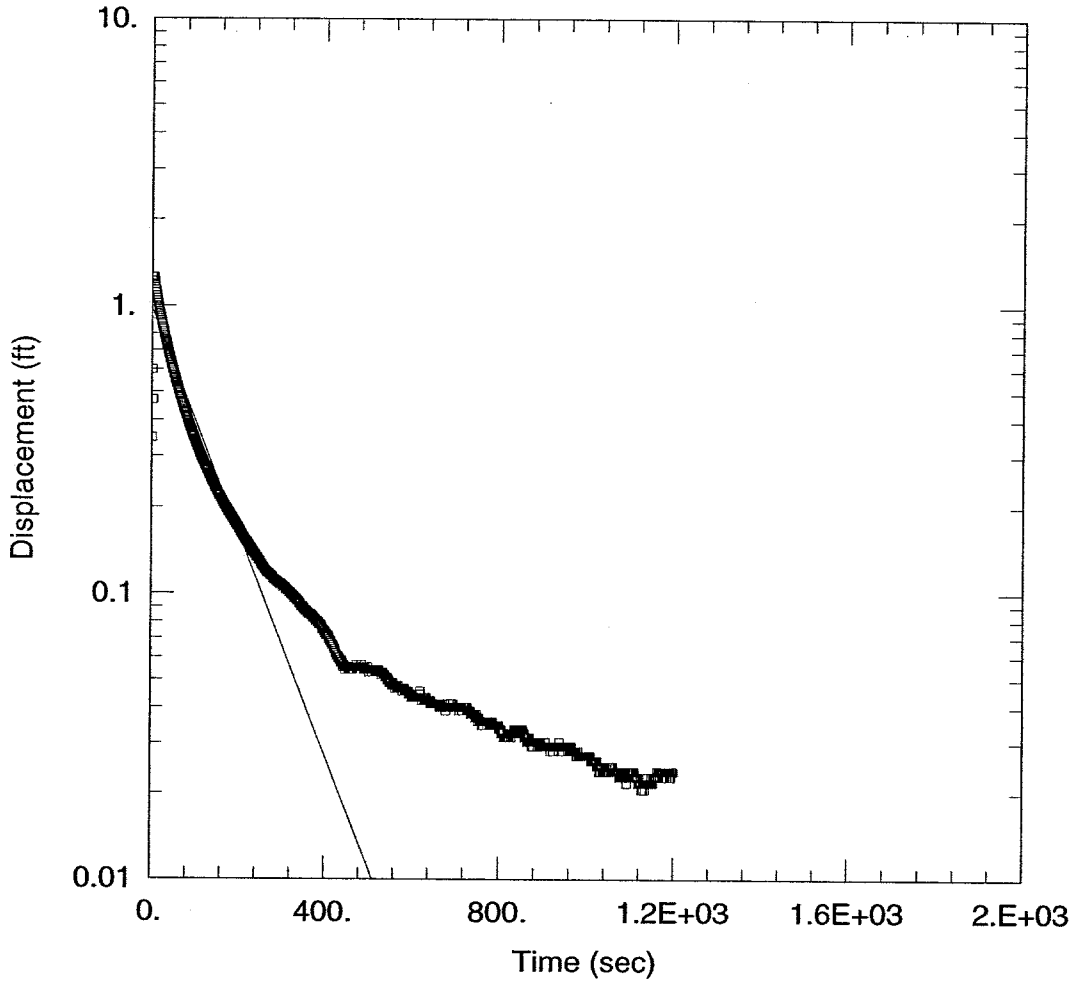
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.337 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.00265 cm/sec
y0 = 0.9987 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2AR2.AQT
Date: 10/21/02 Time: 09:35:27

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2A Rising 2
Test Date: 4/25/02

AQUIFER DATA

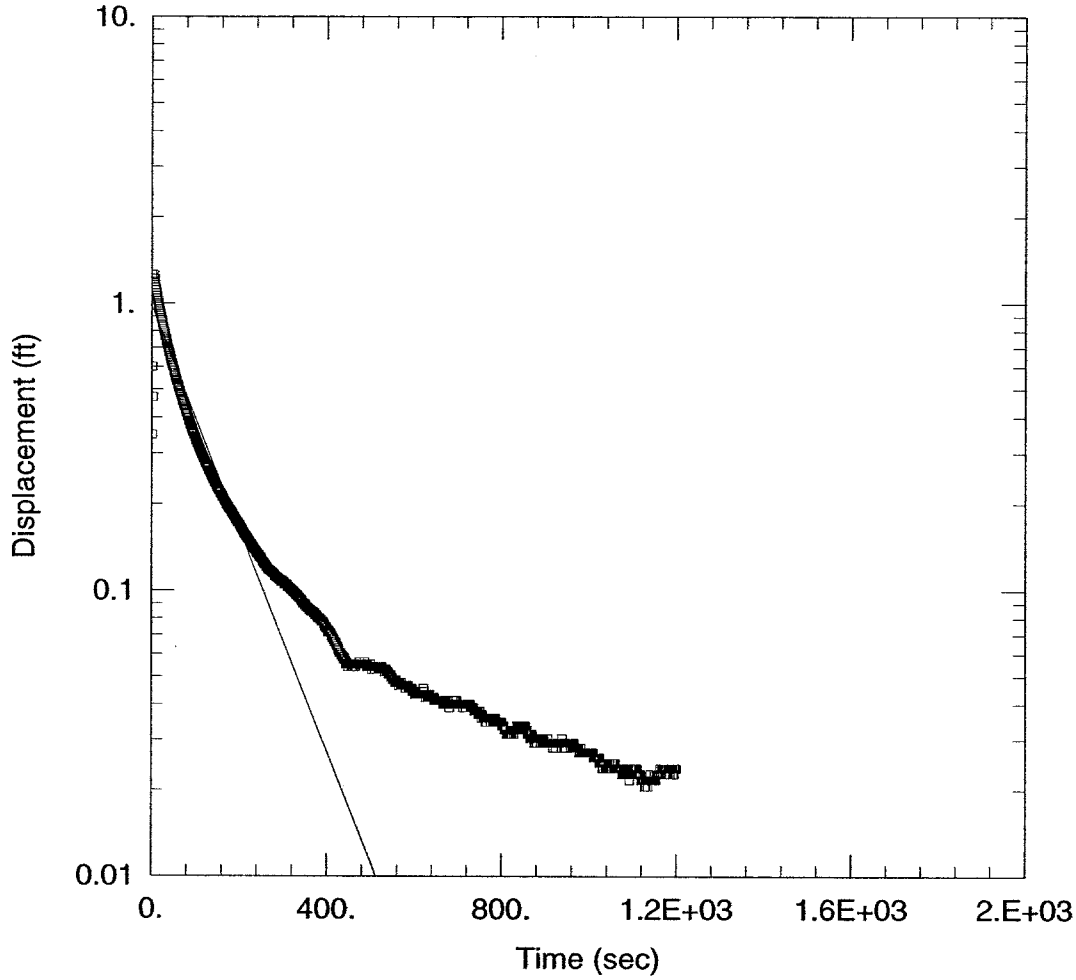
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.257 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.002028 cm/sec
y0 = 0.9789 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2AR2.AQT
Date: 10/21/02 Time: 09:35:46

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2A Rising 2
Test Date: 4/25/02

AQUIFER DATA

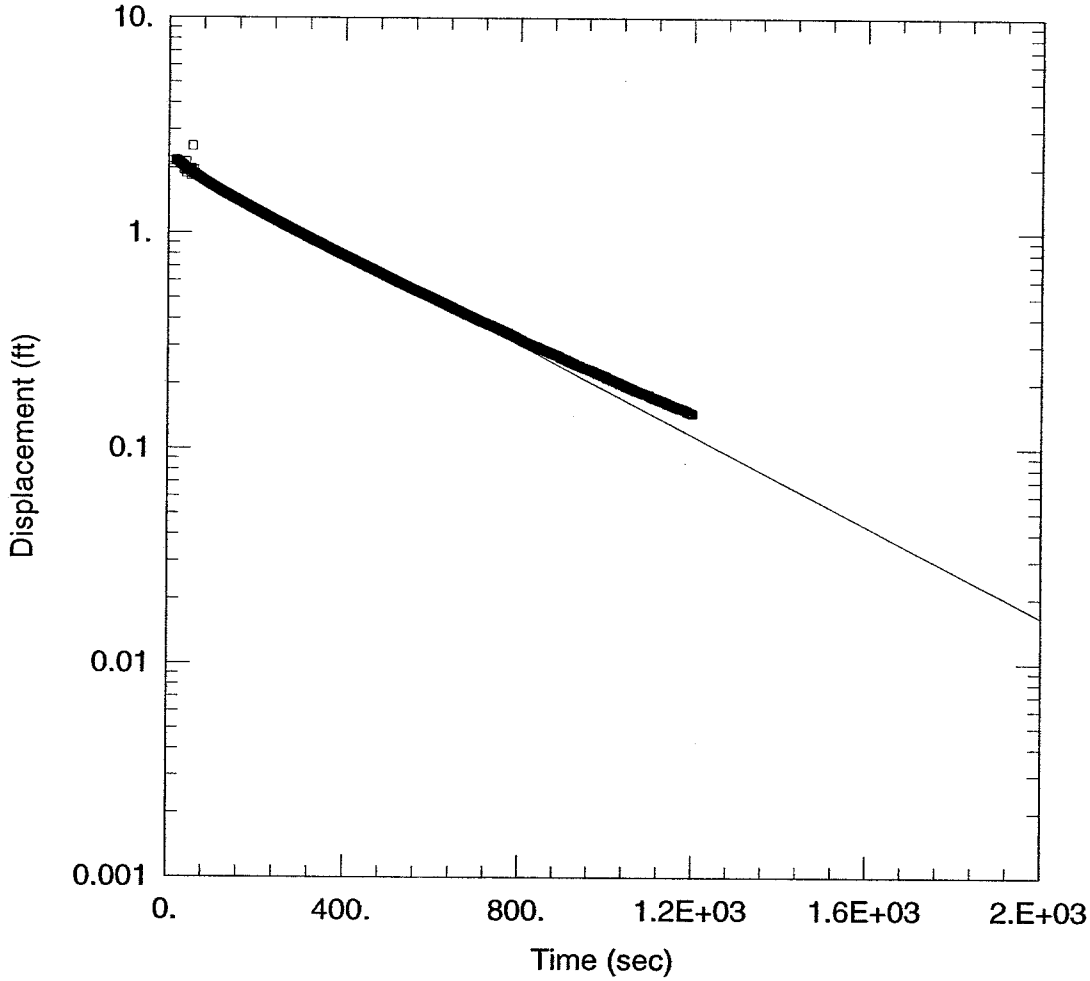
Saturated Thickness: 35. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.257 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.002693 cm/sec
y0 = 0.9789 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW5AF.AQT
Date: 10/21/02 Time: 11:05:17

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-5A Falling Head
Test Date: 4/24/02

AQUIFER DATA

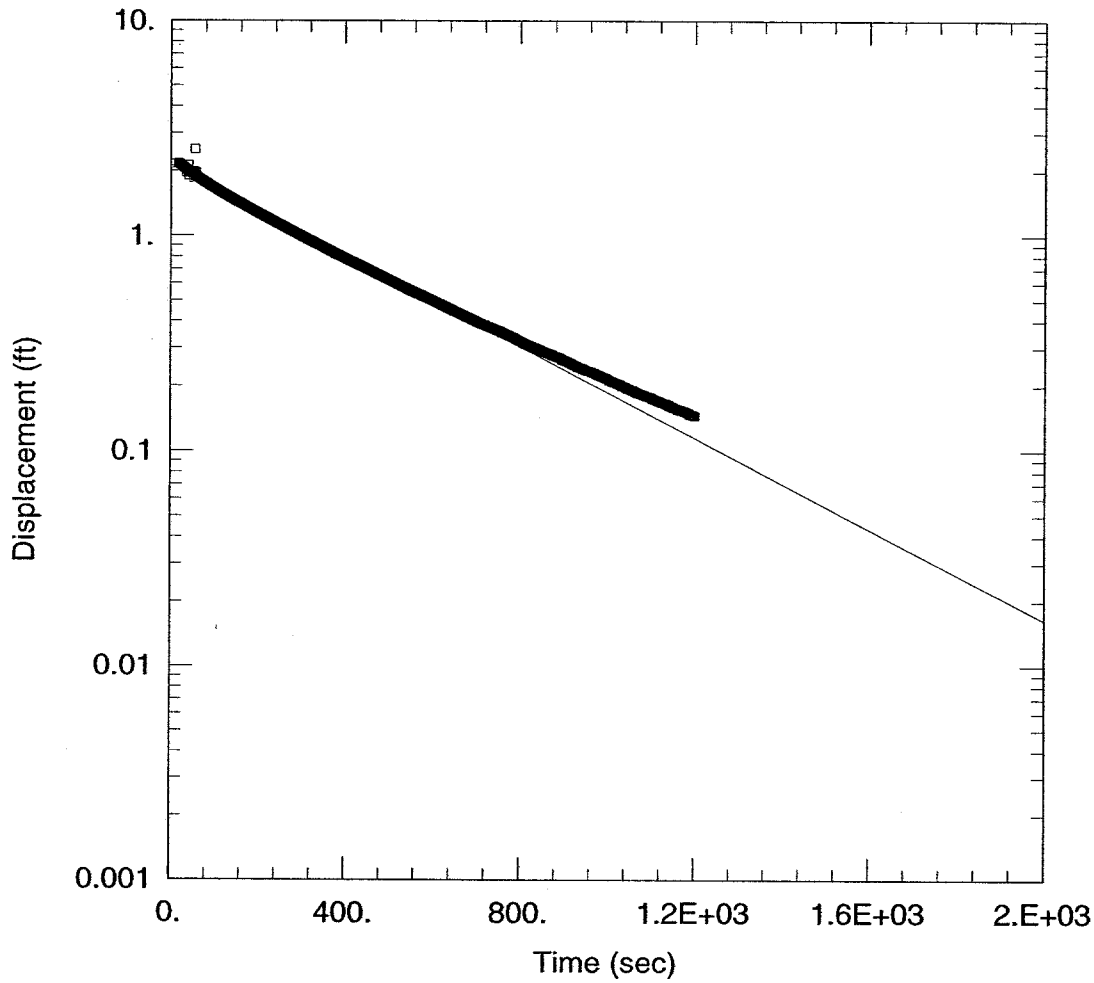
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.16 ft
Casing Radius: 0.1 ft
Screen Length: 5. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.001178 cm/sec
y0 = 2.135 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW5AF.AQT
Date: 10/21/02 Time: 11:05:35

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-5A Falling Head
Test Date: 4/24/02

AQUIFER DATA

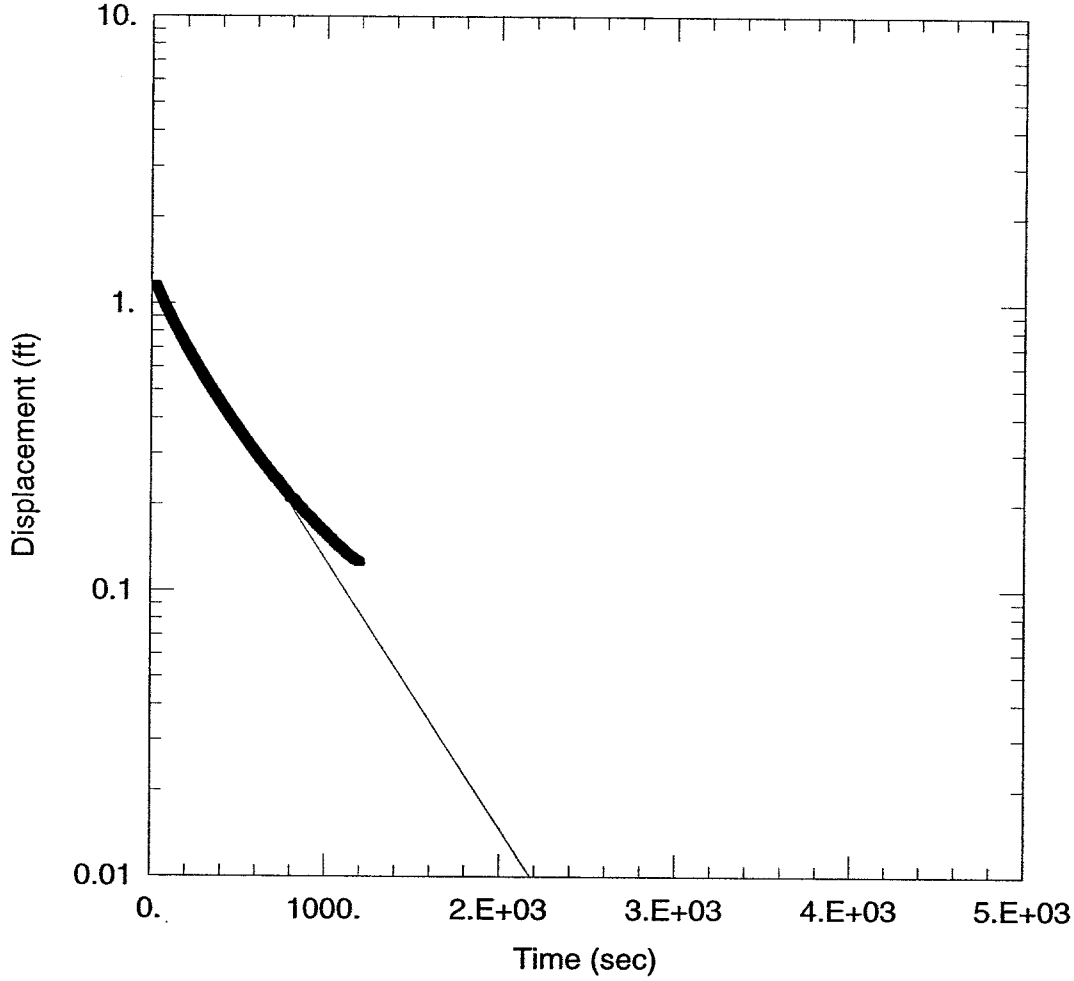
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.16 ft
Casing Radius: 0.1 ft
Screen Length: 5. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.00129 cm/sec
y0 = 2.135 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW5AF2.AQT
Date: 10/21/02 Time: 11:07:10

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-5A Falling 2
Test Date: 4/23/02

AQUIFER DATA

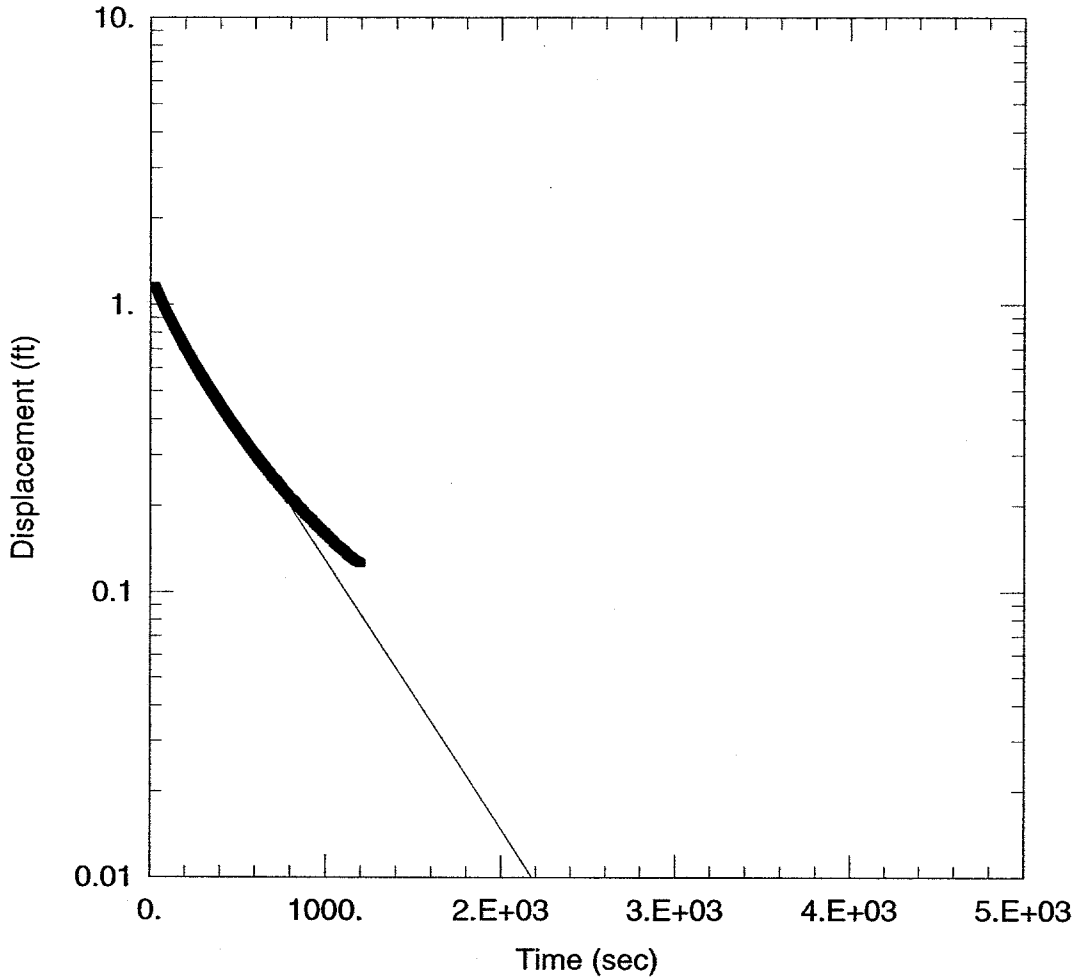
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.137 ft
Casing Radius: 0.1 ft
Screen Length: 5. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.001052 cm/sec
y0 = 1.132 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW5AF2.AQT
Date: 10/21/02 Time: 11:07:27

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-5A Falling 2
Test Date: 4/23/02

AQUIFER DATA

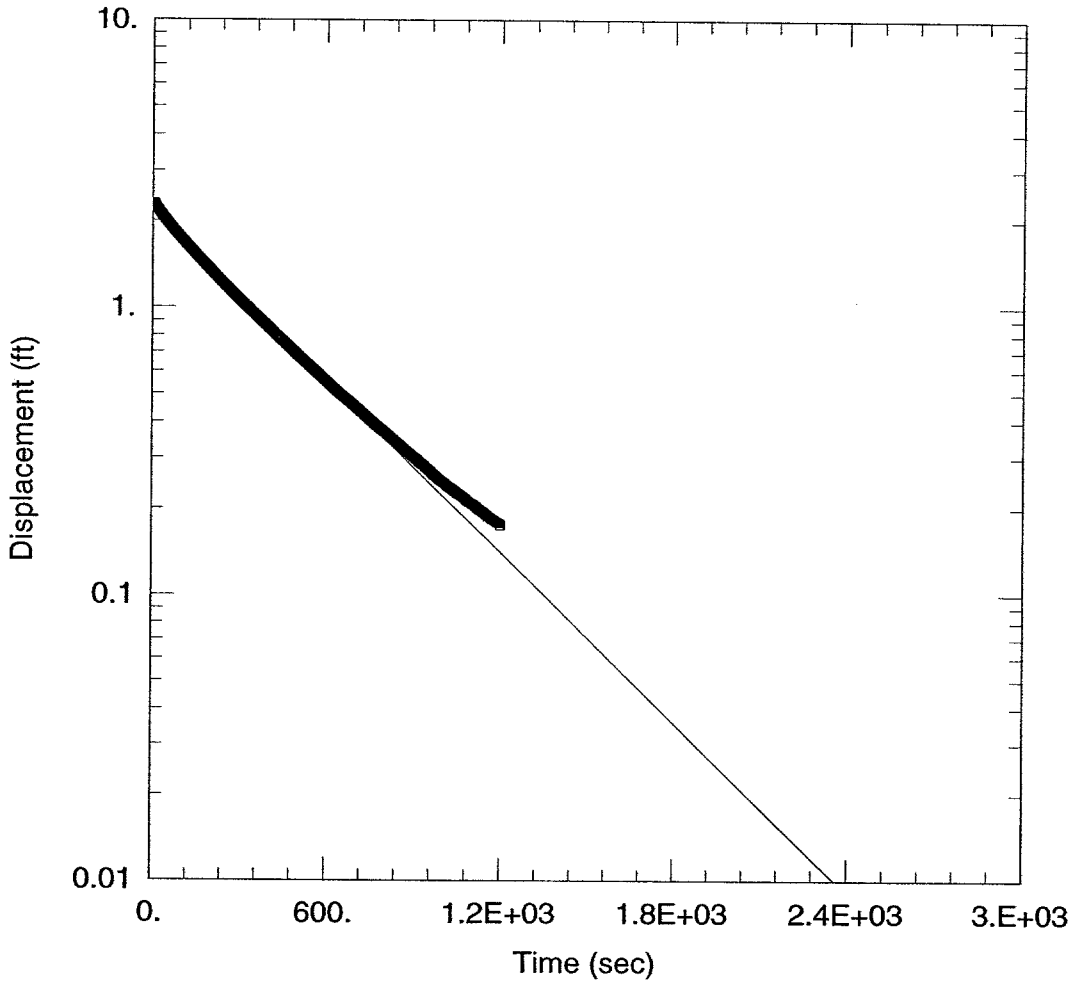
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.137 ft
Casing Radius: 0.1 ft
Screen Length: 5. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.001151 cm/sec
y0 = 1.132 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW5AR.AQT
Date: 10/21/02 Time: 11:09:24

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-5A Rising Head
Test Date: 4/24/02

AQUIFER DATA

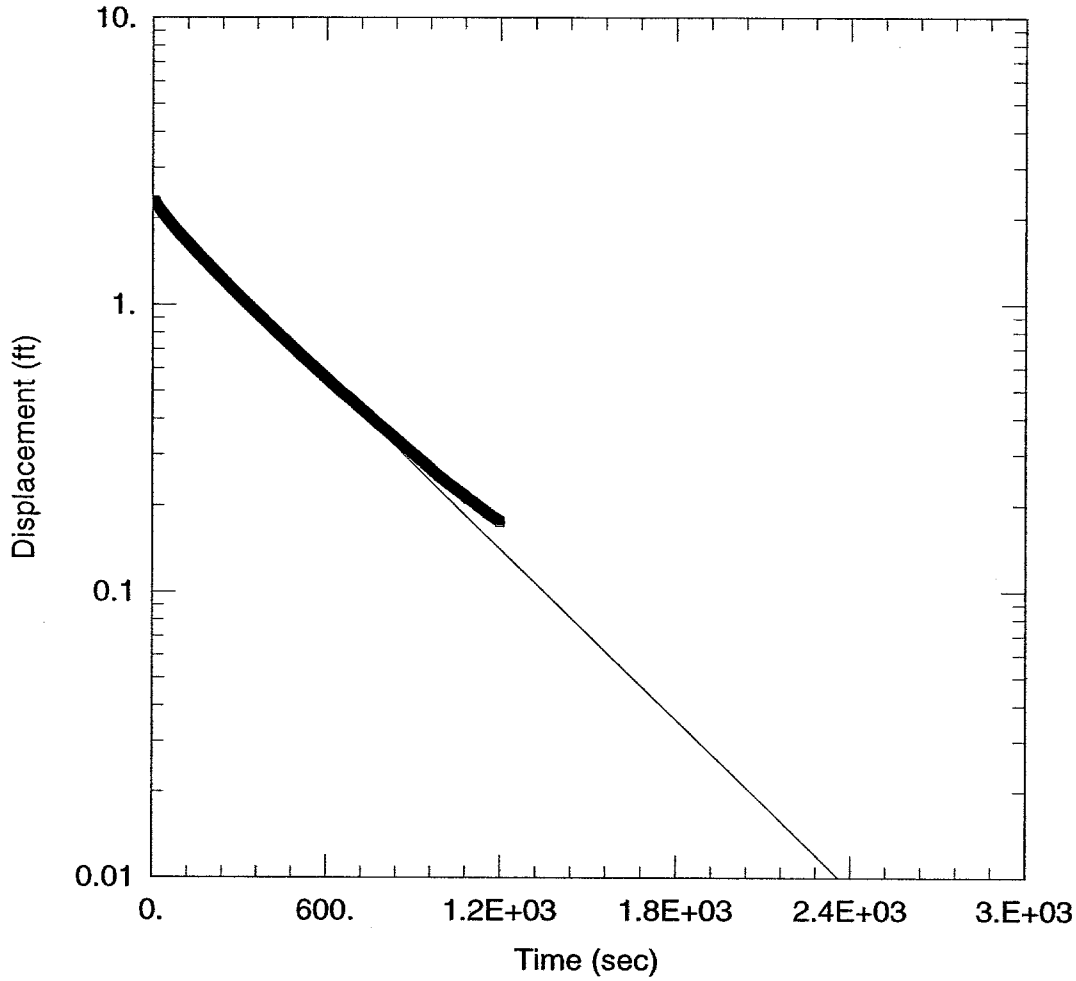
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.306 ft
Casing Radius: 0.1 ft
Screen Length: 5. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.001105 cm/sec
y0 = 2.181 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW5AR.AQT
Date: 10/21/02 Time: 11:09:41

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-5A Rising Head
Test Date: 4/24/02

AQUIFER DATA

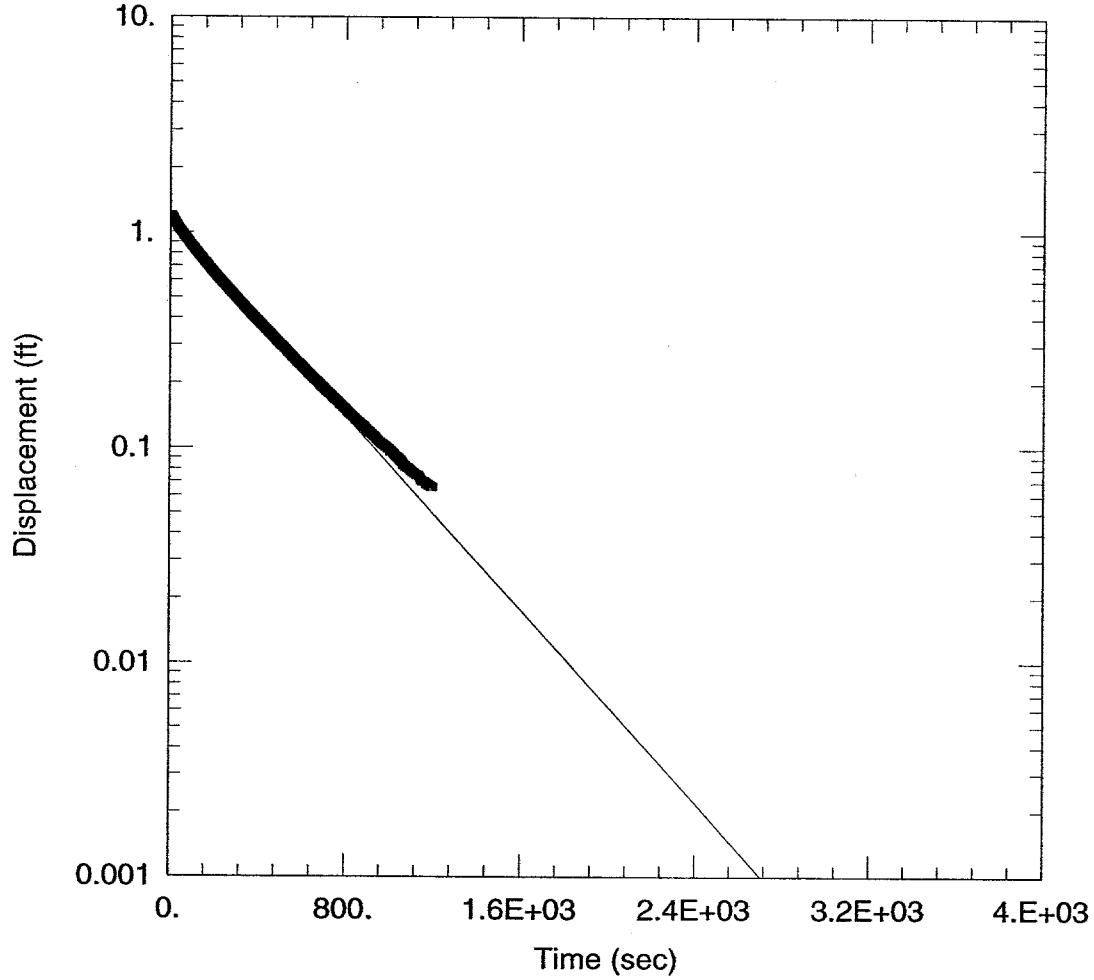
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.306 ft
Casing Radius: 0.1 ft
Screen Length: 5. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Hvorslev
K = 0.00121 cm/sec
y0 = 2.181 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW5AR2.AQT
Date: 10/21/02 Time: 11:10:56

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-5A Rising 2
Test Date: 4/23/02

AQUIFER DATA

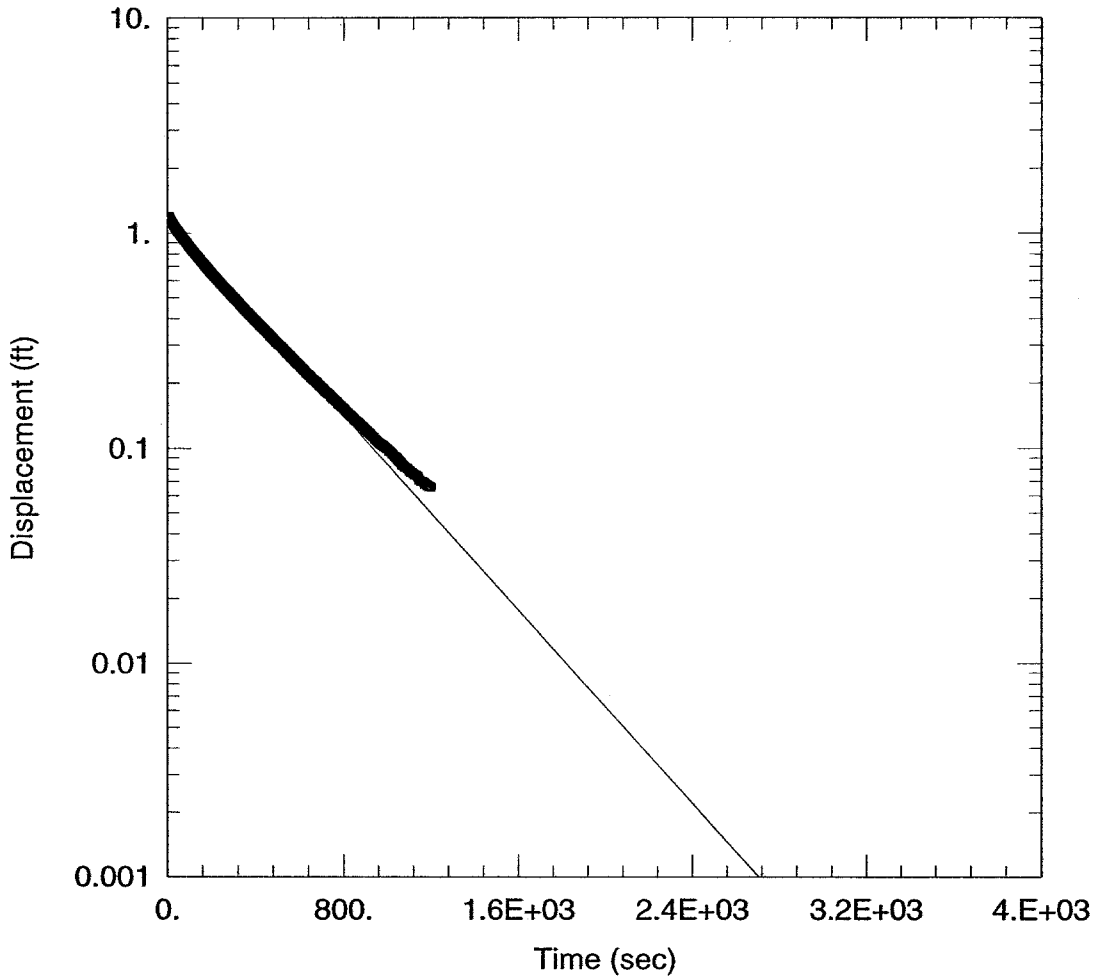
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.195 ft
Casing Radius: 0.1 ft
Screen Length: 5. ft
Water Column Height: 15. ft
Wellbore Radius: 0.3 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined
Solution Method: Bouwer-Rice
K = 0.001258 cm/sec
y0 = 1.129 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW5AR2.AQT
Date: 10/21/02 Time: 11:11:12

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-5A Rising 2
Test Date: 4/23/02

AQUIFER DATA

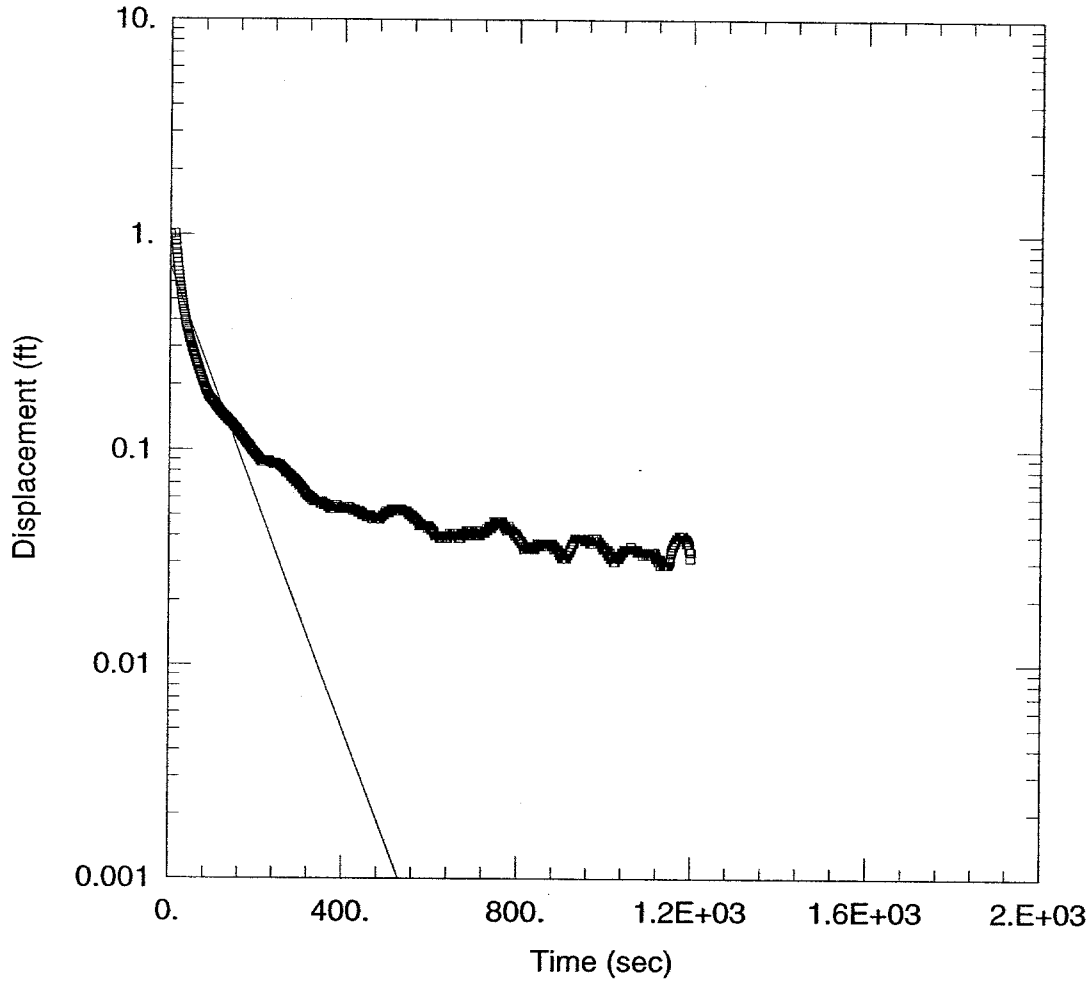
Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.195 ft Water Column Height: 15. ft
Casing Radius: 0.1 ft Wellbore Radius: 0.3 ft
Screen Length: 5. ft Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Unconfined K = 0.001377 cm/sec
Solution Method: Hvorslev y0 = 1.129 ft



BOUWER-RICE

Data Set: S:\TMM\BONNEV~1\MW1BF.AQT
Date: 10/22/02 Time: 10:25:13

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Falling Head
Test Date: 4/24/02

AQUIFER DATA

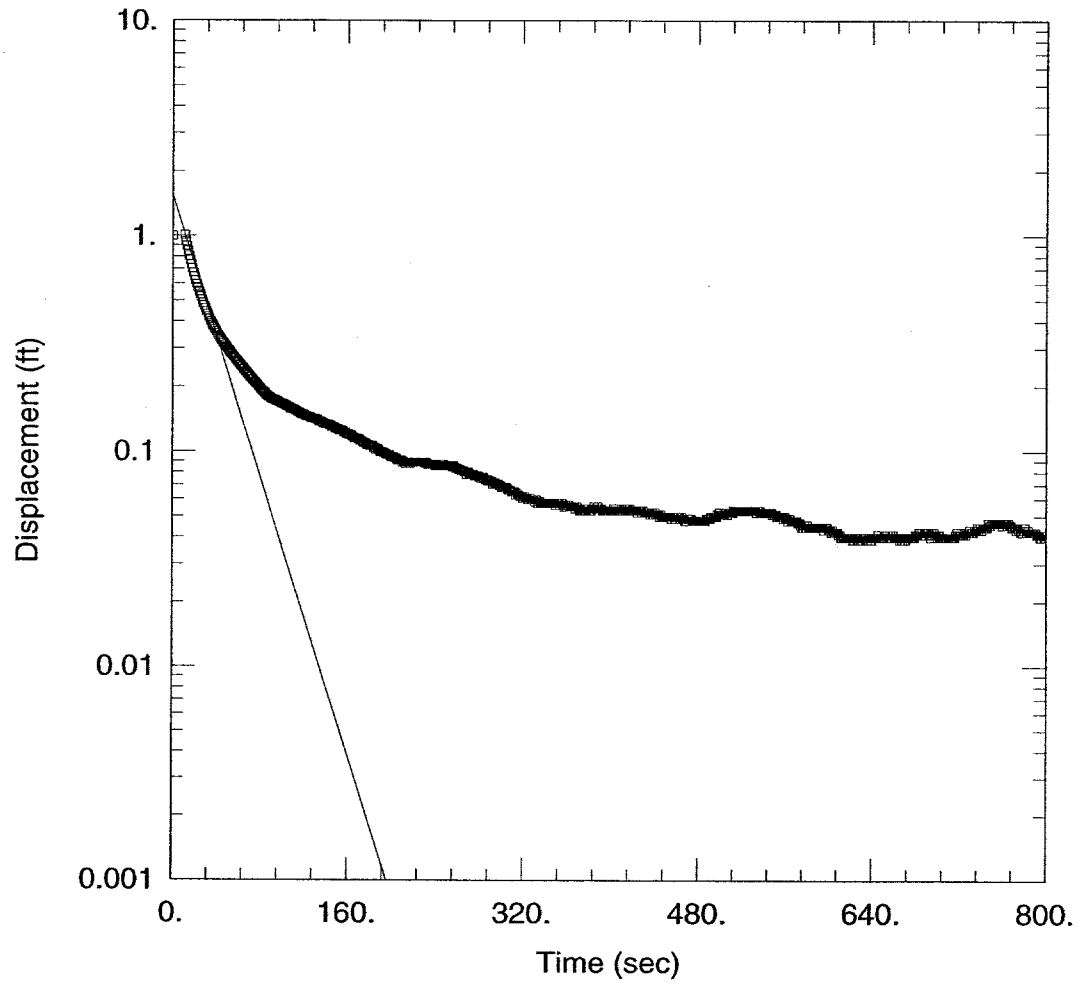
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1. ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 45. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.005518 cm/sec
y0 = 0.7118 ft



BOUWER-RICE MANUAL FIT

Data Set: S:\TMM\BONNEV~1\MW1BF.AQT
Date: 10/22/02 Time: 10:33:29

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Falling Head
Test Date: 4/24/02

AQUIFER DATA

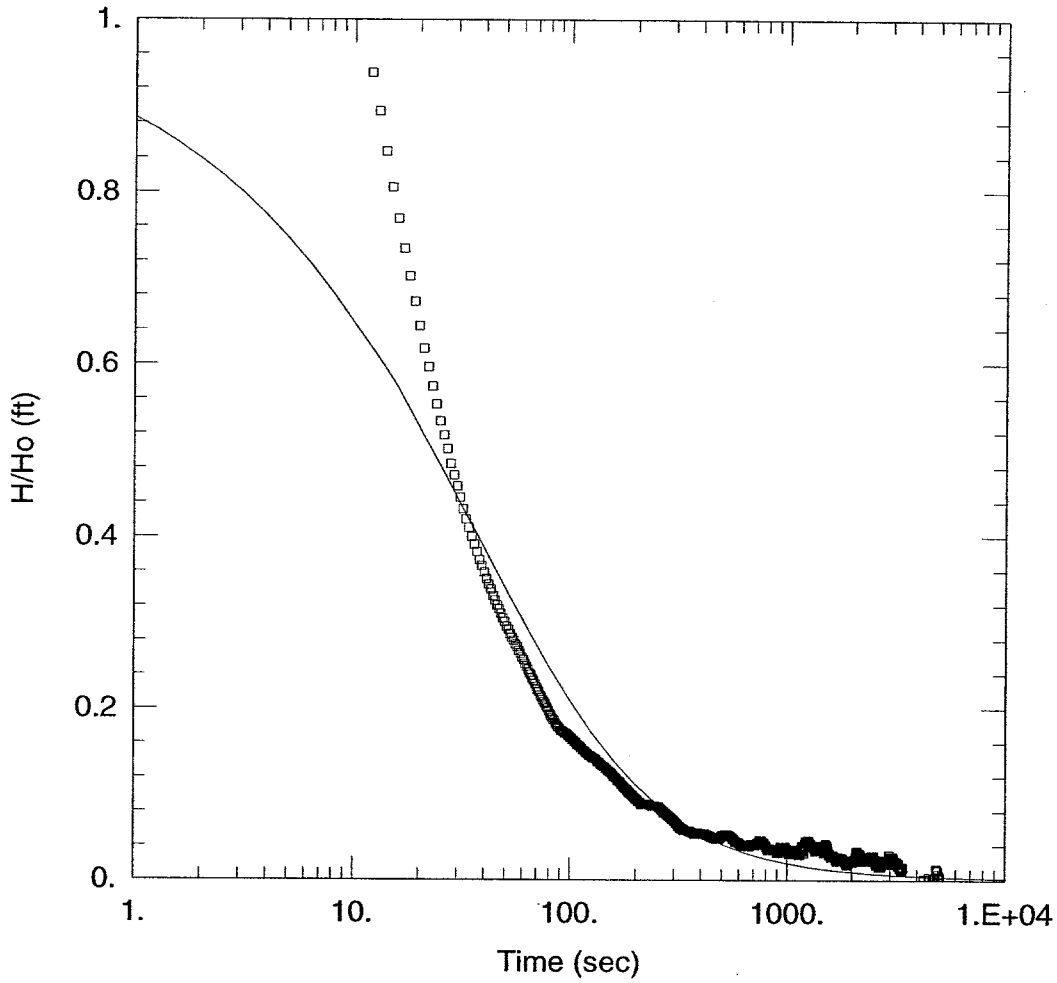
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1. ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 45. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.01669 cm/sec
y0 = 1.542 ft



BOUWER-RICE

Data Set: S:\TMM\BONNEV~1\MW1BF.AQT
Date: 10/22/02 Time: 10:22:34

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Falling Head
Test Date: 4/24/02

AQUIFER DATA

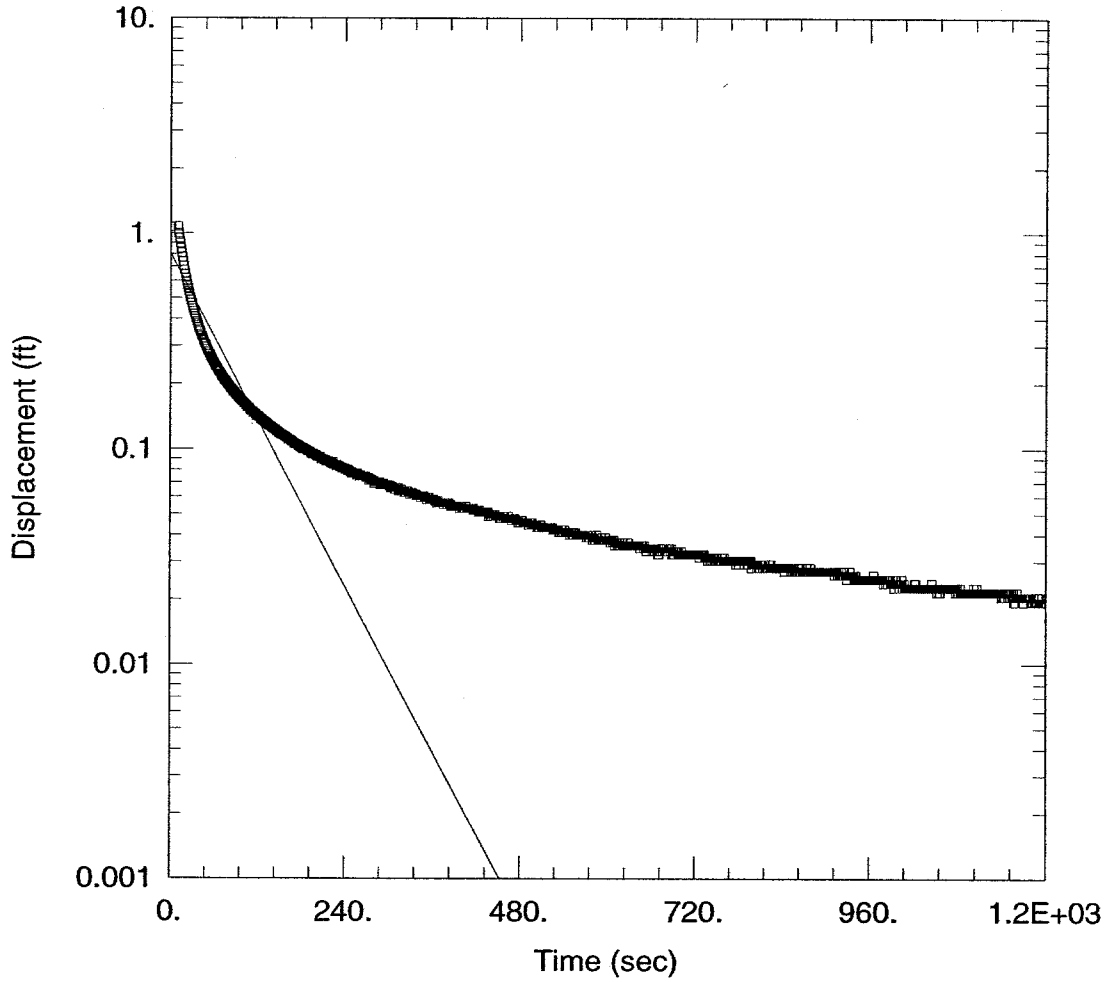
Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1. ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 45. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos
$T = 0.1349\ cm^2/sec$
$S = 0.01038$



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1BF2.AQT
Date: 10/22/02 Time: 10:49:13

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Falling 2
Test Date: 4/25/02

AQUIFER DATA

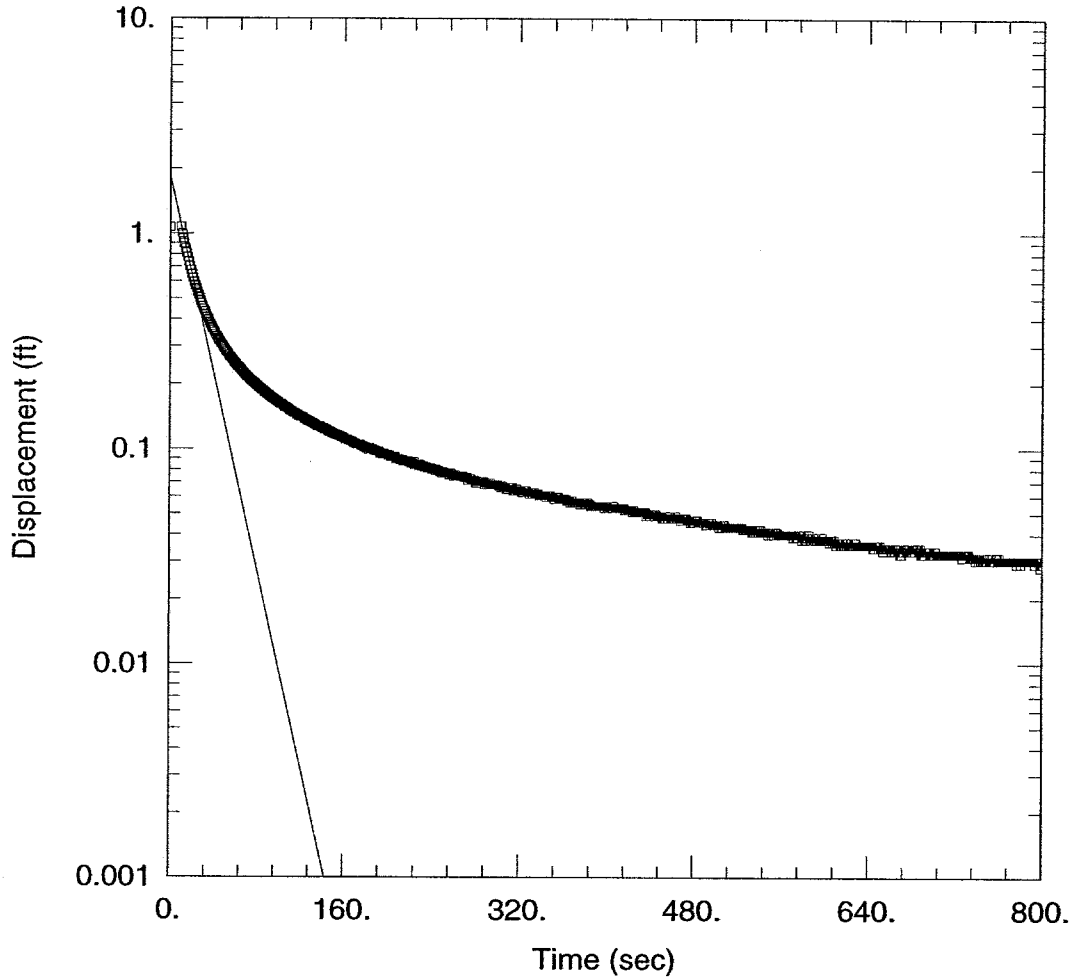
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.07 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 45. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.006592 cm/sec
y0 = 0.8028 ft



MW1B FALLING 2 MANUAL FIT

Data Set: S:\TMM\BONNEV~1\MW1BF2.AQT
Date: 10/22/02 Time: 10:50:29

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Falling 2
Test Date: 4/25/02

AQUIFER DATA

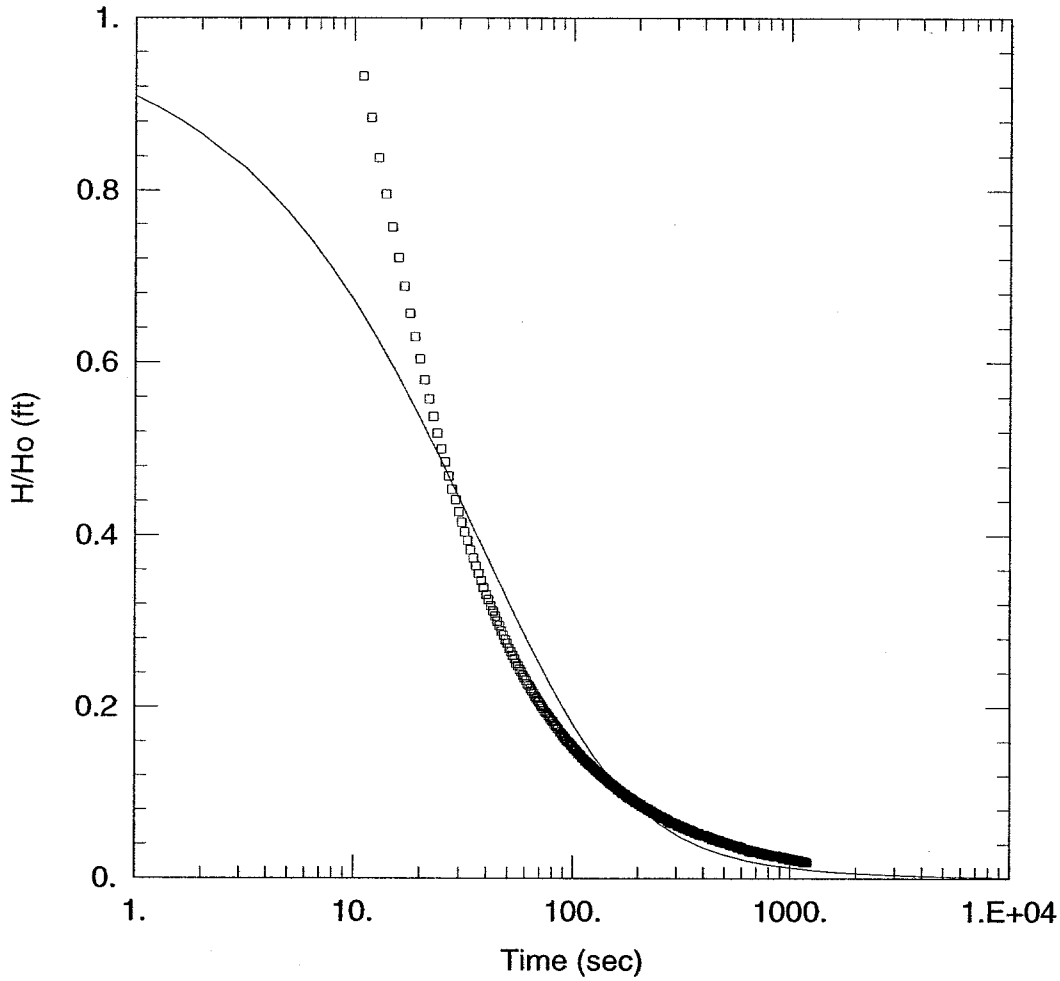
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.07 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 45. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.02335 cm/sec
y0 = 1.841 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1BF2.AQT
Date: 10/22/02 Time: 10:48:08

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Falling 2
Test Date: 4/25/02

AQUIFER DATA

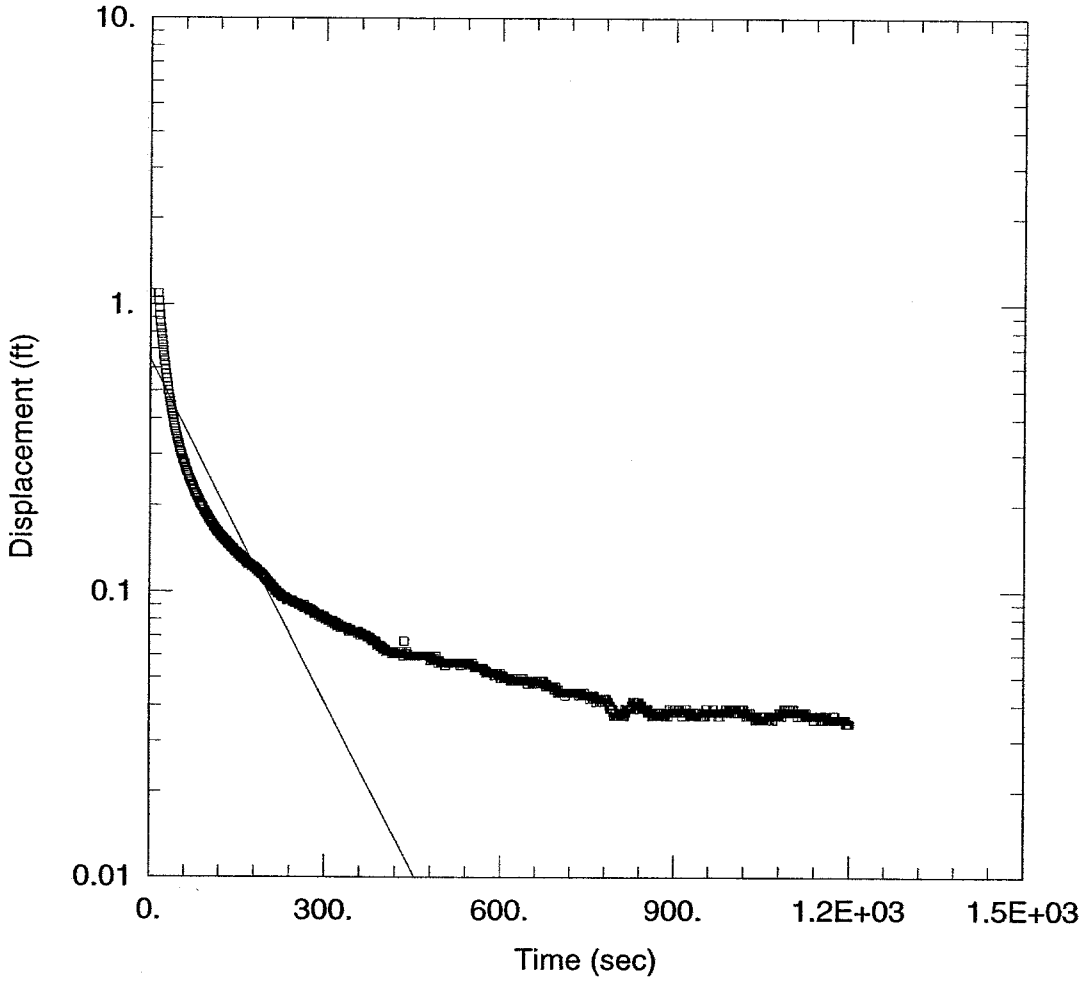
Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.07 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 45. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos
$T = 0.2161\ cm^2/sec$
$S = 0.003061$



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1BR.AQT
Date: 10/22/02 Time: 11:01:23

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Rising Head
Test Date: 4/24/02

AQUIFER DATA

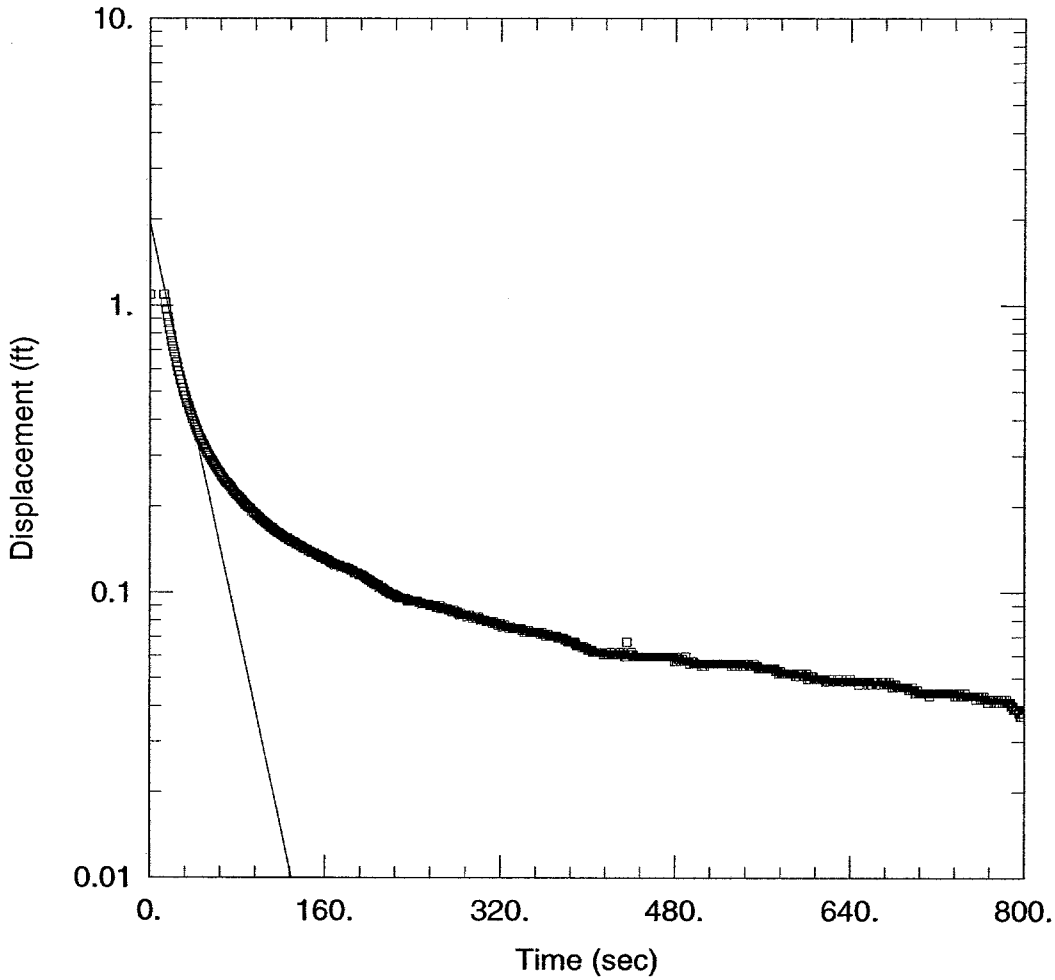
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.09 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 45. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.004096 cm/sec
y0 = 0.6452 ft



MW-1B RISING 1 MANUAL FIT

Data Set: S:\TMM\BONNEV~1\MW1BR.AQT
Date: 10/22/02 Time: 11:02:15

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Rising Head
Test Date: 4/24/02

AQUIFER DATA

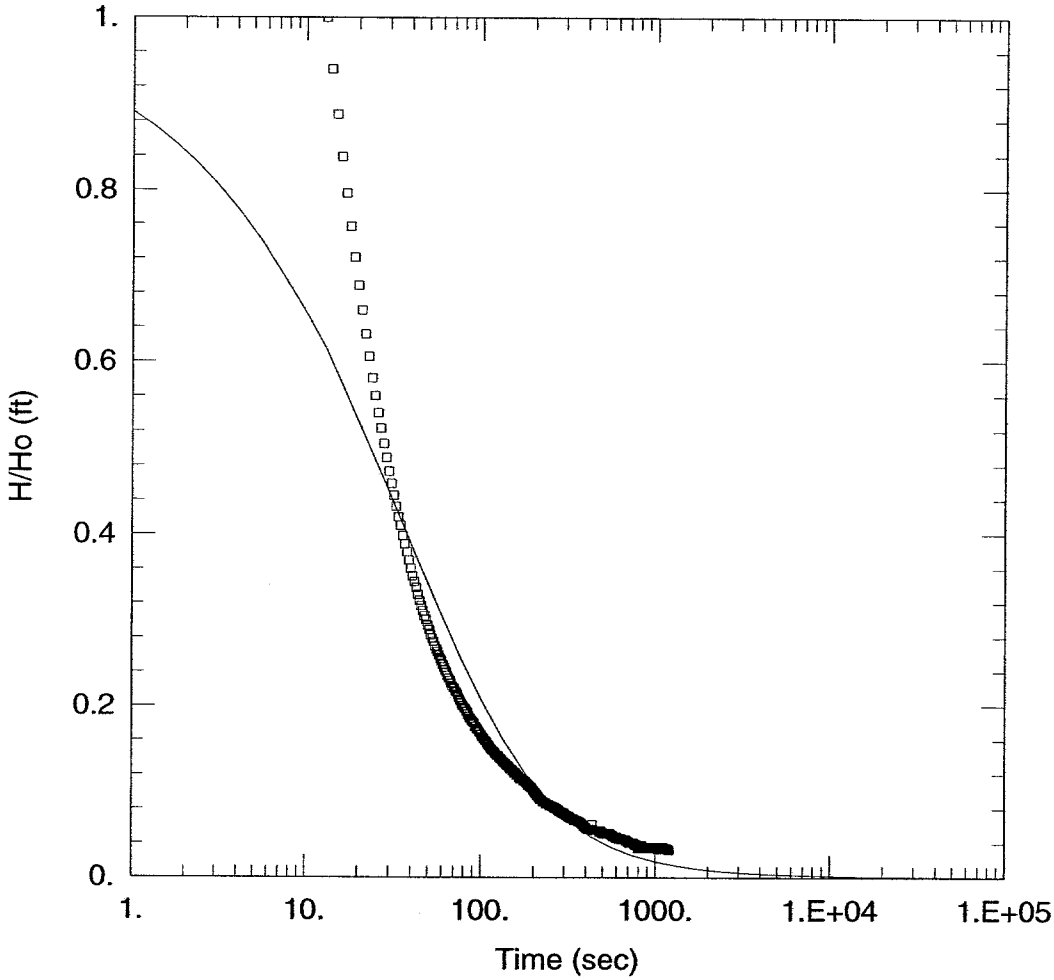
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.09 ft
Water Column Height: 45. ft
Casing Radius: 0.1 ft
Wellbore Radius: 0.4 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
K = 0.01812 cm/sec
Solution Method: Bouwer-Rice
y0 = 1.945 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1BR.AQT
Date: 10/22/02 Time: 11:00:04

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Rising Head
Test Date: 4/24/02

AQUIFER DATA

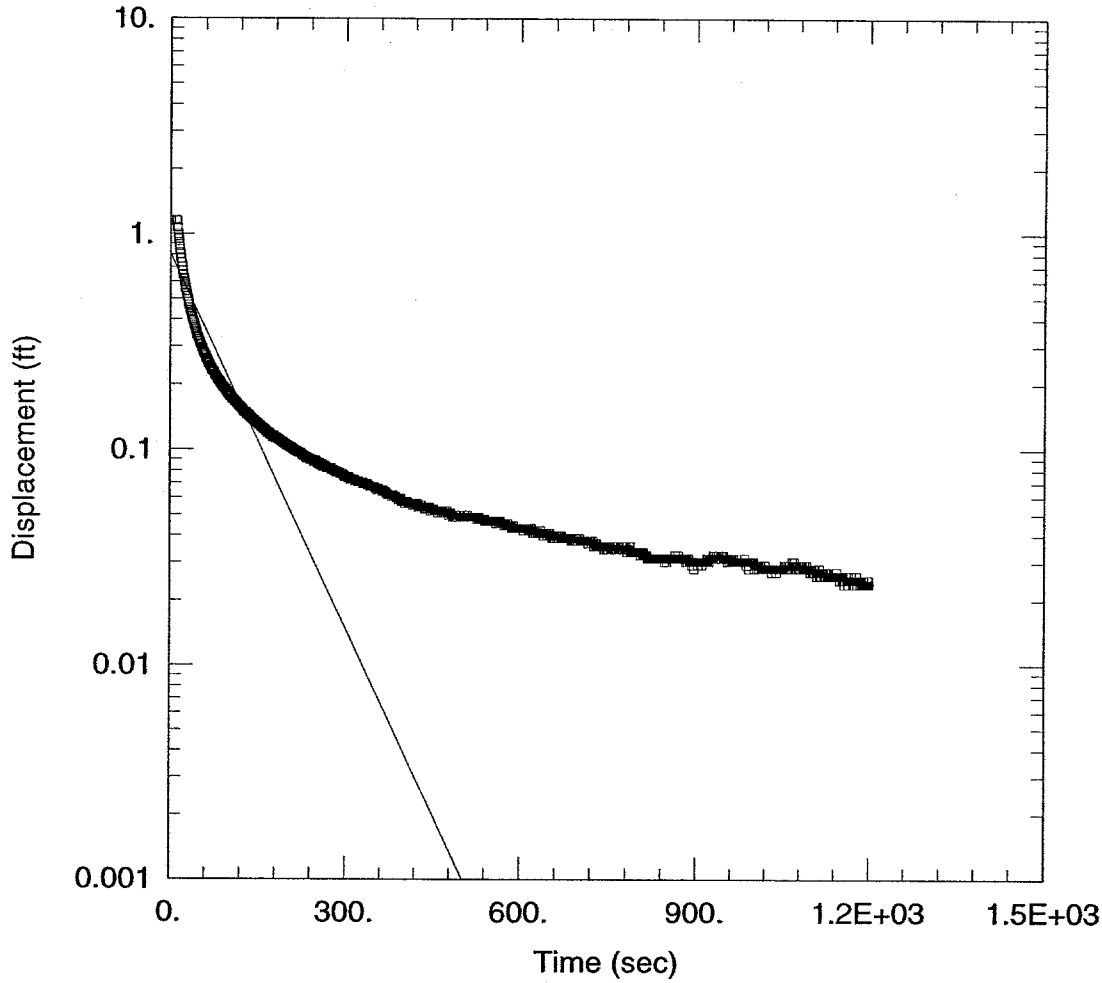
Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.09 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 45. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos
$T = 0.1424\ cm^2/sec$
$S = 0.008786$



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1BR2.AQT
Date: 10/22/02 Time: 13:28:34

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Rising 2
Test Date: 4/25/02

AQUIFER DATA

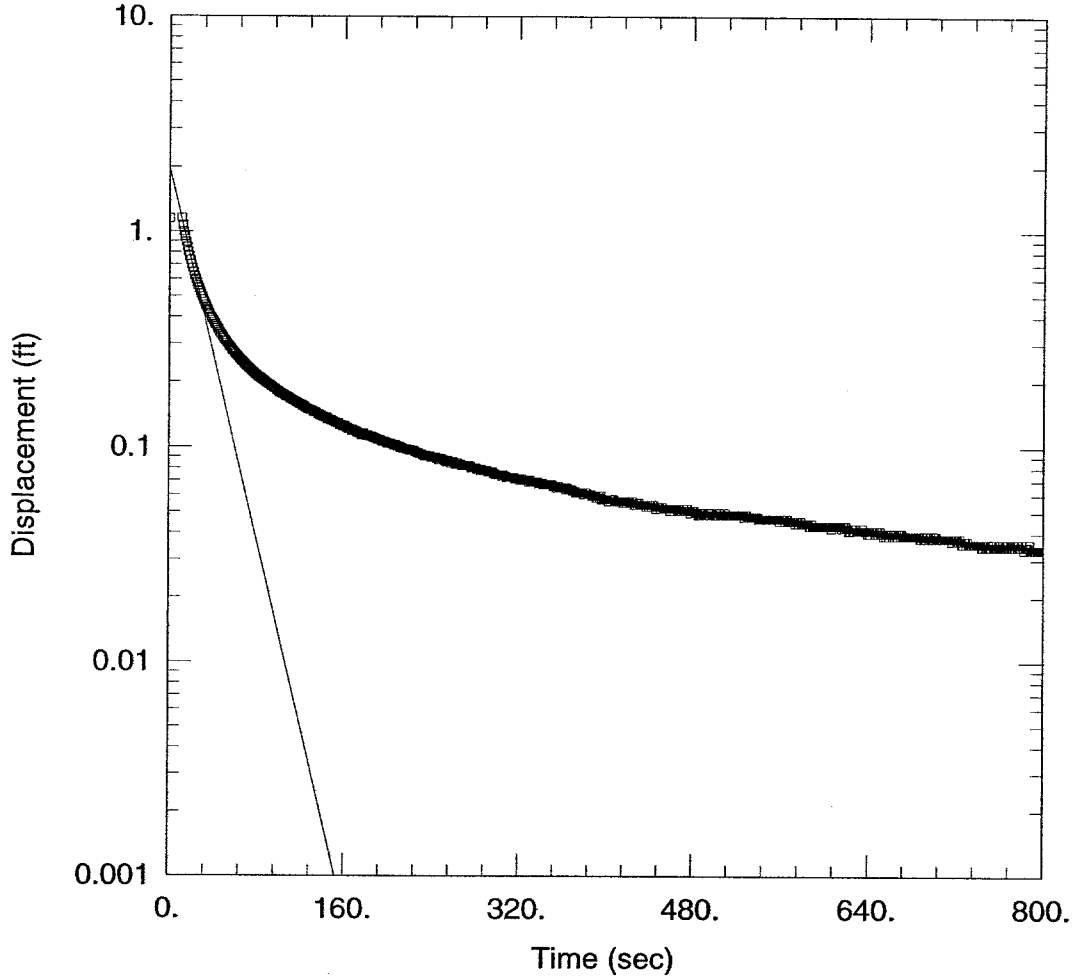
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.15 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 45. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.005933 cm/sec
y0 = 0.8067 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1BR2.AQT
Date: 10/22/02 Time: 13:29:14

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Rising 2
Test Date: 4/25/02

AQUIFER DATA

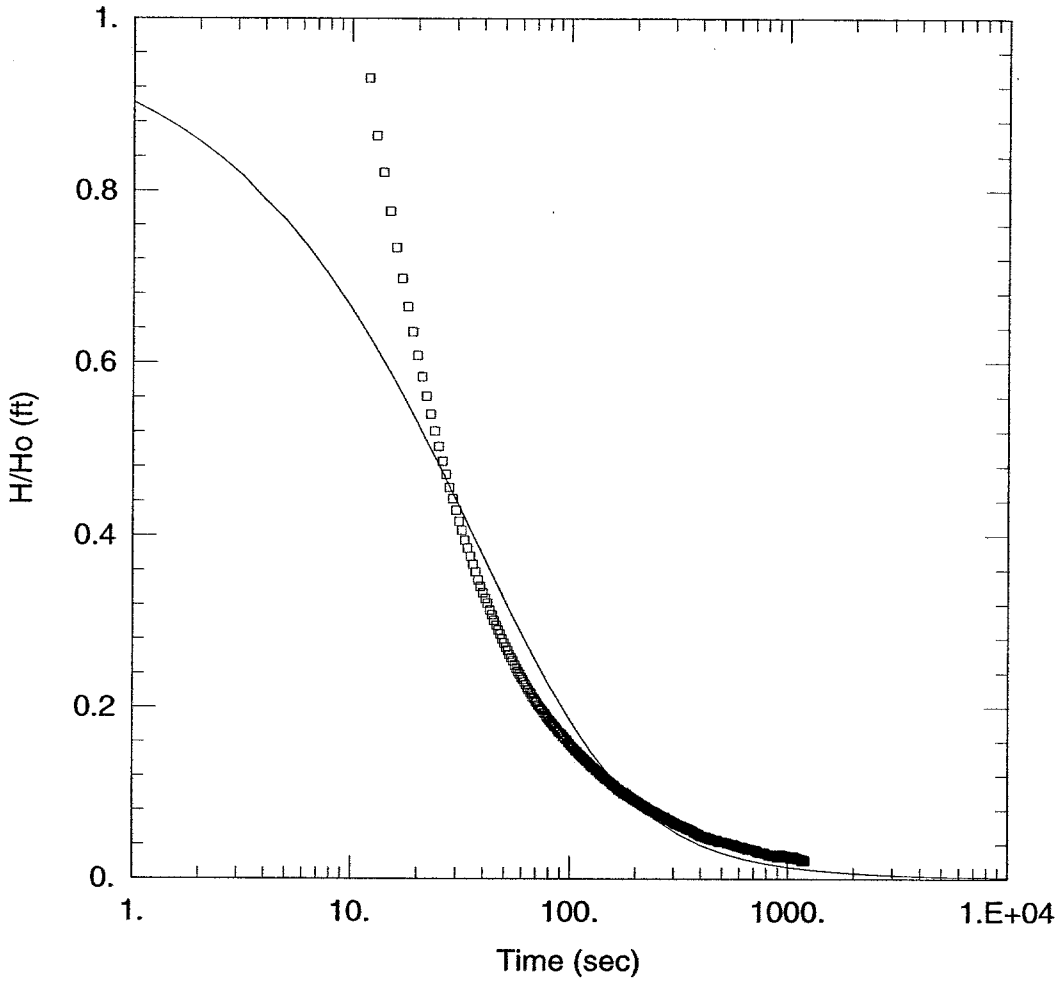
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.15 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 45. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.02215 cm/sec
y0 = 1.966 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW1BR2.AQT
Date: 10/22/02 Time: 13:27:52

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-1B Rising 2
Test Date: 4/25/02

AQUIFER DATA

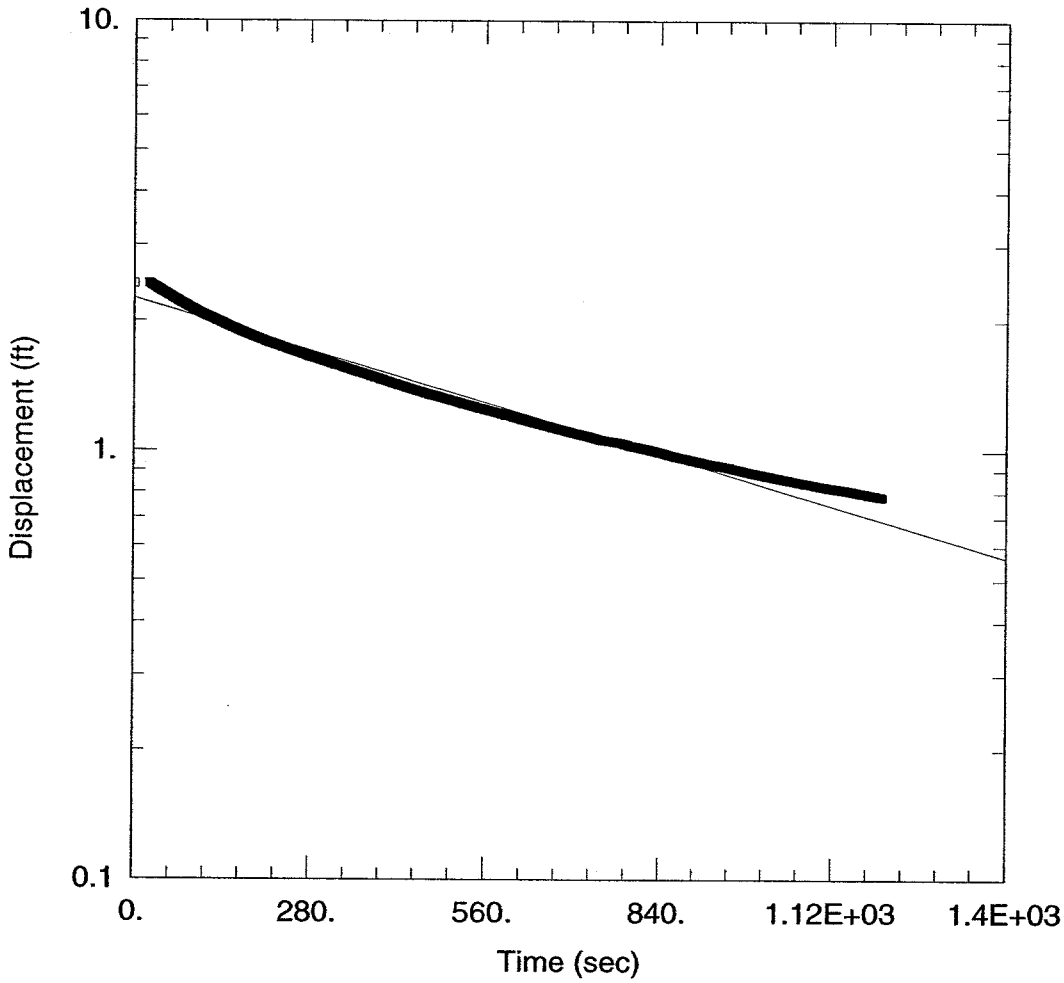
Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 1.15 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 45. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos
$T = 0.1953\ cm^2/sec$
$S = 0.004289$



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2BF.AQT
Date: 10/22/02 Time: 13:34:33

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2B Falling Head
Test Date: 4/24/02

AQUIFER DATA

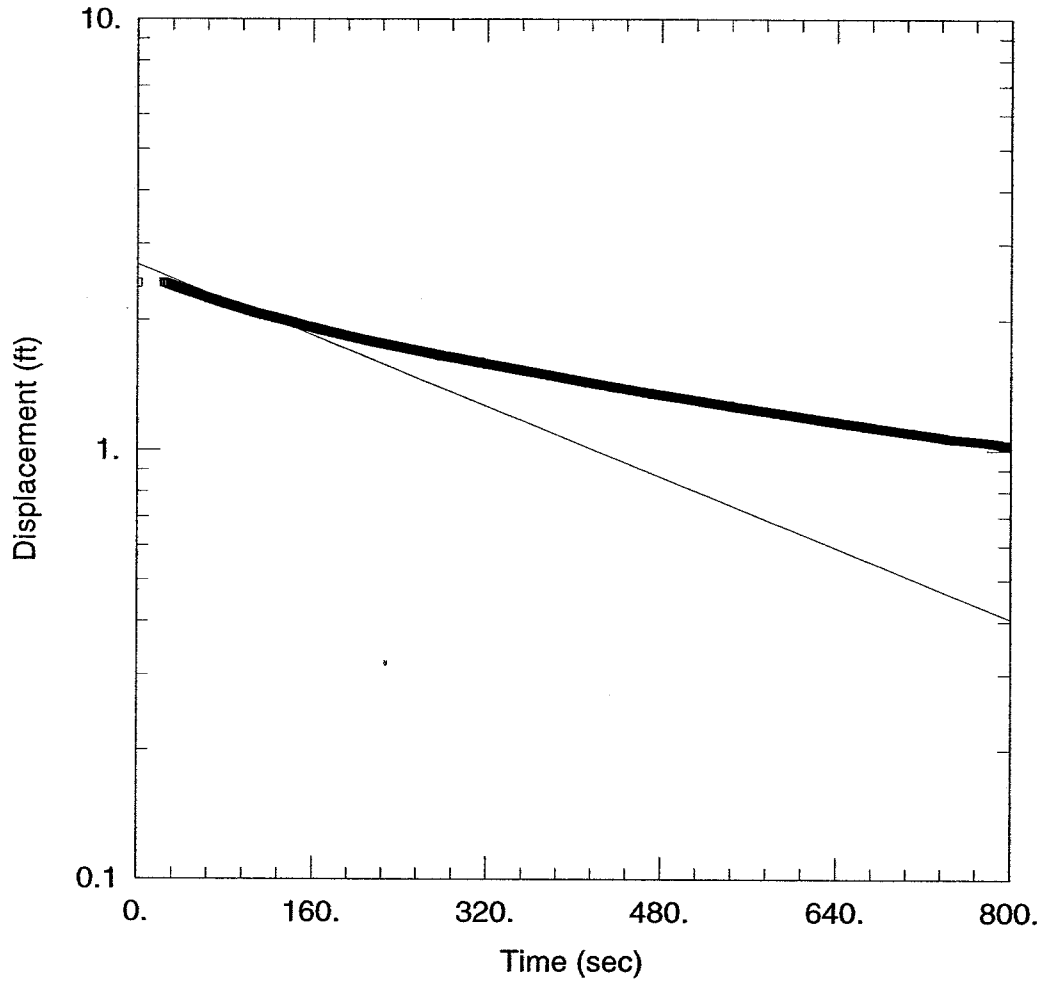
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.44 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 40. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.000435 cm/sec
y0 = 2.258 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2BF.AQT
Date: 10/22/02 Time: 13:35:08

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2B Falling Head
Test Date: 4/24/02

AQUIFER DATA

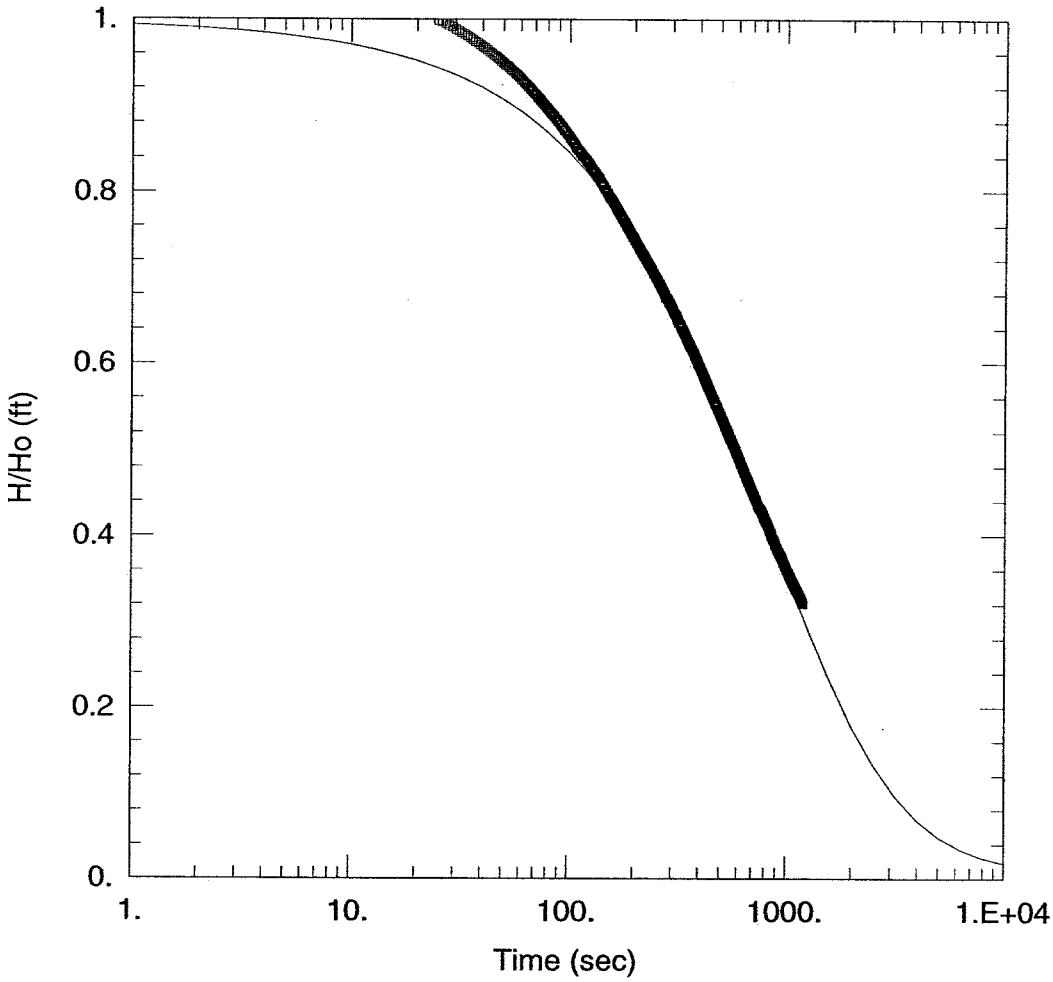
Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.44 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 40. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.001041 cm/sec
y0 = 2.696 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2BF.AQT
Date: 10/22/02 Time: 13:33:52

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2B Falling Head
Test Date: 4/24/02

AQUIFER DATA

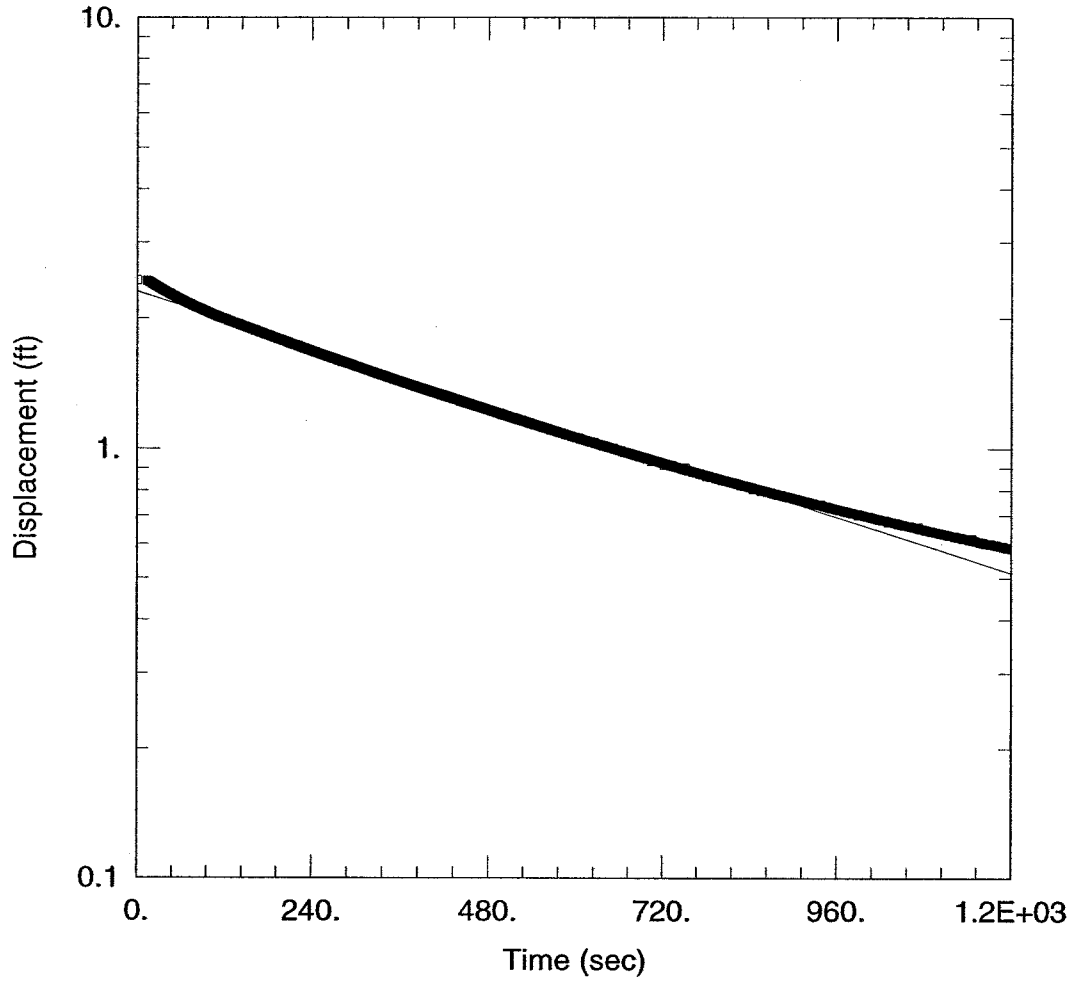
Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.44 ft Water Column Height: 40. ft
Casing Radius: 0.1 ft Wellbore Radius: 0.4 ft
Screen Length: 10. ft Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined T = 0.0174 cm^2/sec
Solution Method: Cooper-Bredehoeft-Papadopulos S = 0.0001568



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2BF2.AQT
Date: 10/22/02 Time: 13:39:13

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2B Falling 2
Test Date: 4/25/02

AQUIFER DATA

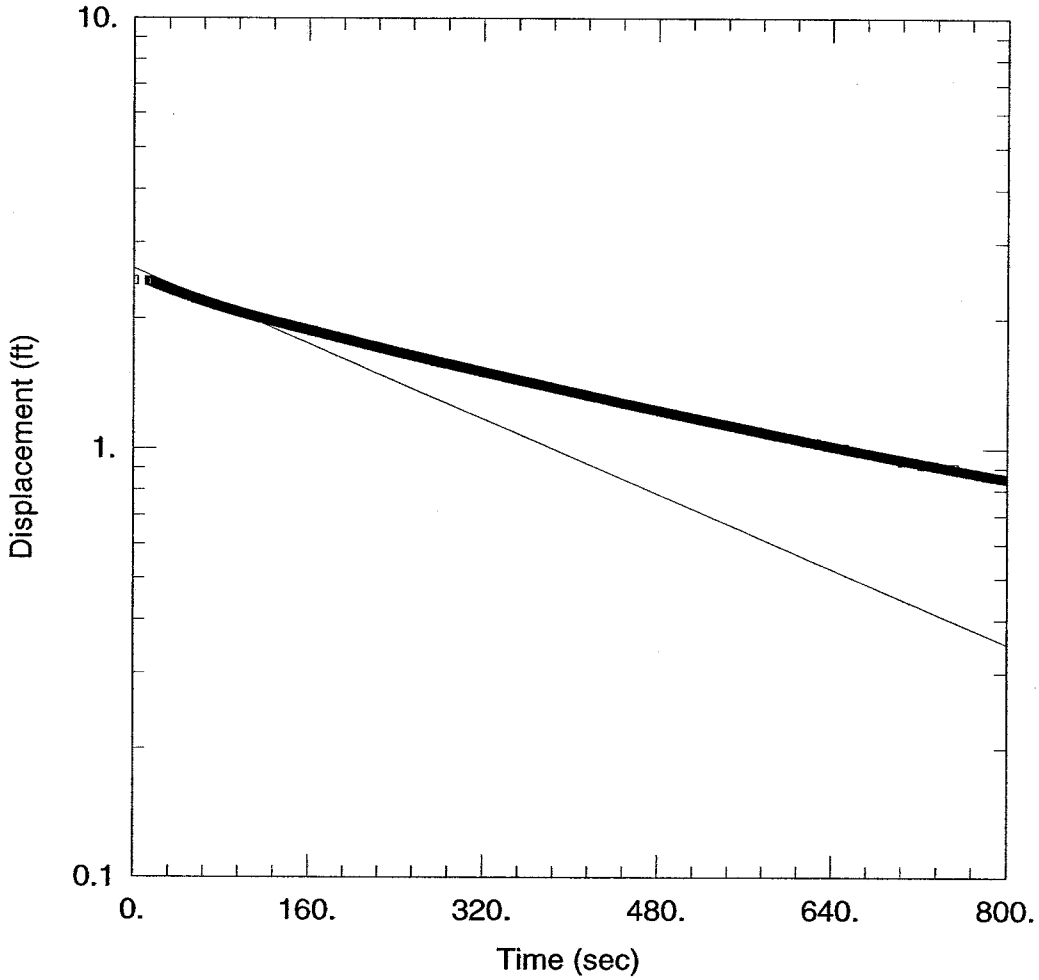
Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.45 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 40. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0005514 cm/sec
y0 = 2.313 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2BF2.AQT
Date: 10/22/02 Time: 13:39:45

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2B Falling 2
Test Date: 4/25/02

AQUIFER DATA

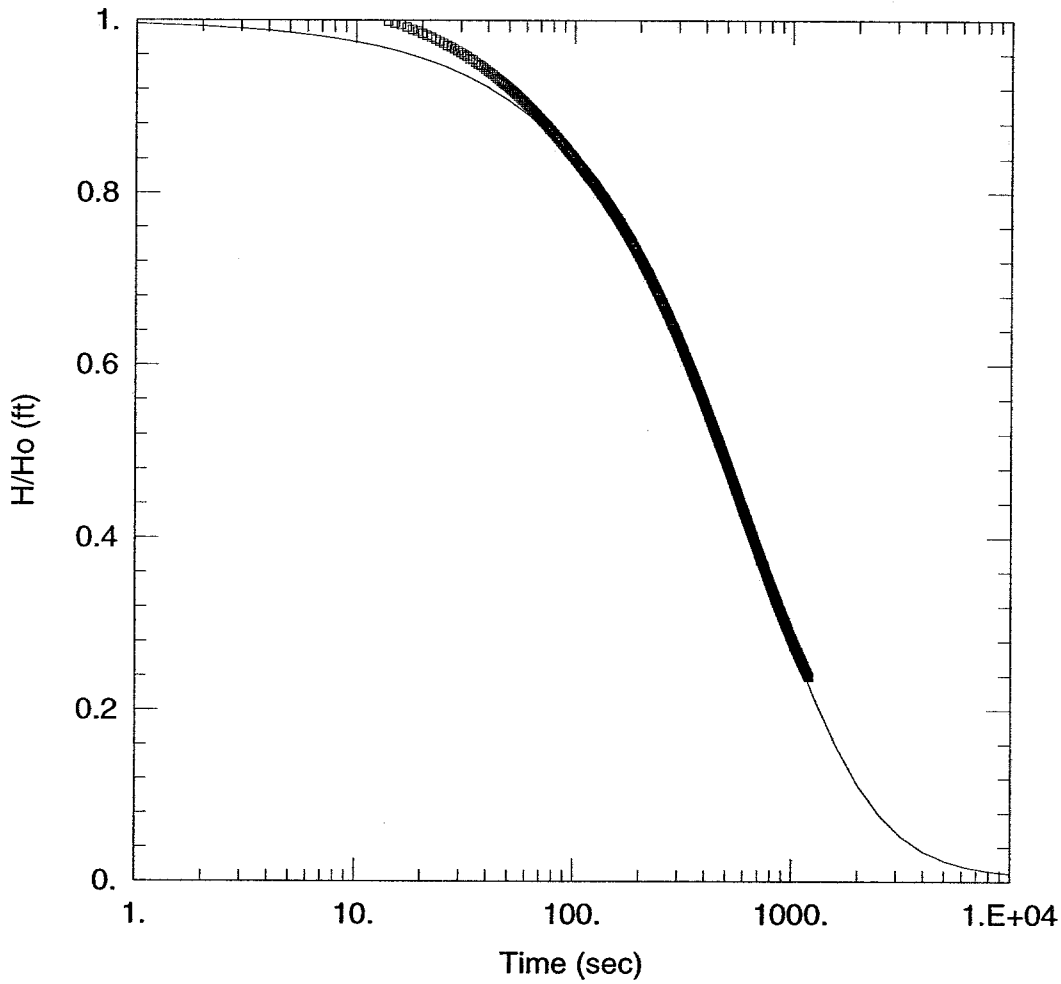
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.45 ft
Water Column Height: 40. ft
Casing Radius: 0.1 ft
Wellbore Radius: 0.4 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
K = 0.001105 cm/sec
Solution Method: Bouwer-Rice
y0 = 2.62 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2BF2.AQT
Date: 10/22/02 Time: 13:38:42

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2B Falling 2
Test Date: 4/25/02

AQUIFER DATA

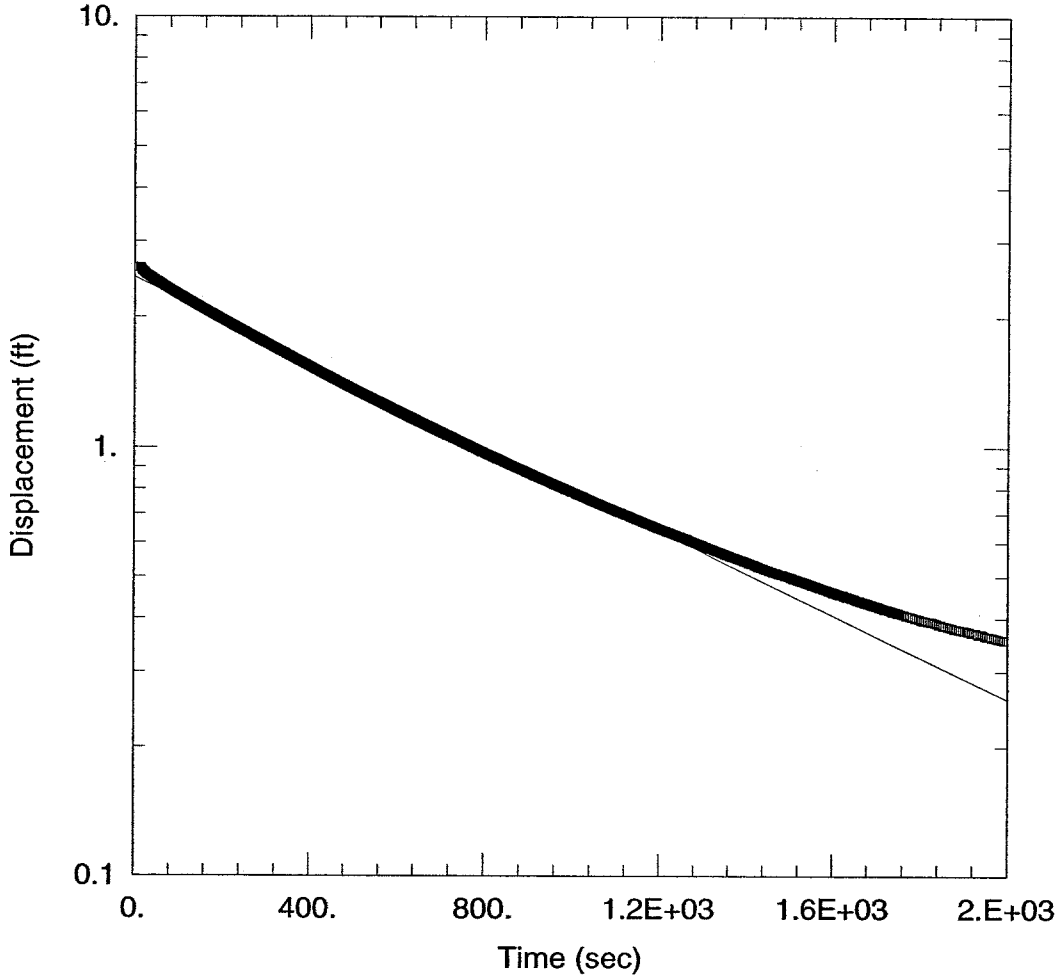
Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.45 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 40. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos
T = 0.03201 cm^2/sec
S = 8.983E-06



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2BR.AQT
Date: 10/22/02 Time: 13:43:44

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2B Rising Head
Test Date: 4/24/02

AQUIFER DATA

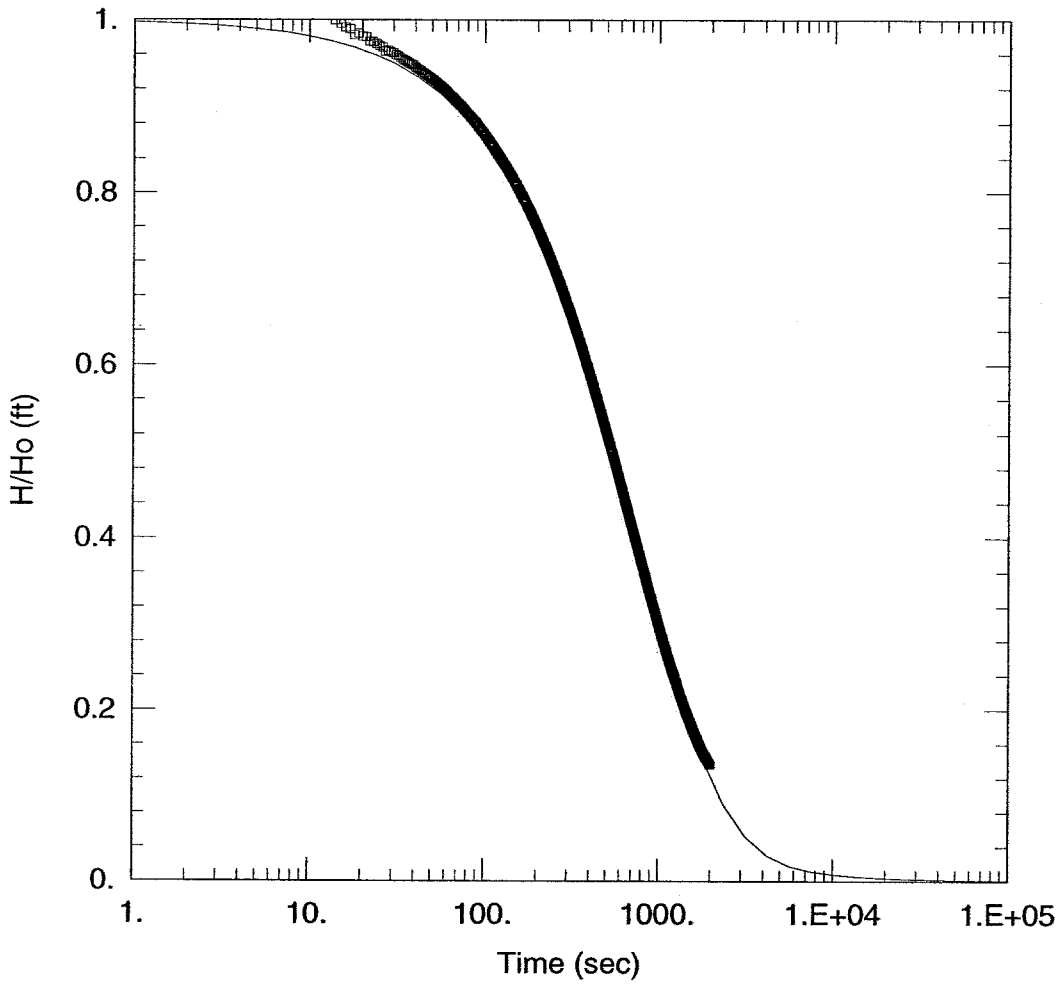
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.61 ft
Water Column Height: 40. ft
Casing Radius: 0.1 ft
Wellbore Radius: 0.4 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
K = 0.0004973 cm/sec
Solution Method: Bouwer-Rice
y0 = 2.482 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2BR.AQT
Date: 10/22/02 Time: 13:43:09

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2B Rising Head
Test Date: 4/24/02

AQUIFER DATA

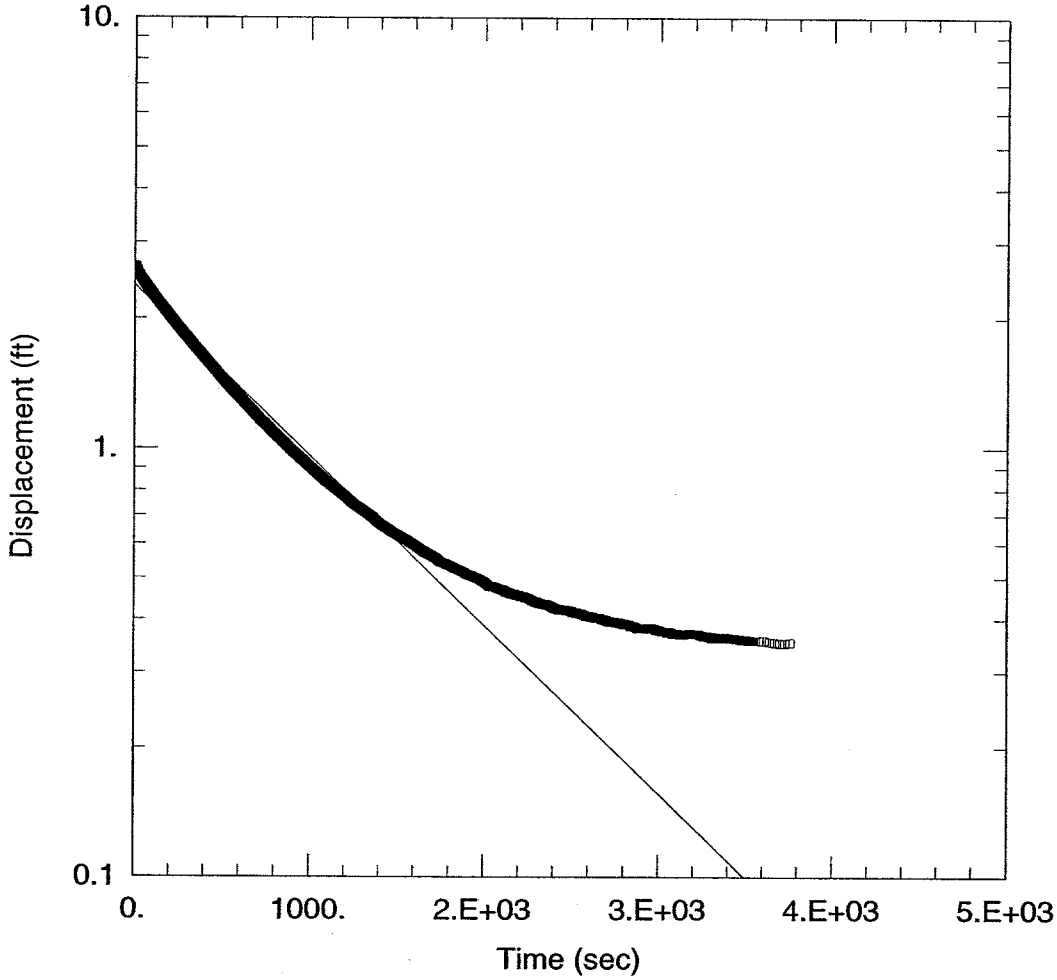
Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.61 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 40. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos
T = 0.03857 cm^2/sec
S = 4.194E-07



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2BR2.AQT
Date: 10/22/02 Time: 13:57:53

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2B Rising 2
Test Date: 4/25/02

AQUIFER DATA

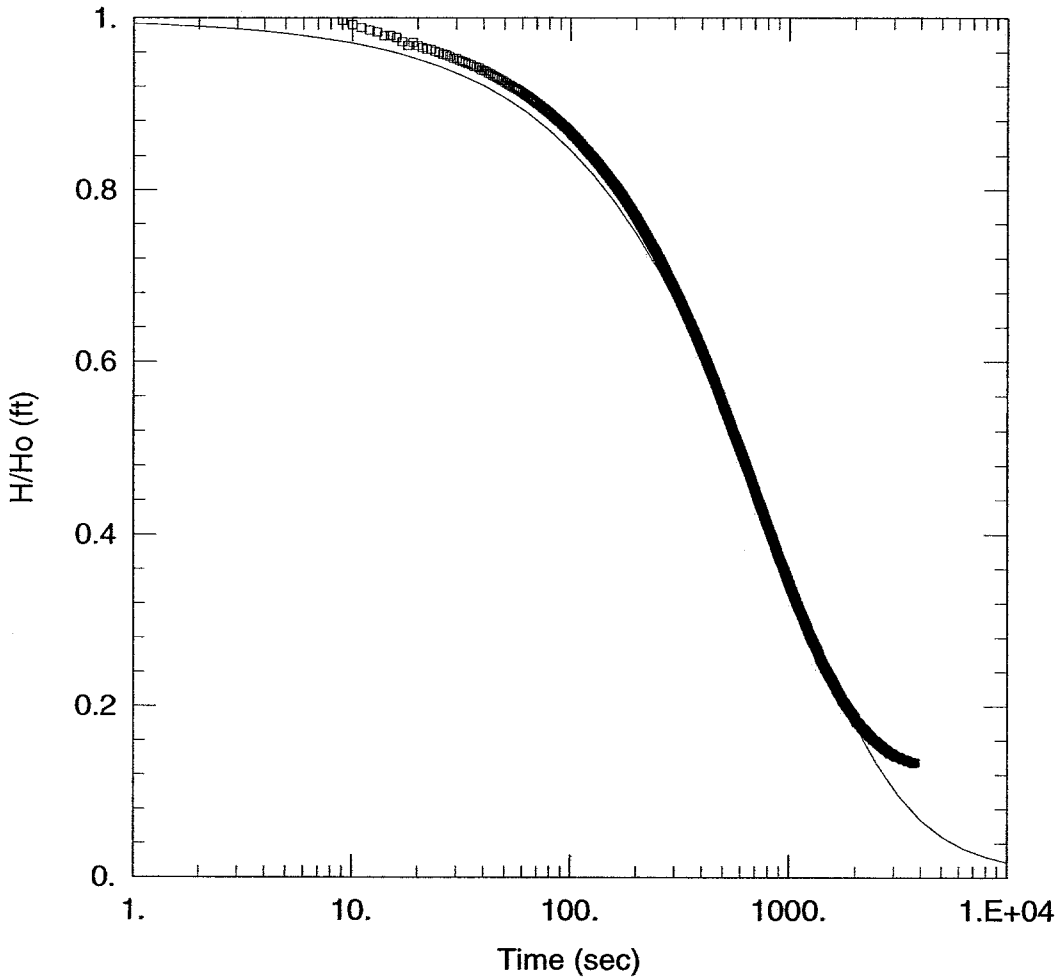
Saturated Thickness: 15. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.63 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 40. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0003992 cm/sec
y0 = 2.387 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW2BR2.AQT
Date: 10/22/02 Time: 13:56:31

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-2B Rising 2
Test Date: 4/25/02

AQUIFER DATA

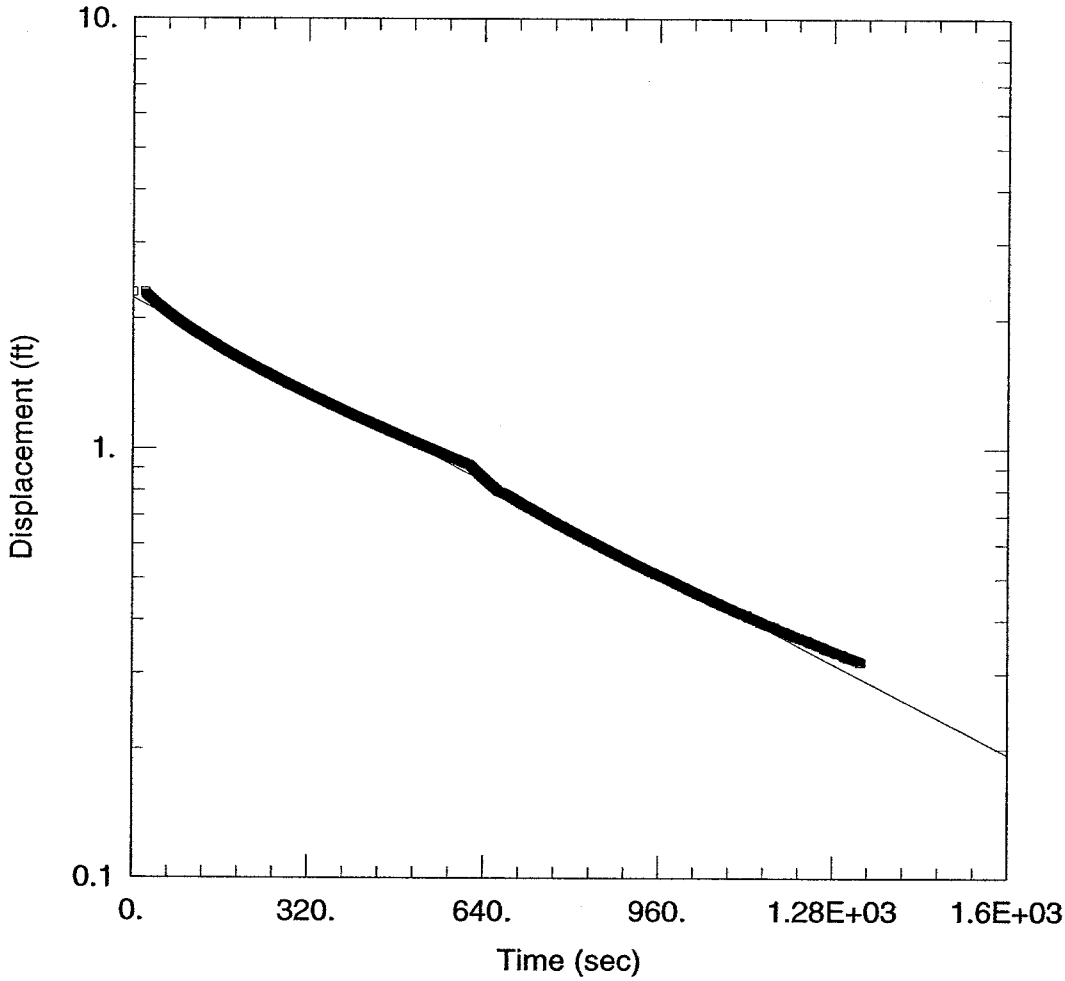
Saturated Thickness: 15. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.63 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 40. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos
$T = 0.01756\ cm^2/sec$
$S = 0.0001462$



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW3BF.AQT
Date: 10/22/02 Time: 14:02:11

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-3B Falling Head
Test Date: 4/24/02

AQUIFER DATA

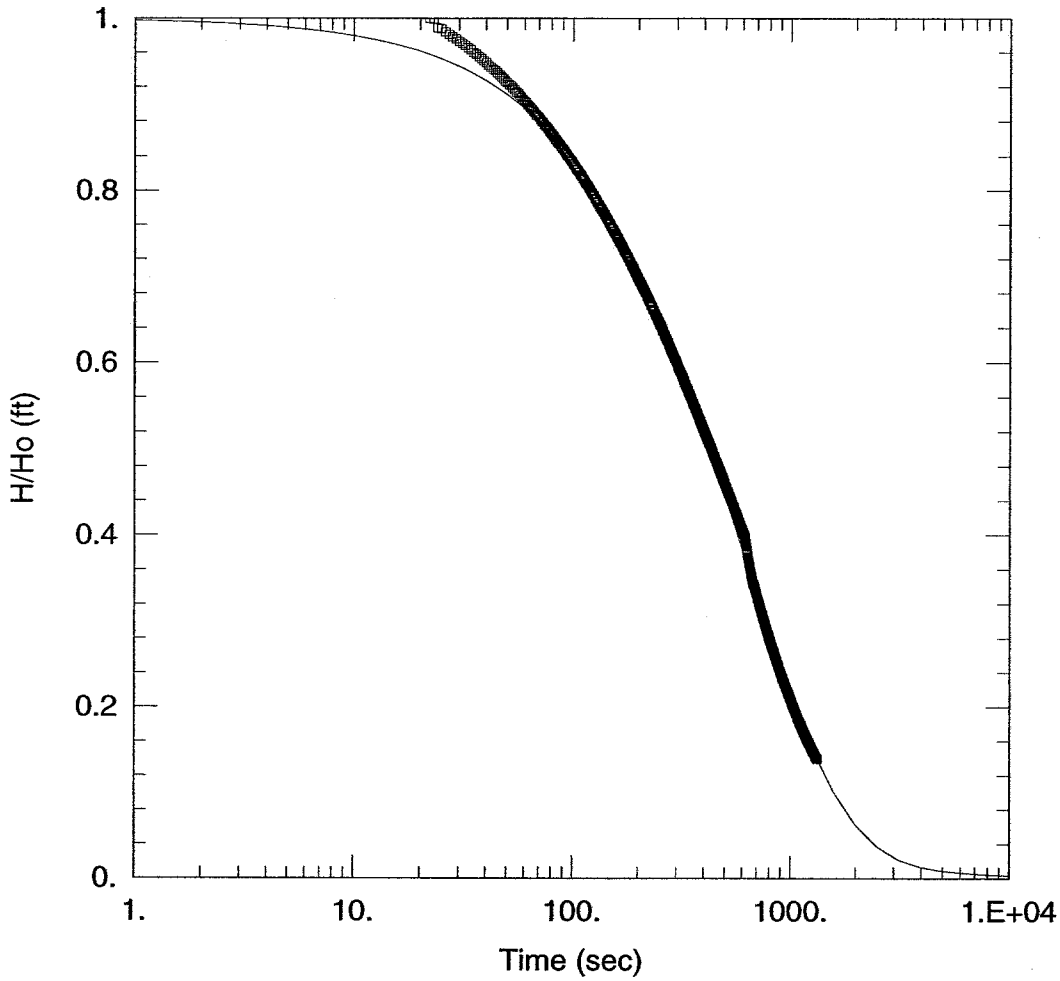
Saturated Thickness: 20. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.306 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 35. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0006603 cm/sec
y0 = 2.234 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW3BF.AQT
Date: 10/22/02 Time: 14:01:43

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-3B Falling Head
Test Date: 4/24/02

AQUIFER DATA

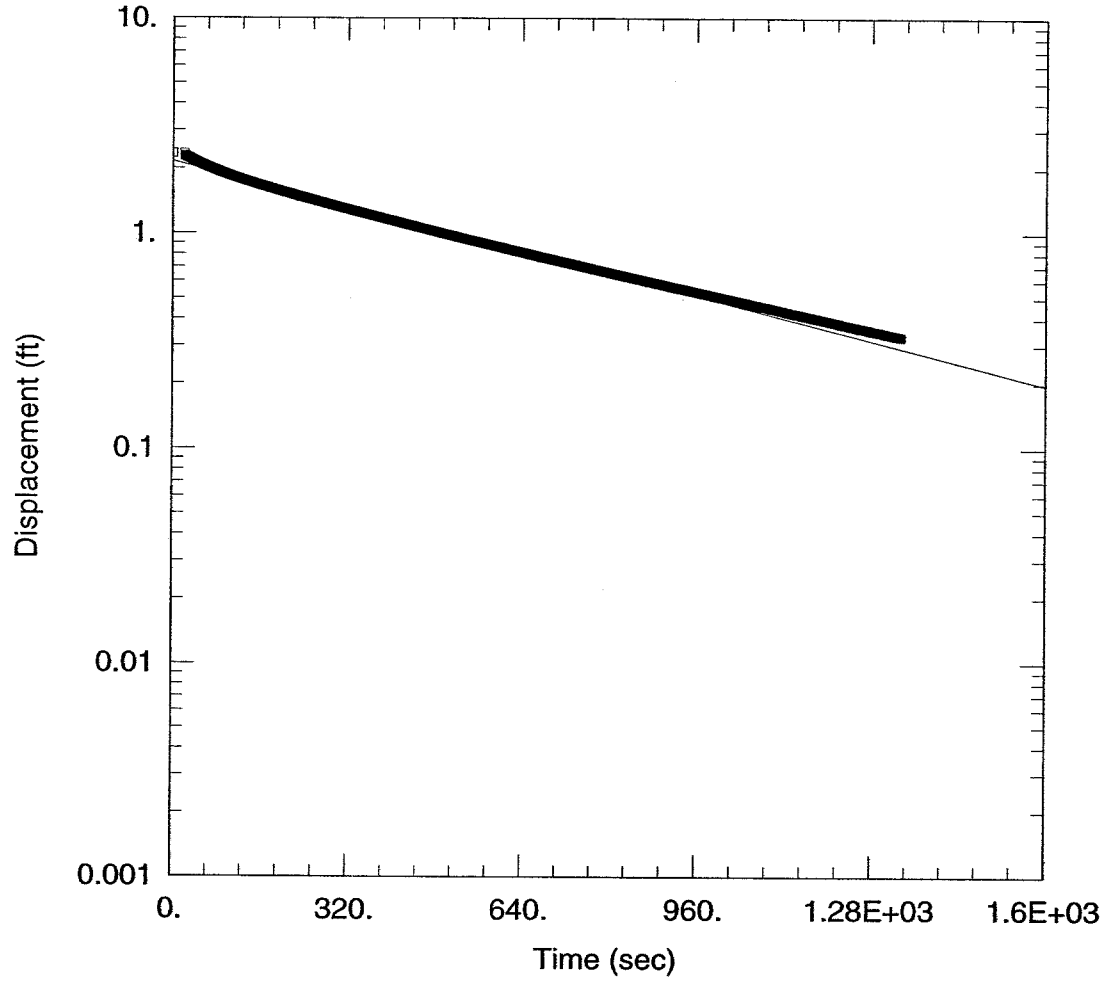
Saturated Thickness: 20. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.306 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 35. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos
$T = 0.08323\ cm^2/sec$
S = 1.E-10



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW3BF2.AQT
Date: 10/22/02 Time: 14:05:43

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-3B Falling 2
Test Date: 4/24/02

AQUIFER DATA

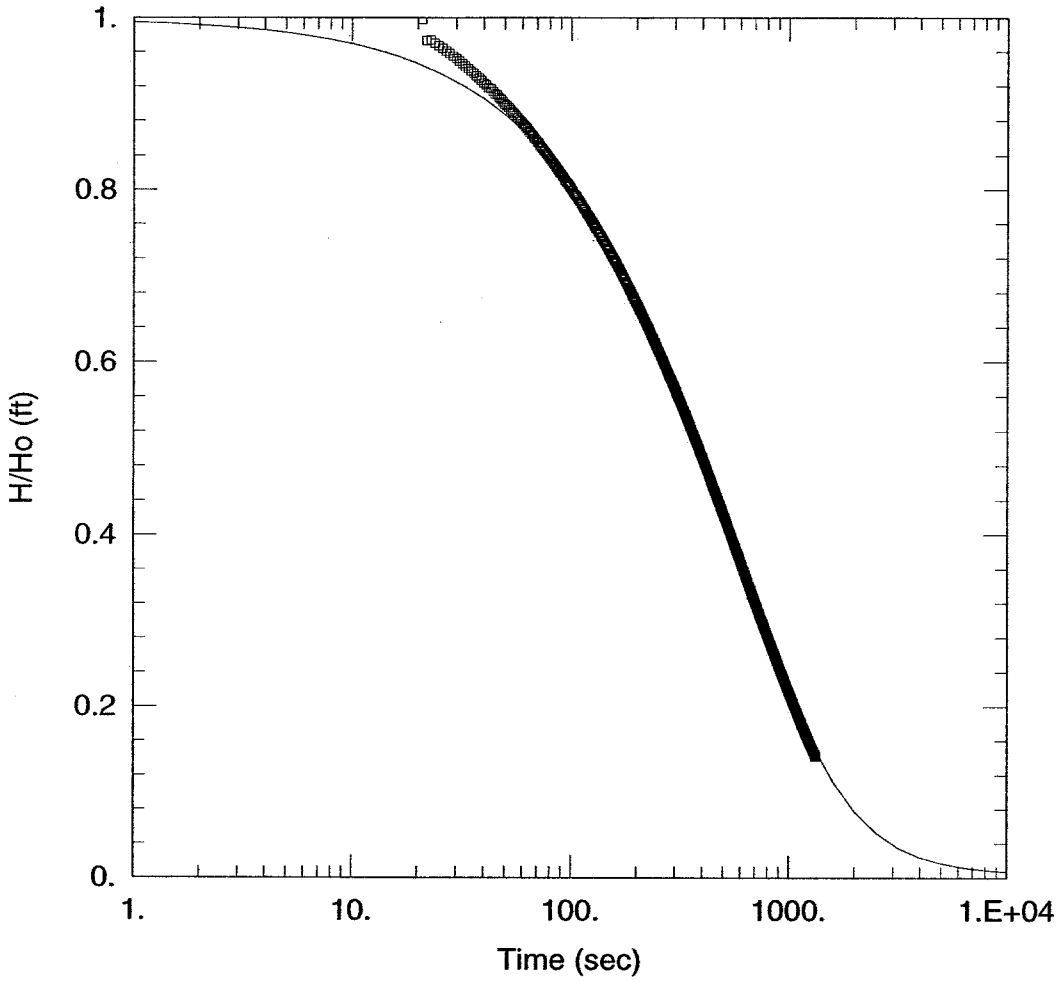
Saturated Thickness: 20. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.34 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 35. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0006463 cm/sec
y0 = 2.155 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW3BF2.AQT
Date: 10/22/02 Time: 14:05:16

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-3B Falling 2
Test Date: 4/24/02

AQUIFER DATA

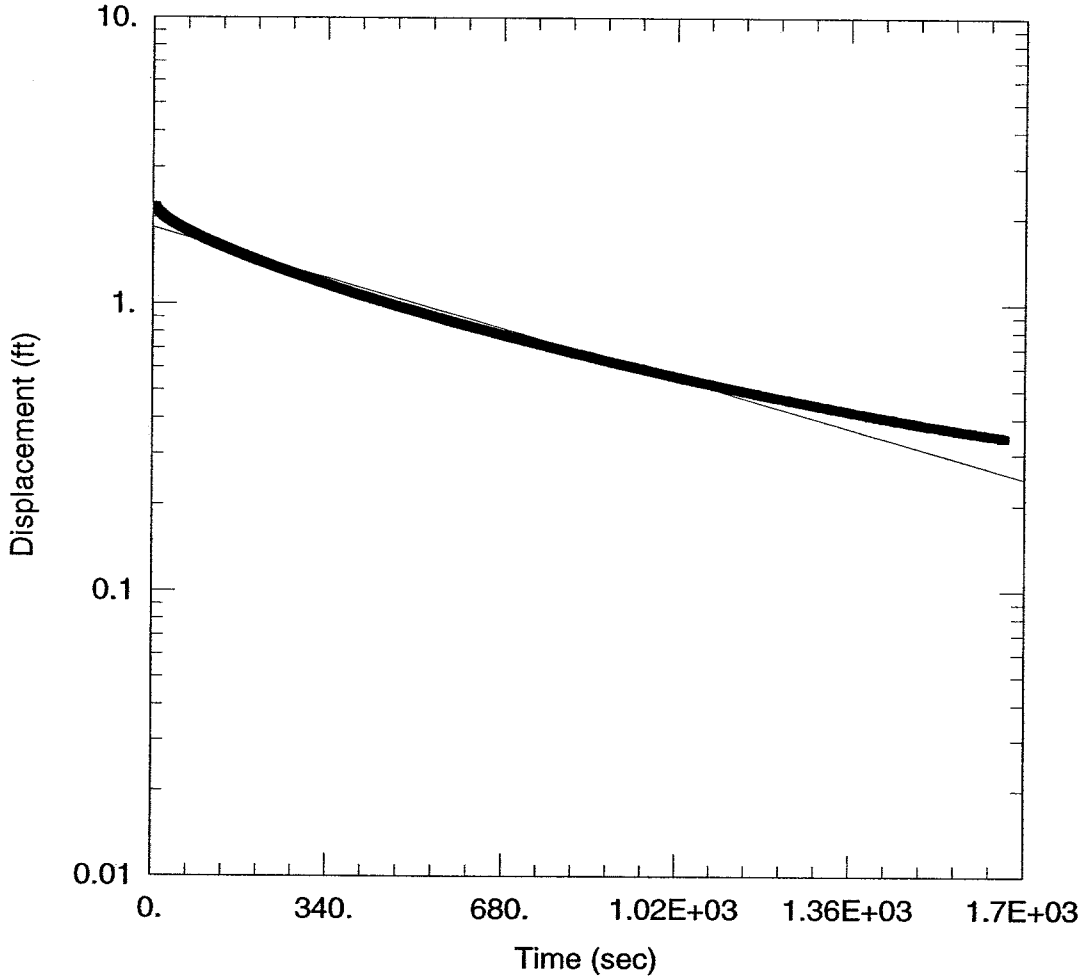
Saturated Thickness: 20. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.34 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 35. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos
$T = 0.04008\ cm^2/sec$
$S = 9.603E-06$



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW3BR.AQT
Date: 10/22/02 Time: 14:21:42

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-3B Risng Head
Test Date: 4/24/02

AQUIFER DATA

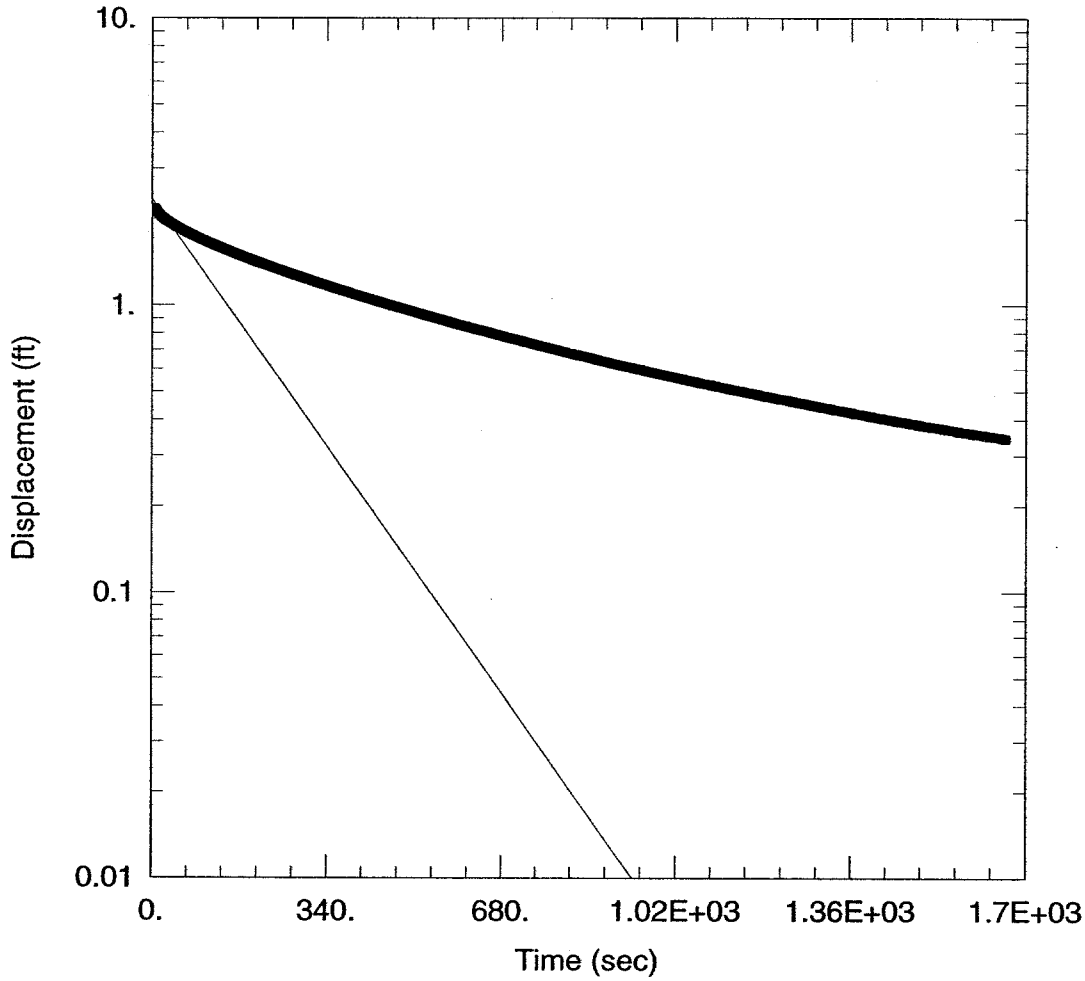
Saturated Thickness: 20. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.18 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 35. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.0005118 cm/sec
y0 = 1.844 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW3BR.AQT
Date: 10/22/02 Time: 14:23:11

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-3B Risng Head
Test Date: 4/24/02

AQUIFER DATA

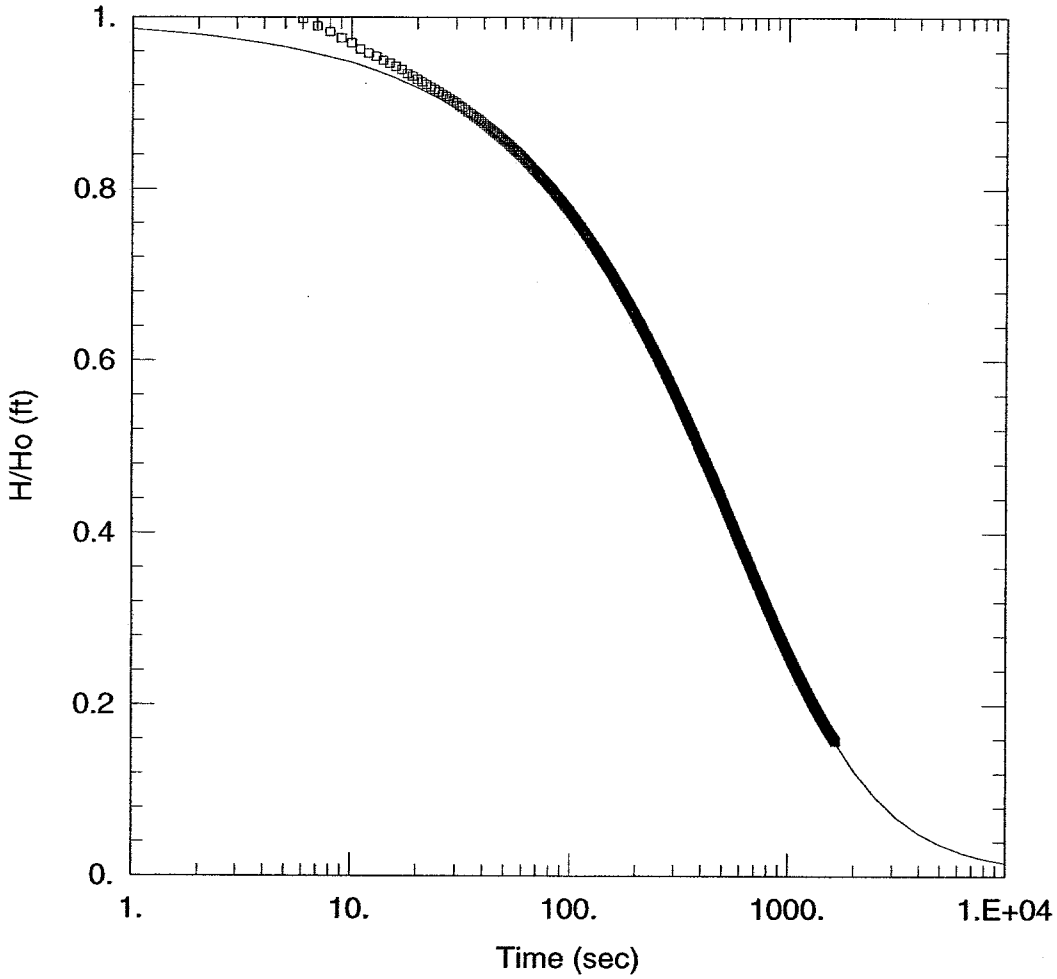
Saturated Thickness: 20. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.18 ft
Water Column Height: 35. ft
Casing Radius: 0.1 ft
Wellbore Radius: 0.4 ft
Screen Length: 10. ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
K = 0.00252 cm/sec
Solution Method: Bouwer-Rice
y0 = 2.343 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW3BR.AQT
Date: 10/22/02 Time: 14:21:13

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-3B Risng Head
Test Date: 4/24/02

AQUIFER DATA

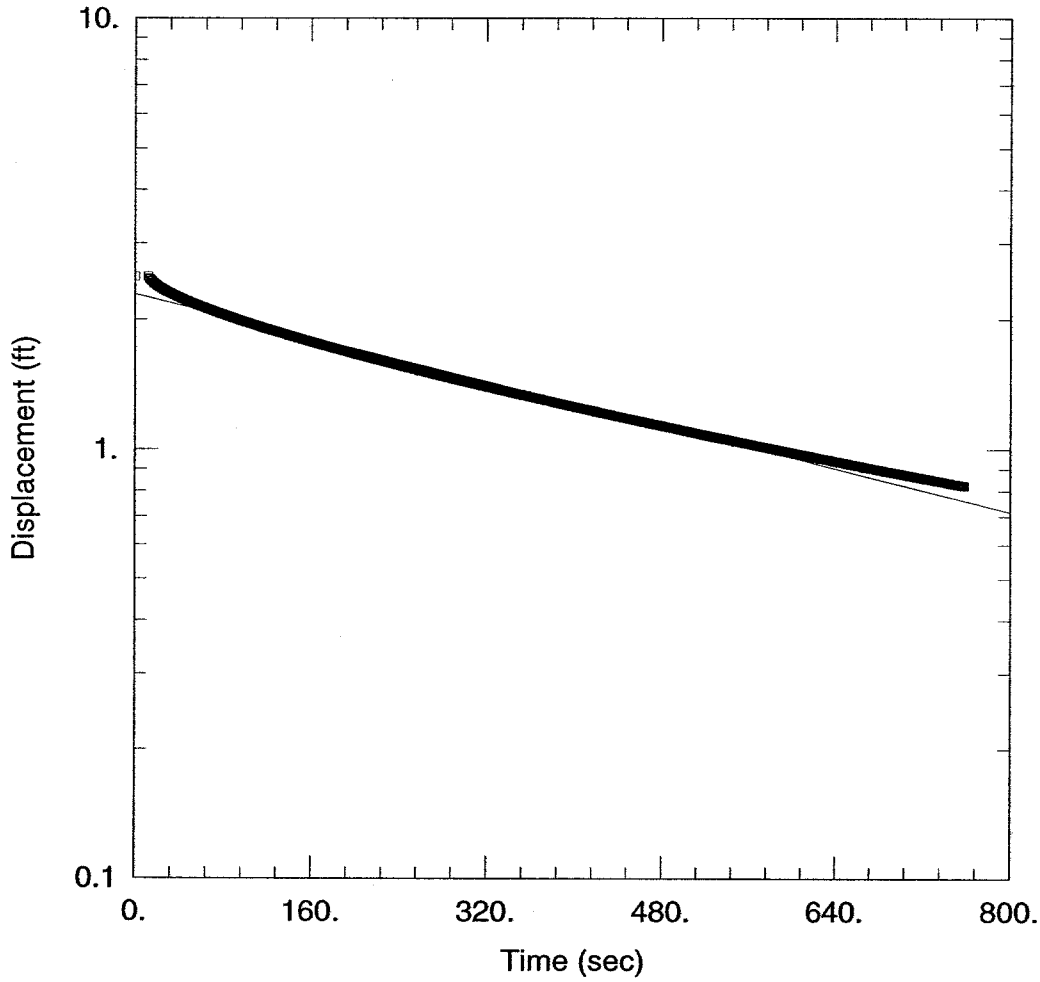
Saturated Thickness: 20. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.18 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 35. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Cooper-Bredehoeft-Papadopulos
$T = 0.01865\ cm^2/sec$
S = 0.0008722



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW3BR2.AQT
Date: 10/22/02 Time: 14:25:40

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-3B Rising 2
Test Date: 4/24/02

AQUIFER DATA

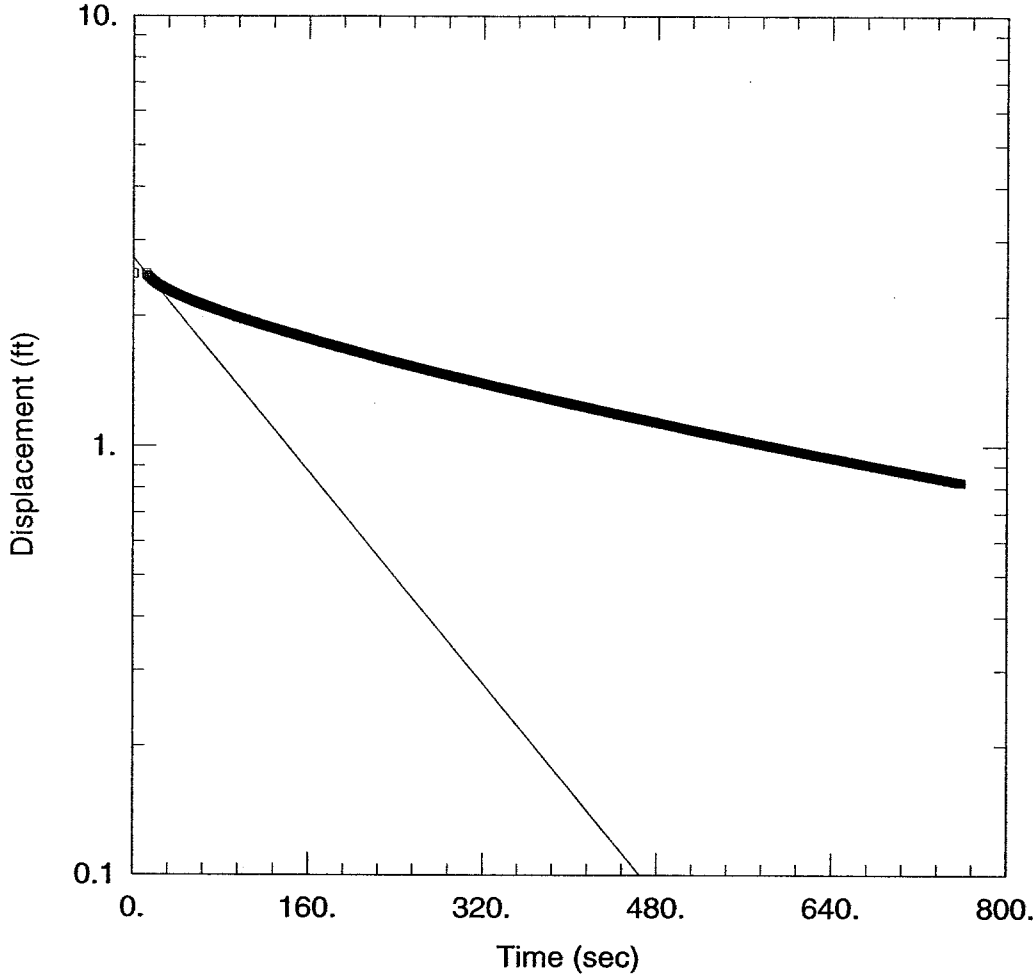
Saturated Thickness: 20. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.51 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 35. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.000629 cm/sec
y0 = 2.291 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW3BR2.AQT
Date: 10/22/02 Time: 14:25:59

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-3B Rising 2
Test Date: 4/24/02

AQUIFER DATA

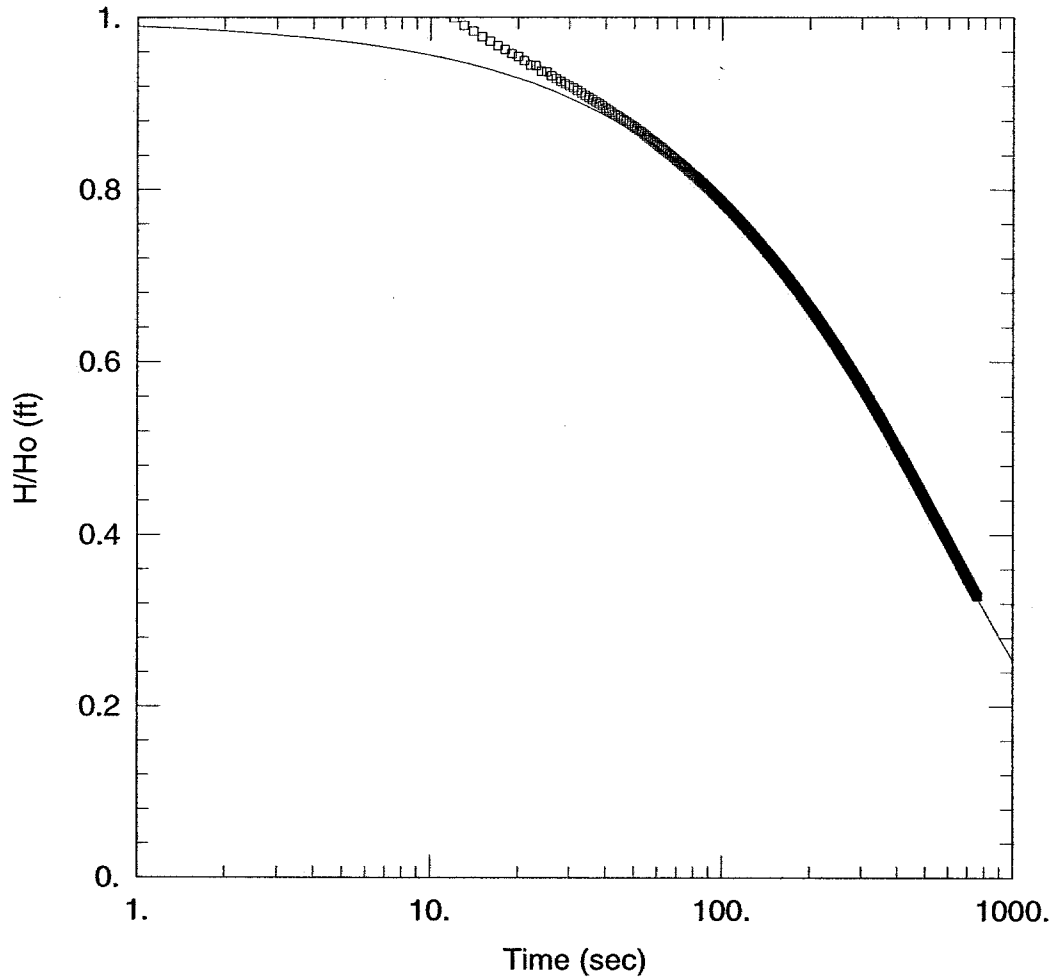
Saturated Thickness: 20. ft
Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.51 ft
Casing Radius: 0.1 ft
Screen Length: 10. ft
Water Column Height: 35. ft
Wellbore Radius: 0.4 ft
Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined
Solution Method: Bouwer-Rice
K = 0.003079 cm/sec
y0 = 2.732 ft



WELL TEST ANALYSIS

Data Set: S:\TMM\BONNEV~1\MW3BR2.AQT
Date: 10/22/02 Time: 14:25:20

PROJECT INFORMATION

Company: URS
Client: Corp of Engineers
Test Location: Camp Bonneville
Test Well: MW-3B Rising 2
Test Date: 4/24/02

AQUIFER DATA

Saturated Thickness: 20. ft Anisotropy Ratio (Kz/Kr): 0.01

WELL DATA

Initial Displacement: 2.51 ft Water Column Height: 35. ft
Casing Radius: 0.1 ft Wellbore Radius: 0.4 ft
Screen Length: 10. ft Gravel Pack Porosity: 0.3

SOLUTION

Aquifer Model: Confined T = 0.02284 cm^2/sec
Solution Method: Cooper-Bredehoeft-Papadopulos S = 0.0003219

Appendix H
Yield Test Data Results

L4-MW02B Yeild Test

DTGW w/ pump = 31.88 ft btoc

Well TD = 74.8 ft btoc

Pump placed at 70 ft btoc

TIME (24-hr)	WATER LEVEL (ft btoc)	PUMP RATE (ml/min)
11:00:00	31.88	250
11:00:05	32	250
11:00:10	32.22	250
11:00:15	32.3	250
11:00:20	32.36	250
11:00:25	32.4	250
11:00:30	32.54	250
11:00:35	32.66	250
11:00:40	33.76	250
11:00:45	33.88	250
11:00:50	33.94	250
11:00:55	34.02	250
11:01:00	34.06	250
11:01:05	34.14	250
11:01:10	34.2	250
11:01:15	34.3	250
11:01:20	34.42	250
11:01:25	34.48	250
11:01:30	34.52	250
11:01:35	34.6	250
11:01:40	34.7	250
11:01:45	34.74	250
11:01:50	34.76	250
11:01:55	34.84	250
11:02:00	34.9	250
11:02:05	34.96	250
11:02:10	35.01	250
11:02:15	35.04	250
11:02:20	35.06	250
11:02:25	35.16	250
11:02:30	35.2	250
11:02:35	35.24	250
11:02:40	35.26	250
11:02:45	35.28	250
11:02:50	35.3	250
11:02:55	35.32	250
11:03:00	35.36	250
11:03:05	35.4	250
11:03:10	35.4	250
11:03:15	35.46	250
11:03:20	35.5	250
11:03:25	35.54	250
11:03:30	35.56	250
11:03:35	35.6	250
11:03:40	35.6	250
11:03:45	35.62	250

11:24:00	36.62	250
11:24:30	36.62	250
11:25:00	36.62	250
11:25:30	36.62	250
11:26:00	36.62	250
11:26:30	36.62	250
11:27:00	36.62	250
11:27:30	36.62	250
11:28:00	36.62	250
11:28:30	36.62	250
11:29:00	36.62	250
11:29:30	36.62	250
11:30:00	36.62	250
11:30:30	36.62	250
11:31:00	36.62	250
11:31:30	36.62	250
11:32:00	36.62	250
11:32:30	36.62	250
11:33:00	36.62	250
11:33:30	36.62	250
11:34:00	36.62	250
11:34:30	36.62	250
11:35:00	36.62	250
11:35:05	37.16	500
11:35:10	37.2	500
11:35:15	37.23	500
11:35:20	37.27	500
11:35:25	37.31	500
11:35:30	37.34	500
11:35:35	37.37	500
11:35:40	37.39	500
11:35:45	37.4	500
11:35:50	37.41	500
11:35:55	37.43	500
11:36:00	37.44	500
11:36:05	37.47	500
11:36:10	37.49	500
11:36:15	37.52	500
11:36:20	37.54	500
11:36:25	37.57	500
11:36:30	37.6	500
11:36:35	37.61	500
11:36:40	37.63	500
11:36:45	37.64	500
11:36:50	37.66	500
11:36:55	37.67	500
11:37:00	37.7	500
11:37:05	37.71	500
11:37:10	37.74	500
11:37:15	37.76	500
11:37:20	37.79	500
11:37:25	37.83	500

11:51:00	38.8	500
11:51:30	38.82	500
11:52:00	38.82	500
11:52:30	38.82	500
11:53:00	38.82	500
11:53:30	38.82	500
11:54:00	38.82	500
11:54:30	38.82	500
11:55:00	38.82	500
11:55:30	38.82	500
11:56:00	38.82	500
11:56:30	38.82	500
11:57:00	38.82	500
11:57:30	38.82	500
11:58:00	38.82	500
11:58:30	38.82	500
11:59:00	38.82	500
11:59:30	38.82	500
12:00:00	38.82	500
12:00:30	38.82	500
12:01:00	38.82	500
12:01:30	38.82	500
12:02:00	38.82	500
12:02:30	38.82	500
12:03:00	38.82	500
12:03:30	38.82	500
12:04:00	38.82	500
12:04:30	38.82	500
12:05:00	38.82	500
12:05:30	38.82	500
12:06:00	38.82	500
12:06:30	38.82	500
12:07:00	38.82	500
12:07:30	38.82	500
12:08:00	38.82	500
12:08:30	38.82	500
12:09:00	38.82	500
12:09:30	38.82	500
12:10:00	38.82	500
12:10:05	39.1	750
12:10:10	39.17	750
12:10:15	39.25	750
12:10:20	39.29	750
12:10:25	39.31	750
12:10:30	39.34	750
12:10:35	39.45	750
12:10:40	39.51	750
12:10:45	39.59	750
12:10:50	39.64	750
12:10:55	39.68	750
12:11:00	39.72	750
12:11:05	39.77	750

12:18:00	41.54	750
12:18:30	41.6	750
12:19:00	41.6	750
12:19:30	41.64	750
12:20:00	41.66	750
12:20:30	41.68	750
12:21:00	41.68	750
12:21:30	41.7	750
12:22:00	41.7	750
12:22:30	41.7	750
12:23:00	41.7	750
12:23:30	41.7	750
12:24:00	41.7	750
12:24:30	41.7	750
12:25:00	41.7	750
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12:26:00	41.7	750
12:26:30	41.7	750
12:27:00	41.7	750
12:27:30	41.7	750
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12:28:30	41.7	750
12:29:00	41.7	750
12:29:30	41.7	750
12:30:00	41.7	750
12:30:30	41.7	750
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12:34:00	41.7	750
12:34:30	41.7	750
12:35:00	41.7	750
12:35:30	41.7	750
12:36:00	41.7	750
12:36:30	41.7	750
12:37:00	41.7	750
12:37:30	41.7	750
12:38:00	41.7	750
12:38:30	41.7	750
12:39:00	41.7	750
12:39:30	41.7	750
12:40:00	41.7	750
12:40:30	41.7	750
12:41:00	41.7	750
12:41:30	41.7	750
12:42:00	41.7	750
12:42:30	41.7	750
12:43:00	41.7	750
12:43:30	41.7	750

12:49:10	45.1	1,000
12:49:15	45.18	1,000
12:49:20	45.28	1,000
12:49:25	45.36	1,000
12:49:30	45.4	1,000
12:49:35	45.46	1,000
12:49:40	45.52	1,000
12:49:45	45.58	1,000
12:49:50	45.62	1,000
12:49:55	45.66	1,000
12:50:00	45.7	1,000
12:50:30	46	1,000
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12:51:30	46.6	1,000
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12:53:00	47.16	1,000
12:53:30	47.3	1,000
12:54:00	47.44	1,000
12:54:30	47.5	1,000
12:55:00	47.56	1,000
12:55:30	47.64	1,000
12:56:00	47.7	1,000
12:56:30	47.76	1,000
12:57:00	47.86	1,000
12:57:30	47.94	1,000
12:58:00	47.98	1,000
12:58:30	48	1,000
12:59:00	48.02	1,000
12:59:30	48.04	1,000
13:00:00	48.06	1,000
13:00:30	48.08	1,000
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13:03:00	48.08	1,000
13:03:30	48.08	1,000
13:04:00	48.08	1,000
13:04:30	48.08	1,000
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13:05:30	48.08	1,000
13:06:00	48.08	1,000
13:06:30	48.08	1,000
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13:08:00	48.08	1,000
13:08:30	48.08	1,000
13:09:00	48.08	1,000
13:09:30	48.08	1,000
13:10:00	48.08	1,000
13:10:30	48.08	1,000

13:22:50	50.24	1,250
13:22:55	50.29	1,250
13:23:00	50.32	1,250
13:23:05	50.36	1,250
13:23:10	50.4	1,250
13:23:15	50.44	1,250
13:23:20	50.46	1,250
13:23:25	50.48	1,250
13:23:30	50.5	1,250
13:23:35	50.56	1,250
13:23:40	50.6	1,250
13:23:45	50.68	1,250
13:23:50	50.78	1,250
13:23:55	50.82	1,250
13:24:00	50.88	1,250
13:24:05	50.98	1,250
13:24:10	51.06	1,250
13:24:15	51.12	1,250
13:24:20	51.18	1,250
13:24:25	51.22	1,250
13:24:30	51.26	1,250
13:24:35	51.29	1,250
13:24:40	51.36	1,250
13:24:45	51.38	1,250
13:24:50	51.4	1,250
13:24:55	51.42	1,250
13:25:00	51.44	1,250
13:25:30	51.66	1,250
13:26:00	51.88	1,250
13:26:30	52.1	1,250
13:27:00	52.3	1,250
13:27:30	52.4	1,250
13:28:00	52.48	1,250
13:28:30	52.6	1,250
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13:31:00	52.96	1,250
13:31:30	52.98	1,250
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13:32:30	53.04	1,250
13:33:00	53.06	1,250
13:33:30	53.1	1,250
13:34:00	53.18	1,250
13:34:30	53.18	1,250
13:35:00	53.22	1,250
13:35:30	53.3	1,250
13:36:00	53.36	1,250
13:36:30	53.4	1,250
13:37:00	53.46	1,250
13:37:30	53.5	1,250

13:56:30	54.86	1,500
13:56:35	54.98	1,500
13:56:40	54.08	1,500
13:56:45	54.2	1,500
13:56:50	54.32	1,500
13:56:55	54.4	1,500
13:57:00	55.5	1,500
13:57:05	55.64	1,500
13:57:10	55.72	1,500
13:57:15	55.8	1,500
13:57:20	55.88	1,500
13:57:25	55.96	1,500
13:57:30	56	1,500
13:57:35	56.08	1,500
13:57:40	56.14	1,500
13:57:45	56.2	1,500
13:57:50	56.24	1,500
13:57:55	56.26	1,500
13:58:00	56.3	1,500
13:58:05	56.36	1,500
13:58:10	56.42	1,500
13:58:15	56.48	1,500
13:58:20	56.56	1,500
13:58:25	56.6	1,500
13:58:30	56.64	1,500
13:58:35	56.7	1,500
13:58:40	56.74	1,500
13:58:45	56.8	1,500
13:58:50	56.84	1,500
13:58:55	56.88	1,500
13:59:00	56.96	1,500
13:59:05	57.02	1,500
13:59:10	57.08	1,500
13:59:15	57.18	1,500
13:59:20	57.26	1,500
13:59:25	57.34	1,500
13:59:30	57.42	1,500
13:59:35	57.48	1,500
13:59:40	57.54	1,500
13:59:45	57.58	1,500
13:59:50	57.6	1,500
13:59:55	57.63	1,500
14:00:00	57.66	1,500
14:00:30	57.8	1,500
14:01:00	58.1	1,500
14:01:30	58.36	1,500
14:02:00	58.66	1,500
14:02:30	58.82	1,500
14:03:00	58.98	1,500
14:03:30	59.18	1,500
14:04:00	59.3	1,500
14:04:30	59.4	1,500

14:21:50	62.08	1,750
14:21:55	62.12	1,750
14:22:00	62.16	1,750
14:22:05	62.22	1,750
14:22:10	62.3	1,750
14:22:15	62.38	1,750
14:22:20	62.48	1,750
14:22:25	62.54	1,750
14:22:30	62.6	1,750
14:22:35	62.66	1,750
14:22:40	62.74	1,750
14:22:45	62.82	1,750
14:22:50	62.9	1,750
14:22:55	62.96	1,750
14:23:00	63	1,750
14:23:05	63.08	1,750
14:23:10	63.14	1,750
14:23:15	63.22	1,750
14:23:20	63.3	1,750
14:23:25	63.38	1,750
14:23:30	63.46	1,750
14:23:35	63.5	1,750
14:23:40	63.54	1,750
14:23:45	63.58	1,750
14:23:50	63.62	1,750
14:23:55	63.66	1,750
14:24:00	63.7	1,750
14:24:05	63.74	1,750
14:24:10	63.77	1,750
14:24:15	63.8	1,750
14:24:20	63.82	1,750
14:24:25	63.84	1,750
14:24:30	63.9	1,750
14:24:35	63.92	1,750
14:24:40	63.94	1,750
14:24:45	63.98	1,750
14:24:50	64.02	1,750
14:24:55	64.06	1,750
14:25:00	64.1	1,750
14:25:30	64.36	1,750
14:26:00	64.54	1,750
14:26:30	64.66	1,750
14:27:00	64.8	1,750
14:27:30	65	1,750
14:28:00	65.14	1,750
14:28:30	65.3	1,750
14:29:00	65.4	1,750
14:29:30	65.38	1,750
14:30:00	65.38	1,750
14:30:30	65.38	1,750
14:31:00	65.38	1,750
14:31:30	65.38	1,750

14:55:30	65.44	2,000
14:55:35	65.44	2,000
14:55:40	65.44	2,000
14:55:45	65.44	2,000
14:55:50	65.44	2,000
14:55:55	65.44	2,000
14:56:00	65.44	2,000
14:56:05	65.44	2,000
14:56:10	65.44	2,000
14:56:15	65.44	2,000
14:56:20	65.44	2,000
14:56:25	65.44	2,000
14:56:30	65.44	2,000
14:56:35	65.44	2,000
14:56:40	65.44	2,000
14:56:45	65.44	2,000
14:56:50	65.44	2,000
14:56:55	65.44	2,000
14:57:00	65.44	2,000
14:57:05	65.44	2,000
14:57:10	65.44	2,000
14:57:15	65.44	2,000
14:57:20	65.44	2,000
14:57:25	65.44	2,000
14:57:30	65.44	2,000
14:57:35	65.44	2,000
14:57:40	65.44	2,000
14:57:45	65.44	2,000
14:57:50	65.44	2,000
14:57:55	65.44	2,000
14:58:00	65.44	2,000
14:58:05	65.44	2,000
14:58:10	65.44	2,000
14:58:15	65.44	2,000
14:58:20	65.44	2,000
14:58:25	65.44	2,000
14:58:30	65.44	2,000
14:58:35	65.44	2,000
14:58:40	65.44	2,000
14:58:45	65.44	2,000
14:58:50	65.44	2,000
14:58:55	65.44	2,000
14:59:00	65.44	2,000
14:59:05	65.44	2,000
14:59:10	65.44	2,000
14:59:15	65.44	2,000
14:59:20	65.44	2,000
14:59:25	65.44	2,000
14:59:30	65.44	2,000
14:59:35	65.44	2,000
14:59:40	65.44	2,000
14:59:45	65.44	2,000

Pump turned off at 15:18:00

TIME (24-hr)	WATER LEVEL (ft btoc)
15:18:00	69.7
15:18:05	69.56
15:18:10	69.5
15:18:15	69.4
15:18:20	69.34
15:18:25	69.28
15:18:30	69.24
15:18:35	69.2
15:18:40	69.14
15:18:45	69.1
15:18:50	69.04
15:18:55	69
15:19:00	68.94
15:19:05	69.86
15:19:10	69.82
15:19:15	69.7
15:19:20	69.6
15:19:25	69.56
15:19:30	69.5
15:19:45	69.4
15:20:00	69.32
15:20:15	69.2
15:20:30	69.1
15:20:45	68
15:21:00	67.92
15:21:15	67.82
15:21:30	67.64
15:22:00	67.4
15:22:30	67.3
15:23:00	67.2
15:23:30	67
15:24:00	66.84
15:24:30	66.7
15:25:00	66.54
15:25:30	66.38
15:26:30	66.1
15:27:30	65.7
15:28:30	65
15:29:30	63.4
15:30:30	62
15:31:30	60.5
15:32:30	59.1
15:33:30	57.6
15:34:30	56.1
15:35:30	55.3
15:36:30	53.4
15:37:30	52.5

Appendix I
Geotechnical Laboratory Analysis

Northwest Testing, Inc.
A Division of Northwest Geotech, Inc.
9120 SW Pioneer Court, Suite B • Wilsonville, Oregon 97070 503/682-1880 FAX: 503/682-2753

TECHNICAL REPORT

RECEIVED
OCT 31 2001
URS CORPORATION
SEATTLE

Report To: Mr. Steven Wolfe
URS Corporation
1501 Fourth Avenue, Suite 1400
Seattle, Washington 98101

Date: 10/26/01

Project: Lab Testing Services
Camp Bonneville, Washington
53-F0072323.00

Project No.: 1179.1.1

Report of: Atterberg limits and hydrometer analysis testing of soil.

Sample Identification

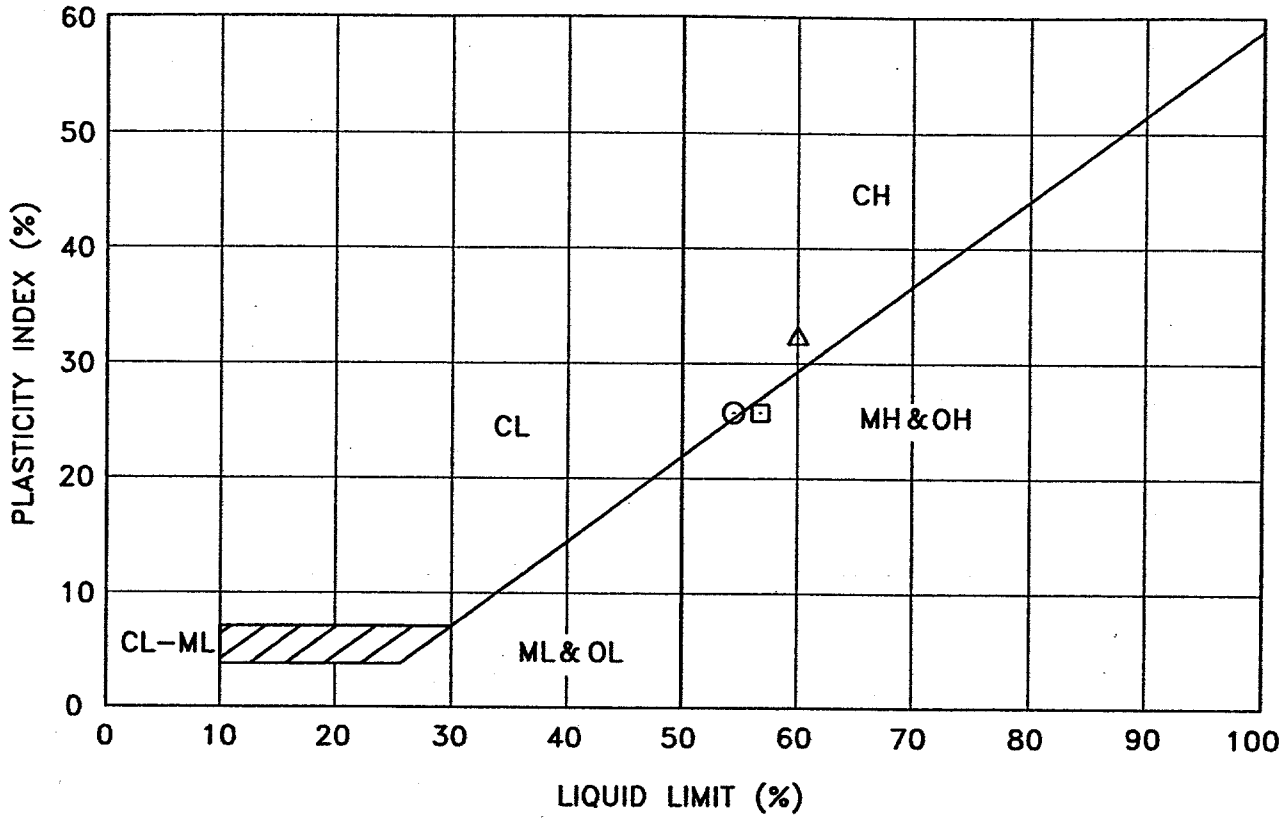
Our personnel performed laboratory tests on soil samples received by our laboratory. As requested, Atterberg limits and hydrometer analysis testing of soil was performed in general accordance with ASTM methods. The test results are summarized on the attached sheets.

Attachments:

Lab Number	Test
914	Atterberg Limits
	Hydrometer Analysis
	Hydrometer Analysis
	Hydrometer Analysis

This report shall not be reproduced except in full, without written approval of Northwest Geotech, Inc.

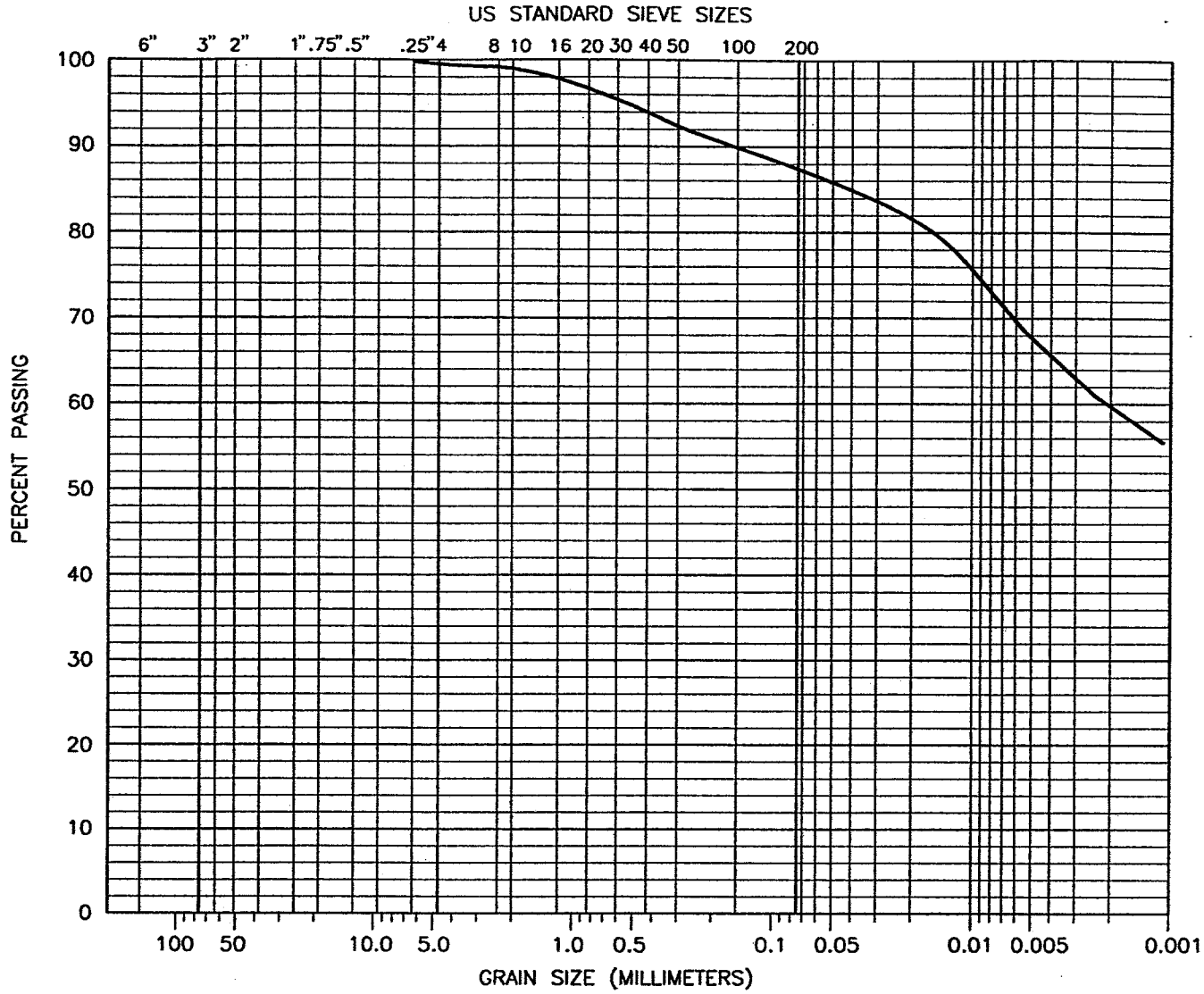
REVIEWED BY: Jon L. Sparks



SYMBOL	SAMPLE LOCATION	FIELD (%) MOISTURE	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	PLASTICITY INDEX (%)	UNIFIED SOIL CLASS.
⊙	3A @ 25'-26.5'	-	54	28	26	CH
△	3B @ 25'	-	60	28	32	CH
⊡	4A @ 41.5'-43'	-	57	31	26	MH

ATTERBERG LIMITS TEST RESULTS

PROJECT NO. 1179.1.1	URS CORPORATION CAMP BONNEVILLE 53-F0072323.00	LAB NO. 914

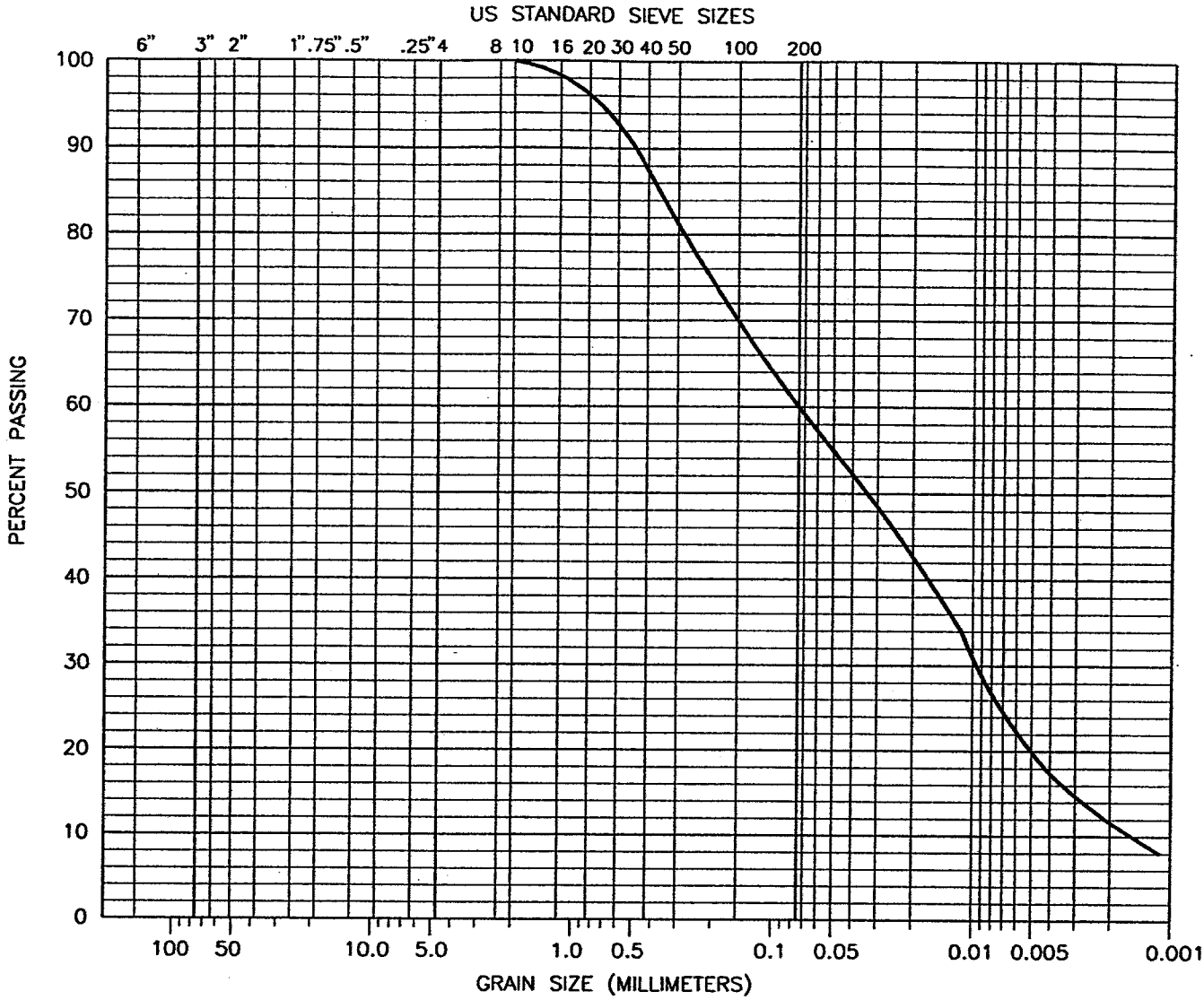


COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SYMBOL	SAMPLE LOCATION	FIELD MOISTURE (%)	% PASSING NO. 200 SIEVE	% PASSING 2 μ	UNIFIED SOIL CLASSIFICATION
———	3B @ 35'	–	87	60	CH

GRADATION TEST RESULTS

PROJECT NO. 1179.1.1	URS CORPORATION CAMP BONNEVILLE 53-F0072323.00	LAB NO. 914

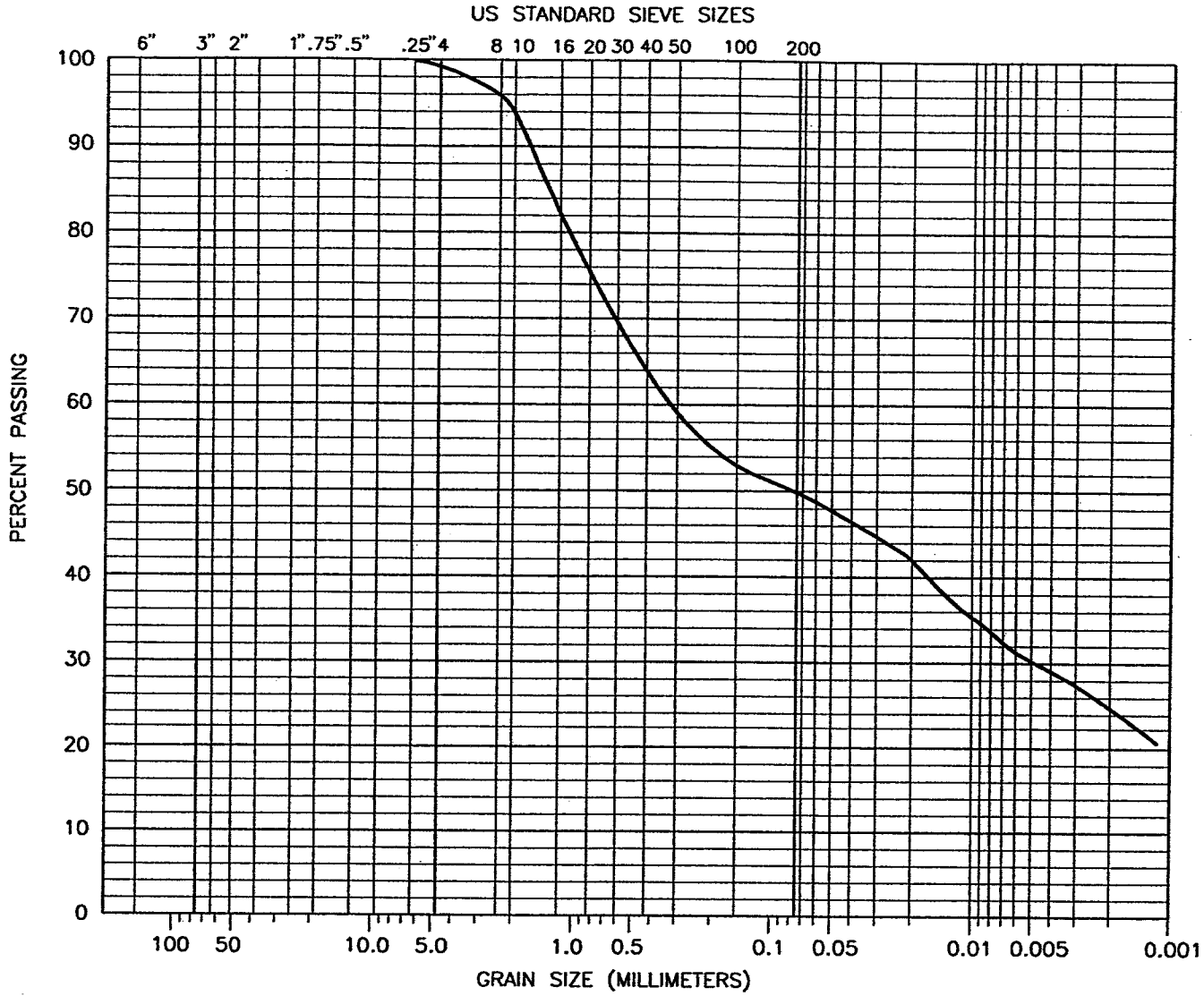


COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SYMBOL	SAMPLE LOCATION	FIELD MOISTURE (%)	% PASSING NO. 200 SIEVE	% PASSING 2 μ	UNIFIED SOIL CLASSIFICATION
———	4A @ 40'–41.5'	–	60	12	MH

GRADATION TEST RESULTS

PROJECT NO. 1179.1.1	URS CORPORATION CAMP BONNEVILLE 53–F0072323.00	LAB NO. 914



COBBLES	GRAVEL		SAND			SILT AND CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SYMBOL	SAMPLE LOCATION	FIELD MOISTURE (%)	% PASSING NO. 200 SIEVE	% PASSING 2 μ	UNIFIED SOIL CLASSIFICATION
———	5A @ 35'–36.5'	–	50	25	MH–SM

GRADATION TEST RESULTS

PROJECT NO. 1179.1.1	URS CORPORATION CAMP BONNEVILLE 53–F0072323.00	LAB NO. 914

Appendix J
Laboratory Reports

SEVERN TRENT SERVICES

STL Burlington
208 South Park Drive
Suite 1
Colchester, VT 05446

Tel: 802 655 1203
Fax: 802 655 1248
www.stl-inc.com

August 15, 2001

Mr. John Kearns
URS Corporation
849 International Drive
Suite 320
Linthicum, MD 21090

Re: Laboratory Project No. 21015
Case: 21015; SDG: BON001

Dear Mr. Kearns:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on July 26, 28, and August 1, 2001. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 07/26/01 ETR No: 83969		
460216	GW01MW01A	07/24/01	Water
460217	GW01MW01B	07/24/01	Water
460218	GW01MW02A	07/24/01	Water
460219	GW501MW02A	07/24/01	Water
460220	GW01MW02B	07/25/01	Water
460220MS	GW01MW02BMS	07/25/01	Water
460220MD	GW01MW02BMSD	07/25/01	Water
	Received: 07/28/01 ETR No: 84007		
460487	GW01MW03A	07/26/01	Water
460488	GW01MW05A	07/26/01	Water
460489	GW1001MW03A	07/27/01	Water
460490	GW01MW04A	07/25/01	Water
460491	GW01MW06A	07/24/01	Water
460492	GW01MW06B	07/27/01	Water
	Received: 08/01/01 ETR No: 84051		
460723	GW01MW03B	07/26/01	Water

0001-A

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW01A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460216

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I701

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/03/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW01B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460217

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I711

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/03/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW02A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460218

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I721

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.5	
121-82-4	RDX	44	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW02ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460218D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 06AUG010920-I301

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/07/01

Injection Volume: 200.0(uL) Dilution Factor: 3.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.6	D
121-82-4	RDX	44	D
88-89-1	Picric acid	0.75	U
99-35-4	1,3,5-Trinitrobenzene	0.75	U
99-65-0	1,3-Dinitrobenzene	0.75	U
98-95-3	Nitrobenzene	0.75	U
479-45-8	Tetryl	0.75	U
55-63-0	Nitroglycerin	15	U
118-96-7	2,4,6-Trinitrotoluene	0.75	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.75	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.75	U
606-20-2	2,6-Dinitrotoluene	0.75	U
121-14-2	2,4-Dinitrotoluene	0.75	U
88-72-2	2-Nitrotoluene	0.75	U
99-99-0	4-Nitrotoluene	0.75	U
99-08-1	3-Nitrotoluene	0.75	U
78-11-5	PETN	30	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW501MW02A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460219

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I751

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.5	
121-82-4	RDX	36	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW501MW02ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460219D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 06AUG010920-I311

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/07/01

Injection Volume: 200.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.4	D
121-82-4	RDX	36	D
88-89-1	Picric acid	0.50	U
99-35-4	1,3,5-Trinitrobenzene	0.50	U
99-65-0	1,3-Dinitrobenzene	0.50	U
98-95-3	Nitrobenzene	0.50	U
479-45-8	Tetryl	0.50	U
55-63-0	Nitroglycerin	10	U
118-96-7	2,4,6-Trinitrotoluene	0.50	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.50	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.50	U
606-20-2	2,6-Dinitrotoluene	0.50	U
121-14-2	2,4-Dinitrotoluene	0.50	U
88-72-2	2-Nitrotoluene	0.50	U
99-99-0	4-Nitrotoluene	0.50	U
99-08-1	3-Nitrotoluene	0.50	U
78-11-5	PETN	20	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW02B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460220

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I761

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	1.7	
121-82-4	RDX	120	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.30	
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW02BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460220D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 06AUG010920-I321

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/26/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/07/01

Injection Volume: 200.0(uL) Dilution Factor: 8.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.0	U
121-82-4	RDX	120	D
88-89-1	Picric acid	2.0	U
99-35-4	1,3,5-Trinitrobenzene	2.0	U
99-65-0	1,3-Dinitrobenzene	2.0	U
98-95-3	Nitrobenzene	2.0	U
479-45-8	Tetryl	2.0	U
55-63-0	Nitroglycerin	40	U
118-96-7	2,4,6-Trinitrotoluene	2.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	2.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	2.0	U
606-20-2	2,6-Dinitrotoluene	2.0	U
121-14-2	2,4-Dinitrotoluene	2.0	U
88-72-2	2-Nitrotoluene	2.0	U
99-99-0	4-Nitrotoluene	2.0	U
99-08-1	3-Nitrotoluene	2.0	U
78-11-5	PETN	80	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW03A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460487

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I791

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	6.6	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW03B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460723

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 30JUL011127-I901

% Moisture: _____ decanted: (Y/N)___ Date Received: 08/01/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:08/01/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/01/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.60	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW05A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460488

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I801

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.28	
121-82-4	RDX	5.2	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW06A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460491

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I831

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	18	
121-82-4	RDX	45	E
88-89-1	Picric acid	12	
99-35-4	1,3,5-Trinitrobenzene	10	
99-65-0	1,3-Dinitrobenzene	45	E
98-95-3	Nitrobenzene	12	
479-45-8	Tetryl	27	E
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	6.0	
1946-51-0	4-Amino-2,6-dinitrotoluene	45	E
35572-78-2	2-Amino-4,6-dinitrotoluene	25	E
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	40	E
88-72-2	2-Nitrotoluene	40	E
99-99-0	4-Nitrotoluene	12	
99-08-1	3-Nitrotoluene	69	E
78-11-5	PETN	19	

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW06ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460491D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 06AUG010920-I331

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/07/01

Injection Volume: 200.0(uL) Dilution Factor: 4.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	18	D
121-82-4	RDX	45	D
88-89-1	Picric acid	10	D
99-35-4	1,3,5-Trinitrobenzene	9.9	D
99-65-0	1,3-Dinitrobenzene	46	D
98-95-3	Nitrobenzene	12	D
479-45-8	Tetryl	27	D
55-63-0	Nitroglycerin	20	U
118-96-7	2,4,6-Trinitrotoluene	5.8	D
1946-51-0	4-Amino-2,6-dinitrotoluene	45	D
35572-78-2	2-Amino-4,6-dinitrotoluene	26	D
606-20-2	2,6-Dinitrotoluene	1.0	U
121-14-2	2,4-Dinitrotoluene	41	D
88-72-2	2-Nitrotoluene	41	D
99-99-0	4-Nitrotoluene	12	D
99-08-1	3-Nitrotoluene	70	D
78-11-5	PETN	40	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW06B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460492

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I841

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200:0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	87	E
121-82-4	RDX	22	E
88-89-1	Picric acid	56	E
99-35-4	1,3,5-Trinitrobenzene	51	E
99-65-0	1,3-Dinitrobenzene	12	
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	55	E
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	22	E
1946-51-0	4-Amino-2,6-dinitrotoluene	22	E
35572-78-2	2-Amino-4,6-dinitrotoluene	67	E
606-20-2	2,6-Dinitrotoluene	66	E
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	10	
99-99-0	4-Nitrotoluene	21	E
99-08-1	3-Nitrotoluene	11	
78-11-5	PETN	100	

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW06BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460492D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 06AUG010920-I341

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/07/01

Injection Volume: 200.0(uL) Dilution Factor: 5.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	89	D
121-82-4	RDX	22	D
88-89-1	Picric acid	52	D
99-35-4	1,3,5-Trinitrobenzene	53	D
99-65-0	1,3-Dinitrobenzene	13	D
98-95-3	Nitrobenzene	1.2	U
479-45-8	Tetryl	62	D
55-63-0	Nitroglycerin	25	U
118-96-7	2,4,6-Trinitrotoluene	22	D
1946-51-0	4-Amino-2,6-dinitrotoluene	21	D
35572-78-2	2-Amino-4,6-dinitrotoluene	69	D
606-20-2	2,6-Dinitrotoluene	69	D
121-14-2	2,4-Dinitrotoluene	1.2	U
88-72-2	2-Nitrotoluene	10	D
99-99-0	4-Nitrotoluene	22	D
99-08-1	3-Nitrotoluene	11	D
78-11-5	PETN	95	D

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW1001MW03A
Rinsate

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460489

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I811

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

SAMPLE SUMMARY

H1G260103

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMI TIMI
EGXWX	001	GW01MW01A	07/24/01	11:(
EGXW4	002	GW01MW01B	07/24/01	00:4
EGXW5	003	GW01MW02A	07/24/01	17:4
EGXW8	004	GW0501MW02A	07/24/01	18:(
EGXXC	005	GW01MW02B	07/25/01	12:4

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

SAMPLE SUMMARY

H1G300135

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAM TIM
EG583	001	GW01MW03A	07/26/01	16:
EG584	002	GW01MW03B	07/26/01	13:
EG587	003	GW01MW05A	07/26/01	12:
EG589	004	GW1001MW03A	07/27/01	08:
EG59J	005	GW01MW04A	07/25/01	18:
EG59K	006	GW01MW06A	07/24/01	11:
EG6GK	007	GW01MW06B	07/27/01	09:

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

URS

Client Sample ID: GW01MW01A

HPLC

Lot-Sample #...: H1G260103-001 Work Order #...: EGXWX1AC Matrix.....: WATER
Date Sampled...: 07/24/01 Date Received..: 07/26/01
Prep Date.....: 07/31/01 Analysis Date..: 08/10/01
Prep Batch #...: 1212362
Dilution Factor: 1 Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	70	(53 - 133)

URS

Client Sample ID: GW01MW01A

General Chemistry

Lot-Sample #...: H1G260103-001 Work Order #...: EGXWX Matrix.....: WATER
Date Sampled...: 07/24/01 Date Received..: 07/26/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH
Perchlorate	ND	5.0	ug/L	EPA 314.0	08/14/01	122647

Dilution Factor: 1

URS

Client Sample ID: GW01MW01B

HPLC

Lot-Sample #...:	H1G260103-002	Work Order #...:	EGXW41AC	Matrix.....:	WATER
Date Sampled...:	07/24/01	Date Received..:	07/26/01		
Prep Date.....:	07/31/01	Analysis Date..:	08/10/01		
Prep Batch #...:	1212362				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	70	(53 - 133)

URS

Client Sample ID: GW01MW01B

General Chemistry

Lot-Sample #...: H1G260103-002 Work Order #...: EGXW4 Matrix.....: WATER
Date Sampled...: 07/24/01 Date Received..: 07/26/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	ND	5.0	ug/L	EPA 314.0	08/14/01	1226476

Dilution Factor: 1

URS

Client Sample ID: GW01MW02A

HPLC

Lot-Sample #...: H1G260103-003 Work Order #...: EGXW51AC Matrix.....: WATER
Date Sampled...: 07/24/01 Date Received..: 07/26/01
Prep Date.....: 07/31/01 Analysis Date..: 08/10/01
Prep Batch #...: 1212362
Dilution Factor: 1 Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	80	(53 - 133)

URS

Client Sample ID: GW01MW02A

General Chemistry

Lot-Sample #...: H1G260103-003 Work Order #...: EGXW5 Matrix.....: WATER
Date Sampled...: 07/24/01 Date Received..: 07/26/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH
Perchlorate	136	5.0	ug/L	EPA 314.0	08/14/01	122647

Dilution Factor: 1

URS

Client Sample ID: GW0501MW02A

HPLC

Lot-Sample #...: H1G260103-004	Work Order #...: EGXW81AC	Matrix.....: WATER	
Date Sampled...: 07/24/01	Date Received..: 07/26/01		
Prep Date.....: 07/31/01	Analysis Date..: 08/10/01		
Prep Batch #...: 1212362			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	66	(53 - 133)

URS

Client Sample ID: GW0501MW02A

General Chemistry

Lot-Sample #...: H1G260103-004 Work Order #...: EGXW8 Matrix.....: WATER
Date Sampled...: 07/24/01 Date Received..: 07/26/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH
Perchlorate	183	5.0	ug/L	EPA 314.0	08/14/01	122647

Dilution Factor: 1

URS

Client Sample ID: GW01MW02B

HPLC

Lot-Sample #...: H1G260103-005	Work Order #...: EGXXC1AE	Matrix.....: WATER	
Date Sampled...: 07/25/01	Date Received..: 07/26/01		
Prep Date.....: 07/31/01	Analysis Date..: 08/10/01		
Prep Batch #...: 1212362			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	80	(53 - 133)

URS

Client Sample ID: GW01MW02B

General Chemistry

Lot-Sample #...: H1G260103-005 Work Order #...: EGXXC Matrix.....: WATER
Date Sampled...: 07/25/01 Date Received..: 07/26/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	199	25.0	ug/L	EPA 314.0	08/14/01	122647(

Dilution Factor: 5

URS

Client Sample ID: GW01MW03A

HPLC

Lot-Sample #...:	H1G300135-001	Work Order #...:	EG5831AC	Matrix.....:	WATER
Date Sampled...:	07/26/01	Date Received..:	07/28/01		
Prep Date.....:	07/31/01	Analysis Date..:	08/10/01		
Prep Batch #...:	1212362				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	65	(53 - 133)

URS

Client Sample ID: GW01MW03A

General Chemistry

Lot-Sample #...: H1G300135-001 Work Order #...: EG583 Matrix.....: WATER
Date Sampled...: 07/26/01 Date Received..: 07/28/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	91.5	5.0	ug/L	EPA 314.0	08/14/01	1226476

Dilution Factor: 1

URS

Client Sample ID: GW01MW03B

HPLC

Lot-Sample #...:	H1G300135-002	Work Order #...:	EG5841AC	Matrix.....:	WATER
Date Sampled...:	07/26/01	Date Received..:	07/28/01		
Prep Date.....:	07/31/01	Analysis Date..:	08/10/01		
Prep Batch #...:	1212362				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	73	(53 - 133)

URS

Client Sample ID: GW01MW03B

General Chemistry

Lot-Sample #...: H1G300135-002 Work Order #...: EG584 Matrix.....: WATER
Date Sampled...: 07/26/01 Date Received..: 07/28/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	15.5	5.0	ug/L	EPA 314.0	08/14/01	1226476

Dilution Factor: 1

URS

Client Sample ID: GW01MW04A

HPLC

Lot-Sample #...:	H1G300135-005	Work Order #...:	EG59J1AC	Matrix.....:	WATER
Date Sampled...:	07/25/01	Date Received..:	07/28/01		
Prep Date.....:	07/31/01	Analysis Date..:	08/10/01		
Prep Batch #...:	1212362				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	69	(53 - 133)

URS

Client Sample ID: GW01MW04A

General Chemistry

Lot-Sample #...: H1G300135-005 Work Order #...: EG59J Matrix.....: WATER
Date Sampled...: 07/25/01 Date Received..: 07/28/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH
Perchlorate	13.2	5.0	ug/L	EPA 314.0	08/14/01	122647

Dilution Factor: 1

URS

Client Sample ID: GW01MW05A

HPLC

Lot-Sample #...: H1G300135-003 Work Order #...: EG5871AC Matrix.....: WATER
Date Sampled...: 07/26/01 Date Received..: 07/28/01
Prep Date.....: 07/31/01 Analysis Date..: 08/10/01
Prep Batch #...: 1212362
Dilution Factor: 1 Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	63	(53 - 133)

URS

Client Sample ID: GW01MW05A

General Chemistry

Lot-Sample #...: H1G300135-003 Work Order #...: EG587 Matrix.....: WATER
Date Sampled...: 07/26/01 Date Received..: 07/28/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	63.8	5.0	ug/L	EPA 314.0	08/14/01	1226476

Dilution Factor: 1

URS

Client Sample ID: GW01MW06A

HPLC

Lot-Sample #...: H1G300135-006 Work Order #...: EG59K1AC Matrix.....: WATER
Date Sampled...: 07/24/01 Date Received..: 07/28/01
Prep Date.....: 07/31/01 Analysis Date..: 08/10/01
Prep Batch #...: 1212362
Dilution Factor: 1 Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	89	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	68	(53 - 133)

URS

Client Sample ID: GW01MW06A

General Chemistry

Lot-Sample #...: H1G300135-006 Work Order #...: EG59K Matrix.....: WATER
Date Sampled...: 07/24/01 Date Received..: 07/28/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	32.5	5.0	ug/L	EPA 314.0	08/14/01	1226476

Dilution Factor: 1

URS

Client Sample ID: GW01MW06B

HPLC

Lot-Sample #...:	H1G300135-007	Work Order #...:	EG6GK1AC	Matrix.....:	WATER
Date Sampled...:	07/27/01	Date Received..:	07/28/01		
Prep Date.....:	07/31/01	Analysis Date..:	08/10/01		
Prep Batch #...:	1212362				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	45	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	71	(53 - 133)

URS

Client Sample ID: GW01MW06B

General Chemistry

Lot-Sample #...: H1G300135-007 Work Order #...: EG6GK Matrix.....: WATER
Date Sampled...: 07/27/01 Date Received..: 07/28/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	58.8	5.0	ug/L	EPA 314.0	08/14/01	1226476

Dilution Factor: 1

Rinsate

URS

Client Sample ID: GW1001MW03A

HPLC

Lot-Sample #...:	H1G300135-004	Work Order #...:	EG5891AC	Matrix.....:	WATER
Date Sampled...:	07/27/01	Date Received..:	07/28/01		
Prep Date.....:	07/31/01	Analysis Date..:	08/10/01		
Prep Batch #...:	1212362				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	82	(53 - 133)

URS

Client Sample ID: GW1001MW03A

General Chemistry

Lot-Sample #...: H1G300135-004 Work Order #...: EG589 Matrix.....: WATER
Date Sampled...: 07/27/01 Date Received..: 07/28/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	ND	5.0	ug/L	EPA 314.0	08/14/01	122647

Dilution Factor: 1

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

Lab Name: ANALYTICAL RESOURCES INC.

Project: DACA67-98-D-1005/D.O.0054

Lab Code: ARI

Case No: Camp Bonneville

Client Code: URS-SW

ARI Job No: DK51

SDG No/first sample in SDG: GW01MW01A

Sample Receipt Date: 07/28/01

SDG No/last sample in SDG: Trip Blank

Sample Receipt Date: 07/28/01

	Sample Numbers	ARI Lab ID	ARI LIMS ID	Matrix	SAMPLE DATE
1	GW01MW01A	DK51A	01-12786	Water	07/24/01
2	GW01MW01B	DK51B	01-12787	Water	07/24/01
3	GW01MW02A	DK51C	01-12788	Water	07/24/01
4	GW501MW02A	DK51D	01-12789	Water	07/24/01
5	GW01MW02B	DK51E	01-12790	Water	07/25/01
	GW01MW04A	DK51F	01-12791	Water	07/25/01
	GW01MW05A	DK51G	01-12792	Water	07/26/01
8	GW01MW03A	DK51H	01-12793	Water	07/26/01
9	GW01MW03B	DK51I	01-12794	Water	07/26/01
10	GW1001MW03B	DK51J	01-12795	Water	07/27/01
11	GW01MW06A	DK51K	01-12796	Water	07/24/01
12	GW01MW01A(D)	DK51L	01-12797	Water	07/24/01
13	GW01MW01B(D)	DK51M	01-12798	Water	07/24/01
14	GW01MW02A(D)	DK51N	01-12799	Water	07/24/01
15	GW501MW02A(D)	DK51O	01-12800	Water	07/24/01
16	GW01MW02B(D)	DK51P	01-12801	Water	07/25/01
17	GW01MW04A(D)	DK51Q	01-12802	Water	07/25/01
18	GW01MW05A(D)	DK51R	01-12803	Water	07/26/01
19	GW01MW03A(D)	DK51S	01-12804	Water	07/26/01
20	GW01MW03B(D)	DK51T	01-12805	Water	07/26/01
21	GW1001MW03B(D)	DK51U	01-12806	Water	07/27/01
22	Trip Blank	DK51V	01-12807	Water	07/27/01

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW01MW04A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON001

Matrix: (soil/water) WATER Lab Sample ID: 460490

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 01AUG011205-I821

% Moisture: _____ decanted: (Y/N)___ Date Received: 07/28/01

Extraction: (SepF/Cont/Sonc) OTHER Date Extracted:07/31/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 08/04/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.82	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW01A

Lab Sample ID: DK51A
LIMS ID: 01-12786
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 15:29

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW01A

Lab Sample ID: DK51A
LIMS ID: 01-12786
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 15:29

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	109%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	97.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW01B

Lab Sample ID: DK51B
LIMS ID: 01-12787
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 15:55

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**8.5 B**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW01B

Lab Sample ID: DK51B
LIMS ID: 01-12787
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 15:55

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.9%
d8-Toluene	107%
Bromofluorobenzene	98.9%
d4-1,2-Dichlorobenzene	98.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW02A

Lab Sample ID: DK51C
LIMS ID: 01-12788
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 16:22

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**8.3 B**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW02A

Lab Sample ID: DK51C
LIMS ID: 01-12788
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 16:22

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	99.3%
d8-Toluene	106%
Bromofluorobenzene	99.4%
d4-1,2-Dichlorobenzene	96.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW501MW02A

Lab Sample ID: DK51D
LIMS ID: 01-12789
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 16:48

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**7.2 B**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW501MW02A

Lab Sample ID: DK51D
LIMS ID: 01-12789
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 16:48

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	100%
d8-Toluene	102%
Bromofluorobenzene	97.9%
d4-1,2-Dichlorobenzene	97.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW02B

Lab Sample ID: DK51E
LIMS ID: 01-12790
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 17:15

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**11 B**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	**1,1-Dichloroethene**	**36**
75-34-3	**1,1-Dichloroethane**	**29**
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	**1,1,1-Trichloroethane**	**260 E**
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	**Trichloroethene**	**0.5 J**
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	**Benzene**	**0.7 J**
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**1.1**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	**Trichlorofluoromethane**	**0.8 J**
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**91**
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW02B

Lab Sample ID: DK51E
LIMS ID: 01-12790
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 17:15

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	**Dichlorodifluoromethane**	**120**
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.9%
d8-Toluene	101%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	97.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW02B
DILUTION

Lab Sample ID: DK51E-DL
LIMS ID: 01-12790
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/06/01 12:24

Sample Amount: 2.50 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	2.0 U
74-83-9	Bromomethane	2.0 U
75-01-4	Vinyl Chloride	2.0 U
75-00-3	Chloroethane	2.0 U
75-09-2	Methylene Chloride	4.0 U
67-64-1	**Acetone**	**10**
75-15-0	Carbon Disulfide	2.0 U
75-35-4	**1,1-Dichloroethene**	**35**
75-34-3	**1,1-Dichloroethane**	**31**
156-60-5	trans-1,2-Dichloroethene	2.0 U
156-59-2	cis-1,2-Dichloroethene	2.0 U
67-66-3	Chloroform	2.0 U
107-06-2	1,2-Dichloroethane	2.0 U
78-93-3	2-Butanone	10 U
71-55-6	**1,1,1-Trichloroethane**	**290**
56-23-5	Carbon Tetrachloride	2.0 U
108-05-4	Vinyl Acetate	10 U
75-27-4	Bromodichloromethane	2.0 U
78-87-5	1,2-Dichloropropane	2.0 U
10061-01-5	cis-1,3-Dichloropropene	2.0 U
79-01-6	Trichloroethene	2.0 U
124-48-1	Dibromochloromethane	2.0 U
79-00-5	1,1,2-Trichloroethane	2.0 U
71-43-2	Benzene	2.0 U
10061-02-6	trans-1,3-Dichloropropene	2.0 U
110-75-8	2-Chloroethylvinylether	10 U
75-25-2	Bromoform	2.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	10 U
591-78-6	2-Hexanone	10 U
127-18-4	**Tetrachloroethene**	**1.2 J**
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U
108-88-3	Toluene	2.0 U
108-90-7	Chlorobenzene	2.0 U
100-41-4	Ethylbenzene	2.0 U
100-42-5	Styrene	2.0 U
75-69-4	Trichlorofluoromethane	2.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**94**
1330-20-7	m,p-Xylene	2.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW02B
DILUTION

Lab Sample ID: DK51E-DL
LIMS ID: 01-12790
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/06/01 12:24

Sample Amount: 2.50 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	2.0 U
95-50-1	1,2-Dichlorobenzene	2.0 U
541-73-1	1,3-Dichlorobenzene	2.0 U
106-46-7	1,4-Dichlorobenzene	2.0 U
107-02-8	Acrolein	100 U
74-88-4	Methyl Iodide	2.0 U
74-96-4	Bromoethane	4.0 U
107-13-1	Acrylonitrile	2.0 U
563-58-6	1,1-Dichloropropene	2.0 U
74-95-3	Dibromomethane	2.0 U
630-20-6	1,1,1,2-Tetrachloroethane	2.0 U
96-12-8	1,2-Dibromo-3-chloropropane	10 U
96-18-4	1,2,3-Trichloropropane	6.0 U
110-57-6	trans-1,4-Dichloro-2-butene	10 U
108-67-8	1,3,5-Trimethylbenzene	2.0 U
95-63-6	1,2,4-Trimethylbenzene	2.0 U
87-68-3	Hexachlorobutadiene	10 U
106-93-4	Ethylene Dibromide	2.0 U
74-97-5	Bromochloromethane	2.0 U
75-71-8	**Dichlorodifluoromethane**	**120**
594-20-7	2,2-Dichloropropane	2.0 U
142-28-9	1,3-Dichloropropane	2.0 U
98-82-8	Isopropylbenzene	2.0 U
103-65-1	n-Propylbenzene	2.0 U
108-86-1	Bromobenzene	2.0 U
95-49-8	2-Chlorotoluene	2.0 U
106-43-4	4-Chlorotoluene	2.0 U
98-06-6	tert-Butylbenzene	2.0 U
135-98-8	sec-Butylbenzene	2.0 U
99-87-6	4-Isopropyltoluene	2.0 U
104-51-8	n-Butylbenzene	2.0 U
120-82-1	1,2,4-Trichlorobenzene	10 U
91-20-3	Naphthalene	10 U
87-61-6	1,2,3-Trichlorobenzene	10 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	104%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	97.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW03A

Lab Sample ID: DK51H
LIMS ID: 01-12793
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 19:27

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**7.1 B**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW03A

Lab Sample ID: DK51H
LIMS ID: 01-12793
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 19:27

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	112%
d8-Toluene	109%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	98.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW03B

Lab Sample ID: DK51I
LIMS ID: 01-12794
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 19:54

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**13 B**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW03B

Lab Sample ID: DK51I
LIMS ID: 01-12794
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 19:54

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	107%
Bromofluorobenzene	97.3%
d4-1,2-Dichlorobenzene	96.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW04A

Lab Sample ID: DK51F
LIMS ID: 01-12791
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 18:34

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW04A

Lab Sample ID: DK51F
LIMS ID: 01-12791
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 18:34

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	99.8%
d8-Toluene	101%
Bromofluorobenzene	96.6%
d4-1,2-Dichlorobenzene	96.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW05A

Lab Sample ID: DK51G
LIMS ID: 01-12792
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 19:01

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**5.8 B**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**0.7 J**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW05A

Lab Sample ID: DK51G
LIMS ID: 01-12792
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 19:01

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	104%
d8-Toluene	106%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	97.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW06A

Lab Sample ID: DK51K
LIMS ID: 01-12796
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 20:47

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	**Vinyl Chloride**	**3.2**
75-00-3	Chloroethane	1.0 U
75-09-2	**Methylene Chloride**	**9.5**
67-64-1	**Acetone**	**16 B**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	**cis-1,2-Dichloroethene**	**9.3**
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	**Trichloroethene**	**5.7**
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**3.0**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	**Toluene**	**18**
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01MW06A

Lab Sample ID: DK51K
LIMS ID: 01-12796
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 20:47

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	**1,2,4-Trichlorobenzene**	**6.6**
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	103%
d8-Toluene	102%
Bromofluorobenzene	98.9%
d4-1,2-Dichlorobenzene	96.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Trip Blank

Lab Sample ID: DK51V
LIMS ID: 01-12807
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/27/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 13:17

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Trip Blank

Lab Sample ID: DK51V
LIMS ID: 01-12807
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/27/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 13:17

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	98.9%
d8-Toluene	98.6%
Bromofluorobenzene	97.0%
d4-1,2-Dichlorobenzene	98.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW1001MW03B

Lab Sample ID: DK51J
LIMS ID: 01-12795
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/27/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 20:21

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**11 B**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW1001MW03B

Lab Sample ID: DK51J
LIMS ID: 01-12795
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/27/01
Date Received: 07/28/01

Instrument: FINN5
Date Analyzed: 08/04/01 20:21

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	106%
d8-Toluene	105%
Bromofluorobenzene	96.1%
d4-1,2-Dichlorobenzene	97.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 080401MB
LIMS ID: 01-12790
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: NA
Date Received: NA

Instrument: FINN5
Date Analyzed: 08/04/01 12:06

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**3.2 J**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 080401MB
LIMS ID: 01-12790
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: NA
Date Received: NA

Instrument: FINN5
Date Analyzed: 08/04/01 12:06

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.3%
d8-Toluene	100%
Bromofluorobenzene	97.8%
d4-1,2-Dichlorobenzene	98.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 080601MB
LIMS ID: 01-12795
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: NA
Date Received: NA

Instrument: FINN5
Date Analyzed: 08/06/01 11:29

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 080601MB
LIMS ID: 01-12795
Matrix: Water
Data Release Authorized:
Reported: 09/18/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: NA
Date Received: NA

Instrument: FINN5
Date Analyzed: 08/06/01 11:29

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	105%
d8-Toluene	102%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	98.4%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW01MW01A

Lab Sample ID: DK51A
LIMS ID: 01-12786
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 01:14
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW01MW01A

Lab Sample ID: DK51A
LIMS ID: 01-12786
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 01:14
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	85.4%	d5-Phenol	80.7%
2-Fluorobiphenyl	79.7%	2-Fluorophenol	79.0%
d14-p-Terphenyl	89.6%	2,4,6-Tribromophenol	31.1%
d4-1,2-Dichlorobenzene	66.7%	d4-2-Chlorophenol	81.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW01MW01A

Lab Sample ID: DK51A
LIMS ID: 01-12786
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized: ?
Reported: 08/13/01

Date Analyzed: 08/11/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW01B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51B
LIMS ID: 01-12787
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 02:01
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW01MW01B

Lab Sample ID: DK51B
LIMS ID: 01-12787
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 02:01
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	91.3%	d5-Phenol	85.0%
2-Fluorobiphenyl	88.8%	2-Fluorophenol	91.6%
d14-p-Terphenyl	104%	2,4,6-Tribromophenol	99.0%
d4-1,2-Dichlorobenzene	76.1%	d4-2-Chlorophenol	96.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW01MW01B

Lab Sample ID: DK51B
LIMS ID: 01-12787
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01

Date Analyzed: 08/11/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW02A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51C
LIMS ID: 01-12788
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 02:49
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW02A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51C
LIMS ID: 01-12788
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 02:49
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	81.3%	d5-Phenol	77.0%
2-Fluorobiphenyl	80.8%	2-Fluorophenol	79.8%
d14-p-Terphenyl	88.7%	2,4,6-Tribromophenol	92.3%
d4-1,2-Dichlorobenzene	66.5%	d4-2-Chlorophenol	83.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW01MW02A

Lab Sample ID: DK51C
LIMS ID: 01-12788
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01

Date Analyzed: 08/11/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW02B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51E
LIMS ID: 01-12790
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 04:23
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW02B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51E
LIMS ID: 01-12790
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 04:23
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	75.7%	d5-Phenol	61.9%
2-Fluorobiphenyl	80.7%	2-Fluorophenol	78.3%
d14-p-Terphenyl	82.6%	2,4,6-Tribromophenol	100%
d4-1,2-Dichlorobenzene	62.4%	d4-2-Chlorophenol	83.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW01MW02B

Lab Sample ID: DK51E
LIMS ID: 01-12790
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01

Date Analyzed: 08/11/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW501MW02A

Lab Sample ID: DK51D
LIMS ID: 01-12789
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 03:35
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW501MW02A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51D
LIMS ID: 01-12789
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 03:35
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	85.8%	d5-Phenol	80.3%
2-Fluorobiphenyl	86.7%	2-Fluorophenol	84.9%
d14-p-Terphenyl	97.8%	2,4,6-Tribromophenol	96.8%
d4-1,2-Dichlorobenzene	77.7%	d4-2-Chlorophenol	91.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW501MW02A

Lab Sample ID: DK51D
LIMS ID: 01-12789
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01

Date Analyzed: 08/11/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW03A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51H
LIMS ID: 01-12793
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 08:16
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW03A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51H
IMS ID: 01-12793
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 08:16
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	74.8%	d5-Phenol	72.2%
2-Fluorobiphenyl	75.4%	2-Fluorophenol	74.9%
d14-p-Terphenyl	94.5%	2,4,6-Tribromophenol	101%
d4-1,2-Dichlorobenzene	64.8%	d4-2-Chlorophenol	77.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW01MW03A

Lab Sample ID: DK51H
LIMS ID: 01-12793
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01

Date Analyzed: 08/11/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW03B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51I
LIMS ID: 01-12794
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 09:03
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW03B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51I
LIMS ID: 01-12794
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 09:03
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	76.2%	d5-Phenol	75.9%
2-Fluorobiphenyl	76.3%	2-Fluorophenol	74.2%
d14-p-Terphenyl	93.5%	2,4,6-Tribromophenol	34.6%
d4-1,2-Dichlorobenzene	59.5%	d4-2-Chlorophenol	77.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW01MW03B

Lab Sample ID: DK51I
LIMS ID: 01-12794
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01

Date Analyzed: 08/11/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
6.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW04A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51F
LIMS ID: 01-12791
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 06:43
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW01MW04A

Lab Sample ID: DK51F
LIMS ID: 01-12791
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 06:43
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	79.1%	d5-Phenol	69.9%
2-Fluorobiphenyl	78.0%	2-Fluorophenol	74.7%
d14-p-Terphenyl	92.1%	2,4,6-Tribromophenol	28.4%
d4-1,2-Dichlorobenzene	68.4%	d4-2-Chlorophenol	79.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW01MW04A

Lab Sample ID: DK51F
LIMS ID: 01-12791
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01

Date Analyzed: 08/11/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW05A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51G
LIMS ID: 01-12792
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 07:30
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW05A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51G
LIMS ID: 01-12792
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 07:30
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	74.4%	d5-Phenol	69.8%
2-Fluorobiphenyl	75.6%	2-Fluorophenol	72.6%
d14-p-Terphenyl	91.2%	2,4,6-Tribromophenol	102%
d4-1,2-Dichlorobenzene	60.5%	d4-2-Chlorophenol	77.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW01MW05A

Lab Sample ID: DK51G
LIMS ID: 01-12792
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01

Date Analyzed: 08/11/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS
Page 1 of 2

Sample No: GW01MW06A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51K
LIMS ID: 01-12796
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 10:37
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	**Dimethylphthalate**	17
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW01MW06A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51K
LIMS ID: 01-12796
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 10:37
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	**Diethylphthalate**	**33**
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	**N-Nitrosodiphenylamine**	**18**
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	**Phenanthrene**	**29**
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	**Di-n-Butylphthalate**	**37**
206-44-0	Fluoranthene	1.0 U
129-00-0	**Pyrene**	**19**
85-68-7	**Butylbenzylphthalate**	**46**
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	**Chrysene**	**9.1**
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	84.4%	d5-Phenol	79.6%
2-Fluorobiphenyl	74.2%	2-Fluorophenol	81.3%
d14-p-Terphenyl	100%	2,4,6-Tribromophenol	87.3%
d4-1,2-Dichlorobenzene	64.3%	d4-2-Chlorophenol	83.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW01MW06A

Lab Sample ID: DK51K
LIMS ID: 01-12796
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01

Date Analyzed: 08/11/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	--------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
6.					
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Rinsate

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW1001MW03B

Lab Sample ID: DK51J
LIMS ID: 01-12795
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/27/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 09:50
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: GW1001MW03B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51J
LIMS ID: 01-12795
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/27/01
Date Received: 07/28/01

Date extracted: 07/31/01
Date analyzed: 08/11/01 09:50
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	83.5%	d5-Phenol	77.2%
2-Fluorobiphenyl	78.4%	2-Fluorophenol	79.0%
d14-p-Terphenyl	95.5%	2,4,6-Tribromophenol	91.2%
d4-1,2-Dichlorobenzene	64.9%	d4-2-Chlorophenol	84.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW1001MW03B

Lab Sample ID: DK51J
LIMS ID: 01-12795
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/27/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01

Date Analyzed: 08/11/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: Method Blank

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51MB
LIMS ID: 01-12786
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: NA
Date Received: NA

Date extracted: 07/31/01
Date analyzed: 08/10/01 23:43
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by GC/MS

Sample No: Method Blank

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DK51MB
LIMS ID: 01-12786
Matrix: Water
Data Release Authorized:
Reported: 08/13/01

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: NA
Date Received: NA

Date extracted: 07/31/01
Date analyzed: 08/10/01 23:43
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.5 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	91.2%	d5-Phenol	86.5%
2-Fluorobiphenyl	84.2%	2-Fluorophenol	94.7%
d14-p-Terphenyl	101%	2,4,6-Tribromophenol	108%
d4-1,2-Dichlorobenzene	71.3%	d4-2-Chlorophenol	95.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: Method Blank

Lab Sample ID: DK51MB
LIMS ID: 01-12786
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 08/13/01

Date Analyzed: 08/10/01

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW01B**
Herbicides by GC/ECD

Lab Sample ID: DK51B
LIMS ID: 01-12787
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized: CH
Reported: 08/14/01 8/14/01

Date extracted: 07/31/01
Date analyzed: 08/08/01
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.28 U
93-76-5	2,4,5-T	0.60 U
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	2,4-D	1.5 U
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U
93-65-2	MCPP	1,200 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 90.2%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW02A**
Herbicides by GC/ECD

Lab Sample ID: DK51C
LIMS ID: 01-12788
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized: CH
Reported: 08/14/01 8/14/01

Date extracted: 07/31/01
Date analyzed: 08/08/01
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.28 U
93-76-5	2,4,5-T	0.60 U
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	2,4-D	1.5 U
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U
93-65-2	MCPP	1,200 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 82.9%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW501MW02A**
Herbicides by GC/ECD

Lab Sample ID: DK51D
LIMS ID: 01-12789
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized: CH
Reported: 08/14/01 8/14/01

Date extracted: 07/31/01
Date analyzed: 08/08/01
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.28 U
93-76-5	2,4,5-T	0.60 U
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	2,4-D	1.5 U
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U
93-65-2	MCPP	1,200 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 80.8%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW02B**
Herbicides by GC/ECD

Lab Sample ID: DK51E
LIMS ID: 01-12790
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Data Release Authorized: CH
Reported: 08/14/01 8/14/01

Date extracted: 07/31/01
Date analyzed: 08/08/01
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.28 U
93-76-5	2,4,5-T	0.60 U
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	2,4-D	1.5 U
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U
93-65-2	MCPP	1,200 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 94.3%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW03A**
Herbicides by GC/ECD

Lab Sample ID: DK51H
LIMS ID: 01-12793
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized: CF
Reported: 08/14/01 8/14/01

Date extracted: 07/31/01
Date analyzed: 08/08/01
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.28 U
93-76-5	2,4,5-T	0.60 U
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	2,4-D	1.5 U
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U
93-65-2	MCPP	1,200 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 94.6%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW03B**
Herbicides by GC/ECD

Lab Sample ID: DK51I
LIMS ID: 01-12794
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized: CH
Reported: 08/14/01 8/14/01

Date extracted: 07/31/01
Date analyzed: 08/08/01
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.28 U
93-76-5	2,4,5-T	0.60 U
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	2,4-D	1.5 U
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U
93-65-2	MCPP	1,200 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 97.0%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW01A**
Herbicides by GC/ECD

Lab Sample ID: DK51A
LIMS ID: 01-12786
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized: clf
Reported: 08/14/01 8/14/-1

Date extracted: 07/31/01
Date analyzed: 08/08/01
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.28 U
93-76-5	2,4,5-T	0.60 U
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	2,4-D	1.5 U
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U
93-65-2	MCPP	1,200 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 84.9%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW04A**
Herbicides by GC/ECD

Lab Sample ID: DK51F
LIMS ID: 01-12791
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Data Release Authorized: CH 8/14/01
Reported: 08/14/01

Date extracted: 07/31/01
Date analyzed: 08/08/01
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.28 U
93-76-5	2,4,5-T	0.60 U
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	2,4-D	1.5 U
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U
93-65-2	MCPP	1,200 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 90.3%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW05A**
Herbicides by GC/ECD

Lab Sample ID: DK51G
LIMS ID: 01-12792
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized: CH
Reported: 08/14/01 8/14/01

Date extracted: 07/31/01
Date analyzed: 08/08/01
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.28 U
93-76-5	2,4,5-T	0.60 U
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	2,4-D	1.5 U
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U
93-65-2	MCPP	1,200 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 86.8%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW06A**
Herbicides by GC/ECD

Lab Sample ID: DK51K
LIMS ID: 01-12796
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized: CLF 8/14/01
Reported: 08/14/01

Date extracted: 07/31/01
Date analyzed: 08/08/01
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	**2,4,5-TP (Silvex)**	**27 E**
93-76-5	**2,4,5-T**	**25 E**
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	**2,4-D**	**62 E**
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 97.2%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

FORM-1

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: **GW01MW06A DILUTION**

Lab Sample ID: DK51K-DL
LIMS ID: 01-12796
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized: CK
Reported: 08/14/01 8/14/01

Date extracted: 07/31/01
Date analyzed: 08/09/01 16:07
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:20

CAS Number	Analyte	ug/L
93-72-1	**2,4,5-TP (Silvex)**	**56**
93-76-5	**2,4,5-T**	**44**
88-85-7	Dinoseb	10 U
1918-00-9	Dicamba	14 U
94-75-7	**2,4-D**	**76**
94-82-6	2,4-DB	200 U
75-99-0	Dalapon	40 U
94-74-6	MCPA	25,000 U
120-36-5	Dichloroprop	62 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid D

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

FORM-1

Rinsate

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW1001MW03B**
Herbicides by GC/ECD

Lab Sample ID: DK51J
LIMS ID: 01-12795
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/27/01
Date Received: 07/28/01

Data Release Authorized: CH 11/4/01
Reported: 08/14/01

Date extracted: 07/31/01
Date analyzed: 08/08/01
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.28 U
93-76-5	2,4,5-T	0.60 U
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	2,4-D	1.5 U
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U
93-65-2	MCPP	1,200 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 92.7%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
Herbicides by GC/ECD

Lab Sample ID: DK51MB
LIMS ID: 01-12786
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: NA
Date Received: NA

Data Release Authorized: CH
Reported: 08/14/01 8/14/01

Date extracted: 07/31/01
Date analyzed: 08/08/01 00:35
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.28 U
93-76-5	2,4,5-T	0.60 U
88-85-7	Dinoseb	0.50 U
1918-00-9	Dicamba	0.70 U
94-75-7	2,4-D	1.5 U
94-82-6	2,4-DB	10 U
75-99-0	Dalapon	2.0 U
94-74-6	MCPA	1,200 U
120-36-5	Dichloroprop	3.1 U
93-65-2	MCPP	1,200 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 91.7%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW01A**
TOTAL METALS

Lab Sample ID: DK51A
LIMS ID: 01-12786
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-39-3**	**Barium**	**3**	**4**
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-70-2**	**Calcium**	**50**	**4,630**
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-47-3**	**Chromium**	**5**	**25**
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	2 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7439-89-6**	**Iron**	**20**	**200**
200.8	08/03/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7439-95-4**	**Magnesium**	**20**	**1,780**
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-02-0**	**Nickel**	**10**	**10**
3010A	08/02/01	6010B	08/07/01	7440-09-7	Potassium	500	500 U
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-23-5**	**Sodium**	**50**	**8,550**
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-66-6**	**Zinc**	**6**	**7**

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW01A(D)**
DISSOLVED METALS

Lab Sample ID: DK51L
LIMS ID: 01-12797
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	08/02/01	6010B	08/06/01	7440-36-0	Antimony	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-39-3	Barium	3	4
6010B	08/02/01	6010B	08/06/01	7440-41-7	Beryllium	1	1 U
6010B	08/02/01	6010B	08/06/01	7440-43-9	Cadmium	2	2 U
6010B	08/02/01	6010B	08/06/01	7440-70-2	Calcium	50	5,060
6010B	08/02/01	6010B	08/06/01	7440-47-3	Chromium	5	12
6010B	08/02/01	6010B	08/06/01	7440-50-8	Copper	2	2 U
6010B	08/02/01	6010B	08/06/01	7439-89-6	Iron	20	110
200.8	08/02/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
6010B	08/02/01	6010B	08/06/01	7439-95-4	Magnesium	20	1,910
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
6010B	08/02/01	6010B	08/06/01	7440-02-0	Nickel	10	40
6010B	08/02/01	6010B	08/06/01	7440-09-7	Potassium	500	500 U
200.8	08/02/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
6010B	08/02/01	6010B	08/06/01	7440-22-4	Silver	3	3 U
6010B	08/02/01	6010B	08/06/01	7440-23-5	Sodium	50	9,010
200.8	08/02/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW01B**
TOTAL METALS

Lab Sample ID: DK51B
LIMS ID: 01-12787
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-39-3	Barium	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	08/02/01	6010B	08/07/01	7440-70-2	Calcium	50	2,040
3010A	08/02/01	6010B	08/07/01	7440-47-3	Chromium	5	7
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	2 U
3010A	08/02/01	6010B	08/07/01	7439-89-6	Iron	20	70
200.8	08/03/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
3010A	08/02/01	6010B	08/07/01	7439-95-4	Magnesium	20	1,090
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
3010A	08/02/01	6010B	08/07/01	7440-02-0	Nickel	10	10 U
3010A	08/02/01	6010B	08/07/01	7440-09-7	Potassium	500	500 U
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-23-5	Sodium	50	1,240
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW01B(D)**
DISSOLVED METALS

Lab Sample ID: DK51M
LIMS ID: 01-12798
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	08/02/01	6010B	08/06/01	7440-36-0	Antimony	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-39-3	Barium	3	3 U
6010B	08/02/01	6010B	08/06/01	7440-41-7	Beryllium	1	1 U
6010B	08/02/01	6010B	08/06/01	7440-43-9	Cadmium	2	2 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-70-2**	**Calcium**	**50**	**2,210**
6010B	08/02/01	6010B	08/06/01	7440-47-3	Chromium	5	5 U
6010B	08/02/01	6010B	08/06/01	7440-50-8	Copper	2	2 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7439-89-6**	**Iron**	**20**	**40**
200.8	08/02/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7439-95-4**	**Magnesium**	**20**	**1,150**
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
6010B	08/02/01	6010B	08/06/01	7440-02-0	Nickel	10	10 U
6010B	08/02/01	6010B	08/06/01	7440-09-7	Potassium	500	500 U
200.8	08/02/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
6010B	08/02/01	6010B	08/06/01	7440-22-4	Silver	3	3 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-23-5**	**Sodium**	**50**	**1,310**
200.8	08/02/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

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ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW01MW02A

Lab Sample ID: DK51C
LIMS ID: 01-12788
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-39-3	Barium	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	08/02/01	6010B	08/07/01	7440-70-2	Calcium	50	1,470
3010A	08/02/01	6010B	08/07/01	7440-47-3	Chromium	5	10
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	2 U
3010A	08/02/01	6010B	08/07/01	7439-89-6	Iron	20	180
200.8	08/03/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
3010A	08/02/01	6010B	08/07/01	7439-95-4	Magnesium	20	480
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
3010A	08/02/01	6010B	08/07/01	7440-02-0	Nickel	10	10 U
3010A	08/02/01	6010B	08/07/01	7440-09-7	Potassium	500	500 U
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.6
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-23-5	Sodium	50	7,770
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW01MW02A(D)

Lab Sample ID: DK51N
LIMS ID: 01-12799
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	08/02/01	6010B	08/06/01	7440-36-0	Antimony	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-39-3	Barium	3	3 U
6010B	08/02/01	6010B	08/06/01	7440-41-7	Beryllium	1	1 U
6010B	08/02/01	6010B	08/06/01	7440-43-9	Cadmium	2	2 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-70-2**	**Calcium**	**50**	**1,270**
6010B	08/02/01	6010B	08/06/01	7440-47-3	Chromium	5	5 U
6010B	08/02/01	6010B	08/06/01	7440-50-8	Copper	2	2 U
6010B	08/02/01	6010B	08/06/01	7439-89-6	Iron	20	20 U
200.8	08/02/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7439-95-4**	**Magnesium**	**20**	**410**
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
6010B	08/02/01	6010B	08/06/01	7440-02-0	Nickel	10	10 U
6010B	08/02/01	6010B	08/06/01	7440-09-7	Potassium	500	500 U
200.8	**08/02/01**	**200.8**	**08/06/01**	**7782-49-2**	**Selenium**	**0.5**	**0.6**
6010B	08/02/01	6010B	08/06/01	7440-22-4	Silver	3	3 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-23-5**	**Sodium**	**50**	**5,710**
200.8	08/02/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

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ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW501MW02A

Lab Sample ID: DK51D
LIMS ID: 01-12789
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-39-3	Barium	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	08/02/01	6010B	08/07/01	7440-70-2	Calcium	50	1,220
3010A	08/02/01	6010B	08/07/01	7440-47-3	Chromium	5	6
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	2 U
3010A	08/02/01	6010B	08/07/01	7439-89-6	Iron	20	50
200.8	08/03/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
3010A	08/02/01	6010B	08/07/01	7439-95-4	Magnesium	20	410
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
3010A	08/02/01	6010B	08/07/01	7440-02-0	Nickel	10	10 U
3010A	08/02/01	6010B	08/07/01	7440-09-7	Potassium	500	500 U
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-23-5	Sodium	50	6,010
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

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ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW501MW02A(D)**
DISSOLVED METALS

Lab Sample ID: DK51O
LIMS ID: 01-12800
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	08/02/01	6010B	08/06/01	7440-36-0	Antimony	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-39-3	Barium	3	3 U
6010B	08/02/01	6010B	08/06/01	7440-41-7	Beryllium	1	1 U
6010B	08/02/01	6010B	08/06/01	7440-43-9	Cadmium	2	2 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-70-2**	**Calcium**	**50**	**1,260**
6010B	08/02/01	6010B	08/06/01	7440-47-3	Chromium	5	5 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-50-8**	**Copper**	**2**	**2**
6010B	08/02/01	6010B	08/06/01	7439-89-6	Iron	20	20 U
200.8	08/02/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7439-95-4**	**Magnesium**	**20**	**420**
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
6010B	08/02/01	6010B	08/06/01	7440-02-0	Nickel	10	10 U
6010B	08/02/01	6010B	08/06/01	7440-09-7	Potassium	500	500 U
200.8	**08/02/01**	**200.8**	**08/06/01**	**7782-49-2**	**Selenium**	**0.5**	**0.6**
6010B	08/02/01	6010B	08/06/01	7440-22-4	Silver	3	3 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-23-5**	**Sodium**	**50**	**6,000**
200.8	08/02/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

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ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW01MW02B

Lab Sample ID: DK51E
LIMS ID: 01-12790
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	2.5
3010A	08/02/01	6010B	08/07/01	7440-39-3	Barium	3	93
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	08/02/01	6010B	08/07/01	7440-70-2	Calcium	50	9,020
3010A	08/02/01	6010B	08/07/01	7440-47-3	Chromium	5	18
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	16
3010A	08/02/01	6010B	08/07/01	7439-89-6	Iron	20	10,400
200.8	08/03/01	200.8	08/06/01	7439-92-1	Lead	1	12
3010A	08/02/01	6010B	08/07/01	7439-95-4	Magnesium	20	6,410
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
3010A	08/02/01	6010B	08/07/01	7440-02-0	Nickel	10	10 U
3010A	08/02/01	6010B	08/07/01	7440-09-7	Potassium	500	4,230
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-23-5	Sodium	50	13,000
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-66-6	Zinc	6	41

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW02B(D)**
DISSOLVED METALS

Lab Sample ID: DK51P
LIMS ID: 01-12801
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	08/02/01	6010B	08/06/01	7440-36-0	Antimony	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-39-3**	**Barium**	**3**	**8**
6010B	08/02/01	6010B	08/06/01	7440-41-7	Beryllium	1	1 U
6010B	08/02/01	6010B	08/06/01	7440-43-9	Cadmium	2	2 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-70-2**	**Calcium**	**50**	**1,460**
6010B	08/02/01	6010B	08/06/01	7440-47-3	Chromium	5	5 U
6010B	08/02/01	6010B	08/06/01	7440-50-8	Copper	2	2 U
6010B	08/02/01	6010B	08/06/01	7439-89-6	Iron	20	20 U
200.8	08/02/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7439-95-4**	**Magnesium**	**20**	**540**
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
6010B	08/02/01	6010B	08/06/01	7440-02-0	Nickel	10	10 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-09-7**	**Potassium**	**500**	**2,670**
200.8	08/02/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
6010B	08/02/01	6010B	08/06/01	7440-22-4	Silver	3	3 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-23-5**	**Sodium**	**50**	**11,500**
200.8	08/02/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW01MW03A

Lab Sample ID: DK51H
LIMS ID: 01-12793
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-39-3	Barium	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-70-2**	**Calcium**	**50**	**1,670**
3010A	08/02/01	6010B	08/07/01	7440-47-3	Chromium	5	5 U
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	2 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7439-89-6**	**Iron**	**20**	**210**
200.8	08/03/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7439-95-4**	**Magnesium**	**20**	**670**
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
3010A	08/02/01	6010B	08/07/01	7440-02-0	Nickel	10	10 U
3010A	08/02/01	6010B	08/07/01	7440-09-7	Potassium	500	500 U
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-23-5**	**Sodium**	**50**	**1,530**
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-66-6**	**Zinc**	**6**	**7**

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW03A(D)**
DISSOLVED METALS

Lab Sample ID: DK51S
LIMS ID: 01-12804
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	08/02/01	6010B	08/06/01	7440-36-0	Antimony	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-39-3	Barium	3	3 U
6010B	08/02/01	6010B	08/06/01	7440-41-7	Beryllium	1	1 U
6010B	08/02/01	6010B	08/06/01	7440-43-9	Cadmium	2	2 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-70-2**	**Calcium**	**50**	**1,800**
6010B	08/02/01	6010B	08/06/01	7440-47-3	Chromium	5	5 U
6010B	08/02/01	6010B	08/06/01	7440-50-8	Copper	2	2 U
6010B	08/02/01	6010B	08/06/01	7439-89-6	Iron	20	20 U
200.8	08/02/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7439-95-4**	**Magnesium**	**20**	**700**
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
6010B	08/02/01	6010B	08/06/01	7440-02-0	Nickel	10	10 U
6010B	08/02/01	6010B	08/06/01	7440-09-7	Potassium	500	500 U
200.8	08/02/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
6010B	08/02/01	6010B	08/06/01	7440-22-4	Silver	3	3 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-23-5**	**Sodium**	**50**	**1,700**
200.8	08/02/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW01MW03B

Lab Sample ID: DK51I
LIMS ID: 01-12794
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-39-3**	**Barium**	**3**	**15**
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-70-2**	**Calcium**	**50**	**5,450**
3010A	08/02/01	6010B	08/07/01	7440-47-3	Chromium	5	5 U
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	2 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7439-89-6**	**Iron**	**20**	**230**
200.8	08/03/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7439-95-4**	**Magnesium**	**20**	**1,990**
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
3010A	08/02/01	6010B	08/07/01	7440-02-0	Nickel	10	10 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-09-7**	**Potassium**	**500**	**9,350**
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-23-5**	**Sodium**	**50**	**26,500**
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-66-6**	**Zinc**	**6**	**9**

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW01MW03B(D)

Lab Sample ID: DK51T
LIMS ID: 01-12805
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	08/02/01	6010B	08/06/01	7440-36-0	Antimony	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-39-3**	**Barium**	**3**	**15**
6010B	08/02/01	6010B	08/06/01	7440-41-7	Beryllium	1	1 U
6010B	08/02/01	6010B	08/06/01	7440-43-9	Cadmium	2	2 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-70-2**	**Calcium**	**50**	**6,400**
6010B	08/02/01	6010B	08/06/01	7440-47-3	Chromium	5	5 U
6010B	08/02/01	6010B	08/06/01	7440-50-8	Copper	2	2 U
6010B	08/02/01	6010B	08/06/01	7439-89-6	Iron	20	20 U
200.8	08/02/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7439-95-4**	**Magnesium**	**20**	**2,250**
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
6010B	08/02/01	6010B	08/06/01	7440-02-0	Nickel	10	10 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-09-7**	**Potassium**	**500**	**10,600**
200.8	08/02/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
6010B	08/02/01	6010B	08/06/01	7440-22-4	Silver	3	3 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-23-5**	**Sodium**	**50**	**28,200**
200.8	08/02/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW01MW04A

Lab Sample ID: DK51F
LIMS ID: 01-12791
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Data Release Authorized
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2
3010A	08/02/01	6010B	08/07/01	7440-39-3	Barium	3	10
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	08/02/01	6010B	08/07/01	7440-70-2	Calcium	50	2,700
3010A	08/02/01	6010B	08/07/01	7440-47-3	Chromium	5	18
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	7
3010A	08/02/01	6010B	08/07/01	7439-89-6	Iron	20	2,730
200.8	08/03/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
3010A	08/02/01	6010B	08/07/01	7439-95-4	Magnesium	20	1,330
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
3010A	08/02/01	6010B	08/07/01	7440-02-0	Nickel	10	10 U
3010A	08/02/01	6010B	08/07/01	7440-09-7	Potassium	500	720
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-23-5	Sodium	50	2,230
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-66-6	Zinc	6	12

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW04A(D)**
DISSOLVED METALS

Lab Sample ID: DK51Q
LIMS ID: 01-12802
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	08/02/01	6010B	08/06/01	7440-36-0	Antimony	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-39-3	Barium	3	3 U
6010B	08/02/01	6010B	08/06/01	7440-41-7	Beryllium	1	1 U
6010B	08/02/01	6010B	08/06/01	7440-43-9	Cadmium	2	2 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-70-2**	**Calcium**	**50**	**2,800**
6010B	08/02/01	6010B	08/06/01	7440-47-3	Chromium	5	5 U
6010B	08/02/01	6010B	08/06/01	7440-50-8	Copper	2	2 U
6010B	08/02/01	6010B	08/06/01	7439-89-6	Iron	20	20 U
200.8	08/02/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7439-95-4**	**Magnesium**	**20**	**920**
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
6010B	08/02/01	6010B	08/06/01	7440-02-0	Nickel	10	10 U
6010B	08/02/01	6010B	08/06/01	7440-09-7	Potassium	500	500 U
200.8	08/02/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
6010B	08/02/01	6010B	08/06/01	7440-22-4	Silver	3	3 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-23-5**	**Sodium**	**50**	**2,620**
200.8	08/02/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW01MW05A

Lab Sample ID: DK51G
LIMS ID: 01-12792
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-39-3	Barium	3	3
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	08/02/01	6010B	08/07/01	7440-70-2	Calcium	50	3,170
3010A	08/02/01	6010B	08/07/01	7440-47-3	Chromium	5	11
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	2 U
3010A	08/02/01	6010B	08/07/01	7439-89-6	Iron	20	320
200.8	08/03/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
3010A	08/02/01	6010B	08/07/01	7439-95-4	Magnesium	20	990
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
3010A	08/02/01	6010B	08/07/01	7440-02-0	Nickel	10	10 U
3010A	08/02/01	6010B	08/07/01	7440-09-7	Potassium	500	500 U
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-23-5	Sodium	50	1,790
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-66-6	Zinc	6	12

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW01MW05A(D)**
DISSOLVED METALS

Lab Sample ID: DK51R
LIMS ID: 01-12803
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	08/02/01	6010B	08/06/01	7440-36-0	Antimony	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-39-3	Barium	3	3 U
6010B	08/02/01	6010B	08/06/01	7440-41-7	Beryllium	1	1 U
6010B	08/02/01	6010B	08/06/01	7440-43-9	Cadmium	2	2 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-70-2**	**Calcium**	**50**	**2,750**
6010B	08/02/01	6010B	08/06/01	7440-47-3	Chromium	5	5 U
6010B	08/02/01	6010B	08/06/01	7440-50-8	Copper	2	2 U
6010B	08/02/01	6010B	08/06/01	7439-89-6	Iron	20	20 U
200.8	08/02/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7439-95-4**	**Magnesium**	**20**	**1,000**
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
6010B	08/02/01	6010B	08/06/01	7440-02-0	Nickel	10	10 U
6010B	08/02/01	6010B	08/06/01	7440-09-7	Potassium	500	500 U
200.8	08/02/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
6010B	08/02/01	6010B	08/06/01	7440-22-4	Silver	3	3 U
6010B	**08/02/01**	**6010B**	**08/06/01**	**7440-23-5**	**Sodium**	**50**	**1,770**
200.8	08/02/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

Rinsate

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW1001MW03B

Lab Sample ID: DK51J
LIMS ID: 01-12795
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/27/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-39-3	Barium	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	08/02/01	6010B	08/07/01	7440-70-2	Calcium	50	50 U
3010A	08/02/01	6010B	08/07/01	7440-47-3	Chromium	5	5 U
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	2 U
3010A	08/02/01	6010B	08/07/01	7439-89-6	Iron	20	20 U
200.8	08/03/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
3010A	08/02/01	6010B	08/07/01	7439-95-4	Magnesium	20	20 U
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
3010A	08/02/01	6010B	08/07/01	7440-02-0	Nickel	10	10 U
3010A	08/02/01	6010B	08/07/01	7440-09-7	Potassium	500	500 U
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-23-5**	**Sodium**	**50**	**80**
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

Rinsate

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW1001MW03B(D)**
DISSOLVED METALS

Lab Sample ID: DK51U
LIMS ID: 01-12806
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/27/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	08/02/01	6010B	08/06/01	7440-36-0	Antimony	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-39-3	Barium	3	3 U
6010B	08/02/01	6010B	08/06/01	7440-41-7	Beryllium	1	1 U
6010B	08/02/01	6010B	08/06/01	7440-43-9	Cadmium	2	2 U
6010B	08/02/01	6010B	08/06/01	7440-70-2	Calcium	50	50 U
6010B	08/02/01	6010B	08/06/01	7440-47-3	Chromium	5	5 U
6010B	08/02/01	6010B	08/06/01	7440-50-8	Copper	2	2 U
6010B	08/02/01	6010B	08/06/01	7439-89-6	Iron	20	20 U
200.8	08/02/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
6010B	08/02/01	6010B	08/06/01	7439-95-4	Magnesium	20	20 U
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
6010B	08/02/01	6010B	08/06/01	7440-02-0	Nickel	10	10 U
6010B	08/02/01	6010B	08/06/01	7440-09-7	Potassium	500	500 U
200.8	08/02/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
6010B	08/02/01	6010B	08/06/01	7440-22-4	Silver	3	3 U
6010B	08/02/01	6010B	08/06/01	7440-23-5	Sodium	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
TOTAL METALS

Lab Sample ID: DK51MB
LIMS ID: 01-12786
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-39-3	Barium	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	08/02/01	6010B	08/07/01	7440-70-2	Calcium	50	50 U
3010A	08/02/01	6010B	08/07/01	7440-47-3	Chromium	5	5 U
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	2 U
3010A	08/02/01	6010B	08/07/01	7439-89-6	Iron	20	20 U
200.8	08/03/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
3010A	08/02/01	6010B	08/07/01	7439-95-4	Magnesium	20	20 U
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
3010A	08/02/01	6010B	08/07/01	7440-02-0	Nickel	10	10 U
3010A	08/02/01	6010B	08/07/01	7440-09-7	Potassium	500	500 U
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-23-5	Sodium	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
DISSOLVED METALS

Lab Sample ID: DK51MB
LIMS ID: 01-12797
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	08/02/01	6010B	08/06/01	7440-36-0	Antimony	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-39-3	Barium	3	3 U
6010B	08/02/01	6010B	08/06/01	7440-41-7	Beryllium	1	1 U
6010B	08/02/01	6010B	08/06/01	7440-43-9	Cadmium	2	2 U
6010B	08/02/01	6010B	08/06/01	7440-70-2	Calcium	50	50 U
6010B	08/02/01	6010B	08/06/01	7440-47-3	Chromium	5	5 U
6010B	08/02/01	6010B	08/06/01	7440-50-8	Copper	2	2 U
6010B	08/02/01	6010B	08/06/01	7439-89-6	Iron	20	20 U
200.8	08/02/01	200.8	08/06/01	7439-92-1	Lead	1	1 U
6010B	08/02/01	6010B	08/06/01	7439-95-4	Magnesium	20	20 U
7470	08/02/01	7470A	08/02/01	7439-97-6	Mercury	0.1	0.1 U
6010B	08/02/01	6010B	08/06/01	7440-02-0	Nickel	10	10 U
6010B	08/02/01	6010B	08/06/01	7440-09-7	Potassium	500	500 U
200.8	08/02/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
6010B	08/02/01	6010B	08/06/01	7440-22-4	Silver	3	3 U
6010B	08/02/01	6010B	08/06/01	7440-23-5	Sodium	50	50 U
200.8	08/02/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
6010B	08/02/01	6010B	08/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW01MW06A

Lab Sample ID: DK51K
LIMS ID: 01-12796
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/22/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	08/02/01	6010B	08/07/01	7440-36-0	Antimony	50	50 U
200.8	**08/03/01**	**200.8**	**08/06/01**	**7440-38-2**	**Arsenic**	**0.2**	**5.8**
3010A	**08/02/01**	**6010B**	**08/07/01**	**7440-39-3**	**Barium**	**3**	**208**
3010A	08/02/01	6010B	08/07/01	7440-41-7	Beryllium	1	1 U
3010A	08/02/01	6010B	08/07/01	7440-43-9	Cadmium	2	2 U
3010A	08/02/01	6010B	08/07/01	7440-70-2	Calcium	50	50 U
3010A	08/02/01	6010B	08/07/01	7440-47-3	Chromium	5	5 U
3010A	08/02/01	6010B	08/07/01	7440-50-8	Copper	2	2 U
3010A	08/02/01	6010B	08/07/01	7439-89-6	Iron	20	20 U
200.8	**08/03/01**	**200.8**	**08/06/01**	**7439-92-1**	**Lead**	**1**	**12**
3010A	08/02/01	6010B	08/07/01	7439-95-4	Magnesium	20	20 U
7470	**08/02/01**	**7470A**	**08/02/01**	**7439-97-6**	**Mercury**	**0.1**	**1.1**
3010A	08/02/01	6010B	08/07/01	7440-02-0	Nickel	10	10 U
3010A	08/02/01	6010B	08/07/01	7440-09-7	Potassium	500	500 U
200.8	08/03/01	200.8	08/06/01	7782-49-2	Selenium	0.5	0.5 U
3010A	08/02/01	6010B	08/07/01	7440-22-4	Silver	3	3 U
3010A	08/02/01	6010B	08/07/01	7440-23-5	Sodium	50	50 U
200.8	08/03/01	200.8	08/06/01	7440-28-0	Thallium	0.2	0.2 U
3010A	08/02/01	6010B	08/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg - Toluene to Naphthalene

Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Received: 07/28/01

Data Release Authorized: CH 8/7/1
Reported: 08/07/01

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range	Gas ID	Surr A Rec	Surr B Rec
DK51-0803MB	Method Blank	08/03/01	1:1	0.25 U	NO	103%	102%
01-12786-DK51A	GW01MW01A	08/03/01	1:1	0.25 U	NO	106%	107%
01-12787-DK51B	GW01MW01B	08/03/01	1:1	0.25 U	NO	109%	106%
01-12788-DK51C	GW01MW02A	08/03/01	1:1	0.25 U	NO	106%	105%
01-12789-DK51D	GW501MW02A	08/03/01	1:1	0.25 U	NO	98.8%	101%
01-12790-DK51E	GW01MW02B	08/04/01	1:1	0.25 U	NO	106%	106%
01-12791-DK51F	GW01MW04A	08/04/01	1:1	0.25 U	NO	107%	105%
01-12792-DK51G	GW01MW05A	08/04/01	1:1	0.25 U	NO	106%	105%
01-12793-DK51H	GW01MW03A	08/04/01	1:1	0.25 U	NO	100%	103%
01-12794-DK51I	GW01MW03B	08/04/01	1:1	0.25 U	NO	103%	104%
01-12795-DK51J	GW1001MW03B	08/04/01	1:1	0.25 U	NO	110%	105%
01-12796-DK51K	GW01MW06A	08/04/01	1:1	0.25 U	NO	110%	105%
01-12807-DK51V	Trip Blank	08/04/01	1:1	0.25 U	NO	109%	106%

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.

Values reported in ppm (mg/L).
Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

FORM-1 TPH-g

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID
and Motor Oil

ANALYTICAL RESOURCES INCORPORATED

Lab ID: 01-12786
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Received: 07/28/01

Data Release Authorized: clt
Reported: 08/07/01 8/1/01

Lab ID	Sample ID	Date Extracted	Date Analyzed	Dilution Factor	Diesel Range	*HC ID	Motor Oil Range	Surr Rec
DK51MB	Method Blank	07/31/01	08/03/01	1:1	0.25 U	---	0.50 U	84.0%
DK51A	GW01MW01A	07/31/01	08/03/01	1:1	0.25 U	---	0.50 U	95.0%
DK51B	GW01MW01B	07/31/01	08/03/01	1:1	0.25 U	---	0.50 U	91.0%
DK51C	GW01MW02A	07/31/01	08/03/01	1:1	0.25 U	---	0.50 U	91.0%
DK51D	GW501MW02A	07/31/01	08/03/01	1:1	0.25 U	---	0.50 U	90.0%
DK51E	GW01MW02B	07/31/01	08/03/01	1:1	0.25 U	---	0.50 U	108%
DK51F	GW01MW04A	07/31/01	08/03/01	1:1	0.25 U	---	0.50 U	74.0%
DK51G	GW01MW05A	07/31/01	08/03/01	1:1	0.25 U	---	0.50 U	97.0%
DK51H	GW01MW03A	07/31/01	08/03/01	1:1	0.25 U	---	0.50 U	95.0%
DK51I	GW01MW03B	07/31/01	08/04/01	1:1	0.25 U	---	0.50 U	88.0%
DK51J	GW1001MW03B	07/31/01	08/04/01	1:1	0.25 U	---	0.50 U	95.0%

Surrogate is o-Terphenyl

* ID indicates, in the opinion of the analyst, the petroleum product with the best pattern match. 'NO' indicates that there was not a good match for any of the requested products.
Values reported in ppm (mg/L)
Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.

Data Qualifiers

U	Compound not detected at the given detection limit.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
E	Indicates a value above the linear range of the detector. Dilution required.
NR	Indicates no recovery due to matrix interference.
B	Indicates compound also detected in the method blank.

FORM-1 TPHD

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW01MW01A

Lab Sample ID: DK51A
LIMS ID: 01-12786
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units		Result
Alkalinity	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		15
Carbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3	<	1.0 U
Bicarbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		15
Total Suspended Solids	07/31/01 07311#1	EPA 160.2	1.1	mg/L		2.6
Chloride	07/28/01 07281#1	EPA 300.0	0.1	mg/L		1.7
Total Cyanide	08/02/01 08021#1	EPA 335.2	0.005	mg/L	<	0.005 U
N-Nitrate	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
N-Nitrite	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
Sulfate	07/28/01 07281#1	EPA 300.0	1.0	mg/L		19.5
Total Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U
Dissolved Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DK51 received 07/28/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW01MW01B

Lab Sample ID: DK51B
LIMS ID: 01-12787
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units		Result
Alkalinity	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		11
Carbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3	<	1.0 U
Bicarbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		11
Total Suspended Solids	07/31/01 07311#1	EPA 160.2	1.1	mg/L	<	1.1 U
Chloride	07/28/01 07281#1	EPA 300.0	0.1	mg/L		1.3
Total Cyanide	08/02/01 08021#1	EPA 335.2	0.005	mg/L	<	0.005 U
N-Nitrate	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
N-Nitrite	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
Sulfate	07/28/01 07281#1	EPA 300.0	0.1	mg/L		0.5
Total Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U
Dissolved Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DK51 received 07/28/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW01MW02A

Lab Sample ID: DK51C
LIMS ID: 01-12788
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized: MS
Reported: 08/13/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units		Result
Alkalinity	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		3.1
Carbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3	<	1.0 U
Bicarbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		3.1
Total Suspended Solids	07/31/01 07311#1	EPA 160.2	1.0	mg/L		2.6
Chloride	07/28/01 07281#1	EPA 300.0	0.1	mg/L		2.3
Total Cyanide	08/02/01 08021#1	EPA 335.2	0.005	mg/L	<	0.005 U
N-Nitrate	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L		0.3
N-Nitrite	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
Sulfate	07/28/01 07281#1	EPA 300.0	1.0	mg/L		15.5
Total Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U
Dissolved Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DK51 received 07/28/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW501MW02A

Lab Sample ID: DK51D
LIMS ID: 01-12789
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/24/01
Date Received: 07/28/01

Data Release Authorized: MP
Reported: 08/13/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units		Result
Alkalinity	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		4.9
Carbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3	<	1.0 U
Bicarbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		4.9
Total Suspended Solids	07/31/01 07311#1	EPA 160.2	1.0	mg/L	<	1.0 U
Chloride	07/28/01 07281#1	EPA 300.0	0.1	mg/L		1.8
Total Cyanide	08/02/01 08021#1	EPA 335.2	0.005	mg/L	<	0.005 U
N-Nitrate	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L		0.3
N-Nitrite	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
Sulfate	07/28/01 07281#1	EPA 300.0	0.5	mg/L		10.3
Total Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U
Dissolved Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DK51 received 07/28/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW01MW02B

Lab Sample ID: DK51E
LIMS ID: 01-12790
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Data Release Authorized: MF
Reported: 08/13/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units		Result
Alkalinity	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		15
Carbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3	<	1.0 U
Bicarbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		15
Total Suspended Solids	07/31/01 07311#1	EPA 160.2	20	mg/L		970
Chloride	07/28/01 07281#1	EPA 300.0	1.0	mg/L		17.3
Total Cyanide	08/02/01 08021#1	EPA 335.2	0.005	mg/L	<	0.005 U
N-Nitrate	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L		0.5
N-Nitrite	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
Sulfate	07/28/01 07281#1	EPA 300.0	1.0	mg/L		16.9
Total Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U
Dissolved Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DK51 received 07/28/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW01MW03A

Lab Sample ID: DK51H
LIMS ID: 01-12793
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized: MB
Reported: 08/13/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units		Result
Alkalinity	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		9.9
Carbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3	<	1.0 U
Bicarbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		9.9
Total Suspended Solids	07/31/01 07311#1	EPA 160.2	1.2	mg/L		8.4
Chloride	07/28/01 07281#1	EPA 300.0	0.1	mg/L		1.4
Total Cyanide	08/02/01 08021#1	EPA 335.2	0.005	mg/L	<	0.005 U
N-Nitrate	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L		0.1
N-Nitrite	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
Sulfate	07/28/01 07281#1	EPA 300.0	0.1	mg/L		0.3
Total Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U
Dissolved Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DK51 received 07/28/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW01MW03B

Lab Sample ID: DK51I
LIMS ID: 01-12794
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units		Result
Alkalinity	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		45
Carbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3	<	1.0 U
Bicarbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		45
Total Suspended Solids	07/31/01 07311#1	EPA 160.2	1.0	mg/L		4.3
Chloride	07/28/01 07281#1	EPA 300.0	1.0	mg/L		26.5
Total Cyanide	08/02/01 08021#1	EPA 335.2	0.005	mg/L	<	0.005 U
N-Nitrate	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
N-Nitrite	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
Sulfate	07/28/01 07281#1	EPA 300.0	1.0	mg/L		24.8
Total Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U
Dissolved Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DK51 received 07/28/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW01MW04A

Lab Sample ID: DK51F
LIMS ID: 01-12791
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/25/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units		Result
Alkalinity	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		9.7
Carbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3	<	1.0 U
Bicarbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		9.7
Total Suspended Solids	07/31/01 07311#1	EPA 160.2	2.0	mg/L		58
Chloride	07/28/01 07281#1	EPA 300.0	0.1	mg/L		1.2
Total Cyanide	08/02/01 08021#1	EPA 335.2	0.005	mg/L	<	0.005 U
N-Nitrate	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L		0.2
N-Nitrite	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
Sulfate	07/28/01 07281#1	EPA 300.0	0.1	mg/L		1.6
Total Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U
Dissolved Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DK51 received 07/28/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW01MW05A

Lab Sample ID: DK51G
LIMS ID: 01-12792
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/26/01
Date Received: 07/28/01

Data Release Authorized:
Reported: 08/13/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units		Result
Alkalinity	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		13
Carbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3	<	1.0 U
Bicarbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		13
Total Suspended Solids	07/31/01 07311#1	EPA 160.2	1.0	mg/L		4.7
Chloride	07/28/01 07281#1	EPA 300.0	0.1	mg/L		1.5
Total Cyanide	08/02/01 08021#1	EPA 335.2	0.005	mg/L	<	0.005 U
N-Nitrate	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L		0.1
N-Nitrite	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
Sulfate	07/28/01 07281#1	EPA 300.0	0.1	mg/L		0.3
Total Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U
Dissolved Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DK51 received 07/28/01

Rinsate

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW1001MW03B

Lab Sample ID: DK51J
LIMS ID: 01-12795
Matrix: Water

QC Report No: DK51-URS Corp.
Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Sampled: 07/27/01
Date Received: 07/28/01

Data Release Authorized: MP
Reported: 08/13/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units		Result
Alkalinity	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		2.5
Carbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3	<	1.0 U
Bicarbonate (Alkalinity)	08/06/01 08061#1	SM 2320	1.0	mg/L CaCO3		2.5
Total Suspended Solids	07/31/01 07311#1	EPA 160.2	1.0	mg/L	<	1.0 U
Chloride	07/28/01 07281#1	EPA 300.0	0.1	mg/L		1.5
Total Cyanide	08/02/01 08021#1	EPA 335.2	0.005	mg/L	<	0.005 U
N-Nitrate	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L		0.1
N-Nitrite	07/28/01 07281#1	EPA 300.0	0.1	mg-N/L	<	0.1 U
Sulfate	07/28/01 07281#1	EPA 300.0	0.1	mg/L		0.3
Total Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U
Dissolved Organic Carbon	08/03/01 08031#1	EPA 415.1	1.5	mg/L	<	1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DK51 received 07/28/01

ANALYTICAL RESOURCES INCORPORATED

QA Report - Method Blank Analysis

QC Report No: DK51-URS Corp.
Matrix: Water Project: Camp Bonneville
DACA67-98-D-1005/D.O.0054
Date Received: NA

Data Release Authorized:
Reported: 08/13/01 Dr. M.A. Perkins

METHOD BLANK RESULTS
CONVENTIONALS

Analysis Date & Batch	Constituent	Units	Result	
07/31/01 07311#1	Total Suspended Solids	mg/L	< 1.0	U
08/02/01 08021#1	Total Cyanide	mg/L	< 0.005	U
08/03/01 08031#1	Total Organic Carbon	mg/L	< 1.5	U
08/03/01)8031#1	Dissolved Organic Carbon	mg/L	< 1.5	U
07/28/01 07281#1	Chloride	mg/L	< 0.1	U
07/28/01 07281#1	N-Nitrate	mg-N/L	< 0.1	U
07/28/01 07281#1	N-Nitrite	mg-N/L	< 0.1	U
07/28/01 07281#1	Sulfate	mg/L	< 0.1	U

C34

DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch

Explosives Analysis Report

Project Name:	Bonneville Dam - Landfill 4 / Demolition Area			Matrix:	Water
Project Number:	6401	Date Sampled:	24 Jul 01	Units:	ug/L
Client Sample ID:	GW01MW02A	Date Received:	27 Jul 01	Dilution Factor:	1
Lab Sample ID:	M010699-001	Date Extracted:	30 Jul 01		
Method:	SW-846 Method 8330	Date Analyzed:	09 Aug 01		
Batch ID:	WG8582	Date Reported:	24 Sep 01		
Analyst:	Schnitker				

CAS Number	Target Analyte	Result		Laboratory Reporting Limit	Method Detection Limit
2691-41-0	HMX	2.8		1.6	0.2
121-82-4	RDX	32.9		1.3	0.3
99-35-4	1,3,5-Trinitrobenzene	0.1	J	0.35	0.06
99-65-0	1,3-Dinitrobenzene	u		0.46	0.08
479-45-8	Tetryl	u		0.82	0.2
618-87-1	3,5-Dinitroaniline	u		0.44	0.2
98-95-3	Nitrobenzene	u		0.56	0.07
118-96-7	2,4,6-Trinitrotoluene	u		0.34	0.07
1946-51-0	4-Amino-2,6-Dinitrotoluene	u		0.19	0.06
355-72-7	2-Amino-4,6-Dinitrotoluene	u		0.21	0.03
606-20-2	2,6-Dinitrotoluene	0.1	JC	0.15	0.08
121-14-2	2,4-Dinitrotoluene	0.03	JC	0.24	0.02
88-72-2	2-Nitrotoluene	u		0.18	0.08
99-08-1	3-Nitrotoluene	u		0.27	0.08
99-99-0	4-Nitrotoluene	u		0.26	0.04

u: Below Method Detection Limit

Laboratory Comments:

Quality Control

Surrogate Standard	Recovery (%)	Acceptable	Spike (ug/L)
3,4-Dinitrotoluene	95	68-127	5.00

Method Blank: 8582-1

Laboratory Control Sample: 8582-2
Laboratory Duplicate Sample: 8582-3

420 South 18th Street, Omaha, NE 68102

FAX: (402) 341-5448
PHONE: (402) 444-4300

C42

DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch
Nitroglycerine and Nitroguanidine
Analysis Report

Project Name:	Bonneville Dam - Landfill 4 / Demolition Area				
Project Number:	6401	Date Sampled:	24 Jul 01	Matrix:	Water
Client Sample ID:	GW01MW02A	Date Received:	27 Jul 01	Units:	ug/L
Lab Sample ID:	M010699-001	Date Extracted:	30 Jul 01	Direct Injection	
Batch ID:	WG8582	Date Reported:	24 Sep 01		
Analyst:	Schnitker				

Method: Cation Exchange/C18 HPLC/UV(214nm) Date Analyzed: 08 Sep 01

CAS Number	Target Analyte	Result	Laboratory Reporting Limit	Method Detection Limit
72689-48-6	Nitroguanidine	u	10	3
88-89-1	Nitroglycerine	u	10	3

u: Below Method Detection Limit

Laboratory Comments:

420 South 18th Street, Omaha, NE 68102
FAX: (402) 341-5448
PHONE: (402) 444-4300

C38

DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch
Picric acid and PETN
Analysis Report

Project Name:	Bonneville Dam - Landfill 4 / Demolition Area			Matrix:	Water
Project Number:	6401	Date Sampled:	24 Jul 01	Units:	ug/L
Client Sample ID:	GW01MW02A	Date Received:	27 Jul 01	Dilution Factor:	1
Lab Sample ID:	M010699-001	Date Extracted:	30 Jul 01		
Batch ID:	WG8582	Date Reported:	24 Sep 01		
Analyst:	Schnitker				

Method: SW-846 Method 8330 M Date Analyzed: 08 Sep 01

CAS Number	Target Analyte	Result	Laboratory Reporting Limit	Method Detection Limit
88-89-1	Picric Acid	u	5.0	1.25

Method: Cation Exchange/C18 HPLC/UV(214nm) Date Analyzed: 08 Sep 01

CAS Number	Target Analyte	Result	Laboratory Reporting Limit	Method Detection Limit
72689-48-6	Pentaerythritol tetranitrate	u	1.0	0.3

u: Below Method Detection Limit

Laboratory Comments:

Quality Control

Surrogate Standard	Recovery (%)	Acceptable	Spike (ug/L)
3,4-Dinitrotoluene	95	68-127	5.00

Method Blank: 8582-1
Laboratory Control Sample: 8582-2
Laboratory Duplicate Sample: 8582-3

420 South 18th Street, Omaha, NE 68102
FAX: (402) 341-5448
PHONE: (402) 444-4300

C79

DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch

Explosives Analysis Report

Project Name:	Bonneville Dam - Landfill 4 / Demolition Area	Date Sampled:	24 Oct 01	Matrix:	Water
Project Number:	6401	Date Received:	26 Oct 01	Units:	ug/L
Client Sample ID:	GW02MW02B	Date Extracted:	30 Oct 01	Dilution Factor:	1
Lab Sample ID:	M011082-001	Date Analyzed:	14 Nov 01		
Method:	SW-846 Method 8330	Date Reported:	19 Dec 01		
Batch ID:	WG9264				
Analyst:	Schnitker				

CAS Number	Target Analyte	Result		Laboratory Reporting Limit	Method Detection Limit
2691-41-0	HMX	3.2	C	1.6	0.2
121-82-4	RDX	94.5		1.3	0.3
99-35-4	1,3,5-Trinitrobenzene	u		0.35	0.06
99-65-0	1,3-Dinitrobenzene	u		0.46	0.08
479-45-8	Tetryl	u		0.82	0.2
618-87-1	3,5-Dinitroaniline	u		0.44	0.2
98-95-3	Nitrobenzene	u		0.56	0.07
118-96-7	2,4,6-Trinitrotoluene	u		0.34	0.07
1946-51-0	4-Amino-2,6-Dinitrotoluene	u		0.19	0.06
355-72-7	2-Amino-4,6-Dinitrotoluene	u		0.21	0.03
606-20-2	2,6-Dinitrotoluene	u		0.15	0.08
121-14-2	2,4-Dinitrotoluene	0.40	C	0.24	0.02
88-72-2	2-Nitrotoluene	u		0.18	0.08
99-08-1	3-Nitrotoluene	u		0.27	0.08
99-99-0	4-Nitrotoluene	u		0.26	0.04

C: Result not confirmed due to matrix interference.
u: Below Method Detection Limit

Laboratory Comments:

Quality Control

Surrogate Standard	Recovery (%)	Acceptable	Spike (ug/L)
3,4-Dinitrotoluene	90	68-127	5.00

Method Blank: 9264-1
Laboratory Control Sample: 9264-2
Laboratory Duplicate Sample: 9264-3

420 South 18th Street, Omaha, NE 68102
FAX: (402) 341-5448
PHONE: (402) 444-4300

C88

DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch
Nitroglycerine and Nitroguanidine
Analysis Report

Project Name:	Bonneville Dam - Landfill 4 / Demolition Area			Matrix:	Water
Project Number:	6401	Date Sampled:	24 Oct 01	Units:	ug/L
Client Sample ID:	GW02MW02B	Date Received:	26 Oct 01	Direct Injection	
Lab Sample ID:	M011082-001	Date Extracted:	30 Oct 01		
Batch ID:	WG9264	Date Reported:	19 Dec 01		
Analyst:	Schnitker				

Method: Cation Exchange/C18 HPLC/UV(214nm) Date Analyzed: 21 Nov 01

CAS Number	Target Analyte	Result	Laboratory Reporting Limit	Method Detection Limit
72689-48-6	Nitroguanidine	u	10	3
88-89-1	Nitroglycerine	u	10	3

u: Below Method Detection Limit

Laboratory Comments:

420 South 18th Street, Omaha, NE 68102

FAX: (402) 341-5448
PHONE: (402) 444-4300

C84

DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch
Picric acid and PETN
Analysis Report

Project Name:	Bonneville Dam - Landfill 4 / Demolition Area			Matrix:	Water
Project Number:	6401	Date Sampled:	24 Oct 01	Units:	ug/L
Client Sample ID:	GW02MW02B	Date Received:	26 Oct 01	Dilution Factor:	1
Lab Sample ID:	M011082-001	Date Extracted:	30 Oct 01		
Batch ID:	WG9264	Date Reported:	19 Dec 01		
Analyst:	Schnitker				

Method: SW-846 Method 8330 M Date Analyzed: 05 Dec 01

CAS Number	Target Analyte	Result	Laboratory Reporting Limit	Method Detection Limit
88-89-1	Picric Acid	u	5.0	1.25

Method: Cation Exchange/C18 HPLC/UV(214nm) Date Analyzed: 21 Nov 01

CAS Number	Target Analyte	Result	Laboratory Reporting Limit	Method Detection Limit
72689-48-6	Pentaerythritol tetranitrate	u	1.0	0.3

u: Below Method Detection Limit

Laboratory Comments:

Quality Control

Surrogate Standard	Recovery (%)	Acceptable	Spike (ug/L)
3,4-Dinitrotoluene	90	68-127	5.00

Method Blank: 9264-1
Laboratory Control Sample: 9264-2
Laboratory Duplicate Sample: 9264-3

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DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch

VOA Sample Report

Project Name: Bonneville Dam - Landfill 4/Demolition Area
Project Number: 6401
Client Sample ID: GW01MW02A
Sample ID: M010699-001
Batch ID: WG8566
Method: EPA 8260
Analyst: Robert Williams

Date Sampled: 07/24/01
Date Received: 07/27/01
Date Analyzed: 07/30/01
Date Reported: 08/10/01

Matrix: Water
Units: ug/L
Dilution: 1.0

CAS Number	Compound	Result	Sample Quant Limit	Sample Det Limit
75-71-8	Dichlorodifluoromethane	u	5.0	1
74-87-3	Chloromethane	u	2.0	0.5
75-01-4	Vinyl Chloride	u	2.0	0.5
74-83-9	Bromomethane	u	2.0	0.5
75-00-3	Chloroethane	u	2.0	0.5
75-69-4	Trichlorofluoromethane	u	5.0	1
67-64-1	Acetone	u	25	10
75-35-4	1,1-Dichloroethene	u	2.0	0.5
75-09-2	Methylene Chloride	u	2.0	0.5
75-15-0	Carbon Disulfide	u	2.0	0.5
156-60-5	trans-1,2-Dichloroethene	u	2.0	0.5
75-34-3	1,1-Dichloroethane	u	2.0	0.5
78-93-3	2-Butanone	u	25	10
594-20-7	2,2-Dichloropropane	u	10	2
156-59-2	cis-1,2-Dichloroethene	u	2.0	0.5
67-66-3	Chloroform	u	2.0	0.5
74-97-5	Bromochloromethane	u	5.0	1
71-55-6	1,1,1-Trichloroethane	u	2.0	0.5
563-58-6	1,1-Dichloropropene	u	5.0	1
56-23-5	Carbon Tetrachloride	u	2.0	0.5
107-06-2	1,2-Dichloroethane	u	2.0	0.5
[illegible]-2	Benzene	u	2.0	0.5
[illegible]-6	Trichloroethene	u	2.0	0.5
78-87-5	1,2-Dichloropropane	u	2.0	0.5
75-27-4	Bromodichloromethane	u	2.0	0.5
74-95-3	Dibromomethane	u	5.0	1
108-10-1	4-Methyl-2-pentanone	u	25	10
10061-01-5	cis-1,3-Dichloropropene	u	2.0	0.5
108-88-3	Toluene	u	2.0	0.5
10061-02-6	trans-1,3-Dichloropropene	u	2.0	0.5
591-78-6	2-Hexanone	u	25	10
79-00-5	1,1,2-Trichloroethane	u	2.0	0.5
142-28-9	1,3-Dichloropropane	u	5.0	1
127-18-4	Tetrachloroethene	u	2.0	0.5
124-48-1	Dibromochloromethane	u	2.0	0.5
106-93-4	1,2-Dibromoethane	u	5.0	1
108-90-7	Chlorobenzene	u	2.0	0.5
100-41-4	Ethylbenzene	u	2.0	0.5
630-20-6	1,1,1,2-Tetrachloroethane	u	5.0	1
1330-20-7B	meta-/para-Xylenes	u	2.0	0.5
95-47-6	ortho-Xylene	u	2.0	0.5
100-42-5	Styrene	u	2.0	0.5
98-92-8	Isopropylbenzene	u	5.0	1
75-25-2	Bromoform	u	2.0	0.5
79-34-5	1,1,2,2-Tetrachloroethane	u	2.0	1
96-18-4	1,2,3-Trichloropropane	u	5.0	1
103-65-1	n-Propylbenzene	u	5.0	1
108-86-1	Bromobenzene	u	5.0	1
108-67-8	1,3,5-Trimethylbenzene	u	5.0	1
95-49-8	2-Chlorotoluene	u	5.0	1

u: Below Sample Detection Limit (SDL >= MDL x Dilution)

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DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch

VOA Sample Report

Project Name:	Bonneville Dam - Landfill 4/Demolition Area				
Project Number:	6401	Date Sampled:	07/24/01	Matrix:	Water
Client Sample ID:	GW01MW02A	Date Received:	07/27/01	Units:	ug/L
Sample ID:	M010699-001	Date Analyzed:	07/30/01		
Batch ID:	WG8566	Date Reported:	08/10/01	Dilution:	1.0
Method:	EPA 8260				
Analyst:	Robert Williams				

CAS Number	Compound	Result	Sample Quant Limit	Sample Det Limit
106-43-4	4-Chlorotoluene	u	5.0	1
98-06-6	tert-Butylbenzene	u	5.0	1
95-63-6	1,2,4-Trimethylbenzene	u	5.0	1
135-98-8	sec-Butylbenzene	u	5.0	1
99-87-6	p-Isopropyltoluene	u	5.0	1
541-73-1	1,3-Dichlorobenzene	u	5.0	1
106-46-7	1,4-Dichlorobenzene	u	5.0	1
104-51-8	n-Butylbenzene	u	5.0	1
95-50-1	1,2-Dichlorobenzene	u	5.0	1
96-12-8	1,2-Dibromo-3-chloropropane	u	10	2
120-82-1	1,2,4-Trichlorobenzene	u	25	10
87-68-3	Hexachlorobutadiene	u	25	10
91-20-3	Naphthalene	u	25	10
87-61-6	1,2,3-Trichlorobenzene	u	25	10

u: Below Sample Detection Limit (SDL >= MDL x Dilution)

Method Quality Control

Surrogate Standard	Recovery (%)	CQAB Lab Perfomance Range	Method 8260 Acceptance Range	Spike (ug/L)
Dibromofluoromethane	98.5	80-120	80-120	50.0
1,2-Dichloroethane-d4	106.	76-114	76-114	50.0
Toluene-d8	97.0	88-110	88-110	50.0
4-Bromofluorobenzene	95.9	86-115	86-115	50.0

(CQAB Laboratory performance ranges are based on in-house testing.)

Quality Assurance / Quality Control

Method Blank:	WG8566-1	Laboratory Control Sample:	WG8566-2
Laboratory Matrix Duplicate:	WG8566-3	Dilution:	NA
Matrix Spike:	WG8566-4	Dilution:	NA
Matrix Spike Duplicate:	WG8566-5		

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DEPARTMENT OF THE ARMY
Corps of Engineers
Environmental Chemistry Branch
(Formally Chemistry Quality Assurance Branch)

VOA Special Request Compound Report

Project Name:	Bonneville Dam - Landfill 4/Demolition Area				
Project Number:	6401	Date Sampled:	07/24/01	Matrix:	water
Client Sample ID:	Listed below	Date Received:	07/27/01	Units:	µg/L
Sample ID:	Listed below	Date Analyzed:	08/07/01 (OA1)		
Batch ID:	WG8566 (OA1 WG8658)	Date Reported:	08/10/01		
Method:	EPA 8260				
Analyst:	Robert Williams				

The samples listed below from project 6401, *Bonneville Dam - Landfill 4/Demolition Area*, were also analyzed specifically for the presence of OA1 (normal range C_6-C_9) - the results are listed below.

Sample ID	Client ID	Compound	Dilution Factor	Result (µg/L)	Estimated Sample Detection Limit (µg/L)
M010699-001	GW01MW02A	OA1 (normal range C_6-C_9)	1.0	U	50

Quality control

Lab. ID	Description	Compound	Dilution Factor	Result (µg/L)	Estimated Sample Detection Limit
WG8658-1	Method Blank	OA1 (normal range C_6-C_9)	1	U	50
WG8658-3	Laboratory Duplicate	OA1 (normal range C_6-C_9)	1	U	50

Sample/LD RPD	RPD
OA1 (normal range C_6-C_9)	NC

Lab. ID	Description	Compound	Spike (µg/L)	Result (µg/L)	Recovery (%)
WG8658-2	Laboratory Control Sample	OA1 (normal range C_6-C_9)	71.4	77.1	108
WG8658-4	Matrix Spike	OA1 (normal range C_6-C_9)	71.4	76.1	107
WG8658-5	Matrix Spike Duplicate	OA1 (normal range C_6-C_9)	71.4	77.1	108

MS/MSD RPD	RPD (%)
OA1 (normal range C_6-C_9)	1

U: Below sample detection Limit
NC: Not Calculable
Note: Sample M010699-001 used for LD, MS/MSD

AJM - 8/15/01
SR - OA1 with QC WG 8566 pno 6401 a

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DEPARTMENT OF THE ARMY
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Chemistry Quality Assurance Branch

BNA Sample Report

Project Name:	Bonneville Dam - Landfill 4/Demolition Area				
Project Number:	6401	Date Sampled:	07/24/01	Matrix:	Water
Client Sample ID:	GW01MW02A	Date Received:	07/27/01	Units:	ug/L
CQAB Sample ID:	M010699-001	Date Logged:	07/27/01	Amount (L):	1.05
Prep Method:	SW-846 3520 C	Date Extracted:	07/30/01	Vial Vol. (mL):	1
Analysis Method:	SW-846 8270 C	Date Analyzed:	08/28/01	Final Vol.(mL):	1
Work Group:	WG8689	Date Reported:	09/10/01	Dilution:	1
Analytical Batch:	010828ew1	Instrument ID:	gcmsb		
Analyst:	Greg O. Shearer	Data File ID:	bna0401006		

CAS Number	Compound	Result	LRL	MDL	CAS Number	Compound	Result	LRL	MDL
108-95-2	Phenol	u	4.8	0.5	99-09-2	3-Nitroaniline	u	48	5
111-44-4	Bis(2-chloroethyl) ether	u	4.8	0.5	83-32-9	Acenaphthene	u	4.8	0.5
95-57-8	2-Chlorophenol	u	4.8	0.5	51-28-5	2,4-Dinitrophenol	u	48	5
541-73-1	1,3-Dichlorobenzene	u	4.8	0.5	132-64-9	Dibenzofuran	u	4.8	0.5
106-46-7	1,4-Dichlorobenzene	u	4.8	0.5	100-02-7	4-Nitrophenol	u	48	5
95-50-1	1,2-Dichlorobenzene	u	4.8	0.5	121-14-2	2,4-Dinitrotoluene	u	4.8	0.5
100-51-6	Benzyl alcohol	u	48	5	86-73-7	Fluorene	u	4.8	0.5
95-48-7	2-Methylphenol	u	4.8	0.5	84-66-2	Diethyl phthalate	u	4.8	0.5
108-60-1	2,2'-Oxybis(1-chloropropane)	u	4.8	0.5	7005-72-3	4-Chlorophenyl phenyl ether	u	4.8	0.5
621-64-7	N-Nitroso-di-n-propylamine	u	4.8	0.5	100-01-6	4-Nitroaniline	u	48	5
67-72-1	Hexachloroethane	u	4.8	0.5	534-52-1	4,6-Dinitro-2-methylphenol	u	48	5
106-44-5	4-Methylphenol	u	4.8	0.5	86-30-6	N-Nitrosodiphenylamine (1)	u	4.8	0.5
98-95-3	Nitrobenzene	u	4.8	0.5	118-74-1	Hexachlorobenzene	u	4.8	0.5
78-59-1	Isophorone	u	4.8	0.5	101-55-3	4-Bromophenyl phenyl ether	u	4.8	0.5
88-75-5	2-Nitrophenol	u	9.5	1	87-86-5	Pentachlorophenol	u	48	5
105-67-9	2,4-Dimethylphenol	u	9.5	1	85-01-8	Phenanthrene	u	4.8	0.5
111-91-1	Bis(2-chloroethoxy)methane	u	4.8	0.5	120-12-7	Anthracene	u	4.8	0.5
120-83-2	2,4-Dichlorophenol	u	4.8	0.5	84-74-2	Di-n-butyl phthalate	1 JB	4.8	0.5
65-85-0	Benzoic acid	u	48	5	206-44-0	Fluoranthene	u	4.8	0.5
120-82-1	1,2,4-Trichlorobenzene	u	4.8	0.5	129-00-0	Pyrene	u	4.8	0.5
91-20-3	Naphthalene	u	4.8	0.5	85-68-7	Butyl benzyl phthalate	u	4.8	0.5
106-47-8	4-Chloroaniline	u	9.5	1	56-55-3	Benzo(a)anthracene	u	4.8	0.5
87-68-3	Hexachlorobutadiene	u	4.8	0.5	91-94-1	3,3'-Dichlorobenzidine	u	19	2
59-50-7	4-Chloro-3-methylphenol	u	9.5	1	218-01-9	Chrysene	u	4.8	
91-57-6	2-Methylnaphthalene	u	4.8	0.5	117-81-7	Bis(2-ethylhexyl) phthalate	1 JB	4.8	
77-47-4	Hexachlorocyclopentadiene	u	19	2	117-84-0	Di-n-octyl phthalate	u	4.8	0.5
88-06-2	2,4,6-Trichlorophenol	u	4.8	0.5	205-99-2	Benzo(b)fluoranthene	u	4.8	0.5
95-95-4	2,4,5-Trichlorophenol	u	4.8	0.5	207-08-9	Benzo(k)fluoranthene	u	4.8	0.5
91-58-7	2-Chloronaphthalene	u	4.8	0.5	50-32-8	Benzo(a)pyrene	u	4.8	0.5
88-74-4	2-Nitroaniline	u	48	5	193-39-5	Indeno(1,2,3-cd)pyrene	u	4.8	0.5
208-96-8	Acenaphthylene	u	4.8	0.5	53-70-3	Dibenzo(a,h)anthracene	u	4.8	0.5
131-11-3	Dimethyl phthalate	u	4.8	0.5	191-24-2	Benzo(g,h,i)perylene	u	4.8	0.5
606-20-2	2,6-Dinitrotoluene	u	4.8	0.5					

MDL determined according to procedures in 40CFR Appendix B to part 136
u: Below Method Detection Limit
(1): Cannot be distinguished from Diphenylamine by this method.
J: Estimated Concentration above MDL but below LRL.
B: Compound also present in the method blank.

Method Quality Control

CAS Number	Surrogate Standard	Recovery (%)	Method Range	CQAB Lab Range	Spike (ug/L)
4165-60-0	Nitrobenzene-d5	68	35-114	43-120	47.6
321-60-8	2-Fluorobiphenyl	73	43-116	50-104	47.6
98904-43-9	Terphenyl-d14	73	33-141	44-113	47.6
4165-62-2	Phenol-d5	67	10-110	52-103	71.4
367-12-4	2-Fluorophenol	62	21-110	45-100	71.4
118-79-6	2,4,6-Tribromophenol	72	10-123	53-120	71.4

Quality Assurance / Quality Control

Method Blank:	WG8689-1	Matrix Spike:	WG8689-4	Dilution:	NA
Lab Control Sample:	WG8689-2	Matrix Spike Duplicate:	WG8689-5	Re-analysis:	NA
Lab Matrix Duplicate:	WG8689-3	Dilution:	NA	Re-extraction:	NA

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DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch

BNA (Method Blank) Report

Project Name:	Bonneville Dam - Landfill 4/Demolition Area				
Project Number:	6401	Date Extracted:	07/30/01	Matrix:	Water
CQAB Sample ID:	WG8689-1	Date Analyzed:	08/28/01	Units:	ug/L
Prep Method:	SW-846 3520 C	Date Reported:	09/10/01	Amount (L):	1.0
Analysis Method:	SW-846 8270 C	Instrument ID:	gcmsb	Vial Vol.(mL):	1
Analytical Batch:	010828ew1	Data File ID:	bna0101003	Final Vol.(mL):	1
Analyst:	Greg O. Shearer			Dilution Factor:	1

CAS Number	Compound	Result	LRL	MDL	CAS Number	Compound	Result	LRL	MDL
108-95-2	Phenol	u	5.0	0.5	99-09-2	3-Nitroaniline	u	50	5
111-44-4	Bis(2-chloroethyl) ether	u	5.0	0.5	83-32-9	Acenaphthene	u	5.0	0.5
95-57-8	2-Chlorophenol	u	5.0	0.5	51-28-5	2,4-Dinitrophenol	u	50	5
541-73-1	1,3-Dichlorobenzene	u	5.0	0.5	132-64-9	Dibenzofuran	u	5.0	0.5
106-46-7	1,4-Dichlorobenzene	u	5.0	0.5	100-02-7	4-Nitrophenol	u	50	5
95-50-1	1,2-Dichlorobenzene	u	5.0	0.5	121-14-2	2,4-Dinitrotoluene	u	5.0	0.5
100-51-6	Benzyl alcohol	u	50	5	86-73-7	Fluorene	u	5.0	0.5
95-48-7	2-Methylphenol	u	5.0	0.5	84-66-2	Diethyl phthalate	u	5.0	0.5
108-60-1	2,2'-Oxybis(1-chloropropane)	u	5.0	0.5	7005-72-3	4-Chlorophenyl phenyl ether	u	5.0	0.5
621-64-7	N-Nitroso-di-n-propylamine	u	5.0	0.5	100-01-6	4-Nitroaniline	u	50	5
67-72-1	Hexachloroethane	u	5.0	0.5	534-52-1	4,6-Dinitro-2-methylphenol	u	50	5
106-44-5	4-Methylphenol	u	5.0	0.5	86-30-6	N-Nitrosodiphenylamine (1)	u	5.0	0.5
98-95-3	Nitrobenzene	u	5.0	0.5	118-74-1	Hexachlorobenzene	u	5.0	0.5
78-59-1	Isophorone	u	5.0	0.5	101-55-3	4-Bromophenyl phenyl ether	u	5.0	0.5
88-75-5	2-Nitrophenol	u	10	1	87-86-5	Pentachlorophenol	u	50	5
105-67-9	2,4-Dimethylphenol	u	10	1	85-01-8	Phenanthrene	u	5.0	0.5
111-91-1	Bis(2-chloroethoxy)methane	u	5.0	0.5	120-12-7	Anthracene	u	5.0	0.5
120-83-2	2,4-Dichlorophenol	u	5.0	0.5	84-74-2	Di-n-butyl phthalate	1 J	5.0	0.5
65-85-0	Benzoic acid	u	50	5	206-44-0	Fluoranthene	u	5.0	0.5
120-82-1	1,2,4-Trichlorobenzene	u	5.0	0.5	129-00-0	Pyrene	u	5.0	0.5
91-20-3	Naphthalene	u	5.0	0.5	85-68-7	Butyl benzyl phthalate	u	5.0	0.5
106-47-8	4-Chloroaniline	u	10	1	56-55-3	Benzo(a)anthracene	u	5.0	0.5
87-68-3	Hexachlorobutadiene	u	5.0	0.5	91-94-1	3,3'-Dichlorobenzidine	u	20	2
[illegible]50-7	4-Chloro-3-methylphenol	u	10	1	218-01-9	Chrysene	u	5.0	0.5
[illegible]1-6	2-Methylnaphthalene	u	5.0	0.5	117-81-7	Bis(2-ethylhexyl) phthalate	3 J	5.0	0.5
[illegible].7-4	Hexachlorocyclopentadiene	u	20	2	117-84-0	Di-n-octyl phthalate	u	5.0	0.5
88-06-2	2,4,6-Trichlorophenol	u	5.0	0.5	205-99-2	Benzo(b)fluoranthene	u	5.0	0.5
95-95-4	2,4,5-Trichlorophenol	u	5.0	0.5	207-08-9	Benzo(k)fluoranthene	u	5.0	0.5
91-58-7	2-Chloronaphthalene	u	5.0	0.5	50-32-8	Benzo(a)pyrene	u	5.0	0.5
88-74-4	2-Nitroaniline	u	50	5	193-39-5	Indeno(1,2,3-cd)pyrene	u	5.0	0.5
208-96-8	Acenaphthylene	u	5.0	0.5	53-70-3	Dibenzo(a,h)anthracene	u	5.0	0.5
131-11-3	Dimethyl phthalate	u	5.0	0.5	191-24-2	Benzo(g,h,i)perylene	u	5.0	0.5
606-20-2	2,6-Dinitrotoluene	u	5.0	0.5					

u: Below Method Detection Limit
(1): Cannot be distinguished from Diphenylamine by this method.
J: Estimated Concentration above MDL but below LRL.

MDL determined according to procedures in 40CFR Appendix B to part 136

Method Quality Control

CAS Number	Surrogate Standard	Recovery (%)	Method Range	CQAB Lab Range	Spike (ug/L)
4165-60-0	Nitrobenzene-d5	63	35-114	43-120	50.0
321-60-8	2-Fluorobiphenyl	68	43-116	50-104	50.0
98904-43-9	Terphenyl-d14	77	33-141	44-113	50.0
4165-62-2	Phenol-d5	62	10-110	52-103	75.0
367-12-4	2-Fluorophenol	57	21-110	45-100	75.0
118-79-6	2,4,6-Tribromophenol	74	10-123	53-120	75.0

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Continental Analytical Services, Inc.

Client: US Army Corps of Engineers
Attn: Laura Percifield
420 South 18th Street
Omaha, NE 68102-2586

Date Sample Rptd: 08/15/2001
Date Sample Recd: 07/28/2001
Continental File No: 5409
Continental Order No: 72249
Client P.O.: 6401,WO#WG8563

Lab Number: 01072225
Sample Description: M010699-001

Date Sampled: 07/24/2001
Time Sampled: 1745

Analysis	Concentration	Units	Dilution Factor	Reporting Limit
EPA Method SW846-8151A				
2,4,5-T	ND(1.0)	µg/L	1.0	1.0
2,4,5-TP (Silvex)	ND(1.0)	µg/L	1.0	1.0
2,4-D	ND(5.0)	µg/L	1.0	5.0
2,4-DB	ND(5.0)	µg/L	1.0	5.0
Dalapon	ND(5.0)	µg/L	1.0	5.0
Dicamba	ND(5.0)	µg/L	1.0	5.0
Dichlorprop	ND(5.0)	µg/L	1.0	5.0
Dinoseb	ND(5.0)	µg/L	1.0	5.0
MCPA	ND(500)	µg/L	1.0	500
MCPP	ND(500)	µg/L	1.0	500
Cyanide, Total	ND(0.01)	mg/L	1.0	0.01

Analysis	Date Prepared	Date Analyzed	QC Batch	Analyst	Method(s)
EPA Method SW846-8151	07/31/2001	08/08/2001	010731-1	RAC	8151A
Cyanide, Total	N/A	08/02/2001	010802-1	GT	SM4500CN(E)/9010B
Herbicides Preparation Analyst/Method				JRT	515.1/615/8151A

Laboratory analyses were performed on samples utilizing procedures published in Title 40 of the Code of Federal Regulations, Parts 136 or 141, or in EPA Publication, SW-846, 3rd edition, September, 1986 and the latest promulgated update. ND(), where noted, indicates none detected with the reporting limit in parentheses. Samples will be retained for thirty days unless otherwise notified.

CONTINENTAL ANALYTICAL SERVICES, INC.

Clifford J. Baker
Technical Manager

Quality Ethics Service
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DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch
Omaha, Nebraska

Total Fuel Hydrocarbons

FAMIS No: 6401
Project: Bonneville Dam - Landfill Demolition Area

Date Sample Taken: 24 Jul 01
Date Extracted: 30 Jul 01
Date Analyzed: 03 Aug 01

Analysis Method: WTPH-HCID

Sample Description: Water
Analyst: M. Woster

Customer Sample No: GW01MW02A
CQAB Sample No: M010699-001
Batch No: 010730W
Work group: WG 8571

RESULTS

Analysis for	Result (µg/L)	Reporting Limit (µg/L)
TPH-G, C6-C12	u	200
TPH-D, C12-C24 (as Diesel)	u	200
TPH-Dx, C24-C30	u	1000

Pentacosane Surrogate Recovery: 75% (QC limits: 51-144)

u: Below Detection Limit (70 µg/L)

Lab comment: The sample contains no detectable petroleum hydrocarbons in the gasoline, diesel or lubricating oil ranges.

Approved By: David E. Aplichel Date: 26 Aug. 01
MW

C44

DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch

Total Metals

Project Name: Bonneville Dam - Landfill 4/Demolition Area
Project Number: 6401
Client Sample ID: GW01MW02A
Sample ID: M010699-001
Date Sampled: 07/24/01
Date Received: 07/27/01
Date Reported: 08/08/01
Matrix: Water
Units: ug/L

CAS Number	Analyte	Dilution	Result	Sample Quant Limit	Det Limit	Method	Batch ID	Date Digested	Date Analyzed	Analyst
7429-90-5	Aluminum	1	75. J	90.	30	SPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-36-0	Antimony	1	u	20.	6.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-38-2	Arsenic	1	u	15.	3.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-39-3	Barium	1	1.2 J	2.5	0.5	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-41-7	Beryllium	1	u	2.0	0.5	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-43-9	Cadmium	1	u	2.5	0.5	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-70-2	Calcium	1	1200	300	100	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-47-3	Chromium	1	8.0 J	10.	2.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-48-4	Cobalt	1	u	15.	3.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-50-8	Copper	1	u	10.	2.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7439-89-6	Iron	1	66. J	120	40	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7439-92-1	Lead	1	u	10.	2.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7439-95-4	Magnesium	1	440	120	40	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7439-96-5	Manganese	1	44.3	4.0	1.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-02-0	Nickel	1	5.8 J	10.	3.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-09-7	Potassium	1	210 J	300	100	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7782-49-2	Selenium	1	u	20.	4.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-22-4	Silver	1	u	5.0	1.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-23-5	Sodium	1	6610	400	200	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-28-0	Thallium	1	u	30.	6.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-62-2	Vanadium	1	u	20.	4.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-66-6	Zinc	1	u	10.	3.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon

u: Below Sample Detection Limit (MDL x Dilution)

J: Estimated concentration below laboratory reporting limit.

Quality Assurance / Quality Control

ICP LCS ID: WG8594-2
GFAA LCS ID: NA
CVAA LCS ID: NA

ICP MS ID: WG8594-4
GFAA MS ID: NA
CVAA MS ID: NA

ICP Method Blank ID: WG8594-1
GFAA Method Blank ID: NA
CVAA Method Blank ID: NA

ICP LD ID: WG8594-3
GFAA LD ID: NA
CVAA LD ID: NA

ICP MSD ID: WG8594-5
GFAA MSD ID: NA
CVAA MSD ID: NA

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C45

DEPARTMENT OF THE ARMY
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Chemistry Quality Assurance Branch

Total Metals

Project Name: Bonneville Dam - Landfill 4/Demolition Area
Project Number: 6401
Client Sample ID: GW01MW02A
Sample ID: M010699-001

Date Sampled: 07/24/01
Date Received: 07/27/01
Date Reported: 08/03/01

Matrix: Water
Units: ug/L

CAS Number	Analyte	Dilution	Result	Sample Quant Limit	Det Limit	Method	Batch ID	Date Digested	Date Analyzed	Analyst
7439-97-6	Mercury	1	u	0.050	0.01	EPA 7470	WG8606	08-02-01	08-03-01	Bond

u: Below Sample Detection Limit (MDL x Dilution)

Quality Assurance / Quality Control

ICP Method Blank ID: NA
GFAA Method Blank ID: NA
CVAA Method Blank ID: WG8606-1

ICP LCS ID: NA
GFAA LCS ID: NA
CVAA LCS ID: WG8606-2

ICP LD ID: NA
GFAA LD ID: NA
CVAA LD ID: WG8606-3

ICP MS ID: NA
GFAA MS ID: NA
CVAA MS ID: WG8606-4

ICP MSD ID: NA
GFAA MSD ID: NA
CVAA MSD ID: WG8606-5

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C46

DEPARTMENT OF THE ARMY
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Chemistry Quality Assurance Branch

Total Metals

Project Name: Bonneville Dam - Landfill 4/Demolition Area
Project Number: 6401
Client Sample ID: GW01MW02A - DISSOLVED
Sample ID: M010699-003

Date Sampled: 07/24/01
Date Received: 07/27/01
Date Reported: 08/08/01

Matrix: Water
Units: ug/L

CAS Number	Analyte	Dilution	Result	Sample Quant Limit	Det Limit	Method	Batch ID	Date Digested	Date Analyzed	Analyst
7429-90-5	Aluminum	1	u	90.	30	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-36-0	Antimony	1	u	20.	6.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-38-2	Arsenic	1	u	15.	3.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-39-3	Barium	1	0.60 J	2.5	0.5	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-41-7	Beryllium	1	u	2.0	0.5	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-43-9	Cadmium	1	u	2.5	0.5	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-70-2	Calcium	1	1100	300	100	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-47-3	Chromium	1	u	10.	2.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-48-4	Cobalt	1	u	15.	3.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-50-8	Copper	1	u	10.	2.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7439-89-6	Iron	1	u	120	40	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7439-92-1	Lead	1	u	10.	2.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7439-95-4	Magnesium	1	390	120	40	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7439-96-5	Manganese	1	40.0	4.0	1.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-02-0	Nickel	1	5.7 J	10.	3.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-09-7	Potassium	1	190 J	300	100	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7782-49-2	Selenium	1	u	20.	4.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-22-4	Silver	1	u	5.0	1.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-23-5	Sodium	1	5560	400	200	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-28-0	Thallium	1	u	30.	6.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-62-2	Vanadium	1	u	20.	4.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon
7440-66-6	Zinc	1	u	10.	3.	EPA 6010B	WG8594	08-02-01	08-04-01	Shannon

u: Below Sample Detection Limit (MDL x Dilution)

J: Estimated concentration below laboratory reporting limit.

Quality Assurance / Quality Control

ICP Method Blank ID: WG8594-1
GFAA Method Blank ID: NA
CVAA Method Blank ID: NA

ICP LCS ID: WG8594-2
GFAA LCS ID: NA
CVAA LCS ID: NA

ICP LD ID: WG8594-3
GFAA LD ID: NA
CVAA LD ID: NA

ICP MS ID: WG8594-4
GFAA MS ID: NA
CVAA MS ID: NA

ICP MSD ID: WG8594-5
GFAA MSD ID: NA
CVAA MSD ID: NA

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DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch

Total Metals

Project Name: Bonneville Dam - Landfill 4/Demolition Area
Project Number: 6401
Client Sample ID: GW01MW02A - DISSOLVED
Sample ID: M010699-003

Date Sampled: 07/24/01
Date Received: 07/27/01
Date Reported: 08/03/01

Matrix: Water
Units: ug/L

CAS Number	Analyte	Dilution	Result	Sample Quant Limit	Det Limit	Method	Batch ID	Date Digested	Date Analyzed	Analyst
7439-97-6	Mercury	1	u	0.050	0.01	EPA 7470	WG8606	08-02-01	08-03-01	Bond

u: Below Sample Detection Limit (MDL x Dilution)

Quality Assurance / Quality Control

ICP Method Blank ID: NA
GFAA Method Blank ID: NA
CVAA Method Blank ID: WG8606-1

ICP LCS ID: NA
GFAA LCS ID: NA
CVAA LCS ID: WG8606-2

ICP LD ID: NA
GFAA LD ID: NA
CVAA LD ID: WG8606-3

ICP MS ID: NA
GFAA MS ID: NA
CVAA MS ID: WG8606-4

ICP MSD ID: NA
GFAA MSD ID: NA
CVAA MSD ID: WG8606-5

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C71

DEPARTMENT OF THE ARMY
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Chemistry Quality Assurance Branch

Wet Chemistry Sample Report

Project Name: Bonneville Dam - Landfill 4/De
Project Number: 6401
Client Sample ID: GW01MW02A

Date Sampled: 07/24/01
Date Received: 07/27/01
Date Reported: 08/06/01

Matrix: Water
Units: mg/L
Sample ID: M010699-001

CAS Number	Analyte	Result	LRL	MDL	Method	Batch ID	Date Analyzed	Analyst
MRL-02	Sulfate	8.7 J	20	6	EPA 375.2	WG8634	08/03/01	LAUBSCHER

J: Estimated Concentration below laboratory reporting limit.

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C66

DEPARTMENT OF THE ARMY
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Chemistry Quality Assurance Branch

Wet Chemistry Sample Report

Project Name: Bonneville Dam - Landfill 4/De
Project Number: 6401
Client Sample ID: GW01MW02A

Date Sampled: 07/24/01
Date Received: 07/27/01
Date Reported: 08/28/01

Matrix: Water
Units: mg/L
Sample ID: M010699-001

CAS Number	Analyte	Result	LRL	MDL	Method	Batch ID	Date Analyzed	Analyst
MRL-01	Chloride	3.3 J	5.0	1	EPA 325.2	WG8777	08/01/01	Sanders

J: Estimated Concentration below laboratory reporting limit.

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C61

DEPARTMENT OF THE ARMY
Corps of Engineers
Chemistry Quality Assurance Branch

Wet Chemistry Sample Report

Project Name: Bonneville Dam - Landfill 4/De
Project Number: 6401
Client Sample ID: GW01MW02A

Date Sampled: 07/24/01
Date Received: 07/27/01
Date Reported: 09/03/01

Matrix: Water
Units: mg/L
Sample ID: M010699-001

CAS Number	Analyte	Result	LRL	MDL	Method	Batch ID	Date Analyzed	Analyst
DOC	DOC	0.12 J	0.25	0.05	EPA 9060	WG8806	08/07/01	Sanders

J: Estimated Concentration below laboratory reporting limit.

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C56

DEPARTMENT OF THE ARMY
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Chemistry Quality Assurance Branch

Wet Chemistry Sample Report

Project Name: Bonneville Dam - Landfill 4/De
Project Number: 6401
Client Sample ID: GW01MW02A

Date Sampled: 07/24/01
Date Received: 07/27/01
Date Reported: 08/17/01

Matrix: Water
Units: mg/L
Sample ID: M010699-001

CAS Number	Analyte	Result	LRL	MDL	Method	Batch ID	Date Analyzed	Analyst
TOC	TOC	0.31	0.25	0.05	EPA 9060	WG8628	08/01/01	Sanders

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C91

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Wet Chemistry Sample Report

Project Name: Bonneville Dam - Landfill 4/De
Project Number: 6401
Client Sample ID: GW01MW02A

Date Sampled: 07/24/01
Date Received: 07/27/01
Date Reported: 09/29/01

Matrix: Water
Units: mg/L
Sample ID: M010699-001

CAS Number	Analyte	Result	LRL	MDL	Method	Batch ID	Date Analyzed	Analyst
114797-55-8	NO3/NO2	0.40	0.10	0.02	EPA 353.2	WG8602	07/31/01	Smith

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C76

DEPARTMENT OF THE ARMY
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Total Suspended Solids Sample Report

Project Name:	Bonneville Dam - Landfill 4/De				
Project Number:	6401	Date Sampled:	07/24/01	Matrix:	Water
Client Sample ID:	GW01MW02A	Date Received:	07/27/01	Units:	mg/L
Sample ID:	M010699-001	Date Extracted:	07/30/01	Dilution Factor:	1
Method:	EPA 160.2				
Batch ID:	WG8577	Date Analyzed:	07/30/01		
Analyst:	Sullivan	Date Reported:	07/31/01		

CAS Number	Target Analyte	Result	Laboratory Reporting Limit	Method Detection Limit
TSS	Total Suspended Solids	u	10	4

u: Below Method Detection Limit

Laboratory Comments:

Laboratory Duplicate : WG8577-2

Method Blank : WG8577-1

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SEVERN TRENT SERVICES

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208 South Park Drive
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Fax: 802 655 1248
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November 20, 2001

Ms. Lori Raschke
URS Corporation
Century Square
1501 Fourth Avenue, Suite 1400
Seattle, WA 98101

Re: Laboratory Project No. 21015
Case: 21015; SDG: BON002

Dear Ms. Raschke:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on October 28, 29, and 30, 2001. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 10/28/01 ETR No: 85328		
469450	GW02MW01A	10/23/01	Water
469451	GW02MW01B	10/24/01	Water
469451MS	GW02MW01BMS	10/24/01	Water
469451MD	GW02MW01BMSD	10/24/01	Water
469452	GW02MW02A	10/24/01	Water
469453	GW02MW02AD	10/24/01	Filtrate
469454	GW02MW02B	10/24/01	Water
469455	GW02MW02BD	10/24/01	Filtrate
469456	GW502MW02B	10/24/01	Water
	Received: 10/29/01 ETR No: 85342		
469549	GW02MW03A	10/25/01	Water
469550	GW02MW03B	10/26/01	Water
469551	GW02MW04A	10/26/01	Water
469552	GW02MW07A	10/23/01	Water
469553	GW02MW05A	10/26/01	Water
469554	GW1002MW05A	10/26/01	Water
	Received: 10/30/01 ETR No: 85365		
469809	GW02MW07B	10/23/01	Water

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW01A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469450

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28OCT012115-I911

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 10/31/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1

EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW01B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469451

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28OCT012115-I921

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 10/31/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW02A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469452

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28OCT012115-I931

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 10/31/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.4	
121-82-4	RDX	37	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1

EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW02ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469452D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I431

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/01/01

Injection Volume: 200.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.4	D
121-82-4	RDX	36	D
88-89-1	Picric acid	0.50	U
99-35-4	1,3,5-Trinitrobenzene	0.50	U
99-65-0	1,3-Dinitrobenzene	0.50	U
98-95-3	Nitrobenzene	0.50	U
479-45-8	Tetryl	0.50	U
55-63-0	Nitroglycerin	10	U
118-96-7	2,4,6-Trinitrotoluene	0.50	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.50	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.50	U
606-20-2	2,6-Dinitrotoluene	0.50	U
121-14-2	2,4-Dinitrotoluene	0.50	U
88-72-2	2-Nitrotoluene	0.50	U
99-99-0	4-Nitrotoluene	0.50	U
99-08-1	3-Nitrotoluene	0.50	U
78-11-5	PETN	20	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW02AD

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469453

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28OCT012115-I941

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 10/31/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.4	
121-82-4	RDX	36	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW02ADDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469453D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I441

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/01/01

Injection Volume: 200.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.5	D
121-82-4	RDX	36	D
88-89-1	Picric acid	0.50	U
99-35-4	1,3,5-Trinitrobenzene	0.50	U
99-65-0	1,3-Dinitrobenzene	0.50	U
98-95-3	Nitrobenzene	0.50	U
479-45-8	Tetryl	0.50	U
55-63-0	Nitroglycerin	10	U
118-96-7	2,4,6-Trinitrotoluene	0.50	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.50	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.50	U
606-20-2	2,6-Dinitrotoluene	0.50	U
121-14-2	2,4-Dinitrotoluene	0.50	U
88-72-2	2-Nitrotoluene	0.50	U
99-99-0	4-Nitrotoluene	0.50	U
99-08-1	3-Nitrotoluene	0.50	U
78-11-5	PETN	20	U

FORM 1

EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW02B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469454

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28OCT012115-I951

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 10/31/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.2	
121-82-4	RDX	120	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.46	
88-72-2	2-Nitrotoluene	0.26	
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW02BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469454D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I451

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/02/01

Injection Volume: 200.0(uL) Dilution Factor: 8.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.1	D
121-82-4	RDX	120	D
88-89-1	Picric acid	2.0	U
99-35-4	1,3,5-Trinitrobenzene	2.0	U
99-65-0	1,3-Dinitrobenzene	2.0	U
98-95-3	Nitrobenzene	2.0	U
479-45-8	Tetryl	2.0	U
55-63-0	Nitroglycerin	40	U
118-96-7	2,4,6-Trinitrotoluene	2.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	2.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	2.0	U
606-20-2	2,6-Dinitrotoluene	2.0	U
121-14-2	2,4-Dinitrotoluene	2.0	U
88-72-2	2-Nitrotoluene	2.0	U
99-99-0	4-Nitrotoluene	2.0	U
99-08-1	3-Nitrotoluene	2.0	U
78-11-5	PETN	80	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW502MW02B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469456

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I031

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 10/31/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.2	
121-82-4	RDX	110	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.48	
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW502MW02BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469456D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I471

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/02/01

Injection Volume: 200.0(uL) Dilution Factor: 8.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.0	D
121-82-4	RDX	120	D
88-89-1	Picric acid	2.0	U
99-35-4	1,3,5-Trinitrobenzene	2.0	U
99-65-0	1,3-Dinitrobenzene	2.0	U
98-95-3	Nitrobenzene	2.0	U
479-45-8	Tetryl	2.0	U
55-63-0	Nitroglycerin	40	U
118-96-7	2,4,6-Trinitrotoluene	2.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	2.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	2.0	U
606-20-2	2,6-Dinitrotoluene	2.0	U
121-14-2	2,4-Dinitrotoluene	2.0	U
88-72-2	2-Nitrotoluene	2.0	U
99-99-0	4-Nitrotoluene	2.0	U
99-08-1	3-Nitrotoluene	2.0	U
78-11-5	PETN	80	U

FORM 1

EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW02BD

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469455

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28OCT012115-I961

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 10/31/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.3	
121-82-4	RDX	120	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.47	
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1

EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW02BDDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469455D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I461

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/02/01

Injection Volume: 200.0(uL) Dilution Factor: 8.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.4	D
121-82-4	RDX	120	D
88-89-1	Picric acid	2.0	U
99-35-4	1,3,5-Trinitrobenzene	2.0	U
99-65-0	1,3-Dinitrobenzene	2.0	U
98-95-3	Nitrobenzene	2.0	U
479-45-8	Tetryl	2.0	U
55-63-0	Nitroglycerin	40	U
118-96-7	2,4,6-Trinitrotoluene	2.0	U
1946-51-0	4-Amino-2,6-dinitrotoluene	2.0	U
35572-78-2	2-Amino-4,6-dinitrotoluene	2.0	U
606-20-2	2,6-Dinitrotoluene	2.0	U
121-14-2	2,4-Dinitrotoluene	2.0	U
88-72-2	2-Nitrotoluene	2.0	U
99-99-0	4-Nitrotoluene	2.0	U
99-08-1	3-Nitrotoluene	2.0	U
78-11-5	PETN	80	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW03A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469549

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I061

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/29/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 10/31/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	6.6	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW03B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469550

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I071

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/29/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 10/31/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	1.2	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW04A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469551

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I081

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/29/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/01/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.78	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW05A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469553

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I101

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/29/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/01/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.31	
121-82-4	RDX	5.0	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW07A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469552

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I091

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/29/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/01/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	5.2	
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	19	
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	6.9	
55-63-0	Nitroglycerin	37	
118-96-7	2,4,6-Trinitrotoluene	3.4	
1946-51-0	4-Amino-2,6-dinitrotoluene	21	E
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	18	
88-72-2	2-Nitrotoluene	9.0	
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	13	

FORM 1

EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW07ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469552D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I481

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/28/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/02/01

Injection Volume: 200.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.50	U
121-82-4	RDX	0.50	U
88-89-1	Picric acid	4.7	D
99-35-4	1,3,5-Trinitrobenzene	0.50	U
99-65-0	1,3-Dinitrobenzene	19	D
98-95-3	Nitrobenzene	0.50	U
479-45-8	Tetryl	7.2	D
55-63-0	Nitroglycerin	63	D
118-96-7	2,4,6-Trinitrotoluene	3.8	D
1946-51-0	4-Amino-2,6-dinitrotoluene	22	D
35572-78-2	2-Amino-4,6-dinitrotoluene	0.50	U
606-20-2	2,6-Dinitrotoluene	0.50	U
121-14-2	2,4-Dinitrotoluene	18	D
88-72-2	2-Nitrotoluene	9.1	D
99-99-0	4-Nitrotoluene	0.50	U
99-08-1	3-Nitrotoluene	0.50	U
78-11-5	PETN	20	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW07B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469809

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I171

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/30/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/01/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	8.3	
121-82-4	RDX	20	
88-89-1	Picric acid	8.8	
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	10	
479-45-8	Tetryl	20	E
55-63-0	Nitroglycerin	9.0	
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	12	
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	20	E
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1

EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW02MW07BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469809D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I511

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/30/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/02/01

Injection Volume: 200.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	8.3	D
121-82-4	RDX	20	D
88-89-1	Picric acid	8.7	D
99-35-4	1,3,5-Trinitrobenzene	0.50	U
99-65-0	1,3-Dinitrobenzene	0.50	U
98-95-3	Nitrobenzene	10	D
479-45-8	Tetryl	20	D
55-63-0	Nitroglycerin	18	D
118-96-7	2,4,6-Trinitrotoluene	0.50	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.50	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.50	U
606-20-2	2,6-Dinitrotoluene	12	D
121-14-2	2,4-Dinitrotoluene	0.50	U
88-72-2	2-Nitrotoluene	0.50	U
99-99-0	4-Nitrotoluene	20	D
99-08-1	3-Nitrotoluene	0.50	U
78-11-5	PETN	20	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW1002MW05A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: 469554

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 31OCT011252-I111

% Moisture: _____ decanted: (Y/N)___ Date Received: 10/29/01

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 11/01/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EBLKQ9

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON002

Matrix: (soil/water) WATER Lab Sample ID: EBLKQ9

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28OCT012115-I801

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:10/30/01

Concentrated Extract Volume: 10(ml) Date Analyzed: 10/31/01

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

SAMPLE SUMMARY

H1J290104

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
EM0X0	001	GW02MW01A	10/23/01	18:0
EM0X2	002	GW02MW01B	10/24/01	09:1
EM0X3	003	GW02MW02A	10/24/01	11:4
EM0X4	004	GW02MW02B	10/24/01	15:3
EM0X5	005	GW502MW02B	10/24/01	16:3
EM0X6	006	GW02MW03A	10/25/01	15:4
EM0X7	007	GW02MW03B	10/26/01	12:4
EM0X8	008	GW02MW04A	10/26/01	09:3
EM0X9	009	GW02MW07A	10/23/01	15:0
EM00A	010	GW02MW07B	10/23/01	16:0
EM00E	011	GW02MW05A	10/26/01	17:1
EM00F	012	GW1002MW05A	10/26/01	20:4
EM04H	013	GW02MW02AD	10/24/01	11:4
EM04R	014	GW02MW02BD	10/24/01	15:3

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

URS

Client Sample ID: GW02MW01A

HPLC

Lot-Sample #...: H1J290104-001	Work Order #...: EM0X01AC	Matrix.....: WATER	
Date Sampled...: 10/23/01	Date Received..: 10/29/01		
Prep Date.....: 10/30/01	Analysis Date..: 11/05/01		
Prep Batch #...: 1303145			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	71	(53 - 133)

URS

Client Sample ID: GW02MW01B

HPLC

Lot-Sample #...: H1J290104-002	Work Order #...: EM0X21AE	Matrix.....: WATER	
Date Sampled...: 10/24/01	Date Received..: 10/29/01		
Prep Date.....: 10/30/01	Analysis Date..: 11/05/01		
Prep Batch #...: 1303145			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	68	(53 - 133)

URS

Client Sample ID: GW02MW02A

HPLC

Lot-Sample #...: H1J290104-003	Work Order #...: EM0X31AC	Matrix.....: WATER	
Date Sampled...: 10/24/01	Date Received..: 10/29/01		
Prep Date.....: 10/30/01	Analysis Date..: 11/05/01		
Prep Batch #...: 1303145			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	68	(53 - 133)

URS

Client Sample ID: GW02MW02AD

HPLC

Lot-Sample #...: H1J290104-013	Work Order #...: EM04H1AC	Matrix.....: WATER	
Date Sampled...: 10/24/01	Date Received..: 10/29/01		
Prep Date.....: 10/30/01	Analysis Date..: 11/05/01		
Prep Batch #...: 1303151			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	71	(53 - 133)

URS

Client Sample ID: GW02MW02B

HPLC

Lot-Sample #...: H1J290104-004
Date Sampled...: 10/24/01
Prep Date.....: 10/30/01
Prep Batch #...: 1303145
Dilution Factor: 1

Work Order #...: EM0X41AC
Date Received..: 10/29/01
Analysis Date..: 11/05/01

Method.....: SW846 8330 MOD

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	69	(53 - 133)

URS

Client Sample ID: GW502MW02B

HPLC

Lot-Sample #...: H1J290104-005	Work Order #...: EM0X51AC	Matrix.....: WATER	
Date Sampled...: 10/24/01	Date Received..: 10/29/01		
Prep Date.....: 10/30/01	Analysis Date..: 11/05/01		
Prep Batch #...: 1303145			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	76	(53 - 133)

URS

Client Sample ID: GW02MW02BD

HPLC

Lot-Sample #...:	H1J290104-014	Work Order #...:	EM04R1AC	Matrix.....:	WATER
Date Sampled...:	10/24/01	Date Received..:	10/29/01		
Prep Date.....:	10/30/01	Analysis Date..:	11/05/01		
Prep Batch #...:	1303151				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	71	(53 - 133)

URS

Client Sample ID: GW02MW03A

HPLC

Lot-Sample #...: H1J290104-006	Work Order #...: EM0X61AC	Matrix.....: WATER	
Date Sampled...: 10/25/01	Date Received..: 10/29/01		
Prep Date.....: 10/30/01	Analysis Date..: 11/05/01		
Prep Batch #...: 1303145			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	65	(53 - 133)

URS

Client Sample ID: GW02MW03B

HPLC

Lot-Sample #...: H1J290104-007 Work Order #...: EM0X71AC Matrix.....: WATER
Date Sampled...: 10/26/01 Date Received..: 10/29/01
Prep Date.....: 10/30/01 Analysis Date..: 11/05/01
Prep Batch #...: 1303145
Dilution Factor: 1 Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	67	(53 - 133)

URS

Client Sample ID: GW02MW04A

HPLC

Lot-Sample #...: H1J290104-008	Work Order #...: EM0X81AC	Matrix.....: WATER	
Date Sampled...: 10/26/01	Date Received..: 10/29/01		
Prep Date.....: 10/30/01	Analysis Date..: 11/05/01		
Prep Batch #...: 1303145			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	66	(53 - 133)

URS

Client Sample ID: GW02MW05A

HPLC

Lot-Sample #...: H1J290104-011
Date Sampled...: 10/26/01
Prep Date.....: 10/30/01
Prep Batch #...: 1303145
Dilution Factor: 1

Work Order #...: EM00E1AC
Date Received..: 10/29/01
Analysis Date..: 11/05/01

Matrix.....: WATER

Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	68	(53 - 133)

URS

Client Sample ID: GW02MW07A

HPLC

Lot-Sample #...: H1J290104-009
Date Sampled...: 10/23/01
Prep Date.....: 10/30/01
Prep Batch #...: 1303145
Dilution Factor: 1

Work Order #...: EM0X91AC
Date Received..: 10/29/01
Analysis Date..: 11/05/01

Method.....: SW846 8330 MOD

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	190	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	70	(53 - 133)

URS

Client Sample ID: GW02MW07B

HPLC

Lot-Sample #...: H1J290104-010
Date Sampled...: 10/23/01
Prep Date.....: 10/30/01
Prep Batch #...: 1303145
Dilution Factor: 1

Work Order #...: EM00A1AC
Date Received..: 10/29/01
Analysis Date..: 11/05/01

Matrix.....: WATER

Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	20	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	65	(53 - 133)

URS

Client Sample ID: GW1002MW05A

HPLC

Lot-Sample #...: H1J290104-012	Work Order #...: EM00F1AC	Matrix.....: WATER	
Date Sampled...: 10/26/01	Date Received..: 10/29/01		
Prep Date.....: 10/30/01	Analysis Date..: 11/05/01		
Prep Batch #...: 1303145			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	70	(53 - 133)

METHOD BLANK REPORT

HPLC

Client Lot #...: H1J290104
MB Lot-Sample #: H1J300000-145
Work Order #...: EM2EH1AA
Matrix.....: WATER
Prep Date.....: 10/30/01
Analysis Date..: 11/05/01
Prep Batch #...: 1303145
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Nitroguanidine	ND	20	ug/L	SW846 8330 MOD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	65	(53 - 133)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

URS

Client Sample ID: GW02MW01A

General Chemistry

Lot-Sample #...: H1J290104-001 Work Order #...: EM0X0 Matrix.....: WATER
Date Sampled...: 10/23/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	ND	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

URS

Client Sample ID: GW02MW01B

General Chemistry

Lot-Sample #...: H1J290104-002 Work Order #...: EM0X2 Matrix.....: WATER
Date Sampled...: 10/24/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	ND	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

URS

Client Sample ID: GW02MW02A

General Chemistry

Lot-Sample #...: H1J290104-003 Work Order #...: EM0X3 Matrix.....: WATER
Date Sampled...: 10/24/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	193	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

URS

Client Sample ID: GW02MW02B

General Chemistry

Lot-Sample #...: H1J290104-004 Work Order #...: EM0X4 Matrix.....: WATER
Date Sampled...: 10/24/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	206	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

URS

Client Sample ID: GW502MW02B

General Chemistry

Lot-Sample #...: H1J290104-005 Work Order #...: EM0X5 Matrix.....: WATER
Date Sampled...: 10/24/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	205	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

URS

Client Sample ID: GW02MW03A

General Chemistry

Lot-Sample #...: H1J290104-006 Work Order #...: EM0X6 Matrix.....: WATER
Date Sampled...: 10/25/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	94.3	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

URS

Client Sample ID: GW02MW03B

General Chemistry

Lot-Sample #...: H1J290104-007 Work Order #...: EM0X7 Matrix.....: WATER
Date Sampled...: 10/26/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	16.9	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

URS

Client Sample ID: GW02MW04A

General Chemistry

Lot-Sample #...: H1J290104-008 Work Order #...: EM0X8 Matrix.....: WATER
Date Sampled...: 10/26/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	14.7	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

URS

Client Sample ID: GW02MW05A

General Chemistry

Lot-Sample #...: H1J290104-011 Work Order #...: EM00E Matrix.....: WATER
Date Sampled...: 10/26/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	57.9	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

URS

Client Sample ID: GW02MW07A

General Chemistry

Lot-Sample #...: H1J290104-009 Work Order #...: EM0X9 Matrix.....: WATER
Date Sampled...: 10/23/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	29.3	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

URS

Client Sample ID: GW02MW07B

General Chemistry

Lot-Sample #...: H1J290104-010 Work Order #...: EM00A Matrix.....: WATER
Date Sampled...: 10/23/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	57.5	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

URS

Client Sample ID: GW1002MW05A

General Chemistry

Lot-Sample #...: H1J290104-012 Work Order #...: EM00F Matrix.....: WATER
Date Sampled...: 10/26/01 Date Received..: 10/29/01

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	ND	5.0	ug/L	EPA 314.0	11/13/01	1318197

Dilution Factor: 1

METHOD BLANK REPORT

General Chemistry

Client Lot #...: H1J290104 Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate		Work Order #: ENWTX1AA		MB Lot-Sample #:	H1K140000-197	
	ND	5.0	ug/L	EPA 314.0	11/13/01	1318197
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

Lab Name: **ANALYTICAL RESOURCES INC.** Project: **Camp Bonneville**

Lab Code: **ARI** Case No: NA

Client Code: **URS-LR** ARI Job No: **DT39**

SDG No/first sample in SDG: **GW02MW01A** Sample Receipt Date: **10/26/01**

SDG No/last sample in SDG: **Trip Blank** Sample Receipt Date: **10/26/01**

	Sample Numbers	ARI Lab ID	ARI LIMS ID	Matrix	SAMPLE DATE
1	GW02MW01A	DT39A	01-18869	Water	10/23/01
2	GW02MW01B	DT39B	01-18870	Water	10/24/01
3	GW02MW02A	DT39C	01-18871	Water	10/24/01
4	GW02MW02B	DT39D	01-18872	Water	10/24/01
5	GW502MW02B	DT39E	01-18873	Water	10/24/01
	GW02MW01A	DT39F	01-18874	Water	10/23/01
,	GW02MW01B	DT39G	01-18875	Water	10/24/01
8	GW02MW02A	DT39H	01-18876	Water	10/24/01
9	GW02MW02B	DT39I	01-18877	Water	10/24/01
10	GW502MW02B	DT39J	01-18878	Water	10/24/01
11	Trip Blank	DT39K	01-18879	Water	10/24/01

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

Lab Name: **ANALYTICAL RESOURCES INC.** Project: **53-F0072323**

Lab Code: **ARI** Case No: **Bonneville**

Client Code: **URS-LR** ARI Job No: **DT50**

SDG No/first sample in SDG: **GW02MW03A** Sample Receipt Date: **10/27/01**

SDG No/last sample in SDG: **Trip Blank** Sample Receipt Date: **10/27/01**

	Sample Numbers	ARI Lab ID	ARI LIMS ID	Matrix	SAMPLE DATE
1	GW02MW03A	DT50A	01-18930	Water	10/25/01
2	GW02MW03B	DT50B	01-18931	Water	10/26/01
3	GW02MW04A	DT50C	01-18932	Water	10/26/01
4	GW02MW05A	DT50D	01-18933	Water	10/26/01
5	GW1002MW05A	DT50E	01-18934	Water	10/26/01
6	GW02MW07A	DT50F	01-18935	Water	10/23/01
7	GW02MW03A	DT50G	01-18936	Water	10/25/01
8	GW02MW03B	DT50H	01-18937	Water	10/26/01
9	GW02MW04A	DT50I	01-18938	Water	10/26/01
10	GW02MW05A	DT50J	01-18939	Water	10/26/01
11	GW1002MW05A	DT50K	01-18940	Water	10/26/01
12	Trip Blank(X)	DT50L	01-18941	Water	10/26/01
13	Trip Blank	DT50M	01-18942	Water	10/26/01

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW01A

Lab Sample ID: DT39A
LIMS ID: 01-18869
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/23/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 10/31/01 14:10

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW01A

Lab Sample ID: DT39A
LIMS ID: 01-18869
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/23/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 10/31/01 14:10

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	114%
d8-Toluene	113%
Bromofluorobenzene	99.8%
d4-1,2-Dichlorobenzene	115%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW01B

Lab Sample ID: DT39B
LIMS ID: 01-18870
Matrix: Water
Data Release Authorized: [illegible]
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 10/31/01 14:38

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW01B

Lab Sample ID: DT39B
LIMS ID: 01-18870
Matrix: Water
Data Release Authorized: AB
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 10/31/01 14:38

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	117%
d8-Toluene	113%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	120%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW02A

Lab Sample ID: DT39C
LIMS ID: 01-18871
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 10/31/01 15:06

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW02A

Lab Sample ID: DT39C
LIMS ID: 01-18871
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 10/31/01 15:06

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	113%
d8-Toluene	112%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	118%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW02B

Lab Sample ID: DT39D
LIMS ID: 01-18872
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 10/31/01 15:34

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	**1,1-Dichloroethene**	**34**
75-34-3	**1,1-Dichloroethane**	**33**
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	**1,1,1-Trichloroethane**	**250 E**
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**83**
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW02B

Lab Sample ID: DT39D
LIMS ID: 01-18872
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 10/31/01 15:34

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	**Dichlorodifluoromethane**	**120**
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	112%
d8-Toluene	118%
Bromofluorobenzene	107%
d4-1,2-Dichlorobenzene	116%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW02B
DILUTION

Lab Sample ID: DT39D-DL
LIMS ID: 01-18872
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 11/02/01 15:12

Sample Amount: 1.67 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	3.0 U
74-83-9	Bromomethane	3.0 U
75-01-4	Vinyl Chloride	3.0 U
75-00-3	Chloroethane	3.0 U
75-09-2	Methylene Chloride	6.0 U
67-64-1	Acetone	15 U
75-15-0	Carbon Disulfide	3.0 U
75-35-4	**1,1-Dichloroethene**	**29**
75-34-3	**1,1-Dichloroethane**	**28**
156-60-5	trans-1,2-Dichloroethene	3.0 U
156-59-2	cis-1,2-Dichloroethene	3.0 U
67-66-3	Chloroform	3.0 U
107-06-2	1,2-Dichloroethane	3.0 U
78-93-3	2-Butanone	15 U
71-55-6	**1,1,1-Trichloroethane**	**200**
56-23-5	Carbon Tetrachloride	3.0 U
108-05-4	Vinyl Acetate	15 U
75-27-4	Bromodichloromethane	3.0 U
78-87-5	1,2-Dichloropropane	3.0 U
10061-01-5	cis-1,3-Dichloropropene	3.0 U
79-01-6	Trichloroethene	3.0 U
124-48-1	Dibromochloromethane	3.0 U
79-00-5	1,1,2-Trichloroethane	3.0 U
71-43-2	Benzene	3.0 U
10061-02-6	trans-1,3-Dichloropropene	3.0 U
110-75-8	2-Chloroethylvinylether	15 U
75-25-2	Bromoform	3.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	15 U
591-78-6	2-Hexanone	15 U
127-18-4	Tetrachloroethene	3.0 U
79-34-5	1,1,2,2-Tetrachloroethane	3.0 U
108-88-3	Toluene	3.0 U
108-90-7	Chlorobenzene	3.0 U
100-41-4	Ethylbenzene	3.0 U
100-42-5	Styrene	3.0 U
75-69-4	Trichlorofluoromethane	3.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**67**
1330-20-7	m,p-Xylene	3.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW02B
DILUTION

Lab Sample ID: DT39D-DL
LIMS ID: 01-18872
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 11/02/01 15:12

Sample Amount: 1.67 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	3.0 U
95-50-1	1,2-Dichlorobenzene	3.0 U
541-73-1	1,3-Dichlorobenzene	3.0 U
106-46-7	1,4-Dichlorobenzene	3.0 U
107-02-8	Acrolein	150 U
74-88-4	Methyl Iodide	3.0 U
74-96-4	Bromoethane	6.0 U
107-13-1	Acrylonitrile	3.0 U
563-58-6	1,1-Dichloropropene	3.0 U
74-95-3	Dibromomethane	3.0 U
630-20-6	1,1,1,2-Tetrachloroethane	3.0 U
96-12-8	1,2-Dibromo-3-chloropropane	15 U
96-18-4	1,2,3-Trichloropropane	9.0 U
110-57-6	trans-1,4-Dichloro-2-butene	15 U
108-67-8	1,3,5-Trimethylbenzene	3.0 U
95-63-6	1,2,4-Trimethylbenzene	3.0 U
87-68-3	Hexachlorobutadiene	15 U
106-93-4	Ethylene Dibromide	3.0 U
74-97-5	Bromochloromethane	3.0 U
75-71-8	**Dichlorodifluoromethane**	**98**
594-20-7	2,2-Dichloropropane	3.0 U
142-28-9	1,3-Dichloropropane	3.0 U
98-82-8	Isopropylbenzene	3.0 U
103-65-1	n-Propylbenzene	3.0 U
108-86-1	Bromobenzene	3.0 U
95-49-8	2-Chlorotoluene	3.0 U
106-43-4	4-Chlorotoluene	3.0 U
98-06-6	tert-Butylbenzene	3.0 U
135-98-8	sec-Butylbenzene	3.0 U
99-87-6	4-Isopropyltoluene	3.0 U
104-51-8	n-Butylbenzene	3.0 U
120-82-1	1,2,4-Trichlorobenzene	15 U
91-20-3	Naphthalene	15 U
87-61-6	1,2,3-Trichlorobenzene	15 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	109%
d8-Toluene	117%
Bromofluorobenzene	99.6%
d4-1,2-Dichlorobenzene	114%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW502MW02B

Lab Sample ID: DT39E
LIMS ID: 01-18873
Matrix: Water
Data Release Authorized: MS
Reported: 11/27/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 10/31/01 16:03

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	**1,1-Dichloroethene**	**35**
75-34-3	**1,1-Dichloroethane**	**31**
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	**1,1,1-Trichloroethane**	**240 E**
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**0.8 J**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**81**
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW502MW02B

Lab Sample ID: DT39E
LIMS ID: 01-18873
Matrix: Water
Data Release Authorized: [signature]
Reported: 11/27/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 10/31/01 16:03

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	**Dichlorodifluoromethane**	**120**
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	113%
d8-Toluene	114%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	113%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW502MW02B
DILUTION

Lab Sample ID: DT39E-DL
LIMS ID: 01-18873
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 11/02/01 15:41

Sample Amount: 1.67 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	3.0 U
74-83-9	Bromomethane	3.0 U
75-01-4	Vinyl Chloride	3.0 U
75-00-3	Chloroethane	3.0 U
75-09-2	Methylene Chloride	6.0 U
67-64-1	Acetone	15 U
75-15-0	Carbon Disulfide	3.0 U
75-35-4	**1,1-Dichloroethene**	**24**
75-34-3	**1,1-Dichloroethane**	**28**
156-60-5	trans-1,2-Dichloroethene	3.0 U
156-59-2	cis-1,2-Dichloroethene	3.0 U
67-66-3	Chloroform	3.0 U
107-06-2	1,2-Dichloroethane	3.0 U
78-93-3	2-Butanone	15 U
71-55-6	**1,1,1-Trichloroethane**	**210**
56-23-5	Carbon Tetrachloride	3.0 U
108-05-4	Vinyl Acetate	15 U
75-27-4	Bromodichloromethane	3.0 U
78-87-5	1,2-Dichloropropane	3.0 U
10061-01-5	cis-1,3-Dichloropropene	3.0 U
79-01-6	Trichloroethene	3.0 U
124-48-1	Dibromochloromethane	3.0 U
79-00-5	1,1,2-Trichloroethane	3.0 U
71-43-2	Benzene	3.0 U
10061-02-6	trans-1,3-Dichloropropene	3.0 U
110-75-8	2-Chloroethylvinylether	15 U
75-25-2	Bromoform	3.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	15 U
591-78-6	2-Hexanone	15 U
127-18-4	Tetrachloroethene	3.0 U
79-34-5	1,1,2,2-Tetrachloroethane	3.0 U
108-88-3	Toluene	3.0 U
108-90-7	Chlorobenzene	3.0 U
100-41-4	Ethylbenzene	3.0 U
100-42-5	Styrene	3.0 U
75-69-4	Trichlorofluoromethane	3.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**68**
1330-20-7	m,p-Xylene	3.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW502MW02B
DILUTION

Lab Sample ID: DT39E-DL
LIMS ID: 01-18873
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Instrument: FINN3
Date Analyzed: 11/02/01 15:41

Sample Amount: 1.67 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	3.0 U
95-50-1	1,2-Dichlorobenzene	3.0 U
541-73-1	1,3-Dichlorobenzene	3.0 U
106-46-7	1,4-Dichlorobenzene	3.0 U
107-02-8	Acrolein	150 U
74-88-4	Methyl Iodide	3.0 U
74-96-4	Bromoethane	6.0 U
107-13-1	Acrylonitrile	3.0 U
563-58-6	1,1-Dichloropropene	3.0 U
74-95-3	Dibromomethane	3.0 U
630-20-6	1,1,1,2-Tetrachloroethane	3.0 U
96-12-8	1,2-Dibromo-3-chloropropane	15 U
96-18-4	1,2,3-Trichloropropane	9.0 U
110-57-6	trans-1,4-Dichloro-2-butene	15 U
108-67-8	1,3,5-Trimethylbenzene	3.0 U
95-63-6	1,2,4-Trimethylbenzene	3.0 U
87-68-3	Hexachlorobutadiene	15 U
106-93-4	Ethylene Dibromide	3.0 U
74-97-5	Bromochloromethane	3.0 U
75-71-8	**Dichlorodifluoromethane**	**98**
594-20-7	2,2-Dichloropropane	3.0 U
142-28-9	1,3-Dichloropropane	3.0 U
98-82-8	Isopropylbenzene	3.0 U
103-65-1	n-Propylbenzene	3.0 U
108-86-1	Bromobenzene	3.0 U
95-49-8	2-Chlorotoluene	3.0 U
106-43-4	4-Chlorotoluene	3.0 U
98-06-6	tert-Butylbenzene	3.0 U
135-98-8	sec-Butylbenzene	3.0 U
99-87-6	4-Isopropyltoluene	3.0 U
104-51-8	n-Butylbenzene	3.0 U
120-82-1	1,2,4-Trichlorobenzene	15 U
91-20-3	Naphthalene	15 U
87-61-6	1,2,3-Trichlorobenzene	15 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	119%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	120%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW03A

Lab Sample ID: DT50A
LIMS ID: 01-18930
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/25/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/08/01 11:27

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B
Page 2 of 2 **Sample No: GW02MW03A**

Lab Sample ID: DT50A
LIMS ID: 01-18930
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/25/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/08/01 11:27

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	96.0%
d8-Toluene	98.3%
Bromofluorobenzene	91.8%
d4-1,2-Dichlorobenzene	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B
Page 1 of 2

Sample No: GW02MW03B

Lab Sample ID: DT50B
LIMS ID: 01-18931
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/08/01 11:55

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW03B

Lab Sample ID: DT50B
LIMS ID: 01-18931
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/08/01 11:55

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.9%
d8-Toluene	95.4%
Bromofluorobenzene	93.1%
d4-1,2-Dichlorobenzene	105%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW04A

Lab Sample ID: DT50C
LIMS ID: 01-18932
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/08/01 12:23

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW04A

Lab Sample ID: DT50C
LIMS ID: 01-18932
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/08/01 12:23

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	95.3%
d8-Toluene	97.1%
Bromofluorobenzene	93.6%
d4-1,2-Dichlorobenzene	95.3%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW05A

Lab Sample ID: DT50D
LIMS ID: 01-18933
Matrix: Water
Data Release Authorized:
Reported: 11/27/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/09/01 12:14

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**0.6 MJ**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW05A

Lab Sample ID: DT50D
LIMS ID: 01-18933
Matrix: Water
Data Release Authorized:
Reported: 11/27/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/09/01 12:14

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.4%
d8-Toluene	98.6%
Bromofluorobenzene	95.5%
d4-1,2-Dichlorobenzene	101%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW07A

Lab Sample ID: DT50F
LIMS ID: 01-18935
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/23/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/08/01 11:00

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	**Vinyl Chloride**	**4.4**
75-00-3	Chloroethane	1.0 U
75-09-2	**Methylene Chloride**	**3.3**
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	**Trichloroethene**	**4.6**
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**3.3**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	**Toluene**	**8.6**
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW02MW07A

Lab Sample ID: DT50F
LIMS ID: 01-18935
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/23/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/08/01 11:00

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	**1,2,4-Trichlorobenzene**	**13**
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	92.8%
d8-Toluene	95.0%
Bromofluorobenzene	93.1%
d4-1,2-Dichlorobenzene	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Trip Blank(X)

Lab Sample ID: DT50L
LIMS ID: 01-18941
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/09/01 13:03

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Trip Blank(X)

Lab Sample ID: DT50L
LIMS ID: 01-18941
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/09/01 13:03

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	96.9%
Bromofluorobenzene	94.9%
d4-1,2-Dichlorobenzene	100%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Trip Blank

Lab Sample ID: DT50M
LIMS ID: 01-18942
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/10/01 16:56

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Trip Blank(X)

Lab Sample ID: DT50L
LIMS ID: 01-18941
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/09/01 13:03

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW1002MW05A

Lab Sample ID: DT50E
LIMS ID: 01-18934
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/09/01 12:36

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW1002MW05A

Lab Sample ID: DT50E
LIMS ID: 01-18934
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Instrument: FINN3
Date Analyzed: 11/09/01 12:36

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	96.8%
Bromofluorobenzene	96.1%
d4-1,2-Dichlorobenzene	103%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 103101MB
LIMS ID: 01-18870
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 10/31/01 10:28

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 103101MB
LIMS ID: 01-18870
Matrix: Water
Data Release Authorized: [signature]
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 10/31/01 10:28

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	112%
d8-Toluene	118%
Bromofluorobenzene	108%
d4-1,2-Dichlorobenzene	116%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 110201MB
LIMS ID: 01-18872
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 11/02/01 10:31

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 110201MB
LIMS ID: 01-18872
Matrix: Water
Data Release Authorized:
Reported: 11/07/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 11/02/01 10:31

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	112%
Bromofluorobenzene	99.6%
d4-1,2-Dichlorobenzene	116%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 110801MB
LIMS ID: 01-18930
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 11/08/01 10:26

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 110801MB
LIMS ID: 01-18930
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 11/08/01 10:26

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	90.1%
d8-Toluene	97.5%
Bromofluorobenzene	92.0%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 110901MB
LIMS ID: 01-18931
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 11/09/01 11:24

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 110901MB
LIMS ID: 01-18931
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 11/09/01 11:24

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.2%
d8-Toluene	96.6%
Bromofluorobenzene	94.4%
d4-1,2-Dichlorobenzene	102%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 111001MB
LIMS ID: 01-18942
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 11/10/01 11:58

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 111001MB
LIMS ID: 01-18942
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 11/10/01 11:58

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	100%
d8-Toluene	96.7%
Bromofluorobenzene	96.1%
d4-1,2-Dichlorobenzene	101%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW02MW01A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT39A
LIMS ID: 01-18869
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/23/01
Date Received: 10/26/01

Date extracted: 10/30/01
Date analyzed: 11/02/01 20:42
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
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Sample No: GW02MW01A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT39A
LIMS ID: 01-18869
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/23/01
Date Received: 10/26/01

Date extracted: 10/30/01
Date analyzed: 11/02/01 20:42
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	61.4%	d5-Phenol	57.9%
2-Fluorobiphenyl	62.9%	2-Fluorophenol	56.2%
d14-p-Terphenyl	84.2%	2,4,6-Tribromophenol	65.1%
d4-1,2-Dichlorobenzene	61.2%	d4-2-Chlorophenol	67.8%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW02MW01B

Lab Sample ID: DT39B
LIMS ID: 01-18870
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Date extracted: 10/30/01
Date analyzed: 11/02/01 21:28
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW02MW01B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT39B
LIMS ID: 01-18870
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Date extracted: 10/30/01
Date analyzed: 11/02/01 21:28
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	65.0%	d5-Phenol	68.4%
2-Fluorobiphenyl	67.7%	2-Fluorophenol	69.9%
d14-p-Terphenyl	90.3%	2,4,6-Tribromophenol	74.2%
d4-1,2-Dichlorobenzene	68.7%	d4-2-Chlorophenol	79.5%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW02MW02A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT39C
LIMS ID: 01-18871
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Date extracted: 10/30/01
Date analyzed: 11/02/01 22:15
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
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Sample No: GW02MW02A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT39C
LIMS ID: 01-18871
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Date extracted: 10/30/01
Date analyzed: 11/02/01 22:15
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	68.4%	d5-Phenol	65.5%
2-Fluorobiphenyl	70.6%	2-Fluorophenol	68.5%
d14-p-Terphenyl	93.9%	2,4,6-Tribromophenol	62.3%
d4-1,2-Dichlorobenzene	66.3%	d4-2-Chlorophenol	77.5%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW02MW02B

Lab Sample ID: DT39D
LIMS ID: 01-18872
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Date extracted: 10/30/01
Date analyzed: 11/02/01 23:02
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW02MW02B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT39D
LIMS ID: 01-18872
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Date extracted: 10/30/01
Date analyzed: 11/02/01 23:02
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	65.3%	d5-Phenol	63.6%
2-Fluorobiphenyl	65.0%	2-Fluorophenol	67.3%
d14-p-Terphenyl	84.6%	2,4,6-Tribromophenol	82.3%
d4-1,2-Dichlorobenzene	61.3%	d4-2-Chlorophenol	73.3%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW502MW02B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT39E
LIMS ID: 01-18873
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Date extracted: 10/30/01
Date analyzed: 11/02/01 23:48
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW502MW02B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT39E
LIMS ID: 01-18873
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: 10/24/01
Date Received: 10/26/01

Date extracted: 10/30/01
Date analyzed: 11/02/01 23:48
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	69.0%	d5-Phenol	69.4%
2-Fluorobiphenyl	71.8%	2-Fluorophenol	73.1%
d14-p-Terphenyl	88.9%	2,4,6-Tribromophenol	62.9%
d4-1,2-Dichlorobenzene	68.2%	d4-2-Chlorophenol	81.3%

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Semivolatiles by SW8270C GC/MS
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Sample No: GW02MW03A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50A
LIMS ID: 01-18930
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/25/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/03/01 00:34
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

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Semivolatiles by SW8270C GC/MS

Sample No: GW02MW03A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50A
LIMS ID: 01-18930
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/25/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/03/01 00:34
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	63.6%	d5-Phenol	64.0%
2-Fluorobiphenyl	68.9%	2-Fluorophenol	66.2%
d14-p-Terphenyl	80.6%	2,4,6-Tribromophenol	78.0%
d4-1,2-Dichlorobenzene	63.2%	d4-2-Chlorophenol	73.9%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW02MW03B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50B
LIMS ID: 01-18931
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/03/01 01:21
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

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Sample No: GW02MW03B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50B
LIMS ID: 01-18931
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/03/01 01:21
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	69.5%	d5-Phenol	68.6%
2-Fluorobiphenyl	73.2%	2-Fluorophenol	70.6%
d14-p-Terphenyl	84.9%	2,4,6-Tribromophenol	38.9%
d4-1,2-Dichlorobenzene	67.6%	d4-2-Chlorophenol	78.5%

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Semivolatiles by SW8270C GC/MS
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Sample No: GW02MW04A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50C
LIMS ID: 01-18932
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/03/01 02:07
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

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Semivolatiles by SW8270C GC/MS
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Sample No: GW02MW04A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50C
LIMS ID: 01-18932
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/03/01 02:07
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	70.6%	d5-Phenol	67.9%
2-Fluorobiphenyl	71.1%	2-Fluorophenol	69.9%
d14-p-Terphenyl	79.2%	2,4,6-Tribromophenol	81.0%
d4-1,2-Dichlorobenzene	65.0%	d4-2-Chlorophenol	77.5%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW02MW05A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50D
LIMS ID: 01-18933
Matrix: Water
Data Release Authorized: MS
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/03/01 02:53
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

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Semivolatiles by SW8270C GC/MS
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Sample No: GW02MW05A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50D
LIMS ID: 01-18933
Matrix: Water
Data Release Authorized: [signature]
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/03/01 02:53
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	70.8%	d5-Phenol	70.7%
2-Fluorobiphenyl	74.7%	2-Fluorophenol	73.6%
d14-p-Terphenyl	88.6%	2,4,6-Tribromophenol	83.9%
d4-1,2-Dichlorobenzene	68.3%	d4-2-Chlorophenol	83.4%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW02MW07A

Lab Sample ID: DT50F
LIMS ID: 01-18935
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/23/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/05/01 16:55
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW02MW07A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50F
LIMS ID: 01-18935
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/23/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/05/01 16:55
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	**Diethylphthalate**	**19**
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	**N-Nitrosodiphenylamine**	**6.1**
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	**Phenanthrene**	**13**
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	**Pyrene**	**16**
85-68-7	**Butylbenzylphthalate**	**33**
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	68.4%	d5-Phenol	65.1%
2-Fluorobiphenyl	71.1%	2-Fluorophenol	68.3%
d14-p-Terphenyl	85.8%	2,4,6-Tribromophenol	59.0%
d4-1,2-Dichlorobenzene	62.0%	d4-2-Chlorophenol	77.0%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW1002MW05A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50E
LIMS ID: 01-18934
Matrix: Water
Data Release Authorized: [signature]
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/05/01 16:01
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW1002MW05A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50E
LIMS ID: 01-18934
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Date extracted: 10/30/01
Date analyzed: 11/05/01 16:01
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	69.6%	d5-Phenol	65.3%
2-Fluorobiphenyl	77.2%	2-Fluorophenol	67.0%
d14-p-Terphenyl	89.5%	2,4,6-Tribromophenol	59.5%
d4-1,2-Dichlorobenzene	65.0%	d4-2-Chlorophenol	78.7%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: Method Blank

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50MB
LIMS ID: 01-18930
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Date extracted: 10/30/01
Date analyzed: 11/02/01 20:01
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 2 of 2

Sample No: Method Blank

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT50MB
LIMS ID: 01-18930
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Date extracted: 10/30/01
Date analyzed: 11/02/01 20:01
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	61.2%	d5-Phenol	58.0%
2-Fluorobiphenyl	65.5%	2-Fluorophenol	68.0%
d14-p-Terphenyl	88.2%	2,4,6-Tribromophenol	72.1%
d4-1,2-Dichlorobenzene	58.4%	d4-2-Chlorophenol	70.9%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: Method Blank

Lab Sample ID: DT39MB
LIMS ID: 01-18869
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: NA
Date Received: NA

Date extracted: 10/30/01
Date analyzed: 11/02/01 20:01
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: Method Blank

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: DT39MB
LIMS ID: 01-18869
Matrix: Water
Data Release Authorized:
Reported: 11/13/01

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville
Date Sampled: NA
Date Received: NA

Date extracted: 10/30/01
Date analyzed: 11/02/01 20:01
Instrument: FINN4

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	61.2%	d5-Phenol	58.0%
2-Fluorobiphenyl	65.5%	2-Fluorophenol	68.0%
d14-p-Terphenyl	88.2%	2,4,6-Tribromophenol	72.1%
d4-1,2-Dichlorobenzene	58.4%	d4-2-Chlorophenol	70.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW01A**
Herbicides by GC/ECD

Lab Sample ID: DT39A
LIMS ID: 01-18869
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/23/01
Date Received: 10/26/01

Data Release Authorized: clt
Reported: 11/13/01 11/9/01

Date extracted: 10/30/01
Date analyzed: 11/12/01 18:23
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 79.6%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW01B**
Herbicides by GC/ECD

Lab Sample ID: DT39B
LIMS ID: 01-18870
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized: clt
Reported: 11/13/01 11/9/01

Date extracted: 10/30/01
Date analyzed: 11/09/01 15:53
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 64.7%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW02A**
Herbicides by GC/ECD

Lab Sample ID: DT39C
LIMS ID: 01-18871
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized: clr
Reported: 11/13/01 11/13/01

Date extracted: 10/30/01
Date analyzed: 11/09/01 17:23
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 62.8%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW02B**
Herbicides by GC/ECD

Lab Sample ID: DT39D
LIMS ID: 01-18872
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized: CLP
Reported: 11/13/01 11/13/01

Date extracted: 10/30/01
Date analyzed: 11/09/01 17:53
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 71.5%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW502MW02B**
Herbicides by GC/ECD

Lab Sample ID: DT39E
LIMS ID: 01-18873
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized: (lr
Reported: 11/13/01 11/13/1

Date extracted: 10/30/01
Date analyzed: 11/09/01 19:52
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 80.9%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW03A**
Herbicides by GC/ECD

Lab Sample ID: DT50A
LIMS ID: 01-18930
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/25/01
Date Received: 10/27/01

Data Release Authorized: clk
Reported: 11/13/01 11/13/01

Date extracted: 10/30/01
Date analyzed: 11/09/01 20:22
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 80.8%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW03B**
Herbicides by GC/ECD

Lab Sample ID: DT50B
LIMS ID: 01-18931
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized: CH
Reported: 11/13/01 11/13/1

Date extracted: 10/30/01
Date analyzed: 11/09/01 20:52
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 92.2%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW04A**
Herbicides by GC/ECD

Lab Sample ID: DT50C
LIMS ID: 01-18932
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized: clr
Reported: 11/13/01 11/13/1

Date extracted: 10/30/01
Date analyzed: 11/09/01 21:22
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 74.1%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW05A**
Herbicides by GC/ECD

Lab Sample ID: DT50D
LIMS ID: 01-18933
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized: CH
Reported: 11/13/01 11/9/1

Date extracted: 10/30/01
Date analyzed: 11/09/01 21:52
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 58.9%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW07A**
Herbicides by GC/ECD

Lab Sample ID: DT50F
LIMS ID: 01-18935
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/23/01
Date Received: 10/27/01

Data Release Authorized: clr
Reported: 11/13/01 11/13/01

Date extracted: 10/30/01
Date analyzed: 11/09/01 23:22
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	**2,4,5-TP (Silvex)**	**S**
93-76-5	**2,4,5-T**	**S**
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	**2,4-D**	**20 E**
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 98.5%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: **GW02MW07A**
DILUTION

Lab Sample ID: DT50F-DL
LIMS ID: 01-18935
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/23/01
Date Received: 10/27/01

Data Release Authorized: CH
Reported: 11/13/01 11/13/01

Date extracted: 10/30/01
Date analyzed: 11/09/01 22:52
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:10

CAS Number	Analyte	ug/L
93-72-1	**2,4,5-TP (Silvex)**	**7.1**
93-76-5	**2,4,5-T**	**18**
88-85-7	Dinoseb	1.0 U
1918-00-9	Dicamba	1.4 U
94-75-7	**2,4-D**	**22**
94-82-6	2,4-DB	20 U
75-99-0	Dalapon	4.0 U
94-74-6	MCPA	500 U
120-36-5	Dichloroprop	6.2 U
93-65-2	MCPP	500 U

Herbicide Surrogate Recovery

Dichlorophenylacetic Acid 48.9%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW1002MW05A**
Herbicides by GC/ECD

Lab Sample ID: DT50E
LIMS ID: 01-18934
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized: clr
Reported: 11/13/01 11/13/1

Date extracted: 10/30/01
Date analyzed: 11/12/01 18:53
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 74.4%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
Herbicides by GC/ECD

Lab Sample ID: DT50MB
LIMS ID: 01-18930
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized: dlf
Reported: 11/13/01 11/13/01

Date extracted: 10/30/01
Date analyzed: 11/09/01 13:53
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 122%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
Herbicides by GC/ECD

Lab Sample ID: DT39MB
LIMS ID: 01-18869
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: NA
Date Received: NA

Data Release Authorized: clr
Reported: 11/13/01 11/13/01

Date extracted: 10/30/01
Date analyzed: 11/09/01 13:53
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 122%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

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INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: URS Operating Servic

PROJECT: Camp Bonneville

SDG: DT39

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
GW02MW01A	DT39A	01-18869	
PBW	DT39MB1	01-18869	
LCSW	DT39MB1SPK	01-18869	
GW02MW01B	DT39B	01-18870	
GW02MW01BD	DT39BDUP	01-18870	
GW02MW01BS	DT39BSPK	01-18870	
GW02MW02A	DT39C	01-18871	
GW02MW02B	DT39D	01-18872	
GW502MW02B	DT39E	01-18873	
GW02MW01A	DT39F	01-18874	
PBW	DT39MB2	01-18874	
LCSW	DT39MB2SPK	01-18874	
GW02MW01B	DT39G	01-18875	
GW02MW01BD	DT39GDUP	01-18875	
GW02MW01BS	DT39GSPK	01-18875	
GW02MW02A	DT39H	01-18876	
GW02MW02B	DT39I	01-18877	
GW502MW02B	DT39J	01-18878	
GW02MW03A	DT50A	01-18930	
GW02MW03B	DT50B	01-18931	
GW02MW04A	DT50C	01-18932	
GW02MW05A	DT50D	01-18933	

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 11/19/01 Title: Inorganics Supervisor

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: URS Operating Servic

PROJECT: Camp Bonneville

SDG: DT39

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
GW1002MW05A	DT50E	01-18934	
GW02MW07A	DT50F	01-18935	
GW02MW03A	DT50G	01-18936	
GW02MW03B	DT50H	01-18937	
GW02MW04A	DT50I	01-18938	
GW02MW05A	DT50J	01-18939	
GW1002MW05A	DT50K	01-18940	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 1/19/01 Title: Inorganics Supervisor

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW02MW01A

Lab Sample ID: DT39A
LIMS ID: 01-18869
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/23/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/06/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2
3010A	10/30/01	6010B	11/06/01	7440-39-3	Barium	3	6
3010A	10/30/01	6010B	11/06/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/06/01	7440-43-9	Cadmium	2	2 U
3010A	10/30/01	6010B	11/06/01	7440-70-2	Calcium	50	3,940
3010A	10/30/01	6010B	11/06/01	7440-47-3	Chromium	5	21
3010A	10/30/01	6010B	11/06/01	7440-50-8	Copper	2	4
3010A	10/30/01	6010B	11/06/01	7439-89-6	Iron	50	580
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1
3010A	10/30/01	6010B	11/06/01	7439-95-4	Magnesium	50	1,650
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
3010A	10/30/01	6010B	11/06/01	7440-02-0	Nickel	10	20
3010A	10/30/01	6010B	11/06/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/06/01	7440-22-4	Silver	3	3 U
3010A	10/30/01	6010B	11/06/01	7440-23-5	Sodium	50	6,090
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	10/30/01	6010B	11/06/01	7440-66-6	Zinc	6	12

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW01A**
DISSOLVED METALS

Lab Sample ID: DT39F
LIMS ID: 01-18874
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/23/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-39-3**	**Barium**	**3**	**3**
6010B	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
6010B	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**4,010**
6010B	10/30/01	6010B	11/07/01	7440-47-3	Chromium	5	5 U
6010B	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	2 U
6010B	10/30/01	6010B	11/07/01	7439-89-6	Iron	50	50 U
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**1,620**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
6010B	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	10 U
6010B	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
6010B	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**6,440**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW01B**
TOTAL METALS

Lab Sample ID: DT39B
LIMS ID: 01-18870
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/06/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	10/30/01	6010B	11/06/01	7440-39-3	Barium	3	3 U
3010A	10/30/01	6010B	11/06/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/06/01	7440-43-9	Cadmium	2	2 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-70-2**	**Calcium**	**50**	**1,990**
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-47-3**	**Chromium**	**5**	**10**
3010A	10/30/01	6010B	11/06/01	7440-50-8	Copper	2	2 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7439-89-6**	**Iron**	**50**	**80**
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7439-95-4**	**Magnesium**	**50**	**1,100**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
3010A	10/30/01	6010B	11/06/01	7440-02-0	Nickel	10	10 U
3010A	10/30/01	6010B	11/06/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/06/01	7440-22-4	Silver	3	3 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-23-5**	**Sodium**	**50**	**1,290**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-66-6**	**Zinc**	**6**	**7**

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW01B**
DISSOLVED METALS

Lab Sample ID: DT39G
LIMS ID: 01-18875
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-39-3	Barium	3	3 U
6010B	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
6010B	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**1,970**
6010B	10/30/01	6010B	11/07/01	7440-47-3	Chromium	5	5 U
6010B	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	2 U
6010B	10/30/01	6010B	11/07/01	7439-89-6	Iron	50	50 U
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**1,140**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
6010B	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	10 U
6010B	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
6010B	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**1,340**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW02MW02A

Lab Sample ID: DT39C
LIMS ID: 01-18871
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/06/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	10/30/01	6010B	11/06/01	7440-39-3	Barium	3	3 U
3010A	10/30/01	6010B	11/06/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/06/01	7440-43-9	Cadmium	2	2 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-70-2**	**Calcium**	**50**	**980**
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-47-3**	**Chromium**	**5**	**41**
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-50-8**	**Copper**	**2**	**3**
3010A	**10/30/01**	**6010B**	**11/06/01**	**7439-89-6**	**Iron**	**50**	**700**
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7439-95-4**	**Magnesium**	**50**	**380**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-02-0**	**Nickel**	**10**	**30**
3010A	10/30/01	6010B	11/06/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/06/01	7440-22-4	Silver	3	3 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-23-5**	**Sodium**	**50**	**4,000**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	10/30/01	6010B	11/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW02A**
DISSOLVED METALS

Lab Sample ID: DT39H
LIMS ID: 01-18876
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-39-3	Barium	3	3 U
6010B	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
6010B	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**960**
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-47-3**	**Chromium**	**5**	**10**
6010B	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-89-6**	**Iron**	**50**	**80**
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**360**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-02-0**	**Nickel**	**10**	**20**
6010B	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
6010B	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**3,910**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW02MW02B

Lab Sample ID: DT39D
LIMS ID: 01-18872
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/06/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-39-3**	**Barium**	**3**	**6**
3010A	10/30/01	6010B	11/06/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/06/01	7440-43-9	Cadmium	2	2 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-70-2**	**Calcium**	**50**	**2,310**
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-47-3**	**Chromium**	**5**	**15**
3010A	10/30/01	6010B	11/06/01	7440-50-8	Copper	2	2 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7439-89-6**	**Iron**	**50**	**180**
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7439-95-4**	**Magnesium**	**50**	**1,100**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-02-0**	**Nickel**	**10**	**10**
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-09-7**	**Potassium**	**500**	**770**
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/06/01	7440-22-4	Silver	3	3 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-23-5**	**Sodium**	**50**	**3,830**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	**10/30/01**	**6010B**	**11/06/01**	**7440-66-6**	**Zinc**	**6**	**8**

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW02B**
DISSOLVED METALS

Lab Sample ID: DT39I
LIMS ID: 01-18877
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	**10/30/01**	**200.8**	**11/07/01**	**7440-38-2**	**Arsenic**	**0.2**	**0.2**
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-39-3**	**Barium**	**3**	**6**
6010B	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
6010B	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**2,350**
6010B	10/30/01	6010B	11/07/01	7440-47-3	Chromium	5	5 U
6010B	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	2 U
6010B	10/30/01	6010B	11/07/01	7439-89-6	Iron	50	50 U
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**1,090**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
6010B	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	10 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-09-7**	**Potassium**	**500**	**800**
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
6010B	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**3,740**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW502MW02B**
TOTAL METALS

Lab Sample ID: DT39E
LIMS ID: 01-18873
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-39-3**	**Barium**	**3**	**7**
3010A	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**2,410**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-47-3**	**Chromium**	**5**	**20**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-50-8**	**Copper**	**2**	**3**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7439-89-6**	**Iron**	**50**	**380**
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**1,160**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-02-0**	**Nickel**	**10**	**10**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-09-7**	**Potassium**	**500**	**820**
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**4,470**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-66-6**	**Zinc**	**6**	**7**

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW502MW02B**
DISSOLVED METALS

Lab Sample ID: DT39J
LIMS ID: 01-18878
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	**10/30/01**	**200.8**	**11/07/01**	**7440-38-2**	**Arsenic**	**0.2**	**0.2**
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-39-3**	**Barium**	**3**	**6**
6010B	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
6010B	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**2,310**
6010B	10/30/01	6010B	11/07/01	7440-47-3	Chromium	5	5 U
6010B	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	2 U
6010B	10/30/01	6010B	11/07/01	7439-89-6	Iron	50	50 U
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**1,100**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
6010B	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	10 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-09-7**	**Potassium**	**500**	**810**
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
6010B	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**3,680**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW02MW03A

Lab Sample ID: DT50A
LIMS ID: 01-18930
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/25/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	10/30/01	6010B	11/07/01	7440-39-3	Barium	3	3 U
3010A	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**1,590**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-47-3**	**Chromium**	**5**	**18**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-50-8**	**Copper**	**2**	**3**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7439-89-6**	**Iron**	**50**	**100**
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**720**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-02-0**	**Nickel**	**10**	**10**
3010A	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**1,450**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW03A**
DISSOLVED METALS

Lab Sample ID: DT50G
LIMS ID: 01-18936
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/25/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-39-3	Barium	3	3 U
6010B	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
6010B	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**1,550**
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-47-3**	**Chromium**	**5**	**8**
6010B	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-89-6**	**Iron**	**50**	**50**
200.8	**10/30/01**	**200.8**	**11/07/01**	**7439-92-1**	**Lead**	**1**	**3**
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**710**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-02-0**	**Nickel**	**10**	**10**
6010B	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
6010B	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**1,430**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW03B**
TOTAL METALS

Lab Sample ID: DT50B
LIMS ID: 01-18931
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	**10/30/01**	**200.8**	**11/07/01**	**7440-38-2**	**Arsenic**	**0.2**	**0.2**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-39-3**	**Barium**	**3**	**8**
3010A	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**3,970**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-47-3**	**Chromium**	**5**	**33**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-50-8**	**Copper**	**2**	**4**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7439-89-6**	**Iron**	**50**	**450**
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**1,790**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-02-0**	**Nickel**	**10**	**20**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-09-7**	**Potassium**	**500**	**3,090**
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**10,400**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-66-6**	**Zinc**	**6**	**10**

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW03B**
DISSOLVED METALS

Lab Sample ID: DT50H
LIMS ID: 01-18937
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-39-3**	**Barium**	**3**	**7**
6010B	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
6010B	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**4,190**
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-47-3**	**Chromium**	**5**	**5**
6010B	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-89-6**	**Iron**	**50**	**50**
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**1,820**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
6010B	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	10 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-09-7**	**Potassium**	**500**	**3,270**
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
6010B	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**11,100**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW02MW04A

Lab Sample ID: DT50C
LIMS ID: 01-18932
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2
3010A	10/30/01	6010B	11/07/01	7440-39-3	Barium	3	8
3010A	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
3010A	10/30/01	6010B	11/07/01	7440-70-2	Calcium	50	1,940
3010A	10/30/01	6010B	11/07/01	7440-47-3	Chromium	5	34
3010A	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	9
3010A	10/30/01	6010B	11/07/01	7439-89-6	Iron	50	2,350
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
3010A	10/30/01	6010B	11/07/01	7439-95-4	Magnesium	50	960
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
3010A	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	20
3010A	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	800
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
3010A	10/30/01	6010B	11/07/01	7440-23-5	Sodium	50	2,050
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	8

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW04A**
DISSOLVED METALS

Lab Sample ID: DT50I
LIMS ID: 01-18938
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-39-3	Barium	3	3 U
6010B	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
6010B	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**1,730**
6010B	10/30/01	6010B	11/07/01	7440-47-3	Chromium	5	5 U
6010B	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	2 U
6010B	10/30/01	6010B	11/07/01	7439-89-6	Iron	50	50 U
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**610**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
6010B	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	10 U
6010B	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
6010B	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**2,050**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW02MW05A

Lab Sample ID: DT50D
LIMS ID: 01-18933
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-39-3**	**Barium**	**3**	**4**
3010A	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**2,700**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-47-3**	**Chromium**	**5**	**27**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-50-8**	**Copper**	**2**	**12**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7439-89-6**	**Iron**	**50**	**400**
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**980**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-02-0**	**Nickel**	**10**	**20**
3010A	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**1,710**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-66-6**	**Zinc**	**6**	**40**

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW05A**
DISSOLVED METALS

Lab Sample ID: DT50J
LIMS ID: 01-18939
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-39-3	Barium	3	3 U
6010B	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
6010B	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-70-2**	**Calcium**	**50**	**2,490**
6010B	10/30/01	6010B	11/07/01	7440-47-3	Chromium	5	5 U
6010B	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	2 U
6010B	10/30/01	6010B	11/07/01	7439-89-6	Iron	50	50 U
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7439-95-4**	**Magnesium**	**50**	**960**
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
6010B	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	10 U
6010B	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
6010B	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
6010B	**10/30/01**	**6010B**	**11/07/01**	**7440-23-5**	**Sodium**	**50**	**1,680**
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW1002MW05A

Lab Sample ID: DT50E
LIMS ID: 01-18934
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	10/30/01	6010B	11/07/01	7440-39-3	Barium	3	3 U
3010A	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
3010A	10/30/01	6010B	11/07/01	7440-70-2	Calcium	50	50 U
3010A	10/30/01	6010B	11/07/01	7440-47-3	Chromium	5	5 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-50-8**	**Copper**	**2**	**2**
3010A	10/30/01	6010B	11/07/01	7439-89-6	Iron	50	50 U
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
3010A	10/30/01	6010B	11/07/01	7439-95-4	Magnesium	50	50 U
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
3010A	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	10 U
3010A	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
3010A	10/30/01	6010B	11/07/01	7440-23-5	Sodium	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW1002MW05A**
DISSOLVED METALS

Lab Sample ID: DT50K
LIMS ID: 01-18940
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/08/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-39-3	Barium	3	3 U
6010B	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
6010B	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
6010B	10/30/01	6010B	11/07/01	7440-70-2	Calcium	50	50 U
6010B	10/30/01	6010B	11/07/01	7440-47-3	Chromium	5	5 U
6010B	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	2 U
6010B	10/30/01	6010B	11/07/01	7439-89-6	Iron	50	50 U
200.8	10/30/01	200.8	11/08/01	7439-92-1	Lead	1	1 U
6010B	10/30/01	6010B	11/07/01	7439-95-4	Magnesium	50	50 U
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
6010B	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	10 U
6010B	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/08/01	7782-49-2	Selenium	0.5	0.5 U
6010B	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
6010B	10/30/01	6010B	11/07/01	7440-23-5	Sodium	50	50 U
200.8	10/30/01	200.8	11/08/01	7440-28-0	Thallium	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: Method Blank

Lab Sample ID: DT39MB
LIMS ID: 01-18869
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/06/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
3010A	10/30/01	6010B	11/06/01	7440-39-3	Barium	3	3 U
3010A	10/30/01	6010B	11/06/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/06/01	7440-43-9	Cadmium	2	2 U
3010A	10/30/01	6010B	11/06/01	7440-70-2	Calcium	50	50 U
3010A	10/30/01	6010B	11/06/01	7440-47-3	Chromium	5	5 U
3010A	10/30/01	6010B	11/06/01	7440-50-8	Copper	2	2 U
3010A	10/30/01	6010B	11/06/01	7439-89-6	Iron	50	50 U
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
3010A	10/30/01	6010B	11/06/01	7439-95-4	Magnesium	50	50 U
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
3010A	10/30/01	6010B	11/06/01	7440-02-0	Nickel	10	10 U
3010A	10/30/01	6010B	11/06/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/06/01	7440-22-4	Silver	3	3 U
3010A	10/30/01	6010B	11/06/01	7440-23-5	Sodium	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	10/30/01	6010B	11/06/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
DISSOLVED METALS

Lab Sample ID: DT39MB
LIMS ID: 01-18874
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-38-2	Arsenic	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-39-3	Barium	3	3 U
6010B	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
6010B	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
6010B	10/30/01	6010B	11/07/01	7440-70-2	Calcium	50	50 U
6010B	10/30/01	6010B	11/07/01	7440-47-3	Chromium	5	5 U
6010B	10/30/01	6010B	11/07/01	7440-50-8	Copper	2	2 U
6010B	10/30/01	6010B	11/07/01	7439-89-6	Iron	50	50 U
200.8	10/30/01	200.8	11/07/01	7439-92-1	Lead	1	1 U
6010B	10/30/01	6010B	11/07/01	7439-95-4	Magnesium	50	50 U
7470	10/31/01	7470A	11/01/01	7439-97-6	Mercury	0.1	0.1 U
6010B	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	10 U
6010B	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
6010B	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
6010B	10/30/01	6010B	11/07/01	7440-23-5	Sodium	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
6010B	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW02MW07A**
TOTAL METALS

Lab Sample ID: DT50F
LIMS ID: 01-18935
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/23/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/09/01

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	10/30/01	6010B	11/07/01	7440-36-0	Antimony	50	50 U
200.8	**10/30/01**	**200.8**	**11/07/01**	**7440-38-2**	**Arsenic**	**0.2**	**4.9**
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-39-3**	**Barium**	**3**	**50**
3010A	10/30/01	6010B	11/07/01	7440-41-7	Beryllium	1	1 U
3010A	10/30/01	6010B	11/07/01	7440-43-9	Cadmium	2	2 U
3010A	10/30/01	6010B	11/07/01	7440-70-2	Calcium	50	50 U
3010A	10/30/01	6010B	11/07/01	7440-47-3	Chromium	5	5 U
3010A	**10/30/01**	**6010B**	**11/07/01**	**7440-50-8**	**Copper**	**2**	**2**
3010A	10/30/01	6010B	11/07/01	7439-89-6	Iron	50	50 U
200.8	**10/30/01**	**200.8**	**11/07/01**	**7439-92-1**	**Lead**	**1**	**10**
3010A	10/30/01	6010B	11/07/01	7439-95-4	Magnesium	50	50 U
7470	**10/31/01**	**7470A**	**11/01/01**	**7439-97-6**	**Mercury**	**0.1**	**1.2**
3010A	10/30/01	6010B	11/07/01	7440-02-0	Nickel	10	10 U
3010A	10/30/01	6010B	11/07/01	7440-09-7	Potassium	500	500 U
200.8	10/30/01	200.8	11/07/01	7782-49-2	Selenium	0.5	0.5 U
3010A	10/30/01	6010B	11/07/01	7440-22-4	Silver	3	3 U
3010A	10/30/01	6010B	11/07/01	7440-23-5	Sodium	50	50 U
200.8	10/30/01	200.8	11/07/01	7440-28-0	Thallium	0.2	0.2 U
3010A	10/30/01	6010B	11/07/01	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg - Toluene to Naphthalene

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Matrix: Water

Data Release Authorized: CIR
Reported: 11/06/01 11/6/01

Date Received: 10/26/01

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range	Gas ID	Surr A Rec	Surr B Rec
DT39-1101MB	Method Blank	11/01/01	1:1	0.25 U	NO	83.8%	86.1%
01-18869-DT39A	GW02MW01A	11/01/01	1:1	0.25 U	NO	93.5%	87.9%
01-18870-DT39B	GW02MW01B	11/01/01	1:1	0.25 U	NO	99.0%	95.4%
01-18871-DT39C	GW02MW02A	11/01/01	1:1	0.25 U	NO	105%	107%
01-18872-DT39D	GW02MW02B	11/01/01	1:1	0.25 U	NO	99.6%	105%
01-18873-DT39E	GW502MW02B	11/01/01	1:1	0.25 U	NO	93.0%	93.1%

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.

Values reported in ppm (mg/L).
Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

FORM-1 TPH-g

ANALYTICAL RESOURCES INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg - Toluene to Naphthalene

Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323

Data Release Authorized: CA
Reported: 11/06/01 11/6/01

Date Received: 10/27/01

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range	Gas ID	Surr A Rec	Surr B Rec
DT50-1101MB	Method Blank	11/01/01	1:1	0.25 U	NO	83.8%	86.1%
01-18930-DT50A	GW02MW03A	11/01/01	1:1	0.25 U	NO	90.9%	81.9%
01-18931-DT50B	GW02MW03B	11/01/01	1:1	0.25 U	NO	99.0%	95.6%
01-18932-DT50C	GW02MW04A	11/01/01	1:1	0.25 U	NO	99.0%	95.8%
01-18933-DT50D	GW02MW05A	11/01/01	1:1	0.25 U	NO	104%	102%
01-18934-DT50E	GW1002MW05A	11/01/01	1:1	0.25 U	NO	96.0%	97.6%

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.

Values reported in ppm (mg/L).
Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

FORM-1 TPH-g

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID
and Motor Oil

ANALYTICAL RESOURCES INCORPORATED

Lab ID: 01-18869
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Received: 10/26/01

Data Release Authorized:
Reported: 11/06/01

Lab ID	Sample ID	Date Extracted	Date Analyzed	Dilution Factor	Diesel Range	*HC ID	Motor Oil Range	Surr Rec
DT39MB	Method Blank	10/30/01	10/31/01	1:1	0.25 U	---	0.50 U	87.0%
DT39A	GW02MW01A	10/30/01	11/01/01	1:1	0.25 U	---	0.50 U	99.0%
DT39B	GW02MW01B	10/30/01	11/01/01	1:1	0.25 U	---	0.50 U	92.0%
DT39C	GW02MW02A	10/30/01	11/01/01	1:1	0.25 U	---	0.50 U	96.0%
DT39D	GW02MW02B	10/30/01	11/01/01	1:1	0.25 U	---	0.50 U	100%
DT39E	GW502MW02B	10/30/01	11/01/01	1:1	0.25 U	---	0.50 U	110%

Surrogate is o-Terphenyl

* ID indicates, in the opinion of the analyst, the petroleum product with the best pattern match. 'NO' indicates that there was not a good match for any of the requested products.
Values reported in ppm (mg/L)
Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.

Data Qualifiers

U	Compound not detected at the given detection limit.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
E	Indicates a value above the linear range of the detector. Dilution required.
NR	Indicates no recovery due to matrix interference.
B	Indicates compound also detected in the method blank.

FORM-1 TPHD

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID
and Motor Oil

ANALYTICAL RESOURCES INCORPORATED

Lab ID: 01-18930
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Received: 10/27/01

Data Release Authorized: clk 11/6/01
Reported: 11/06/01

Lab ID	Sample ID	Date Extracted	Date Analyzed	Dilution Factor	Diesel Range	*HC ID	Motor Oil Range	Surr Rec
DT50MB	Method Blank	10/30/01	10/31/01	1:1	0.25 U	---	0.50 U	87.0%
DT50A	GW02MW03A	10/30/01	11/01/01	1:1	0.25 U	---	0.50 U	97.0%
DT50B	GW02MW03B	10/30/01	11/01/01	1:1	0.25 U	---	0.50 U	99.0%
DT50C	GW02MW04A	10/30/01	11/01/01	1:1	0.25 U	---	0.50 U	95.0%
DT50D	GW02MW05A	10/30/01	11/01/01	1:1	0.25 U	---	0.50 U	100%
DT50E	GW1002MW05A	10/30/01	11/01/01	1:1	0.25 U	---	0.50 U	89.0%

Surrogate is o-Terphenyl

* ID indicates, in the opinion of the analyst, the petroleum product with the best pattern match. 'NO' indicates that there was not a good match for any of the requested products.
Values reported in ppm (mg/L)
Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.

Data Qualifiers

U	Compound not detected at the given detection limit.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
E	Indicates a value above the linear range of the detector. Dilution required.
NR	Indicates no recovery due to matrix interference.
B	Indicates compound also detected in the method blank.

FORM-1 TPHD

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW02MW01A

Lab Sample ID: DT39A
LIMS ID: 01-18869
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/23/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/15/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	13
Carbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	13
Total Suspended Solids	10/29/01 10291#1	EPA 160.2	1.0	mg/L	4.2
Chloride	10/29/01 10291#1	EPA 300.0	0.1	mg/L	1.3
Total Cyanide	11/01/01 11011#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
N-Nitrite	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
Sulfate	10/29/01 10291#1	EPA 300.0	0.4	mg/L	13.2
Total Organic Carbon	11/01/01	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DT39 received 10/26/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW02MW01B

Lab Sample ID: DT39B
LIMS ID: 01-18870
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Data Release Authorized: MB Date Received: 10/26/01
Reported: 11/15/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	12
Carbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	12
Total Suspended Solids	10/29/01 10291#1	EPA 160.2	1.0	mg/L	< 1.0 U
Chloride	10/29/01 10291#1	EPA 300.0	0.1	mg/L	1.1
Total Cyanide	11/01/01 11011#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
N-Nitrite	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
Sulfate	10/29/01 10291#1	EPA 300.0	0.1	mg/L	0.4
Total Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DT39 received 10/26/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW02MW02A

Lab Sample ID: DT39C
LIMS ID: 01-18871
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/15/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	3.7
Carbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	3.7
Total Suspended Solids	10/29/01 10291#1	EPA 160.2	1.0	mg/L	8.4
Chloride	10/29/01 10291#1	EPA 300.0	0.1	mg/L	1.0
Total Cyanide	11/01/01 11011#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	0.3
N-Nitrite	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
Sulfate	10/29/01 10291#1	EPA 300.0	0.2	mg/L	5.3
Total Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DT39 received 10/26/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW02MW02B

Lab Sample ID: DT39D
LIMS ID: 01-18872
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Data Release Authorized: Date Received: 10/26/01
Reported: 11/15/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	5.9
Carbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	5.9
Total Suspended Solids	10/29/01 10291#1	EPA 160.2	1.0	mg/L	4.0
Chloride	10/29/01 10291#1	EPA 300.0	0.2	mg/L	6.8
Total Cyanide	11/01/01 11011#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	0.7
N-Nitrite	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
Sulfate	10/29/01 10291#1	EPA 300.0	0.1	mg/L	2.0
Total Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DT39 received 10/26/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW502MW02B

Lab Sample ID: DT39E
LIMS ID: 01-18873
Matrix: Water

QC Report No: DT39-URS Operating Services, Inc.
Project: Camp Bonneville

Date Sampled: 10/24/01
Date Received: 10/26/01

Data Release Authorized:
Reported: 11/15/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	5.2
Carbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	5.2
Total Suspended Solids	10/29/01 10291#1	EPA 160.2	1.0	mg/L	7.5
Chloride	10/29/01 10291#1	EPA 300.0	0.2	mg/L	7.1
Total Cyanide	11/01/01 11011#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	0.7
N-Nitrite	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
Sulfate	10/29/01 10291#1	EPA 300.0	0.1	mg/L	2.6
Total Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DT39 received 10/26/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW02MW03A

Lab Sample ID: DT50A
LIMS ID: 01-18930
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/25/01
Date Received: 10/27/01

Data Release Authorized: MB
Reported: 11/15/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	7.4
Carbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	7.4
Total Suspended Solids	10/30/01 10301#1	EPA 160.2	1.0	mg/L	< 1.0 U
Chloride	10/29/01 10291#1	EPA 300.0	0.1	mg/L	1.2
Total Cyanide	11/01/01 11011#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	0.1
N-Nitrite	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
Sulfate	10/29/01 10291#1	EPA 300.0	0.1	mg/L	0.2
Total Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DT50 received 10/27/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW02MW03B

Lab Sample ID: DT50B
LIMS ID: 01-18931
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized:
Reported: 11/15/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	13
Carbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	13
Total Suspended Solids	10/30/01 10301#1	EPA 160.2	1.0	mg/L	8.2
Chloride	10/29/01 10291#1	EPA 300.0	0.4	mg/L	12.1
Total Cyanide	11/01/01 11011#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	1.1
N-Nitrite	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
Sulfate	10/29/01 10291#1	EPA 300.0	0.4	mg/L	7.6
Total Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DT50 received 10/27/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW02MW04A

Lab Sample ID: DT50C
LIMS ID: 01-18932
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized: MB
Reported: 11/15/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	9.1
Carbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	9.1
Total Suspended Solids	10/30/01 10301#1	EPA 160.2	4.0	mg/L	75
Chloride	10/29/01 10291#1	EPA 300.0	0.1	mg/L	1.0
Total Cyanide	11/01/01 11011#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
N-Nitrite	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
Sulfate	10/29/01 10291#1	EPA 300.0	0.1	mg/L	1.3
Total Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DT50 received 10/27/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW02MW05A

Lab Sample ID: DT50D
LIMS ID: 01-18933
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized: MB
Reported: 11/15/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	11
Carbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	11
Total Suspended Solids	10/30/01 10301#1	EPA 160.2	1.0	mg/L	9.2
Chloride	10/29/01 10291#1	EPA 300.0	0.1	mg/L	1.3
Total Cyanide	11/01/01 11011#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	0.2
N-Nitrite	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
Sulfate	10/29/01 10291#1	EPA 300.0	0.1	mg/L	0.2
Total Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DT50 received 10/27/01

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW1002MW05A

Lab Sample ID: DT50E
LIMS ID: 01-18934
Matrix: Water

QC Report No: DT50-URS Operating Services, Inc.
Project: Bonneville
53-F0072323
Date Sampled: 10/26/01
Date Received: 10/27/01

Data Release Authorized: MP
Reported: 11/15/01 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	2.7
Carbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	11/15/01 11151#1	SM 2320	1.0	mg/L CaCO3	2.7
Total Suspended Solids	10/30/01 10301#1	EPA 160.2	1.0	mg/L	< 1.0 U
Chloride	10/29/01 10291#1	EPA 300.0	0.1	mg/L	< 0.1 U
Total Cyanide	11/01/01 11011#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
N-Nitrite	10/29/01 10291#1	EPA 300.0	0.1	mg-N/L	< 0.1 U
Sulfate	10/29/01 10291#1	EPA 300.0	0.1	mg/L	< 0.1 U
Total Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	11/01/01 11011#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for DT50 received 10/27/01

ANALYTICAL RESOURCES INCORPORATED

QA Report - Method Blank Analysis

QC Report No: DT39-URS Operating Services, Inc.
Matrix: Water Project: Camp Bonneville

Date Received: NA

Data Release Authorized:
Reported: 11/15/01 Dr. M.A. Perkins

METHOD BLANK RESULTS
CONVENTIONALS

Analysis Date & Batch	Constituent	Units	Result	
10/29/01 10291#1	Total Suspended Solids	mg/L	< 1.0	U
10/29/01 10291#1	Chloride	mg/L	< 0.1	U
11/01/01 11011#1	Total Cyanide	mg/L	< 0.005	U
10/29/01 10291#1	N-Nitrate	mg-N/L	< 0.1	U
10/29/01 10291#1	N-Nitrite	mg-N/L	< 0.1	U
10/29/01 10291#1	Sulfate	mg/L	< 0.1	U
11/01/01 11011#1	Total Organic Carbon	mg/L	< 1.5	U
11/01/01 11011#1	Dissolved Organic Carbon	mg/L	< 1.5	U

ANALYTICAL RESOURCES INCORPORATED

QA Report - Method Blank Analysis

QC Report No: DT50-URS Operating Services, Inc.
Matrix: Water Project: Bonneville
53-F0072323
Date Received: NA

Data Release Authorized: MB
Reported: 11/15/01 Dr. M.A. Perkins

METHOD BLANK RESULTS
CONVENTIONALS

Analysis Date & Batch	Constituent	Units	Result		
10/29/01 10291#1	Chloride	mg/L	<	0.1	U
11/01/01 11011#1	Total Cyanide	mg/L	<	0.005	U
10/29/01 10291#1	N-Nitrate	mg-N/L	<	0.1	U
10/29/01 10291#1	N-Nitrite	mg-N/L	<	0.1	U
10/29/01 10291#1	Sulfate	mg/L	<	0.1	U
11/01/01 11011#1	Total Organic Carbon	mg/L	<	1.5	U
11/01/01 11011#1	Dissolved Organic Carbon	mg/L	<	1.5	U
10/30/01 10301#1	Total Suspended Solids	mg/L	<	1.0	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW01A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475620

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I421

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/29/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW01B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475622

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I471

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/29/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW02A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475621

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I771

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/30/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.1	
121-82-4	RDX	25	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW02ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475621D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I431

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/29/02

Injection Volume: 200.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.1	D
121-82-4	RDX	25	D
88-89-1	Picric acid	0.50	U
99-35-4	1,3,5-Trinitrobenzene	0.50	U
99-65-0	1,3-Dinitrobenzene	0.50	U
98-95-3	Nitrobenzene	0.50	U
479-45-8	Tetryl	0.50	U
55-63-0	Nitroglycerin	10	U
118-96-7	2,4,6-Trinitrotoluene	0.50	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.50	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.50	U
606-20-2	2,6-Dinitrotoluene	0.50	U
121-14-2	2,4-Dinitrotoluene	0.50	U
88-72-2	2-Nitrotoluene	0.50	U
99-99-0	4-Nitrotoluene	0.50	U
99-08-1	3-Nitrotoluene	0.50	U
78-11-5	PETN	20	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW02B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475625

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I151

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/29/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.6	
121-82-4	RDX	110	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.49	
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW02BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475625D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I531

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/30/02

Injection Volume: 200.0(uL) Dilution Factor: 6.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.8	D
121-82-4	RDX	110	D
88-89-1	Picric acid	1.5	U
99-35-4	1,3,5-Trinitrobenzene	1.5	U
99-65-0	1,3-Dinitrobenzene	1.5	U
98-95-3	Nitrobenzene	1.5	U
479-45-8	Tetryl	1.5	U
55-63-0	Nitroglycerin	30	U
118-96-7	2,4,6-Trinitrotoluene	1.5	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.5	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.5	U
606-20-2	2,6-Dinitrotoluene	1.5	U
121-14-2	2,4-Dinitrotoluene	1.5	U
88-72-2	2-Nitrotoluene	1.5	U
99-99-0	4-Nitrotoluene	1.5	U
99-08-1	3-Nitrotoluene	1.5	U
78-11-5	PETN	60	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW503MW02B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475626

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I161

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/29/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.5	
121-82-4	RDX	110	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.48	
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW503MW02BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475626D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I541

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/30/02

Injection Volume: 200.0(uL) Dilution Factor: 6.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.9	D
121-82-4	RDX	110	D
88-89-1	Picric acid	1.5	U
99-35-4	1,3,5-Trinitrobenzene	1.5	U
99-65-0	1,3-Dinitrobenzene	1.5	U
98-95-3	Nitrobenzene	1.5	U
479-45-8	Tetryl	1.5	U
55-63-0	Nitroglycerin	30	U
118-96-7	2,4,6-Trinitrotoluene	1.5	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.5	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.5	U
606-20-2	2,6-Dinitrotoluene	1.5	U
121-14-2	2,4-Dinitrotoluene	1.5	U
88-72-2	2-Nitrotoluene	1.5	U
99-99-0	4-Nitrotoluene	1.5	U
99-08-1	3-Nitrotoluene	1.5	U
78-11-5	PETN	60	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW03A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475734

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I291

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/29/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	
121-82-4	RDX	6.7	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW03B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475735

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I301

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/29/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	1.8	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW04A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475627

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I171

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/29/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.63	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW05A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475736

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I311

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/29/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.39	
121-82-4	RDX	4.6	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW1003MW05A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475737

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I321

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/29/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW08A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475623

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I511

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/30/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	5.3	
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	20	
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	7.6	
55-63-0	Nitroglycerin	49	
118-96-7	2,4,6-Trinitrotoluene	4.3	
1946-51-0	4-Amino-2,6-dinitrotoluene	21	E
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	9.0	
88-72-2	2-Nitrotoluene	9.3	
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	12	

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW08ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475623D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I501

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/30/02

Injection Volume: 200.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.50	U
121-82-4	RDX	0.50	U
88-89-1	Picric acid	5.0	D
99-35-4	1,3,5-Trinitrobenzene	0.50	U
99-65-0	1,3-Dinitrobenzene	20	D
98-95-3	Nitrobenzene	0.50	U
479-45-8	Tetryl	7.7	D
55-63-0	Nitroglycerin	47	D
118-96-7	2,4,6-Trinitrotoluene	4.3	D
1946-51-0	4-Amino-2,6-dinitrotoluene	21	D
35572-78-2	2-Amino-4,6-dinitrotoluene	0.50	U
606-20-2	2,6-Dinitrotoluene	0.50	U
121-14-2	2,4-Dinitrotoluene	9.2	D
88-72-2	2-Nitrotoluene	9.4	D
99-99-0	4-Nitrotoluene	0.50	U
99-08-1	3-Nitrotoluene	0.50	U
78-11-5	PETN	20	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW03MW08B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON003

Matrix: (soil/water) WATER Lab Sample ID: 475624

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 28JAN021617-I521

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/25/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:01/28/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/30/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	8.6	
121-82-4	RDX	19	
88-89-1	Picric acid	10	
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	15	
479-45-8	Tetryl	18	
55-63-0	Nitroglycerin	8.9	
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	10	
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	15	
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

SAMPLE SUMMARY

H2A250107

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMPLE TIME
ER7J6	001	GW03MW01A	01/21/02	16:1
ER7J7	002	GW03MW01B	01/22/02	10:1
ER7J8	003	GW03MW02A	01/22/02	16:4

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

SAMPLE SUMMARY

H2A260116

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAM TIM
ER9NX	001	GW03MW03A	01/24/02	11:
ER9N0	002	GW03MW03B	01/24/02	13:
ER9N1	003	GW03MW05A	01/25/02	11:
ER9N2	004	GW1003MW05A	01/25/02	14:

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

SAMPLE SUMMARY

H2A280103

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
ETACM	001	GW03MW08A	01/23/02	09:5(
ETACP	002	GW03MW08B	01/23/02	09:3(
ETACQ	003	GW03MW02B	01/23/02	10:3(
ETACR	004	GW503MW02B	01/23/02	14:5(
ETACT	005	GW03MW04A	01/23/02	19:0(

NOTE(S):

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

ANALYTICAL METHODS SUMMARY

H2A260116

PARAMETER	ANALYTICAL METHOD
Nitroaromatics and Nitramines by HPLC	SW846 8330 MOD
Perchlorate	EPA 314.0

References:

EPA "EASTERN ENVIRONMENTAL RADIATION FACILITY RADIOCHEMISTRY PROCEDURES MANUAL" US EPA EPA 520/5-84-006 AUGUST 1984

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

URS

Client Sample ID: GW03MW01A

HPLC

Lot-Sample #...:	H2A250107-001	Work Order #...:	ER7J61AC	Matrix.....:	WATER
Date Sampled...:	01/21/02	Date Received..:	01/25/02		
Prep Date.....:	01/28/02	Analysis Date..:	01/28/02		
Prep Batch #...:	2028124				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	110	(53 - 133)

URS

Client Sample ID: GW03MW01A

General Chemistry

Lot-Sample #...: H2A250107-001 Work Order #...: ER7J6 Matrix.....: WATER
Date Sampled...: 01/21/02 Date Received..: 01/25/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	6.5	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

URS

Client Sample ID: GW03MW01B

HPLC

Lot-Sample #...: H2A250107-002	Work Order #...: ER7J71AE	Matrix.....: WATER	
Date Sampled...: 01/22/02	Date Received..: 01/25/02		
Prep Date.....: 01/28/02	Analysis Date..: 01/28/02		
Prep Batch #...: 2028124			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	96	(53 - 133)

URS

Client Sample ID: GW03MW01B

General Chemistry

Lot-Sample #...: H2A250107-002 Work Order #...: ER7J7 Matrix.....: WATER
Date Sampled...: 01/22/02 Date Received..: 01/25/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	ND	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

URS

Client Sample ID: GW03MW02A

HPLC

Lot-Sample #...: H2A250107-003 Work Order #...: ER7J81AC Matrix.....: WATER
Date Sampled...: 01/22/02 Date Received..: 01/25/02
Prep Date.....: 01/28/02 Analysis Date..: 01/28/02
Prep Batch #...: 2028124
Dilution Factor: 1 Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	106	(53 - 133)

URS

Client Sample ID: GW03MW02A

General Chemistry

Lot-Sample #...: H2A250107-003 Work Order #...: ER7J8 Matrix.....: WATER
Date Sampled...: 01/22/02 Date Received..: 01/25/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	138	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

URS

Client Sample ID: GW03MW02B

HPLC

Lot-Sample #...: H2A280103-003	Work Order #...: ETACQ1AC	Matrix.....: WATER	
Date Sampled...: 01/23/02	Date Received..: 01/28/02		
Prep Date.....: 01/28/02	Analysis Date..: 01/28/02		
Prep Batch #...: 2028124			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	109	(53 - 133)

URS

Client Sample ID: GW03MW02B

General Chemistry

Lot-Sample #...: H2A280103-003 Work Order #...: ETACQ Matrix.....: WATER
Date Sampled...: 01/23/02 Date Received..: 01/28/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	227	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

URS

Client Sample ID: GW503MW02B

HPLC

Lot-Sample #...: H2A280103-004	Work Order #...: ETACR1AC	Matrix.....: WATER	
Date Sampled...: 01/23/02	Date Received..: 01/28/02		
Prep Date.....: 01/28/02	Analysis Date..: 01/28/02		
Prep Batch #...: 2028124			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	105	(53 - 133)

URS

Client Sample ID: GW503MW02B

General Chemistry

Lot-Sample #...: H2A280103-004 Work Order #...: ETACR Matrix.....: WATER
Date Sampled...: 01/23/02 Date Received..: 01/28/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	226	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

URS

Client Sample ID: GW03MW03A

HPLC

Lot-Sample #...: H2A260116-001	Work Order #...: ER9NX1AC	Matrix.....: WATER
Date Sampled...: 01/24/02	Date Received..: 01/26/02	
Prep Date.....: 01/28/02	Analysis Date..: 01/28/02	
Prep Batch #...: 2028124		
Dilution Factor: 1	Method.....: SW846 8330 MOD	

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	89	(53 - 133)

URS

Client Sample ID: GW03MW03A

General Chemistry

Lot-Sample #...: H2A260116-001 Work Order #...: ER9NX Matrix.....: WATER
Date Sampled...: 01/24/02 Date Received..: 01/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	102	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

URS

Client Sample ID: GW03MW03B

HPLC

Lot-Sample #...: H2A260116-002	Work Order #...: ER9N01AC		Matrix.....: WATER
Date Sampled...: 01/24/02	Date Received..: 01/26/02		
Prep Date.....: 01/28/02	Analysis Date..: 01/28/02		
Prep Batch #...: 2028124			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	95	(53 - 133)

URS

Client Sample ID: GW03MW03B

General Chemistry

Lot-Sample #...: H2A260116-002 Work Order #...: ER9N0 Matrix.....: WATER
Date Sampled...: 01/24/02 Date Received..: 01/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	22.1	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

URS

Client Sample ID: GW03MW04A

HPLC

Lot-Sample #...: H2A280103-005	Work Order #...: ETACT1AC	Matrix.....: WATER	
Date Sampled...: 01/23/02	Date Received..: 01/28/02		
Prep Date.....: 01/28/02	Analysis Date..: 01/28/02		
Prep Batch #...: 2028124			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	98	(53 - 133)

URS

Client Sample ID: GW03MW04A

General Chemistry

Lot-Sample #...: H2A280103-005 Work Order #...: ETACT Matrix.....: WATER
Date Sampled...: 01/23/02 Date Received..: 01/28/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	14.0	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

URS

Client Sample ID: GW03MW05A

HPLC

Lot-Sample #...:	H2A260116-003	Work Order #...:	ER9N11AC	Matrix.....:	WATER
Date Sampled...:	01/25/02	Date Received..:	01/26/02		
Prep Date.....:	01/28/02	Analysis Date..:	01/28/02		
Prep Batch #...:	2028124				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	98	(53 - 133)

URS

Client Sample ID: GW03MW05A

General Chemistry

Lot-Sample #...: H2A260116-003 Work Order #...: ER9N1 Matrix.....: WATER
Date Sampled...: 01/25/02 Date Received..: 01/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	57.4	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

URS

Client Sample ID: GW1003MW05A

HPLC

Lot-Sample #...:	H2A260116-004	Work Order #...:	ER9N21AC	Matrix.....:	WATER
Date Sampled...:	01/25/02	Date Received..:	01/26/02		
Prep Date.....:	01/28/02	Analysis Date..:	01/28/02		
Prep Batch #...:	2028124				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	111	(53 - 133)

URS

Client Sample ID: GW1003MW05A

General Chemistry

Lot-Sample #...: H2A260116-004 Work Order #...: ER9N2 Matrix.....: WATER
Date Sampled...: 01/25/02 Date Received..: 01/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	ND	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

URS

Client Sample ID: GW03MW08A

HPLC

Lot-Sample #...: H2A280103-001 Work Order #...: ETACM1AC Matrix.....: WATER
Date Sampled...: 01/23/02 Date Received..: 01/28/02
Prep Date.....: 01/28/02 Analysis Date..: 01/28/02
Prep Batch #...: 2028124
Dilution Factor: 1 Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	49	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	84	(53 - 133)

URS

Client Sample ID: GW03MW08A

General Chemistry

Lot-Sample #...: H2A280103-001 Work Order #...: ETACM Matrix.....: WATER
Date Sampled...: 01/23/02 Date Received..: 01/28/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	31.1	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

URS

Client Sample ID: GW03MW07B

HPLC

Lot-Sample #...: H2A280103-002
Date Sampled...: 01/23/02
Prep Date.....: 01/28/02
Prep Batch #...: 2028124
Dilution Factor: 1

Work Order #...: ETACP1AC
Date Received..: 01/28/02
Analysis Date..: 01/28/02

Method.....: SW846 8330 MOD

Matrix.....: WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	30	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	100	(53 - 133)

URS

Client Sample ID: GW03MW07B

General Chemistry

Lot-Sample #...: H2A280103-002 Work Order #...: ETACP Matrix.....: WATER
Date Sampled...: 01/23/02 Date Received..: 01/28/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	62.7	5.0	ug/L	EPA 314.0	01/31/02	2031404

Dilution Factor: 1

METHOD BLANK REPORT

HPLC

Client Lot #...: H2A280103 **Work Order #...:** ER99D1AA **Matrix.....:** WATER
MB Lot-Sample #: H2A280000-124

Prep Date.....: 01/28/02
Analysis Date..: 01/28/02 **Prep Batch #...:** 2028124
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Nitroguanidine	ND	20	ug/L	SW846 8330 MOD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	95	(53 - 133)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

METHOD BLANK REPORT

General Chemistry

Client Lot #...: H2A280103 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate		Work Order #: ETHXR1AA		MB Lot-Sample #:	H2A310000-404	
	ND	5.0	ug/L	EPA 314.0	01/31/02	2031404
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

Lab Name: **ANALYTICAL RESOURCES INC.** Project: **53-F0072323**

Lab Code: **ARI** Case No: **Camp Bonneville**

Client Code: **URS-LR** ARI Job No: **EB00**

SDG No/first sample in SDG: **GW03MW01A** Sample Receipt Date: **01/24/02**

SDG No/last sample in SDG: **GW03MW02A** Sample Receipt Date: **01/24/02**

	Sample Numbers	ARI Lab ID	ARI LIMS ID	Matrix	SAMPLE DATE
1	GW03MW01A	EB00A	02-1058	Water	01/21/02
2	GW03MW01B	EB00B	02-1059	Water	01/22/02
3	GW03MW02A	EB00C	02-1060	Water	01/22/02
4	012102TRIP01	EB00D	02-1061	Water	01/22/02
5	GW03MW01A	EB00E	02-1062	Water	01/21/02
	GW03MW01B	EB00F	02-1063	Water	01/22/02
	GW03MW02A	EB00G	02-1064	Water	01/22/02

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

Lab Name: ANALYTICAL RESOURCES INC.

Project: 53-F0072323

Lab Code: ARI

Case No: Camp Bonneville

Client Code: URS-LR

ARI Job No: EB10

SDG No/first sample in SDG: GW03MW08A

Sample Receipt Date: 01/25/02

SDG No/last sample in SDG: GW03MW04A

Sample Receipt Date: 01/25/02

	Sample Numbers	ARI Lab ID	ARI LIMS ID	Matrix	SAMPLE DATE
1	GW03MW08A	EB10A	02-1126	Water	01/23/02
2	GW03MW02B	EB10B	02-1127	Water	01/23/02
3	GW503MW02B	EB10C	02-1128	Water	01/23/02
4	GW03MW04A	EB10D	02-1129	Water	01/23/02
5	012302TRIP02	EB10E	02-1130	Water	01/23/02
6	GW03MW02B	EB10F	02-1131	Water	01/23/02
7	GW503MW02B	EB10G	02-1132	Water	01/23/02
8	GW03MW04A	EB10H	02-1133	Water	01/23/02

SAMPLE DELIVERY GROUP (SDG)
TRAFFIC REPORT (TR) COVER SHEET

Lab Name: **ANALYTICAL RESOURCES INC.** Project: **53-F0072323**

Lab Code: **ARI** Case No: **Camp Bonneville**

Client Code: **URS-LR** ARI Job No: **EB18**

SDG No/first sample in SDG: **GW03MW03A** Sample Receipt Date: **01/26/02**

SDG No/last sample in SDG: **GW1003MW05A** Sample Receipt Date: **01/26/02**

	Sample Numbers	ARI Lab ID	ARI LIMS ID	Matrix	SAMPLE DATE
1	GW03MW03A	EB18A	02-1154	Water	01/24/02
2	GW03MW03B	EB18B	02-1155	Water	01/24/02
3	GW03MW05A	EB18C	02-1156	Water	01/25/02
4	GW1003MW05A	EB18D	02-1157	Water	01/25/02
5	012502TRIP03	EB18E	02-1158	Water	01/10/02
	GW03MW03A	EB18F	02-1159	Water	01/24/02
	GW03MW03B	EB18G	02-1160	Water	01/24/02
8	GW03MW05A	EB18H	02-1161	Water	01/25/02
9	GW1003MW05A	EB18I	02-1162	Water	01/25/02

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW01A

Lab Sample ID: EB00A
LIMS ID: 02-1058
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/21/02
Date Received: 01/24/02

Instrument: FINN3
Date Analyzed: 01/29/02 09:20

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**3.9 J**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW01A

Lab Sample ID: EB00A
LIMS ID: 02-1058
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/21/02
Date Received: 01/24/02

Instrument: FINN3
Date Analyzed: 01/29/02 09:20

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	103%
Bromofluorobenzene	92.5%
d4-1,2-Dichlorobenzene	107%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW01B

Lab Sample ID: EB00B
LIMS ID: 02-1059
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Instrument: FINN3
Date Analyzed: 01/29/02 09:47

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW01B

Lab Sample ID: EB00B
LIMS ID: 02-1059
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Instrument: FINN3
Date Analyzed: 01/29/02 09:47

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	107%
Bromofluorobenzene	99.0%
d4-1,2-Dichlorobenzene	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW02A

Lab Sample ID: EB00C
LIMS ID: 02-1060
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Instrument: FINN3
Date Analyzed: 01/29/02 10:43

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**3.3 J**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW02A

Lab Sample ID: EB00C
LIMS ID: 02-1060
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Instrument: FINN3
Date Analyzed: 01/29/02 10:43

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	102%
Bromofluorobenzene	93.3%
d4-1,2-Dichlorobenzene	110%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW02B

Lab Sample ID: EB10B
LIMS ID: 02-1127
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/29/02 11:38

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	**1,1-Dichloroethene**	**35**
75-34-3	**1,1-Dichloroethane**	**32**
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	**1,1,1-Trichloroethane**	**220 E**
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**86**
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW02B

Lab Sample ID: EB10B
LIMS ID: 02-1127
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/29/02 11:38

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	**Dichlorodifluoromethane**	**100**
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	103%
Bromofluorobenzene	96.7%
d4-1,2-Dichlorobenzene	110%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW02B
DILUTION

Lab Sample ID: EB10B-DL
LIMS ID: 02-1127
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/30/02 19:33

Sample Amount: 2.50 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	2.0 U
74-83-9	Bromomethane	2.0 U
75-01-4	Vinyl Chloride	2.0 U
75-00-3	Chloroethane	2.0 U
75-09-2	Methylene Chloride	4.0 U
67-64-1	Acetone	10 U
75-15-0	Carbon Disulfide	2.0 U
75-35-4	**1,1-Dichloroethene**	**29**
75-34-3	**1,1-Dichloroethane**	**35**
156-60-5	trans-1,2-Dichloroethene	2.0 U
156-59-2	cis-1,2-Dichloroethene	2.0 U
67-66-3	Chloroform	2.0 U
107-06-2	1,2-Dichloroethane	2.0 U
78-93-3	2-Butanone	10 U
71-55-6	**1,1,1-Trichloroethane**	**230**
56-23-5	Carbon Tetrachloride	2.0 U
108-05-4	Vinyl Acetate	10 U
75-27-4	Bromodichloromethane	2.0 U
78-87-5	1,2-Dichloropropane	2.0 U
10061-01-5	cis-1,3-Dichloropropene	2.0 U
79-01-6	Trichloroethene	2.0 U
124-48-1	Dibromochloromethane	2.0 U
79-00-5	1,1,2-Trichloroethane	2.0 U
71-43-2	Benzene	2.0 U
10061-02-6	trans-1,3-Dichloropropene	2.0 U
110-75-8	2-Chloroethylvinylether	10 U
75-25-2	Bromoform	2.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	10 U
591-78-6	2-Hexanone	10 U
127-18-4	Tetrachloroethene	2.0 U
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U
108-88-3	Toluene	2.0 U
108-90-7	Chlorobenzene	2.0 U
100-41-4	Ethylbenzene	2.0 U
100-42-5	Styrene	2.0 U
75-69-4	Trichlorofluoromethane	2.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**86**
1330-20-7	m,p-Xylene	2.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW02B
DILUTION

Lab Sample ID: EB10B-DL
LIMS ID: 02-1127
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/30/02 19:33

Sample Amount: 2.50 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	2.0 U
95-50-1	1,2-Dichlorobenzene	2.0 U
541-73-1	1,3-Dichlorobenzene	2.0 U
106-46-7	1,4-Dichlorobenzene	2.0 U
107-02-8	Acrolein	100 U
74-88-4	Methyl Iodide	2.0 U
74-96-4	Bromoethane	4.0 U
107-13-1	Acrylonitrile	2.0 U
563-58-6	1,1-Dichloropropene	2.0 U
74-95-3	Dibromomethane	2.0 U
630-20-6	1,1,1,2-Tetrachloroethane	2.0 U
96-12-8	1,2-Dibromo-3-chloropropane	10 U
96-18-4	1,2,3-Trichloropropane	6.0 U
110-57-6	trans-1,4-Dichloro-2-butene	10 U
108-67-8	1,3,5-Trimethylbenzene	2.0 U
95-63-6	1,2,4-Trimethylbenzene	2.0 U
87-68-3	Hexachlorobutadiene	10 U
106-93-4	Ethylene Dibromide	2.0 U
74-97-5	Bromochloromethane	2.0 U
75-71-8	**Dichlorodifluoromethane**	**99**
594-20-7	2,2-Dichloropropane	2.0 U
142-28-9	1,3-Dichloropropane	2.0 U
98-82-8	Isopropylbenzene	2.0 U
103-65-1	n-Propylbenzene	2.0 U
108-86-1	Bromobenzene	2.0 U
95-49-8	2-Chlorotoluene	2.0 U
106-43-4	4-Chlorotoluene	2.0 U
98-06-6	tert-Butylbenzene	2.0 U
135-98-8	sec-Butylbenzene	2.0 U
99-87-6	4-Isopropyltoluene	2.0 U
104-51-8	n-Butylbenzene	2.0 U
120-82-1	1,2,4-Trichlorobenzene	10 U
91-20-3	Naphthalene	10 U
87-61-6	1,2,3-Trichlorobenzene	10 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	111%
d8-Toluene	106%
Bromofluorobenzene	96.4%
d4-1,2-Dichlorobenzene	109%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW503MW02B

Lab Sample ID: EB10C
LIMS ID: 02-1128
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/29/02 12:05

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	**1,1-Dichloroethene**	**33**
75-34-3	**1,1-Dichloroethane**	**30**
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	**1,1,1-Trichloroethane**	**210 E**
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**83**
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW503MW02B

Lab Sample ID: EB10C
LIMS ID: 02-1128
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/29/02 12:05

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	**Dichlorodifluoromethane**	**100**
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	97.6%
d8-Toluene	107%
Bromofluorobenzene	95.4%
d4-1,2-Dichlorobenzene	109%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW503MW02B
DILUTION

Lab Sample ID: EB10C-DL
LIMS ID: 02-1128
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/30/02 20:00

Sample Amount: 2.50 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	2.0 U
74-83-9	Bromomethane	2.0 U
75-01-4	Vinyl Chloride	2.0 U
75-00-3	Chloroethane	2.0 U
75-09-2	Methylene Chloride	4.0 U
67-64-1	Acetone	10 U
75-15-0	Carbon Disulfide	2.0 U
75-35-4	**1,1-Dichloroethene**	**20**
75-34-3	**1,1-Dichloroethane**	**35**
156-60-5	trans-1,2-Dichloroethene	2.0 U
156-59-2	cis-1,2-Dichloroethene	2.0 U
67-66-3	Chloroform	2.0 U
107-06-2	1,2-Dichloroethane	2.0 U
78-93-3	2-Butanone	10 U
71-55-6	**1,1,1-Trichloroethane**	**220**
56-23-5	Carbon Tetrachloride	2.0 U
108-05-4	Vinyl Acetate	10 U
75-27-4	Bromodichloromethane	2.0 U
78-87-5	1,2-Dichloropropane	2.0 U
10061-01-5	cis-1,3-Dichloropropene	2.0 U
79-01-6	Trichloroethene	2.0 U
124-48-1	Dibromochloromethane	2.0 U
79-00-5	1,1,2-Trichloroethane	2.0 U
71-43-2	Benzene	2.0 U
10061-02-6	trans-1,3-Dichloropropene	2.0 U
110-75-8	2-Chloroethylvinylether	10 U
75-25-2	Bromoform	2.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	10 U
591-78-6	2-Hexanone	10 U
127-18-4	Tetrachloroethene	2.0 U
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U
108-88-3	Toluene	2.0 U
108-90-7	Chlorobenzene	2.0 U
100-41-4	Ethylbenzene	2.0 U
100-42-5	Styrene	2.0 U
75-69-4	Trichlorofluoromethane	2.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**81**
1330-20-7	m,p-Xylene	2.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW503MW02B
DILUTION

Lab Sample ID: EB10C-DL
LIMS ID: 02-1128
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/30/02 20:00

Sample Amount: 2.50 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	2.0 U
95-50-1	1,2-Dichlorobenzene	2.0 U
541-73-1	1,3-Dichlorobenzene	2.0 U
106-46-7	1,4-Dichlorobenzene	2.0 U
107-02-8	Acrolein	100 U
74-88-4	Methyl Iodide	2.0 U
74-96-4	Bromoethane	4.0 U
107-13-1	Acrylonitrile	2.0 U
563-58-6	1,1-Dichloropropene	2.0 U
74-95-3	Dibromomethane	2.0 U
630-20-6	1,1,1,2-Tetrachloroethane	2.0 U
96-12-8	1,2-Dibromo-3-chloropropane	10 U
96-18-4	1,2,3-Trichloropropane	6.0 U
110-57-6	trans-1,4-Dichloro-2-butene	10 U
108-67-8	1,3,5-Trimethylbenzene	2.0 U
95-63-6	1,2,4-Trimethylbenzene	2.0 U
87-68-3	Hexachlorobutadiene	10 U
106-93-4	Ethylene Dibromide	2.0 U
74-97-5	Bromochloromethane	2.0 U
75-71-8	**Dichlorodifluoromethane**	**95**
594-20-7	2,2-Dichloropropane	2.0 U
142-28-9	1,3-Dichloropropane	2.0 U
98-82-8	Isopropylbenzene	2.0 U
103-65-1	n-Propylbenzene	2.0 U
108-86-1	Bromobenzene	2.0 U
95-49-8	2-Chlorotoluene	2.0 U
106-43-4	4-Chlorotoluene	2.0 U
98-06-6	tert-Butylbenzene	2.0 U
135-98-8	sec-Butylbenzene	2.0 U
99-87-6	4-Isopropyltoluene	2.0 U
104-51-8	n-Butylbenzene	2.0 U
120-82-1	1,2,4-Trichlorobenzene	10 U
91-20-3	Naphthalene	10 U
87-61-6	1,2,3-Trichlorobenzene	10 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	107%
Bromofluorobenzene	95.5%
d4-1,2-Dichlorobenzene	110%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW03A

Lab Sample ID: EB18A
LIMS ID: 02-1154
Matrix: Water
Data Release Authorized:
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Instrument: FINN3
Date Analyzed: 01/29/02 13:00

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW03A

Lab Sample ID: EB18A
LIMS ID: 02-1154
Matrix: Water
Data Release Authorized:
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Instrument: FINN3
Date Analyzed: 01/29/02 13:00

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	110%
Bromofluorobenzene	96.6%
d4-1,2-Dichlorobenzene	108%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW03B

Lab Sample ID: EB18B
LIMS ID: 02-1155
Matrix: Water
Data Release Authorized:
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Instrument: FINN3
Date Analyzed: 01/29/02 13:27

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW03B

Lab Sample ID: EB18B
LIMS ID: 02-1155
Matrix: Water
Data Release Authorized:
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Instrument: FINN3
Date Analyzed: 01/29/02 13:27

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	104%
Bromofluorobenzene	95.4%
d4-1,2-Dichlorobenzene	110%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW04A

Lab Sample ID: EB10D
LIMS ID: 02-1129
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/29/02 12:33

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW04A

Lab Sample ID: EB10D
LIMS ID: 02-1129
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/29/02 12:33

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	103%
Bromofluorobenzene	92.2%
d4-1,2-Dichlorobenzene	110%

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ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW05A

Lab Sample ID: EB18C
LIMS ID: 02-1156
Matrix: Water
Data Release Authorized:
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Instrument: FINN3
Date Analyzed: 01/29/02 13:55

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**0.6 J**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW05A

Lab Sample ID: EB18C
LIMS ID: 02-1156
Matrix: Water
Data Release Authorized:
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Instrument: FINN3
Date Analyzed: 01/29/02 13:55

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	103%
Bromofluorobenzene	93.4%
d4-1,2-Dichlorobenzene	109%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW1003MW05A

Lab Sample ID: EB18D
LIMS ID: 02-1157
Matrix: Water
Data Release Authorized
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Instrument: FINN3
Date Analyzed: 01/29/02 14:22

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW1003MW05A

Lab Sample ID: EB18D
LIMS ID: 02-1157
Matrix: Water
Data Release Authorized:
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Instrument: FINN3
Date Analyzed: 01/29/02 14:22

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	106%
Bromofluorobenzene	93.9%
d4-1,2-Dichlorobenzene	110%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW08A

Lab Sample ID: EB10A
LIMS ID: 02-1126
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/29/02 11:11

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	**Vinyl Chloride**	**3.8**
75-00-3	Chloroethane	1.0 U
75-09-2	**Methylene Chloride**	**3.9**
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	**Trichloroethene**	**4.7**
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**2.9**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	**Toluene**	**8.6**
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW03MW08A

Lab Sample ID: EB10A
LIMS ID: 02-1126
Matrix: Water
Data Release Authorized: *JS*
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/29/02 11:11

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	**1,2,4-Trichlorobenzene**	**12**
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	104%
Bromofluorobenzene	94.5%
d4-1,2-Dichlorobenzene	109%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: 012102TRIP01

Lab Sample ID: EB00D
LIMS ID: 02-1061
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Instrument: FINN3
Date Analyzed: 01/29/02 08:06

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: 012102TRIP01

Lab Sample ID: EB00D
LIMS ID: 02-1061
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Instrument: FINN3
Date Analyzed: 01/29/02 08:06

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	99.6%
d8-Toluene	101%
Bromofluorobenzene	96.9%
d4-1,2-Dichlorobenzene	110%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: 012302TRIP02

Lab Sample ID: EB10E
LIMS ID: 02-1130
Matrix: Water
Data Release Authorized:
Reported: 02/19/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/29/02 08:26

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: 012302TRIP02

Lab Sample ID: EB10E
LIMS ID: 02-1130
Matrix: Water
Data Release Authorized:
Reported: 02/19/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Instrument: FINN3
Date Analyzed: 01/29/02 08:26

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	100%
d8-Toluene	103%
Bromofluorobenzene	96.5%
d4-1,2-Dichlorobenzene	110%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: 012502TRIP03

Lab Sample ID: EB18E
LIMS ID: 02-1158
Matrix: Water
Data Release Authorized:
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/10/02
Date Received: 01/26/02

Instrument: FINN3
Date Analyzed: 01/29/02 08:53

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**2.2 J**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: 012502TRIP03

Lab Sample ID: EB18E
LIMS ID: 02-1158
Matrix: Water
Data Release Authorized:
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/10/02
Date Received: 01/26/02

Instrument: FINN3
Date Analyzed: 01/29/02 08:53

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	102%
Bromofluorobenzene	93.6%
d4-1,2-Dichlorobenzene	107%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 012902MB
LIMS ID: 02-1059
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 01/29/02 06:34

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 012902MB
LIMS ID: 02-1059
Matrix: Water
Data Release Authorized: MB
Reported: 02/05/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 01/29/02 06:34

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.0%
d8-Toluene	102%
Bromofluorobenzene	98.5%
d4-1,2-Dichlorobenzene	106%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 012902MB
LIMS ID: 02-1126
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 01/29/02 06:34

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 012902MB
LIMS ID: 02-1126
Matrix: Water
Data Release Authorized: [signature]
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 01/29/02 06:34

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.0%
d8-Toluene	102%
Bromofluorobenzene	98.5%
d4-1,2-Dichlorobenzene	106%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 013002MB
LIMS ID: 02-1128
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 01/30/02 13:10

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 013002MB
LIMS ID: 02-1128
Matrix: Water
Data Release Authorized:
Reported: 02/05/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 01/30/02 13:10

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	101%
d8-Toluene	103%
Bromofluorobenzene	92.8%
d4-1,2-Dichlorobenzene	110%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 012902MB
LIMS ID: 02-1154
Matrix: Water
Data Release Authorized:
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 01/29/02 06:34

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 012902MB
LIMS ID: 02-1154
Matrix: Water
Data Release Authorized:
Reported: 02/06/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 01/29/02 06:34

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	96.0%
d8-Toluene	102%
Bromofluorobenzene	98.5%
d4-1,2-Dichlorobenzene	106%

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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW01A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB00A
LIMS ID: 02-1058
Matrix: Water
Data Release Authorized: MW
Reported: 02/08/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/21/02
Date Received: 01/24/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 16:25
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW01A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB00A
LIMS ID: 02-1058
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/21/02
Date Received: 01/24/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 16:25
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	76.0%	d5-Phenol	73.4%
2-Fluorobiphenyl	73.5%	2-Fluorophenol	70.2%
d14-p-Terphenyl	130%	2,4,6-Tribromophenol	64.1%
d4-1,2-Dichlorobenzene	61.8%	d4-2-Chlorophenol	82.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW03MW01A

Lab Sample ID: EB00A
LIMS ID: 02-1058
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/21/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/08/02

Date Analyzed: 02/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW01B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB00B
LIMS ID: 02-1059
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 17:13
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW01B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB00B
LIMS ID: 02-1059
Matrix: Water
Data Release Authorized: MW
Reported: 02/08/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 17:13
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	82.7%	d5-Phenol	77.3%
2-Fluorobiphenyl	86.9%	2-Fluorophenol	73.3%
d14-p-Terphenyl	114%	2,4,6-Tribromophenol	74.8%
d4-1,2-Dichlorobenzene	71.7%	d4-2-Chlorophenol	83.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW03MW01B

Lab Sample ID: EB00B
LIMS ID: 02-1059
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/08/02

Date Analyzed: 02/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW02A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB00C
LIMS ID: 02-1060
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 19:39
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 2 of 2

Sample No: GW03MW02A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB00C
LIMS ID: 02-1060
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 19:39
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	80.0%	d5-Phenol	74.9%
2-Fluorobiphenyl	83.1%	2-Fluorophenol	69.5%
d14-p-Terphenyl	118%	2,4,6-Tribromophenol	95.6%
d4-1,2-Dichlorobenzene	72.7%	d4-2-Chlorophenol	84.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW03MW02A

Lab Sample ID: EB00C
LIMS ID: 02-1060
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/08/02

Date Analyzed: 02/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW02B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB10B
LIMS ID: 02-1127
Matrix: Water
Data Release Authorized: MV
Reported: 02/07/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 21:14
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW02B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB10B
LIMS ID: 02-1127
Matrix: Water
Data Release Authorized: MJ
Reported: 02/07/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 21:14
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	80.1%	d5-Phenol	72.2%
2-Fluorobiphenyl	90.0%	2-Fluorophenol	69.0%
d14-p-Terphenyl	132%	2,4,6-Tribromophenol	98.3%
d4-1,2-Dichlorobenzene	69.4%	d4-2-Chlorophenol	87.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW03MW02B

Lab Sample ID: EB10B
LIMS ID: 02-1127
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized: MJ
Reported: 02/08/02

Date Analyzed: 02/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	--	Unknown	23.02	SVOA	6 J
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW503MW02B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB10C
LIMS ID: 02-1128
Matrix: Water
Data Release Authorized: MW
Reported: 02/07/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 22:01
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 2 of 2

Sample No: GW503MW02B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB10C
LIMS ID: 02-1128
Matrix: Water
Data Release Authorized: MW
Reported: 02/07/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 22:01
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	76.0%	d5-Phenol	69.9%
2-Fluorobiphenyl	78.8%	2-Fluorophenol	67.1%
d14-p-Terphenyl	137%	2,4,6-Tribromophenol	82.9%
d4-1,2-Dichlorobenzene	67.6%	d4-2-Chlorophenol	83.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW503MW02B

Lab Sample ID: EB10C
LIMS ID: 02-1128
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized: MW
Reported: 02/08/02

Date Analyzed: 02/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	--	Unknown	23.03	SVOA	6 J
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW03A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB18A
LIMS ID: 02-1154
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Date extracted: 01/29/02
Date analyzed: 02/07/02 15:13
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW03A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB18A
LIMS ID: 02-1154
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Date extracted: 01/29/02
Date analyzed: 02/07/02 15:13
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	100%	d5-Phenol	88.1%
2-Fluorobiphenyl	104%	2-Fluorophenol	96.0%
d14-p-Terphenyl	118%	2,4,6-Tribromophenol	92.0%
d4-1,2-Dichlorobenzene	76.2%	d4-2-Chlorophenol	94.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW03MW03A

Lab Sample ID: EB18A
LIMS ID: 02-1154
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/27/02

Date Analyzed: 02/07/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 1 of 2

Sample No: GW03MW03B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB18B
LIMS ID: 02-1155
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Date extracted: 01/29/02
Date analyzed: 02/07/02 16:01
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW03B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB18B
LIMS ID: 02-1155
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Date extracted: 01/29/02
Date analyzed: 02/07/02 16:01
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	88.7%	d5-Phenol	80.2%
2-Fluorobiphenyl	99.3%	2-Fluorophenol	87.1%
d14-p-Terphenyl	108%	2,4,6-Tribromophenol	82.6%
d4-1,2-Dichlorobenzene	70.4%	d4-2-Chlorophenol	85.0%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW03MW03B

Lab Sample ID: EB18B
LIMS ID: 02-1155
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/27/02

Date Analyzed: 02/07/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 1 of 2

Sample No: GW03MW04A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB10D
LIMS ID: 02-1129
Matrix: Water
Data Release Authorized: MW
Reported: 02/07/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 22:49
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW04A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB10D
LIMS ID: 02-1129
Matrix: Water
Data Release Authorized: MV
Reported: 02/07/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 22:49
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	79.6%	d5-Phenol	70.1%
2-Fluorobiphenyl	80.5%	2-Fluorophenol	69.0%
d14-p-Terphenyl	119%	2,4,6-Tribromophenol	79.5%
d4-1,2-Dichlorobenzene	68.1%	d4-2-Chlorophenol	81.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW03MW04A

Lab Sample ID: EB10D
LIMS ID: 02-1129
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized: MW
Reported: 02/08/02

Date Analyzed: 02/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW05A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB18C
LIMS ID: 02-1156
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Date extracted: 01/29/02
Date analyzed: 02/07/02 16:50
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW05A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB18C
LIMS ID: 02-1156
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Date extracted: 01/29/02
Date analyzed: 02/07/02 16:50
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	95.2%	d5-Phenol	79.2%
2-Fluorobiphenyl	100%	2-Fluorophenol	83.9%
d14-p-Terphenyl	99.9%	2,4,6-Tribromophenol	91.9%
d4-1,2-Dichlorobenzene	66.9%	d4-2-Chlorophenol	85.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW03MW05A

Lab Sample ID: EB18C
LIMS ID: 02-1156
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/27/02

Date Analyzed: 02/07/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW1003MW05A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB18D
LIMS ID: 02-1157
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Date extracted: 01/29/02
Date analyzed: 02/07/02 17:38
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW1003MW05A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB18D
LIMS ID: 02-1157
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Date extracted: 01/29/02
Date analyzed: 02/07/02 17:38
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	92.8%	d5-Phenol	76.2%
2-Fluorobiphenyl	88.6%	2-Fluorophenol	99.3%
d14-p-Terphenyl	77.5%	2,4,6-Tribromophenol	92.2%
d4-1,2-Dichlorobenzene	62.3%	d4-2-Chlorophenol	78.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW1003MW05A

Lab Sample ID: EB18D
LIMS ID: 02-1157
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/27/02

Date Analyzed: 02/07/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW08A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB10A
LIMS ID: 02-1126
Matrix: Water
Data Release Authorized: MW
Reported: 02/07/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 20:27
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW03MW08A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB10A
LIMS ID: 02-1126
Matrix: Water
Data Release Authorized: MJ
Reported: 02/07/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Date extracted: 01/28/02
Date analyzed: 02/06/02 20:27
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	**Diethylphthalate**	**15**
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	**N-Nitrosodiphenylamine**	**2.9**
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	**Phenanthrene**	**13**
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	**Pyrene**	**20**
85-68-7	**Butylbenzylphthalate**	**33**
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	**Chrysene**	**2.6**
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	75.4%	d5-Phenol	70.7%
2-Fluorobiphenyl	81.3%	2-Fluorophenol	67.7%
d14-p-Terphenyl	128%	2,4,6-Tribromophenol	81.2%
d4-1,2-Dichlorobenzene	68.1%	d4-2-Chlorophenol	84.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW03MW08A

Lab Sample ID: EB10A
LIMS ID: 02-1126
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized: MJ
Reported: 02/08/02

Date Analyzed: 02/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: Method Blank

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB00MB
LIMS ID: 02-1058
Matrix: Water
Data Release Authorized: MW
Reported: 02/08/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Date extracted: 01/28/02
Date analyzed: 02/06/02 14:04
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: Method Blank

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB00MB
LIMS ID: 02-1058
Matrix: Water
Data Release Authorized: MW
Reported: 02/08/02

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Date extracted: 01/28/02
Date analyzed: 02/06/02 14:04
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	83.0%	d5-Phenol	79.4%
2-Fluorobiphenyl	93.0%	2-Fluorophenol	70.4%
d14-p-Terphenyl	127%	2,4,6-Tribromophenol	76.6%
d4-1,2-Dichlorobenzene	72.5%	d4-2-Chlorophenol	86.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: Method Blank

Lab Sample ID: EB00MB
LIMS ID: 02-1058
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized: MW
Reported: 02/08/02

Date Analyzed: 02/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: Method Blank

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB10MB
LIMS ID: 02-1126
Matrix: Water
Data Release Authorized: MW
Reported: 02/07/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Date extracted: 01/28/02
Date analyzed: 02/06/02 14:04
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	30 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	10 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: Method Blank

Lab Sample ID: EB10MB
LIMS ID: 02-1126
Matrix: Water
Data Release Authorized: MW
Reported: 02/07/02

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Date extracted: 01/28/02
Date analyzed: 02/06/02 14:04
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	83.0%	d5-Phenol	79.4%
2-Fluorobiphenyl	93.0%	2-Fluorophenol	70.4%
d14-p-Terphenyl	127%	2,4,6-Tribromophenol	76.6%
d4-1,2-Dichlorobenzene	72.5%	d4-2-Chlorophenol	86.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: **Method Blank**

Lab Sample ID: EB10MB
LIMS ID: 02-1126
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized: MW
Reported: 02/08/02

Date Analyzed: 02/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
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13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 1 of 2

Sample No: Method Blank

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB18MB
LIMS ID: 02-1154
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Date extracted: 01/29/02
Date analyzed: 02/07/02 13:36
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: Method Blank

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EB18MB
LIMS ID: 02-1154
Matrix: Water
Data Release Authorized:
Reported: 02/08/02

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Date extracted: 01/29/02
Date analyzed: 02/07/02 13:36
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	87.4%	d5-Phenol	76.8%
2-Fluorobiphenyl	91.1%	2-Fluorophenol	79.7%
d14-p-Terphenyl	99.6%	2,4,6-Tribromophenol	96.8%
d4-1,2-Dichlorobenzene	64.2%	d4-2-Chlorophenol	79.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: Method Blank

Lab Sample ID: EB18MB
LIMS ID: 02-1154
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 02/27/02

Date Analyzed: 02/07/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
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ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW01A**
Herbicides by GC/ECD

Lab Sample ID: EB00A
LIMS ID: 02-1058
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/21/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/11/02

Date extracted: 01/28/02
Date analyzed: 02/07/02 14:09
Instrument ID: ECD2

Sample Amount: 470 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.060 U
93-76-5	2,4,5-T	0.13 U
88-85-7	Dinoseb	0.11 U
1918-00-9	Dicamba	0.15 U
94-75-7	2,4-D	0.32 U
94-82-6	2,4-DB	2.1 U
75-99-0	Dalapon	0.43 U
94-74-6	MCPA	53 U
120-36-5	Dichloroprop	0.66 U
93-65-2	MCPP	53 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 84.3%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW01B**
Herbicides by GC/ECD

Lab Sample ID: EB00B
LIMS ID: 02-1059
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/11/02

Date extracted: 01/28/02
Date analyzed: 02/07/02 14:40
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 82.7%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW02A**
Herbicides by GC/ECD

Lab Sample ID: EB00C
LIMS ID: 02-1060
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/11/02

Date extracted: 01/28/02
Date analyzed: 02/07/02 16:10
Instrument ID: ECD2

Sample Amount: 485 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.058 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.31 U
94-82-6	2,4-DB	2.1 U
75-99-0	Dalapon	0.41 U
94-74-6	MCPA	52 U
120-36-5	Dichloroprop	0.64 U
93-65-2	MCPP	52 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 78.5%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW02B**
Herbicides by GC/ECD

Lab Sample ID: EB10B
LIMS ID: 02-1127
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/14/02

Date extracted: 01/28/02
Date analyzed: 02/07/02 17:10
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 88.2%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW503MW02B**
Herbicides by GC/ECD

Lab Sample ID: EB10C
LIMS ID: 02-1128
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/14/02

Date extracted: 01/28/02
Date analyzed: 02/07/02 20:11
Instrument ID: ECD2

Sample Amount: 460 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.061 U
93-76-5	2,4,5-T	0.13 U
88-85-7	Dinoseb	0.11 U
1918-00-9	Dicamba	0.15 U
94-75-7	2,4-D	0.33 U
94-82-6	2,4-DB	2.2 U
75-99-0	Dalapon	0.43 U
94-74-6	MCPA	54 U
120-36-5	Dichloroprop	0.67 U
93-65-2	MCPP	54 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 84.1%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW03A**
Herbicides by GC/ECD

Lab Sample ID: EB18A
LIMS ID: 02-1154
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/11/02

Date extracted: 01/30/02
Date analyzed: 02/07/02 21:11
Instrument ID: ECD2

Sample Amount: 485 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.058 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.31 U
94-82-6	2,4-DB	2.1 U
75-99-0	Dalapon	0.41 U
94-74-6	MCPA	52 U
120-36-5	Dichloroprop	0.64 U
93-65-2	MCPP	52 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 87.5%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW03B**
Herbicides by GC/ECD

Lab Sample ID: EB18B
LIMS ID: 02-1155
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/11/02

Date extracted: 01/30/02
Date analyzed: 02/07/02 21:41
Instrument ID: ECD2

Sample Amount: 490 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.057 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.31 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.41 U
94-74-6	MCPA	51 U
120-36-5	Dichloroprop	0.63 U
93-65-2	MCPP	51 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 83.5%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW04A**
Herbicides by GC/ECD

Lab Sample ID: EB10D
LIMS ID: 02-1129
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/14/02

Date extracted: 01/28/02
Date analyzed: 02/07/02 20:41
Instrument ID: ECD2

Sample Amount: 460 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.061 U
93-76-5	2,4,5-T	0.13 U
88-85-7	Dinoseb	0.11 U
1918-00-9	Dicamba	0.15 U
94-75-7	2,4-D	0.33 U
94-82-6	2,4-DB	2.2 U
75-99-0	Dalapon	0.43 U
94-74-6	MCPA	54 U
120-36-5	Dichloroprop	0.67 U
93-65-2	MCPP	54 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 83.7%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW05A**
Herbicides by GC/ECD

Lab Sample ID: EB18C
LIMS ID: 02-1156
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/11/02

Date extracted: 01/30/02
Date analyzed: 02/07/02 22:11
Instrument ID: ECD2

Sample Amount: 465 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.060 U
93-76-5	2,4,5-T	0.13 U
88-85-7	Dinoseb	0.11 U
1918-00-9	Dicamba	0.15 U
94-75-7	2,4-D	0.32 U
94-82-6	2,4-DB	2.2 U
75-99-0	Dalapon	0.43 U
94-74-6	MCPA	54 U
120-36-5	Dichloroprop	0.67 U
93-65-2	MCPP	54 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 79.3%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW1003MW05A**
Herbicides by GC/ECD

Lab Sample ID: EB18D
LIMS ID: 02-1157
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/11/02

Date extracted: 01/30/02
Date analyzed: 02/07/02 22:41
Instrument ID: ECD2

Sample Amount: 365 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.077 U
93-76-5	2,4,5-T	0.16 U
88-85-7	Dinoseb	0.14 U
1918-00-9	Dicamba	0.19 U
94-75-7	2,4-D	0.41 U
94-82-6	2,4-DB	2.7 U
75-99-0	Dalapon	0.55 U
94-74-6	MCPA	68 U
120-36-5	Dichloroprop	0.85 U
93-65-2	MCPP	68 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 78.0%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW08A**
Herbicides by GC/ECD

Lab Sample ID: EB10A
LIMS ID: 02-1126
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/14/02

Date extracted: 01/28/02
Date analyzed: 02/07/02 16:40
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	**2,4,5-TP (Silvex)**	**5.0 E**
93-76-5	**2,4,5-T**	**S**
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	**2,4-D**	**29 E**
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 92.9%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW08A**
Herbicides by GC/ECD **DILUTION**

Lab Sample ID: EB10A-DL
LIMS ID: 02-1126
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/15/02

Date extracted: 01/28/02
Date analyzed: 02/14/02 20:34
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:10

CAS Number	Analyte	ug/L
93-72-1	**2,4,5-TP (Silvex)**	**8.5**
93-76-5	**2,4,5-T**	**23 E**
88-85-7	Dinoseb	1.0 U
1918-00-9	Dicamba	1.4 U
94-75-7	**2,4-D**	**35**
94-82-6	2,4-DB	20 U
75-99-0	Dalapon	4.0 U
94-74-6	MCPA	500 U
120-36-5	Dichloroprop	6.2 U
93-65-2	MCPP	500 U

Herbicide Surrogate Recovery

Dichlorophenylacetic Acid 67.9%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW08A**
Herbicides by GC/ECD **REANALYSIS/DILUTION**

Lab Sample ID: EB10A-RE
LIMS ID: 02-1126
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/15/02

Date extracted: 01/28/02
Date analyzed: 02/14/02 21:34
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:40

CAS Number	Analyte	ug/L
93-72-1	**2,4,5-TP (Silvex)**	**8.7**
93-76-5	**2,4,5-T**	**26**
88-85-7	Dinoseb	4.0 U
1918-00-9	Dicamba	5.6 U
94-75-7	**2,4-D**	**35**
94-82-6	2,4-DB	80 U
75-99-0	Dalapon	16 U
94-74-6	MCPA	2,000 U
120-36-5	Dichloroprop	25 U
93-65-2	MCPP	2,000 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid D

Data Qualifiers

J	Indicates an estimated value when that result is less than the calculated detection limit.
E	Indicates a value above the linear range of the detector. Dilution Required
S	Indicates no value reported due to saturation of the detector.
D	Indicates the surrogate was diluted out.
U	Indicates compound was analyzed for, but not detected at the given detection limit.
B	Found in associated method blank
NA	Indicates compound was not analyzed.
NR	Indicates no recovery due to interferences.
Y	Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
Herbicides by GC/ECD

Lab Sample ID: EB00MB
LIMS ID: 02-1058
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 02/11/02

Date extracted: 01/28/02
Date analyzed: 02/07/02 12:39
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 85.1%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
Herbicides by GC/ECD

Lab Sample ID: EB10MB
LIMS ID: 02-1126
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 02/14/02

Date extracted: 01/28/02
Date analyzed: 02/07/02 12:39
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 85.1%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
Herbicides by GC/ECD

Lab Sample ID: EB18MB
LIMS ID: 02-1154
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 02/11/02

Date extracted: 01/30/02
Date analyzed: 02/07/02 18:41
Instrument ID: ECD2

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 79.7%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: URS Operating Servic

PROJECT: Camp Booneville

SDG: EB00

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
GW03MW01A	EB00A	02-1058	
GW03MW01AD	EB00ADUP	02-1058	
GW03MW01AS	EB00ASPK	02-1058	
GW03MW01B	EB00B	02-1059	
PBW	EB00MB1	02-1059	
LCSW	EB00MB1SPK	02-1059	
GW03MW02A	EB00C	02-1060	
GW03MW01A	EB00E	02-1062	
GW03MW01AD	EB00EDUP	02-1062	
GW03MW01AS	EB00ESPK	02-1062	
GW03MW01B	EB00F	02-1063	
PBW	EB00MB2	02-1063	
LCSW	EB00MB2SPK	02-1063	
GW03MW02A	EB00G	02-1064	
GW03MW08A	EB10A	02-1126	
GW03MW02B	EB10B	02-1127	
GW503MW02B	EB10C	02-1128	
GW03MW04A	EB10D	02-1129	
GW03MW02B	EB10F	02-1131	
GW503MW02B	EB10G	02-1132	
GW03MW04A	EB10H	02-1133	
GW03MW03A	EB18A	02-1154	

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 2/11/02 Title: Inorganics Supervisor

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Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: URS Operating Servic

PROJECT: Camp Booneville

SDG: EB00

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
GW03MW03B	EB18B	02-1155	
GW03MW05A	EB18C	02-1156	
GW1003MW05A	EB18D	02-1157	
GW03MW03A	EB18F	02-1159	
GW03MW03B	EB18G	02-1160	
GW03MW05A	EB18H	02-1161	
GW1003MW05A	EB18I	02-1162	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 2/11/02 Title: Inorganics Supervisor

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW03MW01A

Lab Sample ID: EB00A
LIMS ID: 02-1058
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/21/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-38-2	Arsenic	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**2,400**
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-47-3**	**Chromium**	**5**	**13**
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-89-6**	**Iron**	**50**	**250**
200.8	01/30/02	200.8	02/05/02	7439-92-1	Lead	1	1 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	**50**	**990**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
3010A	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10 U
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/30/02	200.8	02/05/02	7782-49-2	Selenium	0.5	0.5 U
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**4,520**
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW01A**
DISSOLVED METALS

Lab Sample ID: EB00E
LIMS ID: 02-1062
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/21/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/29/02	200.8	02/06/02	7440-38-2	Arsenic	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
6010B	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
6010B	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**2,440**
6010B	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
6010B	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
6010B	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	50 U
200.8	01/29/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	**50**	**1,000**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
6010B	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10 U
6010B	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/29/02	200.8	02/06/02	7782-49-2	Selenium	0.5	0.5 U
6010B	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**4,680**
200.8	01/29/02	200.8	02/06/02	7440-28-0	Thallium	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW03MW01B

Lab Sample ID: EB00B
LIMS ID: 02-1059
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-38-2	Arsenic	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**1,960**
3010A	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
3010A	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	50 U
200.8	01/30/02	200.8	02/05/02	7439-92-1	Lead	1	1 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	**50**	**1,090**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
3010A	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10 U
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/30/02	200.8	02/05/02	7782-49-2	Selenium	0.5	0.5 U
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**1,290**
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW03MW01B

Lab Sample ID: EB00F
LIMS ID: 02-1063
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/29/02	200.8	02/06/02	7440-38-2	Arsenic	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
6010B	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
6010B	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**2,050**
6010B	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
6010B	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
6010B	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	50 U
200.8	01/29/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	**50**	**1,150**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
6010B	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10 U
6010B	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/29/02	200.8	02/06/02	7782-49-2	Selenium	0.5	0.5 U
6010B	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**1,400**
200.8	01/29/02	200.8	02/06/02	7440-28-0	Thallium	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW03MW02A

Lab Sample ID: EB00C
LIMS ID: 02-1060
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-38-2	Arsenic	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**1,400**
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-47-3**	**Chromium**	**5**	**26**
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-89-6**	**Iron**	**50**	**280**
200.8	01/30/02	200.8	02/05/02	7439-92-1	Lead	1	1 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	**50**	**450**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-02-0**	**Nickel**	**10**	**20**
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	**01/30/02**	**200.8**	**02/05/02**	**7782-49-2**	**Selenium**	**0.5**	**0.6**
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**10,100**
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-66-6**	**Zinc**	**6**	**8**

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW03MW02A

Lab Sample ID: EB00G
LIMS ID: 02-1064
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/29/02	200.8	02/06/02	7440-38-2	Arsenic	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
6010B	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
6010B	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
6010B	01/29/02	6010B	01/31/02	7440-70-2	Calcium	50	1,370
6010B	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	12
6010B	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
6010B	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	110
200.8	01/29/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
6010B	01/29/02	6010B	01/31/02	7439-95-4	Magnesium	50	460
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
6010B	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	20
6010B	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/29/02	200.8	02/06/02	7782-49-2	Selenium	0.5	0.5 U
6010B	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
6010B	01/29/02	6010B	01/31/02	7440-23-5	Sodium	50	10,200
200.8	01/29/02	200.8	02/06/02	7440-28-0	Thallium	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW03MW02B

Lab Sample ID: EB10B
LIMS ID: 02-1127
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-38-2	Arsenic	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	4
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	01/29/02	6010B	01/31/02	7440-70-2	Calcium	50	2,110
3010A	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	21
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
3010A	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	200
200.8	01/30/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
3010A	01/29/02	6010B	01/31/02	7439-95-4	Magnesium	50	1,050
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
3010A	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/30/02	200.8	02/05/02	7782-49-2	Selenium	0.5	0.5 U
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-23-5	Sodium	50	3,000
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW02B**
DISSOLVED METALS

Lab Sample ID: EB10F
LIMS ID: 02-1131
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/29/02	200.8	02/07/02	7440-38-2	Arsenic	0.2	0.2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-39-3**	**Barium**	3	**4**
6010B	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
6010B	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	50	**2,110**
6010B	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
6010B	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7439-89-6**	**Iron**	50	**80**
200.8	01/29/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	50	**1,040**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-02-0**	**Nickel**	10	**10**
6010B	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/29/02	200.8	02/07/02	7782-49-2	Selenium	0.5	0.5 U
6010B	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	50	**3,070**
200.8	01/29/02	200.8	02/06/02	7440-28-0	Thallium	0.2	0.2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-66-6**	**Zinc**	6	**7**

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW503MW02B

Lab Sample ID: EB10C
LIMS ID: 02-1128
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-38-2	Arsenic	0.2	0.2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-39-3**	**Barium**	**3**	**4**
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**1,920**
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-47-3**	**Chromium**	**5**	**18**
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-89-6**	**Iron**	**50**	**120**
200.8	01/30/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	**50**	**940**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-02-0**	**Nickel**	**10**	**10**
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/30/02	200.8	02/05/02	7782-49-2	Selenium	0.5	0.5 U
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**2,780**
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW503MW02B

Lab Sample ID: EB10G
LIMS ID: 02-1132
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/29/02	200.8	02/07/02	7440-38-2	Arsenic	0.2	0.2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-39-3**	**Barium**	**3**	**4**
6010B	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
6010B	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**2,080**
6010B	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
6010B	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7439-89-6**	**Iron**	**50**	**60**
200.8	01/29/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	**50**	**1,040**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-02-0**	**Nickel**	**10**	**10**
6010B	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/29/02	200.8	02/07/02	7782-49-2	Selenium	0.5	0.5 U
6010B	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**3,030**
200.8	01/29/02	200.8	02/06/02	7440-28-0	Thallium	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW03MW03A

Lab Sample ID: EB18A
LIMS ID: 02-1154
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-38-2	Arsenic	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**1,570**
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-47-3**	**Chromium**	**5**	**18**
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-89-6**	**Iron**	**50**	**2,180**
200.8	01/30/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	**50**	**740**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-02-0**	**Nickel**	**10**	**10**
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/30/02	200.8	02/05/02	7782-49-2	Selenium	0.5	0.5 U
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**1,480**
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW03A**
DISSOLVED METALS

Lab Sample ID: EB18F
LIMS ID: 02-1159
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/29/02	200.8	02/07/02	7440-38-2	Arsenic	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
6010B	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
6010B	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	50	1,610
6010B	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
6010B	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
6010B	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	50 U
200.8	01/29/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	50	760
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
6010B	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10 U
6010B	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/29/02	200.8	02/07/02	7782-49-2	Selenium	0.5	0.5 U
6010B	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	50	1,570
200.8	01/29/02	200.8	02/06/02	7440-28-0	Thallium	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW03MW03B

Lab Sample ID: EB18B
LIMS ID: 02-1155
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-38-2	Arsenic	0.2	0.3
3010A	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	9
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	01/29/02	6010B	01/31/02	7440-70-2	Calcium	50	3,800
3010A	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	65
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	4
3010A	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	1,110
200.8	01/30/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
3010A	01/29/02	6010B	01/31/02	7439-95-4	Magnesium	50	1,810
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
3010A	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	40
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	2,100
200.8	01/30/02	200.8	02/05/02	7782-49-2	Selenium	0.5	0.6
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-23-5	Sodium	50	8,320
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW03MW03B

Lab Sample ID: EB18G
LIMS ID: 02-1160
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/29/02	200.8	02/07/02	7440-38-2	Arsenic	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	7
6010B	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
6010B	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
6010B	01/29/02	6010B	01/31/02	7440-70-2	Calcium	50	4,160
6010B	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	7
6010B	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
6010B	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	90
200.8	01/29/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
6010B	01/29/02	6010B	01/31/02	7439-95-4	Magnesium	50	1,930
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
6010B	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	20
6010B	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	2,210
200.8	01/29/02	200.8	02/07/02	7782-49-2	Selenium	0.5	0.5 U
6010B	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
6010B	01/29/02	6010B	01/31/02	7440-23-5	Sodium	50	9,010
200.8	01/29/02	200.8	02/06/02	7440-28-0	Thallium	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW03MW04A

Lab Sample ID: EB10D
LIMS ID: 02-1129
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-38-2	Arsenic	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	5
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	01/29/02	6010B	01/31/02	7440-70-2	Calcium	50	1,630
3010A	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	47
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	4
3010A	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	1,440
200.8	01/30/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
3010A	01/29/02	6010B	01/31/02	7439-95-4	Magnesium	50	760
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
3010A	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	30
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	550
200.8	01/30/02	200.8	02/05/02	7782-49-2	Selenium	0.5	0.5 U
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-23-5	Sodium	50	1,710
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW03MW04A**
DISSOLVED METALS

Lab Sample ID: EB10H
LIMS ID: 02-1133
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/29/02	200.8	02/07/02	7440-38-2	Arsenic	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
6010B	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
6010B	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**1,560**
6010B	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
6010B	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7439-89-6**	**Iron**	**50**	**60**
200.8	01/29/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	**50**	**590**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-02-0**	**Nickel**	**10**	**10**
6010B	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/29/02	200.8	02/07/02	7782-49-2	Selenium	0.5	0.5 U
6010B	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**1,780**
200.8	01/29/02	200.8	02/06/02	7440-28-0	Thallium	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW03MW05A

Lab Sample ID: EB18C
LIMS ID: 02-1156
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-38-2	Arsenic	0.2	0.2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-39-3**	**Barium**	**3**	**3**
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**2,210**
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-47-3**	**Chromium**	**5**	**29**
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-89-6**	**Iron**	**50**	**160**
200.8	01/30/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	**50**	**950**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-02-0**	**Nickel**	**10**	**20**
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/30/02	200.8	02/05/02	7782-49-2	Selenium	0.5	0.5 U
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**1,790**
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-66-6**	**Zinc**	**6**	**7**

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW03MW05A

Lab Sample ID: EB18H
LIMS ID: 02-1161
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/29/02	200.8	02/07/02	7440-38-2	Arsenic	0.2	0.2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-39-3**	**Barium**	**3**	**4**
6010B	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
6010B	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**2,290**
6010B	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
6010B	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
6010B	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	50 U
200.8	01/29/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7439-95-4**	**Magnesium**	**50**	**970**
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
6010B	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10 U
6010B	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/29/02	200.8	02/07/02	7782-49-2	Selenium	0.5	0.5 U
6010B	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**1,900**
200.8	01/29/02	200.8	02/06/02	7440-28-0	Thallium	0.2	0.2 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-66-6**	**Zinc**	**6**	**7**

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW1003MW05A**
TOTAL METALS

Lab Sample ID: EB18D
LIMS ID: 02-1157
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-38-2	Arsenic	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-70-2**	**Calcium**	**50**	**60**
3010A	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
3010A	**01/29/02**	**6010B**	**01/31/02**	**7439-89-6**	**Iron**	**50**	**70**
200.8	**01/30/02**	**200.8**	**02/06/02**	**7439-92-1**	**Lead**	**1**	**3**
3010A	01/29/02	6010B	01/31/02	7439-95-4	Magnesium	50	50 U
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
3010A	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10 U
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/30/02	200.8	02/05/02	7782-49-2	Selenium	0.5	0.5 U
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-23-5	Sodium	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW1003MW05A**
DISSOLVED METALS

Lab Sample ID: EB18I
LIMS ID: 02-1162
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/29/02	200.8	02/07/02	7440-38-2	Arsenic	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
6010B	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
6010B	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
6010B	01/29/02	6010B	01/31/02	7440-70-2	Calcium	50	50 U
6010B	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
6010B	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
6010B	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	50 U
200.8	01/29/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
6010B	01/29/02	6010B	01/31/02	7439-95-4	Magnesium	50	50 U
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
6010B	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10 U
6010B	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/29/02	200.8	02/07/02	7782-49-2	Selenium	0.5	0.5 U
6010B	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
6010B	**01/29/02**	**6010B**	**01/31/02**	**7440-23-5**	**Sodium**	**50**	**130**
200.8	01/29/02	200.8	02/06/02	7440-28-0	Thallium	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW03MW08A

Lab Sample ID: EB10A
LIMS ID: 02-1126
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	**01/30/02**	**200.8**	**02/05/02**	**7440-38-2**	**Arsenic**	**0.2**	**4.8**
3010A	**01/29/02**	**6010B**	**01/31/02**	**7440-39-3**	**Barium**	**3**	**53**
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	01/29/02	6010B	01/31/02	7440-70-2	Calcium	50	50 U
3010A	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
3010A	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	50 U
200.8	**01/30/02**	**200.8**	**02/06/02**	**7439-92-1**	**Lead**	**1**	**10**
3010A	01/29/02	6010B	01/31/02	7439-95-4	Magnesium	50	50 U
7470	**01/29/02**	**7470A**	**01/30/02**	**7439-97-6**	**Mercury**	**0.1**	**0.7**
3010A	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10 U
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/30/02	200.8	02/05/02	7782-49-2	Selenium	0.5	0.5 U
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-23-5	Sodium	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
TOTAL METALS

Lab Sample ID: EB00MB
LIMS ID: 02-1059
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-38-2	Arsenic	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
3010A	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
3010A	01/29/02	6010B	01/31/02	7440-70-2	Calcium	50	50 U
3010A	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
3010A	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
3010A	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	50 U
200.8	01/30/02	200.8	02/05/02	7439-92-1	Lead	1	1 U
3010A	01/29/02	6010B	01/31/02	7439-95-4	Magnesium	50	50 U
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
3010A	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10 U
3010A	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/30/02	200.8	02/05/02	7782-49-2	Selenium	0.5	0.5 U
3010A	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
3010A	01/29/02	6010B	01/31/02	7440-23-5	Sodium	50	50 U
200.8	01/30/02	200.8	02/05/02	7440-28-0	Thallium	0.2	0.2 U
3010A	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: Method Blank

Lab Sample ID: EB00MB
LIMS ID: 02-1063
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 02/08/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/29/02	6010B	01/31/02	7440-36-0	Antimony	50	50 U
200.8	01/29/02	200.8	02/06/02	7440-38-2	Arsenic	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-39-3	Barium	3	3 U
6010B	01/29/02	6010B	01/31/02	7440-41-7	Beryllium	1	1 U
6010B	01/29/02	6010B	01/31/02	7440-43-9	Cadmium	2	2 U
6010B	01/29/02	6010B	01/31/02	7440-70-2	Calcium	50	50 U
6010B	01/29/02	6010B	01/31/02	7440-47-3	Chromium	5	5 U
6010B	01/29/02	6010B	01/31/02	7440-50-8	Copper	2	2 U
6010B	01/29/02	6010B	01/31/02	7439-89-6	Iron	50	50 U
200.8	01/29/02	200.8	02/06/02	7439-92-1	Lead	1	1 U
6010B	01/29/02	6010B	01/31/02	7439-95-4	Magnesium	50	50 U
7470	01/29/02	7470A	01/30/02	7439-97-6	Mercury	0.1	0.1 U
6010B	01/29/02	6010B	01/31/02	7440-02-0	Nickel	10	10 U
6010B	01/29/02	6010B	01/31/02	7440-09-7	Potassium	500	500 U
200.8	01/29/02	200.8	02/06/02	7782-49-2	Selenium	0.5	0.5 U
6010B	01/29/02	6010B	01/31/02	7440-22-4	Silver	3	3 U
6010B	01/29/02	6010B	01/31/02	7440-23-5	Sodium	50	50 U
200.8	01/29/02	200.8	02/06/02	7440-28-0	Thallium	0.2	0.2 U
6010B	01/29/02	6010B	01/31/02	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg - Toluene to Naphthalene

QC Report No: EB00-URS Operating Services, Inc.
Matrix: Water Project: Camp Bonneville
53-F0072323
Data Release Authorized: CH Date Received: 01/24/02
Reported: 01/30/02 1/30/02

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range	Gas ID	Surr A Rec	Surr B Rec
EB00-0128MB	Method Blank	01/28/02	1:1	0.25 U	NO	95.2%	85.7%
02-1058-EB00A	GW03MW01A	01/28/02	1:1	0.25 U	NO	100%	88.2%
02-1059-EB00B	GW03MW01B	01/28/02	1:1	0.25 U	NO	100%	88.7%
02-1060-EB00C	GW03MW02A	01/28/02	1:1	0.25 U	NO	100%	93.2%
02-1061-EB00D	012102TRIP01	01/28/02	1:1	0.25 U	NO	98.6%	89.8%

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.

Values reported in ppm (mg/L).
Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

FORM-1 TPH-g

ANALYTICAL RESOURCES INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg - Toluene to Naphthalene

QC Report No: EB10-URS Operating Services, Inc.
Matrix: Water Project: Camp Bonneville
53-F0072323
Data Release Authorized: CH Date Received: 01/25/02
Reported: 01/30/02 1/30/02

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range	Gas ID	Surr A Rec	Surr B Rec
EB10-0128MB	Method Blank	01/28/02	1:1	0.25 U	NO	95.2%	85.7%
02-1127-EB10B	GW03MW02B	01/29/02	1:1	0.25 U	NO	100%	89.0%
02-1128-EB10C	GW503MW02B	01/29/02	1:1	0.25 U	NO	98.2%	89.1%
02-1129-EB10D	GW03MW04A	01/29/02	1:1	0.25 U	NO	97.9%	88.8%
02-1130-EB10E	012302TRIP02	01/29/02	1:1	0.25 U	NO	97.4%	88.3%

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.

Values reported in ppm (mg/L).
Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

FORM-1 TPH-g

ANALYTICAL RESOURCES INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg - Toluene to Naphthalene

Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Received: 01/26/02

Data Release Authorized: CW
Reported: 01/30/02 1/30/02

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range	Gas ID	Surr A Rec	Surr B Rec
EB18-0128MB	Method Blank	01/28/02	1:1	0.25 U	NO	95.2%	85.7%
02-1154-EB18A	GW03MW03A	01/29/02	1:1	0.25 U	NO	97.5%	87.6%
02-1155-EB18B	GW03MW03B	01/29/02	1:1	0.25 U	NO	99.9%	88.1%
02-1156-EB18C	GW03MW05A	01/29/02	1:1	0.25 U	NO	98.3%	86.1%
02-1157-EB18D	GW1003MW05A	01/29/02	1:1	0.25 U	NO	99.3%	88.9%
02-1158-EB18E	012502TRIP03	01/29/02	1:1	0.25 U	NO	99.3%	87.2%

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.

Values reported in ppm (mg/L).
Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

FORM-1 TPH-g

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID
and Motor Oil

ANALYTICAL RESOURCES INCORPORATED

Lab ID: 02-1058
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Received: 01/24/02

Data Release Authorized: CH
Reported: 01/31/02 1/31/02

Lab ID	Sample ID	Date Extracted	Date Analyzed	Dilution Factor	Diesel Range	*HC ID	Motor Oil Range	Surr Rec
EB00MB	Method Blank	01/28/02	01/29/02	1:1	0.25 U	---	0.50 U	94.0%
EB00A	GW03MW01A	01/28/02	01/29/02	1:1	0.25 U	---	0.50 U	98.0%
EB00B	GW03MW01B	01/28/02	01/29/02	1:1	0.25 U	---	0.50 U	97.0%
EB00C	GW03MW02A	01/28/02	01/29/02	1:1	0.25 U	---	0.50 U	96.0%

Surrogate is o-Terphenyl

* ID indicates, in the opinion of the analyst, the petroleum product with the best pattern match. 'NO' indicates that there was not a good match for any of the requested products.
Values reported in ppm (mg/L)
Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.

Data Qualifiers

U	Compound not detected at the given detection limit.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
E	Indicates a value above the linear range of the detector. Dilution required.
NR	Indicates no recovery due to matrix interference.
B	Indicates compound also detected in the method blank.

FORM-1 TPHD

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID
and Motor Oil

ANALYTICAL RESOURCES INCORPORATED

Lab ID: 02-1127
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Received: 01/25/02

Data Release Authorized: CH
Reported: 01/30/02 1/30/02

Lab ID	Sample ID	Date Extracted	Date Analyzed	Dilution Factor	Diesel Range	*HC ID	Motor Oil Range	Surr Rec
EB10MB	Method Blank	01/28/02	01/29/02	1:1	0.25 U	---	0.50 U	94.0%
EB10B	GW03MW02B	01/28/02	01/29/02	1:1	0.25 U	---	0.50 U	90.0%
EB10C	GW503MW02B	01/28/02	01/29/02	1:1	0.25 U	---	0.50 U	95.0%
EB10D	GW03MW04A	01/28/02	01/29/02	1:1	0.25 U	---	0.50 U	95.0%

Surrogate is o-Terphenyl

* ID indicates, in the opinion of the analyst, the petroleum product with the best pattern match. 'NO' indicates that there was not a good match for any of the requested products.
Values reported in ppm (mg/L)
Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.

Data Qualifiers

U	Compound not detected at the given detection limit.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
E	Indicates a value above the linear range of the detector. Dilution required.
NR	Indicates no recovery due to matrix interference.
B	Indicates compound also detected in the method blank.

FORM-1 TPHD

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID
and Motor Oil

ANALYTICAL RESOURCES INCORPORATED

Lab ID: 02-1154
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Received: 01/26/02

Data Release Authorized: MC
Reported: 02/07/02

Lab ID	Sample ID	Date Extracted	Date Analyzed	Dilution Factor	Diesel Range	*HC ID	Motor Oil Range	Surr Rec
EB18MB	Method Blank	01/30/02	02/02/02	1:1	0.25 U	---	0.50 U	90.0%
EB18A	GW03MW03A	01/30/02	02/02/02	1:1	0.25 U	---	0.50 U	94.0%
EB18B	GW03MW03B	01/30/02	02/02/02	1:1	0.25 U	---	0.50 U	94.0%
EB18C	GW03MW05A	01/30/02	02/02/02	1:1	0.25 U	---	0.50 U	86.0%
EB18D	GW1003MW05A	01/30/02	02/02/02	1:1	0.25 U	---	0.50 U	89.0%

Surrogate is o-Terphenyl

* ID indicates, in the opinion of the analyst, the petroleum product with the best pattern match. 'NO' indicates that there was not a good match for any of the requested products.
Values reported in ppm (mg/L)
Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.

Data Qualifiers

U	Compound not detected at the given detection limit.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
E	Indicates a value above the linear range of the detector. Dilution required.
NR	Indicates no recovery due to matrix interference.
B	Indicates compound also detected in the method blank.

FORM-1 TPHD

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW03MW01A

Lab Sample ID: EB00A
LIMS ID: 02-1058
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/21/02
Date Received: 01/24/02

Data Release Authorized: MP
Reported: 02/06/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	10
Carbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	10
Total Suspended Solids	01/24/02 01242#1	EPA 160.2	1.0	mg/L	3.6
Chloride	01/29/02 01292#2	EPA 325.2	1.0	mg/L	2.2
Total Cyanide	01/28/02 01282#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/25/02	Calculated	0.010	mg-N/L	0.029
N-Nitrite	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	0.029
Sulfate	01/25/02 01252#1	EPA 375.2	2.5	mg/L	8.3
Total Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EB00 received 01/24/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW03MW01B

Lab Sample ID: EB00B
LIMS ID: 02-1059
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Data Release Authorized: JMP
Reported: 02/06/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	11
Carbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	11
Total Suspended Solids	01/24/02 01242#1	EPA 160.2	1.0	mg/L	< 1.0 U
Chloride	01/29/02 01292#2	EPA 325.2	1.0	mg/L	2.5
Total Cyanide	01/28/02 01282#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/25/02	Calculated	0.010	mg-N/L	< 0.010 U
N-Nitrite	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Sulfate	01/25/02 01252#1	EPA 375.2	2.5	mg/L	< 2.5 U
Total Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EB00 received 01/24/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW03MW02A

Lab Sample ID: EB00C
LIMS ID: 02-1060
Matrix: Water

QC Report No: EB00-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/22/02
Date Received: 01/24/02

Data Release Authorized:
Reported: 02/06/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	4.3
Carbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	4.3
Total Suspended Solids	01/24/02 01242#1	EPA 160.2	1.0	mg/L	2.2
Chloride	01/29/02 01292#2	EPA 325.2	1.0	mg/L	2.7
Total Cyanide	01/28/02 01282#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/25/02	Calculated	0.010	mg-N/L	0.36
N-Nitrite	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	0.36
Sulfate	01/25/02 01252#1	EPA 375.2	2.5	mg/L	19
Total Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EB00 received 01/24/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW03MW02B

Lab Sample ID: EB10B
LIMS ID: 02-1127
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized: MP
Reported: 02/07/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	3.4
Carbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	3.4
Total Suspended Solids	01/30/02 01302#1	EPA 160.2	1.0	mg/L	3.0
Chloride	01/29/02 01292#2	EPA 325.2	1.0	mg/L	6.0
Total Cyanide	01/31/02 01312#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/25/02	Calculated	0.010	mg-N/L	0.82
N-Nitrite	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	0.82
Sulfate	01/30/02 01302#1	EPA 375.2	2.5	mg/L	3.1
Total Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EB10 received 01/25/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW503MW02B

Lab Sample ID: EB10C
LIMS ID: 02-1128
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized:
Reported: 02/07/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	4.4
Carbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	4.4
Total Suspended Solids	01/30/02 01302#1	EPA 160.2	1.0	mg/L	1.2
Chloride	01/29/02 01292#2	EPA 325.2	1.0	mg/L	3.2
Total Cyanide	01/31/02 01312#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/25/02	Calculated	0.010	mg-N/L	0.84
N-Nitrite	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	0.84
Sulfate	01/30/02 01302#1	EPA 375.2	2.5	mg/L	2.6
Total Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EB10 received 01/25/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW03MW03A

Lab Sample ID: EB18A
LIMS ID: 02-1154
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Data Release Authorized: MP
Reported: 02/07/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	8.1
Carbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	8.1
Total Suspended Solids	01/30/02 01302#1	EPA 160.2	1.0	mg/L	1.1
Chloride	01/29/02 01292#2	EPA 325.2	1.0	mg/L	< 1.0 U
Total Cyanide	01/31/02 01312#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/28/02	Calculated	0.010	mg-N/L	0.14
N-Nitrite	01/28/02 01282#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/28/02 01282#1	EPA 353.2	0.010	mg-N/L	0.14
Sulfate	01/30/02 01302#1	EPA 375.2	2.5	mg/L	< 2.5 U
Total Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EB18 received 01/26/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW03MW03B

Lab Sample ID: EB18B
LIMS ID: 02-1155
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/24/02
Date Received: 01/26/02

Data Release Authorized: MF
Reported: 02/07/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	13
Carbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	13
Total Suspended Solids	01/30/02 01302#1	EPA 160.2	1.0	mg/L	17
Chloride	01/29/02 01292#2	EPA 325.2	1.0	mg/L	9.5
Total Cyanide	01/31/02 01312#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/28/02	Calculated	0.010	mg-N/L	0.77
N-Nitrite	01/28/02 01282#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/28/02 01282#1	EPA 353.2	0.010	mg-N/L	0.77
Sulfate	01/30/02 01302#1	EPA 375.2	2.5	mg/L	7.8
Total Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EB18 received 01/26/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW03MW04A

Lab Sample ID: EB10D
LIMS ID: 02-1129
Matrix: Water

QC Report No: EB10-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/23/02
Date Received: 01/25/02

Data Release Authorized: MP
Reported: 02/07/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	8.3
Carbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	8.3
Total Suspended Solids	01/30/02 01302#1	EPA 160.2	1.2	mg/L	22
Chloride	01/29/02 01292#2	EPA 325.2	1.0	mg/L	< 1.0 U
Total Cyanide	01/31/02 01312#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/25/02	Calculated	0.010	mg-N/L	0.059
N-Nitrite	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/25/02 01252#1	EPA 353.2	0.010	mg-N/L	0.059
Sulfate	01/30/02 01302#1	EPA 375.2	2.5	mg/L	< 2.5 U
Total Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EB10 received 01/25/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW03MW05A

Lab Sample ID: EB18C
LIMS ID: 02-1156
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Data Release Authorized: MP
Reported: 02/07/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	11
Carbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	11
Total Suspended Solids	01/30/02 01302#1	EPA 160.2	1.0	mg/L	1.7
Chloride	01/29/02 01292#2	EPA 325.2	1.0	mg/L	< 1.0 U
Total Cyanide	01/31/02 01312#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/28/02	Calculated	0.010	mg-N/L	0.22
N-Nitrite	01/28/02 01282#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/28/02 01282#1	EPA 353.2	0.010	mg-N/L	0.22
Sulfate	01/30/02 01302#1	EPA 375.2	2.5	mg/L	3.1
Total Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EB18 received 01/26/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW1003MW05A

Lab Sample ID: EB18D
LIMS ID: 02-1157
Matrix: Water

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Sampled: 01/25/02
Date Received: 01/26/02

Data Release Authorized: MP
Reported: 02/07/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Carbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/31/02 01312#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Total Suspended Solids	01/30/02 01302#1	EPA 160.2	1.0	mg/L	< 1.0 U
Chloride	01/29/02 01292#2	EPA 325.2	1.0	mg/L	1.3
Total Cyanide	01/31/02 01312#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/28/02	Calculated	0.010	mg-N/L	< 0.010 U
N-Nitrite	01/28/02 01282#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/28/02 01282#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Sulfate	01/30/02 01302#1	EPA 375.2	2.5	mg/L	< 2.5 U
Total Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/29/02 01292#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EB18 received 01/26/02

ANALYTICAL RESOURCES INCORPORATED

QA Report - Method Blank Analysis

QC Report No: EB00-URS Operating Services, Inc.
Matrix: Water Project: Camp Bonneville
53-F0072323
Date Received: NA

Data Release Authorized:
Reported: 02/06/02 Dr. M.A. Perkins

METHOD BLANK RESULTS
CONVENTIONALS

Analysis Date & Batch	Constituent	Units	Result	
01/24/02 01242#1	Total Suspended Solids	mg/L	< 1.0	U
01/29/02 01292#2	Chloride	mg/L	< 1.0	U
01/28/02 01282#1	Total Cyanide	mg/L	< 0.005	U
01/25/02 01252#1	N-Nitrite	mg-N/L	< 0.010	U
01/25/02 01252#1	Nitrate + Nitrite (NO3+NO2)	mg-N/L	< 0.010	U
01/25/02 01252#1	Sulfate	mg/L	< 2.5	U
01/29/02 01292#1	Total Organic Carbon	mg/L	< 1.5	U

000209

ANALYTICAL RESOURCES INCORPORATED

QA Report - Method Blank Analysis

QC Report No: EB10-URS Operating Services, Inc.
Matrix: Water
Project: Camp Bonneville
53-F0072323
Date Received: NA

Data Release Authorized: MB
Reported: 02/07/02 Dr. M.A. Perkins

METHOD BLANK RESULTS
CONVENTIONALS

Analysis Date & Batch	Constituent	Units	Result	
01/30/02 01302#1	Total Suspended Solids	mg/L	< 1.0	U
01/29/02 01292#2	Chloride	mg/L	< 1.0	U
01/31/02 01312#1	Total Cyanide	mg/L	< 0.005	U
01/25/02 01252#1	N-Nitrite	mg-N/L	< 0.010	U
01/25/02 01252#1	Nitrate + Nitrite (NO3+NO2)	mg-N/L	< 0.010	U
01/30/02 01302#1	Sulfate	mg/L	< 2.5	U
01/29/02 01292#1	Total Organic Carbon	mg/L	< 1.5	U

000213

ANALYTICAL RESOURCES INCORPORATED

QA Report - Method Blank Analysis

QC Report No: EB18-URS Operating Services, Inc.
Project: Camp Bonneville
53-F0072323
Date Received: NA

Matrix: Water

Data Release Authorized:
Reported: 02/07/02 Dr. M.A. Perkins

METHOD BLANK RESULTS
CONVENTIONALS

Analysis Date & Batch	Constituent	Units	Result	
01/30/02 01302#1	Total Suspended Solids	mg/L	< 1.0	U
01/29/02 01292#2	Chloride	mg/L	< 1.0	U
01/31/02 01312#1	Total Cyanide	mg/L	< 0.005	U
01/29/02 01292#1	Total Organic Carbon	mg/L	< 1.5	U
01/28/02 01282#1	N-Nitrite	mg-N/L	< 0.010	U
01/28/02 01282#1	Nitrate + Nitrite (NO3+NO2)	mg-N/L	< 0.010	U
01/30/02 01302#1	Sulfate	mg/L	< 2.5	U

000217

SEVERN TRENT SERVICES

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May 21, 2002

Ms. Lori Raschke
URS Corporation
Century Square
1501 Fourth Avenue, Suite 1400
Seattle, WA 98101

Re: Laboratory Project No. 21015
Case: 21015; SDG: BON004

Dear Ms. Raschke:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on April 26, and 27, 2002. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 04/26/02 ETR No: 87640		
485168	GW04MW05A	04/25/02	Water
485169	GW04MW03B	04/25/02	Water
485170	GW1004MW03B	04/25/02	Water
485171	GW04MW03A	04/25/02	Water
485172	GW04MW09A	04/25/02	Water
485173	GW04MW09B	04/25/02	Water
485174	GW04MW01A	04/23/02	Water
485175	GW04MW01B	04/23/02	Water
485175MS	GW04MW01BMS	04/23/02	Water
485175MD	GW04MW01BMSD	04/23/02	Water
485176	GW04MW02B	04/24/02	Water
485177	GW04MW02A	04/24/02	Water
485178	GW504MW02B	04/24/02	Water
485179	GW04MW04A	04/24/02	Water

Documentation regarding the condition of samples at the time of their receipt is filed in the sample handling section of this case submittal.

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW01A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485174

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I601

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW01B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485175

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I631

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW02A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485177

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I651

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	1.9	
121-82-4	RDX	23	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW02ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485177D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 15MAY021439-I051

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/15/02

Injection Volume: 200.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	1.9	D
121-82-4	RDX	24	D
88-89-1	Picric acid	0.50	U
99-35-4	1,3,5-Trinitrobenzene	0.50	U
99-65-0	1,3-Dinitrobenzene	0.50	U
98-95-3	Nitrobenzene	0.50	U
479-45-8	Tetryl	0.50	U
55-63-0	Nitroglycerin	10	U
118-96-7	2,4,6-Trinitrotoluene	0.50	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.50	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.50	U
606-20-2	2,6-Dinitrotoluene	0.50	U
121-14-2	2,4-Dinitrotoluene	0.50	U
88-72-2	2-Nitrotoluene	0.50	U
99-99-0	4-Nitrotoluene	0.50	U
99-08-1	3-Nitrotoluene	0.50	U
78-11-5	PETN	20	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW504MW02B/A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485178

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I661

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.0	
121-82-4	RDX	26	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW504MW02A~~D~~DL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485178D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 15MAY021439-I061

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/15/02

Injection Volume: 200.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.0	D
121-82-4	RDX	26	D
88-89-1	Picric acid	0.50	U
99-35-4	1,3,5-Trinitrobenzene	0.50	U
99-65-0	1,3-Dinitrobenzene	0.50	U
98-95-3	Nitrobenzene	0.50	U
479-45-8	Tetryl	0.50	U
55-63-0	Nitroglycerin	10	U
118-96-7	2,4,6-Trinitrotoluene	0.50	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.50	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.50	U
606-20-2	2,6-Dinitrotoluene	0.50	U
121-14-2	2,4-Dinitrotoluene	0.50	U
88-72-2	2-Nitrotoluene	0.50	U
99-99-0	4-Nitrotoluene	0.50	U
99-08-1	3-Nitrotoluene	0.50	U
78-11-5	PETN	20	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW02B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485176

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I641

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.6	
121-82-4	RDX	110	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.41	
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW02BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485176D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 15MAY021439-I041

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/15/02

Injection Volume: 200.0(uL) Dilution Factor: 10.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.6	D
121-82-4	RDX	110	D
88-89-1	Picric acid	2.5	U
99-35-4	1,3,5-Trinitrobenzene	2.5	U
99-65-0	1,3-Dinitrobenzene	2.5	U
98-95-3	Nitrobenzene	2.5	U
479-45-8	Tetryl	2.5	U
55-63-0	Nitroglycerin	50	U
118-96-7	2,4,6-Trinitrotoluene	2.5	U
1946-51-0	4-Amino-2,6-dinitrotoluene	2.5	U
35572-78-2	2-Amino-4,6-dinitrotoluene	2.5	U
606-20-2	2,6-Dinitrotoluene	2.5	U
121-14-2	2,4-Dinitrotoluene	2.5	U
88-72-2	2-Nitrotoluene	2.5	U
99-99-0	4-Nitrotoluene	2.5	U
99-08-1	3-Nitrotoluene	2.5	U
78-11-5	PETN	100	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW03A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485171

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I571

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	7.4	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW03B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485169

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I551

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	2.7	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1

EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW04A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485179

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I671

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/15/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.54	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW05A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485168

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I541

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.27	
121-82-4	RDX	4.4	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1

EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW09A

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485172

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I581

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	3.9	
121-82-4	RDX	26	E
88-89-1	Picric acid	4.6	
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	4.6	
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	5.0	
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW09ADL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485172D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 15MAY021439-I031

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/15/02

Injection Volume: 200.0(uL) Dilution Factor: 2.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	3.8	D
121-82-4	RDX	26	D
88-89-1	Picric acid	4.5	D
99-35-4	1,3,5-Trinitrobenzene	0.50	U
99-65-0	1,3-Dinitrobenzene	0.50	U
98-95-3	Nitrobenzene	0.50	U
479-45-8	Tetryl	0.50	U
55-63-0	Nitroglycerin	10	U
118-96-7	2,4,6-Trinitrotoluene	4.7	D
1946-51-0	4-Amino-2,6-dinitrotoluene	0.50	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.50	U
606-20-2	2,6-Dinitrotoluene	0.50	U
121-14-2	2,4-Dinitrotoluene	5.1	D
88-72-2	2-Nitrotoluene	0.50	U
99-99-0	4-Nitrotoluene	0.50	U
99-08-1	3-Nitrotoluene	0.50	U
78-11-5	PETN	20	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW04MW09B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485173

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I591

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	8.4	
121-82-4	RDX	18	
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	4.8	
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	2.4	
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	9.4	
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW1004MW03B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: 485170

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I561

% Moisture: _____ decanted: (Y/N)___ Date Received: 04/26/02

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.86	
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EBLKG3

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON004

Matrix: (soil/water) WATER Lab Sample ID: EBLKG3

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 10MAY021326-I521

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted:04/29/02

Concentrated Extract Volume: 10(ml) Date Analyzed: 05/14/02

Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

SAMPLE SUMMARY

URS01 : H2D260110

WO #	SAMPLE#	CLIENT SAMPLE ID	SAMPLED DATE	SAMP TIME
E0GR7	001	GW04MW01A	04/23/02	12:30
E0GR9	002	GW04MW01B	04/23/02	14:50
E0HFR	003	GW04MW02B	04/24/02	09:35
E0HF2	004	GW04MW02A	04/24/02	11:30
E0HF5	005	GW0504MW02B	04/24/02	12:30
E0HF8	006	GW04MW04A	04/24/02	13:45
E0HGF	007	GW04MW05A	04/25/02	09:00
E0HGH	008	GW04MW03B	04/25/02	10:50
E0HGL	009	GW1004MW03B	04/25/02	13:00
E0HGT	010	GW04MW03A	04/25/02	13:45
E0HGW	011	GW04MW09A	04/25/02	12:00
E0HG1	012	GW04MW09B	04/25/02	11:00

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, aint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

(Continued on next page)

URS

Client Sample ID: GW04MW01A

HPLC

Lot-Sample #...: H2D260110-001 Work Order #...: E0GR71AC Matrix.....: WG
Date Sampled...: 04/23/02 Date Received..: 04/26/02
Prep Date.....: 04/29/02 Analysis Date..: 04/30/02
Prep Batch #...: 2119469
Dilution Factor: 1 Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	110	(53 - 133)

URS

Client Sample ID: GW04MW01B

HPLC

Lot-Sample #...: H2D260110-002	**Work Order #...:** E0GR91AE	**Matrix.....:** WG	
Date Sampled...: 04/23/02	**Date Received..:** 04/26/02		
Prep Date.....: 04/29/02	**Analysis Date..:** 04/30/02		
Prep Batch #...: 2119469			
Dilution Factor: 1	**Method.....:** SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	95	(53 - 133)

URS

Client Sample ID: GW04MW02A

HPLC

Lot-Sample #...: H2D260110-004 Work Order #...: E0HF21AC Matrix.....: WG
Date Sampled...: 04/24/02 Date Received..: 04/26/02
Prep Date.....: 04/29/02 Analysis Date..: 04/30/02
Prep Batch #...: 2119469
Dilution Factor: 1 Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	96	(53 - 133)

URS

Client Sample ID: GW0504MW02A

HPLC

Lot-Sample #...: H2D260110-005 Work Order #...: E0HF51AC Matrix.....: WG
Date Sampled...: 04/24/02 Date Received..: 04/26/02
Prep Date.....: 04/29/02 Analysis Date..: 04/30/02
Prep Batch #...: 2119469
Dilution Factor: 1 Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	105	(53 - 133)

URS

Client Sample ID: GW04MW02B

HPLC

Lot-Sample #...: H2D260110-003	Work Order #...: E0HFR1AC	Matrix.....: WG	
Date Sampled...: 04/24/02	Date Received..: 04/26/02		
Prep Date.....: 04/29/02	Analysis Date..: 04/30/02		
Prep Batch #...: 2119469			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	113	(53 - 133)

URS

Client Sample ID: GW04MW03A

HPLC

Lot-Sample #...: H2D260110-010	Work Order #...: E0HGT1AC	Matrix.....: WG	
Date Sampled...: 04/25/02	Date Received..: 04/26/02		
Prep Date.....: 04/29/02	Analysis Date..: 04/30/02		
Prep Batch #...: 2119469			
Dilution Factor: 1	Method.....: SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	100	(53 - 133)

URS

Client Sample ID: GW04MW03B

HPLC

Lot-Sample #...: H2D260110-008 Work Order #...: E0HGH1AC Matrix.....: WG
Date Sampled...: 04/25/02 Date Received..: 04/26/02
Prep Date.....: 04/29/02 Analysis Date..: 04/30/02
Prep Batch #...: 2119469
Dilution Factor: 1 Method.....: SW846 8330 MOD

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	66	(53 - 133)

URS

Client Sample ID: GW04MW04A

HPLC

Lot-Sample #...:	H2D260110-006	Work Order #...:	E0HF81AC	Matrix.....:	WG
Date Sampled...:	04/24/02	Date Received..:	04/26/02		
Prep Date.....:	04/29/02	Analysis Date..:	04/30/02		
Prep Batch #...:	2119469				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	99	(53 - 133)

URS

Client Sample ID: GW04MW05A

HPLC

Lot-Sample #...: H2D260110-007	**Work Order #...:** E0HGF1AC	**Matrix.....:** WG	
Date Sampled...: 04/25/02	**Date Received..:** 04/26/02		
Prep Date.....: 04/29/02	**Analysis Date..:** 04/30/02		
Prep Batch #...: 2119469			
Dilution Factor: 1	**Method.....:** SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	108	(53 - 133)

URS

Client Sample ID: GW04MW09A

HPLC

Lot-Sample #...:	H2D260110-011	Work Order #...:	E0HGW1AC	Matrix.....:	WG
Date Sampled...:	04/25/02	Date Received..:	04/26/02		
Prep Date.....:	04/29/02	Analysis Date..:	04/30/02		
Prep Batch #...:	2119469				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	53	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	108	(53 - 133)

URS

Client Sample ID: GW04MW09B

HPLC

Lot-Sample #...:	H2D260110-012	Work Order #...:	E0HG11AC	Matrix.....:	WG
Date Sampled...:	04/25/02	Date Received..:	04/26/02		
Prep Date.....:	04/29/02	Analysis Date..:	04/30/02		
Prep Batch #...:	2119469				
Dilution Factor:	1	Method.....:	SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	22	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	95	(53 - 133)

URS

Client Sample ID: GW1004MW03B

HPLC

Lot-Sample #...: H2D260110-009	**Work Order #...:** E0HGL1AC	**Matrix.....:** WG	
Date Sampled...: 04/25/02	**Date Received..:** 04/26/02		
Prep Date.....: 04/29/02	**Analysis Date..:** 04/30/02		
Prep Batch #...: 2119469			
Dilution Factor: 1	**Method.....:** SW846 8330 MOD		

PARAMETER	RESULT	REPORTING LIMIT	UNITS
Nitroguanidine	ND	20	ug/L

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	90	(53 - 133)

METHOD BLANK REPORT

HPLC

Client Lot #...: URS01 **Work Order #...:** E0LNJ1AA **Matrix.....:** WATER
MB Lot-Sample #: H2D290000-469

Prep Date.....: 04/29/02
Analysis Date..: 04/30/02 **Prep Batch #...:** 2119469
Dilution Factor: 1

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD
Nitroguanidine	ND	20	ug/L	SW846 8330 MOD

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
1-Chloro-3-nitrobenzene	107	(53 - 133)

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

URS

Client Sample ID: GW04MW01A

General Chemistry

Lot-Sample #...: H2D260110-001 Work Order #...: E0GR7 Matrix.....: WG
Date Sampled...: 04/23/02 Date Received..: 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	ND	5.0	ug/L	EPA 314.0	05/09/02	2131095

Dilution Factor: 1

URS

Client Sample ID: GW04MW01B

General Chemistry

Lot-Sample #...: H2D260110-002 **Work Order #...:** E0GR9 **Matrix.....:** WG
Date Sampled...: 04/23/02 **Date Received..:** 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	ND	5.0	ug/L	EPA 314.0	05/09/02	2131095

Dilution Factor: 1

URS

Client Sample ID: GW04MW02A

General Chemistry

Lot-Sample #...: H2D260110-004 Work Order #...: E0HF2 Matrix.....: WG
Date Sampled...: 04/24/02 Date Received..: 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	104	5.0	ug/L	EPA 314.0	05/09/02	2131095

Dilution Factor: 1

URS

Client Sample ID: GW0504MW02B A

General Chemistry

Lot-Sample #...: H2D260110-005 Work Order #...: E0HF5 Matrix.....: WG
Date Sampled...: 04/24/02 Date Received..: 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	130	5.0	ug/L	EPA 314.0	05/09/02	2131095

Dilution Factor: 1

URS

Client Sample ID: GW04MW02B

General Chemistry

Lot-Sample #...: H2D260110-003 Work Order #...: E0HFR Matrix.....: WG
Date Sampled...: 04/24/02 Date Received..: 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	241	5.0	ug/L	EPA 314.0	05/09/02	2131095

Dilution Factor: 1

URS

Client Sample ID: GW04MW03A

General Chemistry

Lot-Sample #...: H2D260110-010 **Work Order #...:** E0HGT **Matrix.....:** WG
Date Sampled...: 04/25/02 **Date Received..:** 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	**106**	**5.0**	**ug/L**	**EPA 314.0**	**05/09/02**	**2131095**

Dilution Factor: 1

URS

Client Sample ID: GW04MW03B

General Chemistry

Lot-Sample #...: H2D260110-008 Work Order #...: E0HGH Matrix.....: WG
Date Sampled...: 04/25/02 Date Received..: 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	29.3	5.0	ug/L	EPA 314.0	05/09/02	2131095

Dilution Factor: 1

URS

Client Sample ID: GW04MW04A

General Chemistry

Lot-Sample #...: H2D260110-006 Work Order #...: E0HF8 Matrix.....: WG
Date Sampled...: 04/24/02 Date Received..: 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	15.8	5.0	ug/L	EPA 314.0	05/09/02	2131095

Dilution Factor: 1

URS

Client Sample ID: GW04MW05A

General Chemistry

Lot-Sample #...: H2D260110-007 Work Order #...: E0HGF Matrix.....: WG
Date Sampled...: 04/25/02 Date Received..: 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	54.7	5.0	ug/L	EPA 314.0	05/09/02	2131095

Dilution Factor: 1

URS

Client Sample ID: GW04MW09A

General Chemistry

Lot-Sample #...: H2D260110-011 Work Order #...: E0HGW Matrix.....: WG
Date Sampled...: 04/25/02 Date Received..: 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	31.4	5.0	ug/L	EPA 314.0	05/09/02	2131095

Dilution Factor: 1

URS

Client Sample ID: GW04MW09B

General Chemistry

Lot-Sample #...: H2D260110-012 Work Order #...: E0HG1 Matrix.....: WG
Date Sampled...: 04/25/02 Date Received..: 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	62.7	5.0	ug/L	EPA 314.0	05/09/02	2131095

Dilution Factor: 1

URS

Client Sample ID: GW1004MW03B

General Chemistry

Lot-Sample #...: H2D260110-009 Work Order #...: E0HGL Matrix.....: WG
Date Sampled...: 04/25/02 Date Received..: 04/26/02

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate	ND	5.0	ug/L	EPA 314.0	05/09/02	2131095

Dilution Factor: 1

METHOD BLANK REPORT

General Chemistry

Client Lot #...: URS01 **Matrix.....:** WATER

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION-ANALYSIS DATE	PREP BATCH #
Perchlorate		Work Order #: E09VA1AA		MB Lot-Sample #:	H2E110000-095	
	ND	5.0	ug/L	EPA 314.0	05/09/02	2131095
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: URS Operating Servic

PROJECT: Camp Bonneville

SDG: EH80

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
GW04MW01A	EH80A	02-5185	
PBW	EH80MB1	02-5185	
LCSW	EH80MB1SPK	02-5185	
GW04MW01B	EH80B	02-5186	
GW04MW01BD	EH80BDUP	02-5186	
GW04MW01BS	EH80BSPK	02-5186	
GW04MW02B	EH80C	02-5187	
GW04MW02A	EH80D	02-5188	
GW504MW02B	EH80E	02-5189	
GW04MW04A	EH80F	02-5190	
GW04MW01A	EH80H	02-5192	
PBW	EH80MB2	02-5192	
LCSW	EH80MB2SPK	02-5192	
GW04MW01B	EH80I	02-5193	
GW04MW01BD	EH80IDUP	02-5193	
GW04MW01BS	EH80ISPK	02-5193	
GW04MW02B	EH80J	02-5194	
GW04MW02A	EH80K	02-5195	
GW504MW02B	EH80L	02-5196	
GW04MW04A	EH80M	02-5197	
GW04MW09	EH80N	02-5224	
GW04MW05A	EH80O	02-5225	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 5/15/02 Title: Inorganics Manager

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: URS Operating Servic

PROJECT: Camp Bonneville

SDG: EH80

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
GW04MW03B	EH80P	02-5226	
GW04MW03A	EH80Q	02-5227	
GW01004MW03B	EH80R	02-5228	
GW04MW09	EH80S	02-5229	
GW04MW05A	EH80T	02-5230	
GW04MW03B	EH80U	02-5231	
GW04MW03A	EH80V	02-5232	
GW01004MW03B	EH80W	02-5233	

Were ICP interelement corrections applied ?	Yes/No	YES
Were ICP background corrections applied ?	Yes/No	YES
If yes - were raw data generated before application of background corrections ?	Yes/No	NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: _____ Name: Jay Kuhn

Date: 5/15/02 Title: Inorganics Manager

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW01A

Lab Sample ID: EH80A
LIMS ID: 02-5185
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 15:09

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	102%
d8-Toluene	111%
Bromofluorobenzene	114%
d4-1,2-Dichlorobenzene	115%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW01A

Lab Sample ID: EH80A
LIMS ID: 02-5185
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 15:09

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW01B

Lab Sample ID: EH80B
LIMS ID: 02-5186
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 14:36

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	111%
Bromofluorobenzene	110%
d4-1,2-Dichlorobenzene	116%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW01B

Lab Sample ID: EH80B
LIMS ID: 02-5186
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 14:36

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW02A

Lab Sample ID: EH80D
LIMS ID: 02-5188
Matrix: Water
Data Release Authorized
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 15:59

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW02A

Lab Sample ID: EH80D
LIMS ID: 02-5188
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 15:59

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	98.7%
d8-Toluene	112%
Bromofluorobenzene	108%
d4-1,2-Dichlorobenzene	118%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW504MW02FA

Lab Sample ID: EH80E
LIMS ID: 02-5189
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 16:27

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW504MW02βA

Lab Sample ID: EH80E
LIMS ID: 02-5189
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 16:27

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	112%
Bromofluorobenzene	108%
d4-1,2-Dichlorobenzene	118%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW02B

Lab Sample ID: EH80C
LIMS ID: 02-5187
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 15:32

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	**1,1-Dichloroethene**	**28**
75-34-3	**1,1-Dichloroethane**	**29**
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	**1,1,1-Trichloroethane**	**220 E**
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**0.8 J**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**69**
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW02B

Lab Sample ID: EH80C
LIMS ID: 02-5187
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 15:32

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	**Dichlorodifluoromethane**	**100**
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	113%
Bromofluorobenzene	116%
d4-1,2-Dichlorobenzene	118%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW02B
DILUTION

Lab Sample ID: EH80C-DL
LIMS ID: 02-5187
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/02/02 15:05

Sample Amount: 2.50 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	2.0 U
74-83-9	Bromomethane	2.0 U
75-01-4	Vinyl Chloride	2.0 U
75-00-3	Chloroethane	2.0 U
75-09-2	Methylene Chloride	4.0 U
67-64-1	Acetone	10 U
75-15-0	Carbon Disulfide	2.0 U
75-35-4	**1,1-Dichloroethene**	**22**
75-34-3	**1,1-Dichloroethane**	**29**
156-60-5	trans-1,2-Dichloroethene	2.0 U
156-59-2	cis-1,2-Dichloroethene	2.0 U
67-66-3	Chloroform	2.0 U
107-06-2	1,2-Dichloroethane	2.0 U
78-93-3	2-Butanone	10 U
71-55-6	**1,1,1-Trichloroethane**	**210**
56-23-5	Carbon Tetrachloride	2.0 U
108-05-4	Vinyl Acetate	10 U
75-27-4	Bromodichloromethane	2.0 U
78-87-5	1,2-Dichloropropane	2.0 U
10061-01-5	cis-1,3-Dichloropropene	2.0 U
79-01-6	Trichloroethene	2.0 U
124-48-1	Dibromochloromethane	2.0 U
79-00-5	1,1,2-Trichloroethane	2.0 U
71-43-2	Benzene	2.0 U
10061-02-6	trans-1,3-Dichloropropene	2.0 U
110-75-8	2-Chloroethylvinylether	10 U
75-25-2	Bromoform	2.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	10 U
591-78-6	2-Hexanone	10 U
127-18-4	Tetrachloroethene	2.0 U
79-34-5	1,1,2,2-Tetrachloroethane	2.0 U
108-88-3	Toluene	2.0 U
108-90-7	Chlorobenzene	2.0 U
100-41-4	Ethylbenzene	2.0 U
100-42-5	Styrene	2.0 U
75-69-4	Trichlorofluoromethane	2.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**67**
1330-20-7	m,p-Xylene	2.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW02B
DILUTION

Lab Sample ID: EH80C-DL
LIMS ID: 02-5187
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/02/02 15:05

Sample Amount: 2.50 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	2.0 U
95-50-1	1,2-Dichlorobenzene	2.0 U
541-73-1	1,3-Dichlorobenzene	2.0 U
106-46-7	1,4-Dichlorobenzene	2.0 U
107-02-8	Acrolein	100 U
74-88-4	Methyl Iodide	2.0 U
74-96-4	Bromoethane	4.0 U
107-13-1	Acrylonitrile	2.0 U
563-58-6	1,1-Dichloropropene	2.0 U
74-95-3	Dibromomethane	2.0 U
630-20-6	1,1,1,2-Tetrachloroethane	2.0 U
96-12-8	1,2-Dibromo-3-chloropropane	10 U
96-18-4	1,2,3-Trichloropropane	6.0 U
110-57-6	trans-1,4-Dichloro-2-butene	10 U
108-67-8	1,3,5-Trimethylbenzene	2.0 U
95-63-6	1,2,4-Trimethylbenzene	2.0 U
87-68-3	Hexachlorobutadiene	10 U
106-93-4	Ethylene Dibromide	2.0 U
74-97-5	Bromochloromethane	2.0 U
75-71-8	**Dichlorodifluoromethane**	**94**
594-20-7	2,2-Dichloropropane	2.0 U
142-28-9	1,3-Dichloropropane	2.0 U
98-82-8	Isopropylbenzene	2.0 U
103-65-1	n-Propylbenzene	2.0 U
108-86-1	Bromobenzene	2.0 U
95-49-8	2-Chlorotoluene	2.0 U
106-43-4	4-Chlorotoluene	2.0 U
98-06-6	tert-Butylbenzene	2.0 U
135-98-8	sec-Butylbenzene	2.0 U
99-87-6	4-Isopropyltoluene	2.0 U
104-51-8	n-Butylbenzene	2.0 U
120-82-1	1,2,4-Trichlorobenzene	10 U
91-20-3	Naphthalene	10 U
87-61-6	1,2,3-Trichlorobenzene	10 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	112%
Bromofluorobenzene	107%
d4-1,2-Dichlorobenzene	116%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW03A

Lab Sample ID: EH80Q
LIMS ID: 02-5227
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Instrument: FINN3
Date Analyzed: 05/01/02 18:44

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW03A

Lab Sample ID: EH80Q
LIMS ID: 02-5227
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Instrument: FINN3
Date Analyzed: 05/01/02 18:44

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	107%
d8-Toluene	111%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	126%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW03B

Lab Sample ID: EH80P
LIMS ID: 02-5226
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Instrument: FINN3
Date Analyzed: 05/01/02 18:16

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW03B

Lab Sample ID: EH80P
LIMS ID: 02-5226
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Instrument: FINN3
Date Analyzed: 05/01/02 18:16

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	105%
d8-Toluene	122%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	118%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW04A

Lab Sample ID: EH80F
LIMS ID: 02-5190
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 16:54

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW04A

Lab Sample ID: EH80F
LIMS ID: 02-5190
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 16:54

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	111%
Bromofluorobenzene	109%
d4-1,2-Dichlorobenzene	119%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW05A

Lab Sample ID: EH80O
LIMS ID: 02-5225
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Instrument: FINN3
Date Analyzed: 05/01/02 17:49

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW05A

Lab Sample ID: EH800
LIMS ID: 02-5225
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Instrument: FINN3
Date Analyzed: 05/01/02 17:49

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	110%
d8-Toluene	113%
Bromofluorobenzene	107%
d4-1,2-Dichlorobenzene	118%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW09

Lab Sample ID: EH80N
LIMS ID: 02-5224
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Instrument: FINN3
Date Analyzed: 05/01/02 17:21

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	**Vinyl Chloride**	**0.7 J**
75-00-3	Chloroethane	1.0 U
75-09-2	**Methylene Chloride**	**2.9**
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	**Trichloroethene**	**5.0**
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**3.4**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	**Toluene**	**6.6**
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW04MW09

Lab Sample ID: EH80N
LIMS ID: 02-5224
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Instrument: FINN3
Date Analyzed: 05/01/02 17:21

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	104%
d8-Toluene	112%
Bromofluorobenzene	108%
d4-1,2-Dichlorobenzene	119%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: 042402TRIP01

Lab Sample ID: EH80G
LIMS ID: 02-5191
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 14:15

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATI

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: 042402TRIP01

Lab Sample ID: EH80G
LIMS ID: 02-5191
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Instrument: FINN3
Date Analyzed: 05/01/02 14:15

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery	
d4-1,2-Dichloroethane	103%
d8-Toluene	113%
Bromofluorobenzene	107%
d4-1,2-Dichlorobenzene	115%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01004MW03B

Lab Sample ID: EH80R
LIMS ID: 02-5228
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Instrument: FINN3
Date Analyzed: 05/01/02 19:11

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**4.1 J**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: GW01004MW03B

Lab Sample ID: EH80R
LIMS ID: 02-5228
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Instrument: FINN3
Date Analyzed: 05/01/02 19:11

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	112%
Bromofluorobenzene	107%
d4-1,2-Dichlorobenzene	118%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 050102MB
LIMS ID: 02-5186
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 05/01/02 13:35

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample No: Method Blank

Lab Sample ID: 050102MB
LIMS ID: 02-5186
Matrix: Water
Data Release Authorized:
Reported: 05/06/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Instrument: FINN3
Date Analyzed: 05/01/02 13:35

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	ug/L
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	112%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	111%

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW04MW01A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80A
LIMS ID: 02-5185
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 13:42
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW04MW01A

Lab Sample ID: EH80A
LIMS ID: 02-5185
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 13:42
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	75.6%	d5-Phenol	78.0%
2-Fluorobiphenyl	71.0%	2-Fluorophenol	75.3%
d14-p-Terphenyl	90.4%	2,4,6-Tribromophenol	86.6%
d4-1,2-Dichlorobenzene	57.1%	d4-2-Chlorophenol	79.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW04MW01A

Lab Sample ID: EH80A
LIMS ID: 02-5185
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/08/02

Date Analyzed: 05/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	--	Unknown_Siloxane	17.08	SVOA	12 J
2.	--	Unknown_Siloxane	19.60	SVOA	5 J
3.	--	Unknown_Siloxane	21.80	SVOA	3 J
4.	--	Unknown_Siloxane	23.75	SVOA	2 J
5.	--	Unknown_Siloxane	25.55	SVOA	3 J
6.	--	Unknown_Siloxane	27.20	SVOA	3 J
7.	123-95-5	Octadecanoic_acid,_butyl_	28.40	SVOA	12 JN
8.	--	Unknown_Siloxane	28.72	SVOA	3 J
9.	--	Unknown_Siloxane	30.15	SVOA	3 J
10.	--	Unknown_Siloxane	31.50	SVOA	2 J
11.	--	Unknown_Siloxane	32.77	SVOA	3 J
12.	--	Unknown_Siloxane	33.97	SVOA	2 J
13.					
14.					
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20.					

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW04MW01B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80B
LIMS ID: 02-5186
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 14:29
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW04MW01B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80B
LIMS ID: 02-5186
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 14:29
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	77.2%	d5-Phenol	75.9%
2-Fluorobiphenyl	71.6%	2-Fluorophenol	75.0%
d14-p-Terphenyl	90.4%	2,4,6-Tribromophenol	89.1%
d4-1,2-Dichlorobenzene	56.1%	d4-2-Chlorophenol	79.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW04MW01B

Lab Sample ID: EH80B
LIMS ID: 02-5186
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/08/02

Date Analyzed: 05/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	--	Unknown_Siloxane	14.27	SVOA	3 J
2.	--	Unknown_Siloxane	17.08	SVOA	3 J
3.	123-95-5	Octadecanoic_acid,_butyl_	28.38	SVOA	4 JN
4.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW04MW02A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80D
LIMS ID: 02-5188
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 17:36
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW04MW02A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80D
LIMS ID: 02-5188
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 17:36
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	68.3%	d5-Phenol	68.8%
2-Fluorobiphenyl	64.1%	2-Fluorophenol	70.9%
d14-p-Terphenyl	87.5%	2,4,6-Tribromophenol	83.6%
d4-1,2-Dichlorobenzene	53.2%	d4-2-Chlorophenol	70.7%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW04MW02A

Lab Sample ID: EH80D
LIMS ID: 02-5188
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/08/02

Date Analyzed: 05/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW504MW02[illegible]A

Lab Sample ID: EH80E
LIMS ID: 02-5189
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 18:22
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW504MW021A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80E
LIMS ID: 02-5189
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 18:22
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	68.8%	d5-Phenol	70.2%
2-Fluorobiphenyl	65.9%	2-Fluorophenol	67.0%
d14-p-Terphenyl	81.5%	2,4,6-Tribromophenol	80.8%
d4-1,2-Dichlorobenzene	50.5%	d4-2-Chlorophenol	70.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW504MW02B A

Lab Sample ID: EH80E
LIMS ID: 02-5189
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized: [signature]
Reported: 05/08/02

Date Analyzed: 05/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
6.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW04MW02B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80C
LIMS ID: 02-5187
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 16:49
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW04MW02B

Lab Sample ID: EH80C
LIMS ID: 02-5187
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 16:49
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	75.3%	d5-Phenol	78.2%
2-Fluorobiphenyl	70.8%	2-Fluorophenol	74.5%
d14-p-Terphenyl	91.4%	2,4,6-Tribromophenol	93.0%
d4-1,2-Dichlorobenzene	56.0%	d4-2-Chlorophenol	77.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW04MW02B

Lab Sample ID: EH80C
LIMS ID: 02-5187
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/08/02

Date Analyzed: 05/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	--	Unknown	22.63	SVOA	8 J
2.					
3.					
4.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW04MW03A

Lab Sample ID: EH80Q
LIMS ID: 02-5227
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Date extracted: 04/29/02
Date analyzed: 05/07/02 11:16
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW04MW03A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80Q
LIMS ID: 02-5227
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Date extracted: 04/29/02
Date analyzed: 05/07/02 11:16
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	71.9%	d5-Phenol	78.7%
2-Fluorobiphenyl	66.8%	2-Fluorophenol	75.0%
d14-p-Terphenyl	90.6%	2,4,6-Tribromophenol	84.7%
d4-1,2-Dichlorobenzene	56.1%	d4-2-Chlorophenol	75.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW04MW03A

Lab Sample ID: EH80Q
LIMS ID: 02-5227
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/08/02

Date Analyzed: 05/07/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
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16.					
17.					
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19.					
20.					

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW04MW03B

Lab Sample ID: EH80P
LIMS ID: 02-5226
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Date extracted: 04/29/02
Date analyzed: 05/07/02 10:34
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW04MW03B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80P
LIMS ID: 02-5226
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Date extracted: 04/29/02
Date analyzed: 05/07/02 10:34
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	75.6%	d5-Phenol	78.9%
2-Fluorobiphenyl	70.0%	2-Fluorophenol	73.5%
d14-p-Terphenyl	88.2%	2,4,6-Tribromophenol	87.2%
d4-1,2-Dichlorobenzene	59.3%	d4-2-Chlorophenol	80.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW04MW03B

Lab Sample ID: EH80P
LIMS ID: 02-5226
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/08/02

Date Analyzed: 05/07/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	--	Unknown	24.92	SVOA	3 J
2.					
3.					
4.					
5.					
6.					
7.					
8.					
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17.					
18.					
19.					
20.					

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW04MW04A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80F
LIMS ID: 02-5190
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 19:09
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 2 of 2

Sample No: GW04MW04A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80F
LIMS ID: 02-5190
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 19:09
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	76.1%	d5-Phenol	78.9%
2-Fluorobiphenyl	70.8%	2-Fluorophenol	73.7%
d14-p-Terphenyl	89.5%	2,4,6-Tribromophenol	92.9%
d4-1,2-Dichlorobenzene	56.3%	d4-2-Chlorophenol	79.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW04MW04A

Lab Sample ID: EH80F
LIMS ID: 02-5190
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/08/02

Date Analyzed: 05/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW04MW05A

Lab Sample ID: EH800
LIMS ID: 02-5225
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 20:42
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW04MW05A

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH800
LIMS ID: 02-5225
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 20:42
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	72.8%	d5-Phenol	76.8%
2-Fluorobiphenyl	70.2%	2-Fluorophenol	71.6%
d14-p-Terphenyl	91.3%	2,4,6-Tribromophenol	91.8%
d4-1,2-Dichlorobenzene	53.9%	d4-2-Chlorophenol	72.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW04MW05A

Lab Sample ID: EH800
LIMS ID: 02-5225
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/08/02

Date Analyzed: 05/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	--	Unknown	30.07	SVOA	2 J
2.	--	Unknown	34.45	SVOA	3 J
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW04MW09

Lab Sample ID: EH80N
LIMS ID: 02-5224
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 19:55
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW04MW09

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80N
LIMS ID: 02-5224
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Date extracted: 04/29/02
Date analyzed: 05/06/02 19:55
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	**N-Nitrosodiphenylamine**	**4.2**
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	**Phenanthrene**	**9.0**
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	**Butylbenzylphthalate**	**19**
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	76.8%	d5-Phenol	80.9%
2-Fluorobiphenyl	72.3%	2-Fluorophenol	74.1%
d14-p-Terphenyl	94.8%	2,4,6-Tribromophenol	96.1%
d4-1,2-Dichlorobenzene	58.0%	d4-2-Chlorophenol	78.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW04MW09

Lab Sample ID: EH80N
LIMS ID: 02-5224
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/08/02

Date Analyzed: 05/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW01004MW03B

Lab Sample ID: EH80R
LIMS ID: 02-5228
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Date extracted: 04/29/02
Date analyzed: 05/07/02 12:03
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample No: GW01004MW03B

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: EH80R
LIMS ID: 02-5228
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Date extracted: 04/29/02
Date analyzed: 05/07/02 12:03
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	72.6%	d5-Phenol	78.8%
2-Fluorobiphenyl	67.6%	2-Fluorophenol	73.0%
d14-p-Terphenyl	84.3%	2,4,6-Tribromophenol	83.4%
d4-1,2-Dichlorobenzene	56.6%	d4-2-Chlorophenol	74.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW01004MW03B

Lab Sample ID: EH80R
LIMS ID: 02-5228
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/08/02

Date Analyzed: 05/07/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
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ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: Method Blank

Lab Sample ID: EH80MB
LIMS ID: 02-5185
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Date extracted: 04/29/02
Date analyzed: 05/06/02 11:26
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

ANALYTICAL RESOURCES INCORPORATED

Sample No: Method Blank

Lab Sample ID: EH80MB
LIMS ID: 02-5185
Matrix: Water
Data Release Authorized:
Reported: 05/08/02

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Date extracted: 04/29/02
Date analyzed: 05/06/02 11:26
Instrument: FINN8

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	4.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	2.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatiles Surrogate Recovery

d5-Nitrobenzene	75.4%	d5-Phenol	75.8%
2-Fluorobiphenyl	67.3%	2-Fluorophenol	71.4%
d14-p-Terphenyl	83.4%	2,4,6-Tribromophenol	85.4%
d4-1,2-Dichlorobenzene	53.8%	d4-2-Chlorophenol	72.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: Method Blank

Lab Sample ID: EH80MB
LIMS ID: 02-5185
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 05/08/02

Date Analyzed: 05/06/02

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW04MW01A

Lab Sample ID: EH80A
LIMS ID: 02-5185
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/10/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 82.2%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW04MW01B

Lab Sample ID: EH80B
LIMS ID: 02-5186
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/10/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 86.1%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW04MW02A

Lab Sample ID: EH80D
LIMS ID: 02-5188
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/10/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 117%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW504MW02[illegible]A

Lab Sample ID: EH80E
LIMS ID: 02-5189
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/10/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 92.6%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW04MW02B

Lab Sample ID: EH80C
LIMS ID: 02-5187
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/10/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 88.3%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW04MW03A

Lab Sample ID: EH80Q
LIMS ID: 02-5227
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized: GMB
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/11/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 95.6%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW04MW03B

Lab Sample ID: EH80P
LIMS ID: 02-5226
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/10/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 55.4%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW04MW04A

Lab Sample ID: EH80F
LIMS ID: 02-5190
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/10/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 32.0%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW04MW04A
REEXTRACTION

Lab Sample ID: EH80F-RE
LIMS ID: 02-5190
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/31/02

Date extracted: 05/10/02
Date analyzed: 05/22/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 95.3%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW04MW05A

Lab Sample ID: EH800
LIMS ID: 02-5225
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/10/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 82.9%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW04MW09

Lab Sample ID: EH80N
LIMS ID: 02-5224
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/10/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	4.0 E
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	17 E
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 84.8%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: GW04MW09
DILUTION

Lab Sample ID: EH80N-DL
LIMS ID: 02-5224
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/22/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:10

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	6.4
93-76-5	2,4,5-T	1.2 U
88-85-7	Dinoseb	1.0 U
1918-00-9	Dicamba	1.4 U
94-75-7	2,4-D	21
94-82-6	2,4-DB	20 U
75-99-0	Dalapon	4.0 U
94-74-6	MCPA	500 U
120-36-5	Dichloroprop	6.2 U
93-65-2	MCPP	500 U

Herbicide Surrogate Recovery

Dichlorophenylacetic Acid 88.0%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET **Sample No: GW01004MW03B**
Herbicides by GC/ECD

Lab Sample ID: EH80R
LIMS ID: 02-5228
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/11/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 113%

Data Qualifiers

J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector. Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by GC/ECD

Sample No: Method Blank

Lab Sample ID: EH80MB
LIMS ID: 02-5185
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 05/23/02

Date extracted: 04/29/02
Date analyzed: 05/10/02
Instrument ID:

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1:1

CAS Number	Analyte	ug/L
93-72-1	2,4,5-TP (Silvex)	0.056 U
93-76-5	2,4,5-T	0.12 U
88-85-7	Dinoseb	0.10 U
1918-00-9	Dicamba	0.14 U
94-75-7	2,4-D	0.30 U
94-82-6	2,4-DB	2.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	50 U
120-36-5	Dichloroprop	0.62 U
93-65-2	MCPP	50 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid 91.5%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector. Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW04MW01A

Lab Sample ID: EH80A
LIMS ID: 02-5185
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**2.25**
3010A	04/30/02	6010B	05/03/02	**7440-47-3**	**Chromium**	0.005	**0.011**
3010A	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	**7439-89-6**	**Iron**	0.05	**0.16**
200.8	04/30/02	200.8	05/01/02	**7439-92-1**	**Lead**	0.001	**0.001**
3010A	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**0.92**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**2.68**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANIC ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW04MW01A

Lab Sample ID: EH80H
LIMS ID: 02-5192
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**2.37**
6010B	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
6010B	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**0.98**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
6010B	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
6010B	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
6010B	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**2.91**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW04MW01B**
TOTAL METALS

Lab Sample ID: EH80B
LIMS ID: 02-5186
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**2.02**
3010A	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
3010A	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**1.09**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**1.26**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANIC ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW04MW01B

Lab Sample ID: EH80I
LIMS ID: 02-5193
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**2.09**
6010B	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
6010B	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**1.13**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
6010B	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
6010B	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
6010B	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**1.32**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW04MW02A

Lab Sample ID: EH80D
LIMS ID: 02-5188
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	**7440-39-3**	**Barium**	0.003	**0.004**
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**1.27**
3010A	04/30/02	6010B	05/03/02	**7440-47-3**	**Chromium**	0.005	**0.023**
3010A	04/30/02	6010B	05/03/02	**7440-50-8**	**Copper**	0.002	**0.003**
3010A	04/30/02	6010B	05/03/02	**7439-89-6**	**Iron**	0.05	**1.00**
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**0.40**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	**7440-02-0**	**Nickel**	0.01	**0.01**
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	**7782-49-2**	**Selenium**	0.0005	**0.0006**
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**7.99**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANIC ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW04MW02A

Lab Sample ID: EH80K
LIMS ID: 02-5195
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**1.32**
6010B	04/30/02	6010B	05/03/02	**7440-47-3**	**Chromium**	0.005	**0.007**
6010B	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7439-89-6**	**Iron**	0.05	**0.10**
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**0.40**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
6010B	04/30/02	6010B	05/03/02	**7440-02-0**	**Nickel**	0.01	**0.01**
6010B	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	**7782-49-2**	**Selenium**	0.0005	**0.0006**
6010B	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**8.24**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET Sample No: GW504MW02
TOTAL METALS

Lab Sample ID: EH80E
LIMS ID: 02-5189
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7440-70-2	Calcium	0.05	1.25
3010A	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.019
3010A	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002
3010A	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.32
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7439-95-4	Magnesium	0.05	0.38
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-23-5	Sodium	0.05	7.82
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.049

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANIC ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW504MW02B A

Lab Sample ID: EH80L
LIMS ID: 02-5196
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/14/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**1.29**
6010B	04/30/02	6010B	05/03/02	**7440-47-3**	**Chromium**	0.005	**0.008**
6010B	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7439-89-6**	**Iron**	0.05	**0.08**
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**0.39**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
6010B	04/30/02	6010B	05/03/02	**7440-02-0**	**Nickel**	0.01	**0.02**
6010B	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	**7782-49-2**	**Selenium**	0.0005	**0.0005**
6010B	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**7.83**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW04MW02B**
TOTAL METALS

Lab Sample ID: EH80C
LIMS ID: 02-5187
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	**7440-38-2**	**Arsenic**	0.0002	**0.0003**
3010A	04/30/02	6010B	05/03/02	**7440-39-3**	**Barium**	0.003	**0.015**
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**2.46**
3010A	04/30/02	6010B	05/03/02	**7440-47-3**	**Chromium**	0.005	**0.033**
3010A	04/30/02	6010B	05/03/02	**7440-50-8**	**Copper**	0.002	**0.009**
3010A	04/30/02	6010B	05/03/02	**7439-89-6**	**Iron**	0.05	**4.97**
200.8	04/30/02	200.8	05/01/02	**7439-92-1**	**Lead**	0.001	**0.001**
3010A	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**1.85**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	**7440-02-0**	**Nickel**	0.01	**0.02**
3010A	04/30/02	6010B	05/03/02	**7440-09-7**	**Potassium**	0.5	**1.0**
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**2.25**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	**7440-66-6**	**Zinc**	0.006	**0.018**

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANIC ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW04MW02B

Lab Sample ID: EH80J
LIMS ID: 02-5194
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**1.92**
6010B	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
6010B	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7439-89-6**	**Iron**	0.05	**0.11**
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**0.90**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
6010B	04/30/02	6010B	05/03/02	**7440-02-0**	**Nickel**	0.01	**0.02**
6010B	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
6010B	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**2.34**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW04MW03A

Lab Sample ID: EH80Q
LIMS ID: 02-5227
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**1.47**
3010A	04/30/02	6010B	05/03/02	**7440-47-3**	**Chromium**	0.005	**0.009**
3010A	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	**7439-89-6**	**Iron**	0.05	**0.13**
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**0.65**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**1.25**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANIC ANALYSIS DATA SHEET **Sample No: GW04MW03A**
DISSOLVED METALS

Lab Sample ID: EH80V
LIMS ID: 02-5232
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/14/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**1.65**
6010B	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
6010B	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**0.74**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
6010B	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
6010B	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
6010B	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**1.42**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW04MW03B

Lab Sample ID: EH80P
LIMS ID: 02-5226
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.012
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7440-70-2	Calcium	0.05	3.47
3010A	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.062
3010A	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.004
3010A	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	1.58
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001
3010A	04/30/02	6010B	05/03/02	7439-95-4	Magnesium	0.05	1.64
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.04
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	1.7
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-23-5	Sodium	0.05	5.70
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.016

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANIC ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW04MW03B

Lab Sample ID: EH80U
LIMS ID: 02-5231
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/14/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	**7440-39-3**	**Barium**	0.003	**0.005**
6010B	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**3.57**
6010B	04/30/02	6010B	05/03/02	**7440-47-3**	**Chromium**	0.005	**0.007**
6010B	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7439-89-6**	**Iron**	0.05	**0.07**
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**1.58**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
6010B	04/30/02	6010B	05/03/02	**7440-02-0**	**Nickel**	0.01	**0.02**
6010B	04/30/02	6010B	05/03/02	**7440-09-7**	**Potassium**	0.5	**1.5**
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
6010B	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**6.74**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	**7440-66-6**	**Zinc**	0.006	**0.006**

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET Sample No: GW04MW04A
TOTAL METALS

Lab Sample ID: EH80F
LIMS ID: 02-5190
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	**7440-39-3**	**Barium**	0.003	**0.011**
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**1.74**
3010A	04/30/02	6010B	05/03/02	**7440-47-3**	**Chromium**	0.005	**0.023**
3010A	04/30/02	6010B	05/03/02	**7440-50-8**	**Copper**	0.002	**0.009**
3010A	04/30/02	6010B	05/03/02	**7439-89-6**	**Iron**	0.05	**3.43**
200.8	04/30/02	200.8	05/01/02	**7439-92-1**	**Lead**	0.001	**0.001**
3010A	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**1.02**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	**7440-02-0**	**Nickel**	0.01	**0.01**
3010A	04/30/02	6010B	05/03/02	**7440-09-7**	**Potassium**	0.5	**0.9**
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**1.42**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	**7440-66-6**	**Zinc**	0.006	**0.011**

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANIC ANALYSIS DATA SHEET **Sample No: GW04MW04A**
DISSOLVED METALS

Lab Sample ID: EH80M
LIMS ID: 02-5197
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**1.61**
6010B	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
6010B	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**0.57**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
6010B	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
6010B	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
6010B	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**1.58**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW04MW05A

Lab Sample ID: EH80O
LIMS ID: 02-5225
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	**7440-39-3**	**Barium**	0.003	**0.004**
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**2.26**
3010A	04/30/02	6010B	05/03/02	**7440-47-3**	**Chromium**	0.005	**0.016**
3010A	04/30/02	6010B	05/03/02	**7440-50-8**	**Copper**	0.002	**0.002**
3010A	04/30/02	6010B	05/03/02	**7439-89-6**	**Iron**	0.05	**0.38**
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**0.88**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	**7440-02-0**	**Nickel**	0.01	**0.01**
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**1.67**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	**7440-66-6**	**Zinc**	0.006	**0.018**

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANIC ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW04MW05A

Lab Sample ID: EH80T
LIMS ID: 02-5230
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/14/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	**7440-70-2**	**Calcium**	0.05	**2.19**
6010B	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
6010B	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	**7439-95-4**	**Magnesium**	0.05	**0.94**
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
6010B	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
6010B	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
6010B	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**1.74**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW04MW09

Lab Sample ID: EH80N
LIMS ID: 02-5224
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	**7440-38-2**	**Arsenic**	0.0002	**0.0048**
3010A	04/30/02	6010B	05/03/02	**7440-39-3**	**Barium**	0.003	**0.049**
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7440-70-2	Calcium	0.05	0.05 U
3010A	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
3010A	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	**7439-92-1**	**Lead**	0.001	**0.011**
3010A	04/30/02	6010B	05/03/02	7439-95-4	Magnesium	0.05	0.05 U
7470A	04/30/02	7470A	05/02/02	**7439-97-6**	**Mercury**	0.0001	**0.0014**
3010A	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**0.45**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW04MW09**
TOTAL METALS

Lab Sample ID: EH80S
LIMS ID: 02-5229
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/14/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	**7440-38-2**	**Arsenic**	0.0002	**0.0024**
3010A	04/30/02	6010B	05/03/02	**7440-39-3**	**Barium**	0.003	**0.014**
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7440-70-2	Calcium	0.05	0.05 U
3010A	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
3010A	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	**7439-92-1**	**Lead**	0.001	**0.006**
3010A	04/30/02	6010B	05/03/02	7439-95-4	Magnesium	0.05	0.05 U
7470A	04/30/02	7470A	05/02/02	**7439-97-6**	**Mercury**	0.0001	**0.0001**
3010A	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	**7440-23-5**	**Sodium**	0.05	**0.40**
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW01004MW03B

Lab Sample ID: EH80W
LIMS ID: 02-5233
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/14/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7440-70-2	Calcium	0.05	0.05 U
3010A	04/30/02	6010B	05/03/02	**7440-47-3**	**Chromium**	0.005	**0.007**
3010A	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	**7439-89-6**	**Iron**	0.05	**0.20**
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7439-95-4	Magnesium	0.05	0.05 U
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-23-5	Sodium	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW01004MW03B

Lab Sample ID: EH80R
LIMS ID: 02-5228
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7440-70-2	Calcium	0.05	0.05 U
3010A	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
3010A	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7439-95-4	Magnesium	0.05	0.05 U
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-23-5	Sodium	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: Method Blank

Lab Sample ID: EH80MB
LIMS ID: 02-5185
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7440-70-2	Calcium	0.05	0.05 U
3010A	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
3010A	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
3010A	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
3010A	04/30/02	6010B	05/03/02	7439-95-4	Magnesium	0.05	0.05 U
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
3010A	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
3010A	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
3010A	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
3010A	04/30/02	6010B	05/03/02	7440-23-5	Sodium	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
3010A	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANIC ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: Method Blank

Lab Sample ID: EH80MB
LIMS ID: 02-5192
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 05/06/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	04/30/02	6010B	05/03/02	7440-36-0	Antimony	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-38-2	Arsenic	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-39-3	Barium	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	7440-41-7	Beryllium	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	7440-43-9	Cadmium	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	7440-70-2	Calcium	0.05	0.05 U
6010B	04/30/02	6010B	05/03/02	7440-47-3	Chromium	0.005	0.005 U
6010B	04/30/02	6010B	05/03/02	7440-50-8	Copper	0.002	0.002 U
6010B	04/30/02	6010B	05/03/02	7439-89-6	Iron	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7439-92-1	Lead	0.001	0.001 U
6010B	04/30/02	6010B	05/03/02	7439-95-4	Magnesium	0.05	0.05 U
7470A	04/30/02	7470A	05/02/02	7439-97-6	Mercury	0.0001	0.0001 U
6010B	04/30/02	6010B	05/03/02	7440-02-0	Nickel	0.01	0.01 U
6010B	04/30/02	6010B	05/03/02	7440-09-7	Potassium	0.5	0.5 U
200.8	04/30/02	200.8	05/01/02	7782-49-2	Selenium	0.0005	0.0005 U
6010B	04/30/02	6010B	05/03/02	7440-22-4	Silver	0.003	0.003 U
6010B	04/30/02	6010B	05/03/02	7440-23-5	Sodium	0.05	0.05 U
200.8	04/30/02	200.8	05/01/02	7440-28-0	Thallium	0.0002	0.0002 U
6010B	04/30/02	6010B	05/03/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg - Toluene to Naphthalene

QC Report No: EH80-URS Operating Services, Inc.
Matrix: Water Project: Camp Bonneville
53-F-0072323
Data Release Authorized: VS Date Received: 04/25/02
Reported: 05/06/02

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range	Gas ID	Surr A Rec	Surr B Rec
050102MB	Method Blank	05/01/02	1:1	0.25 U	NO	91.0%	86.5%
02-5185-EH80A	GW04MW01A	05/02/02	1:1	0.25 U	NO	96.1%	92.0%
02-5186-EH80B	GW04MW01B	05/02/02	1:1	0.25 U	NO	94.9%	91.5%
02-5187-EH80C	GW04MW02B	05/02/02	1:1	0.25 U	NO	94.7%	88.2%
02-5188-EH80D	GW04MW02A	05/02/02	1:1	0.25 U	NO	97.5%	91.4%
02-5189-EH80E	GW504MW02B	05/02/02	1:1	0.25 U	NO	97.5%	93.4%
02-5190-EH80F	GW04MW04A	05/02/02	1:1	0.25 U	NO	102%	96.2%
02-5191-EH80G	042402TRIP01	05/02/02	1:1	0.25 U	NO	89.4%	88.4%
02-5225-EH80O	GW04MW05A	05/02/02	1:1	0.25 U	NO	95.9%	91.3%
02-5226-EH80P	GW04MW03B	05/02/02	1:1	0.25 U	NO	101%	97.4%
02-5227-EH80Q	GW04MW03A	05/02/02	1:1	0.25 U	NO	99.2%	95.5%
02-5228-EH80R	GW01004MW03B	05/02/02	1:1	0.25 U	NO	100%	94.1%

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.

Values reported in ppm (mg/L).
Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

FORM-1 TPH-g

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID
and Motor Oil

ANALYTICAL RESOURCES INCORPORATED

Lab ID: 02-5185
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/13/02

Lab ID	Sample ID	Date Extracted	Date Analyzed	Dilution Factor	Diesel Range	*HC ID	Motor Oil Range	Surr Rec
042602MB1	Method Blank	04/26/02	04/30/02	1:1	0.25 U	---	0.50 U	100%
EH80A	GW04MW01A	04/26/02	04/30/02	1:1	0.25 U	---	0.50 U	86.4%
EH80B	GW04MW01B	04/26/02	04/30/02	1:1	0.25 U	---	0.50 U	87.7%
EH80C	GW04MW02B	04/26/02	04/30/02	1:1	0.25 U	---	0.50 U	90.0%
EH80D	GW04MW02A	04/26/02	04/30/02	1:1	0.25 U	---	0.50 U	91.0%
EH80E	GW504MW02B	04/26/02	04/30/02	1:1	0.25 U	---	0.50 U	94.7%
EH80F	GW04MW04A	04/26/02	04/30/02	1:1	0.25 U	---	0.50 U	93.0%
EH80O	GW04MW05A	04/26/02	04/30/02	1:1	0.25 U	---	0.50 U	96.0%
EH80P	GW04MW03B	04/26/02	04/30/02	1:1	0.25 U	---	0.50 U	87.0%
EH80Q	GW04MW03A	04/26/02	04/30/02	1:1	0.25 U	---	0.50 U	97.0%
EH80R	GW01004MW03B	04/26/02	04/30/02	1:1	0.25 U	---	0.50 U	95.0%
050202MB1	Method Blank	05/02/02	05/02/02	1:1	0.25 U	---	0.50 U	91.1%
EH80B	GW04MW01B-RE	05/02/02	05/02/02	1:1	0.25 U	---	0.50 U	89.7%

Surrogate is o-Terphenyl

* ID indicates, in the opinion of the analyst, the petroleum product with the best pattern match. 'NO' indicates that there was not a good match for any of the requested products.
Values reported in ppm (mg/L)
Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.

Data Qualifiers

U	Compound not detected at the given detection limit.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
E	Indicates a value above the linear range of the detector. Dilution required.
NR	Indicates no recovery due to matrix interference.
B	Indicates compound also detected in the method blank.

FORM-1 TPHD

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW04MW01A

Lab Sample ID: EH80A
LIMS ID: 02-5185
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Data Release Authorized: MB
Reported: 05/17/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	8.3
Carbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	8.3
Total Suspended Solids	04/26/02 04262#1	EPA 160.2	1.0	mg/L	2.3
Chloride	05/09/02 05092#1	EPA 325.2	1.0	mg/L	1.5
Total Cyanide	05/07/02 05072#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	04/26/02	Calculated	0.010	mg-N/L	0.056
N-Nitrite	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	0.056
Sulfate	05/07/02 05072#1	EPA 375.2	2.5	mg/L	6.9
Total Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EH80 received 04/25/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW04MW01B

Lab Sample ID: EH80B
LIMS ID: 02-5186
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/23/02
Date Received: 04/25/02

Data Release Authorized: MP
Reported: 05/17/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	10
Carbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	10
Total Suspended Solids	04/26/02 04262#1	EPA 160.2	1.0	mg/L	< 1.0 U
Chloride	05/09/02 05092#1	EPA 325.2	1.0	mg/L	1.4
Total Cyanide	05/07/02 05072#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	04/26/02	Calculated	0.010	mg-N/L	0.071
N-Nitrite	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	0.071
Sulfate	05/07/02 05072#1	EPA 375.2	2.5	mg/L	< 2.5 U
Total Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EH80 received 04/25/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW04MW02A

Lab Sample ID: EH80D
LIMS ID: 02-5188
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/17/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	2.3
Carbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	2.3
Total Suspended Solids	04/26/02 04262#1	EPA 160.2	1.0	mg/L	11
Chloride	05/09/02 05092#1	EPA 325.2	1.0	mg/L	1.8
Total Cyanide	05/07/02 05072#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	04/26/02	Calculated	0.010	mg-N/L	0.39
N-Nitrite	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	0.39
Sulfate	05/07/02 05072#1	EPA 375.2	2.5	mg/L	19
Total Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EH80 received 04/25/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW504MW02B A

Lab Sample ID: EH80E
LIMS ID: 02-5189
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized: MF
Reported: 05/17/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	1.9
Carbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	1.9
Total Suspended Solids	04/26/02 04262#1	EPA 160.2	1.0	mg/L	3.9
Chloride	05/09/02 05092#1	EPA 325.2	1.0	mg/L	1.7
Total Cyanide	05/07/02 05072#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	04/26/02	Calculated	0.010	mg-N/L	0.34
N-Nitrite	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	0.34
Sulfate	05/07/02 05072#1	EPA 375.2	2.5	mg/L	17
Total Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EH80 received 04/25/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW04MW02B

Lab Sample ID: EH80C
LIMS ID: 02-5187
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized: MB
Reported: 05/17/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	3.5
Carbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	3.5
Total Suspended Solids	04/26/02 04262#1	EPA 160.2	2.5	mg/L	89
Chloride	05/09/02 05092#1	EPA 325.2	1.0	mg/L	3.4
Total Cyanide	05/07/02 05072#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	04/26/02	Calculated	0.010	mg-N/L	0.82
N-Nitrite	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	0.82
Sulfate	05/07/02 05072#1	EPA 375.2	2.5	mg/L	2.5
Total Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EH80 received 04/25/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW04MW03A

Lab Sample ID: EH80Q
LIMS ID: 02-5227
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized: MP
Reported: 05/17/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	6.6
Carbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	6.6
Total Suspended Solids	04/29/02 04292#1	EPA 160.2	1.0	mg/L	1.7
Chloride	05/09/02 05092#1	EPA 325.2	1.0	mg/L	1.3
Total Cyanide	05/07/02 05072#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	04/26/02	Calculated	0.010	mg-N/L	0.13
N-Nitrite	04/26/02 04262#2	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	04/26/02 04262#2	EPA 353.2	0.010	mg-N/L	0.13
Sulfate	05/07/02 05072#1	EPA 375.2	2.5	mg/L	< 2.5 U
Total Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EH80 received 04/26/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW04MW03B

Lab Sample ID: EH80P
LIMS ID: 02-5226
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized:
Reported: 05/17/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	11
Carbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	11
Total Suspended Solids	04/29/02 04292#1	EPA 160.2	1.0	mg/L	10
Chloride	05/09/02 05092#1	EPA 325.2	1.0	mg/L	8.0
Total Cyanide	05/07/02 05072#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	04/26/02	Calculated	0.010	mg-N/L	0.54
N-Nitrite	04/26/02 04262#2	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	04/26/02 04262#2	EPA 353.2	0.010	mg-N/L	0.54
Sulfate	05/07/02 05072#1	EPA 375.2	2.5	mg/L	6.1
Total Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EH80 received 04/26/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW04MW04A

Lab Sample ID: EH80F
LIMS ID: 02-5190
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/24/02
Date Received: 04/25/02

Data Release Authorized:
Reported: 05/17/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	05/16/02 05162#1	SM 2320	1.0	mg/L CaCO3	7.1
Carbonate (Alkalinity)	05/16/02 05162#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	05/16/02 05162#1	SM 2320	1.0	mg/L CaCO3	7.1
Total Suspended Solids	04/26/02 04262#1	EPA 160.2	1.0	mg/L	11
Chloride	05/09/02 05092#1	EPA 325.2	1.0	mg/L	1.3
Total Cyanide	05/07/02 05072#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	04/26/02	Calculated	0.010	mg-N/L	0.047
N-Nitrite	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	04/26/02 04262#1	EPA 353.2	0.010	mg-N/L	0.047
Sulfate	05/07/02 05072#1	EPA 375.2	2.5	mg/L	< 2.5 U
Total Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EH80 received 04/25/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW04MW05A

Lab Sample ID: EH80O
LIMS ID: 02-5225
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized: DMP
Reported: 05/17/02 Dr. M.A. Perkins

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	9.3
Carbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	9.3
Total Suspended Solids	04/29/02 04292#1	EPA 160.2	1.0	mg/L	1.9
Chloride	05/09/02 05092#1	EPA 325.2	1.0	mg/L	1.4
Total Cyanide	05/07/02 05072#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	04/26/02	Calculated	0.010	mg-N/L	0.20
N-Nitrite	04/26/02 04262#2	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	04/26/02 04262#2	EPA 353.2	0.010	mg-N/L	0.20
Sulfate	05/07/02 05072#1	EPA 375.2	2.5	mg/L	< 2.5 U
Total Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EH80 received 04/26/02

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW01004MW03B

Lab Sample ID: EH80R
LIMS ID: 02-5228
Matrix: Water

QC Report No: EH80-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 04/25/02
Date Received: 04/26/02

Data Release Authorized: Dr. M.A. Perkins
Reported: 05/17/02

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Carbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	04/29/02 04292#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Total Suspended Solids	04/29/02 04292#1	EPA 160.2	1.0	mg/L	1.9
Chloride	05/09/02 05092#1	EPA 325.2	1.0	mg/L	< 1.0 U
Total Cyanide	05/07/02 05072#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	04/26/02	Calculated	0.010	mg-N/L	< 0.010 U
N-Nitrite	04/26/02 04262#2	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	04/26/02 04262#2	EPA 353.2	0.010	mg-N/L	< 0.010 U
Sulfate	05/07/02 05072#1	EPA 375.2	2.5	mg/L	< 2.5 U
Total Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	05/03/02 05032#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for EH80 received 04/26/02

ANALYTICAL RESOURCES INCORPORATED

QA Report - Method Blank Analysis

QC Report No: EH80-URS Operating Services, Inc.
Matrix: Water
Project: Camp Bonneville
53-F-0072323
Date Received: NA

Data Release Authorized:
Reported: 05/17/02 Dr. M.A. Perkins

METHOD BLANK RESULTS
CONVENTIONALS

Analysis Date & Batch	Constituent	Units	Result	
04/26/02 04262#1	Total Suspended Solids	mg/L	< 1.0	U
05/09/02 05092#1	Chloride	mg/L	< 1.0	U
05/07/02 05072#1	Total Cyanide	mg/L	< 0.005	U
04/26/02 04262#1	N-Nitrite	mg-N/L	< 0.010	U
04/26/02 04262#1	Nitrate + Nitrite (NO3+NO2)	mg-N/L	< 0.010	U
05/07/02 05072#1	Sulfate	mg/L	< 2.5	U
05/03/02 05032#1	Total Organic Carbon	mg/L	< 1.5	U
04/26/02 04262#2	N-Nitrite	mg-N/L	< 0.010	U
04/26/02 04262#2	Nitrate + Nitrite (NO3+NO2)	mg-N/L	< 0.010	U

SEVERN TRENT STL

January 23, 2003

Ms. Lori Raschke
URS Corporation
1501 Fourth Avenue, Suite 1400
Seattle, WA 98101

Re: Laboratory Project No. 21015
Case: 21015; SDG: BON005

Dear Ms. Raschke:

Enclosed are the analytical results of samples received intact by Severn Trent Laboratories on January 09, 2003. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 01/09/03 ETR No: 91624		
514220	GW05MW02B	01/08/03	Water
514221	GW05MW07B	01/08/03	Water
514221MS	GW05MW07BMS	01/08/03	Water
514221MD	GW05MW07BMSD	01/08/03	Water
514222	GW05MW10	01/08/03	Water
514223	GW505MW07B	01/08/03	Water
514224	GW1005MW07B	01/08/03	Water

Documentation regarding the condition of samples at the time of their receipt is filed in the sample handling section of this case submittal.

The laboratory performed a modified SW-846 method 8330 analysis on all samples in this delivery group, reporting an extended compound list that includes the routine 8330 compounds as well as nitroglycerin, PETN and picric acid.

The original nitroaromatic analysis of sample GW05MW02B yielded the presence of target compound RDX at a concentration above calibration range. This sample was reanalyzed at a six-fold dilution yielding acceptable results. Both sets of data have been presented in this case submittal. Please note that the laboratory did not observe any indications of carry-over from the full strength analyses. Furthermore, it is the laboratory's experience that samples would have to contain much greater concentrations of target compounds than those detected in these samples before the slightest trace of carryover would be present from one injection to the next. This is primarily due to the nature of the HPLC analyses, which greatly reduce the risk of instrument carry-over as the injection port is continually rinsed.

Severn Trent Laboratories, Inc.
STL Burlington • 208 South Park Drive, Suite 1, Colchester, VT 05446
Tel 802 655 1203 Fax 802 655 1248 • *www.stl-inc.com*
A part of Severn Trent plc

The US Army Corps of Engineers (USACE) has established specific Quality Control (QC) acceptance limits for the methods that are being used to analyze the samples included in this sample delivery group. After negotiation of site- and laboratory-specific requirements, final tables of QC acceptance limits were incorporated into the project-specific QAPP. Those tables are attached to this case narrative for reference.

The STL computer system could not easily be modified to reflect the USACE site-specific acceptance criteria in all cases. Thus, although the QC acceptance criteria contained in the attached tables were used by the laboratory for data assessment and corrective action, the forms contained in this report still reflect STL's standard acceptance limits for the methods of analysis employed.

If there are any questions regarding this submittal, please contact James Madison (802) 655-1203.

This report shall not be reproduced, except in full, without the written approval of the laboratory. This report is sequentially numbered starting with page 0001 and ending with page 0287.

I certify that this package is in compliance with the NELAC requirements, both technically and for completeness, for other than the conditions detailed above. The release of the data contained in this hardcopy data package and in the computer-readable data submitted on diskette has been authorized by the Laboratory Director or his designee, as verified by the following signature.

Sincerely,

Michael F. Wheeler, Ph.D.
Laboratory Director

Enclosure

FORM 2
WATER EXPLOSIVES SURROGATE RECOVERY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

GC Column(1): LC-18 ID: 4.60 (mm) GC Column(2): CN ID: 4.60 (mm)

	CLIENT SAMPLE NO.	S1 1 %REC	#	S1 2 %REC	#	S2 1 %REC	#	S2 2 %REC	#	S3 1 %REC	#	S3 2 %REC	#	TOT OUT
01	EBLKW1	92		98										0
02	W1LCS	97		95										0
03	W1LCSD	100		96										0
04	GW05MW02B	95		102										0
05	GW05MW07B	99												0
06	GW05MW10	98		100										0
07	GW505MW07B	95												0
08	GW1005MW07B	93												0
09	GW05MW07BMS	96												0
10	GW05MW07BMSD	100												0
11	GW05MW02BDL	116	D	100										0
12														
13														
14														
15														
16														
17														
18														
19														
20														
21														
22														
23														
24														
25														
26														
27														
28														

ADVISORY
QC LIMITS

S1 = 1,2-Dinitrobenzene (85-116)

Column to be used to flag recovery values
* Values outside of QC limits
D Surrogate diluted out

FORM 3
WATER EXPLOSIVES MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix Spike - Sample No.: GW05MW07B

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC #	QC. LIMITS REC.
HMX	4.0	0.0	3.8	95	83-122
RDX	4.0	0.0	4.0	100	81-116
Picric acid	4.0	0.0	3.7	92	67-109
1,3,5-Trinitrobenzene	4.0	0.0	4.1	102	81-120
1,3-Dinitrobenzene	4.0	0.0	4.1	102	82-116
Nitrobenzene	4.0	0.0	4.0	100	76-114
Tetryl	4.0	0.0	3.9	98	72-102
Nitroglycerin	80	0.0	76	95	80-109
2,4,6-Trinitrotoluene	4.0	0.0	4.1	102	75-106
4-Amino-2,6-dinitrotolu	4.0	0.0	4.0	100	80-119
2-Amino-4,6-dinitrotolu	4.0	0.0	4.0	100	79-117
2,6-Dinitrotoluene	4.0	0.0	4.6	115	77-115
2,4-Dinitrotoluene	4.0	0.0	3.7	92	82-116
2-Nitrotoluene	4.0	0.0	3.9	98	70-103
4-Nitrotoluene	4.0	0.0	4.1	102	74-114
3-Nitrotoluene	4.0	0.0	4.2	105	75-115
PETN	80	0.0	66	82	75-110

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER EXPLOSIVES MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix Spike - Sample No.: GW05MW07B

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
HMX	4.0	3.6	90	5	30	83-122
RDX	4.0	3.7	92	8	30	81-116
Picric acid	4.0	3.7	92	0	30	67-109
1,3,5-Trinitrobenzene	4.0	3.8	95	7	30	81-120
1,3-Dinitrobenzene	4.0	3.8	95	7	30	82-116
Nitrobenzene	4.0	3.8	95	5	30	76-114
Tetryl	4.0	3.7	92	6	30	72-102
Nitroglycerin	80	79	99	4	30	80-109
2,4,6-Trinitrotoluene	4.0	3.8	95	7	30	75-106
4-Amino-2,6-dinitrotolu	4.0	3.8	95	5	30	80-119
2-Amino-4,6-dinitrotolu	4.0	3.7	92	8	30	79-117
2,6-Dinitrotoluene	4.0	4.4	110	4	30	77-115
2,4-Dinitrotoluene	4.0	3.5	88	4	30	82-116
2-Nitrotoluene	4.0	3.7	92	6	30	70-103
4-Nitrotoluene	4.0	3.8	95	7	30	74-114
3-Nitrotoluene	4.0	3.8	95	10	30	75-115
PETN	80	68	85	4	30	75-110

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 17 outside limits
Spike Recovery: 0 out of 34 outside limits

COMMENTS: _____

FORM 3
WATER EXPLOSIVES LAB CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix Spike - Sample No.: W1LCS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC #	QC. LIMITS REC.
HMX	4.0		3.8	95	83-122
RDX	4.0		3.9	98	81-116
Picric acid	4.0		4.0	100	67-109
1,3,5-Trinitrobenzene	4.0		4.0	100	81-120
1,3-Dinitrobenzene	4.0		3.9	98	82-116
Nitrobenzene	4.0		3.9	98	76-114
Tetryl	4.0		3.4	85	72-102
Nitroglycerin	80		82	102	80-109
2,4,6-Trinitrotoluene	4.0		4.0	100	75-106
4-Amino-2,6-dinitrotolu	4.0		4.0	100	80-119
2-Amino-4,6-dinitrotolu	4.0		3.8	95	79-117
2,6-Dinitrotoluene	4.0		4.5	112	77-115
2,4-Dinitrotoluene	4.0		3.6	90	82-116
2-Nitrotoluene	4.0		3.8	95	70-103
4-Nitrotoluene	4.0		3.9	98	74-114
3-Nitrotoluene	4.0		3.9	98	75-115
PETN	80		69	86	75-110

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

COMMENTS: _____

FORM 3
WATER EXPLOSIVES LAB CONTROL SAMPLE

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix Spike - Sample No.: W1LCS

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.
HMX	4.0	3.9	98	3	30	83-122
RDX	4.0	4.1	102	4	30	81-116
Picric acid	4.0	3.8	95	5	30	67-109
1,3,5-Trinitrobenzene	4.0	4.0	100	0	30	81-120
1,3-Dinitrobenzene	4.0	4.0	100	2	30	82-116
Nitrobenzene	4.0	4.0	100	2	30	76-114
Tetryl	4.0	3.6	90	6	30	72-102
Nitroglycerin	80	78	98	4	30	80-109
2,4,6-Trinitrotoluene	4.0	4.1	102	2	30	75-106
4-Amino-2,6-dinitrotolu	4.0	4.0	100	0	30	80-119
2-Amino-4,6-dinitrotolu	4.0	3.9	98	3	30	79-117
2,6-Dinitrotoluene	4.0	4.6	115	3	30	77-115
2,4-Dinitrotoluene	4.0	3.8	95	5	30	82-116
2-Nitrotoluene	4.0	4.0	100	5	30	70-103
4-Nitrotoluene	4.0	4.1	102	4	30	74-114
3-Nitrotoluene	4.0	4.0	100	2	30	75-115
PETN	80	69	86	0	30	75-110

Column to be used to flag recovery and RPD values with an asterisk

* Values outside of QC limits

RPD: 0 out of 17 outside limits
Spike Recovery: 0 out of 34 outside limits

COMMENTS: _____

FORM 4
EXPLOSIVES METHOD BLANK SUMMARY

CLIENT SAMPLE NO.

EBLKW1

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: EBLKW1 Lab File ID: 13JAN031446-I031

Matrix (soil/water) WATER Extraction:(SepF/Cont/Sonc) SOLIDPHASE

Sulfur Cleanup (Y/N) N Date Extracted: 01/13/03

Date Analyzed (1): 01/13/03 Date Analyzed (2): 01/13/03

Time Analyzed (1): 1616 Time Analyzed (2): 1810

Instrument ID (1): 1488_1 Instrument ID (2): 3330_1

GC Column (1): LC-18 ID: 4.60(mm) GC Column (2): CN ID: 4.60(mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS and MSD:

	SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
01	W1LCS	W1LCS	01/13/03	01/13/03
02	W1LCSD	W1LCSD	01/13/03	01/13/03
03	GW05MW02B	514220	01/14/03	01/15/03
04	GW05MW07B	514221	01/14/03	
05	GW05MW10	514222	01/14/03	01/15/03
06	GW505MW07B	514223	01/14/03	
07	GW1005MW07B	514224	01/14/03	
08	GW05MW07BMS	514221MS	01/14/03	
09	GW05MW07BMSD	514221MD	01/14/03	
10	GW05MW02BDL	514220D1	01/14/03	01/15/03
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				
21				
22				
23				
24				

COMMENTS: _____

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW05MW02B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix: (soil/water) WATER Lab Sample ID: 514220

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 13JAN031446-I191

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/09/03

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted: 01/13/03

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/14/03

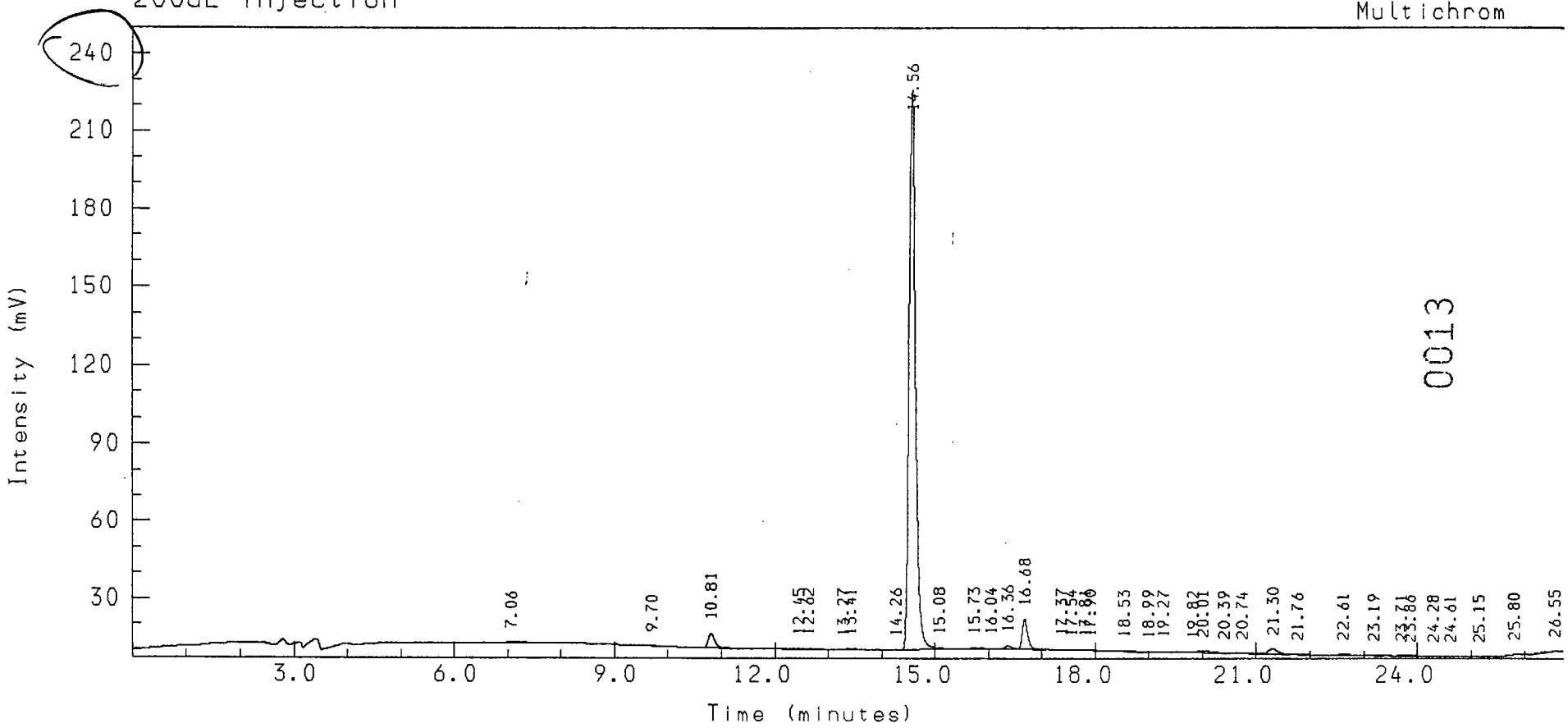
Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	2.9	
121-82-4	RDX	110	E
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.30	
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.47	
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,19,1.
GW05MW02B Amount : 1.000
200uL injection

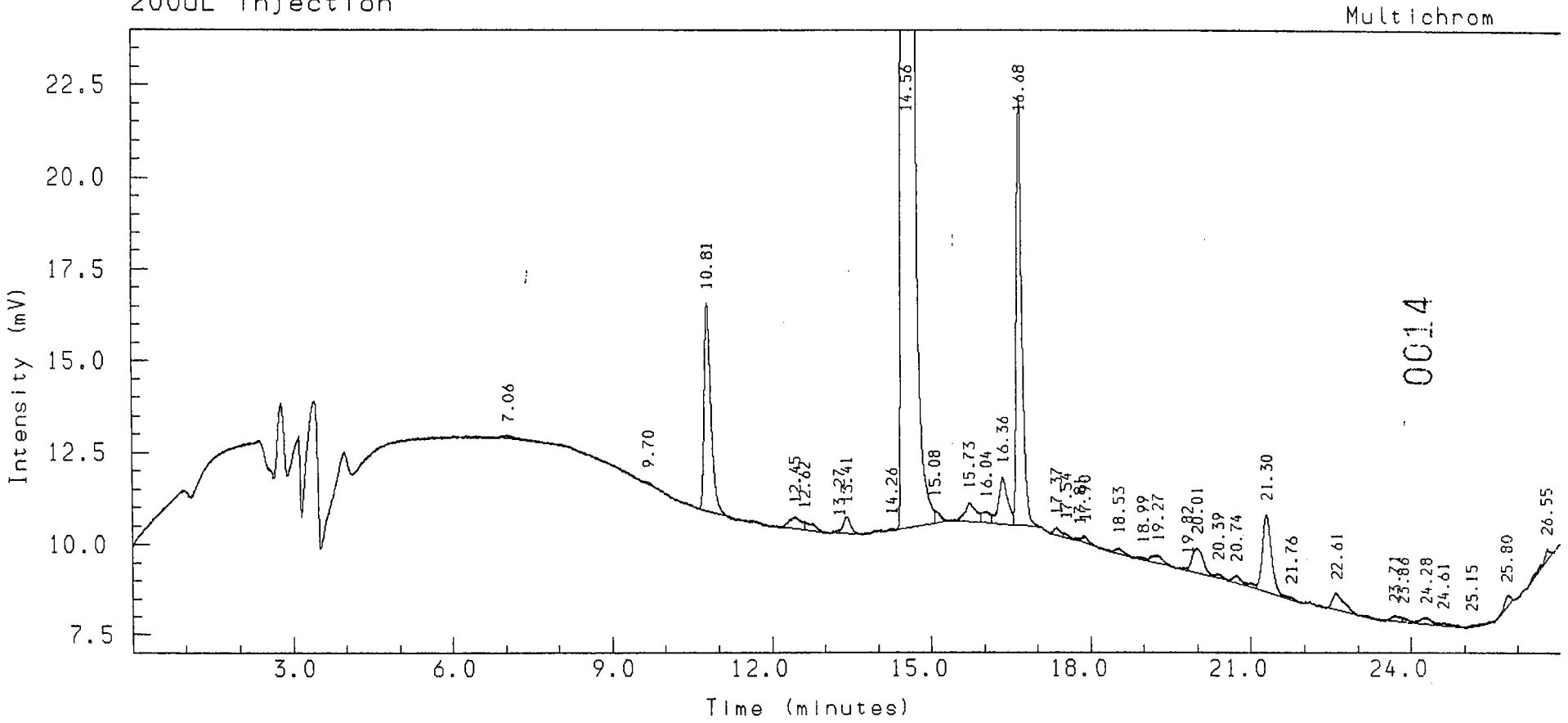


Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : 514220
Acquired on 14-JAN-2003 at 02:40
Reported on 17-JAN-2003 at 15:00

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,19,1.
GW05MW02B Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : 514220
Acquired on 14-JAN-2003 at 02:40
Reported on 17-JAN-2003 at 14:02

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 14-JAN-2003 at 02:40

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : GW05MW02B
Sample Id : 514220
Sample Type : Sample Amount=1.00000
Bottle No : 12

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				7.056	0.000	68	632	0.000		U
2			O	9.697	9.800	79	467	3.089	TNX	U
3				10.806	10.770	5689	49367	146.506	HMX	U
4				12.452	0.000	329	4978	0.000		UMOF
5				12.623	0.000	225	2849	0.000		UMOL
6				13.274	0.000	76	238	0.000		UMOF
7			O	13.411	13.370	446	4098	12.881	MNX	UMOL
8				14.259	0.000	64	296	0.000		OL
9			O	14.556	14.510	215738	1807889	5462.013	RDX	UMOF
10				15.080	0.000	352	2362	0.000		UMOL
11			O	15.731	15.840	521	7469	8.012	PICRIC ACID	UMOF
12				16.036	0.000	309	3353	0.000		UMO
13			O	16.361	16.340	1293	15367	12.944	1,3,5-TNB	UMO
14	1			16.677	16.640	11640	84084	189.521	1,2-DNB	UMOL
15				17.372	0.000	191	1651	0.000		UMOF
16			O	17.544	17.550	110	681	0.226	1,3-DNB	UMOL
17				17.812	0.000	80	362	0.000		UMOF
18				17.900	0.000	187	1393	0.000		UMOL
19				18.534	0.000	157	1628	0.000		M
20				18.990	0.000	75	678	0.000		UMOF
21				19.272	0.000	221	2925	0.000		UMOL
22				19.821	0.000	106	469	0.000		UMOF
23				20.006	19.900	689	9692	15.029	2,4,6-TNT	UMO
24			O	20.394	20.300	128	1204	1.674	4-am-2,6-DNT	UMOL
25			O	20.737	20.640	204	3130	3.735	2-am-4,6-DNT	UMOF
26				21.299	21.220	2116	24630	23.491	2,4-DNT	UMO
27				21.764	0.000	83	871	0.000		UMOL
28				22.612	22.580	468	7129	20.398	2-NT	M
29			O	23.190	23.260	47	314	2.636	4-NT	U
30				23.706	0.000	153	1763	0.000		UMOF
31			O	23.856	23.980	122	754	0.000	NT	UMO
32				24.285	0.000	179	2453	0.000		UMO
33				24.610	0.000	75	1166	0.000		UMOL

0015

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
34				25.147	0.000	52	436	0.000		U
35				25.799	0.000	303	2212	0.000		M
36				26.552	0.000	310	2944	0.000		M

Totals			
Unknowns	3594	35660	0.000
Named	239290	2016277	5902.833
Grand Total	242883	2051937	5902.833

MISSING PEAKS

RT mins	Peak name
9.040	2,6-DA
10.480	2,4-DA
11.680	DNX
18.380	NB
18.740	Tetryl
19.530	NG
21.050	2,6-DNT
24.950	PETN

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11640	84084	94.760	1,2-DINITROBENZENE % RECOVERY

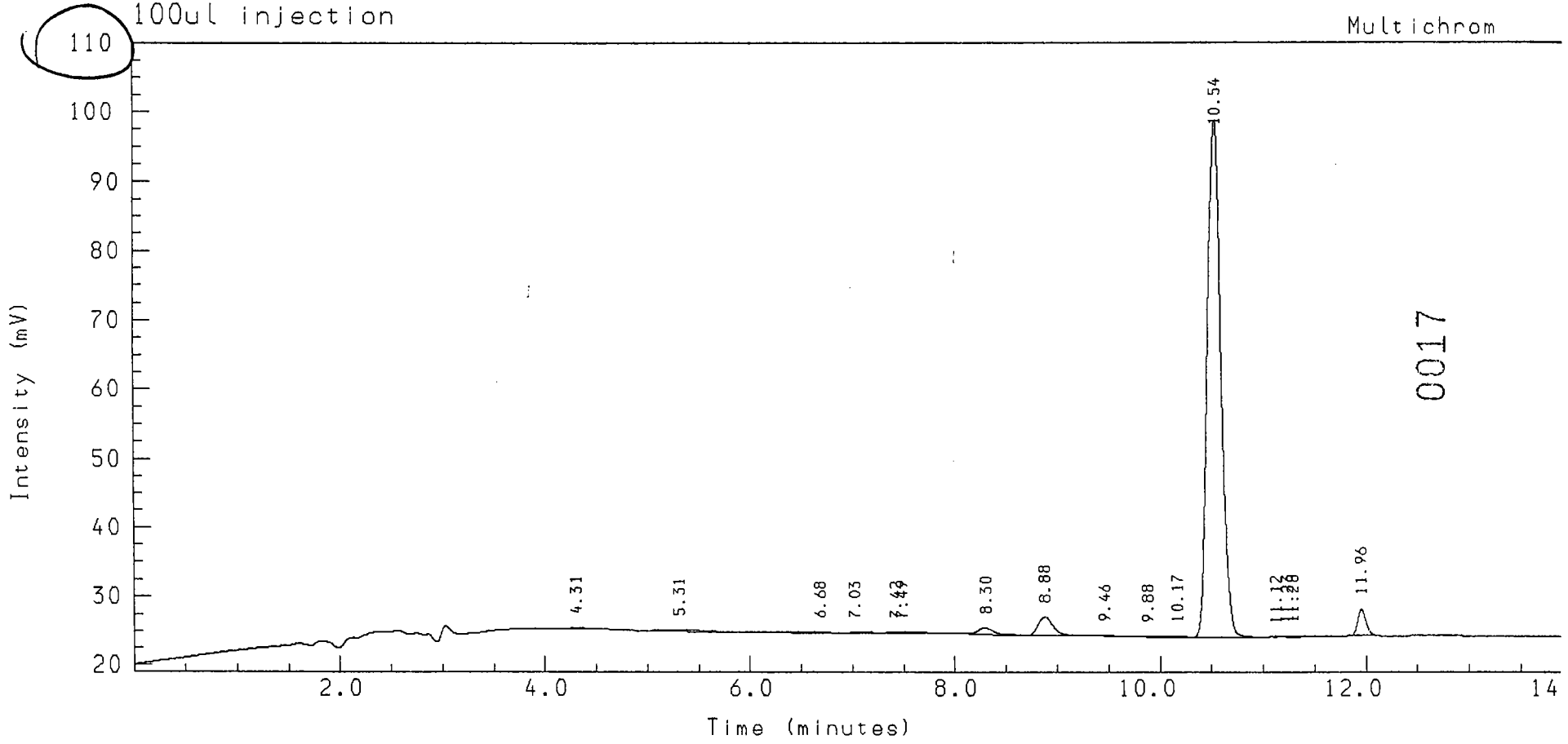
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 14JAN031056,49,1.
GW05MW02B Amount : 1.000
100ul injection

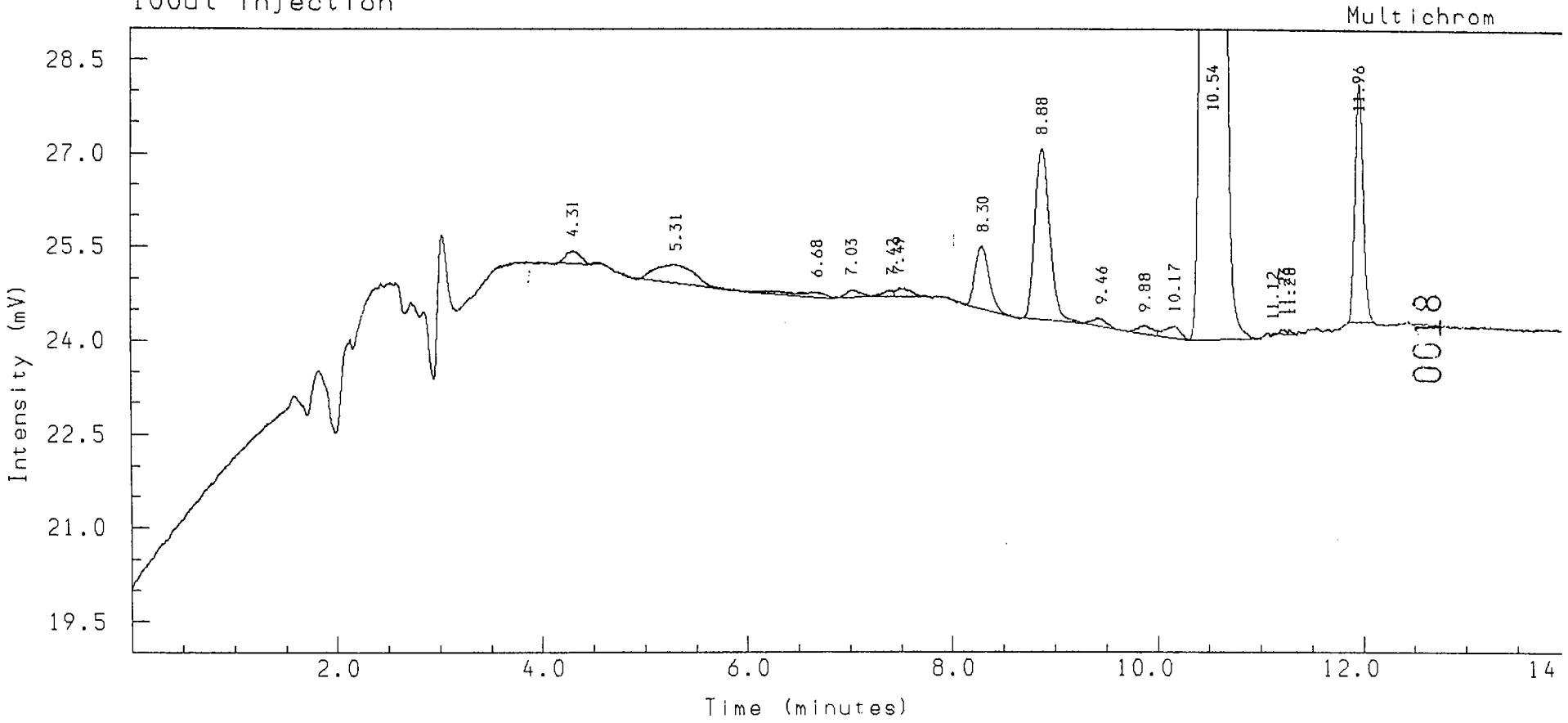


Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : 514220
Acquired on 15-JAN-2003 at 05:30
Reported on 17-JAN-2003 at 15:13

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_5

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 14JAN031056,49,1.
GW05MW02B Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : 514220
Acquired on 15-JAN-2003 at 05:30
Reported on 17-JAN-2003 at 15:11

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_5

Injection Report

Acquired on 15-JAN-2003 at 05:30

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : GW05MW02B
Sample Id : 514220
Sample Type : Sample Amount=1.00000
Bottle No : 59

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				4.308	0.000	205	1986	0.000		M
2				5.308	0.000	292	7501	0.000		M
3			O	6.679	6.660	85	2275	3.092	1,3,5-TNB/1,3-DNB	U
4				7.026	0.000	114	1125	0.000		M
5				7.424	0.000	97	673	0.000		UMOF
6			O	7.485	7.610	129	1240	-18.0365	PICRIC ACID	UMOL
7				8.299	8.240	987	9347	37.848	2,4-DNT/2,4,6-TNT	M
8	1			8.881	8.790	2732	27664	203.603	1,2-DNB	M
9			O	9.459	9.410	137	1387	10.051	MNX	M
10			O	9.881	9.770	140	1440	5.436	2-am-4,6-DNT	MOF
11				10.172	0.000	194	2003	0.000		MOL
12			O	10.539	10.530	74567	679911	5699.451	RDX	M
13				11.119	0.000	33	85	0.000		M
14				11.232	0.000	80	276	0.000		OF
15				11.283	0.000	81	203	0.000		MOL
16				11.955	11.900	3807	21042	167.977	HMX	UM

Totals			
Unknowns	1096	13853	0.000
Named	82585	744305	6109.422
Grand Total	83681	758158	6109.422

MISSING PEAKS

RT mins	Peak name

.010	2,6-DA/2,4-DA
5.820	NB
6.350	TNX
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.190	DNX
9.299	4-am-2,6-DNT
10.310	NG
11.480	Tetryl
13.060	PETN
16.280	2,2-AZOXY
16.510	4,4-AZOXY
16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2732	27664	101.802	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_5
Calibration..... 040202_3
External standard calibration using area
Calibration last modified on 7-JAN-2003 at 09:09
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW05MW02BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix: (soil/water) WATER Lab Sample ID: 514220D1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 13JAN031446-I431

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/09/03

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted: 01/13/03

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/14/03

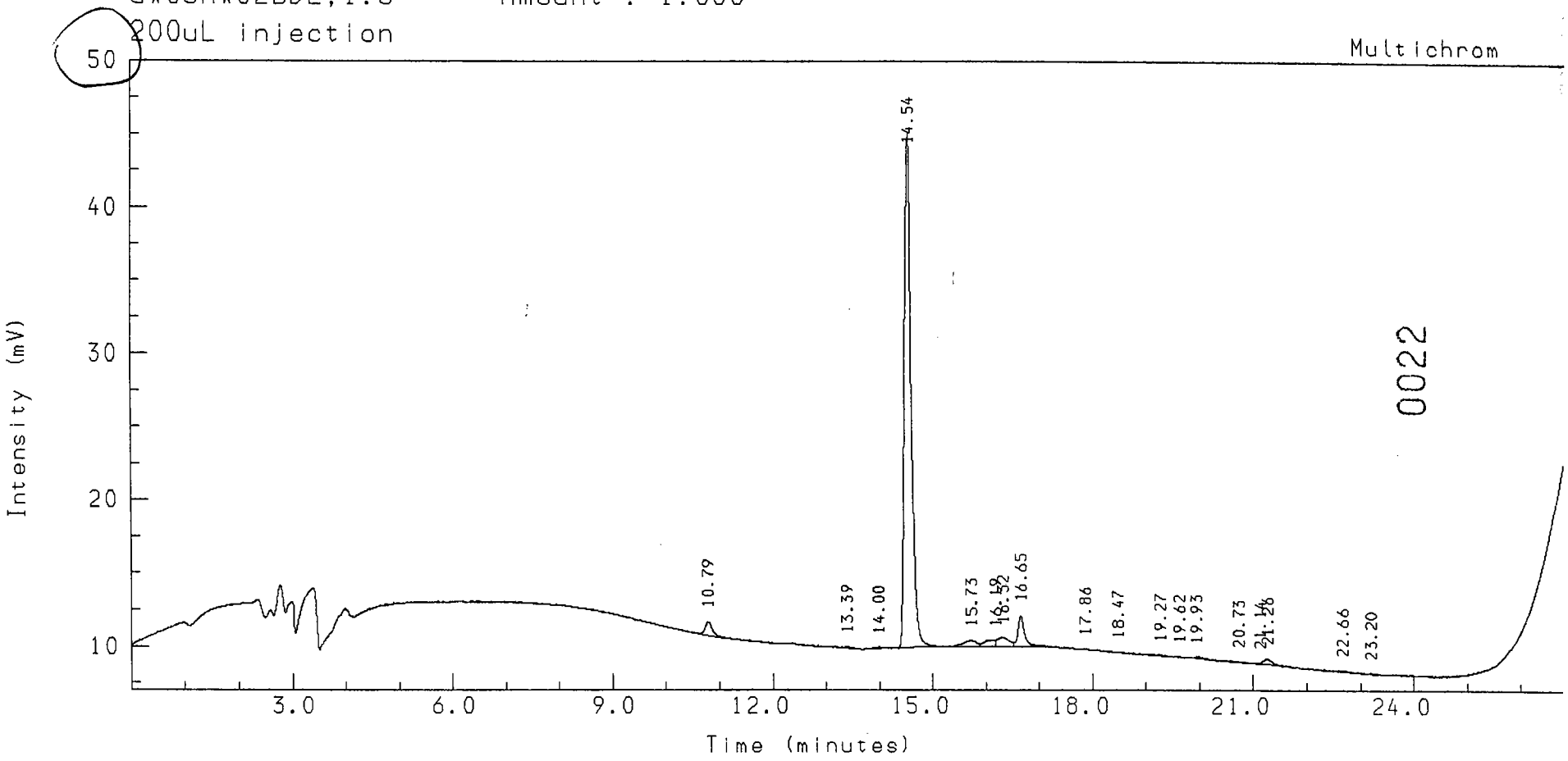
Injection Volume: 200.0(uL) Dilution Factor: 6.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	3.7	D
121-82-4	RDX	110	D
88-89-1	Picric acid	1.5	U
99-35-4	1,3,5-Trinitrobenzene	1.5	U
99-65-0	1,3-Dinitrobenzene	1.5	U
98-95-3	Nitrobenzene	1.5	U
479-45-8	Tetryl	1.5	U
55-63-0	Nitroglycerin	30	U
118-96-7	2,4,6-Trinitrotoluene	1.5	U
1946-51-0	4-Amino-2,6-dinitrotoluene	1.5	U
35572-78-2	2-Amino-4,6-dinitrotoluene	1.5	U
606-20-2	2,6-Dinitrotoluene	1.5	U
121-14-2	2,4-Dinitrotoluene	1.5	U
88-72-2	2-Nitrotoluene	1.5	U
99-99-0	4-Nitrotoluene	1.5	U
99-08-1	3-Nitrotoluene	1.5	U
78-11-5	PETN	60	U

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,43,1.
GW05MW02BDL;1:6 Amount : 1.000
200uL injection

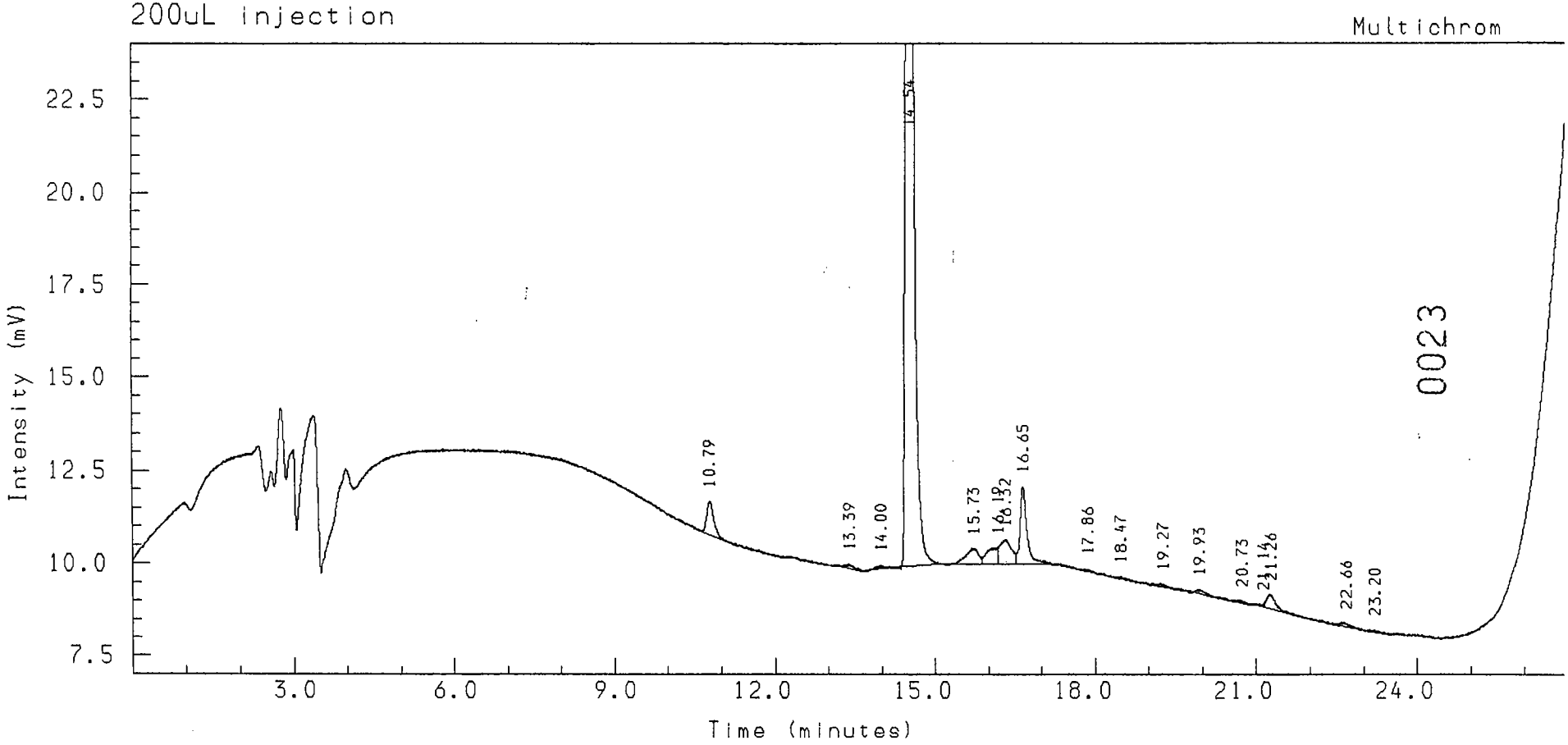


Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : 514220D1
Acquired on 14-JAN-2003 at 18:17
Reported on 17-JAN-2003 at 15:02

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,43,1.
GW05MW02BDL;1:6 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : 514220D1
Acquired on 14-JAN-2003 at 18:17
Reported on 17-JAN-2003 at 14:03

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 14-JAN-2003 at 18:17

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : GW05MW02BDL;1:6
Sample Id : 514220D1
Sample Type : Sample Amount=1.00000
Bottle No : 42

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				10.788	10.770	921	8558	30.667	HMX	UM
2			O	13.389	13.370	99	931	4.767	MNX	U
3				13.997	0.000	82	683	0.000		MOF
				14.539	14.510	35097	310036	937.254	RDX	MOL
			O	15.728	15.840	422	7067	7.100	PICRIC ACID	MOF
6				16.190	0.000	444	6407	0.000		MO
7			O	16.323	16.340	650	9946	5.140	1,3,5-TNB	MO
8	1			16.650	16.640	2102	18808	38.834	1,2-DNB	UMOL
9				17.864	0.000	67	389	0.000		U
10			O	18.474	18.380	50	420	1.388	NB	U
11				19.273	0.000	75	607	0.000		U
12			O	19.615	19.530	35	109	26.780	NG	U
13			O	19.934	19.900	105	1049	1.374	2,4,6-TNT	M
14			O	20.731	20.640	61	510	-0.0337	2-am-4,6-DNT	U
15			O	21.135	21.050	83	323	1.347	2,6-DNT	UMOF
16			O	21.258	21.220	373	4044	1.786	2,4-DNT	UMOL
17			O	22.660	22.580	118	1278	3.224	2-NT	U
18			O	23.197	23.260	70	571	3.588	4-NT	UM

Totals			
Unknowns	667	8086	0.000
Named	40187	363650	1063.214
Grand Total	40854	371735	1063.214

MISSING PEAKS

RT mins	Peak name
9.040	2,6-DA
9.800	TNX
10.480	2,4-DA
11.680	DNX
17.550	1,3-DNB
18.740	Tetryl
20.300	4-am-2,6-DNT
23.980	3-NT
24.950	PETN

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2102	18808	19.417	1,2-DINITROBENZENE % RECOVERY

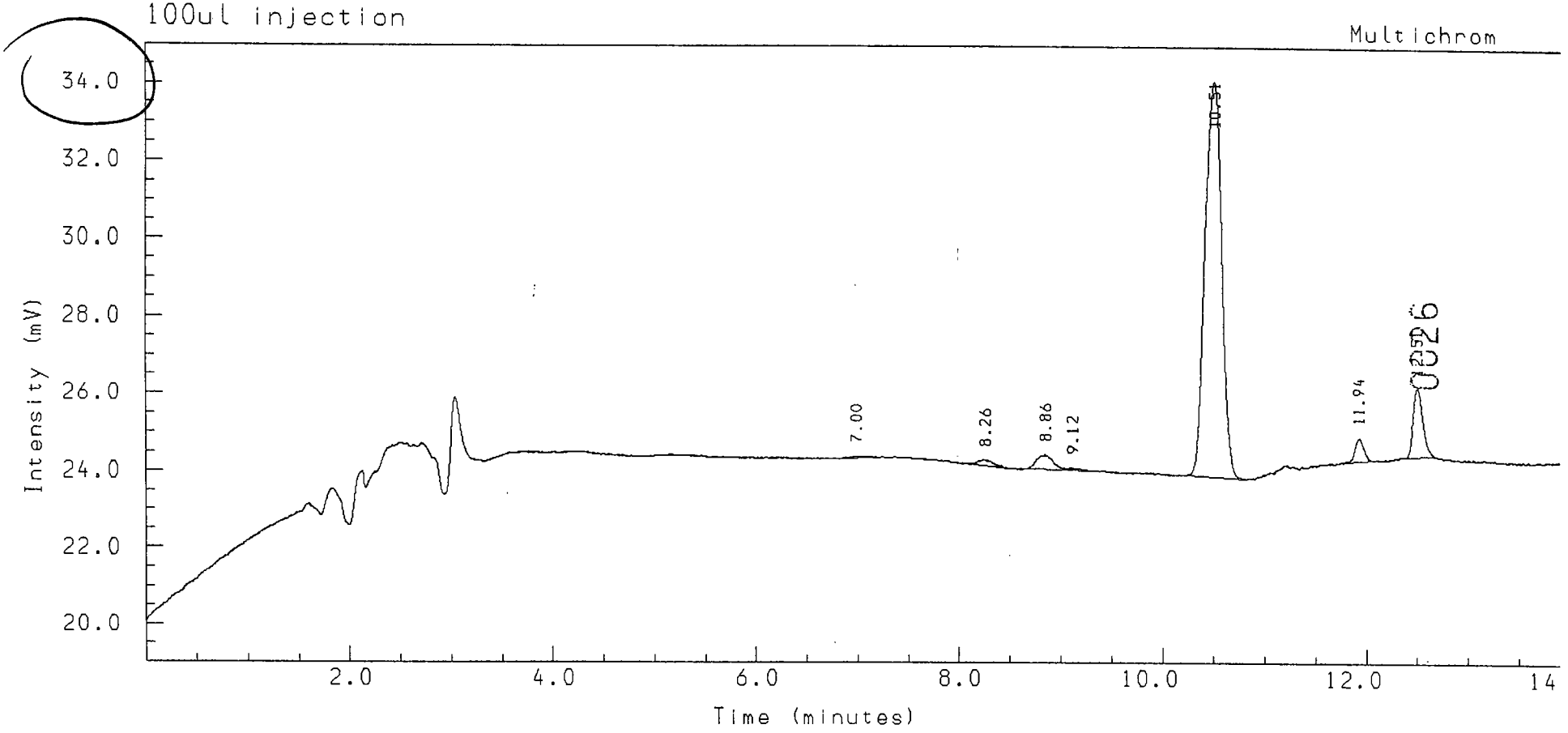
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 14-JAN-2003 at 16:32

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 14JAN031056,48,1.
GW05MW02BDL;1:6 Amount : 1.000
100ul injection

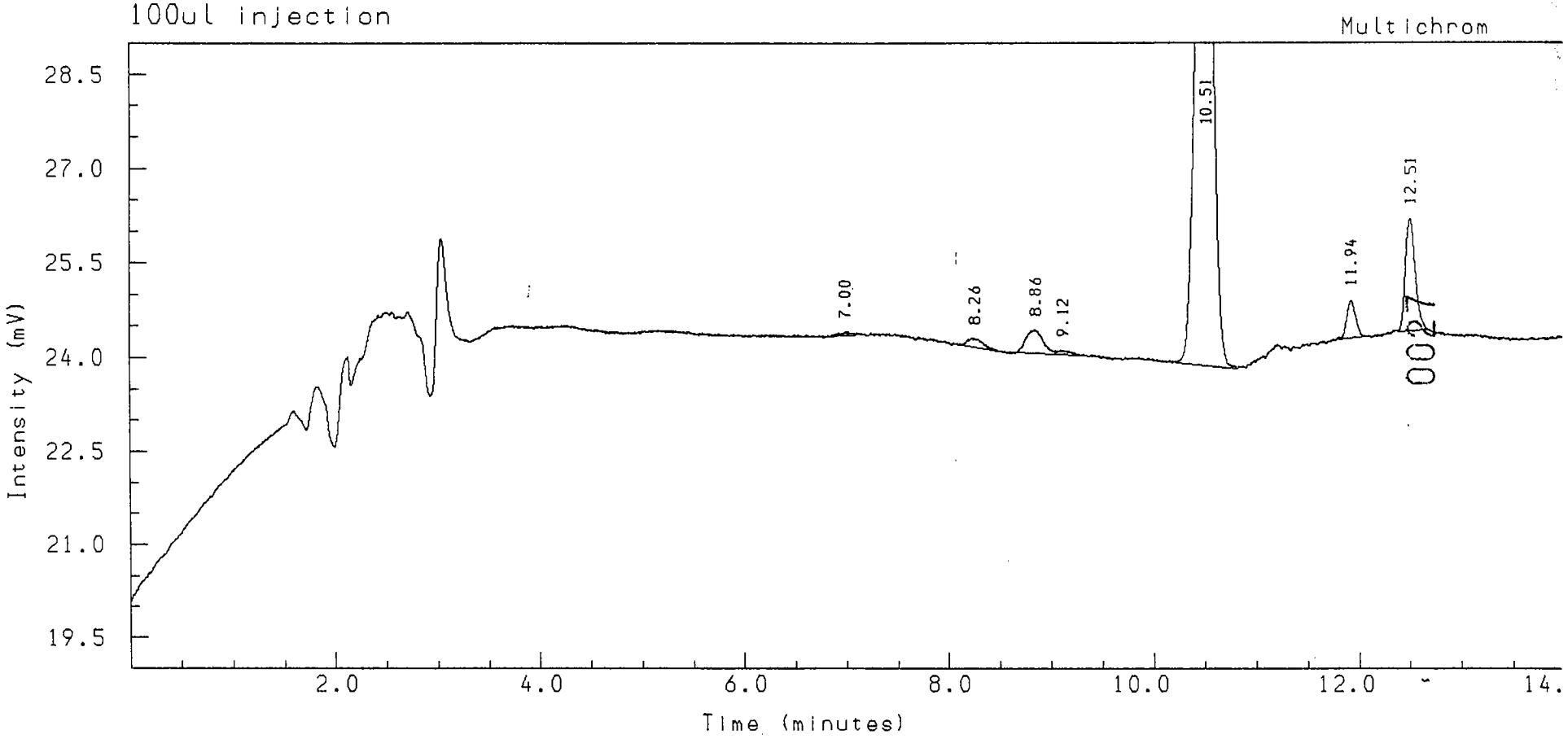


Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : 514220D1
Acquired on 15-JAN-2003 at 05:07
Reported on 17-JAN-2003 at 15:12

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_5

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 14JAN031056,48,1.
GW05MW02BDL;1:6 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : 514220D1
Acquired on 15-JAN-2003 at 05:07
Reported on 17-JAN-2003 at 15:11

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_5

Injection Report

Acquired on 15-JAN-2003 at 05:07

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : GW05MW02BDL;1:6
Sample Id : 514220D1
Sample Type : Sample Amount=1.00000
Bottle No : 59

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				6.995	0.000	55	540	0.000		U
2			O	8.257	8.240	146	1579	10.078	2,4-DNT/2,4,6-TNT	UM
3	1			8.857	8.790	372	4315	33.386	1,2-DNB	UMOF
				9.121	0.000	62	529	0.000		UMOL
				10.514	10.530	10236	116069	977.751	RDX	M
6				11.935	11.900	595	3594	26.164	HMX	UO
7				12.506	0.000	1780	11761	0.000		UO

Totals			
Unknowns	1897	12830	0.000
Named	11348	125557	1047.379
Grand Total	13246	138386	1047.379

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
5.820	NB
6.350	TNX
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.610	PICRIC ACID
7.980	2,6-DNT
8.190	DNX
9.299	4-am-2,6-DNT
9.410	MNX
770	2-am-4,6-DNT
10	NG
11.480	Tetryl
13.060	PETN
16.280	2,2-AZOXY

RT mins	Peak name
16.510	4,4-AZOXY
16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	372	4315	16.693	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_5
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW05MW07B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix: (soil/water) WATER Lab Sample ID: 514221

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 13JAN031446-I201

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/09/03

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted: 01/13/03

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/14/03

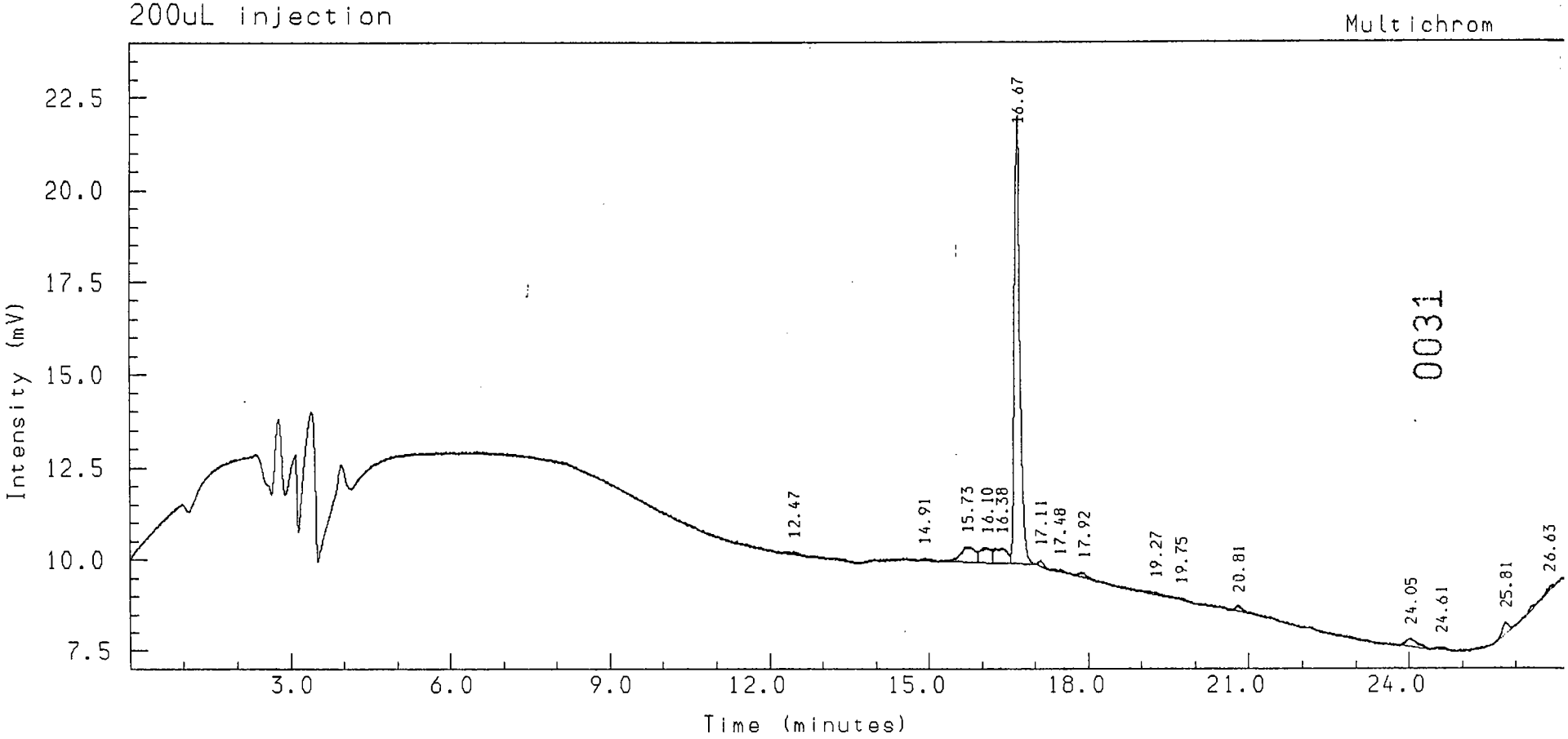
Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,20,1.
GW05MW07B Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : 514221
Acquired on 14-JAN-2003 at 03:19
Reported on 17-JAN-2003 at 14:02

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 14-JAN-2003 at 03:19

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL Injection
Method Title : 8330
Sample Name : GW05MW07B
Sample Id : 514221
Sample Type : Sample Amount=1.00000
Bottle No : 12

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				12.471	0.000	68	562	0.000		U
2				13.983	0.000	41	126	0.000		M
3				14.911	0.000	68	632	0.000		U
			O	15.731	15.840	402	7840	8.853	PICRIC ACID	UMOF
				16.095	0.000	407	5929	0.000		UMO
6			O	16.383	16.340	403	6492	0.167	1,3,5-TNB	UMO
7	1			16.670	16.640	12117	87541	197.499	1,2-DNB	UMOL
8				17.110	0.000	163	1073	0.000		UM
9			O	17.478	17.550	54	271	-0.2066	1,3-DNB	U
10				17.917	0.000	150	1224	0.000		U
11				19.268	0.000	68	697	0.000		U
12				19.747	0.000	50	271	0.000		U
13				20.809	0.000	133	1174	0.000		UM
14			O	24.046	23.980	238	3405	8.361	3-NT	M
15				24.613	0.000	73	618	0.000		U
16				25.806	0.000	334	2710	0.000		M
17				26.632	0.000	127	1637	0.000		M

Totals			
Unknowns	1682	16653	0.000
Named	13213	105548	214.674
Grand Total	14895	122201	214.674

MISSING PEAKS

RT mins	Peak name
9.040	2,6-DA
9.800	TNX
10.480	2,4-DA
10.770	HMX
11.680	DNX
13.370	MNX
14.510	RDX
18.380	NB
18.740	Tetryl
19.530	NG
19.900	2,4,6-TNT
20.300	4-am-2,6-DNT
20.640	2-am-4,6-DNT
21.050	2,6-DNT
21.220	2,4-DNT
22.580	2-NT
23.260	4-NT
24.950	PETN

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	12117	87541	98.750	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Calibration last modified on 11-DEC-2002 at 11:13
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW05MW10

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix: (soil/water) WATER Lab Sample ID: 514222

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 13JAN031446-I211

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/09/03

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted: 01/13/03

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/14/03

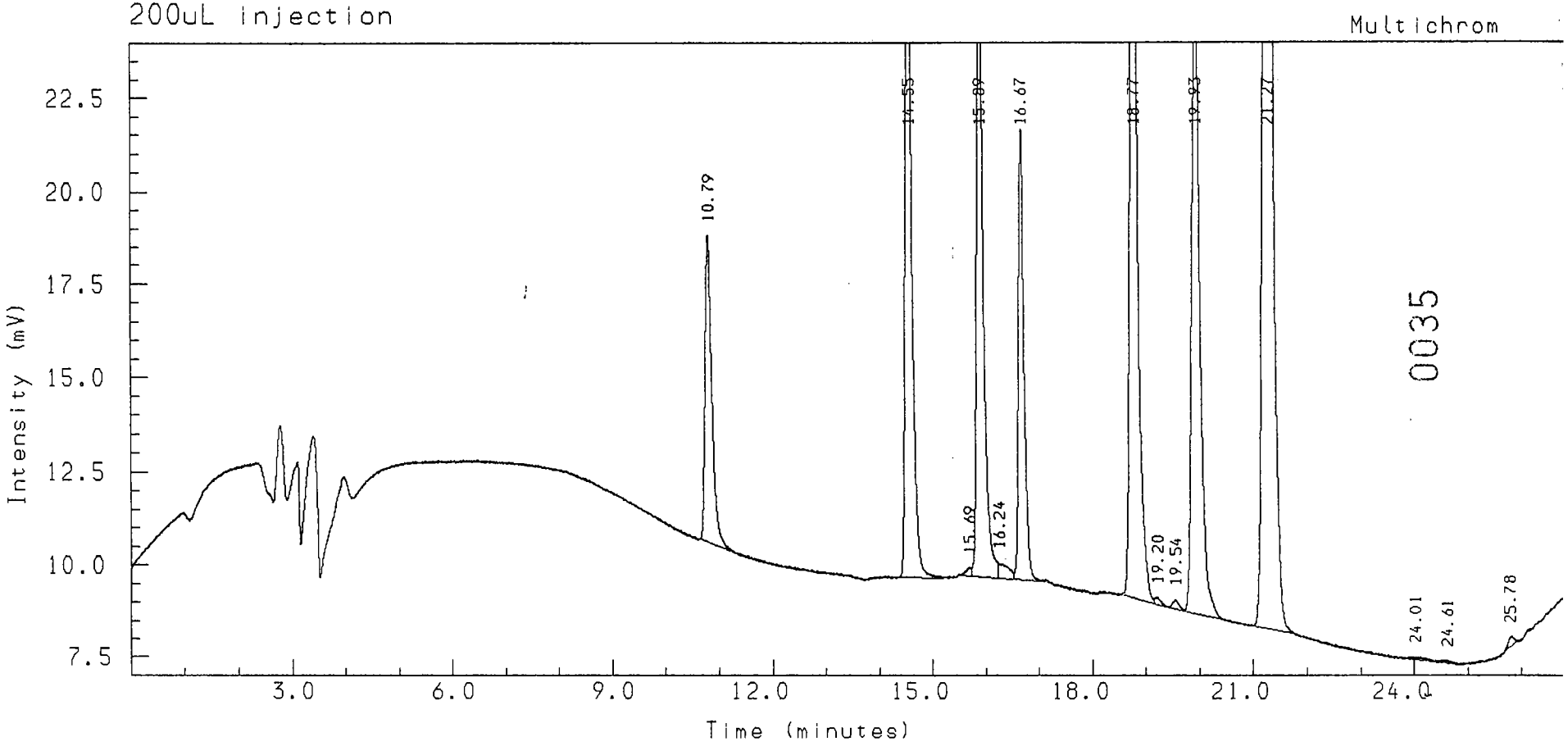
Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	4.2	
121-82-4	RDX	9.7	
88-89-1	Picric acid	6.4	
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	8.5	
55-63-0	Nitroglycerin	13	
118-96-7	2,4,6-Trinitrotoluene	5.6	
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	8.7	
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,21,1.
GW05MW10 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : 514222
Acquired on 14-JAN-2003 at 03:58
Reported on 17-JAN-2003 at 14:02

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 14-JAN-2003 at 03:58

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : GW05MW10
Sample Id : 514222
Sample Type : Sample Amount=1.00000
Bottle No : 12

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				10.794	10.770	8219	72645	212.582	HMX	M
2				12.746	0.000	41	145	0.000		M
3				14.552	14.510	19168	160338	485.043	RDX	M
				15.695	0.000	238	1611	0.000		UMOF
				15.892	15.840	16629	144708	319.256	PICRIC ACID	UMO
6			O	16.243	16.340	411	5523	-1.2276	1,3,5-TNB	UMO
7	1			16.666	16.640	12061	86735	195.640	1,2-DNB	UMOL
8				18.772	18.740	23608	221307	424.588	Tetryl	UMOF
9				19.199	0.000	173	1170	0.000		UMOL
10				19.537	19.530	236	1917	637.206	NG	UO
11				19.930	19.900	16798	176465	278.525	2,4,6-TNT	UO
12				21.272	21.220	36535	416718	436.900	2,4-DNT	UO
13			O	24.008	23.980	71	1197	1.960	3-NT	U
14				24.612	0.000	68	731	0.000		U
15				25.783	0.000	265	1854	0.000		M

Totals			
Unknowns	786	5509	0.000
Named	133735	1287553	2990.471
Grand Total	134521	1293062	2990.471

MISSING PEAKS

RT mins	Peak name
9.040	2,6-DA
9.800	TNX
10.480	2,4-DA
680	DNX
13.370	MNX
17.550	1,3-DNB
18.380	NB

0036

RT mins	Peak name
20.300	4-am-2,6-DNT
20.640	2-am-4,6-DNT
21.050	2,6-DNT
22.580	2-NT
23.260	4-NT
24.950	PETN

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	12061	86735	97.820	1,2-DINITROBENZENE % RECOVERY

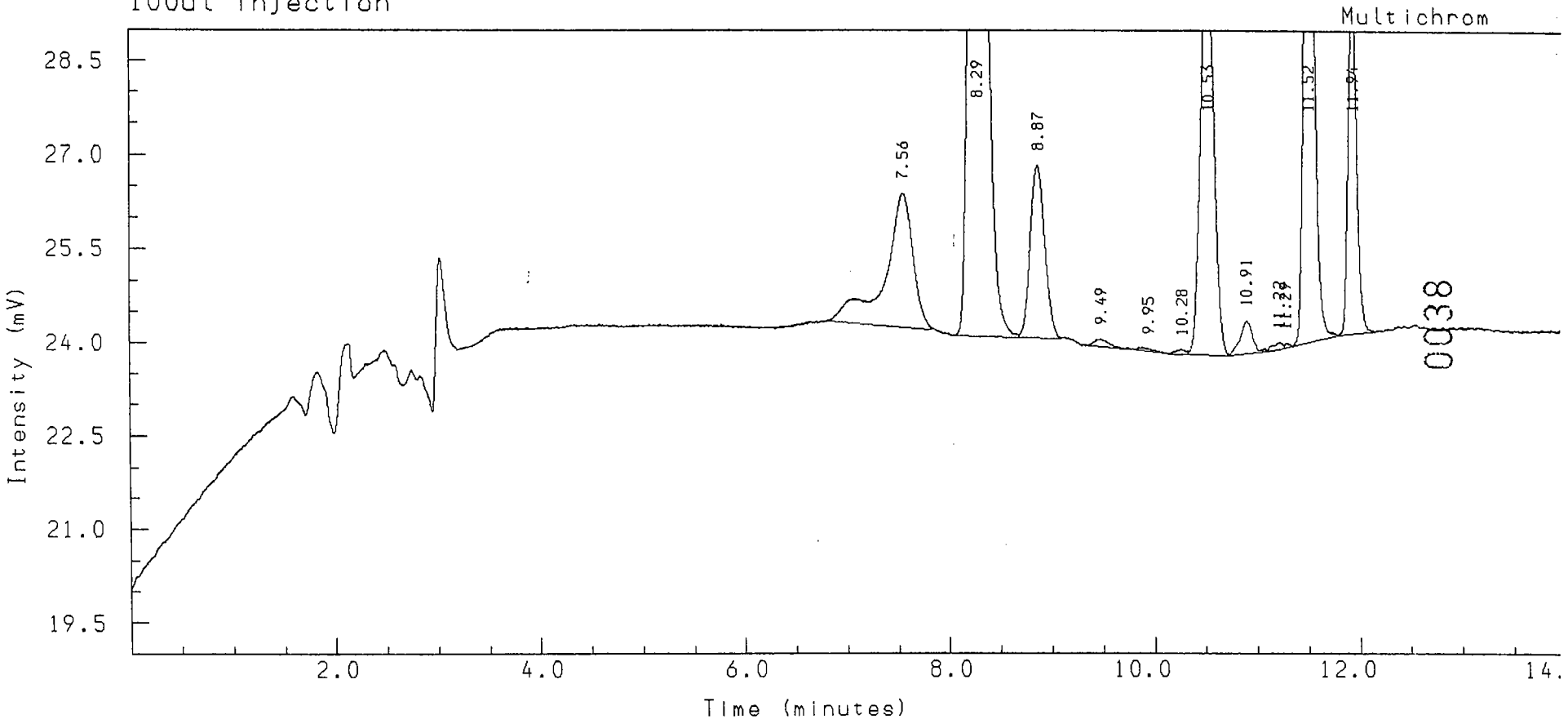
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 14JAN031056,51,1.
GW05MW10 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : 514222
Acquired on 15-JAN-2003 at 06:15
Reported on 17-JAN-2003 at 15:11

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_5

Injection Report

Acquired on 15-JAN-2003 at 06:15

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : GW05MW10
Sample Id : 514222
Sample Type : Sample Amount=1.00000
Bottle No : 57

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				7.557	7.610	2127	40452	312.686	PICRIC ACID	UO
2				8.286	8.240	21296	207848	747.505	2,4-DNT/2,4,6-TNT	MOF
3	1			8.872	8.790	2759	27213	200.318	1,2-DNB	UMOL
4			O	9.492	9.410	132	1305	9.458	MNX	M
5				9.952	0.000	50	439	0.000		M
6				10.281	10.310	78	519	432.155	NG	UMOF
7				10.532	10.530	6403	57538	487.606	RDX	UMOL
8				10.910	0.000	525	4367	0.000		M
9				11.221	0.000	113	726	0.000		MOF
10				11.290	0.000	77	237	0.000		MOL
11				11.517	11.480	11052	71869	431.893	Tetryl	U
12				11.939	11.900	5592	31743	254.957	HMX	UO

Totals			
Unknowns	766	5769	0.000
Named	49438	438487	2876.577
Grand Total	50204	444256	2876.577

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
5.820	NB
6.350	TNX
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
9.299	4-am-2,6-DNT
9.770	2-am-4,6-DNT
13.060	PETN
16.280	2,2-AZOXY

R. Tns	Peak name
16.510	4,4-AZOXY
16.750	PYX
0.000	DNX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2759	27213	100.159	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_5
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW1005MW07B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix: (soil/water) WATER Lab Sample ID: 514224

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 13JAN031446-I231

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/09/03

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted: 01/13/03

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/14/03

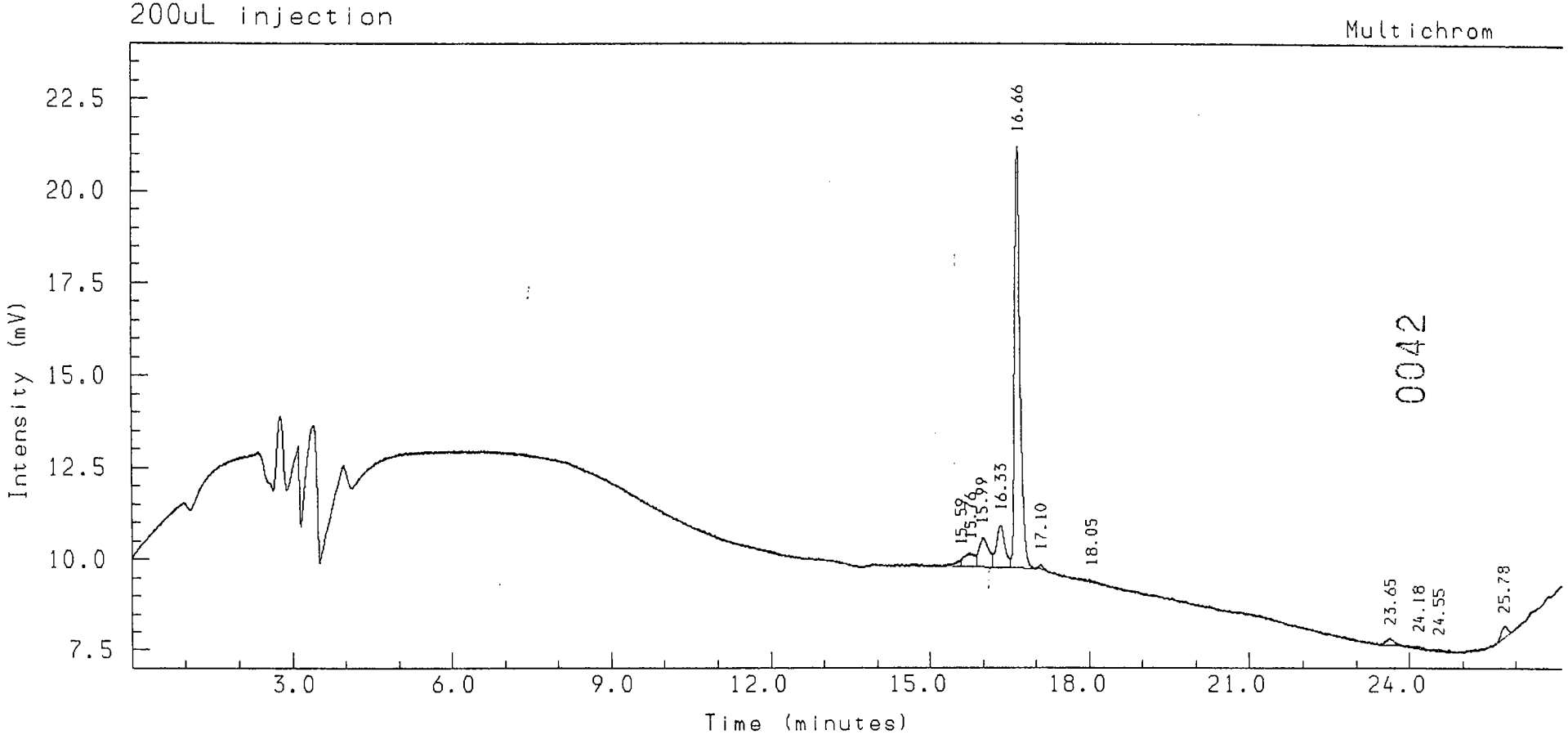
Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,23,1.
GW1005MW07B Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : 514224
Acquired on 14-JAN-2003 at 05:16
Reported on 17-JAN-2003 at 14:02

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 14-JAN-2003 at 05:16

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : GW1005MW07B
Sample Id : 514224
Sample Type : Sample Amount=1.00000
Bottle No : 12

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				15.595	0.000	180	1258	0.000		UMOF
2			O	15.764	15.840	367	4976	2.359	PICRIC ACID	UMO
3				15.992	0.000	788	10133	0.000		UMO
4			O	16.334	16.340	1161	12960	9.478	1,3,5-TNB	UMO
5	1			16.659	16.640	11469	82347	185.509	1,2-DNB	UMOL
6				17.101	0.000	128	706	0.000		M
7				18.049	0.000	70	714	0.000		U
8				23.649	0.000	189	1939	0.000		UO
9				24.179	0.000	74	886	0.000		UO
10				24.553	0.000	80	730	0.000		U
11				25.781	0.000	318	2780	0.000		M

Totals			
Unknowns	1828	19147	0.000
Named	12997	100283	197.347
Grand Total	14824	119430	197.347

MISSING PEAKS

RT mins	Peak name
9.040	2,6-DA
9.800	TNX
10.480	2,4-DA
10.770	HMX
11.680	DNX
13.370	MNX
14.510	RDX
17.550	1,3-DNB
18.380	NB
18.740	Tetryl
19.530	NG

R.t mins	Peak name
19.900	2,4,6-TNT
20.300	4-am-2,6-DNT
20.640	2-am-4,6-DNT
21.050	2,6-DNT
21.220	2,4-DNT
22.580	2-NT
23.260	4-NT
23.980	3-NT
24.950	PETN

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11469	82347	92.755	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Calibration last modified on 11-DEC-2002 at 11:13
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW505MW07B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix: (soil/water) WATER Lab Sample ID: 514223

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 13JAN031446-I221

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/09/03

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted: 01/13/03

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/14/03

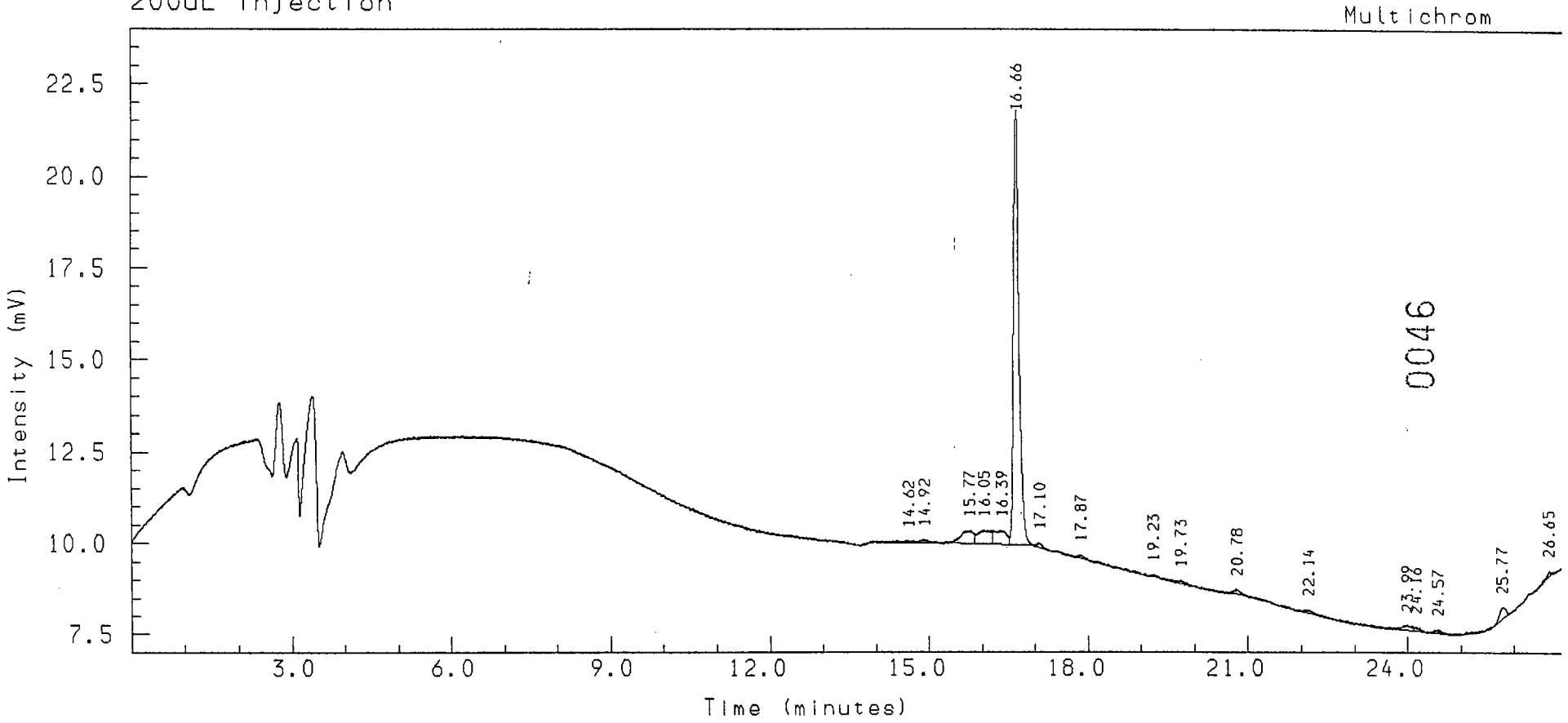
Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,22,1.
GW505MW07B Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : 514223
Acquired on 14-JAN-2003 at 04:37
Reported on 17-JAN-2003 at 14:02

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 14-JAN-2003 at 04:37

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : GW505MW07B
Sample Id : 514223
Sample Type : Sample Amount=1.00000
Bottle No : 12

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1			O	14.620	14.510	62	1121	4.075	RDX	UMOF
2				14.919	0.000	99	1100	0.000		UMOL
3			O	15.767	15.840	353	6008	4.700	PICRIC ACID	UMOF
4				16.045	0.000	365	6081	0.000		UMO
5			O	16.386	16.340	366	6099	-0.3994	1,3,5-TNB	UMO
6	1			16.657	16.640	11806	84682	190.900	1,2-DNB	UMOL
7				17.099	0.000	124	893	0.000		M
8				17.870	0.000	94	581	0.000		U
9				19.235	0.000	56	180	0.000		U
10				19.735	0.000	69	811	0.000		U
11				20.782	0.000	134	1047	0.000		UM
12				22.142	0.000	90	838	0.000		U
13			O	23.991	23.980	145	1656	3.290	3-NT	UMOF
14				24.158	0.000	116	724	0.000		UMO
15				24.571	0.000	103	941	0.000		UMOL
16				25.770	0.000	333	2685	0.000		M
17				26.648	0.000	150	1006	0.000		M

Totals			
Unknowns	1733	16887	0.000
Named	12731	99565	202.565
Grand Total	14464	116452	202.565

MISSING PEAKS

RT mins	Peak name
9.040	2,6-DA
9.800	TNX
10.480	2,4-DA
10.770	HMX
11.680	DNX
13.370	MNX
17.550	1,3-DNB
18.380	NB
18.740	Tetryl
19.530	NG
19.900	2,4,6-TNT
20.300	4-am-2,6-DNT
20.640	2-am-4,6-DNT
21.050	2,6-DNT
21.220	2,4-DNT
22.580	2-NT
23.260	4-NT
24.950	PETN

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11806	84682	95.450	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Calibration last modified on 11-DEC-2002 at 11:13
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

ID REPORT - 8330+ EXPLOSIVES

Lab sample #: 514220 File Name: 45 13JAN031446,19 SDG: BON005

Client ID: GW05MW02B Confirmation File Name: 46 14JAN031054,49

	Kromasil C-18						Pinnacle CN				
COMPOUND	ACT. RT	EXP. RT	AREA	CAL FLAG	Ext Conc (ug/L)	Spl Conc (ug/L)	COMPOUND	ACT. RT	EXP. RT	AREA	Ext Conc (ug/L)*
1,2-DNB	16.68	16.64	84084	D,C4	189.52	3.79	1,2-DNB 10.09	8.88	8.79	27664	203.60
2,6-DA		9.04					2,6-DA/2,4-DA		5.01		
TNX	9.70	9.80	467	O	3.09	0.06	TNX		6.35		
2,4-DA		10.48					2,6-DA/2,4-DA		5.01		
HMX	10.81	10.77	49367		146.51	2.93	HMX	11.96	11.90	21042	167.97
DNX		11.68					DNX		8.19		
~~MNX~~	~~13.41~~	~~13.37~~	~~4098~~	~~O~~	~~12.88~~	~~0.26~~	VM3 11/03 MNX		9.41		
RDX	14.56	14.51	1807889	E	5462.01	109.24	RDX	10.54	10.53	67991	569.45 (E)
PICRIC ACID	15.73	15.84	7469	O	8.01	0.16	PICRIC ACID		7.61		
1,3,5-TNB	16.36	16.34	15367		12.94	0.26	1,3,5-TNB/1,3-DNB CRL	6.68	6.66	2275	3092
1,3-DNB	17.54	17.55	681	O	0.23	0.00	1,3,5-TNB/1,3-DNB		6.66		
NB		18.38					NB		5.82		
Tetryl		18.74					Tetryl		11.48		
NG		19.53					NG		10.32		
2,4,6-TNT	20.01	19.90	9692		15.03	0.30	2,4,6-TNT/2,4-DNT	8.30	8.24	9347	37.848
4-am-2,6-DNT	20.39	20.30	1204	O	1.67	0.03	4-am-2,6-DNT		9.30		
2-am-4,6-DNT	20.74	20.64	3130	O	3.74	0.07	2-am-4,6-DNT		9.77		
2,6-DNT		21.05					2,6-DNT		7.98		
2,4-DNT	21.30	21.22	24630		23.49	0.47	2,4,6-TNT/2,4-DNT	8.30	8.24	9347	37.848
2-NT	22.61	22.58	7129		20.40	0.41	2NT/4NT/3NT (IN2)	7.42	7.25	673	<CRL
4-NT	23.19	23.26	314	O	2.64	0.05	2NT/4NT/3NT		7.25		
3-NT	23.86	23.98	754	O	0.68	0.01	2NT/4NT/3NT		7.25		
PETN		24.95					PETN		13.06		

*=Ext Conc must be divided by **50.00** to yield Spl Conc.

1,2-DNB % RECOVERY 95 1,2-DNB % RECOVERY 102

500 Sample Volume (mL)

1.0 Dilution Factor

10 Extract Volume (mL)

50.0 Prep Factor [Formula: Sample Volume (mL)/Extract Volume (mL)]

STL Burlington

ID REPORT - 8330+ EXPLOSIVES

SDG: BON005

Lab sample #: 514220D1 File Name: 45 13JAN031446,43

Client ID: 05MW02BDL;1:6 Confirmation File Name: 46 14JAN031054,48

	Kromasil C-18						Pinnacle CN				
COMPOUND	ACT. RT	EXP. RT	AREA	CAL FLAG	Ext Conc (ug/L)	Spl Conc (ug/L)	COMPOUND	ACT. RT	EXP. RT	AREA	Ext Conc (ug/L)*
1,2-DNB	16.65	16.64	18808		233.00	4.66	1,2-DNB (10.0?)	8.86	8.79	4315	~~3305~~ 1/23/10 CM
2,6-DA		9.04					2,6-DA/2,4-DA		5.01		33.356
TNX		9.80					TNX		6.35		200.316
2,4-DA		10.48					2,6-DA/2,4-DA		5.01		
HMX	10.79	10.77	8558		30.67	3.68	HMX	11.94	11.90	3594	26.164
DNX		11.68					DNX		8.19		
MNX	13.39	13.37	931	O	4.77	0.57	MNX		9.41		
RDX	14.54	14.51	310036		937.25	112.47	RDX	10.51	10.53	116069	977.751
PICRIC ACID	15.73	15.84	7067	O	7.10	0.85	PICRIC ACID		7.61		
1,3,5-TNB	16.32	16.34	9946	O	5.14	0.62	1,3,5-TNB/1,3-DNB		6.66		
1,3-DNB		17.55					1,3,5-TNB/1,3-DNB		6.66		
NB	18.47	18.38	420	O	1.39	0.17	NB		5.82		
Tetryl		18.74					Tetryl		11.48		
NG	19.62	19.53	109	O	26.78	3.21	NG		10.32		
2,4,6-TNT	19.93	19.90	1049	O	1.37	0.16	2,4,6-TNT/2,4-DNT		8.24		
4-am-2,6-DNT		20.30					4-am-2,6-DNT		9.30		
2-am-4,6-DNT	20.73	20.64	510	O	-0.03	0.00	2-am-4,6-DNT		9.77		
2,6-DNT	21.14	21.05	323	O	1.35	0.16	2,6-DNT		7.98		
2,4-DNT	21.26	21.22	4044	O	1.79	0.21	2,4,6-TNT/2,4-DNT		8.24		
2-NT	22.66	22.58	1278	O	3.22	0.39	2NT/4NT/3NT		7.25		
4-NT	23.20	23.26	571	O	3.59	0.43	2NT/4NT/3NT		7.25		
3-NT		23.98					2NT/4NT/3NT		7.25		
PETN		24.95					PETN		13.06		

*=Ext Conc must be divided by **8.33** to yield Spl Conc.

1,2-DNB % RECOVERY 117 (D)

1,2-DNB % RECOVERY 100

500	Sample Volume (mL)
6.0	Dilution Factor
10	Extract Volume (mL)
50.0	Prep Factor

[Formula: Sample Volume (mL)/Extract Volume (mL)]

STL Burlington

ID REPORT - 8330+ EXPLOSIVES

Lab sample #: 514221 File Name: 45 13JAN031446,20 SDG: BON005

Client ID: GW05MW07B Confirmation File Name: ~~46 14JAN031054~~ WBK 1/17/03

	Kromasil C-18						Pinnacle CN				
COMPOUND	ACT. RT	EXP. RT	AREA	CAL FLAG	Ext Conc (ug/L)	Spl Conc (ug/L)	COMPOUND	ACT. RT	EXP. RT	AREA	Ext Conc (ug/L)*
1,2-DNB	16.67	16.64	87541	TOO3	197.50	3.95	1,2-DNB		8.79		
2,6-DA		9.04					2,6-DA/2,4-DA		5.01		
TNX		9.80					TNX		6.35		
2,4-DA		10.48					2,6-DA/2,4-DA		5.01		
HMX		10.77					HMX		11.90		
DNX		11.68					DNX		8.19		
MNX		13.37					MNX		9.41		
RDX		14.51					RDX		10.53		
PICRIC ACID	15.73	15.84	7840	O	8.85	0.18	PICRIC ACID		7.61		
1,3,5-TNB	16.38	16.34	6492	O	0.17	0.00	1,3,5-TNB/1,3-DNB		6.66		
1,3-DNB	17.48	17.55	271	O	-0.21	0.00	1,3,5-TNB/1,3-DNB		6.66		
NB		18.38					NB		5.82		
Tetryl		18.74					Tetryl		11.48		
NG		19.53					NG		10.32		
2,4,6-TNT		19.90					2,4,6-TNT/2,4-DNT		8.24		
4-am-2,6-DNT		20.30					4-am-2,6-DNT		9.30		
2-am-4,6-DNT		20.64					2-am-4,6-DNT		9.77		
2,6-DNT		21.05					2,6-DNT		7.98		
2,4-DNT		21.22					2,4,6-TNT/2,4-DNT		8.24		
2-NT		22.58					2NT/4NT/3NT		7.25		
4-NT		23.26					2NT/4NT/3NT		7.25		
3-NT	24.05	23.98	3405	O	8.36	0.17	2NT/4NT/3NT		7.25		
PETN		24.95					PETN		13.06		

*=Ext Conc must be divided by **50.00** to yield Spl Conc.

1,2-DNB % RECOVERY 99 1,2-DNB % RECOVERY X

500 Sample Volume (mL)

1.0 Dilution Factor

10 Extract Volume (mL)

50.0 Prep Factor [Formula: Sample Volume (mL)/Extract Volume (mL)]

STL Burlington

ID REPORT - 8330+ EXPLOSIVES

SDG: BON005

Lab sample #: 514222 File Name: 45 13JAN031446,21

Client ID: GW05MW10 Confirmation File Name: 46 14JAN031054,51

	Kromasil C-18						Pinnacle CN 1/23/03 LMB				
COMPOUND	ACT. RT	EXP. RT	AREA	CAL FLAG	Ext Conc (ug/L)	Spl Conc (ug/L)	COMPOUND	ACT. RT	EXP. RT	AREA	Ext Conc (ug/L)*
1,2-DNB	16.67	16.64	86735	10.07	195.64	3.91	1,2-DNB 8.87	~~8.87~~	8.79	27213	200.318
2,6-DA		9.04					2,6-DA/2,4-DA		5.01		
TNX		9.80					TNX		6.35		
2,4-DA		10.48					2,6-DA/2,4-DA		5.01		
HMX	10.79	10.77	72645		212.58	4.25	HMX	11.94	11.90	31743	254.957
DNX		11.68					DNX		8.19		
MNX		13.37					MNX		9.41		
RDX	14.55	14.51	160338		485.04	9.70	RDX	10.53	10.53	57535	487.604
PICRIC ACID	15.89	15.84	144708		319.26	6.39	PICRIC ACID	7.56	7.61	40452	312.685 see CCV info
1,3,5-TNB	16.24	16.34	5523	O	-1.23	-0.02	1,3,5-TNB/1,3-DNB		6.66		
1,3-DNB		17.55					1,3,5-TNB/1,3-DNB		6.66		
NB		18.38					NB		5.82	71864	
Tetryl	18.77	18.74	221307		424.59	8.49	Tetryl	11.52	11.48	~~74869~~	431.843
NG	19.54	19.53	1917		637.21	12.74	NG	10.28	10.32	519	432.155
2,4,6-TNT	19.93	19.90	176465		278.53	5.57	2,4,6-TNT/2,4-DNT	8.29	8.24	207848	747.507
4-am-2,6-DNT		20.30					4-am-2,6-DNT		9.30		
2-am-4,6-DNT		20.64					2-am-4,6-DNT		9.77		
2,6-DNT		21.05					2,6-DNT		7.98		
2,4-DNT	21.27	21.22	416718		436.90	8.74	2,4,6-TNT/2,4-DNT	8.29	8.24	207845	747.505
2-NT		22.58					2NT/4NT/3NT		7.25		
4-NT		23.26					2NT/4NT/3NT		7.25		
3-NT	24.01	23.98	1197	O	1.96	0.04	2NT/4NT/3NT		7.25		
PETN		24.95					PETN		13.06		

*=Ext Conc must be divided by **50.00** to yield Spl Conc.

1,2-DNB % RECOVERY 98

1,2-DNB % RECOVERY 100

500 Sample Volume (mL)

1.0 Dilution Factor

10 Extract Volume (mL)

50.0 Prep Factor [Formula: Sample Volume (mL)/Extract Volume (mL)]

STL Burlington

ID REPORT - 8330+ EXPLOSIVES

Lab sample #: 514224 File Name: 45 13JAN031446,23 SDG: BON005

Client ID: GW1005MW07B Confirmation File Name: ~~46 14JAN031054~~ wby

	Kromasil C-18						Pinnacle CN				
COMPOUND	ACT. RT	EXP. RT	AREA	CAL FLAG	Ext Conc (ug/L)	Spl Conc (ug/L)	COMPOUND	ACT. RT	EXP. RT	AREA	Ext Conc (ug/L)*
1,2-DNB	16.66	16.64	82347		185.51	3.71	1,2-DNB		8.79		
2,6-DA		9.04					2,6-DA/2,4-DA		5.01		
TNX		9.80					TNX		6.35		
2,4-DA		10.48					2,6-DA/2,4-DA		5.01		
HMX		10.77					HMX		11.90		
DNX		11.68					DNX		8.19		
MNX		13.37					MNX		9.41		
RDX		14.51					RDX		10.53		
PICRIC ACID	15.76	15.84	4976	O	2.36	0.05	PICRIC ACID		7.61		
1,3,5-TNB	16.33	16.34	12960	O	9.48	0.19	1,3,5-TNB/1,3-DNB		6.66		
1,3-DNB		17.55					1,3,5-TNB/1,3-DNB		6.66		
NB		18.38					NB		5.82		
Tetryl		18.74					Tetryl		11.48		
NG		19.53					NG		10.32		
2,4,6-TNT		19.90					2,4,6-TNT/2,4-DNT		8.24		
4-am-2,6-DNT		20.30					4-am-2,6-DNT		9.30		
2-am-4,6-DNT		20.64					2-am-4,6-DNT		9.77		
2,6-DNT		21.05					2,6-DNT		7.98		
2,4-DNT		21.22					2,4,6-TNT/2,4-DNT		8.24		
2-NT		22.58					2NT/4NT/3NT		7.25		
4-NT		23.26					2NT/4NT/3NT		7.25		
3-NT		23.98					2NT/4NT/3NT		7.25		
PETN		24.95					PETN		13.06		

*=Ext Conc must be divided by **50.00** to yield Spl Conc.

1,2-DNB % RECOVERY 93 1,2-DNB % RECOVERY X

500 Sample Volume (mL)

1.0 Dilution Factor

10 Extract Volume (mL)

50.0 Prep Factor [Formula: Sample Volume (mL)/Extract Volume (mL)]

STL Burlington

ID REPORT - 8330+ EXPLOSIVES

SDG: BON005

Lab sample #: 514223 File Name: 45 13JAN031446,22

Client ID: GW505MW07B Confirmation File Name: ~~46 14JAN031054~~ WB 1/12/10

	Kromasil C-18						Pinnacle CN				
COMPOUND	ACT. RT	EXP. RT	AREA	CAL FLAG	Ext Conc (ug/L)	Spl Conc (ug/L)	COMPOUND	ACT. RT	EXP. RT	AREA	Ext Conc (ug/L)*
1,2-DNB	16.66	16.64	84682		190.90	3.82	1,2-DNB		8.79		
2,6-DA		9.04					2,6-DA/2,4-DA		5.01		
TNX		9.80					TNX		6.35		
2,4-DA		10.48					2,6-DA/2,4-DA		5.01		
HMX		10.77					HMX		11.90		
DNX		11.68					DNX		8.19		
MNX		13.37					MNX		9.41		
RDX	14.62	14.51	1121	O	4.08	0.08	RDX		10.53		
PICRIC ACID	15.77	15.84	6008	O	4.70	0.09	PICRIC ACID		7.61		
1,3,5-TNB	16.39	16.34	6099	O	-0.40	-0.01	1,3,5-TNB/1,3-DNB		6.66		
1,3-DNB		17.55					1,3,5-TNB/1,3-DNB		6.66		
NB		18.38					NB		5.82		
Tetryl		18.74					Tetryl		11.48		
NG		19.53					NG		10.32		
2,4,6-TNT		19.90					2,4,6-TNT/2,4-DNT		8.24		
4-am-2,6-DNT		20.30					4-am-2,6-DNT		9.30		
2-am-4,6-DNT		20.64					2-am-4,6-DNT		9.77		
2,6-DNT		21.05					2,6-DNT		7.98		
2,4-DNT		21.22					2,4,6-TNT/2,4-DNT		8.24		
2-NT		22.58					2NT/4NT/3NT		7.25		
4-NT		23.26					2NT/4NT/3NT		7.25		
3-NT	23.99	23.98	1656	O	3.29	0.07	2NT/4NT/3NT		7.25		
PETN		24.95					PETN		13.06		

*=Ext Conc must be divided by **50.00** to yield Spl Conc.

1,2-DNB % RECOVERY 95 1,2-DNB % RECOVERY X

500 Sample Volume (mL)

1.0 Dilution Factor

10 Extract Volume (mL)

50.0 Prep Factor [Formula: Sample Volume (mL)/Extract Volume (mL)]

STL Burlington

ID REPORT - 8330+ EXPLOSIVES

SDG: Burl005

Lab sample #: EBLKW1 File Name: 45 13JAN031446,3,

Client ID: EBLKW1 Confirmation File Name: 46 13JAN031633, 4

	Kromasil C-18						Pinnacle CN				
COMPOUND	ACT. RT	EXP. RT	AREA	CAL FLAG	Ext Conc (ug/L)	Spl Conc (ug/L)	COMPOUND	ACT. RT	EXP. RT	AREA	Ext Conc (ug/L)*
1,2-DNB	16.65	16.64	81342		183.19	3.66	1,2-DNB	8.82	8.79	26487	145027
2,6-DA		9.04					2,6-DA/2,4-DA		5.01		
TNX		9.80					TNX		6.35		
2,4-DA		10.48					2,6-DA/2,4-DA		5.01		
HMX		10.77					HMX		11.90		
DNX		11.68					DNX		8.19		
MNX		13.37					MNX		9.41		
RDX		14.51					RDX		10.53		
PICRIC ACID	15.76	15.84	4830	O	2.03	0.04	PICRIC ACID		7.61		
1,3,5-TNB	16.28	16.34	4906	O	-2.12	-0.04	1,3,5-TNB/1,3-DNB		6.66		
1,3-DNB		17.55					1,3,5-TNB/1,3-DNB		6.66		
NB		18.38					NB		5.82		
Tetryl		18.74					Tetryl		11.48		
NG		19.53					NG		10.32		
2,4,6-TNT		19.90					2,4,6-TNT/2,4-DNT		8.24		
4-am-2,6-DNT		20.30					4-am-2,6-DNT		9.30		
2-am-4,6-DNT		20.64					2-am-4,6-DNT		9.77		
2,6-DNT		21.05					2,6-DNT		7.98		
2,4-DNT		21.22					2,4,6-TNT/2,4-DNT		8.24		
2-NT		22.58					2NT/4NT/3NT		7.25		
4-NT		23.26					2NT/4NT/3NT		7.25		
3-NT	24.00	23.98	403	O	-0.34	-0.01	2NT/4NT/3NT		7.25		
PETN		24.95					PETN		13.06		

*=Ext Conc must be divided by **50.00** to yield Spl Conc.

1,2-DNB % RECOVERY 92

1,2-DNB % RECOVERY 98

500 Sample Volume (mL)

1.0 Dilution Factor

10 Extract Volume (mL)

50.0 Prep Factor [Formula: Sample Volume (mL)/Extract Volume (mL)]

ID REPORT - 8330+ EXPLOSIVES

SDG: BON005

Lab sample #: 514221MS File Name: 45 13JAN031446,24

Client ID: W05MW07BMS Confirmation File Name: ~~48 14JAN031054~~ 46 1/13/03

Kromasil C-18 Pinnacle CN

COMPOUND	ACT. RT	EXP. RT	AREA	CAL FLAG	Ext Conc (ug/L)	Spl Conc (ug/L)	COMPOUND	ACT. RT	EXP. RT	AREA	Ext Conc (ug/L)*
1,2-DNB	16.65	16.64	84981		191.59	3.83	1,2-DNB		8.79		
2,6-DA X	9.04	9.04	111332		190.29	3.81	2,6-DA/2,4-DA		5.01		
TNX X		9.80					TNX		6.35		
2,4-DA X	10.51	10.48	52194		164.21	3.28	2,6-DA/2,4-DA		5.01		
HMX	10.78	10.77	65529		192.38	3.85	HMX		11.90		
DNX X		11.68					DNX		8.19		
MNX X		13.37					MNX		9.41		
RDX	14.54	14.51	65155		197.51	3.95	RDX		10.53		
PICRIC ACID	15.88	15.84	86005		186.12	3.72	PICRIC ACID		7.61		
1,3,5-TNB	16.36	16.34	149383		205.88	4.12	1,3,5-TNB/1,3-DNB		6.66		
1,3-DNB	17.57	17.55	193763		203.93	4.08	1,3,5-TNB/1,3-DNB		6.66		
NB	18.39	18.38	116985		201.44	4.03	NB		5.82		
Tetryl	18.76	18.74	100630		193.68	3.87	Tetryl		11.48		
NG	19.53	19.53	11358		3823.90	76.48	NG		10.32		
2,4,6-TNT	19.92	19.90	129476		204.29	4.09	2,4,6-TNT/2,4-DNT		8.24		
4-am-2,6-DNT	20.35	20.30	98362		200.91	4.02	4-am-2,6-DNT		9.30		
2-am-4,6-DNT	20.70	20.64	138154		197.97	3.96	2-am-4,6-DNT		9.77		
2,6-DNT	21.01	21.05	87699		232.95	4.66	2,6-DNT		7.98		
2,4-DNT	21.25	21.22	179229		186.50	3.73	2,4,6-TNT/2,4-DNT		8.24		
2-NT	22.59	22.58	66945		195.95	3.92	2NT/4NT/3NT		7.25		
4-NT	23.27	23.26	54591		203.33	4.07	2NT/4NT/3NT		7.25		
3-NT	23.98	23.98	72319		208.08	4.16	2NT/4NT/3NT		7.25		
PETN	24.91	24.95	9337		3327.96	66.56	PETN		13.06		

*=Ext Conc must be divided by **50.00** to yield Spl Conc.

1,2-DNB % RECOVERY 96 1,2-DNB % RECOVERY X

500 Sample Volume (mL)

1.0 Dilution Factor

10 Extract Volume (mL)

50.0 Prep Factor

[Formula: Sample Volume (mL)/Extract Volume (mL)]

X - Non target cpds

0056

STL Burlington

ID REPORT - 8330+ EXPLOSIVES

Lab sample #: 514221MD
Client ID: W05MW07BMSD
File Name: 45 13JAN031446,27
Confirmation File Name: ~~46 14JAN031054~~ 1/16/03
SDG: BON005

Kromasil C-18 | Pinnacle CN

COMPOUND	ACT. RT	EXP. RT	AREA	CAL FLAG	Ext Conc (ug/L)	Spl Conc (ug/L)	COMPOUND	ACT. RT	EXP. RT	AREA	Ext Conc (ug/L)*
1,2-DNB	16.65	16.64	88883		200.60	4.01	1,2-DNB		8.79		
2,6-DA	9.06	9.04	111053		189.81	3.80	2,6-DA/2,4-DA		5.01		
TNX		9.80					TNX		6.35		
2,4-DA	10.51	10.48	53315		167.57	3.35	2,6-DA/2,4-DA		5.01		
HMX	10.78	10.77	61434		180.76	3.62	HMX		11.90		
DNX		11.68					DNX		8.19		
MNX		13.37					MNX		9.41		
RDX	14.53	14.51	61172		185.48	3.71	RDX		10.53		
PICRIC ACID	15.88	15.84	86392		187.00	3.74	PICRIC ACID		7.61		
1,3,5-TNB	16.35	16.34	139066		191.03	3.82	1,3,5-TNB/1,3-DNB		6.66		
1,3-DNB	17.56	17.55	181567		191.06	3.82	1,3,5-TNB/1,3-DNB		6.66		
NB	18.38	18.38	108962		187.67	3.75	NB		5.82		
Tetryl	18.75	18.74	95744		184.33	3.69	Tetryl		11.48		
NG	19.52	19.53	11710		3942.70	78.85	NG		10.32		
2,4,6-TNT	19.90	19.90	122098		192.63	3.85	2,4,6-TNT/2,4-DNT		8.24		
4-am-2,6-DNT	20.33	20.30	92904		189.71	3.79	4-am-2,6-DNT		9.30		
2-am-4,6-DNT	20.68	20.64	130034		186.29	3.73	2-am-4,6-DNT		9.77		
2,6-DNT	21.00	21.05	83422		221.61	4.43	2,6-DNT		7.98		
2,4-DNT	21.23	21.22	168587		175.28	3.51	2,4,6-TNT/2,4-DNT		8.24		
2-NT	22.57	22.58	62651		183.34	3.67	2NT/4NT/3NT		7.25		
4-NT	23.26	23.26	51012		190.10	3.80	2NT/4NT/3NT		7.25		
3-NT	23.96	23.98	66235		190.45	3.81	2NT/4NT/3NT		7.25		
PETN	24.89	24.95	9543		3397.44	67.95	PETN		13.06		

*=Ext Conc must be divided by **50.00** to yield Spl Conc.

1,2-DNB % RECOVERY 100

1,2-DNB % RECOVERY X

500	Sample Volume (mL)
1.0	Dilution Factor
10	Extract Volume (mL)
50.0	Prep Factor

X - Non target cpd -

[Formula: Sample Volume (mL)/Extract Volume (mL)]

STL Burlington

ID REPORT - 8330+ EXPLOSIVES

Lab sample #: W1LCS
Client ID: W1LCS
File Name: 45 13JAN031446,4,
Confirmation File Name: 46 13JAN031633, 5`
SDG: BaNoo5

	Kromasil C-18							Pinnacle CN				
COMPOUND	ACT. RT	EXP. RT	AREA	CAL FLAG	Ext Conc (ug/L)	Spl Conc (ug/L)	COMPOUND	ACT. RT	EXP. RT	AREA	Ext Conc (ug/L)*
1,2-DNB	16.65	16.64	86286		194.60	3.89	1,2-DNB	8.81	8.79	25750	189.650
2,6-DA	9.06	9.04	114537		195.83	3.92	2,6-DA/2,4-DA		5.01		
TNX		9.80					TNX		6.35		
2,4-DA	10.51	10.48	52872		166.24	3.32	2,6-DA/2,4-DA		5.01		
HMX	10.76	10.77	64616		189.79	3.80	HMX	11.91	11.90		
DNX		11.68					DNX		8.19		
MNX	~~13.49~~	~~13.37~~	~~2276~~	~~O~~	~~8.21~~	~~0.16~~	MNX		9.41		
RDX	14.53	14.51	65025		197.12	3.94	RDX	10.47	10.53		
PICRIC ACID	15.86	15.84	92357		200.53	4.01	PICRIC ACID	7.39	7.61	69581	
1,3,5-TNB	16.35	16.34	143692		197.69	3.95	1,3,5-TNB/1,3-DNB	6.74	6.66		
1,3-DNB	17.56	17.55	186757		196.53	3.93	1,3,5-TNB/1,3-DNB	6.74	6.66		
NB	18.38	18.38	112410		193.59	3.87	NB	5.95	5.82		
Tetryl	18.75	18.74	89670		172.70	3.45	Tetryl	11.49	11.48		
NG	19.53	19.53	12136		4086.73	81.73	NG	10.23	10.32		
2,4,6-TNT	19.90	19.90	126152		199.03	3.98	2,4,6-TNT/2,4-DNT	8.33	8.24		
4-am-2,6-DNT	20.32	20.30	96815		197.73	3.95	4-am-2,6-DNT	9.39	9.30		
2-am-4,6-DNT	20.67	20.64	134135		192.19	3.84	2-am-4,6-DNT	9.79	9.77		
2,6-DNT	21.00	21.05	84565		224.64	4.49	2,6-DNT	8.12	7.98		
2,4-DNT	21.23	21.22	175330		182.39	3.65	2,4,6-TNT/2,4-DNT	8.23	8.24		
2-NT	22.58	22.58	65061		190.42	3.81	2NT/4NT/3NT	7.39	7.25	69581	
4-NT	23.25	23.26	52449		195.41	3.91	2NT/4NT/3NT	7.39	7.25	69581	
3-NT	23.96	23.98	67382		193.77	3.88	2NT/4NT/3NT	7.39	7.25	69581	
PETN	24.90	24.95	9741		3464.37	69.29	PETN	13.07	13.06		

*=Ext Conc must be divided by **50.00** to yield Spl Conc.

1,2-DNB % RECOVERY 97

1,2-DNB % RECOVERY 95

PA + NTs co-elute -

Confirm all target cpds

+ - Non target cpds

500 Sample Volume (mL)
1.0 Dilution Factor
10 Extract Volume (mL)
50.0 Prep Factor

[Formula: Sample Volume (mL)/Extract Volume (mL)]

STL Burlington

ID REPORT - 8330+ EXPLOSIVES

SDG: BONGOS

Lab sample #: W1LCSD
Client ID: W1LCSD
File Name: 45 13JAN031446,5,
Confirmation File Name: 46 13JAN031633, 6

	Kromasil C-18							Pinnacle CN				
COMPOUND	ACT. RT	EXP. RT	AREA	CAL FLAG	Ext Conc (ug/L)	Spl Conc (ug/L)	COMPOUND	ACT. RT	EXP. RT	AREA	Ext Conc (ug/L)*
1,2-DNB	16.65	16.64	88755		200.30	4.01	1,2-DNB	8.82	8.79	26183	142.812
2,6-DA	9.06	9.04	109185		186.58	3.73	2,6-DA/2,4-DA		5.01		
TNX		9.80					TNX		6.35		
2,4-DA	10.51	10.48	52021		163.69	3.27	2,6-DA/2,4-DA		5.01		
HMX	10.77	10.77	65925		193.51	3.87	HMX	11.90	11.90		
DNX		11.68					DNX		8.19		
MNX		13.37					MNX		9.41		
RDX	14.53	14.51	67325		204.07	4.08	RDX	10.46	10.53		
PICRIC ACID	15.87	15.84	88969		192.85	3.86	PICRIC ACID	7.39	7.61	71057	
1,3,5-TNB	16.35	16.34	147158		202.68	4.05	1,3,5-TNB/1,3-DNB	6.74	6.66		
1,3-DNB	17.56	17.55	191997		202.06	4.04	1,3,5-TNB/1,3-DNB	6.74	6.66		
NB	18.38	18.38	116977		201.42	4.03	NB	5.97	5.82		
Tetryl	18.75	18.74	92804		178.70	3.57	Tetryl	11.47	11.48		
NG	19.53	19.53	11537		3884.56	77.69	NG	10.23	10.32		
2,4,6-TNT	19.91	19.90	129950		205.03	4.10	2,4,6-TNT/2,4-DNT	8.24	8.24		
4-am-2,6-DNT	20.33	20.30	98990		202.19	4.04	4-am-2,6-DNT	9.39	9.30		
2-am-4,6-DNT	20.68	20.64	136887		196.15	3.92	2-am-4,6-DNT	9.80	9.77		
2,6-DNT	21.01	21.05	86880		230.77	4.62	2,6-DNT	8.13	7.98		
2,4-DNT	21.24	21.22	181090		188.46	3.77	2,4,6-TNT/2,4-DNT	8.24	8.24		
2-NT	22.58	22.58	68080		199.28	3.99	2NT/4NT/3NT	7.39	7.25	71057	
4-NT	23.25	23.26	54699		203.73	4.07	2NT/4NT/3NT	7.39	7.25	71057	
3-NT	23.97	23.98	69943		201.19	4.02	2NT/4NT/3NT	7.39	7.25	71057	
PETN	24.91	24.95	9657		3436.06	68.72	PETN	13.05	13.06		

*=Ext Conc must be divided by **50.00** to yield Spl Conc.

1,2-DNB % RECOVERY 100

1,2-DNB % RECOVERY 96

PA + NTs co-elute

500 Sample Volume (mL)
1.0 Dilution Factor
10 Extract Volume (mL)
50.0 Prep Factor

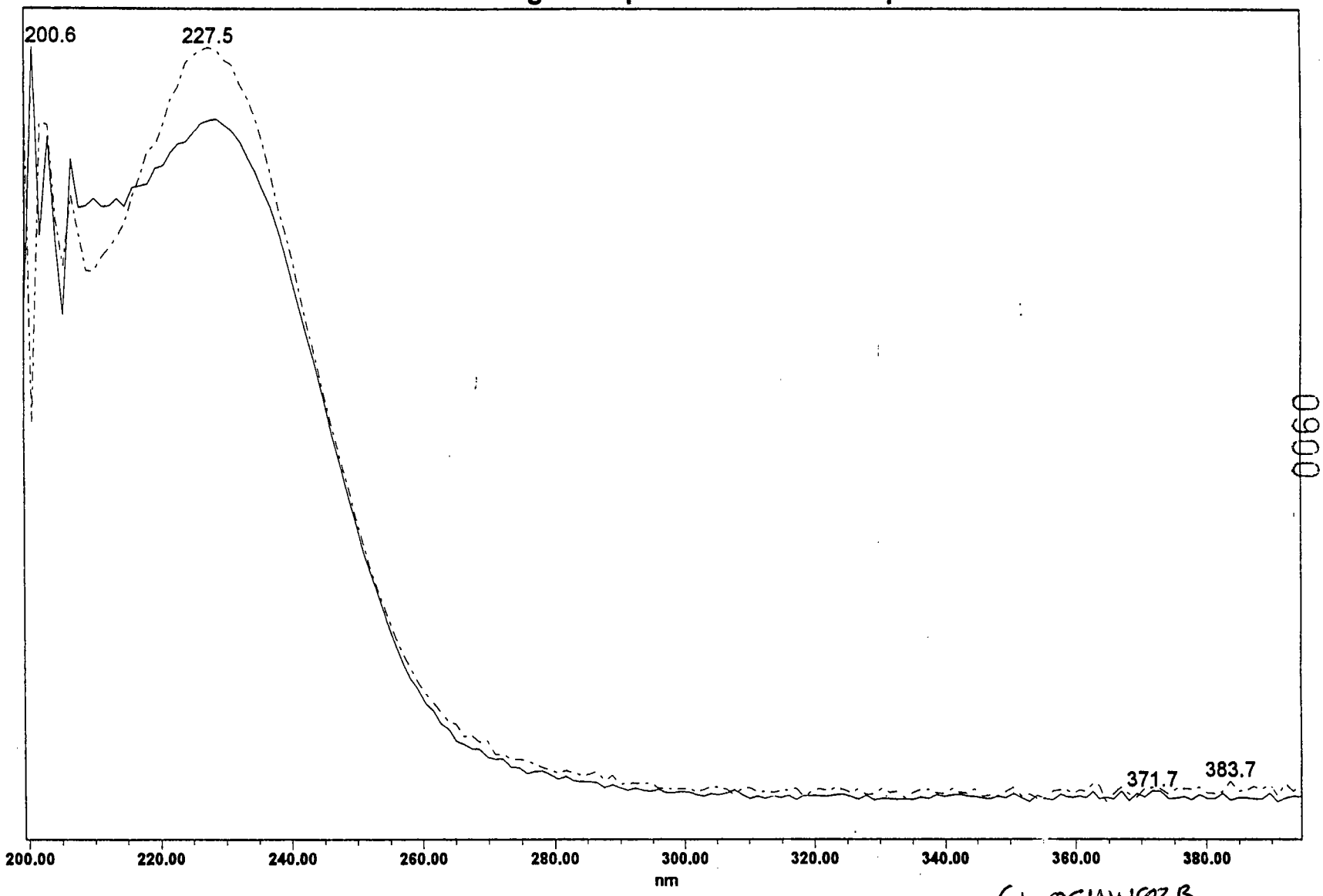
confirm all target cpds

X - Non target cpds

[Formula: Sample Volume (mL)/Extract Volume (mL)]

STL Burlington

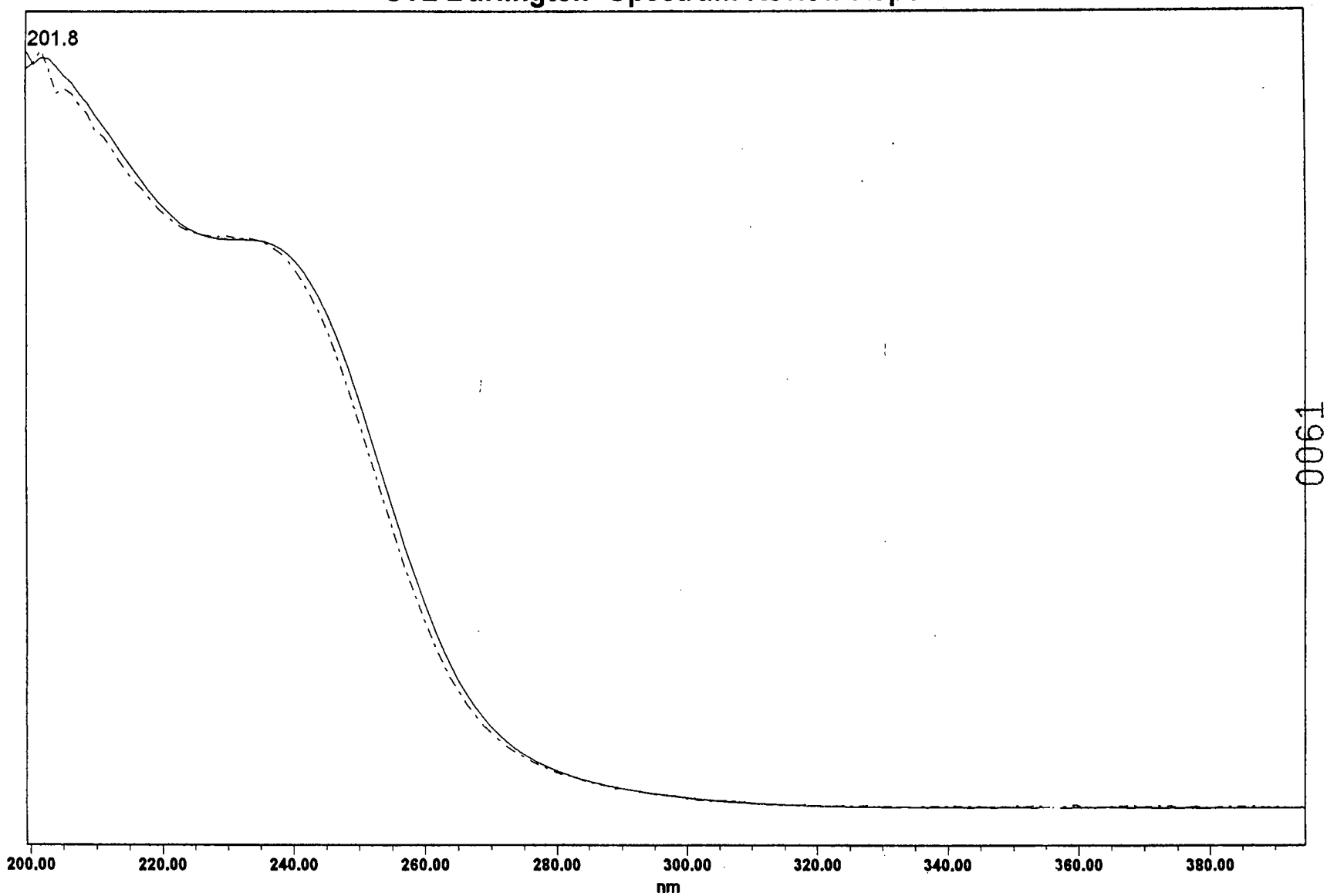
STL Burlington--Spectrum Review Report



Retention Time: 10.937 Source Name: 514220 Spectrum Description: Spectrum Name: GW05MW02B

Retention Time: 10.912 Source Name: MMRSTD4 Spectrum Description: Calib of 10/16/02 Spectrum Name: HMX-200ppb

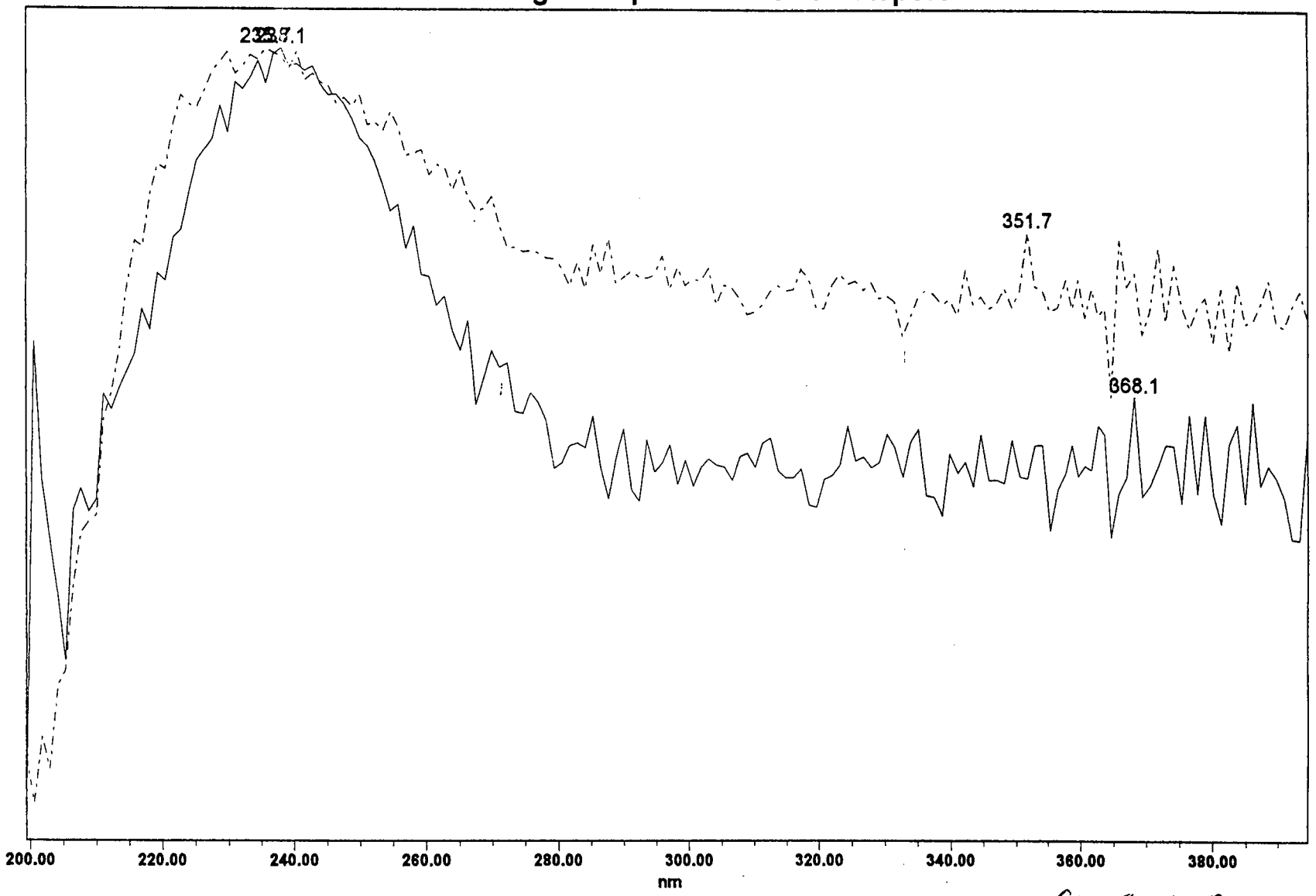
STL Burlington--Spectrum Review Report



Retention Time: 14.703 Source Name: 514220 Spectrum Description: Spectrum Name: GW05MW02R

Retention Time: 14.668 Source Name: MMRSTD6 Spectrum Description: Calib of 10/16/02 Spectrum Name: RDX-1000ppb

STL Burlington--Spectrum Review Report

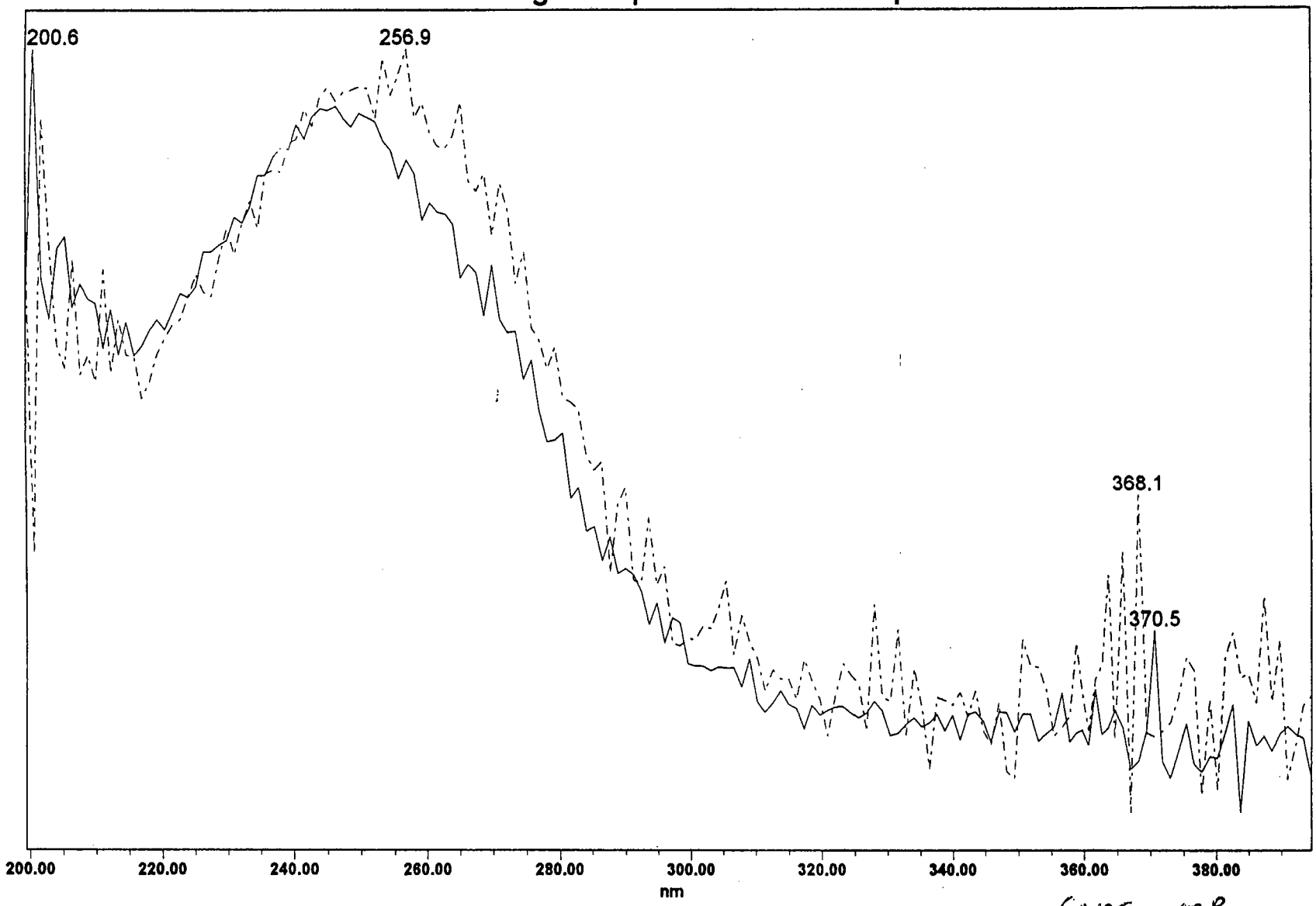


0062

—— Retention Time: 20.137 Source Name: 514220 Spectrum Description: Spectrum Name: GWOSMW02B

- - - - Retention Time: 20.038 Source Name: MMRSTD1 Spectrum Description: Calib of 10/16/02 Spectrum Name: 2,4,6-TNT-12.5ppb

STL Burlington--Spectrum Review Report



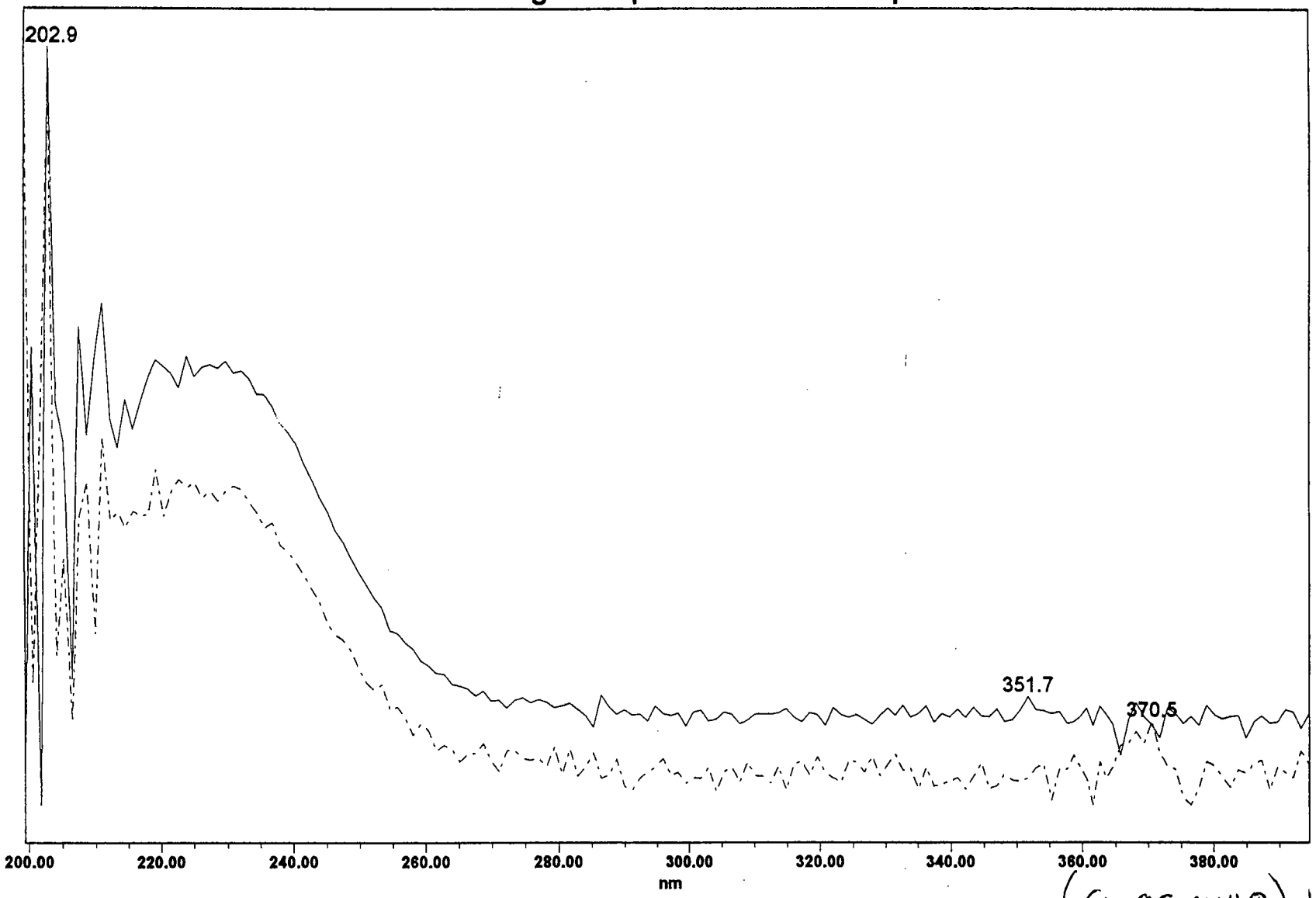
0063

GW05MW02B

——— Retention Time: 21.437 Source Name: 514220 Spectrum Description: Spectrum Name:

- - - - - Retention Time: 21.372 Source Name: MMRSTD2 Spectrum Description: Calib of 10/16/02 Spectrum Name: 2,4-DNT-25ppb

STL Burlington--Spectrum Review Report



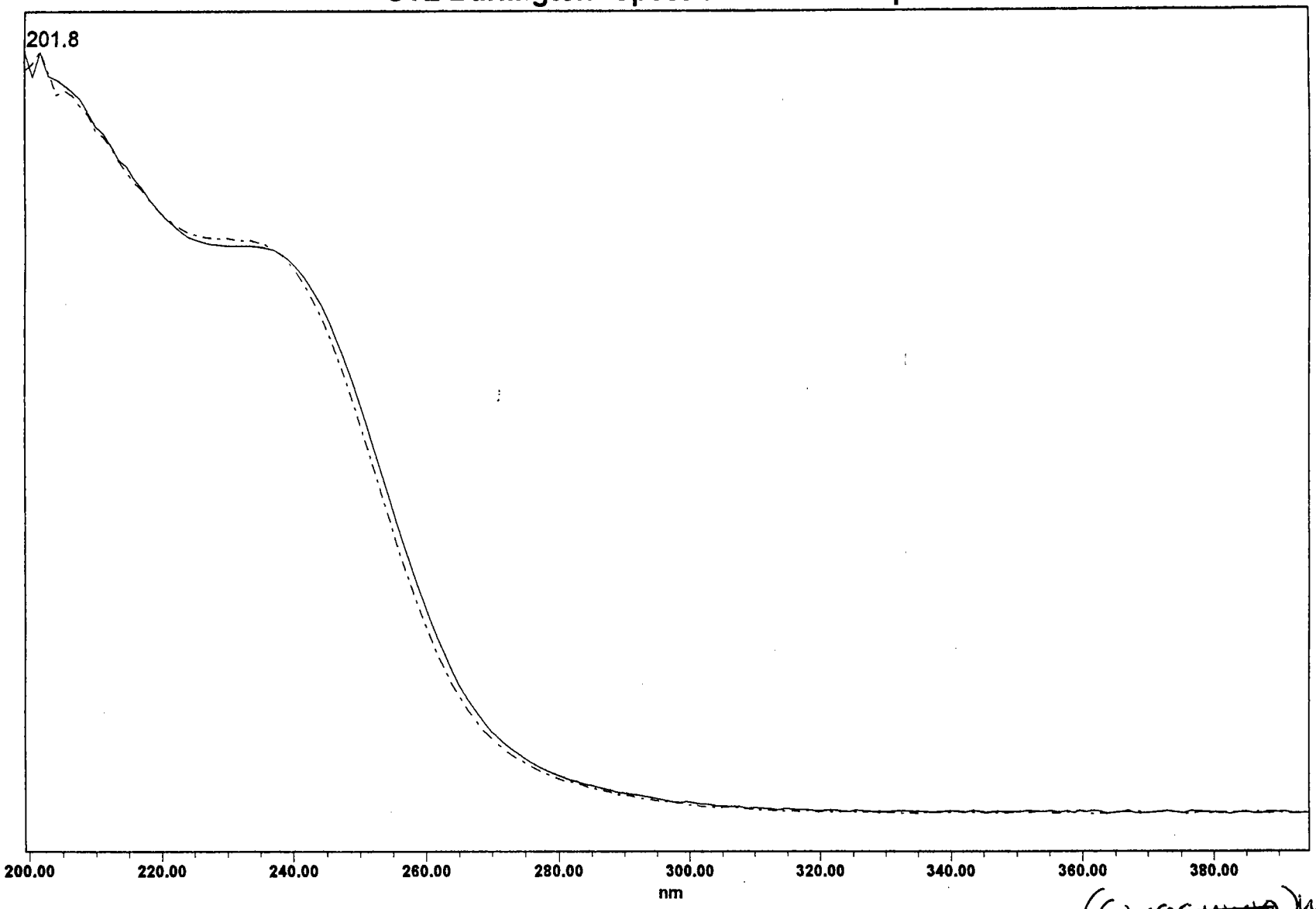
0064

Retention Time: 10.938 Source Name: 514220D1;1:6 Spectrum Description: Spectrum Name: ~~(GW05MW10)~~ WBH 11/12/02

Retention Time: 10.905 Source Name: MMRSTD2 Spectrum Description: Calib of 10/16/02 Spectrum Name: HMX-25ppb

(GW05MW02BDL)

STL Burlington--Spectrum Review Report



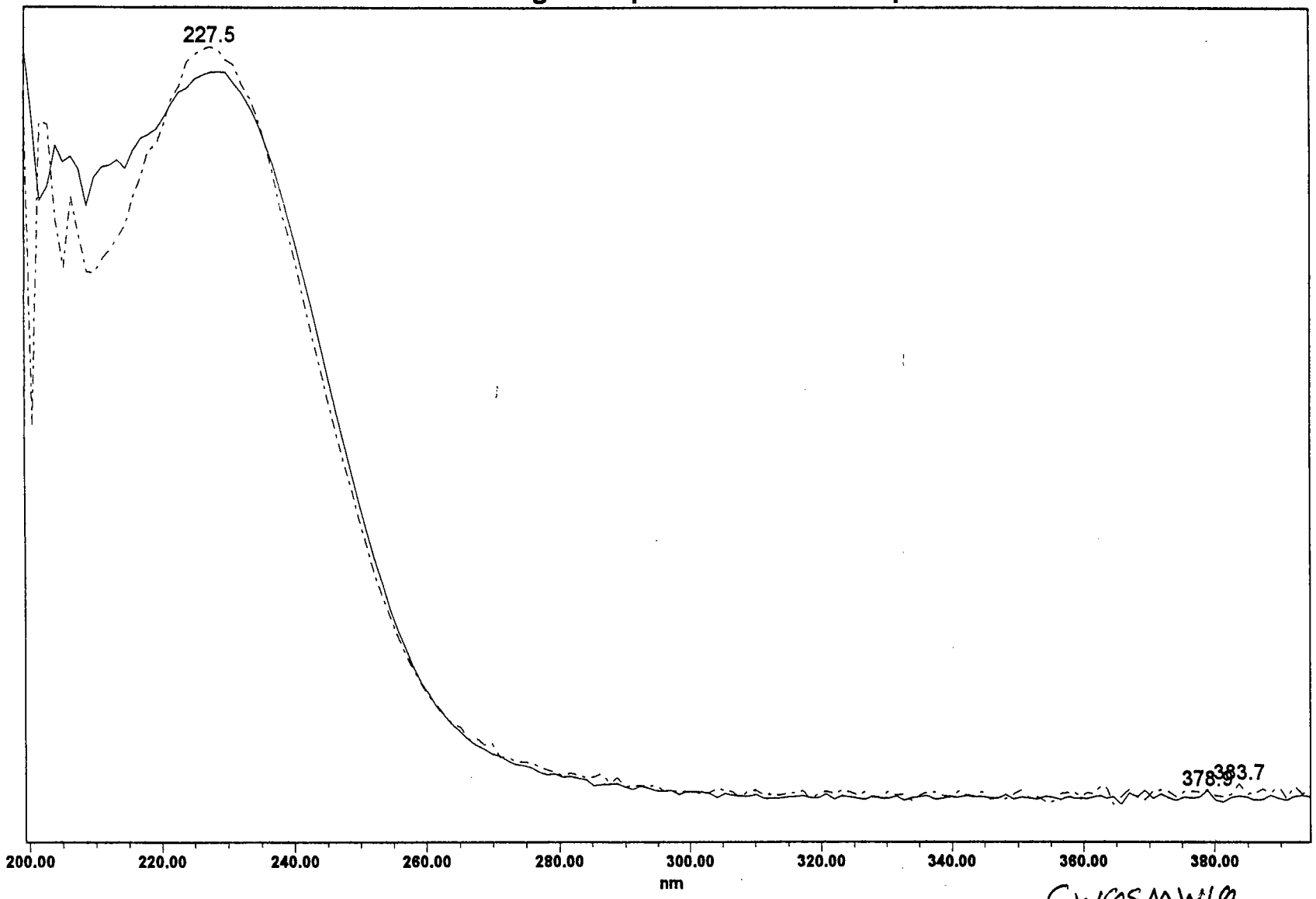
0065

Retention Time: 14.705 Source Name: 514220D1;1:6 Spectrum Description: Spectrum Name: ~~(GW05MW10)~~ MR 11/26/03

Retention Time: 14.668 Source Name: MMRSTD6 Spectrum Description: Calib of 10/16/02 Spectrum Name: RDX-1000ppb

(GW05MW02BDL)

STL Burlington--Spectrum Review Report



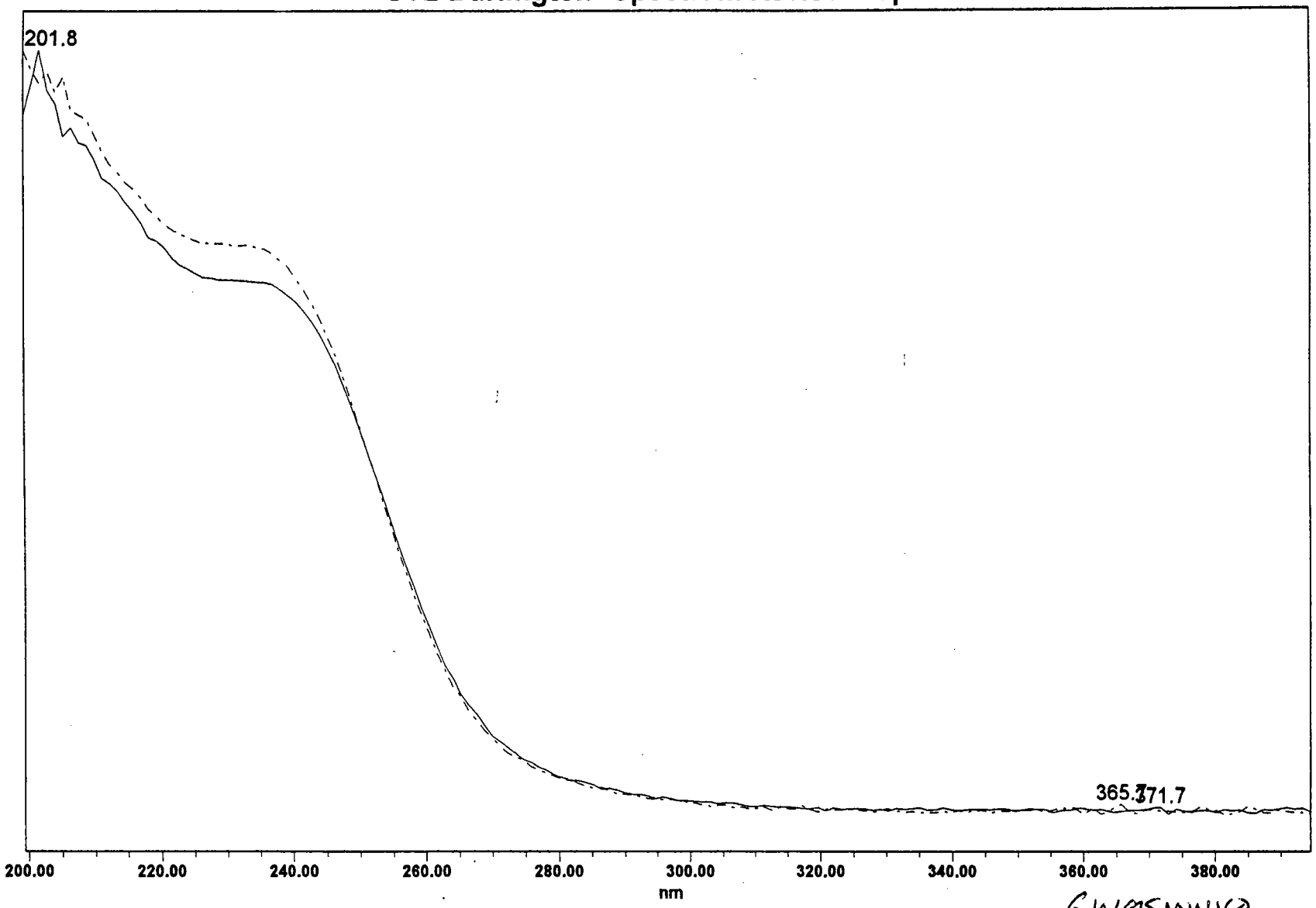
9900

GW05MW10

Retention Time: 10.948 Source Name: 514222 Spectrum Description: Spectrum Name:

Retention Time: 10.912 Source Name: MMRSTD4 Spectrum Description: Calib of 10/16/02 Spectrum Name: HMX-200ppb

STL Burlington--Spectrum Review Report



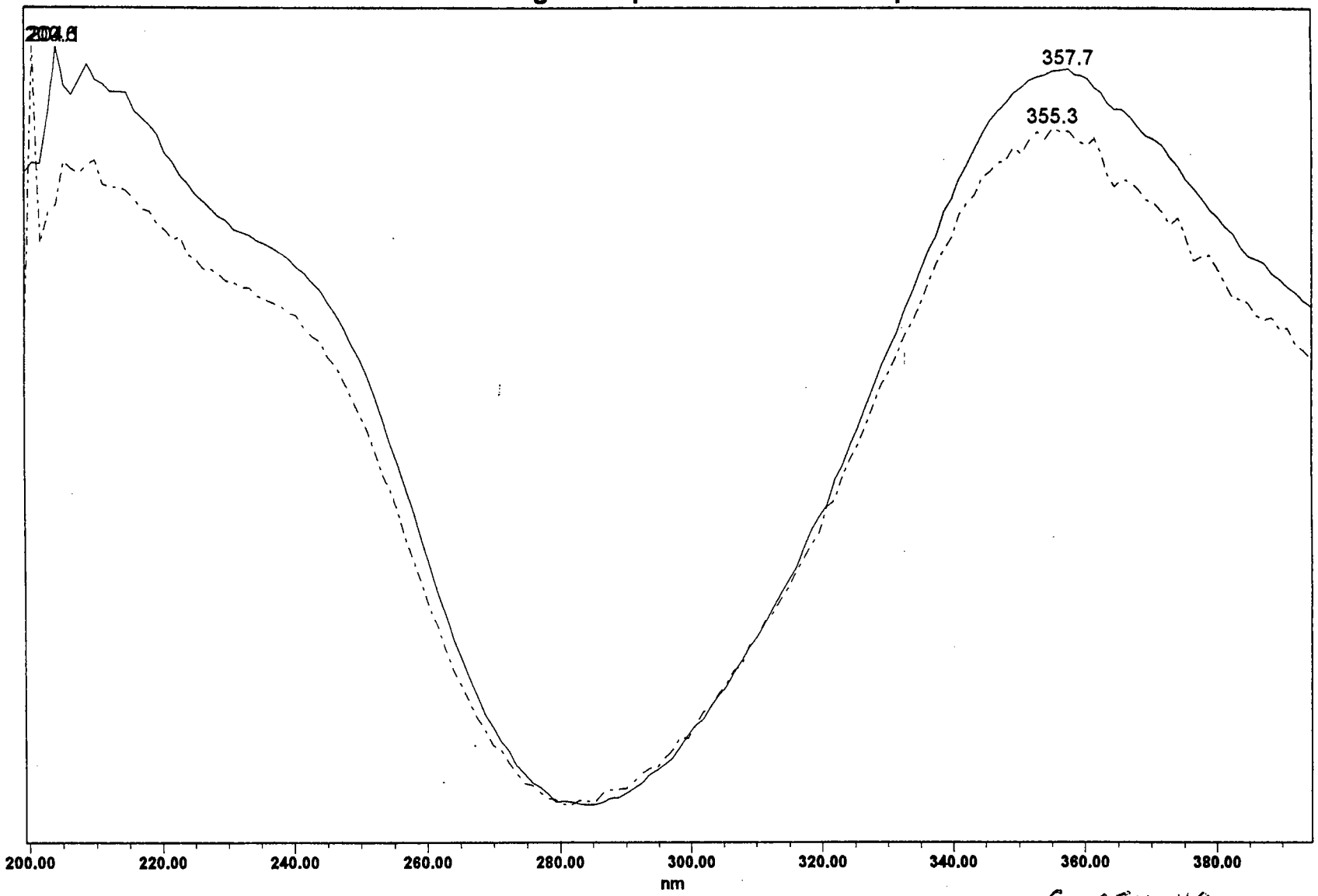
0067

GW05MW10

Retention Time: 14.715 Source Name: 514222 Spectrum Description: Spectrum Name:

Retention Time: 14.673 Source Name: MMRSTD5 Spectrum Description: Calib of 10/16/02 Spectrum Name: RDX-500ppb

STL Burlington--Spectrum Review Report



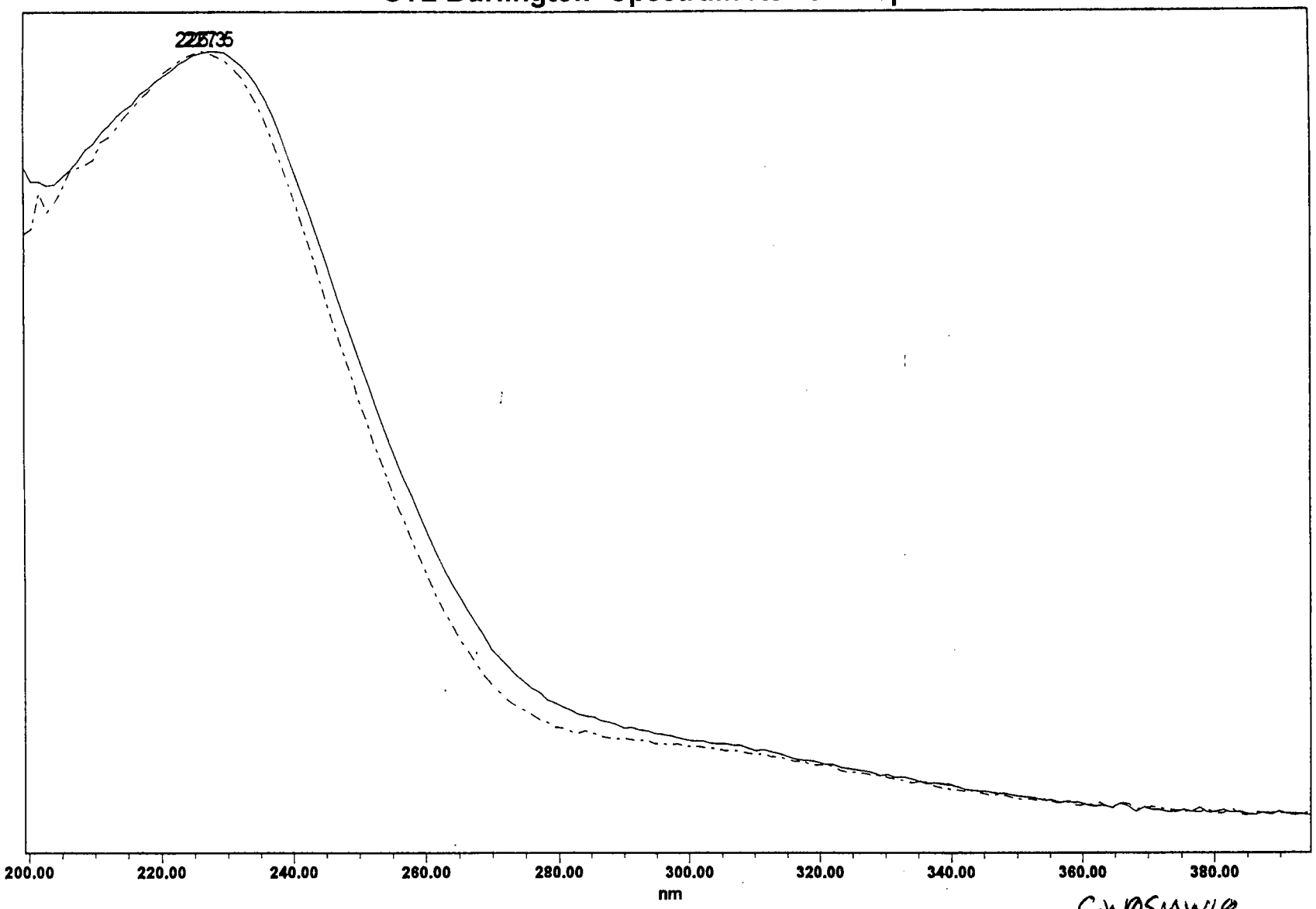
8900

GW05MW16

——— Retention Time: 16.048 Source Name: 514222 Spectrum Description: Spectrum Name:

- - - - - Retention Time: 15.978 Source Name: MMRSTD4 Spectrum Description: Calib of 10/16/02 Spectrum Name: Picric Acid-200ppb

STL Burlington--Spectrum Review Report



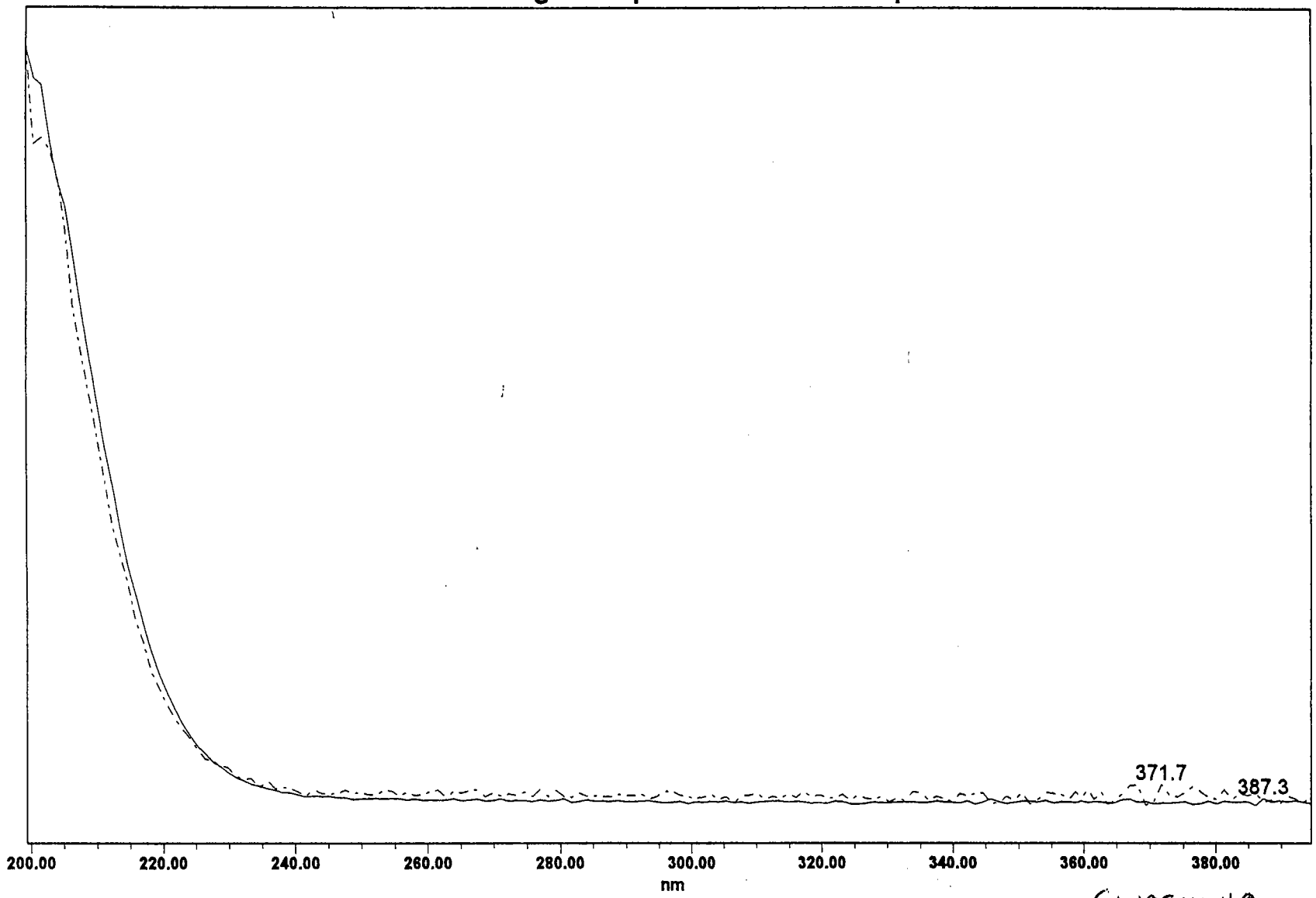
6900

GW05MW10

——— Retention Time: 18.915 Source Name: 514222 Spectrum Description: Spectrum Name:

- - - - - Retention Time: 18.873 Source Name: MMRSTD5 Spectrum Description: Calib of 10/16/02 Spectrum Name: Tetryl-500ppb

STL Burlington--Spectrum Review Report



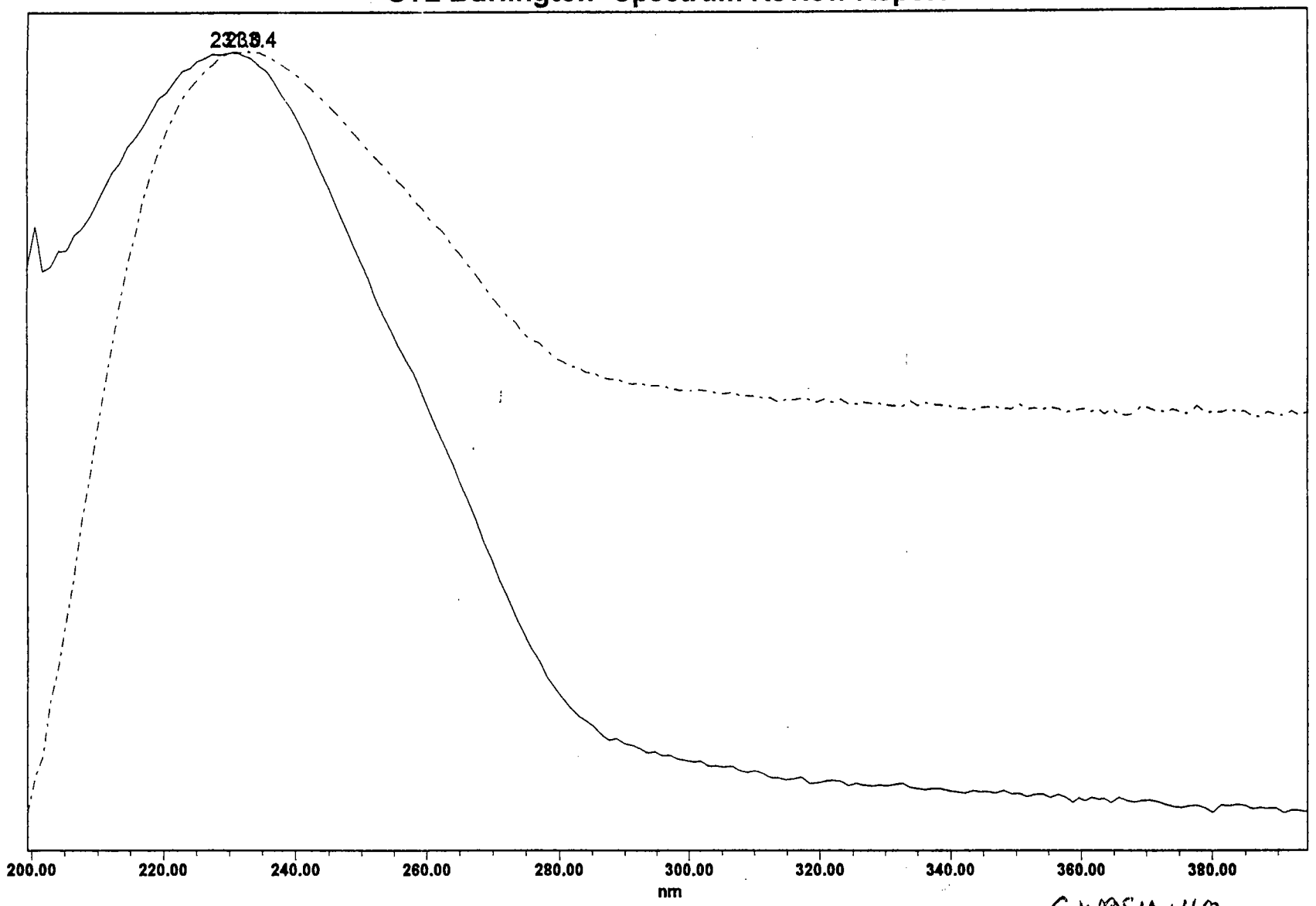
GW0SMW10

Retention Time: 19.682 Source Name: 514222 Spectrum Description: Spectrum Name:

Retention Time: 19.738 Source Name: MMRSTD2 Spectrum Description: Calib of 10/16/02 Spectrum Name: NG-500ppb

0070

STL Burlington--Spectrum Review Report



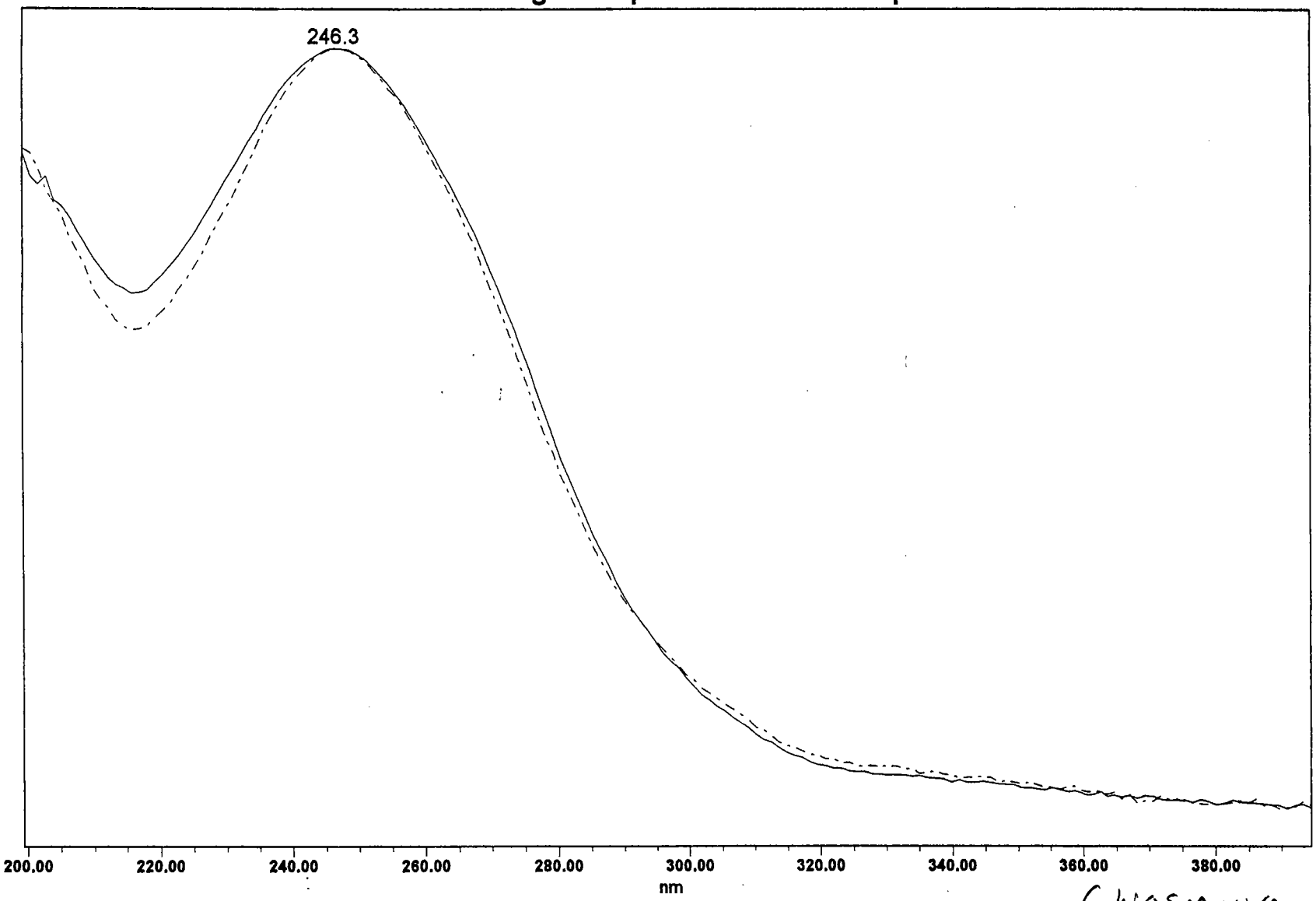
Retention Time: 20.082 Source Name: 514222 Spectrum Description: Spectrum Name:

Retention Time: 20.045 Source Name: MMRSTD4 Spectrum Description: Calib of 10/16/02 Spectrum Name: 2,4,6-TNT-200ppb

G-W05MW10

0071

STL Burlington--Spectrum Review Report



0072

GW0SMW16

——— Retention Time: 21.415 Source Name: 514222 Spectrum Description: Spectrum Name:

- - - - - Retention Time: 21.373 Source Name: MMRSTD5 Spectrum Description: Calib. on 10/16/02 Spectrum Name: 2,4-DNT-500ppb

FORM 6
EXPLOSIVES INITIAL CALIBRATION DATA

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 1488_1 Calibration Date(s): 10/16/02 10/16/02

Column: LC-18 ID: 4.60 (mm) Calibration Time(s): 1721 2036

LAB FILE ID: RF12.5: 16OCT02151RF25: 16OCT021513-RF50: 16OCT021513-RF200: 16OCT021513RF500: 16OCT021513RF1000: 16OCT02151

COMPOUND	RF12.5	RF25	RF50	RF200	RF500	RF1000
2,6-Diamino-4-nitrotoluene		16227	30575	115500	290949	580157
2,4-Diamino-6-nitrotoluene	2571	6306	13934	61882	164901	331548
HMX	3315	7347	15409	65916	173677	350579
RDX	4415	8302	16227	64860	165767	330783
1,3,5-Trinitrobenzene	16181	24028	40715	143979	353746	701202
Picric acid	9636	14930	26501	91387	224279	445057
1,3-Dinitrobenzene	13012	24369	47931	188410	475103	948307
Nitrobenzene	7179	14317	28494	115594	291482	582149
Tetryl	6114	12750	25053	103536	261416	521769
Nitroglycerin	823	1473	2950	11800	29826	59211
2,4,6-Trinitrotoluene	8643	15906	32023	125504	317379	632971
4-Amino-2,6-dinitrotoluene	6640	12680	24886	97167	244700	487951
2-Amino-4,6-dinitrotoluene	9326	18021	35192	139000	348796	695473
2,6-Dinitrotoluene	5110	10008	19580	73689	186634	378242
2,4-Dinitrotoluene	14493	25687	49042	192559	477272	950359
2-Nitrotoluene	4158	8319	17234	67742	172734	339950
4-Nitrotoluene	3386	6928	13141	52425	134906	270236
3-Nitrotoluene	5166	8829	17973	69344	172927	345669
PETN		970	2721	10968	29123	58772
TNX	7329	14612	30259	121433	312697	625769
DNX	5643	10998	22550	90133	229688	459149
MNX	4479	9272	18979	75854	193683	389975
1,2-Dinitrobenzene	7492	12773	23694	88370	218794	435116

FORM VI EXPLOSIVES

FORM 6
EXPLOSIVES INITIAL CALIBRATION DATA

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 1488_1 Calibration Date(s): 10/16/02 10/16/02

Column: LC-18 ID: 4.60 (mm) Calibration Time(s): 1721 2036

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2	
2,6-Diamino-4-nitrotoluene	LINR	-2.0289950	578.893040	0.9999875	0.9900000	<-
2,4-Diamino-6-nitrotoluene	LINR	7.96816713	334.048978	0.9999180	0.9900000	
HMX	LINR	6.37594923	352.290986	0.9999199	0.9900000	
RDX	LINR	0.68992644	331.034594	0.9999783	0.9900000	
1,3,5-Trinitrobenzene	LINR	-9.1787833	694.600001	0.9999910	0.9900000	
Picric acid	LINR	-8.9245000	440.939313	0.9999939	0.9900000	
1,3-Dinitrobenzene	LINR	-0.4915583	947.880486	0.9999946	0.9900000	
Nitrobenzene	LINR	0.66842513	582.686374	0.9999970	0.9900000	
Tetryl	LINR	1.12579960	522.611544	0.9999949	0.9900000	
Nitroglycerin	LINR	-9.7715529	2.96249820	0.9999826	0.9900000	
2,4,6-Trinitrotoluene	LINR	-0.2833222	632.923118	0.9999918	0.9900000	
4-Amino-2,6-dinitrotoluene	LINR	-0.7949063	487.663284	0.9999953	0.9900000	
2-Amino-4,6-dinitrotoluene	LINR	-0.7671474	695.165446	0.9999976	0.9900000	
2,6-Dinitrotoluene	LINR	0.49271029	377.274586	0.9999182	0.9900000	
2,4-Dinitrotoluene	LINR	-2.4779262	948.425860	0.9999975	0.9900000	
2-Nitrotoluene	LINR	-0.5236217	340.736502	0.9999289	0.9900000	
4-Nitrotoluene	LINR	1.47759366	270.444556	0.9999618	0.9900000	
3-Nitrotoluene	LINR	-1.5058538	345.057546	0.9999966	0.9900000	
PETN	LINR	176.167169	2.96234766	0.9999095	0.9900000	<-
TNX	LINR	2.34479840	627.088885	0.9999734	0.9900000	
DNX	LINR	1.31318986	459.738935	0.9999880	0.9900000	
MNX	LINR	2.38465736	390.393132	0.9999749	0.9900000	
1,2-Dinitrobenzene	LINR	-4.5835348	433.189243	0.9999991	0.9900000	

FORM 6
EXPLOSIVES INITIAL CALIBRATION DATA

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date(s): 04/02/02 04/02/02

Column: CN ID: 4.60 (mm) Calibration Time(s): 0938 1329

LAB FILE ID: RF12.5: 02AR020855RF25: 02AR020855-IRF50: 02AR020855-I
RF200: 02AR020855-RF500: 02AR020855-RF1000: 02AR020855

COMPOUND	RF12.5	RF25	RF50	RF200	RF500	RF1000
2,6-Diamino-4-nitrotoluene		13579	27075	111717	289902	579238
2,4-Diamino-6-nitrotoluene	6680	13579	27075	111717	289902	579238
HMX	1855	3526	6458	25101	61795	123435
RDX	1075	2650	5516	22485	58472	119115
1,3,5-Trinitrobenzene	10950	20339	38269	150046	374472	749269
Picric acid	4972	6349	9505	26932	62303	122143
1,3-Dinitrobenzene	10950	20339	38269	150046	374472	749269
Nitrobenzene	2077	3563	7739	30693	76924	154093
Tetryl	2046	4311	8479	32928	82928	166661
Nitroglycerin	250	608	1345	5171	13192	26402
2,4,6-Trinitrotoluene	6746	13248	27228	109682	276130	559502
4-Amino-2,6-dinitrotoluene	3353	6086	12202	47737	119664	240237
2-Amino-4,6-dinitrotoluene	3507	6281	12598	47500	118713	240206
2,6-Dinitrotoluene	2138	3933	7992	33182	83414	166642
2,4-Dinitrotoluene	6746	13248	27228	109682	276130	559502
2-Nitrotoluene	6161	8902	14937	52698	126344	249812
4-Nitrotoluene	6161	8902	14937	52698	126344	249812
3-Nitrotoluene	6161	8902	14937	52698	126344	249812
PETN		697	1144	5574	13514	26615
TNX	3037	6268	13205	55688	139825	
DNX	3098	5167	9822	38731	95713	190639
MNX	2049	3801	7559	29825	74456	150047
1,2-Dinitrobenzene	1968	3322	6708	26836	67305	137463

FORM 6
EXPLOSIVES INITIAL CALIBRATION DATA

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date(s): 04/02/02 04/02/02

Column: CN ID: 4.60 (mm) Calibration Time(s): 0938 1329

COMPOUND	CURVE	COEFFICENTS A0	COEFFICENTS A1	%RSD OR R^2	MAX %RSD OR R^2	
2,6-Diamino-4-nitrotoluene	LINR	7.42663140	290.791267	0.9999596	0.9900000	<-
2,4-Diamino-6-nitrotoluene	LINR	5.92950823	290.496788	0.9999577	0.9900000	
HMX	LINR	-3.0433878	123.034046	0.9999967	0.9900000	
RDX	LINR	5.78023532	119.415096	0.9998888	0.9900000	
1,3,5-Trinitrobenzene	LINR	-2.9912692	373.883826	0.9999967	0.9900000	
Picric acid	LINR	-28.489871	118.565844	0.9999771	0.9900000	
1,3-Dinitrobenzene	LINR	-2.9912692	373.883826	0.9999967	0.9900000	
Nitrobenzene	LINR	0.41888700	154.112635	0.9999935	0.9900000	
Tetryl	LINR	0.30300629	166.520694	0.9999856	0.9900000	
Nitroglycerin	LINR	40.1964968	1.32271359	0.9999789	0.9900000	
2,4,6-Trinitrotoluene	LINR	4.43338893	279.713700	0.9999595	0.9900000	
4-Amino-2,6-dinitrotoluene	LINR	-0.2755020	239.934202	0.9999910	0.9900000	
2-Amino-4,6-dinitrotoluene	LINR	-0.5776161	239.426696	0.9999453	0.9900000	
2,6-Dinitrotoluene	LINR	0.95899702	166.859360	0.9999947	0.9900000	
2,4-Dinitrotoluene	LINR	4.43338893	279.713700	0.9999595	0.9900000	
2-Nitrotoluene	LINR	-35.286087	82.3172186	0.9999930	0.9900000	
4-Nitrotoluene	LINR	-35.286087	82.3172186	0.9999930	0.9900000	
3-Nitrotoluene	LINR	-35.286087	82.3172186	0.9999930	0.9900000	
PETN	LINR	-30.267108	1.33358258	0.9997433	0.9900000	<-
TNX	LINR	2.18250580	302.195899	0.9999926	0.9900000	<-
DNX	LINR	-2.9432845	184.620628	0.9999950	0.9900000	
MNX	LINR	0.07659824	139.042811	0.9999816	0.9900000	
1,2-Dinitrobenzene	LINR	1.93075917	137.169819	0.9998771	0.9900000	

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 1488_1 Calibration Date: 10/16/02 Time: 2115

Lab File ID: 16OCT021513-I0 Init. Calib. Date(s): 10/16/02 10/16/02

Init. Calib. Times: 1721 2036

GC Column: LC-18 ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL0 AMOUNT	CURVE	%D	MAX %d
2,6-Diamino-4-nitrotoluene	230	200	LINR	15.0	15.0
2,4-Diamino-6-nitrotoluene	180	200	LINR	10.0	15.0
HMX	190	200	LINR	5.0	15.0
RDX	210	200	LINR	5.0	15.0
1,3,5-Trinitrobenzene	200	200	LINR	0.0	15.0
Picric acid	220	200	LINR	10.0	15.0
1,3-Dinitrobenzene	190	200	LINR	5.0	15.0
Nitrobenzene	180	200	LINR	10.0	15.0
Tetryl	220	200	LINR	10.0	15.0
Nitroglycerin	4500	4000	LINR	12.5	15.0
2,4,6-Trinitrotoluene	210	200	LINR	5.0	15.0
4-Amino-2,6-dinitrotoluene	210	200	LINR	5.0	15.0
2-Amino-4,6-dinitrotoluene	200	200	LINR	0.0	15.0
2,6-Dinitrotoluene	200	200	LINR	0.0	15.0
2,4-Dinitrotoluene	200	200	LINR	0.0	15.0
2-Nitrotoluene	190	200	LINR	5.0	15.0
4-Nitrotoluene	190	200	LINR	5.0	15.0
3-Nitrotoluene	190	200	LINR	5.0	15.0
PETN	4000	4000	LINR	0.0	15.0
TNX	58	58	LINR	0.0	15.0
DNX	230	260	LINR	11.5	15.0
MNX	180	180	LINR	0.0	15.0
1,2-Dinitrobenzene	190	200	LINR	5.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 1488_1 Calibration Date: 01/13/03 Time: 1537

Lab File ID: 13JAN031446-I0 Init. Calib. Date(s): 10/16/02 10/16/02

Init. Calib. Times: 1721 2036

GC Column: LC-18 ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL200 AMOUNT	CURVE	%D	MAX %d
2,6-Diamino-4-nitrotoluene	190	200	LINR	5.0	15.0
2,4-Diamino-6-nitrotoluene	180	200	LINR	10.0	15.0
HMX	190	200	LINR	5.0	15.0
RDX	190	200	LINR	5.0	15.0
1,3,5-Trinitrobenzene	200	200	LINR	0.0	15.0
Picric acid	200	200	LINR	0.0	15.0
1,3-Dinitrobenzene	190	200	LINR	5.0	15.0
Nitrobenzene	190	200	LINR	5.0	15.0
Tetryl	190	200	LINR	5.0	15.0
Nitroglycerin	4100	4000	LINR	2.5	15.0
2,4,6-Trinitrotoluene	200	200	LINR	0.0	15.0
4-Amino-2,6-dinitrotoluene	190	200	LINR	5.0	15.0
2-Amino-4,6-dinitrotoluene	190	200	LINR	5.0	15.0
2,6-Dinitrotoluene	220	200	LINR	10.0	15.0
2,4-Dinitrotoluene	180	200	LINR	10.0	15.0
2-Nitrotoluene	190	200	LINR	5.0	15.0
4-Nitrotoluene	190	200	LINR	5.0	15.0
3-Nitrotoluene	200	200	LINR	0.0	15.0
PETN	4100	4000	LINR	2.5	15.0
TNX	200	200	LINR	0.0	15.0
DNX	210	200	LINR	5.0	15.0
MNX	220	200	LINR	10.0	15.0
1,2-Dinitrobenzene	200	200	LINR	0.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 1488_1 Calibration Date: 01/13/03 Time: 2325

Lab File ID: 13JAN031446-I1 Init. Calib. Date(s): 10/16/02 10/16/02

Init. Calib. Times: 1721 2036

GC Column: LC-18 ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL200 AMOUNT	CURVE	%D	MAX %d
2,6-Diamino-4-nitrotoluene	190	200	LINR	5.0	15.0
2,4-Diamino-6-nitrotoluene	180	200	LINR	10.0	15.0
HMX	190	200	LINR	5.0	15.0
RDX	190	200	LINR	5.0	15.0
1,3,5-Trinitrobenzene	200	200	LINR	0.0	15.0
Picric acid	190	200	LINR	5.0	15.0
1,3-Dinitrobenzene	190	200	LINR	5.0	15.0
Nitrobenzene	190	200	LINR	5.0	15.0
Tetryl	200	200	LINR	0.0	15.0
Nitroglycerin	4100	4000	LINR	2.5	15.0
2,4,6-Trinitrotoluene	200	200	LINR	0.0	15.0
4-Amino-2,6-dinitrotoluene	190	200	LINR	5.0	15.0
2-Amino-4,6-dinitrotoluene	190	200	LINR	5.0	15.0
2,6-Dinitrotoluene	220	200	LINR	10.0	15.0
2,4-Dinitrotoluene	180	200	LINR	10.0	15.0
2-Nitrotoluene	200	200	LINR	0.0	15.0
4-Nitrotoluene	200	200	LINR	0.0	15.0
3-Nitrotoluene	190	200	LINR	5.0	15.0
PETN	3800	4000	LINR	5.0	15.0
TNX	200	200	LINR	0.0	15.0
DNX	210	200	LINR	5.0	15.0
MNX	220	200	LINR	10.0	15.0
1,2-Dinitrobenzene	200	200	LINR	0.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 1488_1 Calibration Date: 01/14/03 Time: 0713

Lab File ID: 13JAN031446-I2 Init. Calib. Date(s): 10/16/02 10/16/02

Init. Calib. Times: 1721 2036

GC Column: LC-18 ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL200 AMOUNT	CURVE	%D	MAX %d
2,6-Diamino-4-nitrotoluene	190	200	LINR	5.0	15.0
2,4-Diamino-6-nitrotoluene	180	200	LINR	10.0	15.0
HMX	190	200	LINR	5.0	15.0
RDX	210	200	LINR	5.0	15.0
1,3,5-Trinitrobenzene	200	200	LINR	0.0	15.0
Picric acid	200	200	LINR	0.0	15.0
1,3-Dinitrobenzene	200	200	LINR	0.0	15.0
Nitrobenzene	190	200	LINR	5.0	15.0
Tetryl	200	200	LINR	0.0	15.0
Nitroglycerin	4100	4000	LINR	2.5	15.0
2,4,6-Trinitrotoluene	200	200	LINR	0.0	15.0
4-Amino-2,6-dinitrotoluene	200	200	LINR	0.0	15.0
2-Amino-4,6-dinitrotoluene	190	200	LINR	5.0	15.0
2,6-Dinitrotoluene	230	200	LINR	15.0	15.0
2,4-Dinitrotoluene	180	200	LINR	10.0	15.0
2-Nitrotoluene	200	200	LINR	0.0	15.0
4-Nitrotoluene	200	200	LINR	0.0	15.0
3-Nitrotoluene	190	200	LINR	5.0	15.0
PETN	4000	4000	LINR	0.0	15.0
TNB	200	200	LINR	0.0	15.0
DNB	220	200	LINR	10.0	15.0
MNB	220	200	LINR	10.0	15.0
1,2-Dinitrobenzene	200	200	LINR	0.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 1488_1 Calibration Date: 01/14/03 Time: 1028

Lab File ID: 13JAN031446-I3 Init. Calib. Date(s): 10/16/02 10/16/02

Init. Calib. Times: 1721 2036

GC Column: LC-18 ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL200 AMOUNT	CURVE	%D	MAX %d
2,6-Diamino-4-nitrotoluene	180	200	LINR	10.0	15.0
2,4-Diamino-6-nitrotoluene	170	200	LINR	15.0	15.0
HMX	180	200	LINR	10.0	15.0
RDX	210	200	LINR	5.0	15.0
1,3,5-Trinitrobenzene	200	200	LINR	0.0	15.0
Picric acid	190	200	LINR	5.0	15.0
1,3-Dinitrobenzene	190	200	LINR	5.0	15.0
Nitrobenzene	190	200	LINR	5.0	15.0
Tetryl	190	200	LINR	5.0	15.0
Nitroglycerin	4000	4000	LINR	0.0	15.0
2,4,6-Trinitrotoluene	200	200	LINR	0.0	15.0
4-Amino-2,6-dinitrotoluene	190	200	LINR	5.0	15.0
2-Amino-4,6-dinitrotoluene	190	200	LINR	5.0	15.0
2,6-Dinitrotoluene	220	200	LINR	10.0	15.0
2,4-Dinitrotoluene	180	200	LINR	10.0	15.0
2-Nitrotoluene	200	200	LINR	0.0	15.0
4-Nitrotoluene	190	200	LINR	5.0	15.0
3-Nitrotoluene	190	200	LINR	5.0	15.0
PETN	4100	4000	LINR	2.5	15.0
TNX	200	200	LINR	0.0	15.0
DNX	210	200	LINR	5.0	15.0
MNX	220	200	LINR	10.0	15.0
1,2-Dinitrobenzene	190	200	LINR	5.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 1488_1 Calibration Date: 01/14/03 Time: 1738

Lab File ID: 13JAN031446-I4 Init. Calib. Date(s): 10/16/02 10/16/02

Init. Calib. Times: 1721 2036

GC Column: LC-18 ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL200 AMOUNT	CURVE	%D	MAX %d
2,6-Diamino-4-nitrotoluene	200	200	LINR	0.0	15.0
2,4-Diamino-6-nitrotoluene	190	200	LINR	5.0	15.0
HMX	180	200	LINR	10.0	15.0
RDX	200	200	LINR	0.0	15.0
1,3,5-Trinitrobenzene	200	200	LINR	0.0	15.0
Picric acid	200	200	LINR	0.0	15.0
1,3-Dinitrobenzene	190	200	LINR	5.0	15.0
Nitrobenzene	190	200	LINR	5.0	15.0
Tetryl	190	200	LINR	5.0	15.0
Nitroglycerin	4200	4000	LINR	5.0	15.0
2,4,6-Trinitrotoluene	200	200	LINR	0.0	15.0
4-Amino-2,6-dinitrotoluene	190	200	LINR	5.0	15.0
2-Amino-4,6-dinitrotoluene	190	200	LINR	5.0	15.0
2,6-Dinitrotoluene	220	200	LINR	10.0	15.0
2,4-Dinitrotoluene	180	200	LINR	10.0	15.0
2-Nitrotoluene	200	200	LINR	0.0	15.0
4-Nitrotoluene	190	200	LINR	5.0	15.0
3-Nitrotoluene	190	200	LINR	5.0	15.0
PETN	3400	4000	LINR	15.0	15.0
TNX	200	200	LINR	0.0	15.0
DNX	210	200	LINR	5.0	15.0
MNX	220	200	LINR	10.0	15.0
1,2-Dinitrobenzene	200	200	LINR	0.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 1488_1 Calibration Date: 01/15/03 Time: 0126

Lab File ID: 13JAN031446-I5 Init. Calib. Date(s): 10/16/02 10/16/02

Init. Calib. Times: 1721 2036

GC Column: LC-18 ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL200 AMOUNT	CURVE	%D	MAX %d
2,6-Diamino-4-nitrotoluene	190	200	LINR	5.0	15.0
2,4-Diamino-6-nitrotoluene	180	200	LINR	10.0	15.0
HMX	180	200	LINR	10.0	15.0
RDX	200	200	LINR	0.0	15.0
1,3,5-Trinitrobenzene	200	200	LINR	0.0	15.0
Picric acid	200	200	LINR	0.0	15.0
1,3-Dinitrobenzene	200	200	LINR	0.0	15.0
Nitrobenzene	190	200	LINR	5.0	15.0
Tetryl	200	200	LINR	0.0	15.0
Nitroglycerin	4100	4000	LINR	2.5	15.0
2,4,6-Trinitrotoluene	200	200	LINR	0.0	15.0
4-Amino-2,6-dinitrotoluene	190	200	LINR	5.0	15.0
2-Amino-4,6-dinitrotoluene	190	200	LINR	5.0	15.0
2,6-Dinitrotoluene	220	200	LINR	10.0	15.0
2,4-Dinitrotoluene	180	200	LINR	10.0	15.0
2-Nitrotoluene	200	200	LINR	0.0	15.0
4-Nitrotoluene	190	200	LINR	5.0	15.0
3-Nitrotoluene	190	200	LINR	5.0	15.0
PETN	4000	4000	LINR	0.0	15.0
TNX	200	200	LINR	0.0	15.0
DNX	210	200	LINR	5.0	15.0
MNX	220	200	LINR	10.0	15.0
1,2-Dinitrobenzene	200	200	LINR	0.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date: 04/02/02 Time: 1350

Lab File ID: 02AR020855-I14 Init. Calib. Date(s): 04/02/02 04/02/02

Init. Calib. Times: 0938 1123

GC Column: CN ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL200 AMOUNT	CURVE	%D	MAX %d
HMX	200	200	LINR	0.0	15.0
RDX	200	200	LINR	0.0	15.0
1,3,5-Trinitrobenzene	400	400	LINR	0.0	15.0
1,3-Dinitrobenzene	400	400	LINR	0.0	15.0
Nitrobenzene	190	200	LINR	5.0	15.0
Tetryl	220	200	LINR	10.0	15.0
2,4,6-Trinitrotoluene	400	400	LINR	0.0	15.0
4-Amino-2,6-dinitrotoluene	210	200	LINR	5.0	15.0
2-Amino-4,6-dinitrotoluene	200	200	LINR	0.0	15.0
2,6-Dinitrotoluene	200	200	LINR	0.0	15.0
2,4-Dinitrotoluene	400	400	LINR	0.0	15.0
2-Nitrotoluene	580	600	LINR	3.3	15.0
4-Nitrotoluene	580	600	LINR	3.3	15.0
3-Nitrotoluene	580	600	LINR	3.3	15.0
1,2-Dinitrobenzene	200	200	LINR	0.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date: 04/02/02 Time: 1411

Lab File ID: 02AR020855-I15 Init. Calib. Date(s): 04/02/02 04/02/02

Init. Calib. Times: 1144 1329

GC Column: CN ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL0 AMOUNT	CURVE	%D	MAX %d	
2,6-Diamino-4-nitrotoluene	440	400	LINR	10.0	15.0	
2,4-Diamino-6-nitrotoluene	440	400	LINR	10.0	15.0	
Picric acid	210	200	LINR	5.0	15.0	
Nitroglycerin	4400	4000	LINR	10.0	15.0	
PETN	4300	4000	LINR	7.5	15.0	
TNX	60	58	LINR	3.4	15.0	
DNX	270	260	LINR	3.8	15.0	
MNX	210	180	LINR	16.7	15.0	<-
1,2-Dinitrobenzene	200	200	LINR	0.0	15.0	

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date: 01/13/03 Time: 1725

Lab File ID: 13JAN031633-I0 Init. Calib. Date(s): 04/02/02 04/02/02

Init. Calib. Times: 0938 1123

GC Column: CN ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL200 AMOUNT	CURVE	%D	MAX %d
HMX	190	200	LINR	5.0	15.0
RDX	200	200	LINR	0.0	15.0
1,3,5-Trinitrobenzene	390	400	LINR	2.5	15.0
1,3-Dinitrobenzene	390	400	LINR	2.5	15.0
Nitrobenzene	190	200	LINR	5.0	15.0
Tetryl	190	200	LINR	5.0	15.0
2,4,6-Trinitrotoluene	390	400	LINR	2.5	15.0
4-Amino-2,6-dinitrotoluene	200	200	LINR	0.0	15.0
2-Amino-4,6-dinitrotoluene	200	200	LINR	0.0	15.0
2,6-Dinitrotoluene	200	200	LINR	0.0	15.0
2,4-Dinitrotoluene	390	400	LINR	2.5	15.0
2-Nitrotoluene	590	600	LINR	1.7	15.0
4-Nitrotoluene	590	600	LINR	1.7	15.0
3-Nitrotoluene	590	600	LINR	1.7	15.0
1,2-Dinitrobenzene	200	200	LINR	0.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date: 01/13/03 Time: 1747

Lab File ID: 13JAN031633-I0 Init. Calib. Date(s): 04/02/02 04/02/02

Init. Calib. Times: 1144 1329

GC Column: CN ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL0 AMOUNT	CURVE	%D	MAX %d
2,6-Diamino-4-nitrotoluene	380	400	LINR	5.0	15.0
2,4-Diamino-6-nitrotoluene	380	400	LINR	5.0	15.0
Picric acid	200	200	LINR	0.0	15.0
Nitroglycerin	4400	4000	LINR	10.0	15.0
PETN	4000	4000	LINR	0.0	15.0
TNX	190	200	LINR	5.0	15.0
DNX	220	200	LINR	10.0	15.0
MNX	220	200	LINR	10.0	15.0
1,2-Dinitrobenzene	210	200	LINR	5.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date: 01/13/03 Time: 2220

Lab File ID: 13JAN031633-I1 Init. Calib. Date(s): 04/02/02 04/02/02

Init. Calib. Times: 0938 1123

GC Column: CN ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL200 AMOUNT	CURVE	%D	MAX %d
HMX	190	200	LINR	5.0	15.0
RDX	200	200	LINR	0.0	15.0
1,3,5-Trinitrobenzene	400	400	LINR	0.0	15.0
1,3-Dinitrobenzene	400	400	LINR	0.0	15.0
Nitrobenzene	190	200	LINR	5.0	15.0
Tetryl	190	200	LINR	5.0	15.0
2,4,6-Trinitrotoluene	400	400	LINR	0.0	15.0
4-Amino-2,6-dinitrotoluene	200	200	LINR	0.0	15.0
2-Amino-4,6-dinitrotoluene	200	200	LINR	0.0	15.0
2,6-Dinitrotoluene	190	200	LINR	5.0	15.0
2,4-Dinitrotoluene	400	400	LINR	0.0	15.0
2-Nitrotoluene	610	600	LINR	1.7	15.0
4-Nitrotoluene	610	600	LINR	1.7	15.0
3-Nitrotoluene	610	600	LINR	1.7	15.0
1,2-Dinitrobenzene	200	200	LINR	0.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date: 01/13/03 Time: 2242

Lab File ID: 13JAN031633-I1 Init. Calib. Date(s): 04/02/02 04/02/02

Init. Calib. Times: 1144 1329

GC Column: CN ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL0 AMOUNT	CURVE	%D	MAX %d
2,6-Diamino-4-nitrotoluene	380	400	LINR	5.0	15.0
2,4-Diamino-6-nitrotoluene	380	400	LINR	5.0	15.0
Picric acid	200	200	LINR	0.0	15.0
Nitroglycerin	4200	4000	LINR	5.0	15.0
PETN	3900	4000	LINR	2.5	15.0
TNX	190	200	LINR	5.0	15.0
DNX	220	200	LINR	10.0	15.0
MNX	220	200	LINR	10.0	15.0
1,2-Dinitrobenzene	210	200	LINR	5.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date: 01/15/03 Time: 0229

Lab File ID: 14JAN031056-I4 Init. Calib. Date(s): 04/02/02 04/02/02

Init. Calib. Times: 0938 1123

GC Column: CN ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL200 AMOUNT	CURVE	%D	MAX %d
HMX	190	200	LINR	5.0	15.0
RDX	200	200	LINR	0.0	15.0
1,3,5-Trinitrobenzene	400	400	LINR	0.0	15.0
1,3-Dinitrobenzene	400	400	LINR	0.0	15.0
Nitrobenzene	190	200	LINR	5.0	15.0
Tetryl	190	200	LINR	5.0	15.0
2,4,6-Trinitrotoluene	400	400	LINR	0.0	15.0
4-Amino-2,6-dinitrotoluene	200	200	LINR	0.0	15.0
2-Amino-4,6-dinitrotoluene	200	200	LINR	0.0	15.0
2,6-Dinitrotoluene	170	200	LINR	15.0	15.0
2,4-Dinitrotoluene	400	400	LINR	0.0	15.0
2-Nitrotoluene	580	600	LINR	3.3	15.0
4-Nitrotoluene	580	600	LINR	3.3	15.0
3-Nitrotoluene	580	600	LINR	3.3	15.0
1,2-Dinitrobenzene	190	200	LINR	5.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date: 01/15/03 Time: 0251

Lab File ID: 14JAN031056-I4 Init. Calib. Date(s): 04/02/02 04/02/02

Init. Calib. Times: 1144 1329

GC Column: CN ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL0 AMOUNT	CURVE	%D	MAX %d
2,6-Diamino-4-nitrotoluene	400	400	LINR	0.0	15.0
2,4-Diamino-6-nitrotoluene	400	400	LINR	0.0	15.0
Picric acid	210	200	LINR	5.0	15.0
Nitroglycerin	4200	4000	LINR	5.0	15.0
PETN	3800	4000	LINR	5.0	15.0
TNX	180	200	LINR	10.0	15.0
DNX	210	200	LINR	5.0	15.0
MNX	220	200	LINR	10.0	15.0
1,2-Dinitrobenzene	200	200	LINR	0.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date: 01/15/03 Time: 0723

Lab File ID: 14JAN031056-I5 Init. Calib. Date(s): 04/02/02 04/02/02

Init. Calib. Times: 0938 1123

GC Column: CN ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL200 AMOUNT	CURVE	%D	MAX %d
HMX	200	200	LINR	0.0	15.0
RDX	200	200	LINR	0.0	15.0
1,3,5-Trinitrobenzene	400	400	LINR	0.0	15.0
1,3-Dinitrobenzene	400	400	LINR	0.0	15.0
Nitrobenzene	190	200	LINR	5.0	15.0
Tetryl	190	200	LINR	5.0	15.0
2,4,6-Trinitrotoluene	410	400	LINR	2.5	15.0
4-Amino-2,6-dinitrotoluene	200	200	LINR	0.0	15.0
2-Amino-4,6-dinitrotoluene	200	200	LINR	0.0	15.0
2,6-Dinitrotoluene	170	200	LINR	15.0	15.0
2,4-Dinitrotoluene	410	400	LINR	2.5	15.0
2-Nitrotoluene	610	600	LINR	1.7	15.0
4-Nitrotoluene	610	600	LINR	1.7	15.0
3-Nitrotoluene	610	600	LINR	1.7	15.0
1,2-Dinitrobenzene	190	200	LINR	5.0	15.0

FORM 7
EXPLOSIVES CALIBRATION VERIFICATION SUMMARY

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Instrument ID: 3330_1 Calibration Date: 01/15/03 Time: 0746

Lab File ID: 14JAN031056-I5 Init. Calib. Date(s): 04/02/02 04/02/02

Init. Calib. Times: 1144 1329

GC Column: CN ID: 4.60 (mm)

COMPOUND	SAMPLE AMOUNT	CAL0 AMOUNT	CURVE	%D	MAX %d
2,6-Diamino-4-nitrotoluene	410	400	LINR	2.5	15.0
2,4-Diamino-6-nitrotoluene	400	400	LINR	0.0	15.0
Picric acid	210	200	LINR	5.0	15.0
Nitroglycerin	4400	4000	LINR	10.0	15.0
PETN	3800	4000	LINR	5.0	15.0
TNX	180	200	LINR	10.0	15.0
DNX	210	200	LINR	5.0	15.0
MNX	220	200	LINR	10.0	15.0
1,2-Dinitrobenzene	200	200	LINR	0.0	15.0

FORM 8
EXPLOSIVES ANALYTICAL SEQUENCE

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

GC Column: LC-18 ID: 4.60 (mm) Init. Calib. Date(s): 10/16/02 10/16/02

Instrument ID: 1488_1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 16.64

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01	MMRSTD1	MMRSTD1	10/16/02	1721	16.63	
02	MMRSTD2	MMRSTD2	10/16/02	1800	16.64	
03	MMRSTD3	MMRSTD3	10/16/02	1839	16.64	
04	MMRSTD4	MMRSTD4	10/16/02	1918	16.64	
05	MMRSTD5	MMRSTD5	10/16/02	1957	16.64	
06	MMRSTD6	MMRSTD6	10/16/02	2036	16.65	
07	ICV	ICV	10/16/02	2115	16.65	
08	MMRSTD4	MMRSTD4	01/13/03	1537	16.65	
09	EBLKW1	EBLKW1	01/13/03	1616	16.65	
10	W1LCS	W1LCS	01/13/03	1655	16.65	
11	W1LCSD	W1LCSD	01/13/03	1734	16.65	
12	MMRSTD4	MMRSTD4	01/13/03	2325	16.65	
13	GW05MW02B	514220	01/14/03	0240	16.68	
14	GW05MW07B	514221	01/14/03	0319	16.67	
15	GW05MW10	514222	01/14/03	0358	16.67	
16	GW505MW07B	514223	01/14/03	0437	16.66	
17	GW1005MW07B	514224	01/14/03	0516	16.66	
18	GW05MW07BMS	514221MS	01/14/03	0555	16.65	
19	MMRSTD4	MMRSTD4	01/14/03	0713	16.66	
20	GW05MW07BMSD	514221MD	01/14/03	0752	16.65	
21	MMRSTD4	MMRSTD4	01/14/03	1028	16.68	
22	MMRSTD4	MMRSTD4	01/14/03	1738	16.65	
23	GW05MW02BDL	514220D1	01/14/03	1817	16.65	
24	MMRSTD4	MMRSTD4	01/15/03	0126	16.68	
25						
26						
27						
28						
29						
30						
31						
32						

QC LIMITS
S1 = 1,2-Dinitrobenzene (+/- 0.10 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 8
EXPLOSIVES ANALYTICAL SEQUENCE

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

GC Column: CN ID: 4.60 (mm) Init. Calib. Date(s): 04/02/02 04/02/02

Instrument ID: 3330_1

THE ANALYTICAL SEQUENCE OF PERFORMANCE EVALUATION MIXTURES, BLANKS, SAMPLES, AND STANDARDS IS GIVEN BELOW:

MEAN SURROGATE RT FROM INITIAL CALIBRATION
S1 : 8.79

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED	TIME ANALYZED	S1 RT #	RT #
01	EXPSTD1	EXPSTD1	04/02/02	0938	8.78	
02	EXPSTD2	EXPSTD2	04/02/02	0959	8.78	
03	EXPSTD3	EXPSTD3	04/02/02	1020	8.81	
04	EXPSTD4	EXPSTD4	04/02/02	1041	8.79	
05	EXPSTD5	EXPSTD5	04/02/02	1102	8.77	
06	EXPSTD6	EXPSTD6	04/02/02	1123	8.79	
07	SUPPSTD1	SUPPSTD1	04/02/02	1144	8.78	
08	SUPPSTD2	SUPPSTD2	04/02/02	1205	8.79	
09	SUPPSTD3	SUPPSTD3	04/02/02	1226	8.78	
10	SUPPSTD4	SUPPSTD4	04/02/02	1247	8.79	
11	SUPPSTD5	SUPPSTD5	04/02/02	1308	8.79	
12	SUPPSTD6	SUPPSTD6	04/02/02	1329	8.79	
13	EXPICV	EXPICV	04/02/02	1350	8.79	
14	SUPPICV	SUPPICV	04/02/02	1411	8.80	
15	EXPSTD4	EXPSTD4	01/13/03	1725	8.79	
16	SUPPSTD4	SUPPSTD4	01/13/03	1747	8.79	
17	EBLKW1	EBLKW1	01/13/03	1810	8.82	
18	W1LCS	W1LCS	01/13/03	1833	8.81	
19	W1LCSD	W1LCSD	01/13/03	1855	8.82	
20	EXPSTD4	EXPSTD4	01/13/03	2220	8.81	
21	SUPPSTD4	SUPPSTD4	01/13/03	2242	8.80	
22	EXPSTD4	EXPSTD4	01/15/03	0229	8.86	
23	SUPPSTD4	SUPPSTD4	01/15/03	0251	8.87	
24	GW05MW02BDL	514220D1	01/15/03	0507	8.86	
25	GW05MW02B	514220	01/15/03	0530	8.88	
26	GW05MW10	514222	01/15/03	0615	8.87	
27	EXPSTD4	EXPSTD4	01/15/03	0723	8.87	
28	SUPPSTD4	SUPPSTD4	01/15/03	0746	8.88	
29						
30						
31						
32						

QC LIMITS
S1 = 1,2-Dinitrobenzene (+/- 0.10 MINUTES)

Column used to flag retention time values with an asterisk.
* Values outside of QC limits.

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

GW05MW02B

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: 514220 Date(s) Analyzed: 01/14/03 01/15/03

Instrument ID (1): 1488_1 Instrument ID (2): 3330_1

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): CN ID: 4.60(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
HMX	1	10.81	10.67	10.87	2.9	
	2	11.96	11.80	12.00	3.4	17.2
RDX	1	14.56	14.41	14.61	110	
	2	10.54	10.43	10.63	110	0.0
2,4,6-Trinitrotoluene	1	20.01	19.80	20.00	0.30	
	2	8.30	8.14	8.34	0.76	153.3
2,4-Dinitrotoluene	1	21.30	21.12	21.32	0.47	
	2	8.30	8.14	8.34	0.76	61.7
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

EXPLOSIVES

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

GW05MW02BDL

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: 514220D1 Date(s) Analyzed: 01/14/03 01/15/03

Instrument ID (1): 1488_1 Instrument ID (2): 3330_1

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): CN ID: 4.60(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
HMX	1	10.79	10.67	10.87	3.7	
	2	11.94	11.80	12.00	3.1	19.4
RDX	1	14.54	14.41	14.61	110	
	2	10.51	10.43	10.63	120	9.1
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

GW05MW10

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: 514222 Date(s) Analyzed: 01/14/03 01/15/03

Instrument ID (1): 1488_1 Instrument ID (2): 3330_1

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): CN ID: 4.60(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
HMX	1	10.79	10.67	10.87	4.2	
	2	11.94	11.80	12.00	5.1	21.4
RDX	1	14.55	14.41	14.61	9.7	
	2	10.53	10.43	10.63	9.8	1.0
Picric acid	1	15.89	15.74	15.94	6.4	
	2	7.56	7.51	7.71	6.2	3.2
Tetryl	1	18.77	18.64	18.84	8.5	
	2	11.52	11.38	11.58	8.6	1.2
Nitroglycerin	1	19.54	19.43	19.63	13	
	2	10.28	10.21	10.41	8.6	51.2
2,4,6-Trinitrotoluene	1	19.93	19.80	20.00	5.6	
	2	8.29	8.14	8.34	15	167.8
2,4-Dinitrotoluene	1	21.27	21.12	21.32	8.7	
	2	8.29	8.14	8.34	15	72.4
	1					
	2					

EXPLOSIVES

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

GW05MW07BMS

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: 514221MS Date(s) Analyzed: 01/14/03 _____

Instrument ID (1): 1488_1 Instrument ID (2): _____

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): _____ ID: _____(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
HMX	1	10.78	10.67	10.87	3.8	
	2					
RDX	1	14.54	14.41	14.61	4.0	
	2					
Picric acid	1	15.88	15.74	15.94	3.7	
	2					
1,3,5-Trinitrobenzene	1	16.36	16.25	16.45	4.1	
	2					
1,3-Dinitrobenzene	1	17.57	17.45	17.65	4.1	
	2					
Nitrobenzene	1	18.39	18.28	18.48	4.0	
	2					
Tetryl	1	18.76	18.64	18.84	3.9	
	2					
Nitroglycerin	1	19.53	19.43	19.63	76	
	2					

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

GW05MW07BMS

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: 514221MS Date(s) Analyzed: 01/14/03

Instrument ID (1): 1488_1 Instrument ID (2): _____

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): _____ ID: _____(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
2,4,6-Trinitrotoluene	1	19.92	19.80	20.00	4.1	
	2					
4-Amino-2,6-dinitrotoluen	1	20.35	20.20	20.40	4.0	
	2					
2-Amino-4,6-dinitrotoluen	1	20.70	20.54	20.74	4.0	
	2					
2,6-Dinitrotoluene	1	21.01	20.95	21.15	4.6	
	2					
2,4-Dinitrotoluene	1	21.25	21.12	21.32	3.7	
	2					
2-Nitrotoluene	1	22.59	22.49	22.69	3.9	
	2					
4-Nitrotoluene	1	23.27	23.16	23.36	4.1	
	2					
3-Nitrotoluene	1	23.98	23.88	24.08	4.2	
	2					

EXPLOSIVES

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

GW05MW07BMS

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: 514221MS Date(s) Analyzed: 01/14/03

Instrument ID (1): 1488_1 Instrument ID (2): _____

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): _____ ID: _____(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
PETN	1	24.91	24.85	25.05	66	
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

EXPLOSIVES

0102

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

GW05MW07BMSD

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: 514221MD Date(s) Analyzed: 01/14/03

Instrument ID (1): 1488_1 Instrument ID (2): _____

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): _____ ID: _____(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
HMX	1	10.78	10.67	10.87	3.6	
	2					
RDX	1	14.53	14.41	14.61	3.7	
	2					
Picric acid	1	15.88	15.74	15.94	3.7	
	2					
1,3,5-Trinitrobenzene	1	16.35	16.25	16.45	3.8	
	2					
1,3-Dinitrobenzene	1	17.56	17.45	17.65	3.8	
	2					
Nitrobenzene	1	18.38	18.28	18.48	3.8	
	2					
Tetryl	1	18.75	18.64	18.34	3.7	
	2					
Nitroglycerin	1	19.52	19.43	19.63	79	
	2					

EXPLOSIVES

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

GW05MW07BMSD

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: 514221MD Date(s) Analyzed: 01/14/03 _____

Instrument ID (1): 1488_1 Instrument ID (2): _____

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): _____ ID: _____(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
2,4,6-Trinitrotoluene	1	19.90	19.80	20.00	3.8	
	2					
4-Amino-2,6-dinitrotoluen	1	20.33	20.20	20.40	3.8	
	2					
2-Amino-4,6-dinitrotoluen	1	20.68	20.54	20.74	3.7	
	2					
2,6-Dinitrotoluene	1	21.00	20.95	21.15	4.4	
	2					
2,4-Dinitrotoluene	1	21.23	21.12	21.32	3.5	
	2					
2-Nitrotoluene	1	22.57	22.49	22.69	3.7	
	2					
4-Nitrotoluene	1	23.26	23.16	23.36	3.8	
	2					
3-Nitrotoluene	1	23.96	23.88	24.08	3.8	
	2					

EXPLOSIVES

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

GW05MW07BMSD

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: 514221MD Date(s) Analyzed: 01/14/03

Instrument ID (1): 1488_1 Instrument ID (2): _____

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): _____ ID: _____(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
PETN	1	24.89	24.85	25.05	68	
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

EXPLOSIVES

0105

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

W1LCS

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: W1LCS Date(s) Analyzed: 01/13/03 01/13/03

Instrument ID (1): 1488_1 Instrument ID (2): 3330_1

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): CN ID: 4.60(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
HMX	1	10.76	10.67	10.87	3.8	
	2	11.91	11.80	12.00	3.8	0.0
RDX	1	14.53	14.41	14.61	3.9	
	2	10.47	10.43	10.63	4.0	2.6
Picric acid	1	15.86	15.74	15.94	4.0	
	2	7.39	7.51	7.71	11	175.0
1,3,5-Trinitrobenzene	1	16.35	16.25	16.45	4.0	
	2	6.74	6.56	6.76	8.0	100.0
1,3-Dinitrobenzene	1	17.56	17.45	17.65	3.9	
	2	6.74	6.56	6.76	8.0	105.1
Nitrobenzene	1	18.38	18.28	18.48	3.9	
	2	5.95	5.72	5.92	3.7	5.4
Tetryl	1	18.75	18.64	18.84	3.4	
	2	11.49	11.38	11.58	3.3	3.0
Nitroglycerin	1	19.53	19.43	19.63	82	
	2	10.23	10.21	10.41	81	1.2

EXPLOSIVES

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

W1LCS

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: W1LCS Date(s) Analyzed: 01/13/03 01/13/03

Instrument ID (1): 1488_1 Instrument ID (2): 3330_1

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): CN ID: 4.60(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
2,4,6-Trinitrotoluene	1	19.90	19.80	20.00	4.0	
	2	8.23	8.14	8.34	8.1	102.5
4-Amino-2,6-dinitrotoluen	1	20.32	20.20	20.40	4.0	
	2	9.39	9.20	9.40	3.9	2.6
2-Amino-4,6-dinitrotoluen	1	20.67	20.54	20.74	3.8	
	2	9.79	9.67	9.87	3.9	2.6
2,6-Dinitrotoluene	1	21.00	20.95	21.15	4.5	
	2	8.12	7.88	8.08	3.5	28.6
2,4-Dinitrotoluene	1	21.23	21.12	21.32	3.6	
	2	8.23	8.14	8.34	8.1	125.0
2-Nitrotoluene	1	22.57	22.49	22.69	3.8	
	2	7.39	7.15	7.35	16	321.0
4-Nitrotoluene	1	23.25	23.16	23.36	3.9	
	2	7.39	7.15	7.35	16	310.2
3-Nitrotoluene	1	23.96	23.88	24.08	3.9	
	2	7.39	7.15	7.35	16	310.2

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

W1LCS

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: W1LCS Date(s) Analyzed: 01/13/03 01/13/03

Instrument ID (1): 1488_1 Instrument ID (2): 3330_1

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): CN ID: 4.60(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
PETN	1	24.90	24.85	25.05	69	
	2	13.07	12.96	13.16	72	4.3
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

EXPLOSIVES

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

W1LCSD

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: W1LCSD Date(s) Analyzed: 01/13/03 01/13/03

Instrument ID (1): 1488_1 Instrument ID (2): 3330_1

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): CN ID: 4.60(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
HMX	1	10.77	10.67	10.87	3.9	
	2	11.90	11.80	12.00	3.8	2.6
RDX	1	14.53	14.41	14.61	4.1	
	2	10.46	10.43	10.63	4.1	0.0
Picric acid	1	15.87	15.74	15.94	3.8	
	2	7.39	7.51	7.71	11	189.5
1,3,5-Trinitrobenzene	1	16.35	16.25	16.45	4.0	
	2	6.74	6.56	6.76	8.1	102.5
1,3-Dinitrobenzene	1	17.56	17.45	17.65	4.0	
	2	6.74	6.56	6.76	8.1	102.5
Nitrobenzene	1	18.38	18.28	18.48	4.0	
	2	5.97	5.72	5.92	3.9	2.6
Tetryl	1	18.75	18.64	18.84	3.6	
	2	11.47	11.38	11.58	3.4	5.9
Nitroglycerin	1	19.53	19.43	19.63	78	
	2	10.23	10.21	10.41	82	5.1

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

W1LCSD

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: W1LCSD Date(s) Analyzed: 01/13/03 01/13/03

Instrument ID (1): 1488_1 Instrument ID (2): 3330_1

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): CN ID: 4.60(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
2,4,6-Trinitrotoluene	1	19.91	19.80	20.00	4.1	
	2	8.24	8.14	8.34	8.4	104.9
4-Amino-2,6-dinitrotoluen	1	20.33	20.20	20.40	4.0	
	2	9.39	9.20	9.40	3.9	2.6
2-Amino-4,6-dinitrotoluen	1	20.68	20.54	20.74	3.9	
	2	9.80	9.67	9.87	3.9	0.0
2,6-Dinitrotoluene	1	21.01	20.95	21.15	4.6	
	2	8.13	7.88	8.08	3.6	27.8
2,4-Dinitrotoluene	1	21.24	21.12	21.32	3.8	
	2	8.24	8.14	8.34	8.4	121.0
2-Nitrotoluene	1	22.58	22.49	22.69	4.0	
	2	7.39	7.15	7.35	16	300.0
4-Nitrotoluene	1	23.25	23.16	23.36	4.1	
	2	7.39	7.15	7.35	16	290.2
3-Nitrotoluene	1	23.97	23.88	24.08	4.0	
	2	7.39	7.15	7.35	16	300.0

FORM 10
EXPLOSIVES IDENTIFICATION SUMMARY
FOR SINGLE COMPONENT ANALYTES

CLIENT SAMPLE NO.

W1LCSD

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Lab Sample ID: W1LCSD Date(s) Analyzed: 01/13/03 01/13/03

Instrument ID (1): 1488_1 Instrument ID (2): 3330_1

GC Column(1): LC-18 ID: 4.60(mm) GC Column(2): CN ID: 4.60(mm)

ANALYTE	COL	RT	RT WINDOW FROM	RT WINDOW TO	CONCENTRATION	%D
PETN	1	24.91	24.85	25.05	69	
	2	13.05	12.96	13.16	67	3.0
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					
	1					
	2					

EXPLOSIVES

STL Burlington

INITIAL CALIBRATION DATA

Start Cal Date : 16-OCT-2002 17:21
End Cal Date : 16-OCT-2002 20:36
Quant Method : ESTD
Target Version : 3.50
Integrator : HP Genie
Method file : /var/chem/1488_1.i/16OCT021513_JAN_2.b/8330_C18_2002.m
Cal Date : 13-Jan-2003 10:31 lab

Calibration File Names:
Level 1: /var/chem/1488_1.i/16OCT021513_JAN_2.b/16oct021513-i021.d
Level 2: /var/chem/1488_1.i/16OCT021513_JAN_2.b/16oct021513-i031.d
Level 3: /var/chem/1488_1.i/16OCT021513_JAN_2.b/16oct021513-i041.d
Level 4: /var/chem/1488_1.i/16OCT021513_JAN_2.b/16oct021513-i051.d
Level 5: /var/chem/1488_1.i/16OCT021513_JAN_2.b/16oct021513-i061.d
Level 6: /var/chem/1488_1.i/16OCT021513_JAN_2.b/16oct021513-i071.d

0112

	12	25	50	200	500	1000		Coefficients			%RSD
Compound	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Curve	b	m1	m2	or R^2
1 2,6-Diamino-4-nitrotoluene	+++++	16227	30575	115500	290949	580157	LINR	-2.02900	0.00173		0.99999
2 TNX	7329	14612	30259	121433	312697	625769	LINR	2.34480	0.00159		0.99997
3 2,4-Diamino-6-nitrotoluene	2571	6306	13934	61882	164901	331548	LINR	7.96817	0.00299		0.99992
4 HMX	3315	7347	15409	65916	173677	350579	LINR	6.37595	0.00284		0.99992
5 DNX	5643	10998	22550	90133	229688	459149	LINR	1.31319	0.00218		0.99999
6 MNX	4479	9272	18979	75854	193683	389975	LINR	2.38466	0.00256		0.99997
7 RDX	4415	8302	16227	64860	165767	330783	LINR	0.68993	0.00302		0.99998
8 Picric acid	9636	14930	26501	91387	224279	445057	LINR	-8.92450	0.00227		0.99999
9 1,3,5-Trinitrobenzene	16181	24028	40715	143979	353746	701202	LINR	-9.17878	0.00144		0.99999
11 1,3-Dinitrobenzene	13012	24369	47931	188410	475103	948307	LINR	-0.49156	0.00105		0.99999
12 Nitrobenzene	7179	14317	28494	115594	291482	582149	LINR	0.66843	0.00172		1.00000
13 Tetryl	6114	12750	25053	103536	261416	521769	LINR	1.12580	0.00191		0.99999
14 Nitroglycerin	823	1473	2950	11800	29826	59211	LINR	-9.77155	0.33755		0.99998
15 2,4,6-Trinitrotoluene	8643	15906	32023	125504	317379	632971	LINR	-0.28332	0.00158		0.99999

STL Burlington

INITIAL CALIBRATION DATA

Start Cal Date : 16-OCT-2002 17:21
End Cal Date : 16-OCT-2002 20:36
Quant Method : ESTD
Target Version : 3.50
Integrator : HP Genie
Method file : /var/chem/1488_1.i/16OCT021513_JAN_2.b/8330_C18_2002.m
Cal Date : 13-Jan-2003 10:31 lab

Compound	12 Level 1	25 Level 2	50 Level 3	200 Level 4	500 Level 5	1000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2
16 4-Amino-2,6-dinitrotoluene	6640	12680	24886	97167	244700	487951	LINR	-0.79491	0.00205		1.00000
17 2-Amino-4,6-dinitrotoluene	9326	18021	35192	139000	348796	695473	LINR	-0.76715	0.00144		1.00000
18 2,6-Dinitrotoluene	5110	10008	19580	73689	186634	378242	LINR	0.49271	0.00265		0.99992
19 2,4-Dinitrotoluene	14493	25687	49042	192559	477272	950359	LINR	-2.47793	0.00105		1.00000
20 2-Nitrotoluene	4158	8319	17234	67742	172734	339950	LINR	-0.52362	0.00293		0.99993
21 4-Nitrotoluene	3386	6928	13141	52425	134906	270236	LINR	1.47759	0.00370		0.99996
22 3-Nitrotoluene	5166	8829	17973	69344	172927	345669	LINR	-1.50585	0.00290		1.00000
23 PETN	+++++	970	2721	10968	29123	58772	LINR	176	0.33757		0.99991
$ 10 1,2-Dinitrobenzene	7492	12773	23694	88370	218794	435116	LINR	-4.58353	0.00231		1.00000

013

STL Burlington

INITIAL CALIBRATION DATA

Start Cal Date : 16-OCT-2002 17:21
End Cal Date : 16-OCT-2002 20:36
Quant Method : ESTD
Target Version : 3.50
Integrator : HP Genie
Method file : /var/chem/1488_1.i/16OCT021513_JAN_2.b/8330_C18_2002.m
Cal Date : 13-Jan-2003 10:31 lab

Curve	Formula	Units
Linear	Amt = b + m1*Rsp	Amount

List Calibration File

CALIBRATION HEADER INFORMATION

Calibration Title : 8330
General :
- Calibration type..... External standard
- Units..... ppb
- Calibration base..... Area

Reference Peak Identification :
- Reference window..... 5.0 %
- Minimum window..... 0.50 mins
- Peak threshold..... 0.0 %

Uncalibrated Peaks Response Factor :
- Response factor source..... User set response factor
- Response factor..... 0.0000

Additional Information :
- Source library..... None
- Variation tolerance..... 100.00 %

Calibrant Peak Identification :
- Calibrant window..... 0.20 mins
- Calibrant threshold..... 0.0 %

Response Factor Calibration Curve :
- Curve fit..... Linear
- Force through zero..... No
- X transformation..... None
- Y transformation..... None
- Weighting..... None

Retention Value Calibration Curve :
- Curve fit..... Linear
- Force through zero..... No
- X transformation..... None
- Y transformation..... None
- Weighting..... None
- RV Calculation Mode..... Use Actual Retention Times

Timed Calibration Curve :
- Curve fit..... Linear
- Force through zero..... No
- X transformation..... None
- Y transformation..... None
- Weighting..... None

GROUP	NAME	MULTIPLIER	TYPE	START	END	PARENT
DNB	1,2-DINITROBENZENE % RECOVERY	0.5000	Named	N/A	N/A	----

Peak name : 2,6-DA
Expected retention time : 9.04 mins (RT range : 8.91 - 9.16 mins)

Peak window mode..... Local
Local window..... 0.25 mins
Group name identifier..... ----
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
A2	25.0000	649.0900	1
A3	50.0000	611.5054	1
A4	200.0000	577.5047	1
A5	500.0000	581.8984	1
A6	1000.0000	580.1575	1

Peak name : **TNX**
Expected retention time : 9.80 mins (RT range : 9.68 - 9.93 mins)

Peak window mode..... Local
Local window..... 0.25 mins
Group name identifier..... ----
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	586.3799	1
A2	25.0000	584.4922	1
A3	50.0000	605.1846	1
A4	200.0000	607.1693	1
A5	500.0000	625.3952	1
A6	1000.0000	625.7692	1

Peak name : **2,4-DA**
Expected retention time : 10.48 mins (RT range : 10.30 - 10.65 mins)

Peak window mode	Local
Local window	0.35 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	205.7110	1
A2	25.0000	252.2621	1
A3	50.0000	278.6831	1
A4	200.0000	309.4144	1
A5	500.0000	329.8021	1
A6	1000.0000	331.5486	1

Peak name : **HMX**
Expected retention time : 10.77 mins (RT range : 10.65 - 10.90 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	265.2285	1
A2	25.0000	293.9103	1
A3	50.0000	308.1855	1
A4	200.0000	329.5819	1
A5	500.0000	347.3552	1
A6	1000.0000	350.5794	1

Peak name : **DNX**
Expected retention time : 11.68 mins (RT range : 11.56 - 11.81 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	451.4704	1
A2	25.0000	439.9376	1
A3	50.0000	451.0069	1
A4	200.0000	450.6698	1
A5	500.0000	459.3779	1
A6	1000.0000	459.1494	1

Peak name : **MNX**
Expected retention time : 13.37 mins (RT range : 13.24 - 13.49 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	358.3950	1
A2	25.0000	370.9062	1
A3	50.0000	379.5939	1
A4	200.0000	379.2733	1
A5	500.0000	387.3671	1
A6	1000.0000	389.9757	1

Peak name : **RDX**
Expected retention time : 14.51 mins (RT range : 14.39 - 14.64 mins)

Peak window mode..... Local
Local window..... 0.25 mins
Group name identifier..... ----
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	353.2383	1
A2	25.0000	332.0906	1
A3	50.0000	324.5403	1
A4	200.0000	324.3044	1
A5	500.0000	331.5357	1
A6	1000.0000	330.7835	1

Peak name : **PICRIC ACID**
Expected retention time : 15.84 mins (RT range : 15.72 - 15.97 mins)

Peak window mode..... Local
Local window..... 0.25 mins
Group name identifier..... ----
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	770.9037	1
A2	25.0000	597.2379	1
A3	50.0000	530.0357	1
A4	200.0000	456.9383	1
A5	500.0000	448.5589	1
A6	1000.0000	445.0572	1

Peak name : **1,3,5-TNB**
Expected retention time : 16.34 mins (RT range : 16.22 - 16.47 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	1294.5099	1
A2	25.0000	961.1498	1
A3	50.0000	814.3088	1
A4	200.0000	719.8970	1
A5	500.0000	707.4935	1
A6	1000.0000	701.2023	1

Peak name : **1,2-DNB**
Expected retention time : 16.64 mins (RT range : 16.51 - 16.76 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	DNB
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	599.4282	1
A2	25.0000	510.9212	1
A3	50.0000	473.8811	1
A4	200.0000	441.8534	1
A5	500.0000	437.5894	1
A6	1000.0000	435.1165	1

Peak name : **1,3-DNB**
Expected retention time : 17.55 mins (RT range : 17.42 - 17.67 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Largest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	1040.9860	1
A2	25.0000	974.7927	1
A3	50.0000	958.6230	1
A4	200.0000	942.0538	1
A5	500.0000	950.2076	1
A6	1000.0000	948.3079	1

Peak name : **NB**
Expected retention time : 18.38 mins (RT range : 18.25 - 18.50 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	574.3201	1
A2	25.0000	572.7138	1
A3	50.0000	569.8939	1
A4	200.0000	577.9730	1
A5	500.0000	582.9644	1
A6	1000.0000	582.1493	1

Peak name : **Tetryl**
Expected retention time : 18.74 mins (RT range : 18.61 - 18.86 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	489.1899	1
A2	25.0000	510.0330	1
A3	50.0000	501.0693	1
A4	200.0000	517.6805	1
A5	500.0000	522.8336	1
A6	1000.0000	521.7697	1

Peak name : **NG**
Expected retention time : 19.53 mins (RT range : 19.41 - 19.66 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	250.0000	3.2947	1
A2	500.0000	2.9466	1
A3	1000.0000	2.9506	1
A4	4000.0000	2.9501	1
A5	10000.0000	2.9826	1
A6	20000.0000	2.9606	1

Peak name : **2,4,6-TNT**
Expected retention time : 19.90 mins (RT range : 19.77 - 20.02 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	691.5023	1
A2	25.0000	636.2531	1
A3	50.0000	640.4687	1
A4	200.0000	627.5210	1
A5	500.0000	634.7599	1
A6	1000.0000	632.9711	1

Peak name : **4-am-2,6-DNT**
Expected retention time : 20.30 mins (RT range : 20.17 - 20.42 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	531.2674	1
A2	25.0000	507.2000	1
A3	50.0000	497.7234	1
A4	200.0000	485.8362	1
A5	500.0000	489.4005	1
A6	1000.0000	487.9510	1

Peak name : **2-am-4,6-DNT**
Expected retention time : 20.64 mins (RT range : 20.51 - 20.76 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	746.1471	1
A2	25.0000	720.8505	1
A3	50.0000	703.8541	1
A4	200.0000	695.0016	1
A5	500.0000	697.5934	1
A6	1000.0000	695.4733	1

Peak name : **2,6-DNT**
Expected retention time : 21.05 mins (RT range : 20.92 - 21.17 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	408.8445	1
A2	25.0000	400.3553	1
A3	50.0000	391.6019	1
A4	200.0000	368.4481	1
A5	500.0000	373.2699	1
A6	1000.0000	378.2427	1

Peak name : **2,4-DNT**
Expected retention time : 21.22 mins (RT range : 21.09 - 21.34 mins)

Peak window mode..... Local
Local window..... 0.25 mins
Group name identifier..... ----
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	1159.4454	1
A2	25.0000	1027.5167	1
A3	50.0000	980.8484	1
A4	200.0000	962.7983	1
A5	500.0000	954.5458	1
A6	1000.0000	950.3598	1

Peak name : **2-NT**
Expected retention time : 22.58 mins (RT range : 22.45 - 22.70 mins)

Peak window mode..... Local
Local window..... 0.25 mins
Group name identifier..... ----
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	332.6725	1
A2	25.0000	332.7850	1
A3	50.0000	344.6836	1
A4	200.0000	338.7141	1
A5	500.0000	345.4694	1
A6	1000.0000	339.9500	1

Peak name : **4-NT**
Expected retention time : 23.26 mins (RT range : 23.14 - 23.39 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	270.9526	1
A2	25.0000	277.1246	1
A3	50.0000	262.8373	1
A4	200.0000	262.1262	1
A5	500.0000	269.8135	1
A6	1000.0000	270.2365	1

Peak name : **3-NT**
Expected retention time : 23.98 mins (RT range : 23.85 - 24.10 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	413.3097	1
A2	25.0000	353.1868	1
A3	50.0000	359.4757	1
A4	200.0000	346.7208	1
A5	500.0000	345.8558	1
A6	1000.0000	345.6693	1

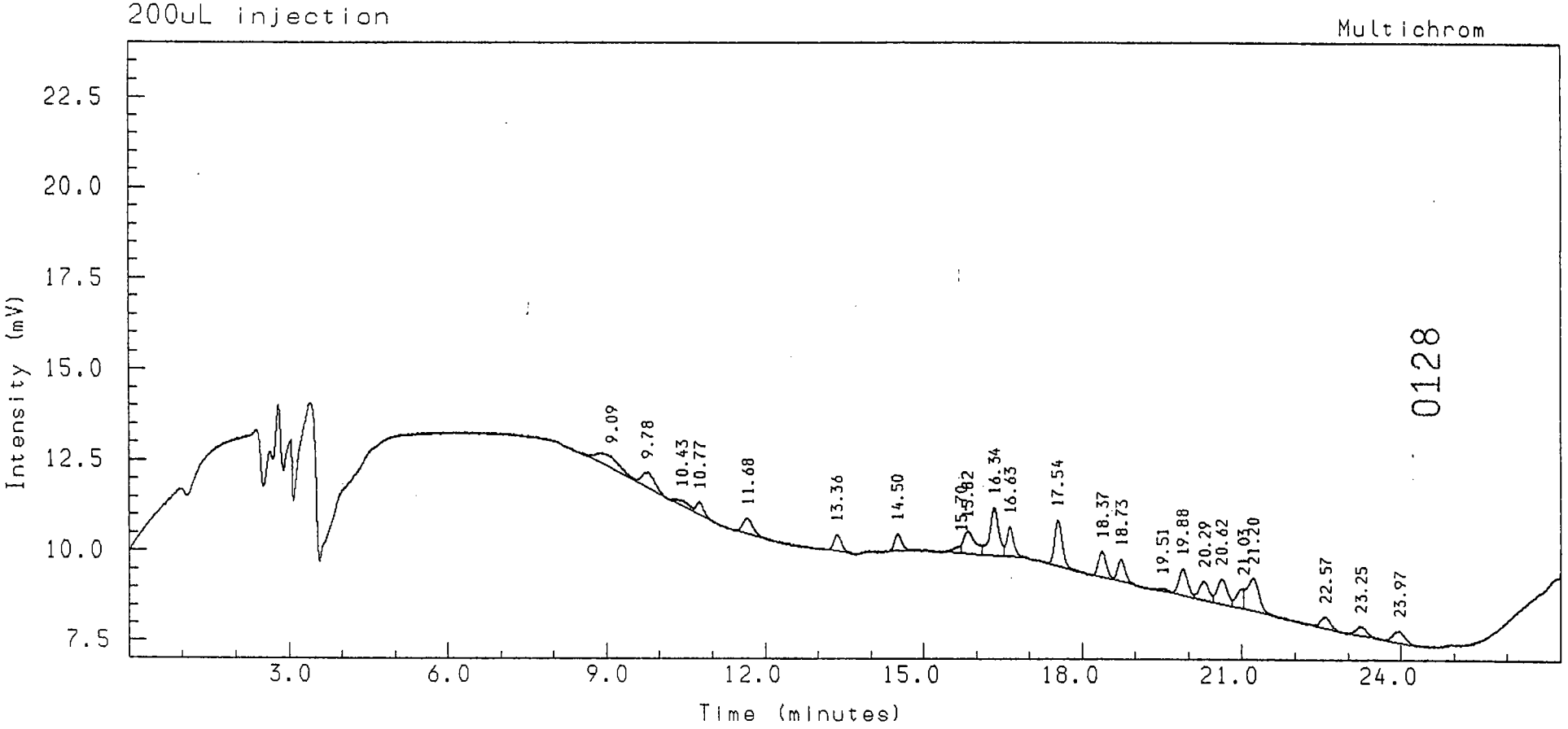
Peak name : **PETN**
Expected retention time : 24.95 mins (RT range : 24.83 - 25.08 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A2	500.0000	1.9400	1
A3	1000.0000	2.7211	1
A4	4000.0000	2.7422	1
A5	10000.0000	2.9123	1
A6	20000.0000	2.9386	1

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 160CT021513,2,1.
MMRSTD1 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD1
Acquired on 16-OCT-2002 at 17:21
Reported on 17-OCT-2002 at 08:30

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101602_1

Injection Report

Acquired on 16-OCT-2002 at 17:21

VAX MULTICHROM V2.11

Analyst Name : BC 9/1
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD1
Sample Id : MMRSTD1
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1			O	9.094	9.040	319	9224	13.904	2,6-DA	UMOF
2				9.784	9.800	437	7330	14.032	TNX	UMOL
3				10.434	10.480	162	2571	15.665	2,4-DA	UMOF
4				10.768	10.770	353	3315	15.785	HMX	UMOL
5				11.681	11.680	429	5643	13.587	DNX	UM
6				13.363	13.370	435	4480	13.858	MNX	M
7				14.503	14.510	471	4415	14.027	RDX	M
8				15.700	0.000	210	1744	0.000		UMOF
9				15.823	15.840	621	9636	12.928	PICRIC ACID	UMO
10				16.339	16.340	1327	16181	14.116	1,3,5-TNB	UMO
11	1		O	16.632	16.640	820	7493	12.712	1,2-DNB	UMOL
12				17.537	17.550	1266	13012	13.236	1,3-DNB	M
13				18.372	18.380	712	7179	12.988	NB	MOF
14				18.728	18.740	612	6115	12.825	Tetryl	MOL
15				19.514	19.530	87	824	268.120	NG	UMOF
16				19.885	19.900	727	8644	13.373	2,4,6-TNT	UMO
17				20.290	20.300	533	6641	12.822	4-am-2,6-DNT	UMO
18				20.621	20.640	697	9327	12.649	2-am-4,6-DNT	UMO
19				21.028	21.050	571	5111	14.037	2,6-DNT	UMO
20			O	21.197	21.220	919	14493	12.803	2,4-DNT	UMOL
21				22.566	22.580	314	4158	11.679	2-NT	UM
22				23.245	23.260	257	3387	13.999	4-NT	UM
23				23.974	23.980	336	5166	13.465	3-NT	M

Totals			
Unknowns	210	1744	0.000
Named	12406	154346	552.611
Grand Total	12616	156090	552.611

MISSING PEAKS

RT mins	Peak name
24.950	PETN

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	820	7493	6.356	1,2-DINITROBENZENE % RECOVERY

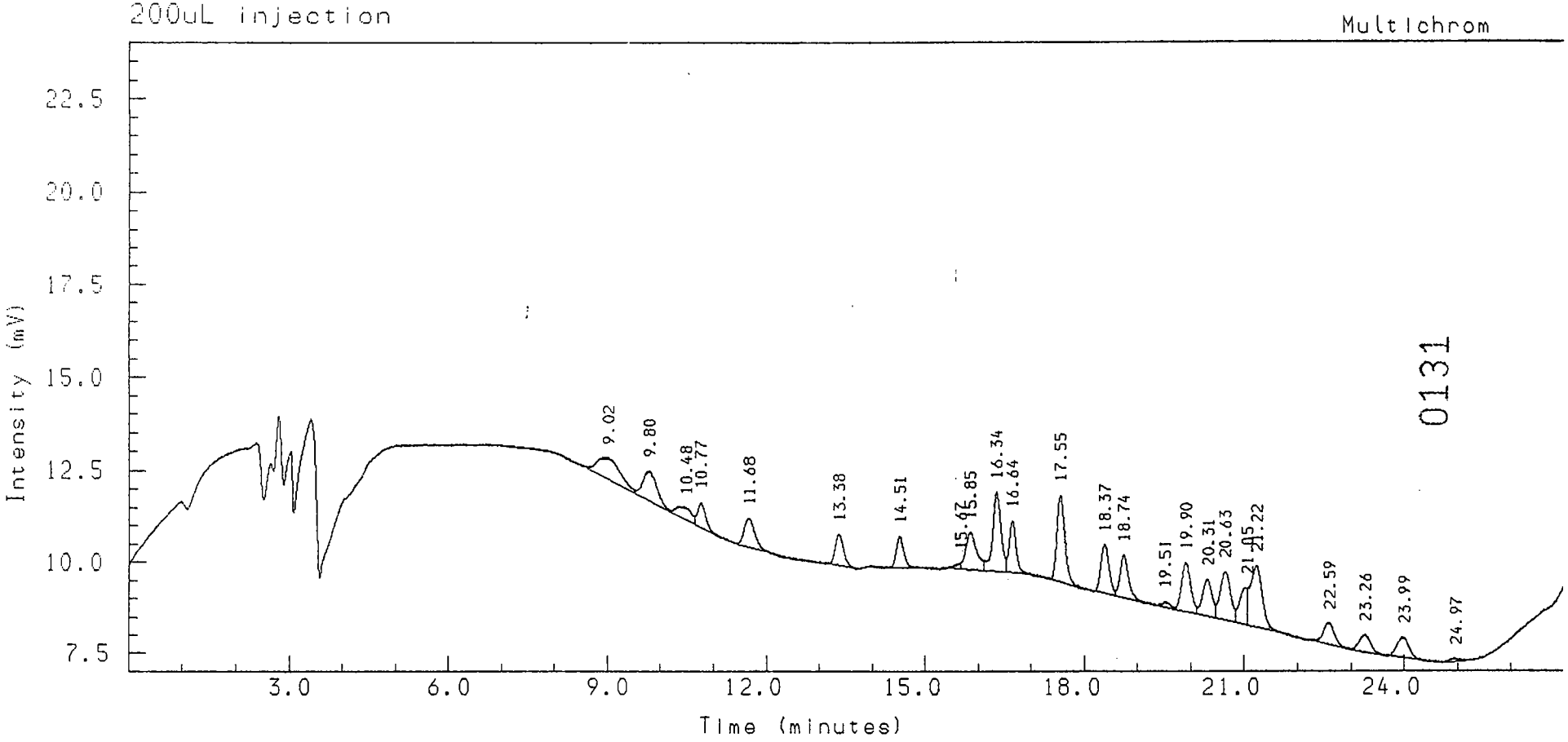
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101602_1
Calibration..... 101602_1
External standard calibration using area
Calibration last modified on 17-OCT-2002 at 08:29
Method last modified on 16-OCT-2002 at 14:42

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 160CT021513,3,1.
MMRSTD2 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD2
Acquired on 16-OCT-2002 at 18:00
Reported on 17-OCT-2002 at 08:30

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101602_1

Injection Report

Acquired on 16-OCT-2002 at 18:00

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD2
Sample Id : MMRSTD2
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.024	9.040	563	16227	26.002	2,6-DA	UMOF
2				9.802	9.800	796	14612	25.646	TNX	UMO
3				10.481	10.480	330	6307	26.846	2,4-DA	UMO
4				10.770	10.770	689	7348	27.232	HMX	UMOL
5				11.679	11.680	782	10998	25.235	DNX	UM
6				13.377	13.370	854	9273	26.135	MNX	M
7				14.513	14.510	855	8302	25.768	RDX	UM
8				15.668	0.000	163	1139	0.000		UMOF
9				15.845	15.840	1034	14931	24.936	PICRIC ACID	UMO
10				16.343	16.340	2183	24029	25.414	1,3,5-TNB	UMO
11	1			16.637	16.640	1416	12773	24.902	1,2-DNB	UMOL
12				17.546	17.550	2373	24370	25.218	1,3-DNB	M
13				18.374	18.380	1321	14318	25.240	NB	MOF
14				18.737	18.740	1164	12751	25.523	Tetryl	MOL
15				19.512	19.530	151	1473	487.393	NG	UMOF
16				19.897	19.900	1318	15906	24.847	2,4,6-TNT	UMO
17				20.308	20.300	1004	12680	25.206	4-am-2,6-DNT	UMO
18				20.632	20.640	1311	18021	25.156	2-am-4,6-DNT	UMO
19				21.046	21.050	999	10009	27.021	2,6-DNT	UMO
20				21.221	21.220	1663	25688	24.606	2,4-DNT	UMOL
21				22.591	22.580	590	8320	23.891	2-NT	UM
22				23.257	23.260	469	6928	27.093	4-NT	M
23				23.990	23.980	563	8830	24.081	3-NT	UM
24				24.972	24.950	88	970	503.523	PETN	U

Totals			
Unknowns	163	1139	0.000
Named	22518	285064	1526.913
Grand Total	22681	286203	1526.913

0132

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	1416	12773	12.451	1,2-DINITROBENZENE % RECOVERY

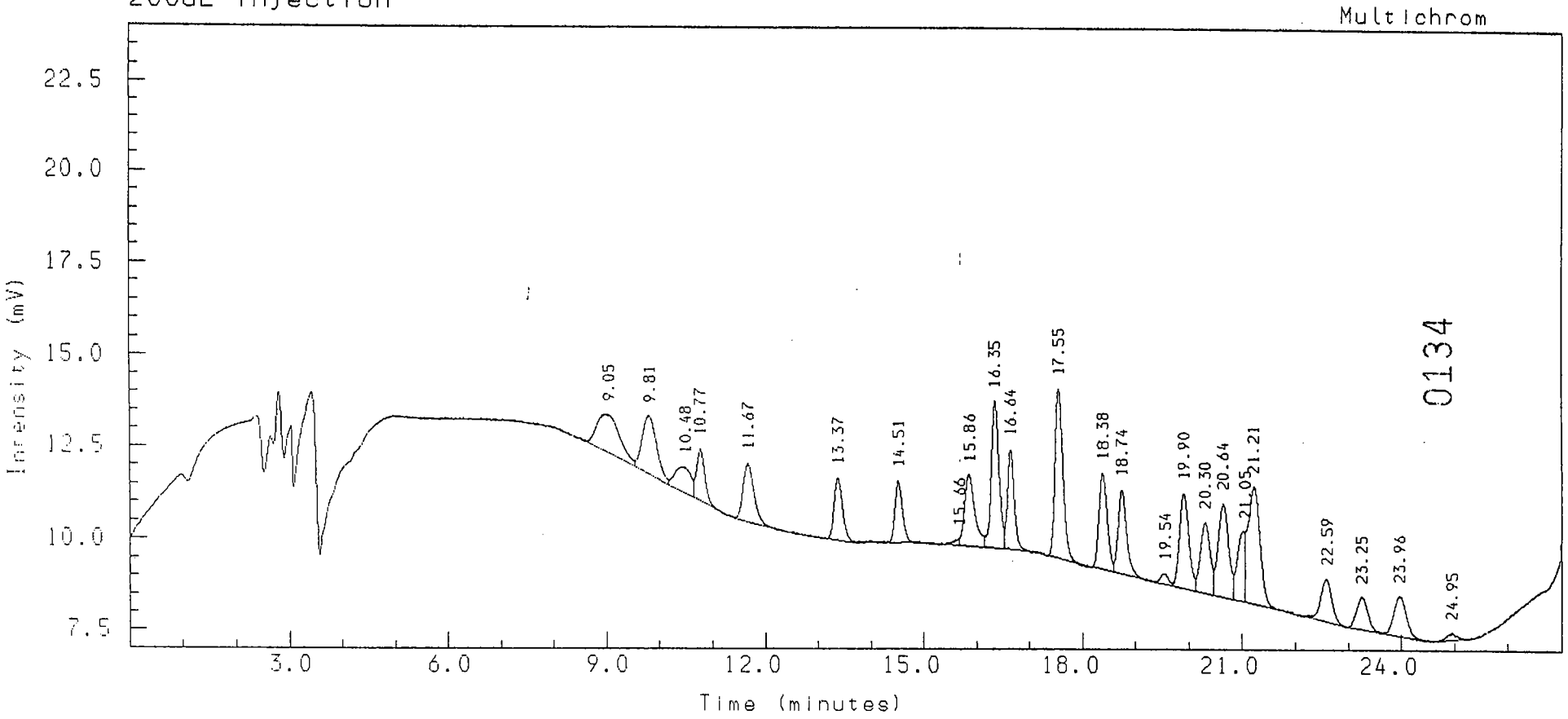
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101602_1
Calibration..... 101602_1
External standard calibration using area
Calibration last modified on 17-OCT-2002 at 08:29
Method last modified on 16-OCT-2002 at 14:42

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 160CT021513,4,1.
MMRSTD3 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD3
Acquired on 16-OCT-2002 at 18:39
Reported on 17-OCT-2002 at 08:30

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101602_1

Injection Report

Acquired on 16-OCT-2002 at 18:39

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD3
Sample Id : MMRSTD3
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.048	9.040	1051	30575	50.787	2,6-DA	UMOF
2				9.814	9.800	1588	30259	50.597	TNX	UMO
3				10.484	10.480	707	13934	49.680	2,4-DA	UMO
4				10.768	10.770	1421	15409	50.115	HMX	UMOL
5				11.674	11.680	1592	22550	50.362	DNX	UM
6				13.372	13.370	1709	18980	51.000	MNX	M
7				14.514	14.510	1678	16227	49.708	RDX	U
8				15.662	0.000	169	1253	0.000		UMOF
9				15.859	15.840	1934	26502	51.177	PICRIC ACID	UMO
10				16.348	16.340	4016	40715	49.438	1,3,5-TNB	UMO
11	1			16.639	16.640	2718	23694	50.112	1,2-DNB	UMOL
12				17.548	17.550	4644	47931	50.075	1,3-DNB	UM
13				18.377	18.380	2625	28495	49.570	NB	MOF
14				18.737	18.740	2291	25053	49.064	Tetryl	UMOL
15				19.537	19.530	288	2951	986.062	NG	UMOF
16				19.899	19.900	2595	32023	50.312	2,4,6-TNT	UMO
17				20.303	20.300	1930	24886	50.236	4-am-2,6-DNT	UMO
18				20.643	20.640	2551	35193	49.857	2-am-4,6-DNT	UMO
19				21.050	21.050	1921	19580	52.390	2,6-DNT	UMO
20				21.214	21.220	3201	49042	49.231	2,4-DNT	UMOL
21				22.588	22.580	1181	17234	50.054	2-NT	UM
22				23.254	23.260	894	13142	50.069	4-NT	M
23				23.963	23.980	1111	17974	50.582	3-NT	M
24				24.953	24.950	199	2721	1094.637	PETN	U

Totals			
Unknowns	169	1253	0.000
Named	43847	555072	3135.113
Grand Total	44016	556325	3135.113

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2718	23694	25.056	1,2-DINITROBENZENE % RECOVERY

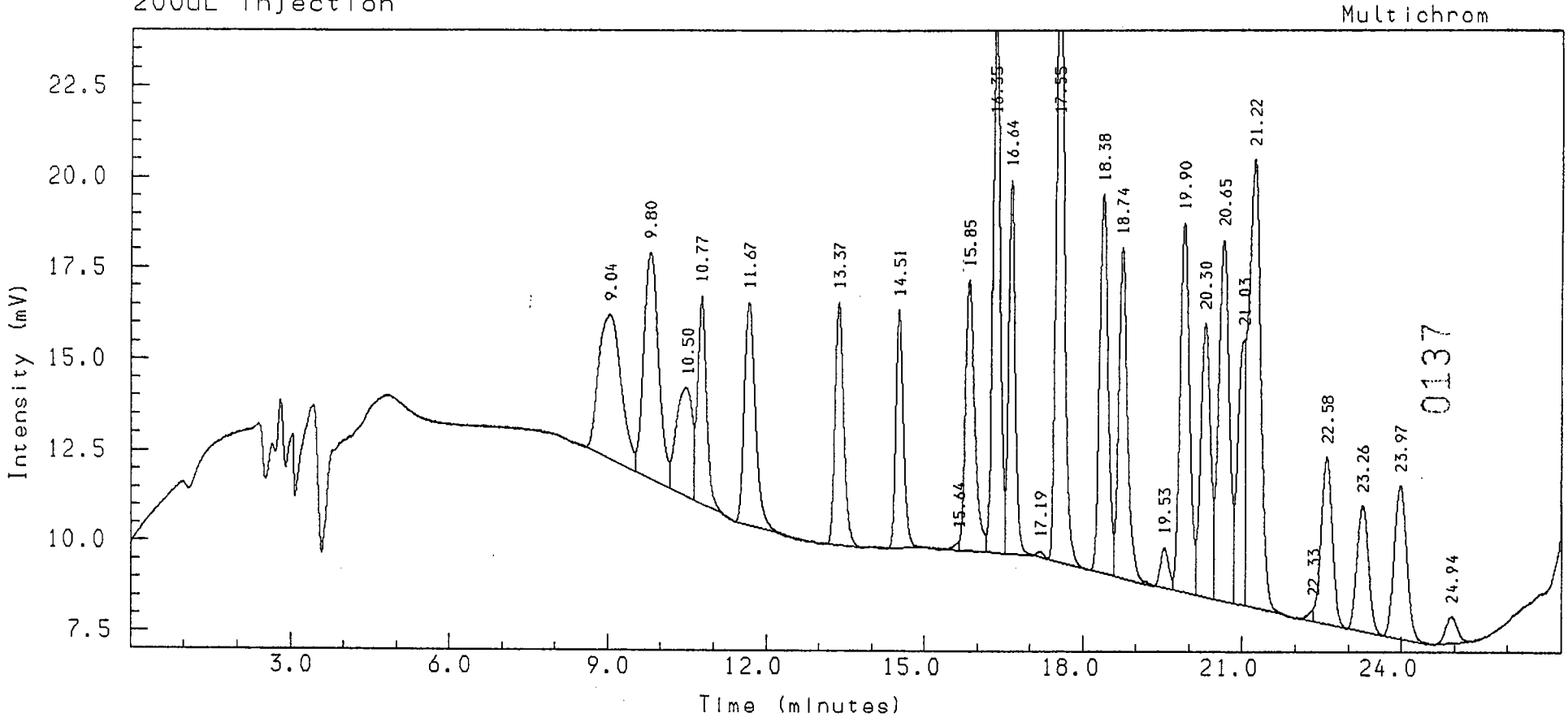
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101602_1
Calibration..... 101602_1
External standard calibration using area
Calibration last modified on 17-OCT-2002 at 08:29
Method last modified on 16-OCT-2002 at 14:42

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 160CT021513,5,1.
MMRSTD4 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD4
Acquired on 16-OCT-2002 at 19:18
Reported on 17-OCT-2002 at 08:30

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101602_1

Injection Report

Acquired on 16-OCT-2002 at 19:18

VAX MULTICHROM V2.11

Analyst Name : BC W
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD4
Sample Id : MMRSTD4
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.039	9.040	3925	115501	197.491	2,6-DA	UMOF
2				9.801	9.800	6190	121434	195.991	TNX	UMO
3				10.499	10.480	2961	61883	193.218	2,4-DA	UMO
4				10.772	10.770	5673	65916	193.482	HMX	UMOL
5				11.672	11.680	6121	90134	197.367	DNX	UM
6				13.370	13.370	6667	75855	196.686	MNX	M
7				14.514	14.510	6536	64861	196.622	RDX	M
8				15.644	0.000	224	1246	0.000		UMOF
9				15.846	15.840	7420	91388	198.331	PICRIC ACID	UMO
10				16.346	16.340	14832	143979	198.104	1,3,5-TNB	UO
11	1			16.641	16.640	10231	88371	199.416	1,2-DNB	UMOL
12				17.190	0.000	144	1110	0.000		M
13				17.546	17.550	18038	188411	198.278	1,3-DNB	UM
14				18.378	18.380	10378	115595	199.050	NB	UOF
15				18.737	18.740	9042	103536	199.238	Tetryl	MOL
16				19.530	19.530	1094	11800	3973.323	NG	UMOF
17				19.901	19.900	10120	125504	198.009	2,4,6-TNT	UO
18				20.301	20.300	7517	97167	198.455	4-am-2,6-DNT	UO
19				20.646	20.640	9887	139000	199.185	2-am-4,6-DNT	UO
20				21.030	21.050	7296	73690	195.812	2,6-DNT	UMO
21				21.224	21.220	12272	192560	200.552	2,4-DNT	UMOL
22				22.331	0.000	317	1853	0.000		UMOF
23				22.585	22.580	4597	67743	198.288	2-NT	UMOL
24				23.263	23.260	3458	52425	195.324	4-NT	M
25				23.970	23.980	4217	69344	199.457	3-NT	M
26				24.945	24.950	733	10969	3878.823	PETN	UM

Totals

Unknowns	685	4208	0.000
med	169204	2167066	12000.501
nd Total	169889	2171274	12000.501

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	10231	88371	99.708	1,2-DINITROBENZENE % RECOVERY

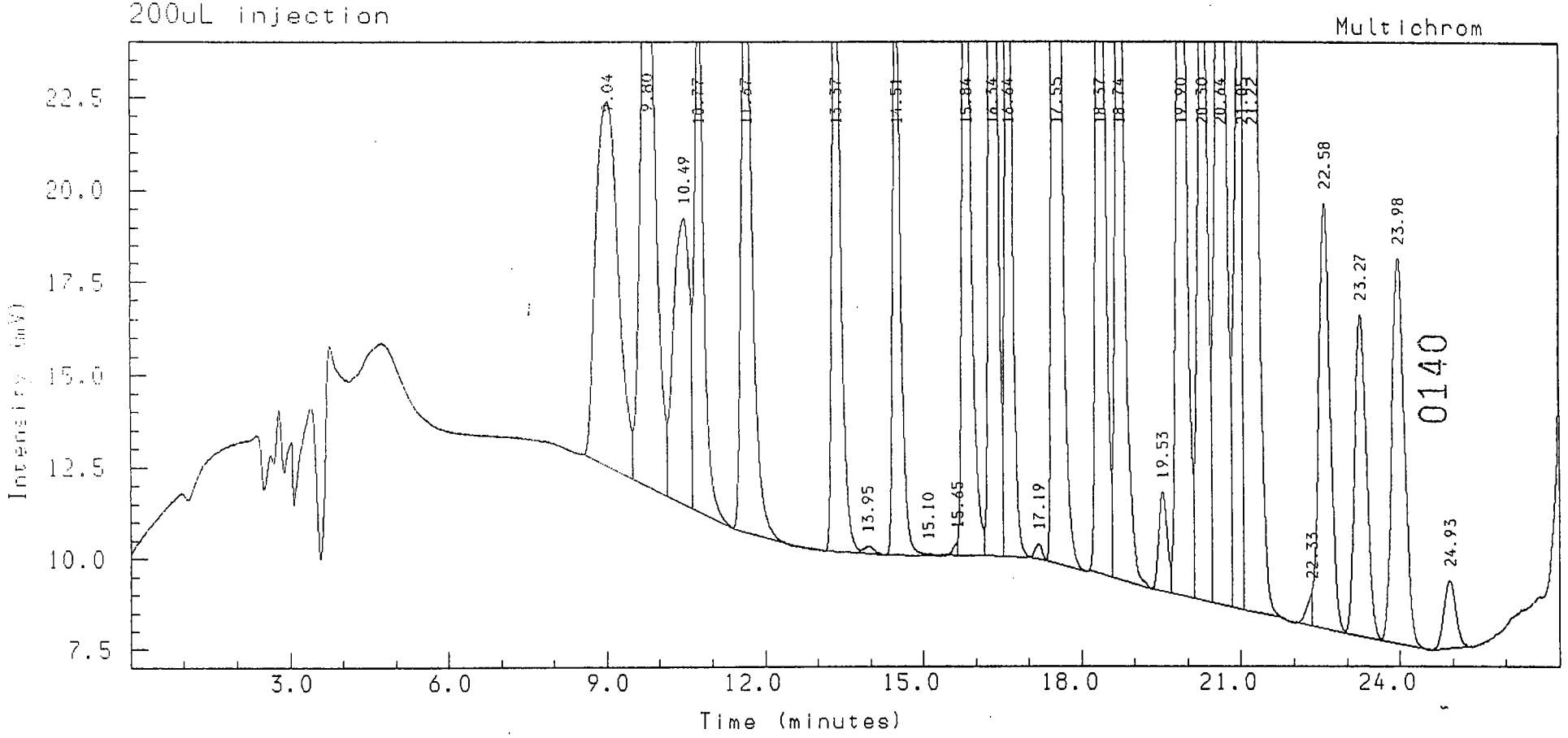
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101602_1
Calibration..... 101602_1
External standard calibration using area
Calibration last modified on 17-OCT-2002 at 08:29
Method last modified on 16-OCT-2002 at 14:42

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 160CT021513,6,1.
MMRSTD5 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD5
Acquired on 16-OCT-2002 at 19:57
Reported on 17-OCT-2002 at 08:30

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101602_1

Injection Report

Acquired on 16-OCT-2002 at 19:57

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD5
Sample Id : MMRSTD5
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.037	9.040	9904	290949	500.566	2,6-DA	MOF
2				9.803	9.800	15763	312698	500.994	TNX	MO
3				10.492	10.480	7770	164901	501.610	2,4-DA	MO
4				10.772	10.770	14484	173678	499.369	HMX	MOL
5				11.672	11.680	15453	229689	500.919	DNX	M
6				13.370	13.370	16839	193684	498.507	MNX	UMOF
7				13.948	0.000	200	2696	0.000		UMOL
8				14.514	14.510	16521	165768	501.445	RDX	UMOF
9				15.101	0.000	63	581	0.000		UMOL
10				15.648	0.000	368	1817	0.000		UMOF
11				15.842	15.840	19128	224279	499.715	PICRIC ACID	UMO
12				16.343	16.340	36877	353747	500.102	1,3,5-TNB	UO
13	1			16.639	16.640	25621	218795	500.494	1,2-DNB	UMOL
14				17.188	0.000	409	3693	0.000		M
15				17.548	17.550	45389	475104	500.735	1,3-DNB	M
16				18.374	18.380	26043	291482	500.906	NB	MOF
17				18.739	18.740	22756	261417	501.337	Tetryl	MOL
18				19.528	19.530	2727	29826	10057.963	NG	UMOF
19				19.901	19.900	25486	317380	501.167	2,4,6-TNT	UO
20				20.303	20.300	18879	244700	500.986	4-am-2,6-DNT	UO
21				20.641	20.640	24835	348797	500.978	2-am-4,6-DNT	UO
22				21.054	21.050	18288	186635	495.184	2,6-DNT	UMO
23				21.223	21.220	30746	477273	500.748	2,4-DNT	UMOL
24				22.327	0.000	891	5791	0.000		UMOF
25				22.585	22.580	11593	172735	506.420	2-NT	UMO
26				23.266	23.260	8768	134907	500.309	4-NT	UMO
27				23.979	23.980	10515	172928	499.649	3-NT	UMOL
28				24.934	24.950	1868	29123	10007.203	PETN	M

Totals			
Unknowns	1932	14578	0.000
Named	426253	5470494	30577.311
Grand Total	428185	5485071	30577.311

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	25621	218795	250.247	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101602_1
Calibration..... 101602_1
External standard calibration using area
Calibration last modified on 17-OCT-2002 at 08:29
Method last modified on 16-OCT-2002 at 14:42

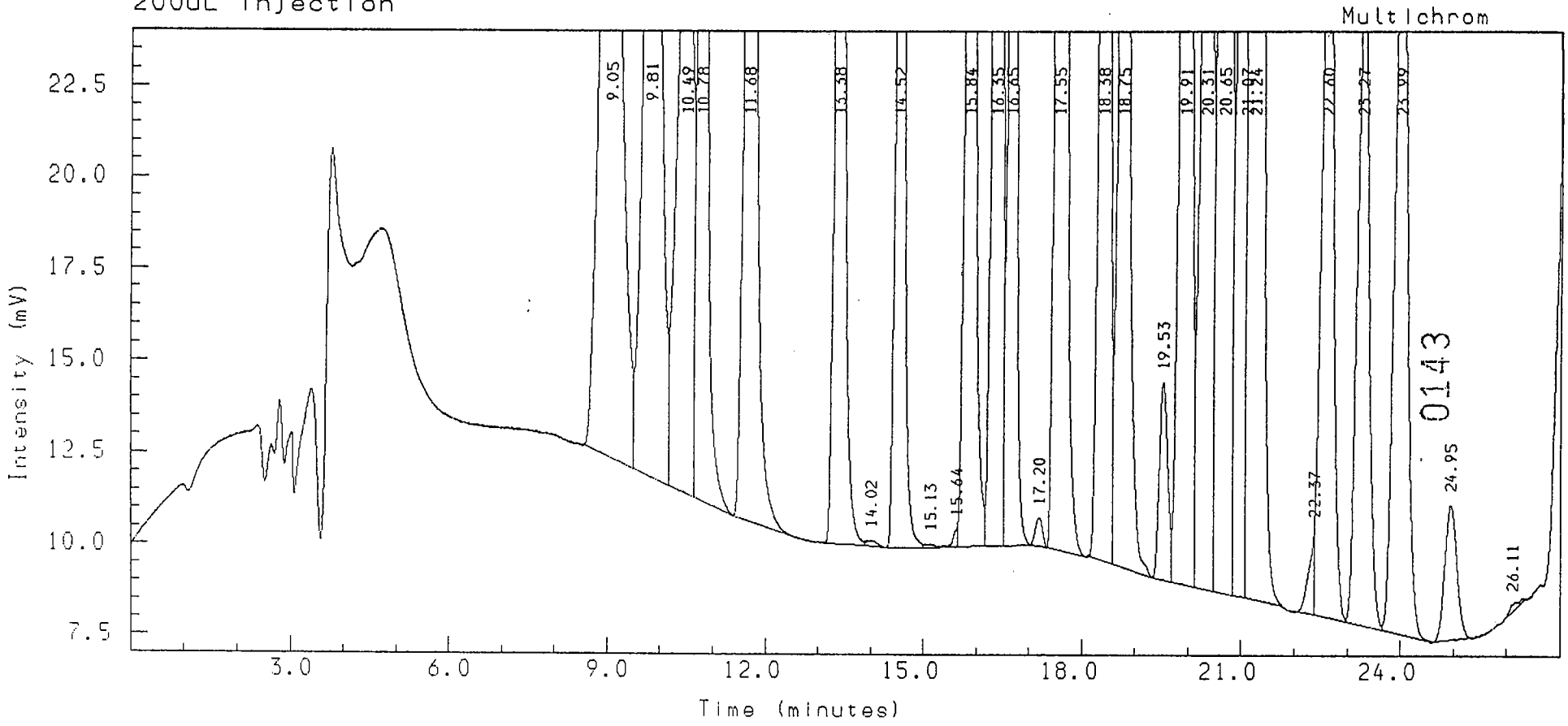
Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 160CT021513,7,1.

MMRSTD6 Amount : 1.000

200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD6
Acquired on 16-OCT-2002 at 20:36
Reported on 17-OCT-2002 at 08:31

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101602_1

Injection Report

Acquired on 16-OCT-2002 at 20:36

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD6
Sample Id : MMRSTD6
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.054	9.040	19678	580158	1000.154	2,6-DA	MOF
2				9.806	9.800	31382	625769	1000.240	TNX	O
3				10.492	10.480	15601	331549	1000.482	2,4-DA	O
4				10.777	10.770	29044	350579	1001.516	HMX	MOL
5				11.677	11.680	30780	459149	1000.029	DNX	M
6				13.377	13.370	33631	389976	1001.314	MNX	UMOF
7				14.017	0.000	162	2252	0.000		UMOL
8				14.521	14.510	32922	330784	999.929	RDX	UMOF
9				15.127	0.000	107	1141	0.000		UMOL
10				15.637	0.000	502	2269	0.000		UMOF
11				15.842	15.840	38800	445057	1000.414	PICRIC ACID	UMO
12				16.352	16.340	73438	701202	1000.326	1,3,5-TNB	UO
13	1			16.646	16.640	51122	435117	999.864	1,2-DNB	UMOL
14				17.201	0.000	789	7461	0.000		M
15				17.552	17.550	90659	948308	999.958	1,3-DNB	M
16				18.383	18.380	51977	582149	999.746	NB	UMOF
17				18.746	18.740	45452	521770	999.514	Tetryl	MOL
18				19.534	19.530	5414	59211	19977.141	NG	UOF
19				19.912	19.900	50966	632971	999.792	2,4,6-TNT	UO
20				20.312	20.300	37734	487951	999.795	4-am-2,6-DNT	UO
21				20.652	20.640	49731	695473	999.675	2-am-4,6-DNT	UO
22				21.068	21.050	36539	378243	1003.057	2,6-DNT	UMO
23				21.235	21.220	61544	950360	999.560	2,4-DNT	UMOL
24				22.370	0.000	2305	14966	0.000		UMOF
25				22.597	22.580	23167	339950	997.167	2-NT	UMO
26				23.272	23.260	17559	270237	1000.706	4-NT	UMO
27				23.988	23.980	21015	345669	1000.266	3-NT	UMOL
28				24.946	24.950	3711	58773	20015.814	PETN	M
29				26.108	0.000	216	2552	0.000		M

als

Unknowns	4080	30641	0.061
Named	851864	10920405	60996.465

0144

Grand Total	855945	10951046	60996.465

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	51122	435117	499.932	1,2-DINITROBENZENE % RECOVERY

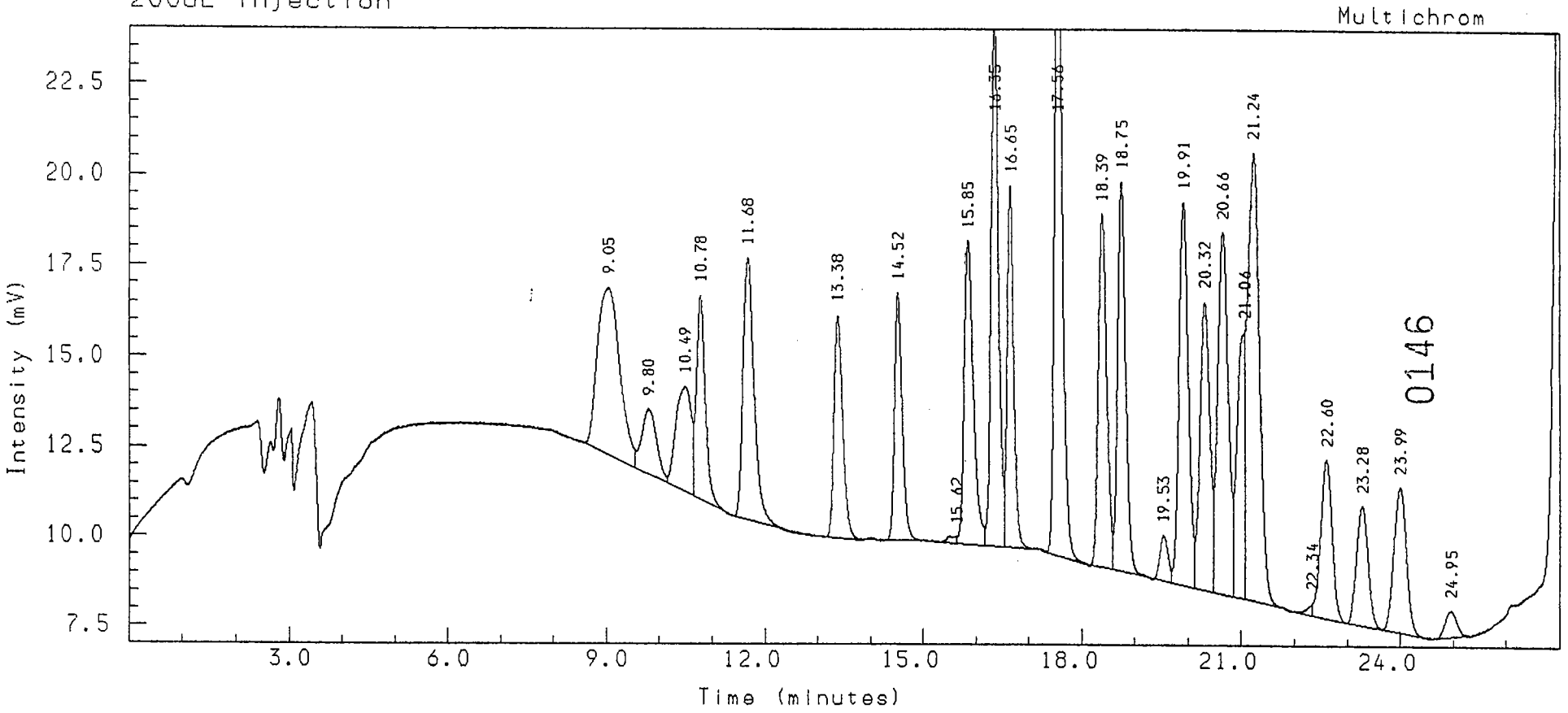
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101602_1
Calibration..... 101602_1
External standard calibration using area
Calibration last modified on 17-OCT-2002 at 08:29
Method last modified on 16-OCT-2002 at 14:42

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 160CT021513,8,1.
ICV Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : ICV
Acquired on 16-OCT-2002 at 21:15
Reported on 17-OCT-2002 at 08:31

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101602_1

Injection Report

Acquired on 16-OCT-2002 at 21:15

VAX MULTICHROM V2.11

Analyst Name : BC W
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : ICV
Sample Id : ICV
Sample Type : Sample Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.050	9.040	4585	134604	230.490	2,6-DA	UMOF
2				9.804	9.800	1792	35144	58.387	TNX	UMO
3				10.486	10.480	2904	58206	182.211	2,4-DA	UMO
4				10.783	10.770	5612	64839	190.423	HMX	UMOL
5				11.679	11.680	7240	106765	233.541	DNX	U
6				13.379	13.370	6187	71323	185.078	MNX	M
7				14.519	14.510	6871	69509	210.663	RDX	M
8				15.620	0.000	176	1915	0.000		UMOF
9				15.855	15.840	8381	102660	223.895	PICRIC ACID	UMO
10				16.352	16.340	14651	143124	196.873	1,3,5-TNB	UO
11	1			16.650	16.640	9989	85829	193.548	1,2-DNB	UMOL
12				17.557	17.550	17623	184601	194.259	1,3-DNB	M
13				18.386	18.380	9776	107889	185.825	NB	UMOF
14				18.746	18.740	10771	113974	219.210	Tetryl	UMOL
15				19.533	19.530	1248	13276	4471.338	NG	UMOF
16				19.914	19.900	10593	131327	207.208	2,4,6-TNT	UMO
17				20.317	20.300	7980	102869	210.148	4-am-2,6-DNT	UMO
18				20.657	20.640	9998	140516	201.365	2-am-4,6-DNT	UMO
19				21.063	21.050	7410	75631	200.957	2,6-DNT	UMO
20				21.236	21.220	12381	192795	200.800	2,4-DNT	UMOL
21				22.341	0.000	331	2170	0.000		UMOF
22				22.604	22.580	4437	66053	193.329	2-NT	UMOL
23				23.280	23.260	3328	50596	188.559	4-NT	U
24				23.992	23.980	4067	66953	192.526	3-NT	M
25				24.954	24.950	751	11340	4004.179	PETN	M

Totals			
Unknowns	507	4084	0.000
Named	168575	2129821	12574.815
Grand Total	169083	2133906	12574.815

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	9989	85829	96.774	1,2-DINITROBENZENE % RECOVERY

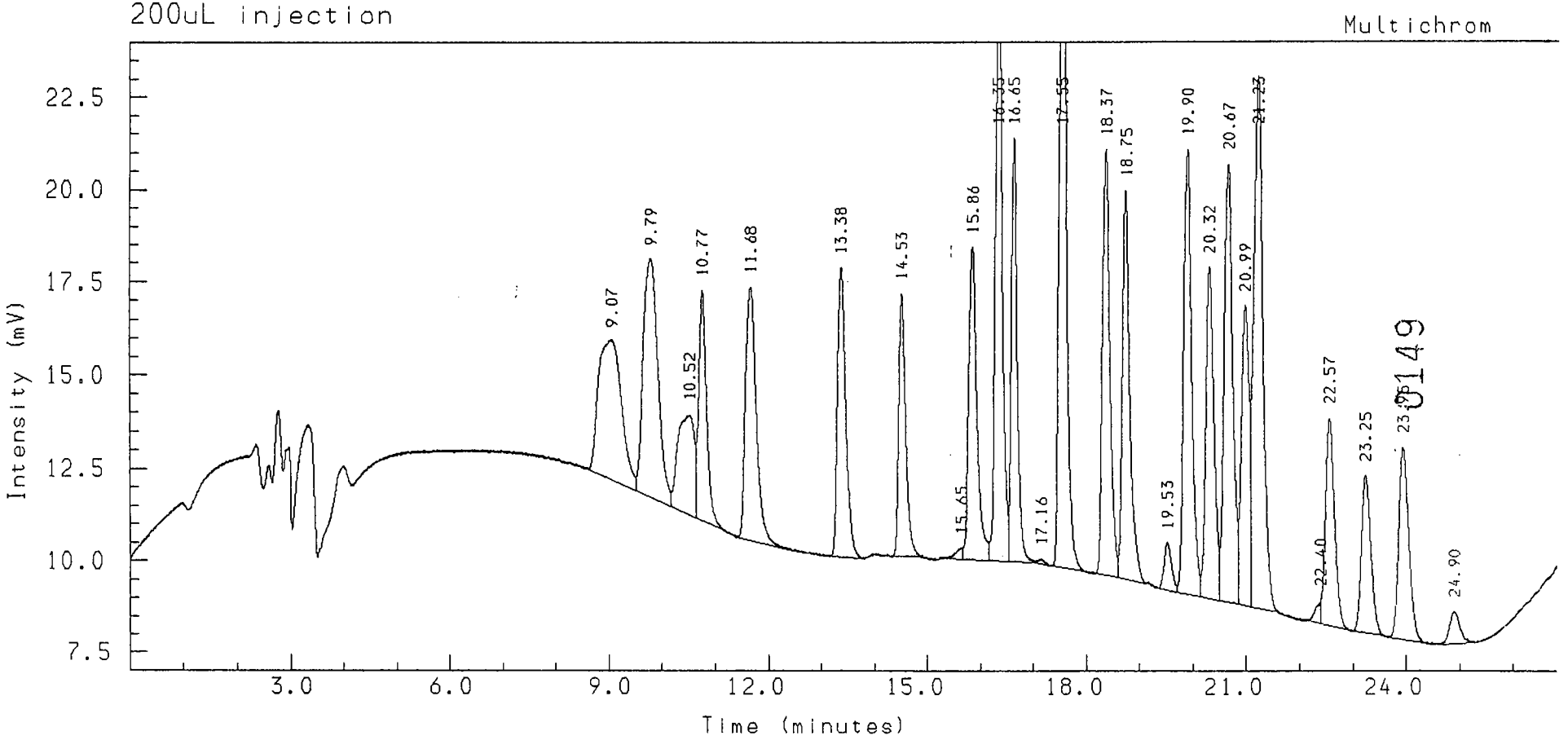
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101602_1
Calibration..... 101602_1
External standard calibration using area
Calibration last modified on 17-OCT-2002 at 08:29
Method last modified on 16-OCT-2002 at 14:42

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,2,1.
MMRSTD4 Amount : 1.000
200uL injection



01149

Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD4
Acquired on 13-JAN-2003 at 15:37
Reported on 17-JAN-2003 at 14:01

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 13-JAN-2003 at 15:37

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD4
Sample Id : MMRSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 42

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.070	9.040	3758	112193	191.777	2,6-DA	UMOF
2				9.788	9.800	6405	123927	199.966	TNX	MO
3				10.521	10.480	2690	56456	176.973	2,4-DA	MO
				10.766	10.770	6177	63827	187.552	HMX	UMOL
				11.677	11.680	6831	97265	212.878	DNX	M
6				13.381	13.370	7769	84232	218.144	MNX	M
7				14.526	14.510	7075	64080	194.264	RDX	UM
8				15.653	0.000	301	2681	0.000		UMOF
9				15.862	15.840	8426	90568	196.473	PICRIC ACID	UMO
10				16.350	16.340	16560	145615	200.459	1,3,5-TNB	UMO
11	1			16.646	16.640	11407	87159	196.619	1,2-DNB	UMOL
12				17.157	0.000	128	963	0.000		M
13				17.554	17.550	20138	184061	193.690	1,3-DNB	UO
14				18.374	18.380	11476	112162	193.159	NB	UMOF
15				18.746	18.740	10488	101096	194.568	Tetryl	UMOL
16				19.528	19.530	1283	12227	4117.231	NG	UMOF
17				19.903	19.900	11991	125338	197.746	2,4,6-TNT	UMO
18				20.323	20.300	8925	94681	193.357	4-am-2,6-DNT	UMO
19				20.666	20.640	11796	133590	191.402	2-am-4,6-DNT	UMO
20				20.990	21.050	8083	83470	221.735	2,6-DNT	UMO
21				21.230	21.220	14354	172284	179.174	2,4-DNT	UMOL
22				22.400	0.000	634	4222	0.000		UMOF
23				22.568	22.580	5586	65834	192.685	2-NT	UMOL
24				23.246	23.260	4265	52068	194.003	4-NT	M
25				23.950	23.980	5188	68240	196.256	3-NT	M
26				24.901	24.950	882	11617	4097.772	PETN	M

Totals			
Unknowns	1063	7866	0.000
N	191553	2141991	12337.886
Grand Total	192616	2149857	12337.886

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11407	87159	98.310	1,2-DINITROBENZENE % RECOVERY

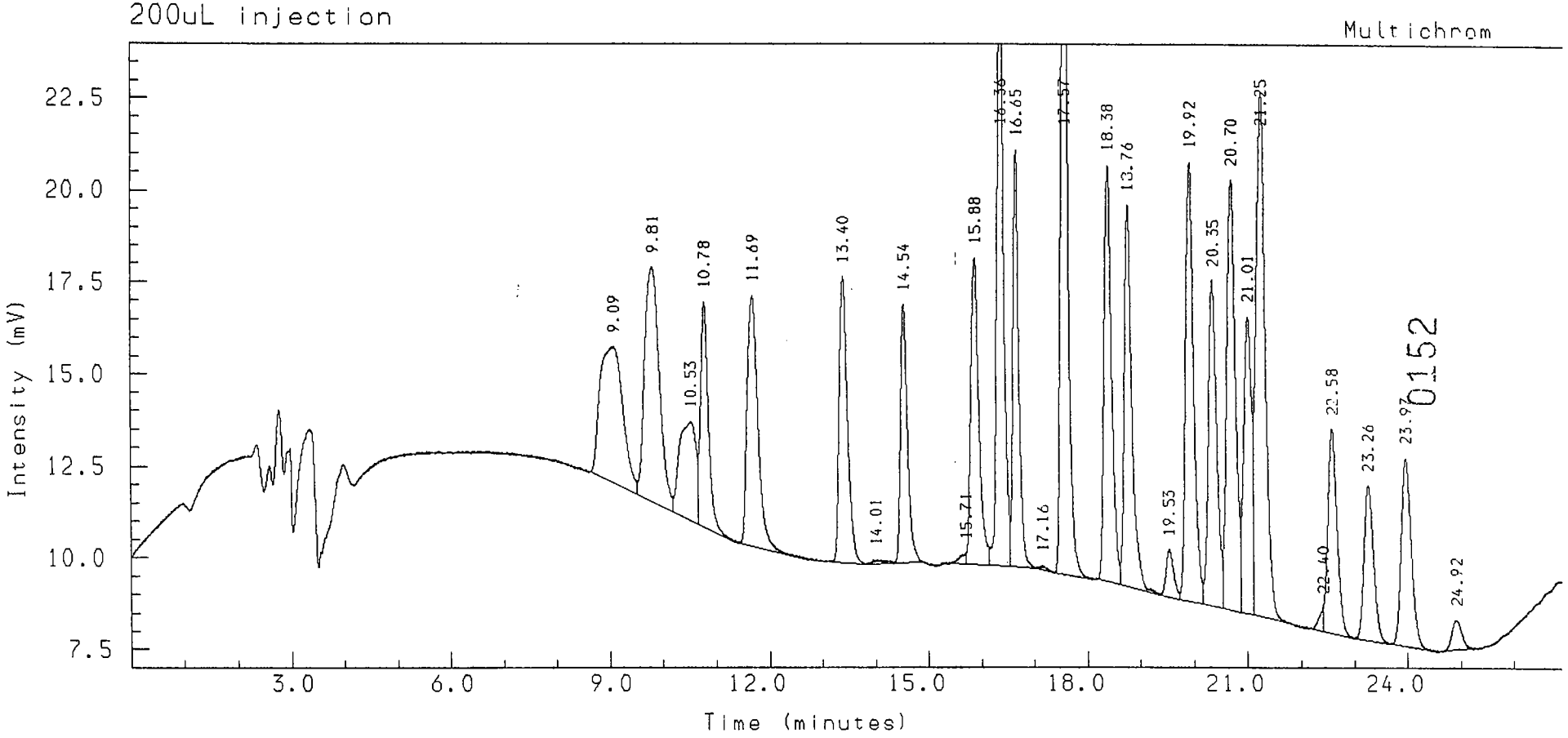
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,14,1.
MMRSTD4 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD4
Acquired on 13-JAN-2003 at 23:25
Reported on 17-JAN-2003 at 14:02

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 13-JAN-2003 at 23:25

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD4
Sample Id : MMRSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 42

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.092	9.040	3723	109845	187.721	2,6-DA	MOF
2				9.808	9.800	6400	123315	198.990	TNX	MO
3				10.532	10.480	2695	56811	178.035	2,4-DA	MO
4				10.781	10.770	6134	63577	186.843	HMX	MOL
5				11.690	11.680	6836	96653	211.545	DNX	M
6				13.397	13.370	7794	84112	217.837	MNX	M
7				14.008	0.000	113	1653	0.000		M
8				14.541	14.510	7044	64242	194.752	RDX	UM
9				15.707	0.000	284	2266	0.000		UMOF
10				15.881	15.840	8367	88414	191.587	PICRIC ACID	UMO
11				16.363	16.340	16479	145591	200.424	1,3,5-TNB	UO
12	1			16.654	16.640	11334	86471	195.030	1,2-DNB	UMOL
13				17.157	0.000	122	930	0.000		M
14				17.568	17.550	20037	184155	193.789	1,3-DNB	M
15				18.383	18.380	11350	111614	192.219	NB	OF
16				18.763	18.740	10426	102405	197.073	Tetryl	MOL
17				19.534	19.530	1263	12232	4119.049	NG	MOF
18				19.917	19.900	11944	125410	197.859	2,4,6-TNT	O
19				20.348	20.300	8876	95143	194.305	4-am-2,6-DNT	O
20				20.697	20.640	11714	133258	190.925	2-am-4,6-DNT	O
21				21.010	21.050	8106	84031	223.222	2,6-DNT	O
22				21.250	21.220	14284	173285	180.230	2,4-DNT	UMOL
23				22.404	0.000	653	3529	0.000		UMOF
24				22.582	22.580	5569	67115	196.446	2-NT	UMOL
25				23.261	23.260	4240	52548	195.778	4-NT	M
26				23.972	23.980	5136	67568	194.309	3-NT	M
27				24.923	24.950	836	10881	3849.107	PETN	M

Totals			
Unknowns	1172	8379	0.000
Named	190587	2138675	12087.073
Grand Total	191758	2147054	12087.073

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11334	86471	97.515	1,2-DINITROBENZENE % RECOVERY

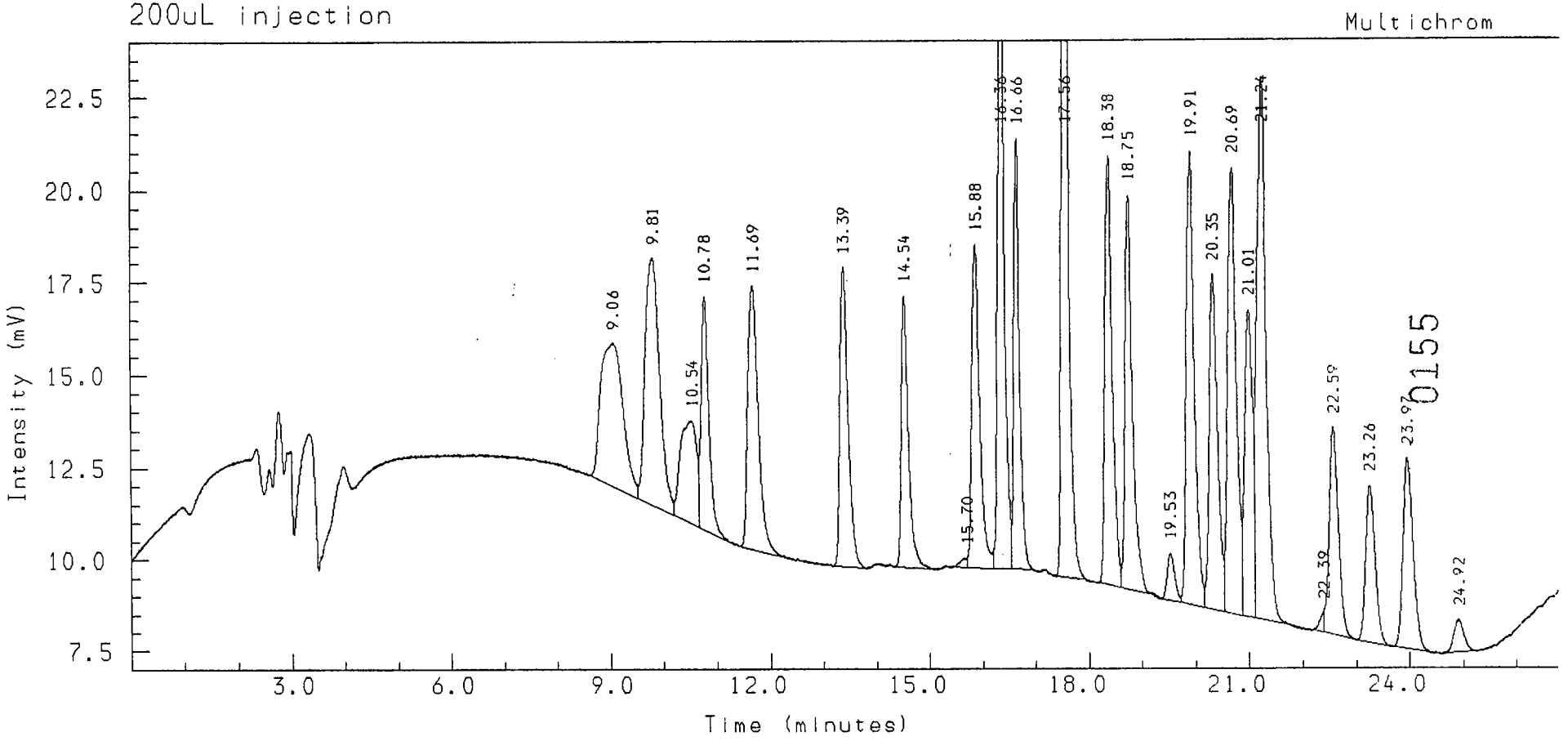
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,26,1.
MMRSTD4 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD4
Acquired on 14-JAN-2003 at 07:13
Reported on 17-JAN-2003 at 14:03

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 14-JAN-2003 at 07:13

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD4
Sample Id : MMRSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 42

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.063	9.040	3888	112732	192.708	2,6-DA	MOF
2				9.808	9.800	6691	126805	204.557	TNX	MO
3				10.541	10.480	2804	58222	182.258	2,4-DA	MO
				10.783	10.770	6338	64637	189.852	HMX	MOL
				11.688	11.680	7150	98399	215.345	DNX	M
6				13.394	13.370	8107	86412	223.728	MNX	M
7				14.541	14.510	7340	68180	206.649	RDX	M
8				15.703	0.000	267	2218	0.000		UMOF
9				15.879	15.840	8756	91367	198.283	PICRIC ACID	UMO
10				16.359	16.340	16916	146619	201.905	1,3,5-TNB	UMO
11	1			16.657	16.640	11646	87627	197.699	1,2-DNB	UMOL
12				17.563	17.550	20719	187780	197.613	1,3-DNB	UO
13				18.381	18.380	11606	112828	194.302	NB	UMOF
14				18.754	18.740	10672	102840	197.906	Tetryl	UMOL
15				19.530	19.530	1279	12299	4141.705	NG	MOF
16				19.912	19.900	12247	128089	202.092	2,4,6-TNT	O
17				20.346	20.300	9071	97532	199.203	4-am-2,6-DNT	O
18				20.692	20.640	12033	135892	194.714	2-am-4,6-DNT	O
19				21.010	21.050	8305	86587	229.999	2,6-DNT	O
20				21.243	21.220	14673	178044	185.247	2,4-DNT	UMOL
21				22.385	0.000	550	2650	0.000		UMOF
22				22.587	22.580	5637	67847	198.592	2-NT	UMOL
23				23.263	23.260	4291	52788	196.665	4-NT	M
24				23.972	23.980	5180	67752	194.841	3-NT	M
25				24.917	24.950	886	11205	3958.546	PETN	M

Totals

Unknowns	817	4868	0.000
Named	196234	2182483	12304.408
Grand Total	197052	2187350	12304.408

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11646	87627	98.849	1,2-DINITROBENZENE % RECOVERY

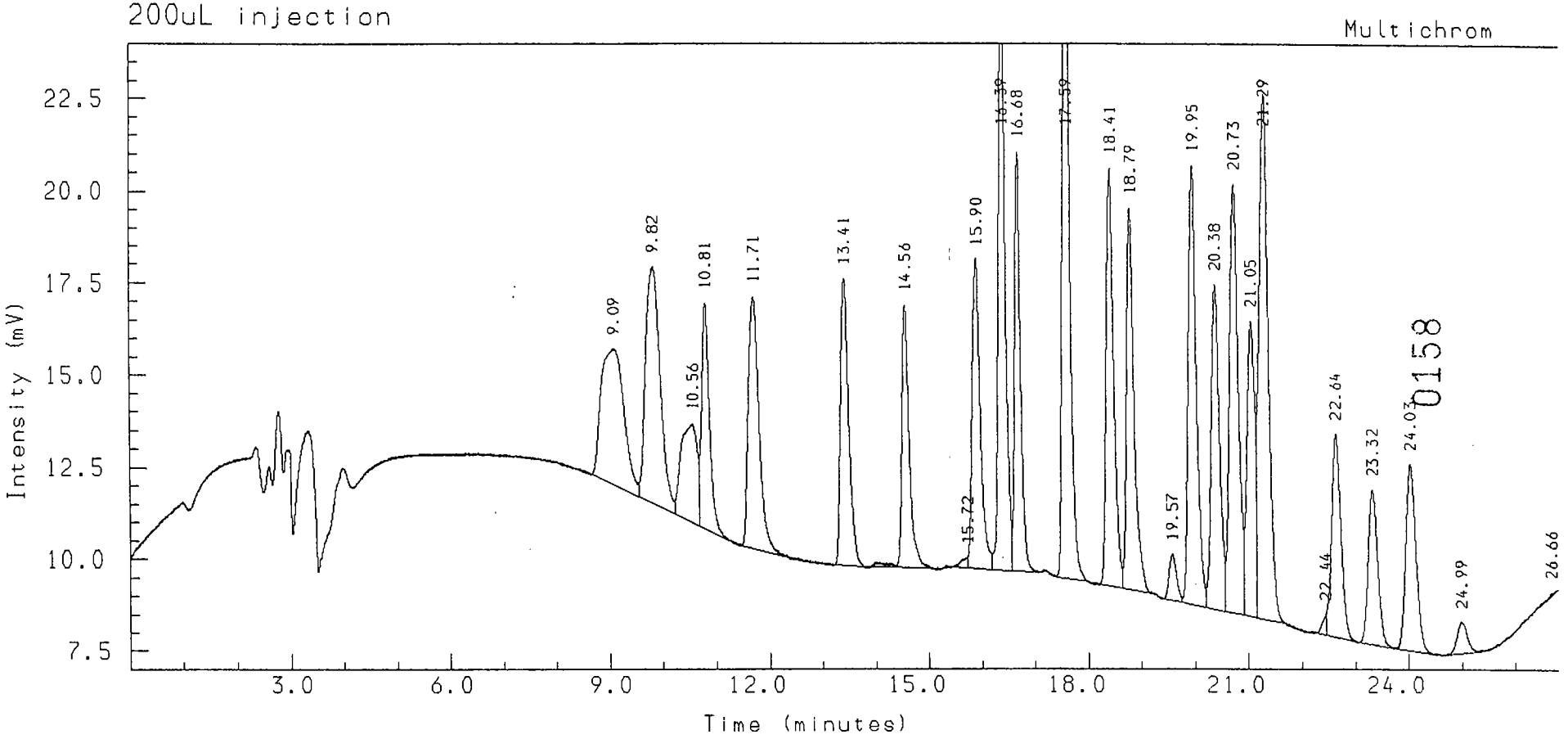
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,31,1.
MMRSTD4 Amount : 1.000
200uL injection



0158

Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD4
Acquired on 14-JAN-2003 at 10:28
Reported on 17-JAN-2003 at 14:03

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 14-JAN-2003 at 10:28

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD4
Sample Id : MMRSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 42

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.090	9.040	3701	108753	185.835	2,6-DA	MOF
2				9.821	9.800	6431	123200	198.807	TNX	MO
3				10.557	10.480	2684	55567	174.311	2,4-DA	MO
4				10.806	10.770	6160	63115	185.530	HMX	MOL
5				11.710	11.680	6859	95729	209.537	DNX	M
6				13.414	13.370	7807	83842	217.145	MNX	M
7				14.557	14.510	7142	69002	209.133	RDX	M
8				15.720	0.000	275	2356	0.000		UMOF
9				15.899	15.840	8427	89336	193.678	PICRIC ACID	UMO
10				16.386	16.340	16499	144676	199.107	1,3,5-TNB	UO
11	1			16.679	16.640	11379	86315	194.671	1,2-DNB	UMOL
12				17.588	17.550	20139	183917	193.538	1,3-DNB	UO
13				18.412	18.380	11365	111466	191.964	NB	UMOF
14				18.788	18.740	10409	101122	194.619	Tetryl	UMOL
15				19.568	19.530	1238	11893	4004.562	NG	UMOF
16				19.954	19.900	11920	124897	197.049	2,4,6-TNT	UMO
17				20.381	20.300	8827	94266	192.506	4-am-2,6-DNT	UMO
18				20.730	20.640	11672	133154	190.775	2-am-4,6-DNT	UMO
19				21.052	21.050	8058	83362	221.451	2,6-DNT	UMO
20				21.290	21.220	14255	172127	179.009	2,4 DNT	UMOL
21				22.443	0.000	568	2513	0.000		UMOF
22				22.638	22.580	5536	67126	196.478	2-NT	UMOL
23				23.319	23.260	4215	52184	194.430	4-NT	M
24				24.030	23.980	5095	66912	192.409	3-NT	M
25				24.990	24.950	879	11554	4076.235	PETN	M
26				26.663	0.000	77	264	0.000		M

Totals			
Unknowns	920	5133	0.000
Named	190698	2133517	12192.780
Grand Total	191619	2138650	12192.780

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11379	86315	97.336	1,2-DINITROBENZENE % RECOVERY

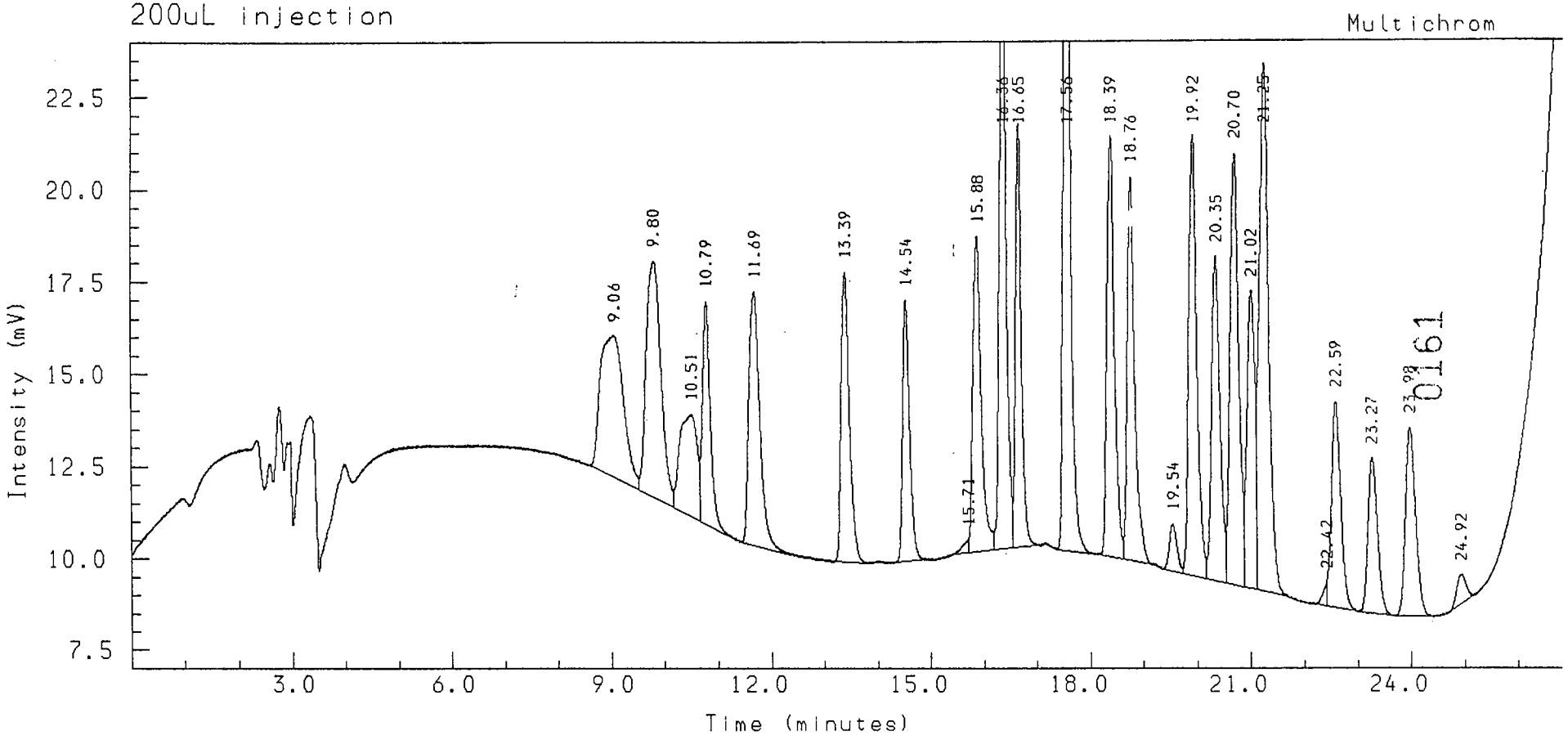
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 14-JAN-2003 at 15:06

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,42,1.
MMRSTD4 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD4
Acquired on 14-JAN-2003 at 17:38
Reported on 17-JAN-2003 at 14:03

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 14-JAN-2003 at 17:38

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD4
Sample Id : MMRSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 42

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.063	9.040	3871	115015	196.651	2,6-DA	MOF
2				9.799	9.800	6435	123965	200.027	TNX	MO
3				10.510	10.480	2794	61457	191.942	2,4-DA	MO
				10.786	10.770	6071	62148	182.785	HMX	MOL
				11.686	11.680	6879	97091	212.499	DNX	M
6				13.392	13.370	7872	85248	220.748	MNX	M
7				14.537	14.510	7106	64387	195.192	RDX	M
8				15.710	0.000	371	2854	0.000		UMOF
9				15.877	15.840	8550	92528	200.917	PICRIC ACID	UMO
10				16.359	16.340	16488	144550	198.925	1,3,5-TNB	UMO
11	1			16.652	16.640	11481	87681	197.824	1,2-DNB	UMOL
12				17.563	17.550	20097	184910	194.585	1,3-DNB	M
13				18.386	18.380	11390	111864	192.648	NB	OF
14				18.761	18.740	10382	100088	192.640	Tetryl	UMOL
15				19.537	19.530	1288	12504	4210.963	NG	MOF
16				19.919	19.900	11921	125195	197.521	2,4,6-TNT	O
17				20.348	20.300	8795	93968	191.895	4-am-2,6-DNT	O
18				20.697	20.640	11679	133206	190.850	2-am-4,6-DNT	O
19				21.017	21.050	8078	83874	222.807	2,6-DNT	O
20				21.254	21.220	14302	173114	180.049	2,4-DNT	UMOL
21				22.415	0.000	640	3145	0.000		UMOF
22				22.593	22.580	5578	67036	196.212	2-NT	UMOL
23				23.272	23.260	4209	51749	192.822	4-NT	M
24				23.979	23.980	5118	67039	192.777	3-NT	M
25				24.919	24.950	804	9695	3448.793	PETN	M

Totals			
Unknowns	1010	6000	0.000
N--ed	191139	2148313	11802.072
Total	192200	2154313	11802.072

0162

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11481	87681	98.912	1,2-DINITROBENZENE % RECOVERY

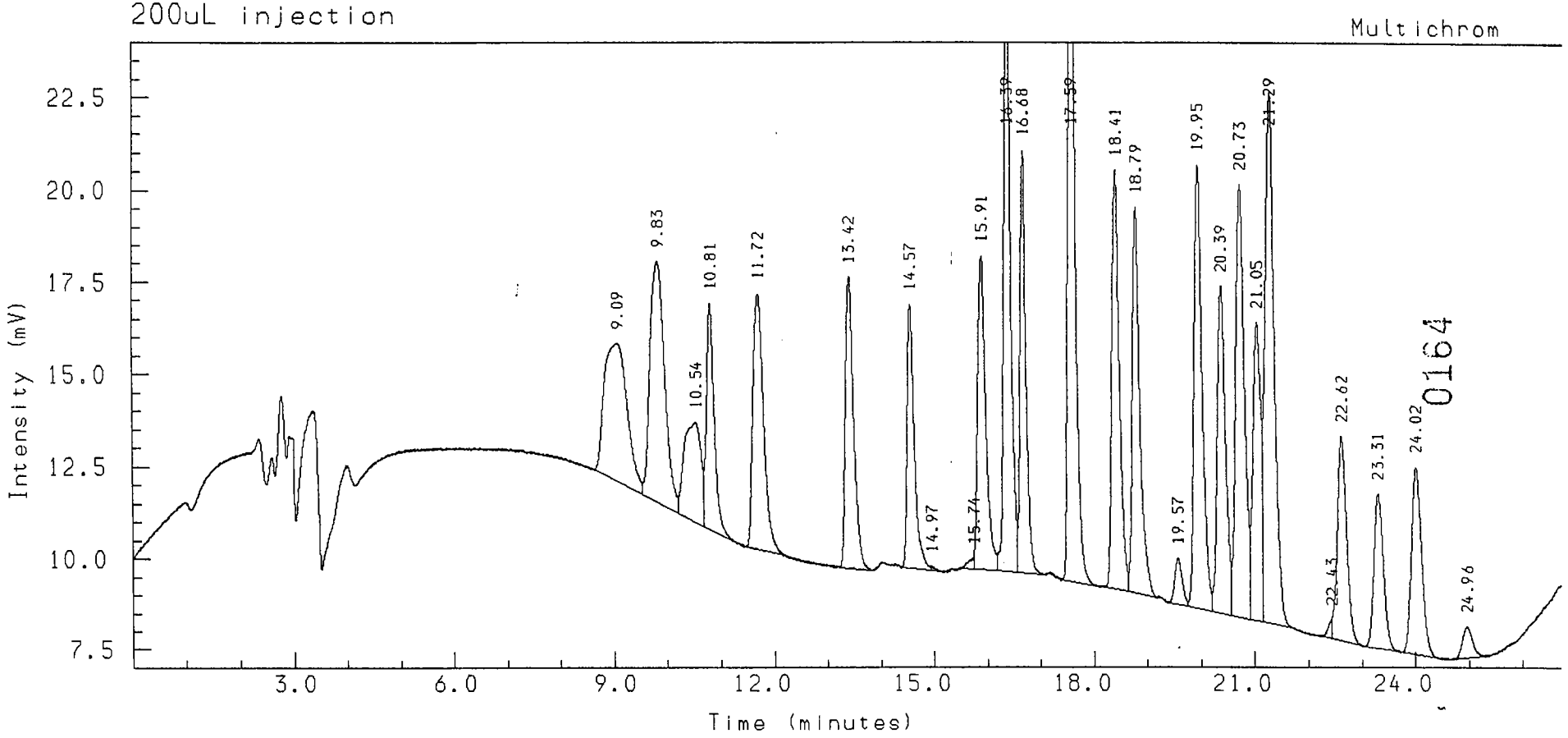
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 14-JAN-2003 at 16:32

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,54,1.
MMRSTD4 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : MMRSTD4
Acquired on 15-JAN-2003 at 01:26
Reported on 17-JAN-2003 at 14:03

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 15-JAN-2003 at 01:26

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : MMRSTD4
Sample Id : MMRSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 42

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.090	9.040	3764	109955	187.910	2,6-DA	MOF
2				9.828	9.800	6550	124600	201.040	TNX	MO
3				10.537	10.480	2702	58097	181.886	2,4-DA	MO
4				10.814	10.770	6152	61835	181.898	HMX	MOL
5				11.717	11.680	6969	95751	209.584	DNX	UM
6				13.419	13.370	7907	84999	220.108	MNX	M
7				14.566	14.510	7193	66840	202.600	RDX	UMOF
8				14.966	0.000	125	602	0.000		UMOL
9				15.739	0.000	305	2086	0.000		UMO
10				15.907	15.840	8543	90249	195.749	PICRIC ACID	UMO
11				16.388	16.340	16758	146755	202.100	1,3,5-TNB	UMO
12	1			16.679	16.640	11466	86847	195.899	1,2-DNB	UMOL
13				17.592	17.550	20356	186024	195.760	1,3-DNB	M
14				18.410	18.380	11411	112004	192.888	NB	MOF
15				18.792	18.740	10514	101762	195.842	Tetryl	UMOL
16				19.568	19.530	1272	12107	4076.923	NG	MOF
17				19.950	19.900	12057	126732	199.949	2,4,6-TNT	O
18				20.386	20.300	8923	95170	194.360	4-am-2,6-DNT	O
19				20.732	20.640	11797	134379	192.537	2-am-4,6-DNT	O
20				21.050	21.050	8154	83712	222.376	2,6-DNT	O
21				21.288	21.220	14429	174481	181.490	2,4-DNT	UMOL
22				22.426	0.000	541	2220	0.000		UMOF
23				22.623	22.580	5595	67757	198.330	2-NT	UMOL
24				23.310	23.260	4243	51765	192.883	4-NT	M
25				24.017	23.980	5153	67712	194.725	3-NT	M
26				24.959	24.950	884	11487	4053.666	PETN	UM

Totals			
Unknowns	971	4908	0.000
Named	192791	2151020	12270.505
Grand Total	193762	2155927	12270.505

MISSING PEAKS

No missing peaks.

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11466	86847	97.949	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 14-JAN-2003 at 16:32

Uncalibrated peaks use user factor (0.0000)

STL Burlington

INITIAL CALIBRATION DATA

Start Cal Date : 02-APR-2002 09:38
End Cal Date : 02-APR-2002 13:29
Quant Method : ESTD
Target Version : 3.50
Integrator : HP Genie
Method file : /var/chem/3330_1.i/02APR020855_JAN_2.b/8330_CN_2002.m
Cal Date : 13-Jan-2003 11:06 lab

Calibration File Names:
Level 1: /var/chem/3330_1.i/02APR020855_JAN_2.b/02ar020855-i081.d
Level 2: /var/chem/3330_1.i/02APR020855_JAN_2.b/02ar020855-i091.d
Level 3: /var/chem/3330_1.i/02APR020855_JAN_2.b/02ar020855-i101.d
Level 4: /var/chem/3330_1.i/02APR020855_JAN_2.b/02ar020855-i111.d
Level 5: /var/chem/3330_1.i/02APR020855_JAN_2.b/02ar020855-i121.d
Level 6: /var/chem/3330_1.i/02APR020855_JAN_2.b/02ar020855-i131.d

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	Compound	12 Level 1	25 Level 2	50 Level 3	200 Level 4	500 Level 5	1000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2
1	2,6-Diamino-4-nitrotoluene	+++++	13579	27075	111717	289902	579238	LINR	7.42663	0.00344		0.99996
2	TNX	3037	6268	13205	55688	139825	+++++	LINR	2.18251	0.00331		0.99999
3	2,4-Diamino-6-nitrotoluene	6680	13579	27075	111717	289902	579238	LINR	5.92951	0.00344		0.99996
4	HMX	1855	3526	6458	25101	61795	123435	LINR	-3.04339	0.00813		1.00000
5	DNX	3098	5167	9822	38731	95713	190639	LINR	-2.94328	0.00542		0.99999
6	MNX	2049	3801	7559	29825	74456	150047	LINR	0.07660	0.00719		0.99998
7	RDX	1075	2650	5516	22485	58472	119115	LINR	5.78024	0.00837		0.99989
8	Picric acid	4972	6349	9505	26932	62303	122143	LINR	-28.48987	0.00843		0.99998
9	1,3,5-Trinitrobenzene	10950	20339	38269	150046	374472	749269	LINR	-2.99127	0.00267		1.00000
11	1,3-Dinitrobenzene	10950	20339	38269	150046	374472	749269	LINR	-2.99127	0.00267		1.00000
12	Nitrobenzene	2077	3563	7739	30693	76924	154093	LINR	0.41889	0.00649		0.99999
13	Tetryl	2046	4311	8479	32928	82928	166661	LINR	0.30301	0.00601		0.99999
14	Nitroglycerin	250	608	1345	5171	13192	26402	LINR	40.19650	0.75602		0.99998
15	2,4,6-Trinitrotoluene	6746	13248	27228	109682	276130	559502	LINR	4.43339	0.00358		0.99996

STL Burlington

INITIAL CALIBRATION DATA

Start Cal Date : 02-APR-2002 09:38
End Cal Date : 02-APR-2002 13:29
Quant Method : ESTD
Target Version : 3.50
Integrator : HP Genie
Method file : /var/chem/3330_1.i/02APR020855_JAN_2.b/8330_CN_2002.m
Cal Date : 13-Jan-2003 11:06 lab

Compound	12 Level 1	25 Level 2	50 Level 3	200 Level 4	500 Level 5	1000 Level 6	Curve	Coefficients b	m1	m2	%RSD or R^2
16 4-Amino-2,6-dinitrotoluene	3353	6086	12202	47737	119664	240237	LINR	-0.27550	0.00417		0.99999
17 2-Amino-4,6-dinitrotoluene	3507	6281	12598	47500	118713	240206	LINR	-0.57762	0.00418		0.99995
18 2,6-Dinitrotoluene	2138	3933	7992	33182	83414	166642	LINR	0.95900	0.00599		0.99999
19 2,4-Dinitrotoluene	6746	13248	27228	109682	276130	559502	LINR	4.43339	0.00358		0.99996
20 2-Nitrotoluene	6161	8902	14937	52698	126344	249812	LINR	-35.28609	0.01215		0.99999
21 4-Nitrotoluene	6161	8902	14937	52698	126344	249812	LINR	-35.28609	0.01215		0.99999
22 3-Nitrotoluene	6161	8902	14937	52698	126344	249812	LINR	-35.28609	0.01215		0.99999
23 PETN	+++++	697	1144	5574	13514	26615	LINR	-30.26711	0.74986		0.99974
$ 10 1,2-Dinitrobenzene	1968	3322	6708	26836	67305	137463	LINR	1.93076	0.00729		0.99988

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STL Burlington

INITIAL CALIBRATION DATA

Start Cal Date : 02-APR-2002 09:38
End Cal Date : 02-APR-2002 13:29
Quant Method : ESTD
Target Version : 3.50
Integrator : HP Genie
Method file : /var/chem/3330_1.i/02APR020855_JAN_2.b/8330_CN_2002.m
Cal Date : 13-Jan-2003 11:06 lab

Curve	Formula	Units
Linear	Amt = b + m1*Rsp	Amount

List Calibration File

CALIBRATION HEADER INFORMATION

Calibration Title : 8330CONF
General :
Calibration type..... External standard
Units..... ppb
Calibration base..... Area
Reference Peak Identification :
Reference window..... 5.0 %
Minimum window..... 0.50 mins
Peak threshold..... 0.0 %
Uncalibrated Peaks Response Factor :
Response factor source..... User set response factor
Response factor..... 0.0000
Additional Information :
Source library..... None
Variation tolerance..... 100.00 %
Calibrant Peak Identification :
Calibrant window..... 0.20 mins
Calibrant threshold..... 0.0 %
sponse Factor Calibration Curve :
Curve fit..... Linear
Force through zero..... No
X transformation..... None
Y transformation..... None
Weighting..... None
Retention Value Calibration Curve :
Curve fit..... Linear
Force through zero..... No
X transformation..... None
Y transformation..... None
Weighting..... None
RV Calculation Mode..... Use Actual Retention Times
Timed Calibration Curve :
Curve fit..... Linear
Force through zero..... No
X transformation..... None
Y transformation..... None
Weighting..... None

GROUP	NAME	MULTIPLIER	TYPE	START	END	PARENT
DNB	1,2-DINITROBENZENE % RECOVERY	0.5000	Named	N/A	N/A	----

Peak name : **2,6-DA/2,4-DA**
Expected retention time : 5.01 mins (RT range : 4.86 - 5.16 mins)

Peak window mode..... Local
Local window..... 0.30 mins
Group name identifier..... ----
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
B1	25.0000	267.2132	1
B2	50.0000	271.5866	1
B3	100.0000	270.7574	1
B4	400.0000	279.2948	1
B5	1000.0000	289.9022	1
B6	2000.0000	289.6192	1

Peak name : **NB**
Expected retention time : 5.82 mins (RT range : 5.70 - 5.95 mins)

Peak window mode..... Local
Local window..... 0.25 mins
Group name identifier..... ----
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	166.1938	1
A2	25.0000	142.5293	1
A3	50.0000	154.7986	1
A4	200.0000	153.4673	1
A5	500.0000	153.8497	1
A6	1000.0000	154.0938	1

Peak name : **TNX**
Expected retention time : 6.35 mins (RT range : 6.22 - 6.47 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
B1	11.6250	261.3317	1
B2	23.2500	269.5954	1
B3	46.5000	283.9870	1
B4	186.0000	299.3998	1
B5	465.0000	300.6995	1

Peak name : **1,3,5-TNB/1,3-DNB**
Expected retention time : 6.66 mins (RT range : 6.53 - 6.78 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	25.0000	438.0369	1
A2	50.0000	406.7819	1
A3	100.0000	382.6951	1
A4	400.0000	375.1150	1
A5	1000.0000	374.4723	1
A6	2000.0000	374.6345	1

Peak name : **2-NT/4-NT/3-NT**
Expected retention time : 7.25 mins (RT range : 7.10 - 7.40 mins)

Peak window mode	Local
Local window	0.30 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	37.5000	164.3010	1
A2	75.0000	118.6980	1
A3	150.0000	99.5801	1
A4	600.0000	87.8305	1
A5	1500.0000	84.2296	1
A6	3000.0000	83.2707	1

Peak name : **PICRIC ACID**
Expected retention time : 7.61 mins (RT range : 7.49 - 7.74 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
B1	12.5000	397.7867	1
B2	25.0000	253.9611	1
B3	50.0000	190.1039	1
B4	200.0000	134.6627	1
B5	500.0000	124.6066	1
B6	1000.0000	122.1440	1

Peak name : **2,6-DNT**
Expected retention time : 7.98 mins (RT range : 7.86 - 8.11 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	171.0550	1
A2	25.0000	157.3369	1
A3	50.0000	159.8598	1
A4	200.0000	165.9145	1
A5	500.0000	166.8299	1
A6	1000.0000	166.6422	1

Peak name : **DNX**
pected retention time : 8.19 mins (RT range : 8.06 - 8.31 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
B1	12.8750	240.6955	1
B2	25.7500	200.6744	1
B3	51.5000	190.7375	1
B4	206.0000	188.0180	1
B5	515.0000	185.8518	1
B6	1030.0000	185.0872	1

Peak name : **2,4-DNT/2,4,6-TNT**
Expected retention time : 8.24 mins (RT range : 8.11 - 8.36 mins)

Peak window mode..... Local
Local window..... 0.25 mins
Group name identifier..... ----
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
A1	25.0000	269.8615	1
A2	50.0000	264.9607	1
A3	100.0000	272.2808	1
A4	400.0000	274.2055	1
A5	1000.0000	276.1302	1
A6	2000.0000	279.7511	1

Peak name : **1,2-DNB**
Expected retention time : 8.79 mins (RT range : 8.66 - 8.91 mins)

Peak window mode..... Local
Local window..... 0.25 mins
Group name identifier..... DNB
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	157.4618	1
A2	25.0000	132.8941	1
A3	50.0000	134.1604	1
A4	200.0000	134.1845	1
A5	500.0000	134.6102	1
A6	1000.0000	137.4634	1

Peak name : **4-am-2,6-DNT**
Expected retention time : 9.30 mins (RT range : 9.18 - 9.43 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	268.3079	1
A2	25.0000	243.4402	1
A3	50.0000	244.0551	1
A4	200.0000	238.6899	1
A5	500.0000	239.3300	1
A6	1000.0000	240.2377	1

Peak name : **MNX**
Expected retention time : 9.41 mins (RT range : 9.28 - 9.53 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
B1	13.4690	152.1893	1
B2	26.9380	141.1125	1
B3	53.8750	140.3239	1
B4	215.5000	138.4000	1
B5	538.7500	138.2015	1
B6	1077.5000	139.2557	1

Peak name : **2-am-4,6-DNT**
Expected retention time : 9.77 mins (RT range : 9.65 - 9.90 mins)

Peak window mode..... Local
Local window..... 0.25 mins
Group name identifier..... ----
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	280.6217	1
A2	25.0000	251.2486	1
A3	50.0000	251.9664	1
A4	200.0000	237.5017	1
A5	500.0000	237.4272	1
A6	1000.0000	240.2064	1

Peak name : **NG**
Expected retention time : 10.31 mins (RT range : 10.19 - 10.44 mins)

Peak window mode..... Local
Local window..... 0.25 mins
Group name identifier..... ----
Peak identification mode..... Nearest
Must peak..... No
Reference peak..... No
Dilution peak..... No
Retention standard..... No
Response factor mode..... Internal Levels
Purity..... 100.0000
Automatic plot..... No

Calibration level	Standard amount	Response factor	Calibration count
B1	250.0000	1.0038	1
B2	500.0000	1.2169	1
B3	1000.0000	1.3453	1
B4	4000.0000	1.2928	1
B5	10000.0000	1.3192	1
B6	20000.0000	1.3201	1

Peak name : **RDX**
Expected retention time : 10.53 mins (RT range : 10.40 - 10.65 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	86.0536	1
A2	25.0000	106.0386	1
A3	50.0000	110.3305	1
A4	200.0000	112.4276	1
A5	500.0000	116.9456	1
A6	1000.0000	119.1156	1

Peak name : **Tetryl**
Expected retention time : 11.48 mins (RT range : 11.35 - 11.60 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	163.7034	1
A2	25.0000	172.4624	1
A3	50.0000	169.5980	1
A4	200.0000	164.6443	1
A5	500.0000	165.8578	1
A6	1000.0000	166.6613	1

Peak name : **HMX**
Expected retention time : 11.90 mins (RT range : 11.77 - 12.02 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
A1	12.5000	148.4124	1
A2	25.0000	141.0515	1
A3	50.0000	129.1770	1
A4	200.0000	125.5083	1
A5	500.0000	123.5916	1
A6	1000.0000	123.4354	1

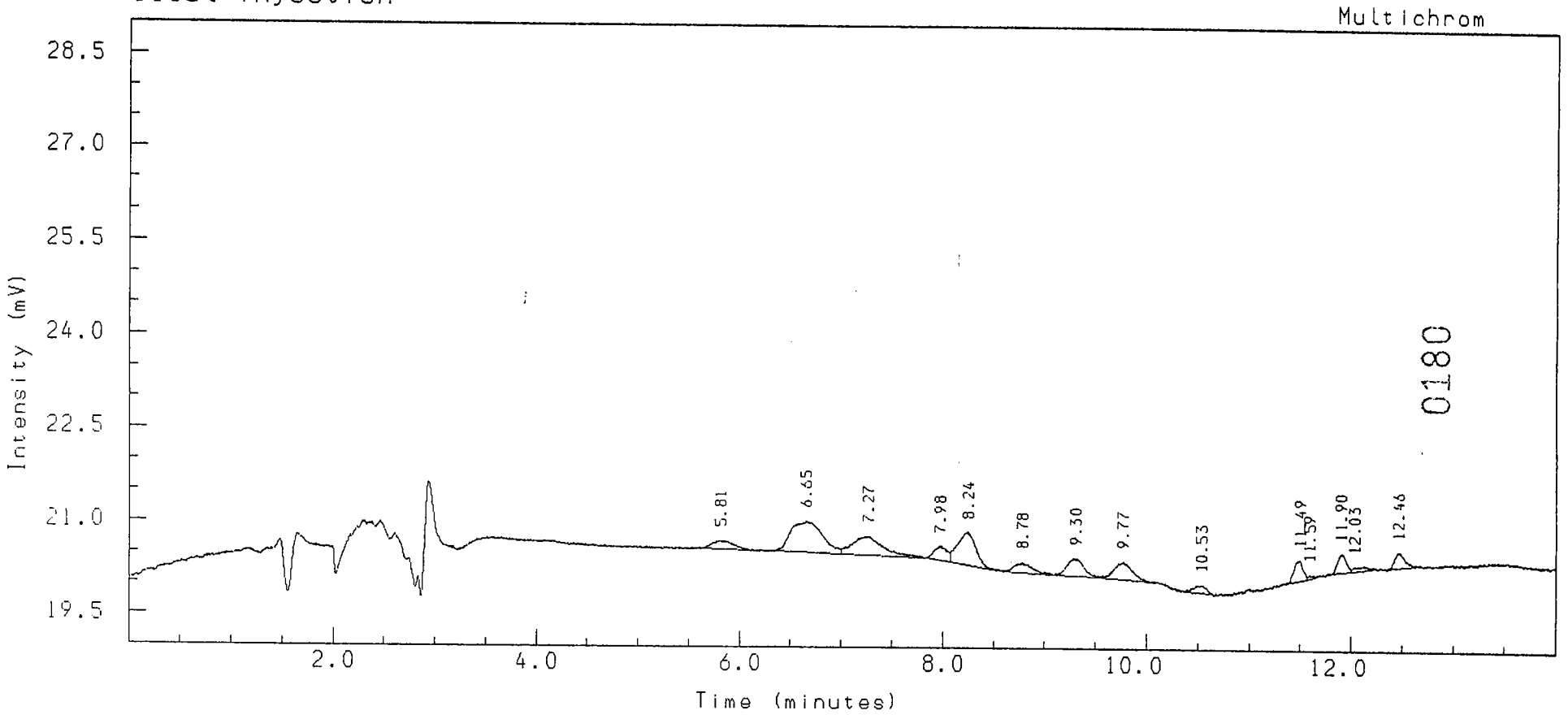
Peak name : **PETN**
Expected retention time : 13.06 mins (RT range : 12.94 - 13.19 mins)

Peak window mode	Local
Local window	0.25 mins
Group name identifier	----
Peak identification mode	Nearest
Must peak	No
Reference peak	No
Dilution peak	No
Retention standard	No
Response factor mode	Internal Levels
Purity	100.0000
Automatic plot	No

Calibration level	Standard amount	Response factor	Calibration count
B2	500.0000	1.3945	1
B3	1000.0000	1.1446	1
B4	4000.0000	1.3936	1
B5	10000.0000	1.3514	1
B6	20000.0000	1.3308	1

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,2,1.
EXPSTD1 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EXPSTD1
Acquired on 2-APR-2002 at 09:38
Reported on 2-APR-2002 at 15:45

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 09:38

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : EXPSTD1
Sample Id : EXPSTD1
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
		5.811	5.820	140	2077	13.895	NB	U
		6.648	6.660	507	10951	26.297	1,3,5-TNB/1,3-DNB	UMOF
		7.267	7.250	304	6161	39.559	2-NT/4-NT/3-NT	UMOL
		7.977	7.980	236	2138	13.769	2,6-DNT	MOF
		8.243	8.240	541	6747	28.552	2,4-DNT/2,4,6-TNT	MOL
	O	8.777	8.790	161	1968	16.277	1,2-DNB	M
	O	9.301	9.300	289	3354	13.700	4-am-2,6-DNT	UMOF
		9.770	9.770	291	3508	14.071	2-am-4,6-DNT	UMOL
		10.534	10.530	129	1076	14.782	RDX	UM
	O	11.492	11.480	336	2046	12.587	Tetryl	UMOF
		11.592	0.000	59	153	0.000		UMOL
		11.898	11.900	305	1855	12.031	HMX	UMOF
		12.034	0.000	79	746	0.000		UMOL
		12.461	0.000	254	1824	0.000		UO

Totals			
Unknowns	392	2723	0.000
Named	3240	41881	205.522
Grand Total	3633	44604	205.522

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
6.350	TNX
7.610	PICRIC ACID
8.190	DNX
9.410	MNX
10.310	NG
13.060	PETN

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
161	1968	8.139	1,2-DINITROBENZENE % RECOVERY

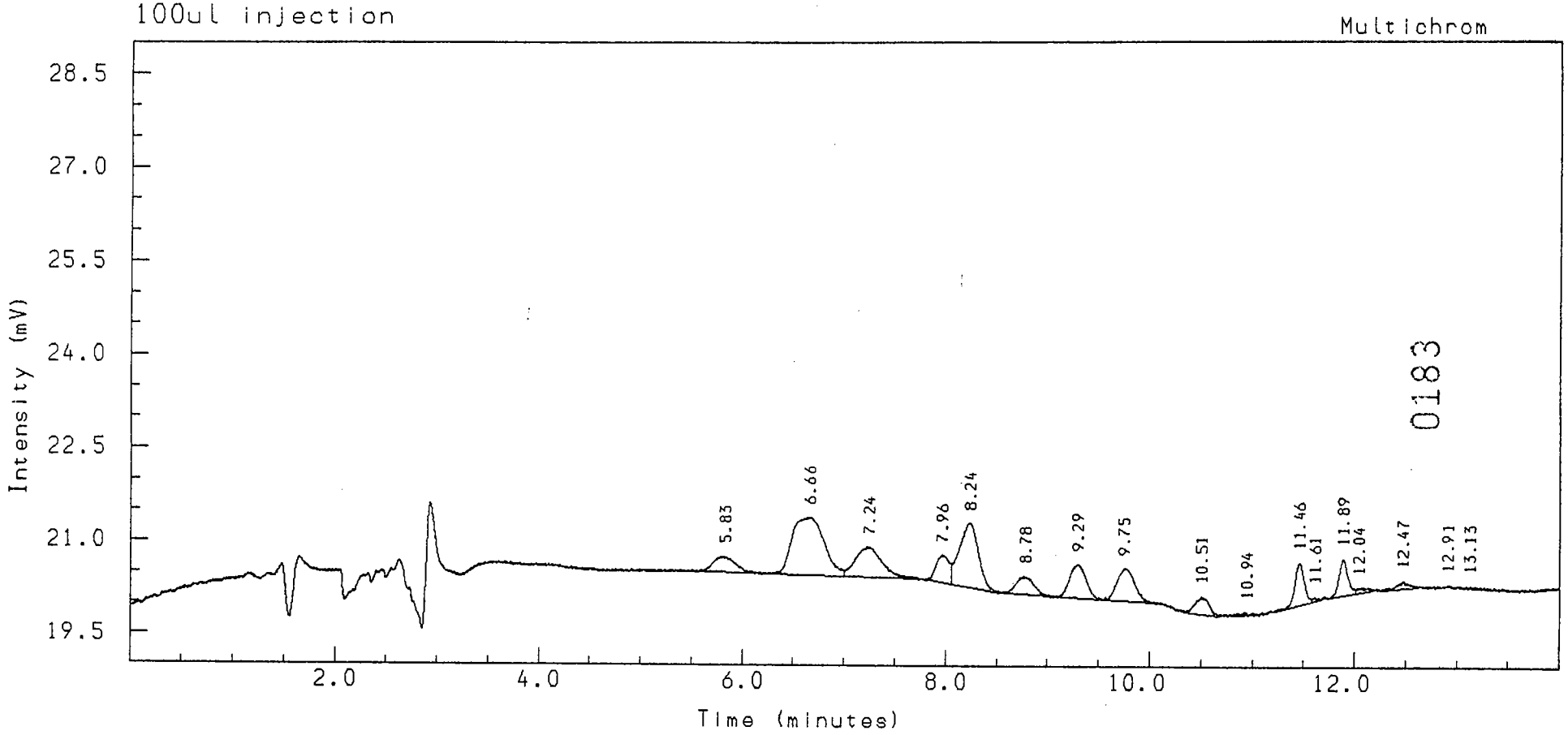
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,3,1.
EXPSTD2 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EXPSTD2
Acquired on 2-APR-2002 at 09:59
Reported on 2-APR-2002 at 15:45

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 09:59

VAX MULTICHROM V2.11

Analyst Name : BCV
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : EXPSTD2
Sample Id : EXPSTD2
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
		5.834	5.820	247	3563	23.536	NB	UM
		6.659	6.660	931	20339	51.407	1,3,5-TNB/1,3-DNB	UMOF
		7.243	7.250	483	8902	72.858	2-NT/4-NT/3-NT	UMOL
		7.962	7.980	437	3933	24.528	2,6-DNT	UMOF
		8.239	8.240	1028	13248	51.795	2,4-DNT/2,4,6-TNT	MOL
		8.779	8.790	270	3322	26.149	1,2-DNB	M
		9.294	9.300	538	6086	25.087	4-am-2,6-DNT	UMOF
		9.748	9.770	515	6281	25.655	2-am-4,6-DNT	UMOL
		10.506	10.530	275	2651	27.974	RDX	UM
		10.941	0.000	47	274	0.000		M
		11.294	0.000	30	80	0.000		M
		11.457	11.480	677	4312	26.191	Tetryl	MOF
		11.610	0.000	64	194	0.000		OL
		11.888	11.900	587	3526	25.614	HMX	UMOF
		12.039	0.000	82	487	0.000		UMOL
		12.468	0.000	116	887	0.000		M
		12.912	0.000	33	99	0.000		
	O	13.126	13.060	30	193	114.115	PETN	M

Totals			
Unknowns	370	2021	0.000
Named	6019	76357	494.909
Grand Total	6390	78379	494.909

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
6.350	TNX
7.610	PICRIC ACID
8.190	DNX
9.410	MNX
10.310	NG

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
270	3322	13.075	1,2-DINITROBENZENE % RECOVERY

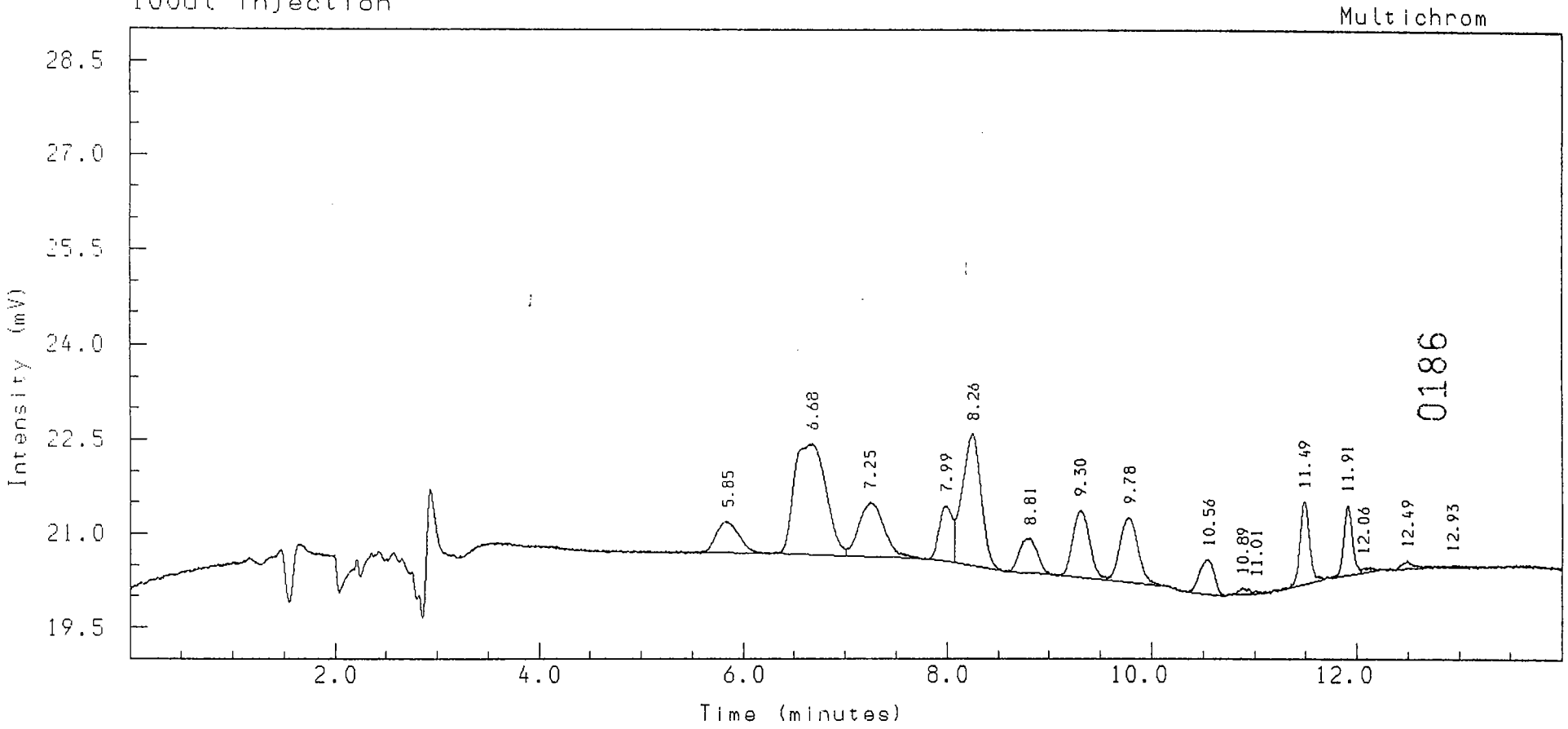
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,4,1.
EXPSTD3 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EXPSTD3
Acquired on 2-APR-2002 at 10:20
Reported on 2-APR-2002 at 15:45

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 10:20

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : EXPSTD3
Sample Id : EXPSTD3
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
	5.849	5.820	497	7740	50.638	NB	U
	6.677	6.660	1771	38270	99.364	1,3,5-TNB/1,3-DNB	UMOF
	7.246	7.250	864	14937	146.167	2-NT/4-NT/3-NT	UMOL
	7.992	7.980	891	7993	48.858	2,6-DNT	MOF
	8.257	8.240	2108	27228	101.775	2,4-DNT/2,4,6-TNT	MOL
	8.810	8.790	551	6708	50.831	1,2-DNB	M
	9.302	9.300	1074	12203	50.581	4-am-2,6-DNT	UMOF
	9.781	9.770	1025	12598	52.039	2-am-4,6-DNT	UMOL
	10.557	10.530	550	5517	51.971	RDX	UM
	10.886	0.000	98	609	0.000		MOF
	11.014	0.000	46	134	0.000		OL
	11.486	11.480	1318	8480	51.223	Tetryl	MOL
	11.906	11.900	1104	6459	49.449	HMX	UMOF
	12.063	0.000	75	452	0.000		UMOL
	12.492	0.000	121	1061	0.000		M
	12.934	0.000	37	196	0.000		M

Totals			
Unknowns	377	2452	0.000
Named	11753	148132	752.896
Grand Total	12130	150584	752.896

MISSING PEAKS

RT mins	Peak name

.010	2,6-DA/2,4-DA
6.350	TNX
7.610	PICRIC ACID
8.190	DNX
9.410	MNX
10.310	NG
13.060	PETN

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
551	6708	25.416	1,2-DINITROBENZENE % RECOVERY

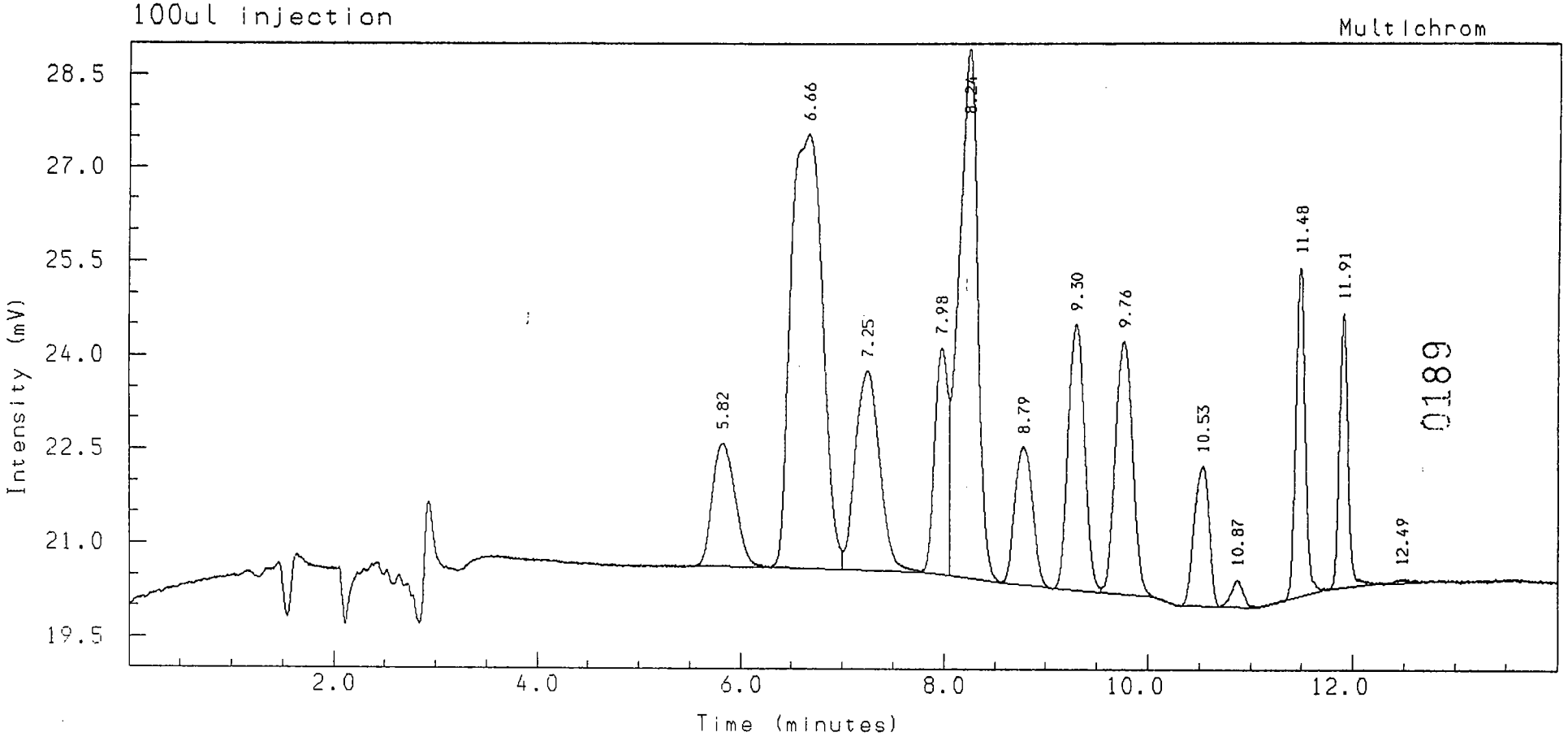
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,5,1.
EXPSTD4 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EXPSTD4
Acquired on 2-APR-2002 at 10:41
Reported on 2-APR-2002 at 15:45

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 10:41

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : EXPSTD4
Sample Id : EXPSTD4
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
	5.823	5.820	1962	30693	199.578	NB	M
	6.661	6.660	6944	150046	398.325	1,3,5-TNB/1,3-DNB	UMOF
	7.246	7.250	3190	52698	604.896	2-NT/4-NT/3-NT	UMOL
	7.977	7.980	3627	33183	199.823	2,6-DNT	UMOF
	8.239	8.240	8443	109682	396.556	2,4-DNT/2,4,6-TNT	UMOL
	8.786	8.790	2196	26837	197.576	1,2-DNB	M
	9.299	9.300	4255	47738	198.684	4-am-2,6-DNT	UMOF
	9.763	9.770	4042	47500	197.813	2-am-4,6-DNT	UMOL
	10.532	10.530	2228	22486	194.072	RDX	
	10.874	0.000	429	3450	0.000		M
	11.482	11.480	5232	32929	198.045	Tetryl	UM
	11.906	11.900	4372	25102	200.974	HMX	UMOL
	12.486	0.000	60	574	0.000		M

Totals			
Unknowns	489	4025	0.000
Named	46493	578894	2986.341
Grand Total	46983	582919	2986.341

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
6.350	TNX
7.610	PICRIC ACID
8.190	DNX
9.410	MNX
10.310	NG
3.060	PETN

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
2196	26837	98.788	1,2-DINITROBENZENE % RECOVERY

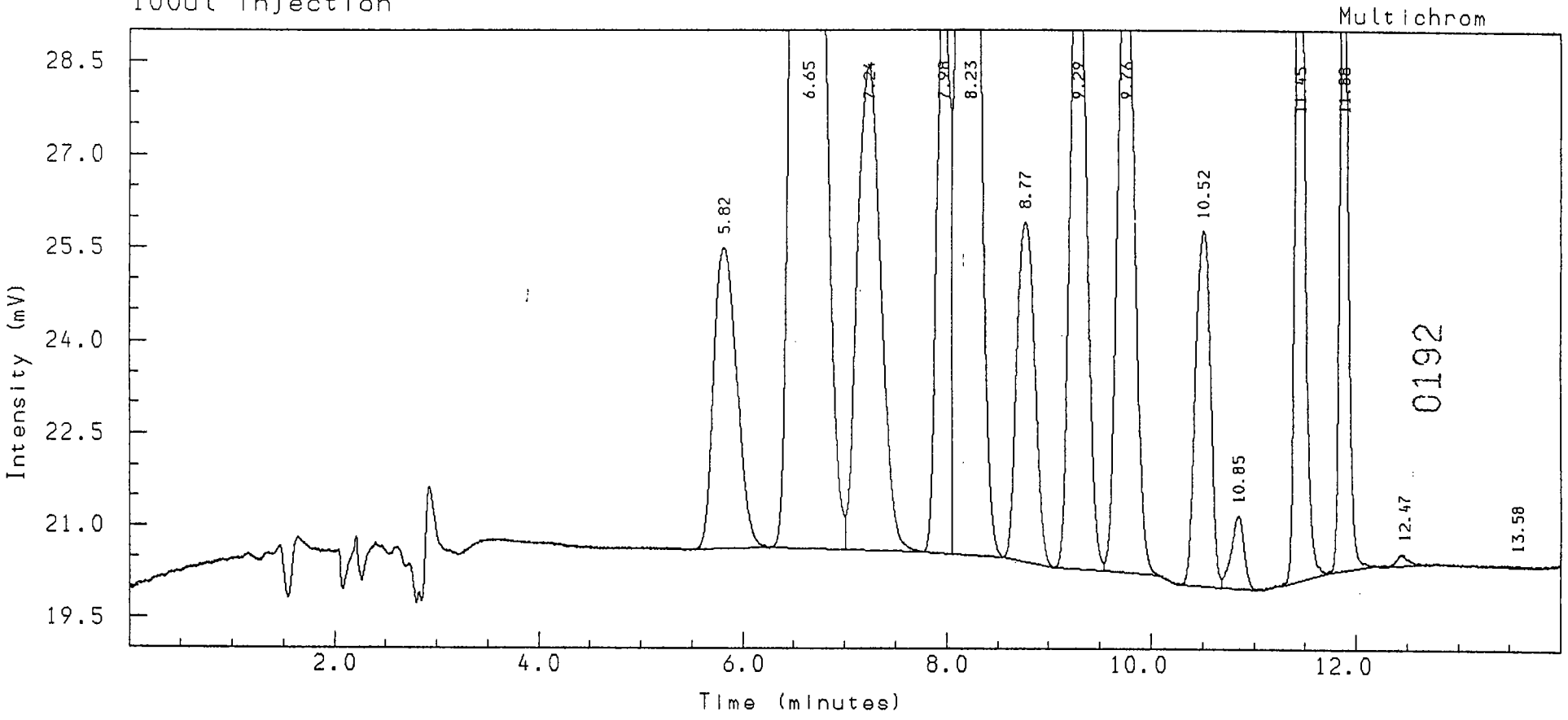
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,6,1.
EXPSTD5 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EXPSTD5
Acquired on 2-APR-2002 at 11:02
Reported on 2-APR-2002 at 15:45

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 11:02

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : EXPSTD5
Sample Id : EXPSTD5
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
	5.817	5.820	4875	76925	499.561	NB	UO
	6.654	6.660	17276	374472	998.582	1,3,5-TNB/1,3-DNB	UMOF
	7.241	7.250	7844	126344	1499.559	2-NT/4-NT/3-NT	UMOL
	7.976	7.980	9101	83415	500.867	2,6-DNT	UOF
	8.234	8.240	21274	276130	991.622	2,4-DNT/2,4,6-TNT	MOL
	8.774	8.790	5503	67305	492.598	1,2-DNB	M
	9.290	9.300	10620	119665	498.462	4-am-2,6-DNT	UMOF
	9.761	9.770	10113	118714	495.245	2-am-4,6-DNT	UMOL
	10.519	10.530	5740	58473	495.435	RDX	OF
	10.852	0.000	1183	10354	0.000		MOL
	11.452	11.480	13183	82929	498.309	Tetryl	M
	11.883	11.900	10894	61796	499.218	HMX	U
	12.468	0.000	176	1383	0.000		UO
	13.577	0.000	38	517	0.000		UO

Totals			
Unknowns	1397	12255	0.000
Named	116425	1446168	7469.458
Grand Total	117821	1458423	7469.458

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
6.350	TNX
7.610	PICRIC ACID
8.190	DNX
9.410	MNX
10.310	NG
13.060	PETN

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
5503	67305	246.299	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

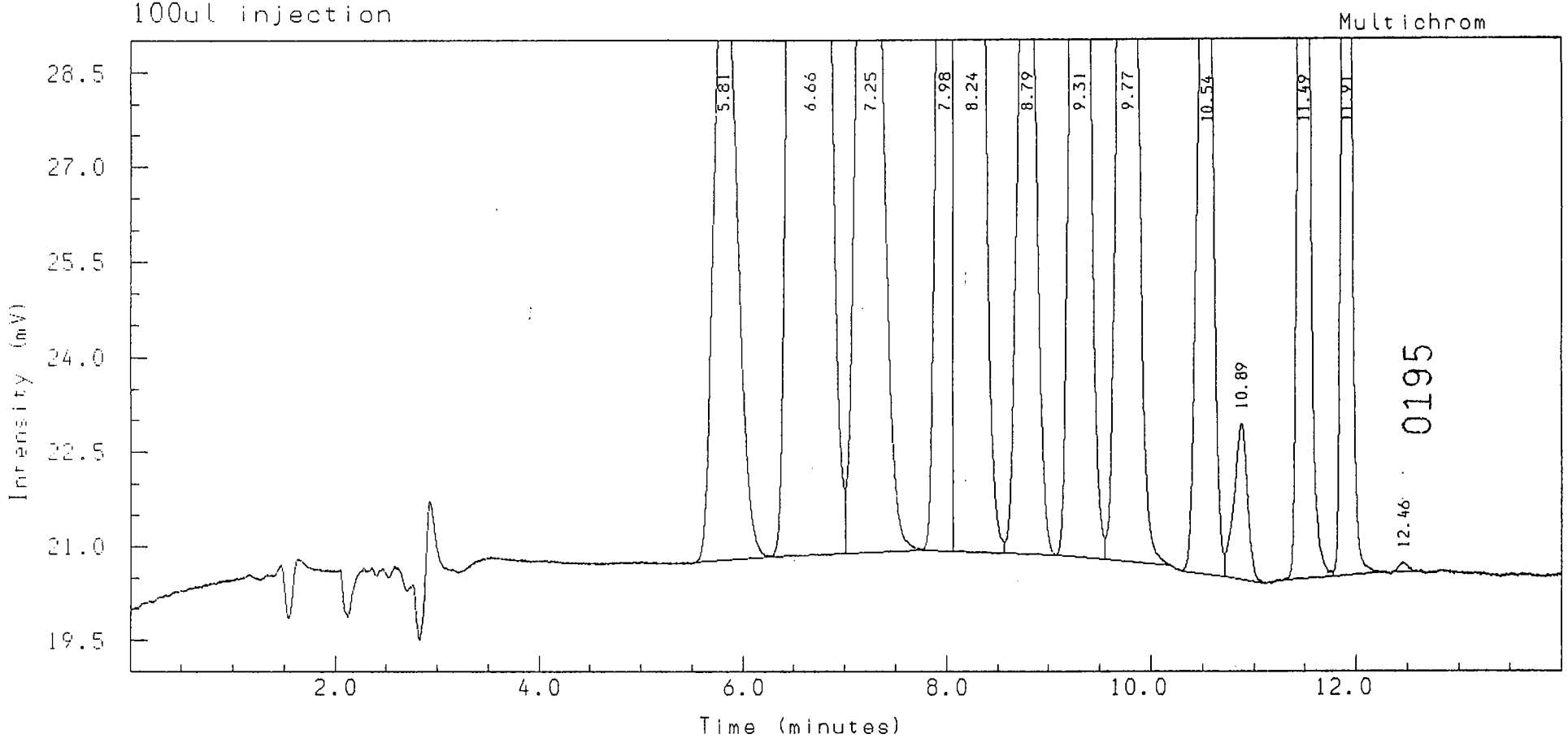
Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,7,1.

EXPSTD6 Amount : 1.000

100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EXPSTD6
Acquired on 2-APR-2002 at 11:23
Reported on 2-APR-2002 at 15:45

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 11:23

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : EXPSTD6
Sample Id : EXPSTD6
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
	5.814	5.820	9684	154094	1000.291	NB	UO
	6.657	6.660	34460	749269	2001.024	1,3,5-TNB/1,3-DNB	UMOF
	7.250	7.250	15469	249812	2999.460	2-NT/4-NT/3-NT	UMOL
	7.983	7.980	18134	166642	999.655	2,6-DNT	UMOF
	8.243	8.240	42674	559502	2004.700	2,4 DNT/2,4,6-TNT	UMO
	8.790	8.790	10999	137463	1004.068	1,2-DNB	UMOL
	9.308	9.300	21122	240238	1000.986	4-am-2,6-DNT	UMOF
	9.774	9.770	20161	240206	1002.677	2-am-4,6-DNT	UMOL
	10.543	10.530	11453	119116	1003.267	RDX	OF
	10.886	0.000	2466	22475	0.000		MOL
	11.486	11.480	26477	166661	1001.144	Tetryl	UMOF
	11.908	11.900	21820	123435	1000.214	HMX	UMOL
	12.457	0.000	149	874	0.000		UO

Totals			
Unknowns	2615	23349	0.000
Named	232454	2906440	15017.487
Grand Total	235070	2929789	15017.487

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
6.350	TNX
7.610	PICRIC ACID
8.190	DNX
9.410	MNX
10.310	NG
11.060	PETN

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
10999	137463	502.034	1,2-DINITROBENZENE % RECOVERY

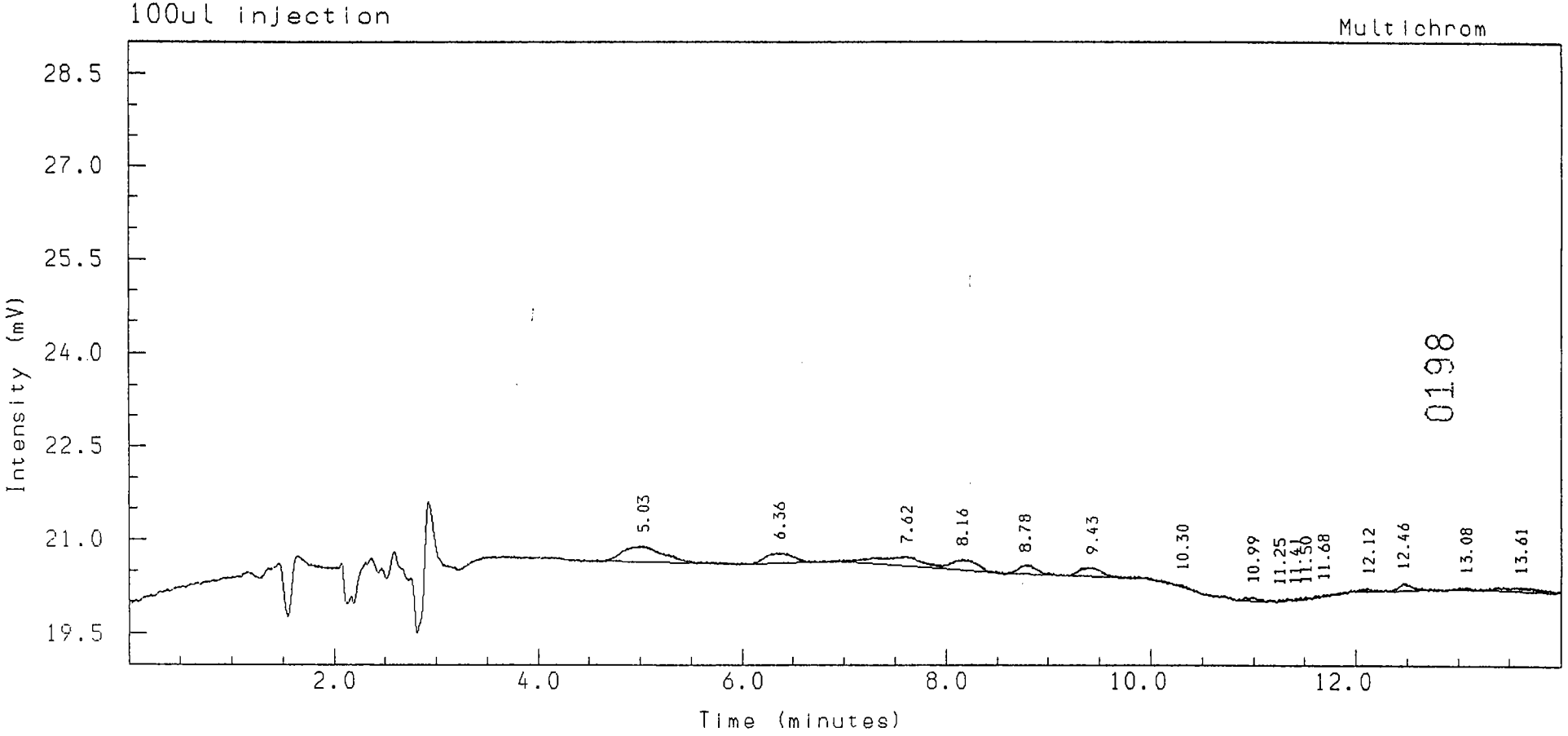
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,8,1.
SUPPSTD1 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : SUPPSTD1
Acquired on 2-APR-2002 at 11:44
Reported on 2-APR-2002 at 15:45

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 11:44

VAX MULTICHROM V2.11

Analyst Name : BCW
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : SUPPSTD1
Sample Id : SUPPSTD1
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
		5.034	5.010	255	6680	28.924	2,6-DA/2,4-DA	UM
		6.363	6.350	167	3038	12.234	TNX	M
		7.617	7.610	157	4972	13.446	PICRIC ACID	UMOF
		8.159	8.190	175	3099	13.838	DNX	UMOL
	O	8.775	8.790	146	1762	14.775	1,2-DNB	UO
		9.432	9.410	147	2050	14.815	MNX	UO
		10.303	10.310	45	251	229.522	NG	U
		10.993	0.000	60	411	0.000		U
		11.248	0.000	42	89	0.000		M
		11.410	0.000	33	78	0.000		
	O	11.503	11.480	39	96	0.877	Tetryl	
		11.681	0.000	42	198	0.000		M
		12.123	0.000	53	400	0.000		M
		12.459	0.000	126	1084	0.000		UM
	O	13.080	13.060	49	362	240.940	PETN	U
		13.611	0.000	67	1604	0.000		UO

Totals			
Unknowns	424	3865	0.000
Named	1180	22311	569.371
Grand Total	1604	26176	569.371

MISSING PEAKS

RT mins	Peak name

5.820	NB
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.300	4-am-2,6-DNT
9.770	2-am-4,6-DNT
10.530	RDX
11.900	HMX

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
146	1762	7.387	1,2-DINITROBENZENE % RECOVERY

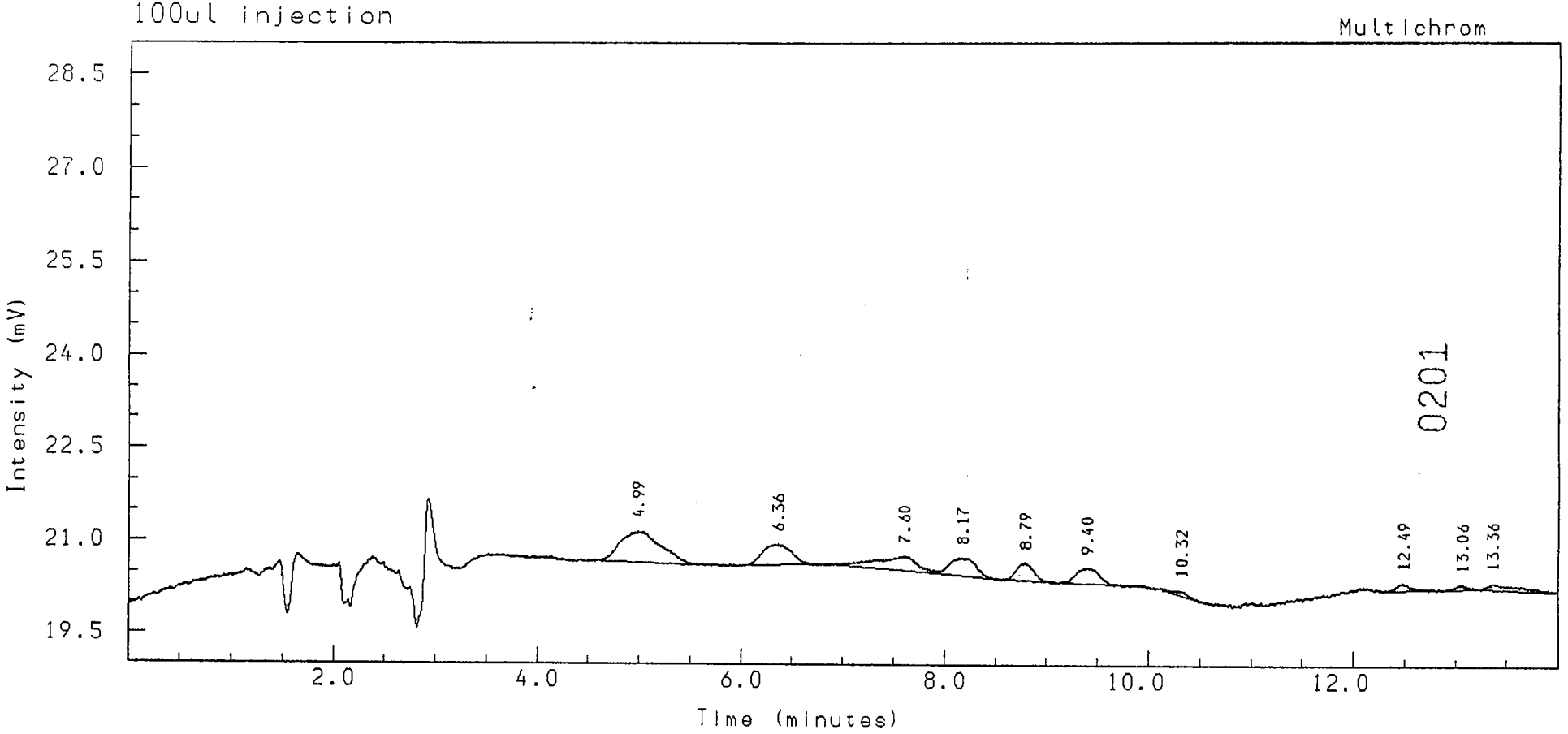
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Calibration last modified on 2-APR-2002 at 15:31
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,9,1.
SUPPSTD2 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : SUPPSTD2
Acquired on 2-APR-2002 at 12:05
Reported on 2-APR-2002 at 15:45

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 12:05

VAX MULTICHROM V2.11

Analyst Name : BCV
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : SUPPSTD2
Sample Id : SUPPSTD2
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
	4.990	5.010	499	13579	52.673	2,6-DA/2,4-DA	UM
	6.359	6.350	326	6268	22.923	TNX	UM
	7.598	7.610	237	6349	25.057	PICRIC ACID	UMOF
	8.174	8.190	290	5167	25.042	DNX	UMOL
	8.790	8.790	282	3405	26.754	1,2-DNB	UO
	9.395	9.410	254	3801	27.412	MNX	UO
	10.321	10.310	78	608	499.812	NG	U
	12.491	0.000	114	1027	0.000		UO
	13.063	13.060	74	697	492.276	PETN	UO
	13.363	0.000	102	2025	0.000		UO

Totals			
Unknowns	216	3052	0.000
Named	2040	39876	1171.947
Grand Total	2256	42929	1171.947

MISSING PEAKS

RT mins	Peak name
5.820	NB
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.300	4-am-2,6-DNT
9.770	2-am-4,6-DNT
10.530	RDX
11.480	Tetryl
1.900	HMX

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
282	3405	13.377	1,2-DINITROBENZENE % RECOVERY

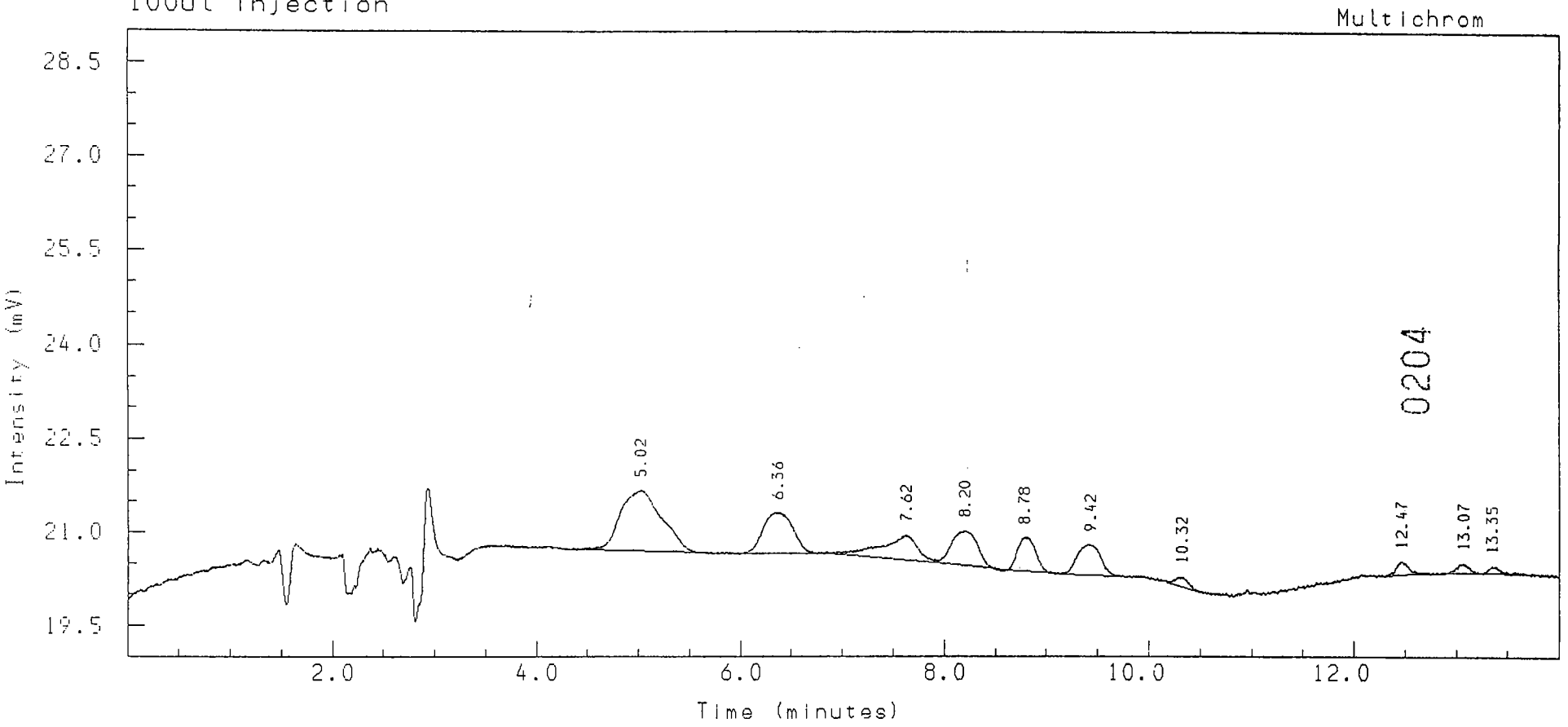
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,10,1.
SUPPSTD3 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : SUPPSTD3
Acquired on 2-APR-2002 at 12:26
Reported on 2-APR-2002 at 15:45

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 12:26

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : SUPPSTD3
Sample Id : SUPPSTD3
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
	5.023	5.010	975	27076	99.133	2,6-DA/2,4-DA	UM
	6.361	6.350	658	13205	45.379	TNX	UO
	7.622	7.610	403	9505	51.676	PICRIC ACID	UMOF
	8.197	8.190	559	9823	50.259	DNX	UMOL
	8.785	8.790	544	6538	49.589	1,2-DNB	UM
	9.423	9.410	487	7560	54.444	MNX	UM
	10.320	10.310	153	1345	1056.915	NG	UM
	12.466	0.000	207	1674	0.000		UO
	13.069	13.060	142	1145	827.756	PETN	UMOF
	13.346	0.000	101	751	0.000		UMOL

Totals			
Unknowns	309	2425	0.000
Named	3922	76197	2235.651
Grand Total	4231	78622	2235.651

MISSING PEAKS

RT mins	Peak name
5.820	NB
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.300	4-am-2,6-DNT
9.770	2-am-4,6-DNT
10.530	RDX
11.480	Tetryl
11.900	HMX

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
544	6538	24.794	1,2-DINITROBENZENE % RECOVERY

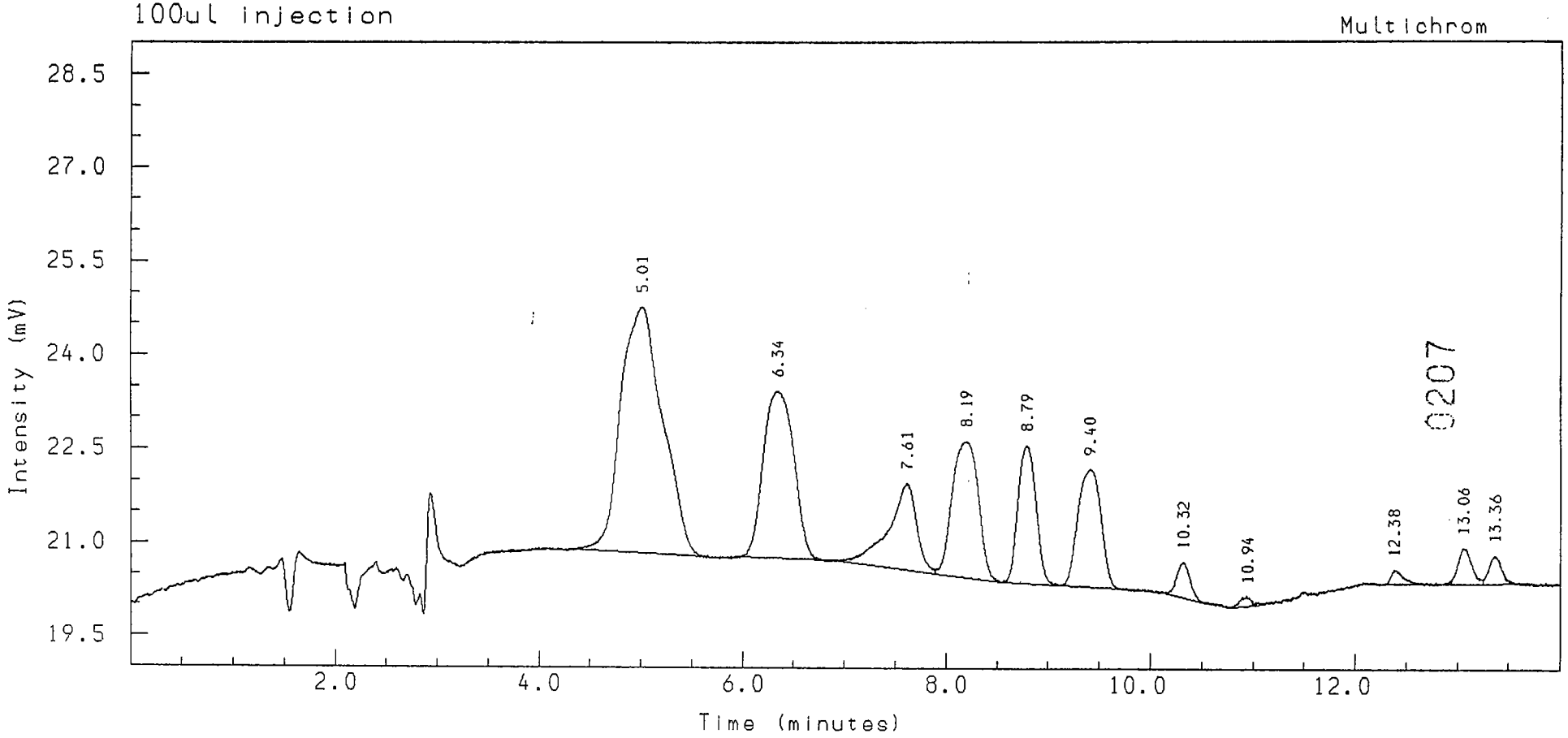
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,11,1.
SUPPSTD4 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : SUPPSTD4
Acquired on 2-APR-2002 at 12:47
Reported on 2-APR-2002 at 15:46

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 12:47

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : SUPPSTD4
Sample Id : SUPPSTD4
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
		5.009	5.010	3927	111718	390.503	2,6-DA/2,4-DA	UM
		6.338	6.350	2668	55688	186.460	TNX	UO
		7.609	7.610	1389	26933	198.660	PICRIC ACID	UMOF
		8.192	8.190	2179	38732	206.843	DNX	UMOL
		8.788	8.790	2215	27317	201.078	1,2-DNB	M
		9.403	9.410	1893	29825	214.577	MNX	UM
		10.321	10.310	580	5171	3949.470	NG	UM
		10.943	0.000	158	1296	0.000		M
		12.378	0.000	225	1843	0.000		UO
		13.059	13.060	583	5574	4149.333	PETN	UMOF
		13.359	0.000	452	3872	0.000		UMOL

Totals			
Unknowns	835	7011	0.000
Named	15436	300959	9496.925
Grand Total	16271	307970	9496.925

MISSING PEAKS

RT mins	Peak name
5.820	NB
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.300	4-am-2,6-DNT
9.770	2-am-4,6-DNT
10.530	RDX
1.480	Tetryl
11.900	HMX

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
2215	27317	100.539	1,2-DINITROBENZENE % RECOVERY

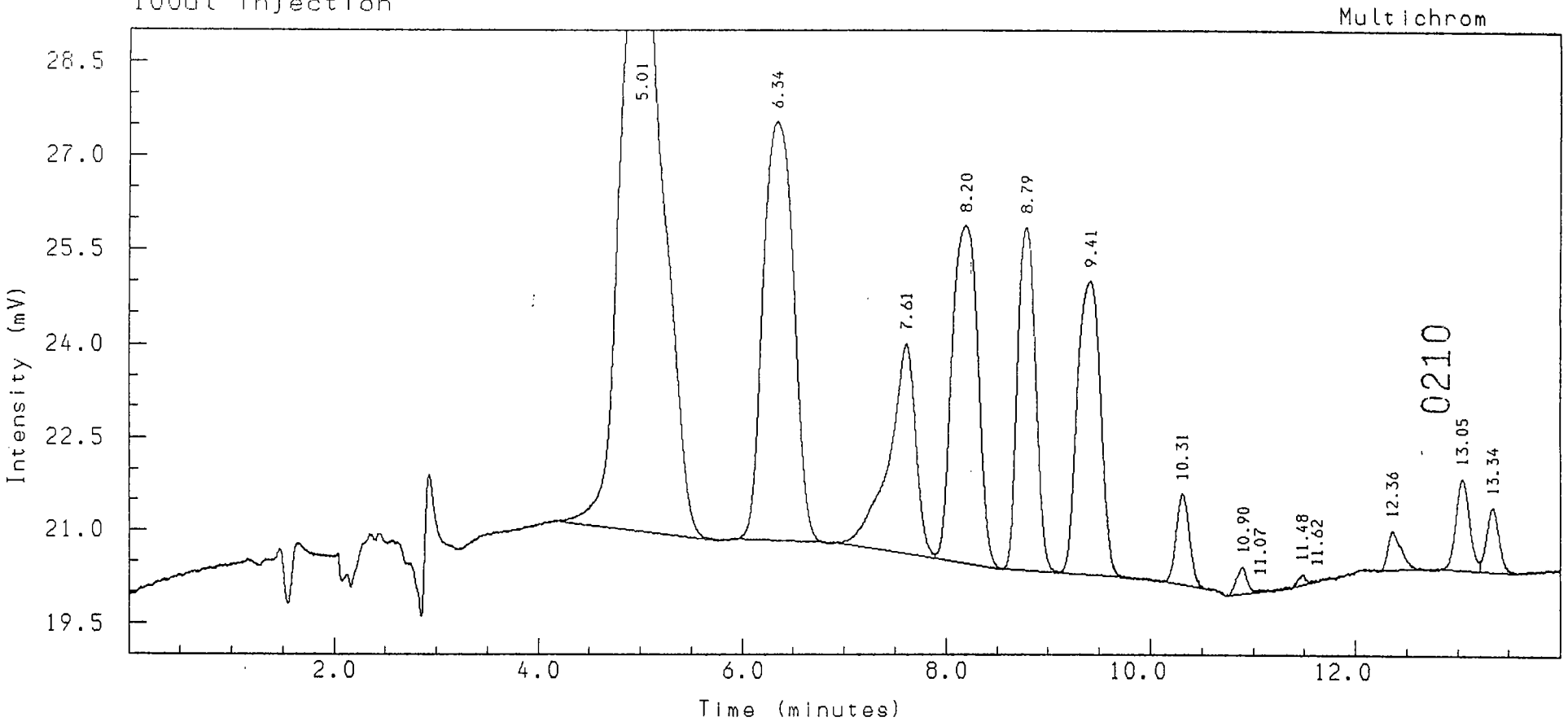
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,12,1.
SUPPSTD5 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : SUPPSTD5
Acquired on 2-APR-2002 at 13:08
Reported on 2-APR-2002 at 15:46

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 13:08

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : SUPPSTD5
Sample Id : SUPPSTD5
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
		5.014	5.010	10035	289902	1003.881	2,6-DA/2,4-DA	UM
		6.342	6.350	6707	139825	464.879	TNX	UO
		7.613	7.610	3394	62303	496.980	PICRIC ACID	UMOF
		8.201	8.190	5429	95714	515.487	DNX	UMOL
		8.790	8.790	5520	67896	496.906	1,2-DNB	MOF
		9.412	9.410	4729	74456	535.563	MNX	UMOL
		10.311	10.310	1476	13192	10013.521	NG	UM
		10.901	0.000	428	3038	0.000		MOF
		11.068	0.000	39	197	0.000		MOL
	O	11.481	11.480	160	825	5.253	Tetryl	UO
		11.617	0.000	34	76	0.000		UO
		12.358	0.000	619	5537	0.000		UO
		13.046	13.060	1482	13514	10103.393	PETN	MOF
		13.343	0.000	1039	8671	0.000		MOL

Totals			
Unknowns	2159	17518	0.000
Named	38934	757628	23635.863
Grand Total	41093	775146	23635.863

MISSING PEAKS

RT mins	Peak name
5.820	NB
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.300	4-am-2,6-DNT
9.770	2-am-4,6-DNT
10.530	RDX

0211

ains	Peak name
11.900	HMX

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
5520	67896	248.453	1,2-DINITROBENZENE % RECOVERY

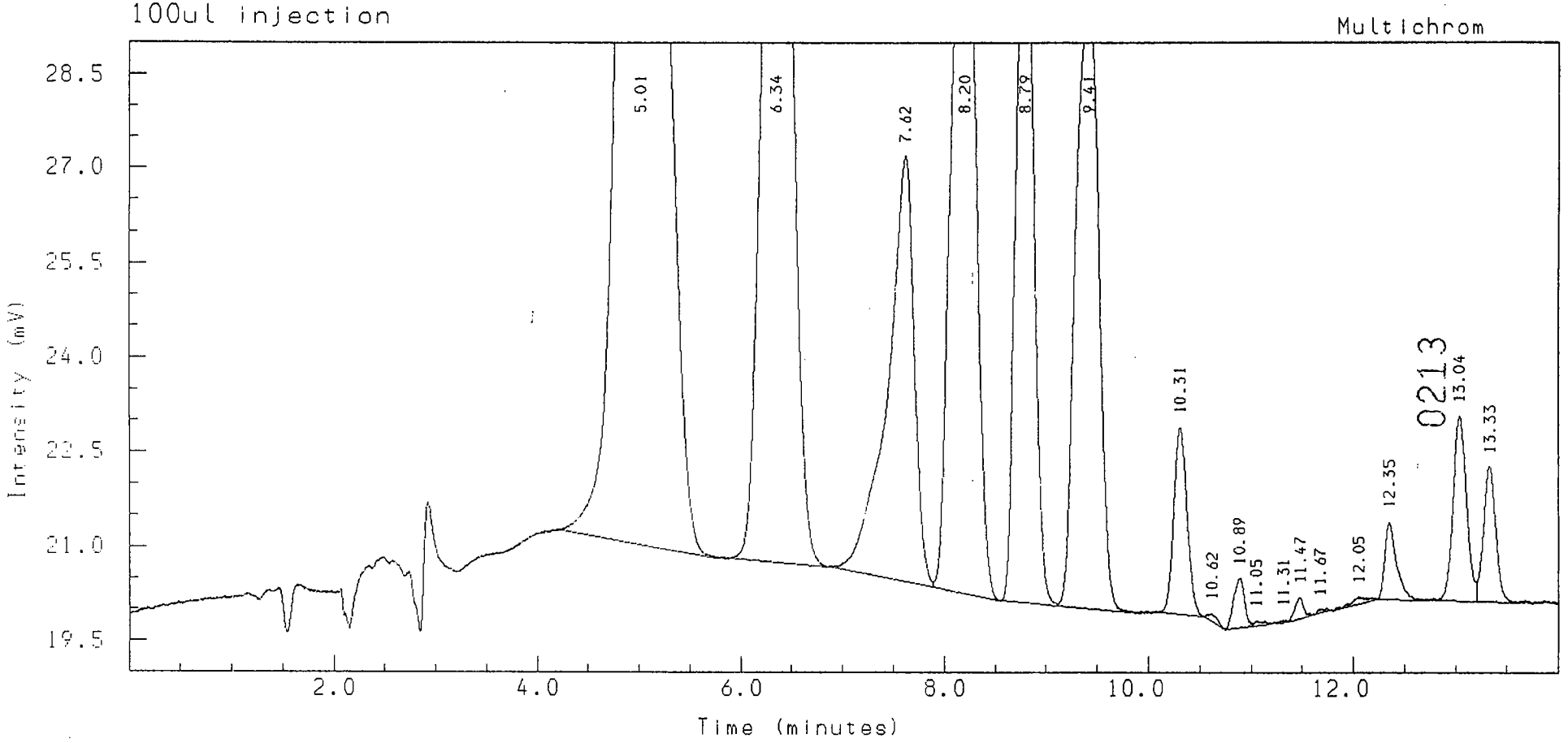
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,13,1.
SUPPSTD6 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : SUPPSTD6
Acquired on 2-APR-2002 at 13:29
Reported on 2-APR-2002 at 15:46

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 13:29

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : SUPPSTD6
Sample Id : SUPPSTD6
Sample Type : Standard Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
		5.013	5.010	19888	579238	1999.886	2,6-DA/2,4-DA	U
	O	6.343	6.350	13398	284057	942.158	TNX	UO
		7.616	7.610	6742	122144	1001.681	PICRIC ACID	UMOF
		8.201	8.190	10760	190640	1029.656	DNX	UMOL
		8.788	8.790	10957	136386	996.213	1,2-DNB	MOF
		9.414	9.410	9383	150048	1079.221	MNX	UMOL
		10.312	10.310	2959	26402	20000.760	NG	UO
	O	10.619	10.530	131	805	12.514	RDX	UO
		10.886	0.000	790	5711	0.000		MOF
		11.046	0.000	80	458	0.000		MOL
		11.308	0.000	37	88	0.000		M
	O	11.474	11.480	339	1939	11.942	Tetryl	MOF
		11.668	0.000	62	354	0.000		MOL
		12.052	0.000	118	1242	0.000		UO
		12.348	0.000	1238	9838	0.000		UO
		13.040	13.060	2934	26615	19927.242	PETN	UMOF
		13.332	0.000	2138	17622	0.000		UMOL

Totals			
Unknowns	4463	35312	0.000
Named	77489	1518274	47001.273
Grand Total	81952	1553586	47001.273

MISSING PEAKS

RT mins	Peak name
5.820	NB
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.300	4-am-2,6-DNT
9.770	2-am-4,6-DNT
11.900	HMX

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
10957	136386	498.107	1,2-DINITROBENZENE % RECOVERY

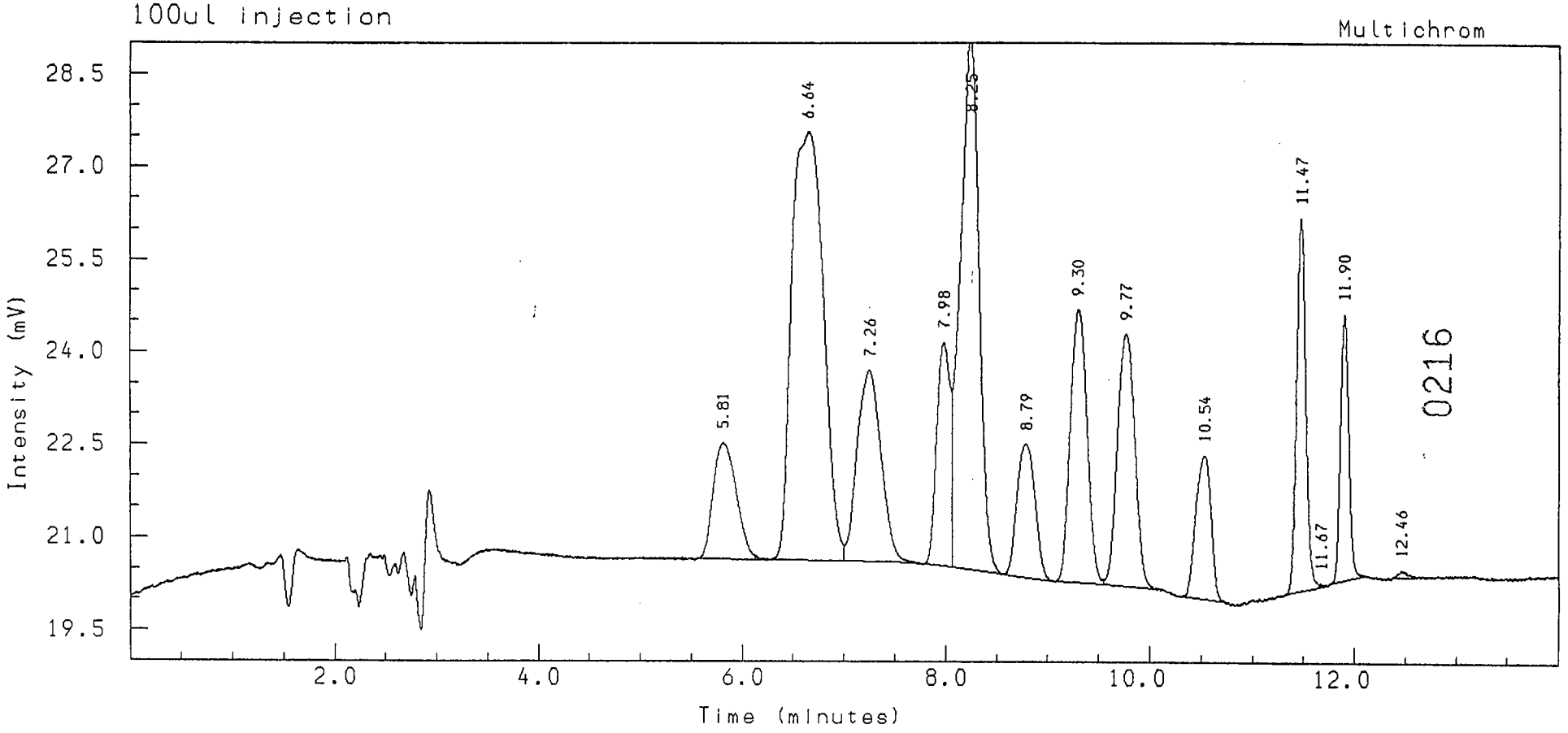
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855,14,1.
EXPICV Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EXPICV
Acquired on 2-APR-2002 at 13:50
Reported on 2-APR-2002 at 15:46

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 13:50

VAX MULTICHROM V2.11

Analyst Name : BCW
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : EXPICV
Sample Id : EXPICV
Sample Type : Sample Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
	5.809	5.820	1879	29852	194.116	NB	UM
	6.642	6.660	6928	149636	397.228	1,3,5-TNB/1,3-DNB	UMOF
	7.257	7.250	3106	50714	580.792	2-NT/4-NT/3-NT	UMOL
	7.980	7.980	3624	33201	199.930	2,6-DNT	UMOF
	8.246	8.240	8578	111300	402.338	2,4-DNT/2,4,6-TNT	MOL
	8.788	8.790	2149	26486	195.016	1,2-DNB	M
	9.299	9.300	4405	50288	209.312	4-am-2,6-DNT	UMOF
	9.766	9.770	4078	48187	200.679	2-am-4,6-DNT	UMOL
	10.537	10.530	2322	23807	205.134	RDX	UM
	11.473	11.480	6019	37314	224.377	Tetryl	UMOF
	11.673	0.000	56	153	0.000		UMOL
	11.898	11.900	4296	24420	195.433	HMX	UM
	12.457	0.000	106	647	0.000		M

Totals			
Unknowns	162	800	0.000
Named	47385	585203	3004.355
Grand Total	47547	586002	3004.355

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
6.350	TNX
7.610	PICRIC ACID
8.190	DNX
9.410	MNX
10.310	NG
13.060	PETN

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
2149	26486	97.508	1,2-DINITROBENZENE % RECOVERY

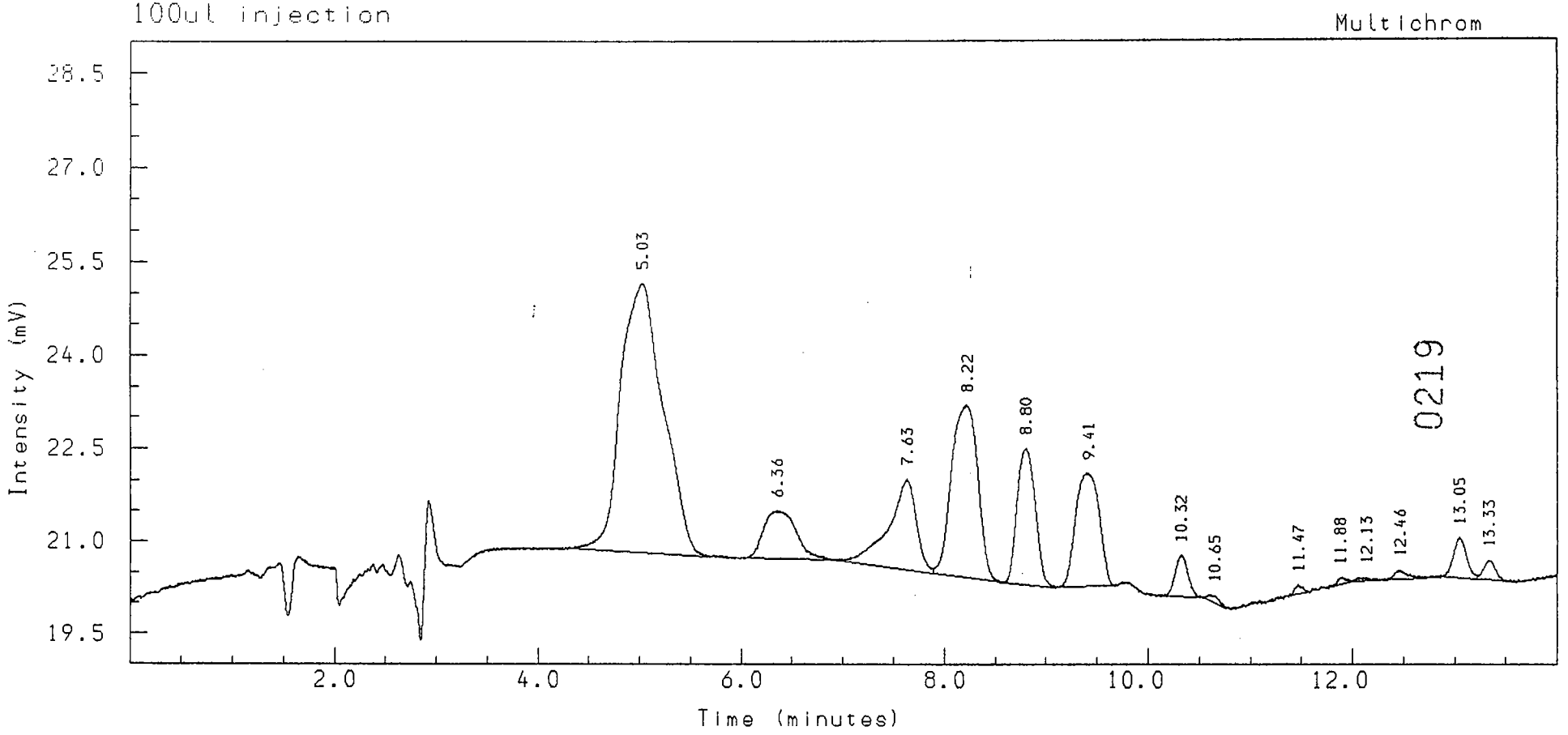
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [040102] 46 02APR020855.15.1.
SUPPICV Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : SUPPICV
Acquired on 2-APR-2002 at 14:11
Reported on 2-APR-2002 at 15:46

Method : 040202_1
Calibration : 040202_1
Run Sequence : 040202_1

Injection Report

Acquired on 2-APR-2002 at 14:11

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330 CONF
Comment : 100uL injection
Method Title : 8330 CONFIRMATION
Sample Name : SUPPICV
Sample Id : SUPPICV
Sample Type : Sample Amount=1.00000
Bottle No : 9

PEAK INFORMATION

Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
		5.025	5.010	4332	125337	437.387	2,6-DA/2,4-DA	JM
		6.356	6.350	791	17572	60.329	TNX	JO
		7.630	7.610	1469	28131	208.772	PICRIC ACID	UMOF
		8.223	8.190	2773	49902	267.346	DNX	JMOL
		8.799	8.790	2187	27222	200.382	1,2-DNB	M
		9.412	9.410	1819	29287	210.703	MNX	UM
		10.323	10.310	663	5800	4424.922	NG	U
	O	10.652	10.530	115	812	12.571	RDX	U
	O	11.466	11.480	146	788	5.028	Tetryl	UM
	O	11.879	11.900	111	701	2.653	HMX	M
		12.132	0.000	50	334	0.000		MOF
		12.463	0.000	142	1189	0.000		MOL
		13.049	13.060	643	5730	4265.978	PETN	UMOF
		13.332	0.000	300	2400	0.000		UMOL

Totals			
Unknowns	492	3924	0.000
Named	15049	291282	10096.072
Grand Total	15541	295206	10096.072

MISSING PEAKS

RT mins	Peak name
5.820	NB
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.300	4-am-2,6-DNT
9.770	2-am-4,6-DNT

PEAK GROUP INFORMATION

Hght uV	Area uVs	ppb	Peak name
2187	27222	100.191	1,2-DINITROBENZENE % RECOVERY

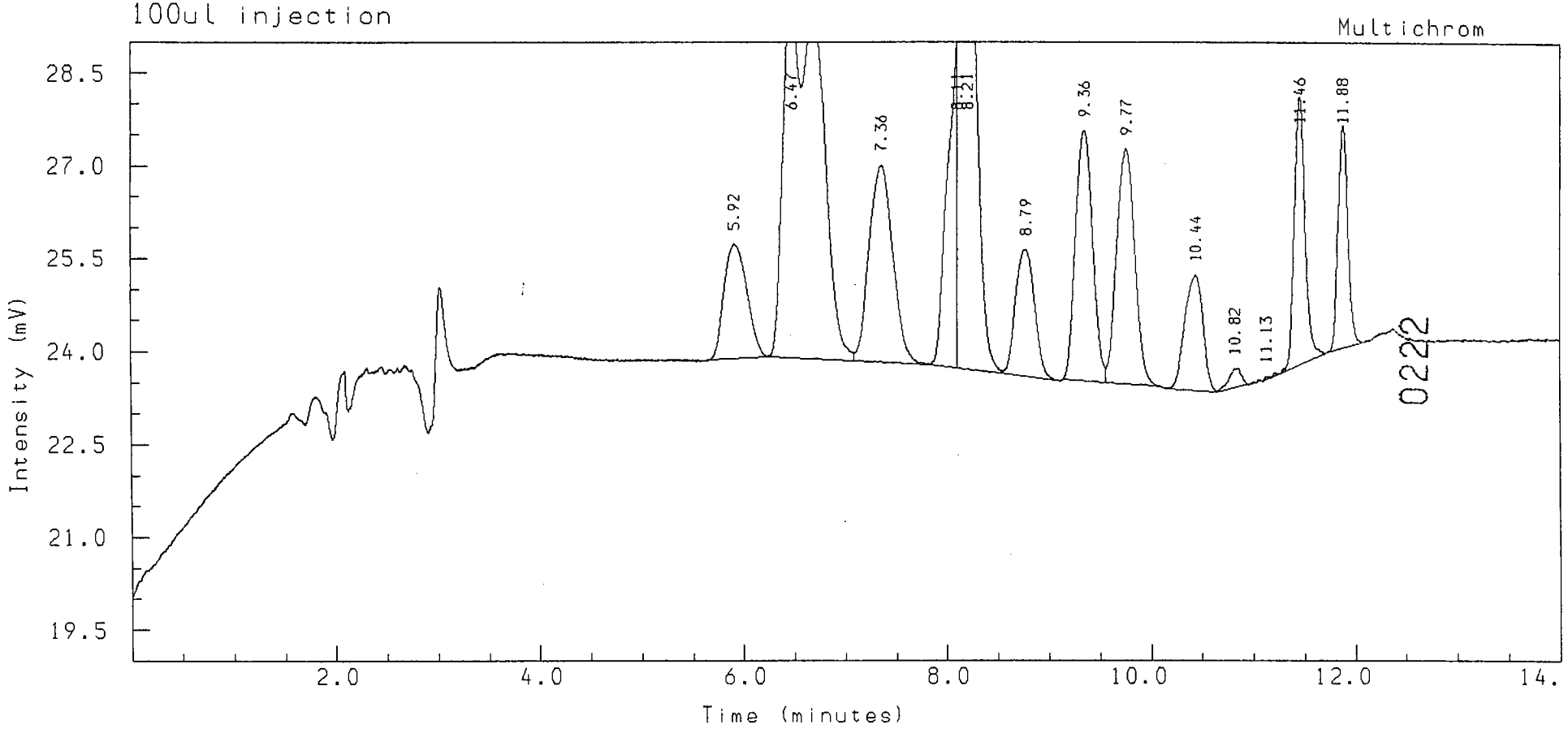
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 040202_1
Calibration..... 040202_1
External standard calibration using area
Method last modified on 28-MAR-2002 at 13:30

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 13JAN031633,2,1.
EXPSTD4 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EXPSTD4
Acquired on 13-JAN-2003 at 17:25
Reported on 17-JAN-2003 at 15:10

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_4

Injection Report

Acquired on 13-JAN-2003 at 17:25

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : EXPSTD4
Sample Id : EXPSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 58

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				5.917	5.820	1843	28676	186.489	NB	UO
2				6.474	6.660	5842	147837	392.417	1,3,5-TNB/1,3-DNB	UMOF
3				7.361	7.250	3170	51282	587.696	2-NT/4-NT/3-NT	UMOL
4				8.106	7.980	5294	33228	200.092	2,6-DNT	UMOF
5				8.213	8.240	9622	107710	389.504	2,4-DNT/2,4,6-TNT	UMO
6	1			8.786	8.790	2050	26745	196.904	1,2-DNB	UMOL
7				9.357	9.299	4036	47343	197.038	4-am-2,6-DNT	UMOF
8				9.766	9.770	3791	47198	196.551	2-am-4,6-DNT	UMOL
9				10.443	10.530	1852	23071	198.972	RDX	M
10				10.823	0.000	311	2647	0.000		M
11				11.128	0.000	53	243	0.000		M
12				11.459	11.480	4339	31617	190.167	Tetryl	UO
13				11.883	11.900	3588	23660	189.256	HMX	UO

Totals			
Unknowns	364	2889	0.000
Named	45426	568367	2925.087
Grand Total	45790	571256	2925.087

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
6.350	TNX
7.610	PICRIC ACID
8.190	DNX
9.410	MNX
10.310	NG
13.060	PETN
16.280	2,2-AZOXY
16.510	4,4-AZOXY

R	.ins	Peak name
	16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2050	26745	98.452	1,2-DINITROBENZENE % RECOVERY

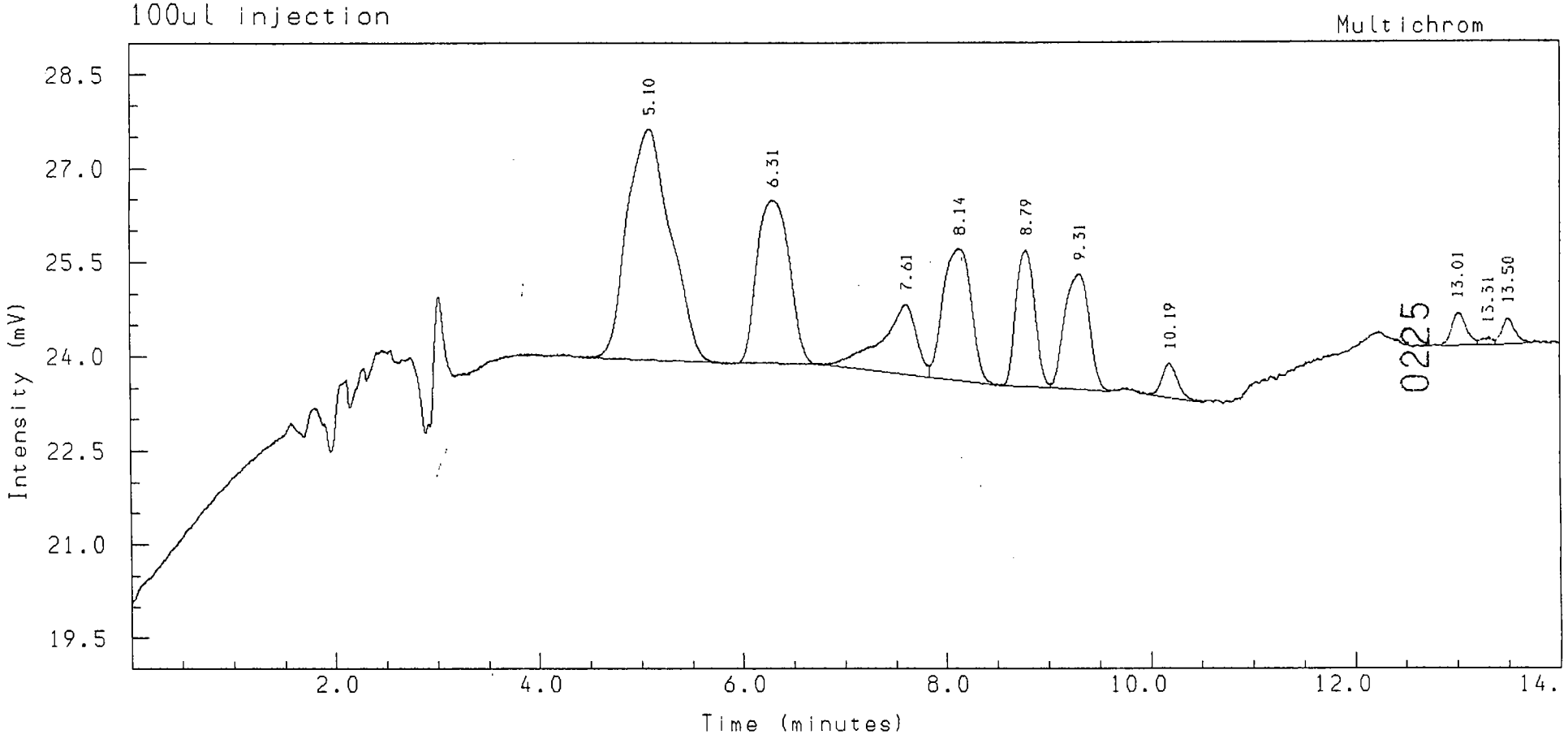
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_4
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 13JAN031633,3,1.
SUPPSTD4 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : SUPPSTD4
Acquired on 13-JAN-2003 at 17:47
Reported on 17-JAN-2003 at 15:10

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_4

Injection Report

Acquired on 13-JAN-2003 at 17:47

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : SUPPSTD4
Sample Id : SUPPSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 59

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				5.098	5.010	3684	109444	382.676	2,6-DA/2,4-DA	UM
2				6.306	6.350	2604	57586	192.740	TNX	UO
3				7.614	7.610	1118	27190	200.829	PICRIC ACID	UMOF
4				8.137	8.190	2111	40605	216.991	DNX	UMOL
	1			8.790	8.790	2183	28066	206.536	1,2-DNB	UMOF
6				9.312	9.410	1843	31023	223.194	MNX	UMOL
7				10.194	10.310	551	5830	4447.463	NG	M
8				13.013	13.060	523	5338	3972.388	PETN	UMOF
9				13.310	0.000	110	864	0.000		O
10				13.503	0.000	411	3719	0.000		UMOL

Totals			
Unknowns	521	4583	0.000
Named	14616	305083	9842.818
Grand Total	15137	309666	9842.818

MISSING PEAKS

RT mins	Peak name
5.820	NB
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.300	4-am-2,6-DNT
9.770	2-am-4,6-DNT
10.530	RDX
80	Tetryl
00	HMX
16.280	2,2-AZOXY
16.510	4,4-AZOXY

RT mins	Peak name
16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2183	28066	103.268	1,2-DINITROBENZENE % RECOVERY

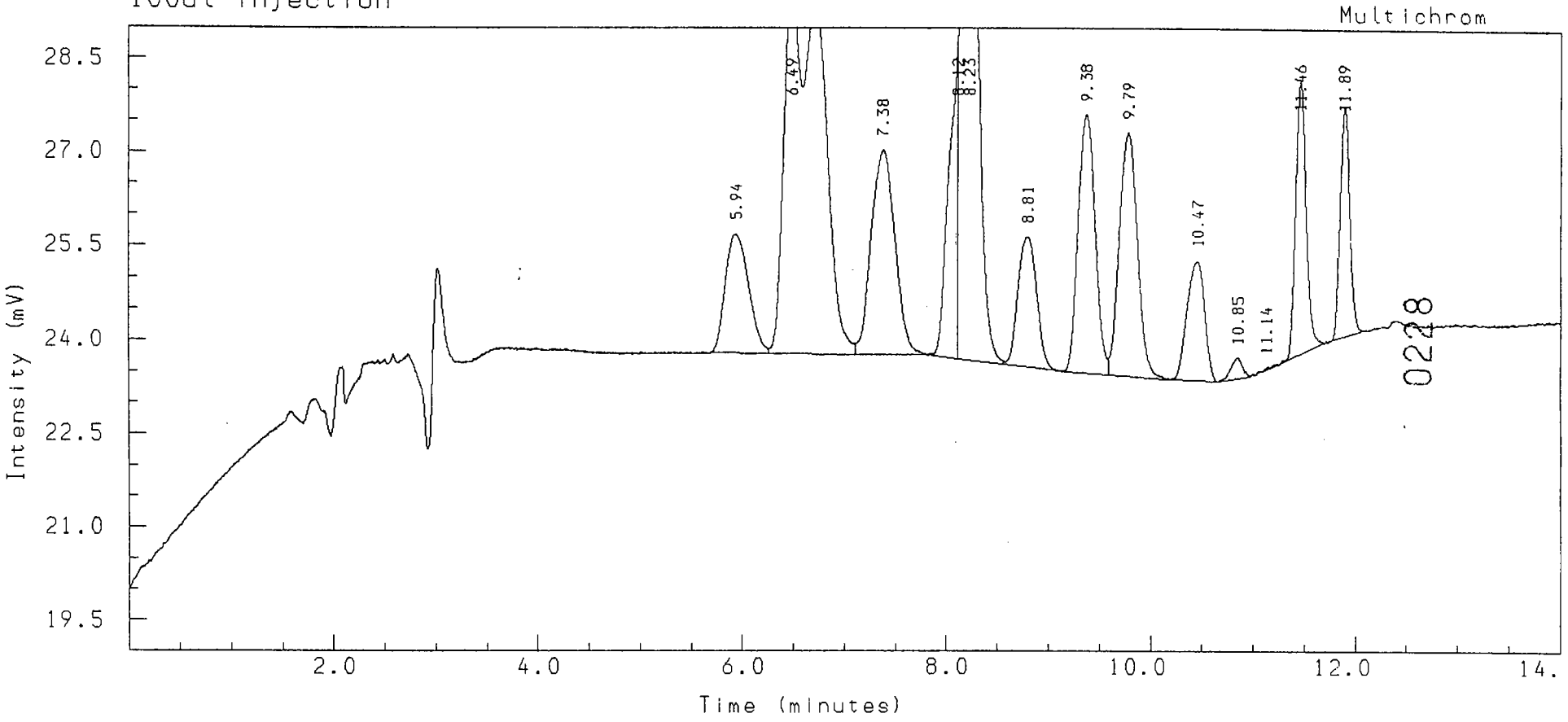
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_4
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 13JAN031633,15,1.
EXPSTD4 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EXPSTD4
Acquired on 13-JAN-2003 at 22:20
Reported on 17-JAN-2003 at 15:10

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_4

Injection Report

Acquired on 13-JAN-2003 at 22:20

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : EXPSTD4
Sample Id : EXPSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 58

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				5.941	5.820	1887	29982	194.959	NB	UMOF
2				6.488	6.660	5895	151000	400.878	1,3,5-TNB/1,3-DNB	UMO
3				7.383	7.250	3257	53006	608.633	2-NT/4-NT/3-NT	UMOL
4				8.119	7.980	5041	30911	186.208	2,6-DNT	UMOF
5				8.230	8.240	9691	110306	398.788	2,4-DNT/2,4,6-TNT	UMO
6	1			8.809	8.790	2074	26622	196.009	1,2-DNB	UMOL
7				9.377	9.299	4127	47991	199.739	4-am-2,6-DNT	UMOF
8				9.790	9.770	3883	48065	200.169	2-am-4,6-DNT	UMOL
9				10.466	10.530	1912	22840	197.040	RDX	M
10				10.854	0.000	333	2580	0.000		M
11				11.137	0.000	35	79	0.000		M
12				11.461	11.480	4361	31059	186.819	Tetryl	UO
13				11.894	11.900	3656	23789	190.309	HMX	UO

Totals			
Unknowns	368	2659	0.000
Named	45783	575572	2959.549
Grand Total	46151	578231	2959.549

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
6.350	TNX
7.610	PICRIC ACID
8.190	DNX
9.410	MNX
10.310	NG
13.060	PETN
16.280	2,2-AZOXY
16.510	4,4-AZOXY

	ins	Peak name
	16.750	PYX

PEAK GROUP INFORMATION

Peak	GRP	Hght uV	Area uVs	ppb	Peak name
G	1	2074	26622	98.005	1,2-DINITROBENZENE % RECOVERY

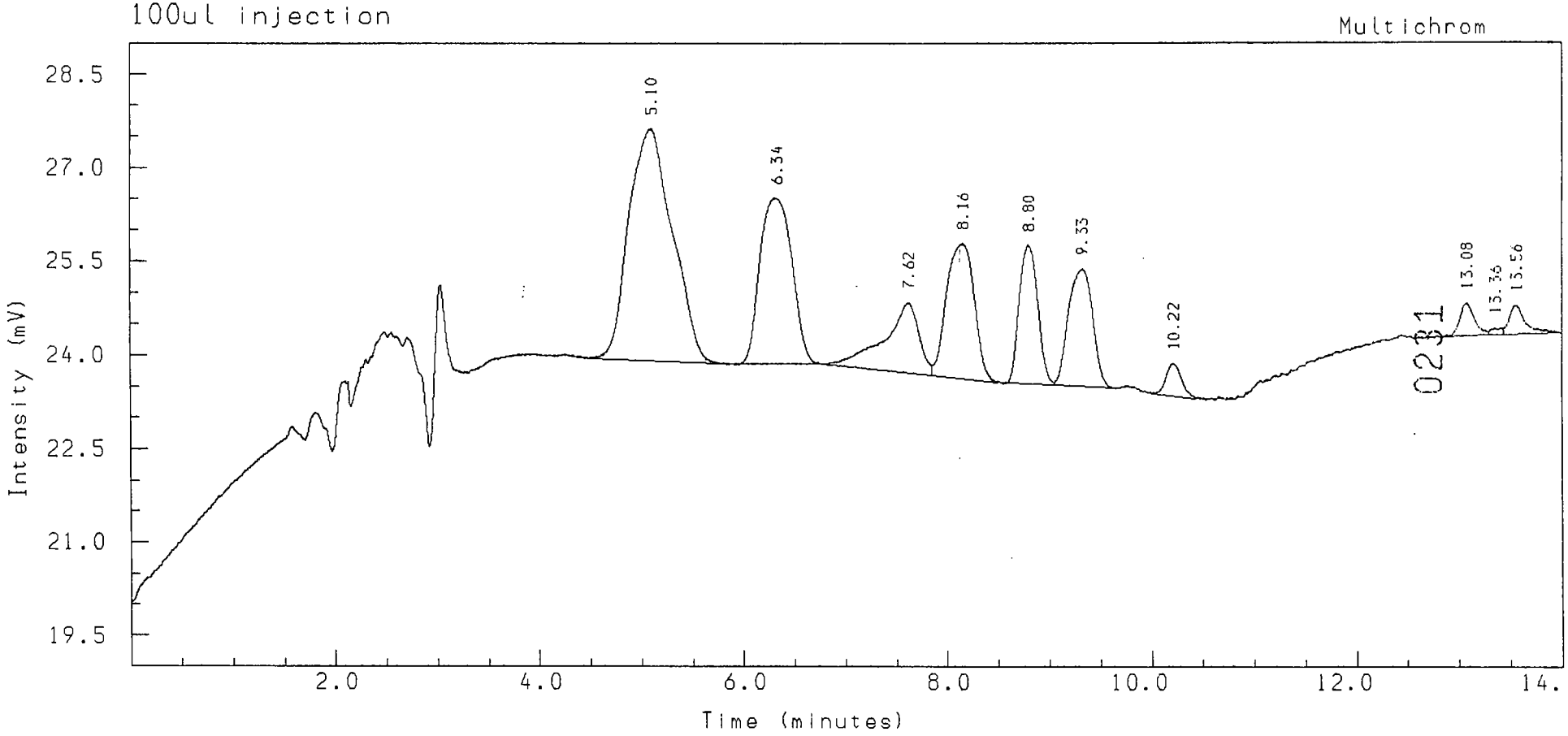
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_4
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 13JAN031633,16,1.
SUPPSTD4 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : SUPPSTD4
Acquired on 13-JAN-2003 at 22:42
Reported on 17-JAN-2003 at 15:11

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_4

Injection Report

Acquired on 13-JAN-2003 at 22:42

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : SUPPSTD4
Sample Id : SUPPSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 59

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				5.104	5.010	3714	109630	383.316	2,6-DA/2,4-DA	UM
2				6.337	6.350	2664	58101	194.444	TNX	UO
3				7.621	7.610	1125	27333	202.039	PICRIC ACID	UMOF
4				8.161	8.190	2170	40913	218.660	DNX	UMOL
	1			8.803	8.790	2217	28135	207.036	1,2-DNB	MOF
6				9.328	9.410	1881	31108	223.801	MNX	MOL
7				10.217	10.310	525	5570	4250.701	NG	M
8				13.083	13.060	514	5223	3886.200	PETN	UMOF
9				13.357	0.000	109	791	0.000		UMO
10				13.561	0.000	454	5039	0.000		UMOL

Totals			
Unknowns	563	5830	0.000
Named	14812	306013	9566.198
Grand Total	15375	311844	9566.198

MISSING PEAKS

RT mins	Peak name
5.820	NB
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.300	4-am-2,6-DNT
9.770	2-am-4,6-DNT
10.530	RDX
80	Tetryl
00	HMX
16.280	2,2-AZOXY
16.510	4,4-AZOXY

RT mins	Peak name
16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2217	28135	103.518	1,2-DINITROBENZENE % RECOVERY

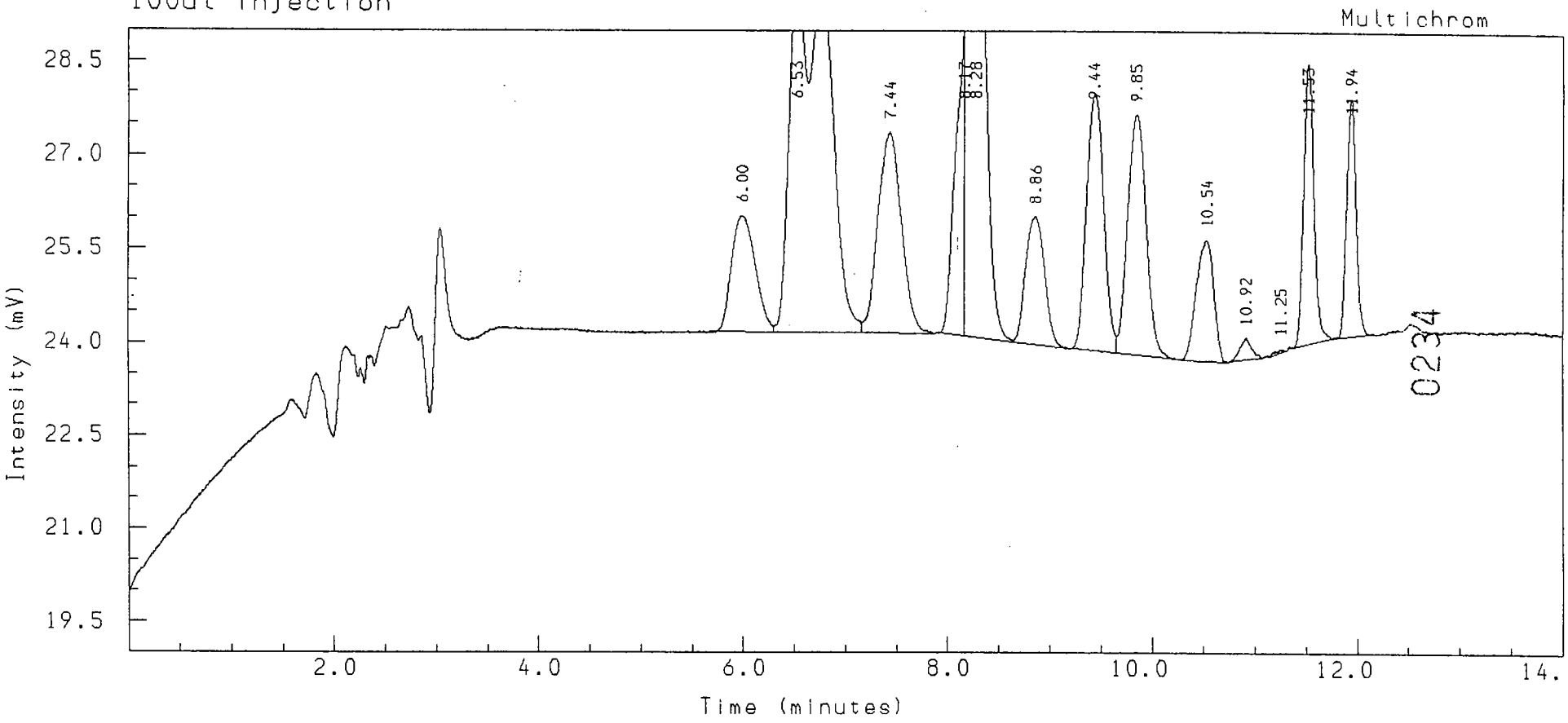
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_4
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 14JAN031056,41.1.
EXPSTD4 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EXPSTD4
Acquired on 15-JAN-2003 at 02:29
Reported on 17-JAN-2003 at 15:11

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_5

Injection Report

Acquired on 15-JAN-2003 at 02:29

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : EXPSTD4
Sample Id : EXPSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 58

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				6.001	5.820	1847	29645	192.775	NB	UMOF
2				6.530	6.660	5821	150618	399.855	1,3,5-TNB/1,3-DNB	UMO
3				7.439	7.610	3194	51100	~~402.490~~	~~PICRIC ACID~~ 2-NT/4-NT/3-NT	UMOL
4				8.168	7.980	4915	28828	173.725	2,6-DNT	UMOF
5				8.281	8.240	9698	112083	405.140	2,4-DNT/2,4,6-TNT	UMO
6	1			8.863	8.790	2040	26394	194.346	1,2-DNB	UMOL
7				9.443	9.300	4090	48218	200.687	4-am-2,6-DNT	OF
8				9.852	9.770	3836	48421	201.656	2-am-4,6-DNT	MOL
9				10.539	10.530	1936	22952	197.974	RDX	M
10				10.917	0.000	347	2803	0.000		MOF
11				11.252	0.000	64	317	0.000		UO
12				11.526	11.480	4483	30929	186.035	Tetryl	UO
13				11.941	11.900	3766	23997	191.992	HMX	UO

1/23/03 AM

Totals			
Unknowns	411	3120	0.000
Named	45628	573185	2746.676
Grand Total	46038	576305	2746.676

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
6.350	TNX
7.250	2-NT/4-NT/3-NT
8.190	DNX
9.410	MNX
10.310	NG
13.060	PETN
16.280	2,2-AZOXY
16.510	4,4-AZOXY

	ıns	Peak name
	16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2040	26394	97.173	1,2-DINITROBENZENE % RECOVERY

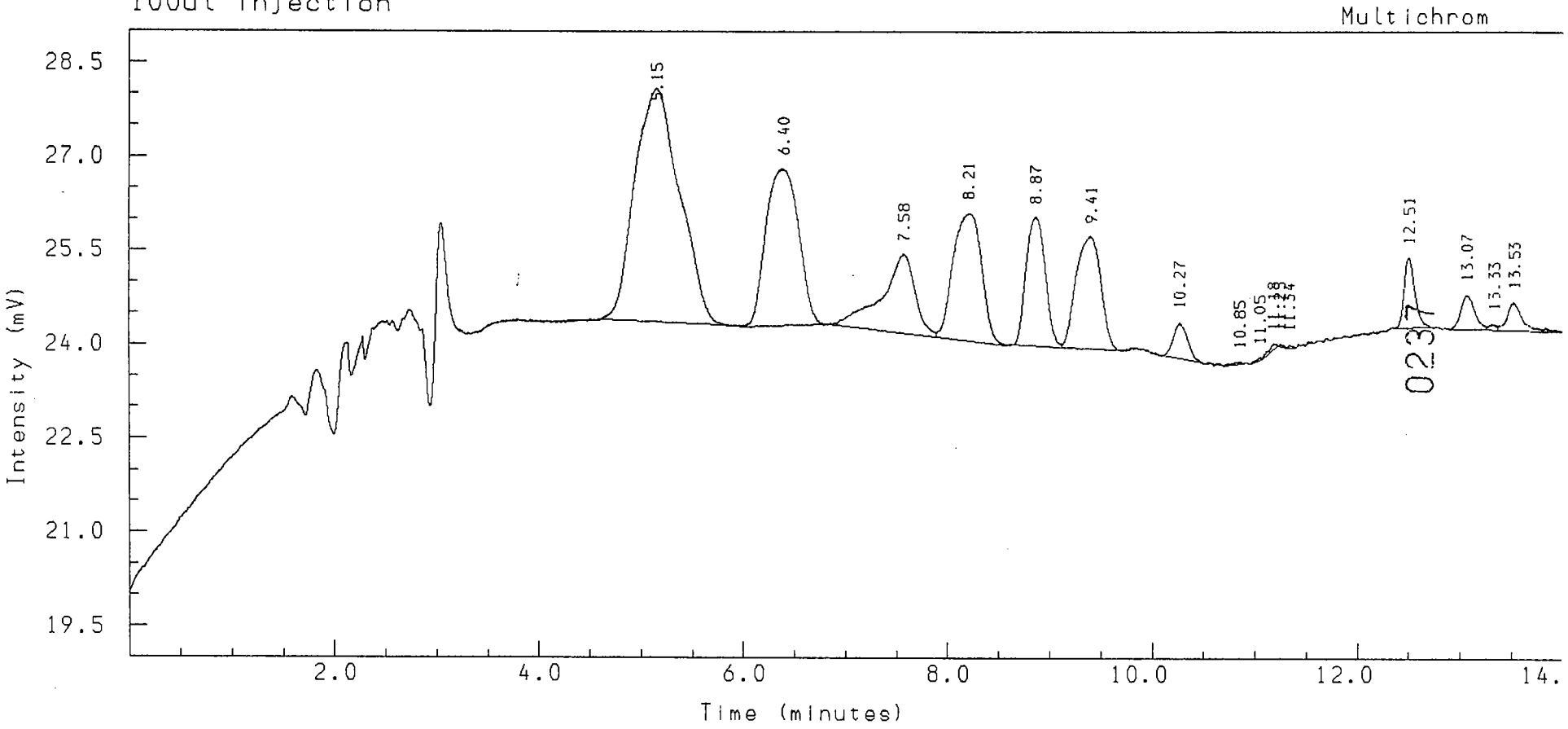
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_5
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 14JAN031056,42,1.
SUPPSTD4 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : SUPPSTD4
Acquired on 15-JAN-2003 at 02:51
Reported on 17-JAN-2003 at 15:11

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_5

Injection Report

Acquired on 15-JAN-2003 at 02:51

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : SUPPSTD4
Sample Id : SUPPSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 59

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				5.154	5.010	3724	113088	395.219	2,6-DA/2,4-DA	M
2				6.397	6.350	2497	55251	185.014	TNX	UO
3				7.579	7.610	1251	28465	211.582	PICRIC ACID	UMOF
4				8.212	8.190	2036	39047	208.549	DNX	UMOL
	1			8.870	8.790	2063	26762	197.030	1,2-DNB	MOF
6				9.412	9.410	1781	29969	215.611	MNX	MOL
7				10.274	10.310	566	5519	4212.404	NG	U
8				10.852	0.000	40	227	0.000		M
9				11.046	0.000	46	130	0.000		M
10				11.181	0.000	95	470	0.000		M
11				11.250	0.000	38	98	0.000		M
12				11.339	0.000	48	95	0.000		U
13				12.508	0.000	1099	7918	0.000		U
14				13.068	13.060	541	5059	3762.954	PETN	UMOF
15				13.334	0.000	93	480	0.000		UMO
16				13.528	0.000	431	4496	0.000		UMOL

Totals			
Unknowns	1890	13914	0.000
Named	14459	303160	9388.364
Grand Total	16349	317074	9388.364

MISSING PEAKS

RT mins	Peak name

5.820	NB
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.300	4-am-2,6-DNT
9.770	2-am-4,6-DNT
10.530	RDX
11.480	Tetryl
11.900	HMX
16.280	2,2-AZOXY
16.510	4,4-AZOXY
16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2063	26762	98.515	1,2-DINITROBENZENE % RECOVERY

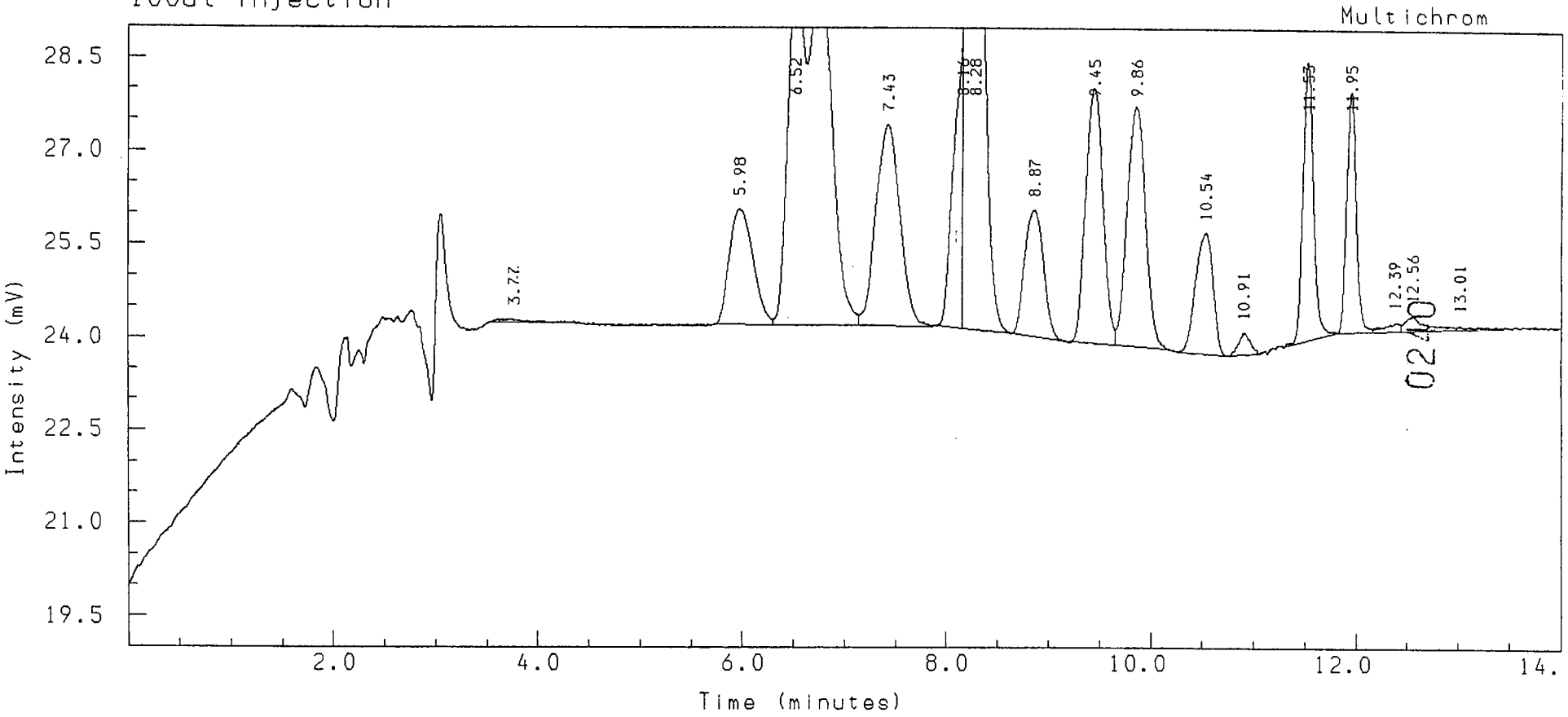
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_5
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 14JAN031056,54,1.
EXPSTD4 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EXPSTD4
Acquired on 15-JAN-2003 at 07:23
Reported on 17-JAN-2003 at 15:11

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_5

Injection Report

Acquired on 15-JAN-2003 at 07:23

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : EXPSTD4
Sample Id : EXPSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 58

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				3.766	0.000	55	952	0.000		
2				5.977	5.820	1857	29744	193.415	NB	UMOF
3				6.523	6.660	5875	151284	401.636	1,3,5-TNB/1,3-DNB	UMO
4				7.434	7.610	3205	52813	~~416.941~~	~~PICRIC ACID~~	UMOL
5				8.161	7.980	4752	28518	171.868	2,6-DNT	UMOF
6				8.280	8.240	9661	112682	407.280	2,4-DNT/2,4,6-TNT	UMOL
7	1			8.866	8.790	2034	26228	193.136	1,2-DNB	UO
8				9.452	9.300	4089	48241	200.781	4-am-2,6-DNT	UMOF
9				9.857	9.770	3835	48022	199.990	2-am-4,6-DNT	UMOL
10				10.539	10.530	1941	23027	198.602	RDX	M
11				10.910	0.000	354	2883	0.000		UO
12				11.528	11.480	4495	31997	192.451	Tetryl	UO
13				11.952	11.900	3844	24980	199.987	HMX	MOF
14				12.386	0.000	139	1575	0.000		MO
15				12.559	0.000	236	3550	0.000		MO
16				13.014	13.060	61	816	581.182	PETN	MOL
17				14.983	0.000	1261	81510	0.000		M

2-NT/3-NT/4-NT

1/23/03 LAB

Totals			
Unknowns	2045	90469	0.000
Named	45649	578352	3357.269
Grand Total	47694	668821	3357.269

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
6.350	TNX
7.250	2-NT/4-NT/3-NT
8.190	DNX
9.410	MNX
10.310	NG
16.280	2,2-AZOXY
16.510	4,4-AZOXY
16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2034	26228	96.568	1,2-DINITROBENZENE % RECOVERY

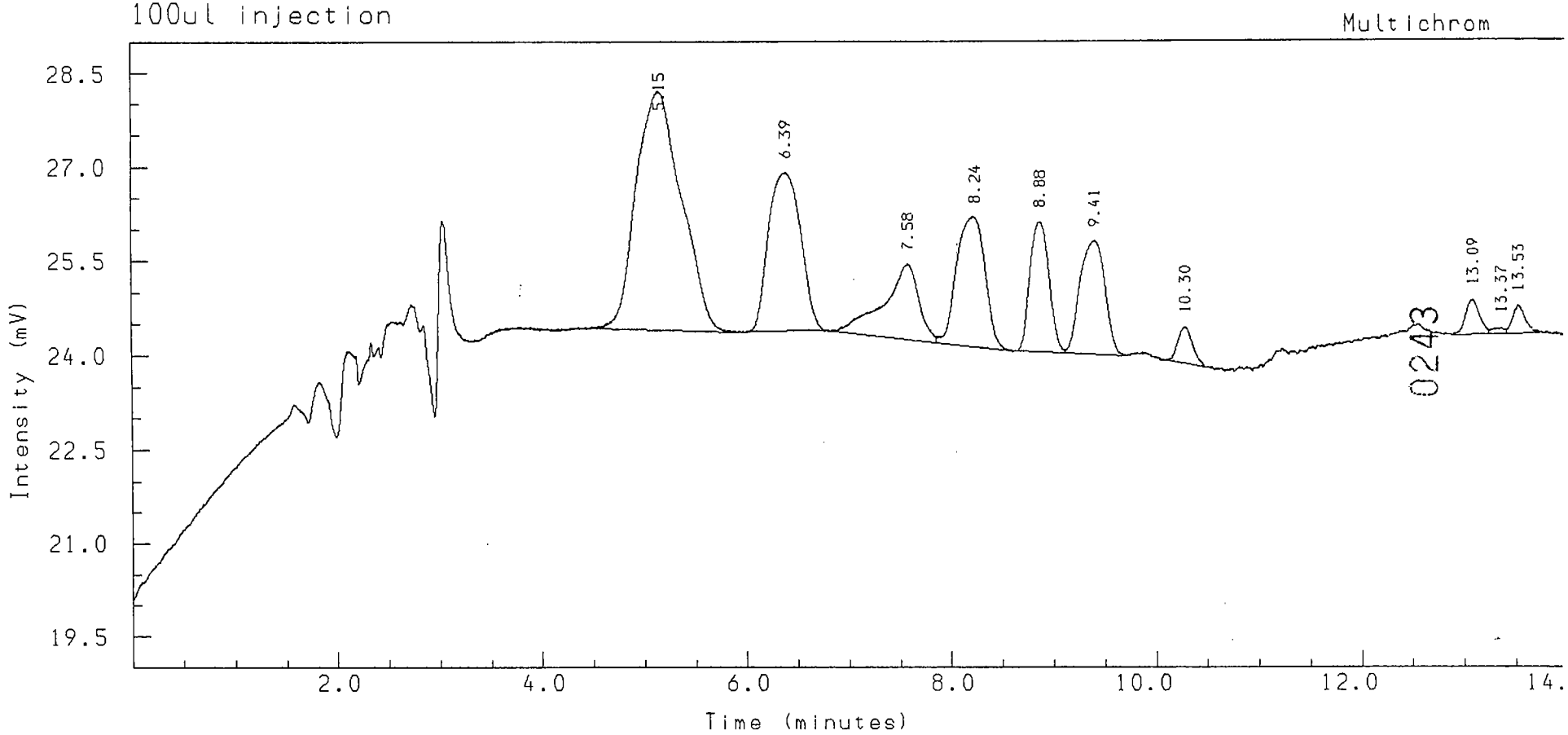
ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_5
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 14JAN031056,55,1.
SUPPSTD4 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : SUPPSTD4
Acquired on 15-JAN-2003 at 07:46
Reported on 17-JAN-2003 at 15:11

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_5

Injection Report

Acquired on 15-JAN-2003 at 07:46

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : SUPPSTD4
Sample Id : SUPPSTD4
Sample Type : Sample Amount=1.00000
Bottle No : 59

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				5.154	5.010	3795	116166	405.814	2,6-DA/2,4-DA	UM
2				6.390	6.350	2519	55095	184.495	TNX	UO
3				7.581	7.610	1195	28616	212.855	PICRIC ACID	UMOF
4				8.241	8.190	2070	39919	213.273	DNX	UMOL
	1			8.881	8.790	2073	26911	198.118	1,2-DNB	MOF
6				9.410	9.410	1807	30464	219.171	MNX	UMOL
7				10.297	10.310	571	5758	4392.724	NG	UM
8				13.087	13.060	546	5073	3773.211	PETN	UMOF
9				13.369	0.000	89	720	0.000		UMO
10				13.532	0.000	438	3735	0.000		UMOL

Totals			
Unknowns	527	4455	0.000
Named	14577	308000	9599.663
Grand Total	15104	312455	9599.663

MISSING PEAKS

RT mins	Peak name
5.820	NB
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.300	4-am-2,6-DNT
9.770	2-am-4,6-DNT
10.530	RDX
80	Tetryl
,00	HMX
16.280	2,2-AZOXY
16.510	4,4-AZOXY

0244

RT mins	Peak name
16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2073	26911	99.059	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_5
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

EBLKW1

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix: (soil/water) WATER Lab Sample ID: EBLKW1

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 13JAN031446-I031

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted: 01/13/03

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/13/03

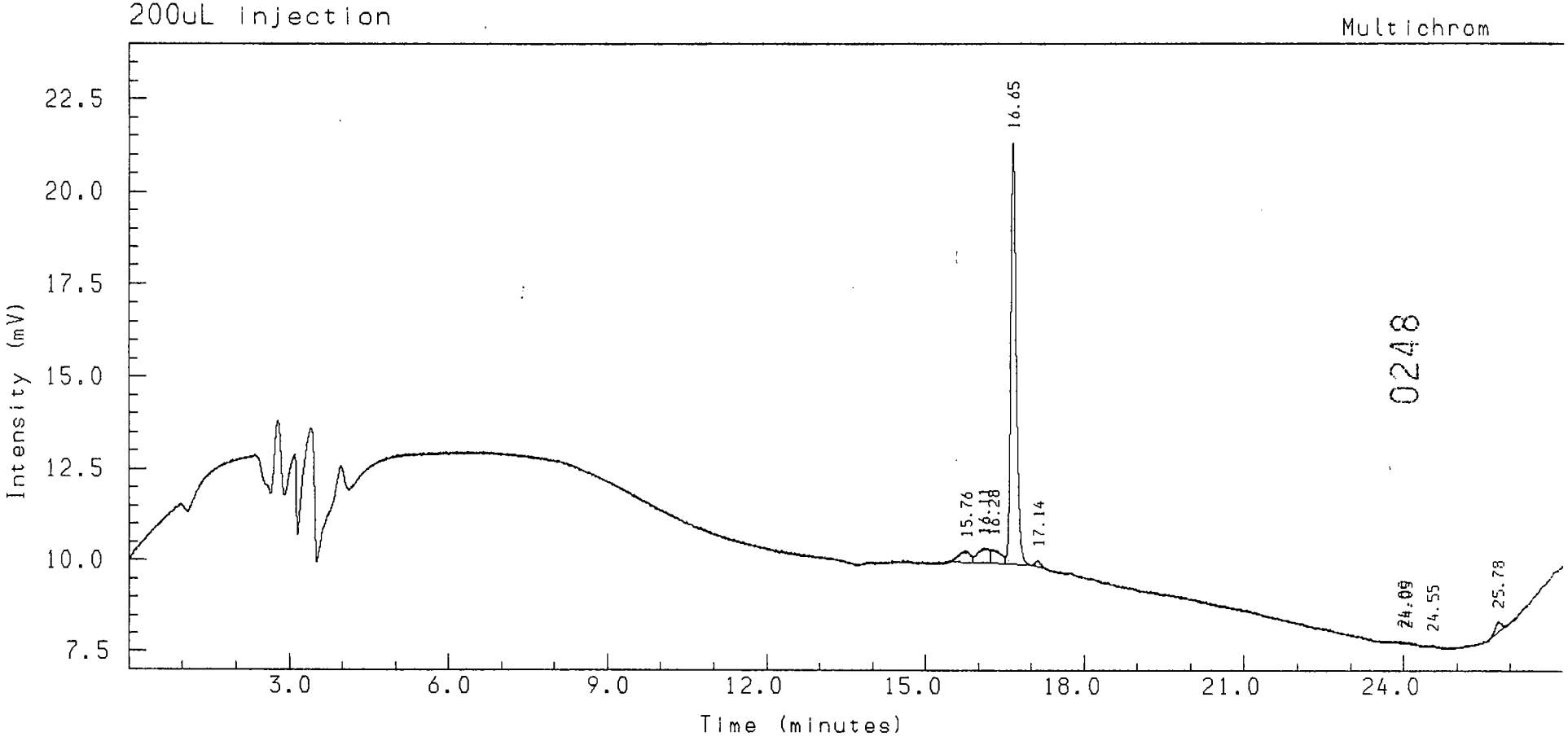
Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	0.25	U
121-82-4	RDX	0.25	U
88-89-1	Picric acid	0.25	U
99-35-4	1,3,5-Trinitrobenzene	0.25	U
99-65-0	1,3-Dinitrobenzene	0.25	U
98-95-3	Nitrobenzene	0.25	U
479-45-8	Tetryl	0.25	U
55-63-0	Nitroglycerin	5.0	U
118-96-7	2,4,6-Trinitrotoluene	0.25	U
1946-51-0	4-Amino-2,6-dinitrotoluene	0.25	U
35572-78-2	2-Amino-4,6-dinitrotoluene	0.25	U
606-20-2	2,6-Dinitrotoluene	0.25	U
121-14-2	2,4-Dinitrotoluene	0.25	U
88-72-2	2-Nitrotoluene	0.25	U
99-99-0	4-Nitrotoluene	0.25	U
99-08-1	3-Nitrotoluene	0.25	U
78-11-5	PETN	10	U

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,3,1.
EBLKW1 Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : EBLKW1
Acquired on 13-JAN-2003 at 16:16
Reported on 17-JAN-2003 at 14:01

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 13-JAN-2003 at 16:16

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : EBLKW1
Sample Id : EBLKW1
Sample Type : Sample Amount=1.00000
Bottle No : 42

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1			O	15.763	15.840	303	4830	2.027	PICRIC ACID	UMOF
2				16.109	0.000	396	6011	0.000		UMO
3			O	16.275	16.340	361	4906	-2.1172	1,3,5-TNB	UMO
	1			16.650	16.640	11396	81342	183.190	1,2-DNB	UMOL
				17.137	0.000	163	1115	0.000		UM
6			O	23.999	23.980	61	403	-0.3403	3-NT	UMOF
7				24.054	0.000	53	201	0.000		UMOL
8				24.554	0.000	70	345	0.000		U
9				25.783	0.000	287	2266	0.000		M

Totals			
Unknowns	969	9937	0.000
Named	12121	91480	182.760
Grand Total	13091	101417	182.760

MISSING PEAKS

RT mins	Peak name
9.040	2,6-DA
9.800	TNX
10.480	2,4-DA
10.770	HMX
11.680	DNX
13.370	MNX
14.510	RDX
17.550	1,3-DNB
18.380	NB
'40	Tetryl
.530	NG
19.900	2,4,6-TNT
20.300	4-am-2,6-DNT

0249

RT mins	Peak name
20.640	2-am-4,6-DNT
21.050	2,6-DNT
21.220	2,4-DNT
22.580	2-NT
23.260	4-NT
24.950	PETN

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11396	81342	91.595	1,2-DINITROBENZENE % RECOVERY

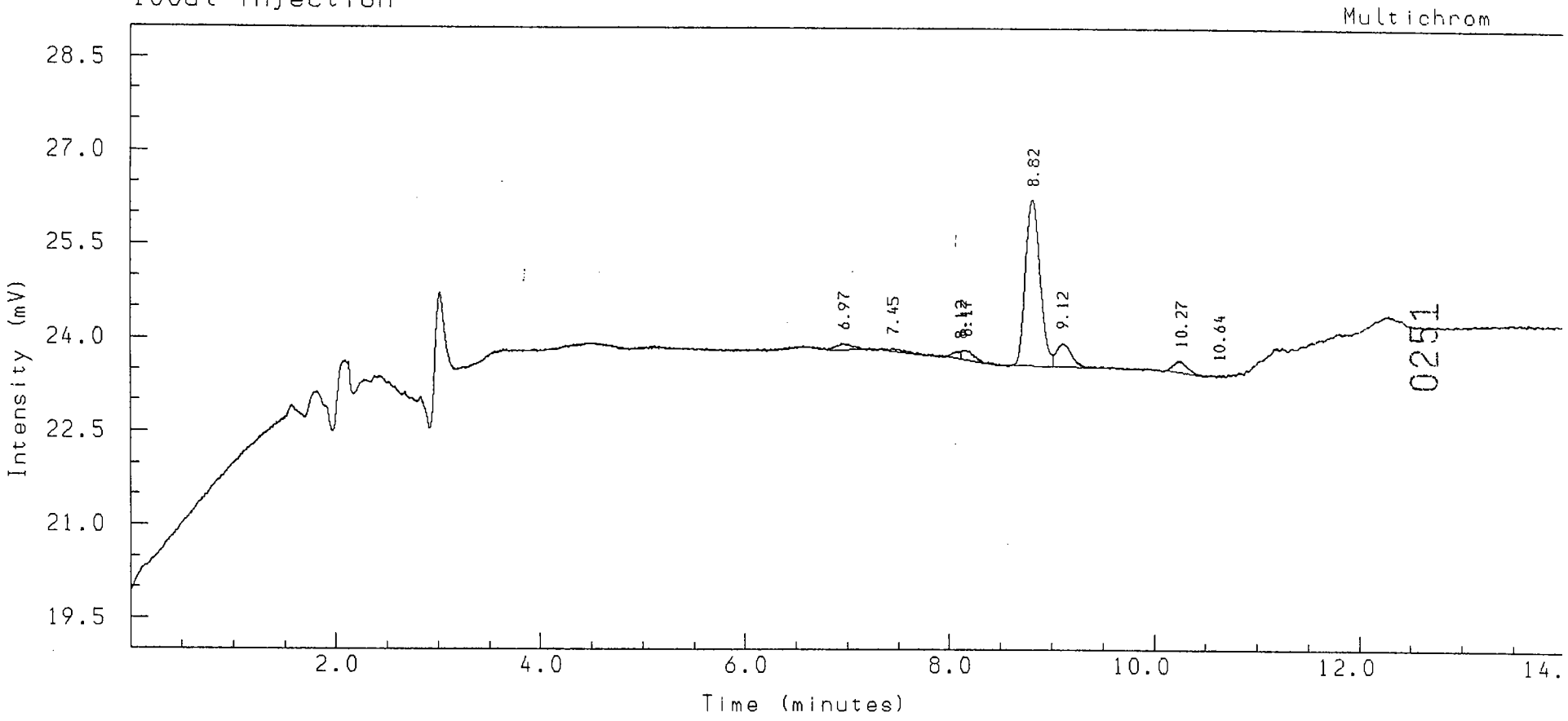
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 13JAN031633,4,1.
EBLKW1 Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : EBLKW1
Acquired on 13-JAN-2003 at 18:10
Reported on 17-JAN-2003 at 15:10

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_4

Injection Report

Acquired on 13-JAN-2003 at 18:10

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : EBLKW1
Sample Id : EBLKW1
Sample Type : Sample Amount=1.00000
Bottle No : 59

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				6.966	0.000	105	1190	0.000		M
2				7.454	0.000	50	491	0.000		M
3				8.115	0.000	117	590	0.000		UMOF
4			O	8.172	8.190	159	1210	3.605	DNX	UMOL
5	1			8.823	8.790	2664	26487	195.027	1,2-DNB	OF
6				9.117	0.000	388	3953	0.000		MOL
7				10.266	10.310	187	1764	1373.218	NG	M
8			O	10.639	10.530	41	121	6.785	RDX	M

Totals			
Unknowns	660	6224	0.000
Named	3051	29581	1578.635
Grand Total	3710	35805	1578.635

MISSING PEAKS

RT mins	Peak name
5.010	2,6-DA/2,4-DA
5.820	NB
6.350	TNX
6.660	1,3,5-TNB/1,3-DNB
7.250	2-NT/4-NT/3-NT
7.610	PICRIC ACID
7.980	2,6-DNT
8.240	2,4-DNT/2,4,6-TNT
9.299	4-am-2,6-DNT
9.410	MNX
9.770	2-am-4,6-DNT
11.480	Tetryl
11.900	HMX
13.060	PETN

	Rns	Peak name
	16.280	2,2-AZOXY
	16.510	4,4-AZOXY
	16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2664	26487	97.513	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_4
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW05MW07BMS

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix: (soil/water) WATER Lab Sample ID: 514221MS

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 13JAN031446-I241

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/09/03

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted: 01/13/03

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/14/03

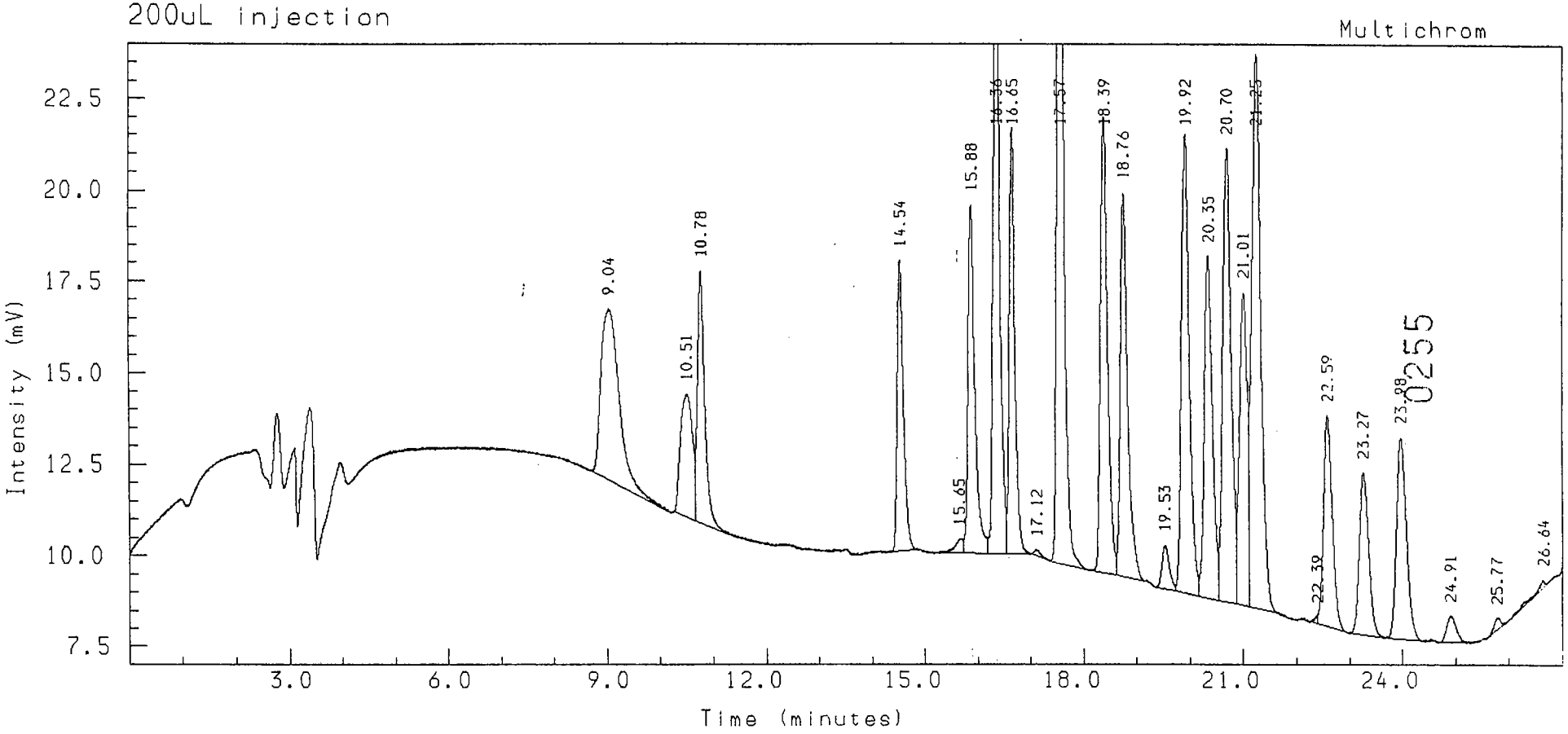
Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	3.8	
121-82-4	RDX	4.0	
88-89-1	Picric acid	3.7	
99-35-4	1,3,5-Trinitrobenzene	4.1	
99-65-0	1,3-Dinitrobenzene	4.1	
98-95-3	Nitrobenzene	4.0	
479-45-8	Tetryl	3.9	
55-63-0	Nitroglycerin	76	
118-96-7	2,4,6-Trinitrotoluene	4.1	
1946-51-0	4-Amino-2,6-dinitrotoluene	4.0	
35572-78-2	2-Amino-4,6-dinitrotoluene	4.0	
606-20-2	2,6-Dinitrotoluene	4.6	
121-14-2	2,4-Dinitrotoluene	3.7	
88-72-2	2-Nitrotoluene	3.9	
99-99-0	4-Nitrotoluene	4.1	
99-08-1	3-Nitrotoluene	4.2	
78-11-5	PETN	66	

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,24,1.
GW05MW07BMS Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : 514221MS
Acquired on 14-JAN-2003 at 05:55
Reported on 17-JAN-2003 at 14:03

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 14-JAN-2003 at 05:55

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : GW05MW07BMS
Sample Id : 514221MS
Sample Type : Sample Amount=1.00000
Bottle No : 12

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.041	9.040	4665	111332	190.289	2,6-DA	M
2				10.514	10.480	3378	52194	164.213	2,4-DA	MOF
3				10.779	10.770	6880	65529	192.383	HMX	MOL
4				14.537	14.510	7948	65155	197.510	RDX	U
5				15.654	0.000	390	3827	0.000		UMOF
6				15.881	15.840	9543	86005	186.123	PICRIC ACID	UMO
7				16.359	16.340	17781	149383	205.884	1,3,5-TNB	UO
8	1			16.652	16.640	11624	84981	191.591	1,2-DNB	UMOL
9				17.119	0.000	169	1447	0.000		M
10				17.566	17.550	22016	193763	203.925	1,3-DNB	M
11				18.388	18.380	12463	116985	201.435	NB	OF
12				18.759	18.740	10510	100630	193.678	Tetryl	UMOL
13				19.534	19.530	1192	11358	3823.897	NG	MOF
14				19.919	19.900	12537	129476	204.285	2,4,6-TNT	O
15				20.348	20.300	9364	98362	200.905	4-am-2,6-DNT	O
16				20.699	20.640	12400	138154	197.968	2-am-4,6-DNT	O
17				21.010	21.050	8559	87699	232.946	2,6-DNT	O
18				21.252	21.220	15165	179229	186.497	2,4-DNT	UMOL
19				22.390	0.000	215	732	0.000		UMOF
20				22.588	22.580	5813	66945	195.947	2-NT	UMOL
21				23.266	23.260	4483	54591	203.333	4-NT	M
22				23.977	23.980	5542	72319	208.078	3-NT	M
23				24.914	24.950	755	9337	3327.964	PETN	M
24				25.770	0.000	328	2582	0.000		M
25				26.637	0.000	213	2489	0.000		M

Totals			
Unknowns	1315	11076	0.000
Named	182618	1873427	10708.851
Grand Total	183933	1884504	10708.851

MISSING PEAKS

RT mins	Peak name
9.800	TNX
11.680	DNX
13.370	MNX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11624	84981	95.795	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

GW05MW07BMSD

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix: (soil/water) WATER Lab Sample ID: 514221MD

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 13JAN031446-I271

% Moisture: _____ decanted: (Y/N)___ Date Received: 01/09/03

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted: 01/13/03

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/14/03

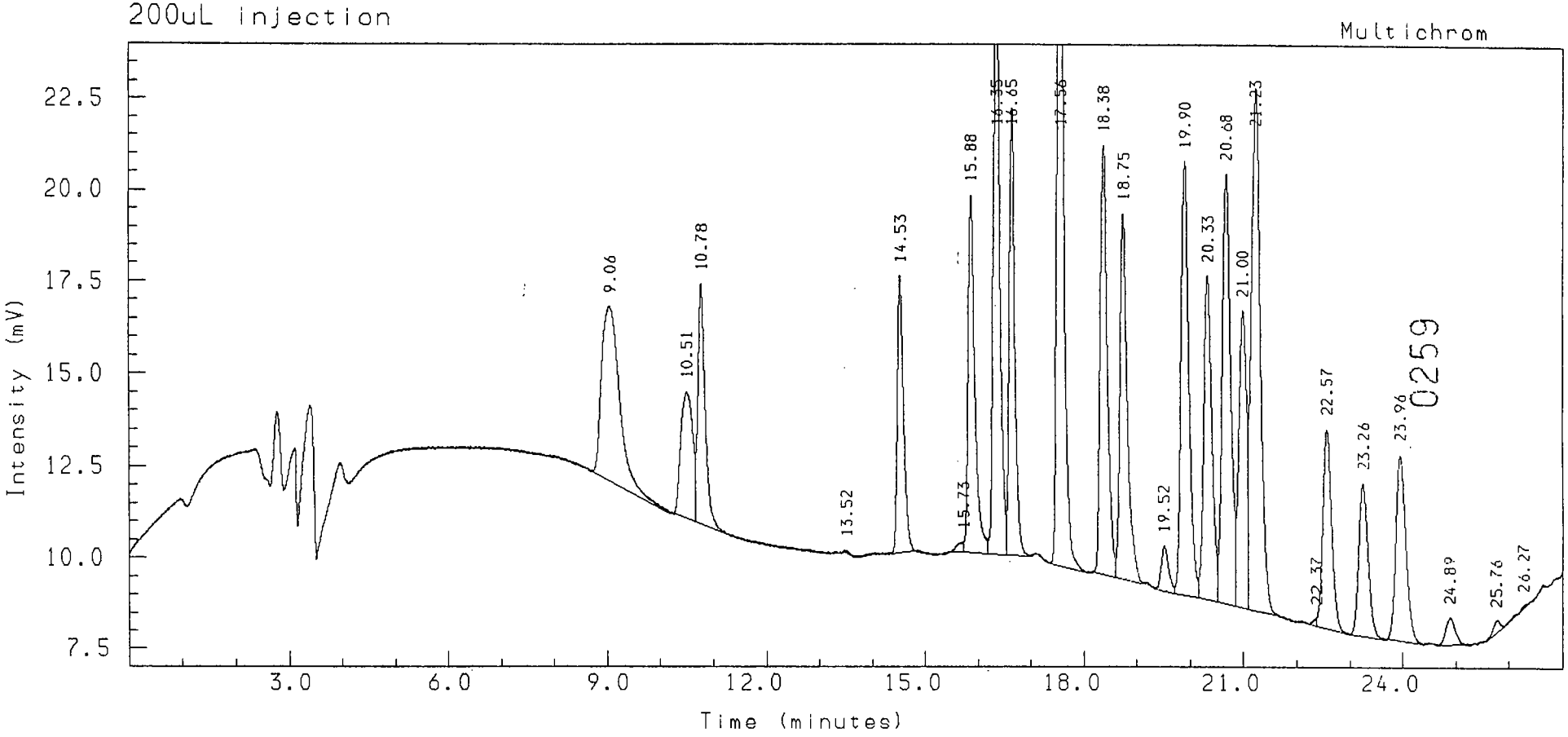
Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	3.6	
121-82-4	RDX	3.7	
88-89-1	Picric acid	3.7	
99-35-4	1,3,5-Trinitrobenzene	3.8	
99-65-0	1,3-Dinitrobenzene	3.8	
98-95-3	Nitrobenzene	3.8	
479-45-8	Tetryl	3.7	
55-63-0	Nitroglycerin	79	
118-96-7	2,4,6-Trinitrotoluene	3.8	
1946-51-0	4-Amino-2,6-dinitrotoluene	3.8	
35572-78-2	2-Amino-4,6-dinitrotoluene	3.7	
606-20-2	2,6-Dinitrotoluene	4.4	
121-14-2	2,4-Dinitrotoluene	3.5	
88-72-2	2-Nitrotoluene	3.7	
99-99-0	4-Nitrotoluene	3.8	
99-08-1	3-Nitrotoluene	3.8	
78-11-5	PETN	68	

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,27,1.
GW05MW07BMSD Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : 514221MD
Acquired on 14-JAN-2003 at 07:52
Reported on 17-JAN-2003 at 15:02

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 14-JAN-2003 at 07:52

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : GW05MW07BMSD
Sample Id : 514221MD
Sample Type : Sample Amount=1.00000
Bottle No : 12

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.057	9.040	4698	111053	189.808	2,6-DA	M
2				10.506	10.480	3428	53315	167.570	2,4-DA	MOF
3				10.779	10.770	6500	61434	180.760	HMX	MOL
4				13.517	0.000	89	487	0.000		M
5				14.534	14.510	7518	61172	185.478	RDX	UM
6				15.730	0.000	282	2406	0.000		UMOF
7				15.876	15.840	9723	86392	187.000	PICRIC ACID	UMO
8				16.352	16.340	16664	139066	191.031	1,3,5-TNB	UO
9	1			16.646	16.640	12203	88883	200.599	1,2-DNB	UMOL
10				17.559	17.550	20691	181567	191.058	1,3-DNB	M
11				18.377	18.380	11666	108962	187.666	NB	OF
12				18.748	18.740	9959	95744	184.329	Tetryl	UMOL
13				19.517	19.530	1215	11710	3942.704	NG	MOF
14				19.903	19.900	11798	122098	192.628	2,4,6-TNT	O
15				20.330	20.300	8816	92904	189.714	4-am-2,6-DNT	O
16				20.681	20.640	11695	130034	186.286	2-am-4,6-DNT	O
17				20.999	21.050	8075	83422	221.609	2,6-DNT	O
18				21.234	21.220	14259	168587	175.276	2,4-DNT	UMOL
19				22.375	0.000	225	927	0.000		UMOF
20				22.571	22.580	5432	62651	183.343	2-NT	UMOL
21				23.257	23.260	4164	51012	190.099	4-NT	M
22				23.957	23.980	5068	66235	190.447	3-NT	M
23				24.888	24.950	759	9543	3397.438	PETN	M
24				25.759	0.000	338	2925	0.000		M
25				26.270	0.000	77	358	0.000		M

Totals			
Unknowns	1011	7104	0.000
Named	174329	1785785	10734.342
Grand Total	175340	1792889	10734.342

0260

MISSING PEAKS

RT mins	Peak name
9.800	TNX
11.680	DNX
13.370	MNX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	12203	88883	100.300	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 16-JAN-2003 at 11:57

Uncalibrated peaks use user factor (0.0000)

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

W1LCS

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix: (soil/water) WATER Lab Sample ID: W1LCS

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 13JAN031446-I041

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted: 01/13/03

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/13/03

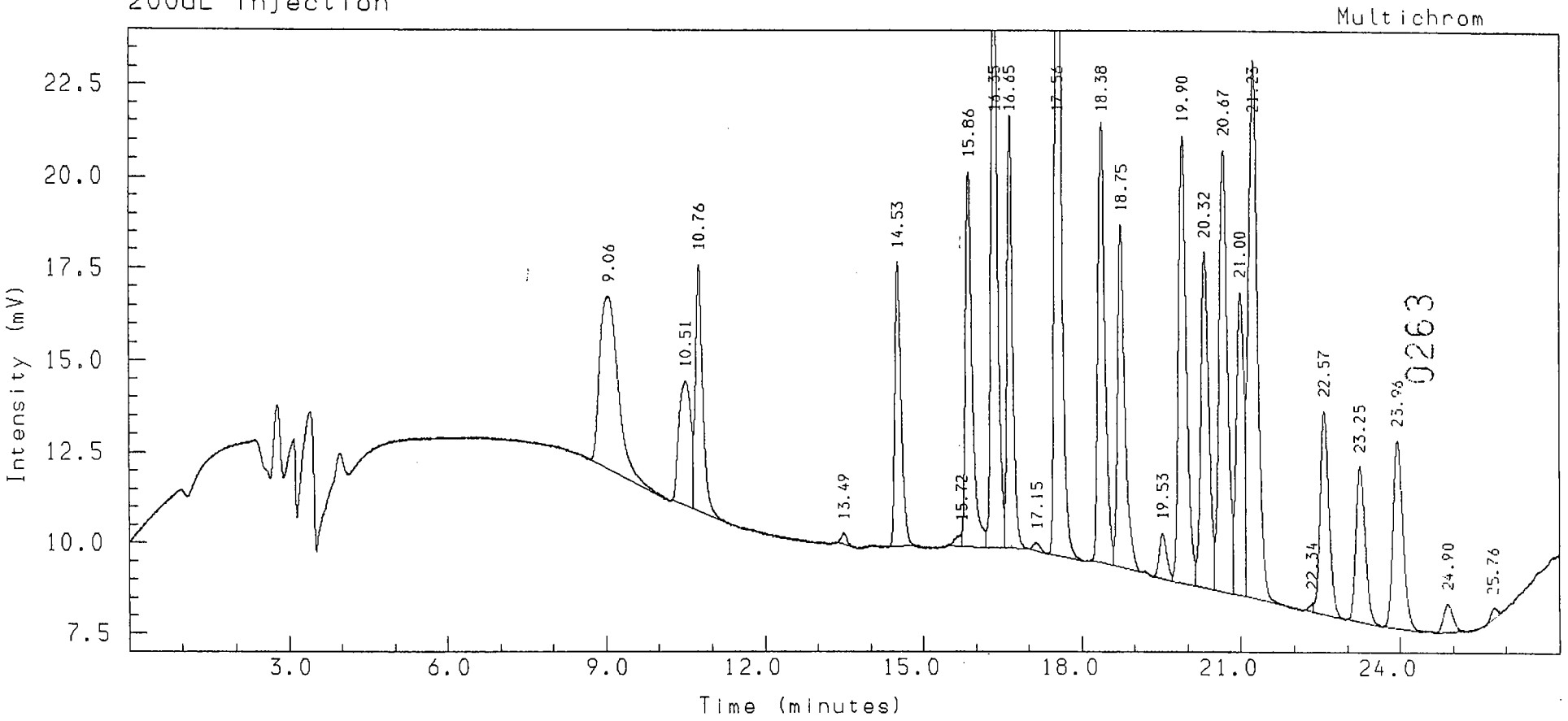
Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	3.8	
121-82-4	RDX	3.9	
88-89-1	Picric acid	4.0	
99-35-4	1,3,5-Trinitrobenzene	4.0	
99-65-0	1,3-Dinitrobenzene	3.9	
98-95-3	Nitrobenzene	3.9	
479-45-8	Tetryl	3.4	
55-63-0	Nitroglycerin	82	
118-96-7	2,4,6-Trinitrotoluene	4.0	
1946-51-0	4-Amino-2,6-dinitrotoluene	4.0	
35572-78-2	2-Amino-4,6-dinitrotoluene	3.8	
606-20-2	2,6-Dinitrotoluene	4.5	
121-14-2	2,4-Dinitrotoluene	3.6	
88-72-2	2-Nitrotoluene	3.8	
99-99-0	4-Nitrotoluene	3.9	
99-08-1	3-Nitrotoluene	3.9	
78-11-5	PETN	69	

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,4,1.
W1LCS Amount : 1.000
200uL injection



02263

Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : W1LCS
Acquired on 13-JAN-2003 at 16:55
Reported on 17-JAN-2003 at 14:02

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 13-JAN-2003 at 16:55

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : W1LCS
Sample Id : W1LCS
Sample Type : Sample Amount=1.00000
Bottle No : 42

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.059	9.040	4705	114537	195.825	2,6-DA	M
2				10.506	10.480	3403	52872	166.244	2,4-DA	MOF
3				10.761	10.770	6726	64616	189.791	HMX	MOL
4			O	13.490	13.370	306	2276	8.212	MNX	M
5				14.526	14.510	7780	65025	197.119	RDX	UM
6				15.720	0.000	332	2711	0.000		UMOF
7				15.864	15.840	10257	92357	200.528	PICRIC ACID	UMO
8				16.352	16.340	17160	143692	197.691	1,3,5-TNB	UO
9	1			16.646	16.640	11796	86286	194.603	1,2-DNB	UMOL
10				17.150	0.000	252	2299	0.000		M
11				17.557	17.550	21282	186757	196.534	1,3-DNB	M
12				18.378	18.380	12038	112410	193.585	NB	UMOF
13				18.746	18.740	9378	89670	172.704	Tetryl	UMOL
14				19.528	19.530	1257	12136	4086.726	NG	MOF
15				19.903	19.900	12210	126152	199.033	2,4,6-TNT	O
16				20.323	20.300	9187	96815	197.733	4-am-2,6-DNT	O
17				20.672	20.640	12075	134135	192.187	2-am-4,6-DNT	O
18				20.999	21.050	8323	84565	224.637	2,6-DNT	O
19				21.232	21.220	14732	175330	182.386	2,4-DNT	UMOL
20				2[illegible].343	0.000	239	1006	0.000		UMOF
21				22.575	22.580	5612	65061	190.416	2-NT	UMOL
22				23.252	23.260	4311	52449	195.411	4-NT	M
23				23.957	23.980	5178	67382	193.769	3-NT	M
24				24.901	24.950	797	9741	3464.365	PETN	M
25				25.761	0.000	295	2430	0.000		M

Totals			
Unknowns	1118	8446	0.000
Named	178512	1834263	11039.499
Grand Total	179630	1842709	11039.499

MISSING PEAKS

RT mins	Peak name
9.800	TNX
11.680	DNX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	11796	86286	97.301	1,2-DINITROBENZENE % RECOVERY

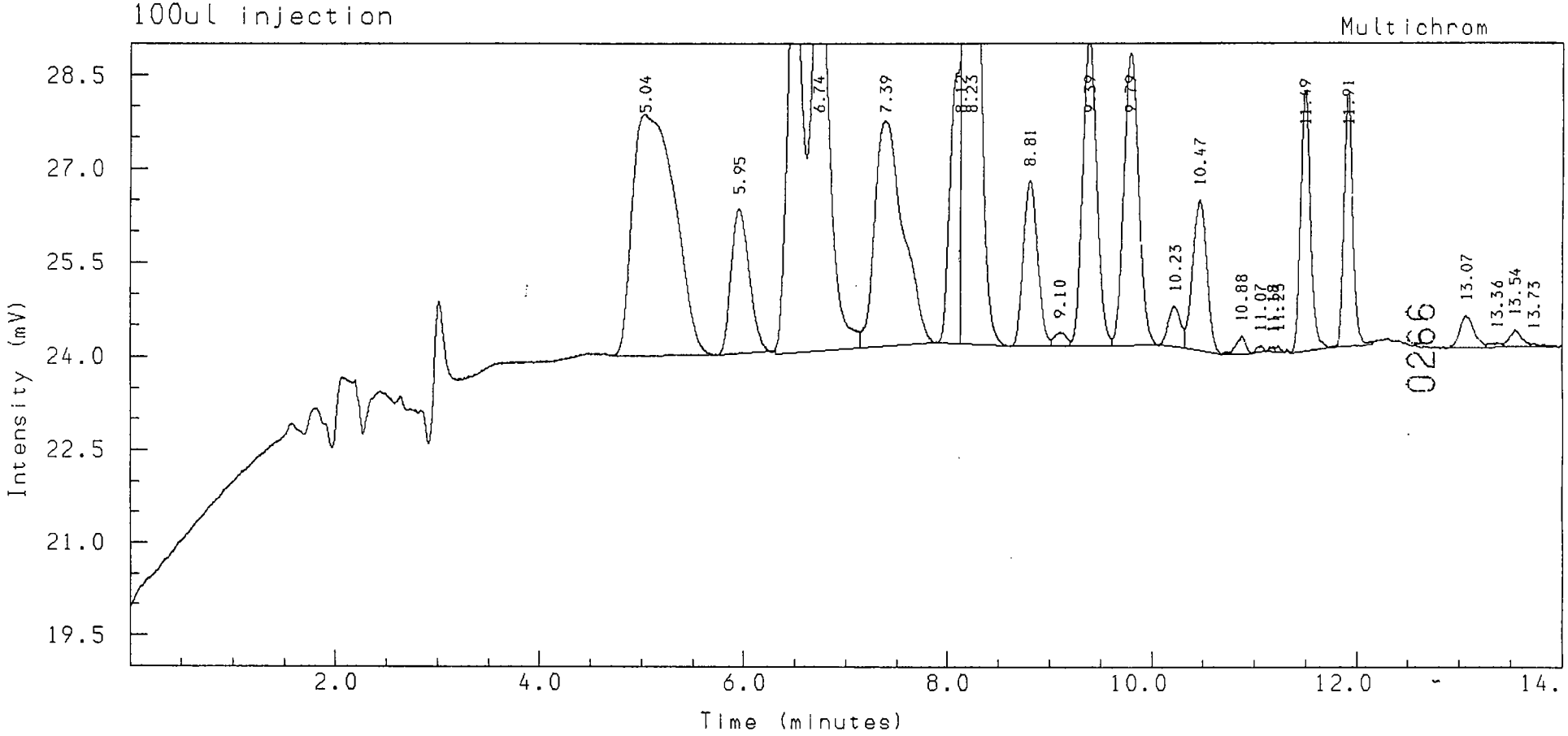
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 13JAN031633,5,1.
W1LCS Amount : 1.000
100ul injection



Instrument : LC3330-1
Channel Title : Pinnacle CN
Lims ID : W1LCS
Acquired on 13-JAN-2003 at 18:33
Reported on 17-JAN-2003 at 15:10

Method : 040202_1
Calibration : 040202_3
Run Sequence : 042102_4

Injection Report

Acquired on 13-JAN-2003 at 18:33

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : W1LCS
Sample Id : W1LCS
Sample Type : Sample Amount=1.00000
Bottle No : 59

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				5.037	5.010	3846	111161	388.587	2,6-DA/2,4-DA	M
2				5.954	5.820	2310	28363	184.455	NB	UO
3				6.737	6.660	6602	149943	398.048	1,3,5-TNB/1,3-DNB	UMOF
4				7.390	7.250	3590	69581	809.993	2-NT/4-NT/3-NT	UMOL
				8.123	7.980	4518	29386	177.069	2,6-DNT	UMOF
6				8.232	8.240	10963	111534	403.176	2,4-DNT/2,4,6-TNT	UMOL
7	1			8.808	8.790	2635	25750	189.650	1,2-DNB	UOF
8				9.103	0.000	218	1821	0.000		UMO
9				9.390	9.299	4901	47000	195.610	4-am-2,6-DNT	UMO
10				9.794	9.770	4664	46760	194.719	2-am-4,6-DNT	UMOL
11				10.226	10.310	639	5292	4040.400	NG	UMOF
12				10.470	10.530	2400	23088	199.118	RDX	UMOL
13				10.879	0.000	275	1843	0.000		M
14				11.066	0.000	105	461	0.000		M
15				11.181	0.000	75	228	0.000		OF
16				11.230	0.000	102	282	0.000		MOL
17				11.492	11.480	4145	27430	165.023	Tetryl	UO
18				11.912	11.900	4020	23745	189.951	HMX	UO
19				13.068	13.060	506	4880	3628.705	PETN	UMOF
20				13.363	0.000	75	627	0.000		UMO
21				13.544	0.000	270	2306	0.000		UMO
22				13.725	0.000	56	346	0.000		UMOL

Totals			
Unknowns	1176	7914	0.000
Named	55738	703913	11164.505
Grand Total	56914	711828	11164.505

MISSING PEAKS

RT mins	Peak name
6.350	TNX
7.610	PICRIC ACID
8.190	DNX
9.410	MNX
16.280	2,2-AZOXY
16.510	4,4-AZOXY
16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2635	25750	94.825	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_4
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

FORM 1
EXPLOSIVES ORGANICS ANALYSIS DATA SHEET

CLIENT SAMPLE NO.

W1LCSD

Lab Name: STL BURLINGTON Contract: 21015

Lab Code: STLVT Case No.: 21015 SAS No.: SDG No.: BON005

Matrix: (soil/water) WATER Lab Sample ID: W1LCSD

Sample wt/vol: 500.0 (g/ml) ML Lab File ID: 13JAN031446-I051

% Moisture: _____ decanted: (Y/N)___ Date Received: _____

Extraction: (SepF/Cont/Sonc) SOLIDPHASE Date Extracted: 01/13/03

Concentrated Extract Volume: 10(ml) Date Analyzed: 01/13/03

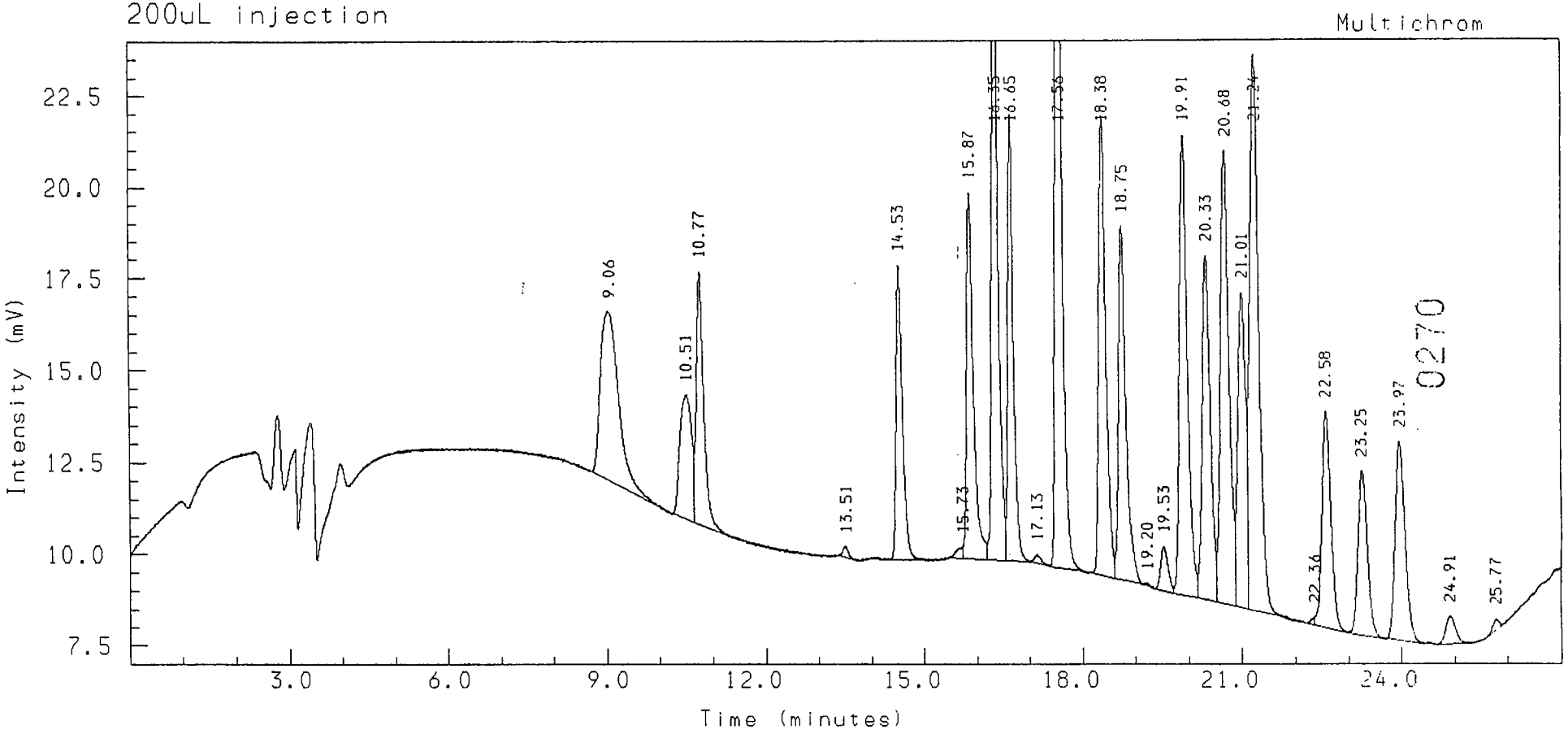
Injection Volume: 200.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ___ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
2691-41-0	HMX	3.9	
121-82-4	RDX	4.1	
88-89-1	Picric acid	3.8	
99-35-4	1,3,5-Trinitrobenzene	4.0	
99-65-0	1,3-Dinitrobenzene	4.0	
98-95-3	Nitrobenzene	4.0	
479-45-8	Tetryl	3.6	
55-63-0	Nitroglycerin	78	
118-96-7	2,4,6-Trinitrotoluene	4.1	
1946-51-0	4-Amino-2,6-dinitrotoluene	4.0	
35572-78-2	2-Amino-4,6-dinitrotoluene	3.9	
606-20-2	2,6-Dinitrotoluene	4.6	
121-14-2	2,4-Dinitrotoluene	3.8	
88-72-2	2-Nitrotoluene	4.0	
99-99-0	4-Nitrotoluene	4.1	
99-08-1	3-Nitrotoluene	4.0	
78-11-5	PETN	69	

VAX MULTICHROM V2.11

Analysis Name : [100102] 45 13JAN031446,5,1.
W1LCSD Amount : 1.000
200uL injection



Instrument : LC1488-1
Channel Title : Kromasil C-18
Lims ID : W1LCSD
Acquired on 13-JAN-2003 at 17:34
Reported on 17-JAN-2003 at 14:02

Method : 101602_1
Calibration : 101602_1
Run Sequence : 101902_5

Injection Report

Acquired on 13-JAN-2003 at 17:34

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL injection
Method Title : 8330
Sample Name : W1LCSD
Sample Id : W1LCSD
Sample Type : Sample Amount=1.00000
Bottle No : 42

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				9.059	9.040	4591	109185	186.580	2,6-DA	M
2				10.510	10.480	3378	52021	163.694	2,4-DA	MOF
3				10.766	10.770	6880	65925	193.507	HMX	MOL
4				13.506	0.000	292	1987	0.000		M
5				14.532	14.510	8023	67325	204.066	RDX	M
6				15.730	0.000	305	2554	0.000		UMOF
7				15.872	15.840	9981	88969	192.845	PICRIC ACID	UMO
8				16.354	16.340	17566	147158	202.681	1,3,5-TNB	UO
9	1			16.648	16.640	12173	88755	200.302	1,2-DNB	UMOL
10				17.132	0.000	236	1982	0.000		M
11				17.561	17.550	21974	191997	202.062	1,3-DNB	UO
12				18.383	18.380	12522	116977	201.422	NB	UMOF
13				18.752	18.740	9651	92804	178.702	Tetryl	UMOL
14				19.201	0.000	72	324	0.000		M
15				19.528	19.530	1203	11537	3884.556	NG	MOF
16				19.910	19.900	12508	129950	205.033	2,4,6-TNT	O
17				20.332	20.300	9377	98990	202.193	4-am-2,6-DNT	O
18				20.683	20.640	12338	136887	196.145	2-am-4,6-DNT	O
19				21.006	21.050	8558	86880	230.774	2,6-DNT	O
20				21.241	21.220	15171	181090	188.459	2,4-DNT	UMOL
21				22.362	0.000	224	996	0.000		UMOF
22				22.578	22.580	5853	68080	199.279	2-NT	UMOL
23				23.254	23.260	4461	54699	203.730	4-NT	M
24				23.972	23.980	5384	69943	201.193	3-NT	M
25				24.912	24.950	766	9657	3436.057	PETN	M
26				25.772	0.000	295	2334	0.000		M

Totals			
Unknowns	1423	10178	0.000
[illegible]	182357	1868829	10873.280
G[illegible] Total	183780	1879007	10873.280

MISSING PEAKS

RT mins	Peak name
9.800	TNX
11.680	DNX
13.370	MNX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	12173	88755	100.151	1,2-DINITROBENZENE % RECOVERY

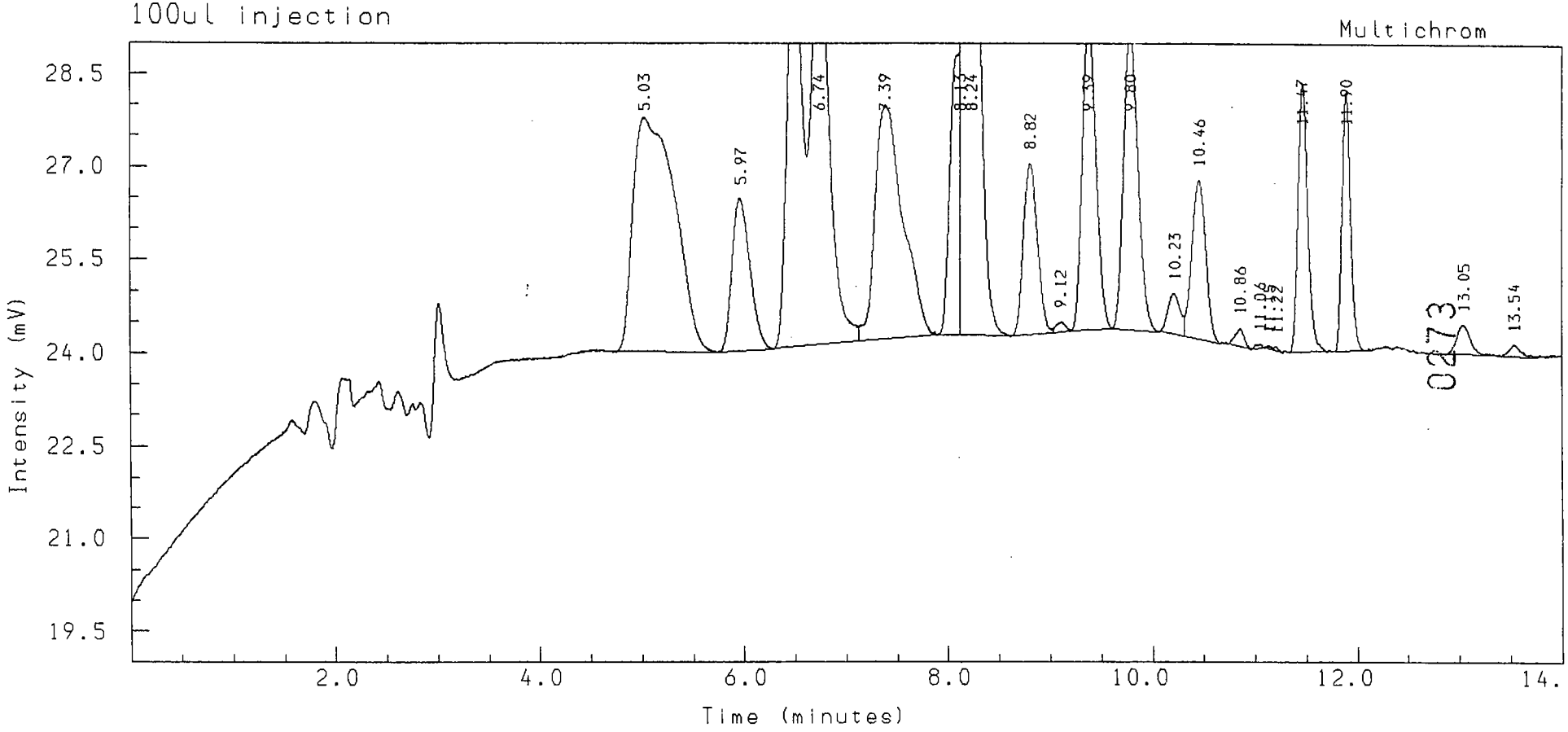
ANALYSIS SUMMARY

Method..... 101602_1
Run sequence..... 101902_5
Calibration..... 101602_1
External standard calibration using area
Method last modified on 13-JAN-2003 at 11:35

Uncalibrated peaks use user factor (0.0000)

VAX MULTICHROM V2.11

Analysis Name : [100102] 46 13JAN031633,6,1.
W1LCSD Amount : 1.000
100ul injection



Instrument	: LC3330-1	Method	: 040202_1
Channel Title	: Pinnacle CN	Calibration	: 040202_3
Lims ID	: W1LCSD	Run Sequence	: 042102_4

Acquired on 13-JAN-2003 at 18:55
Reported on 17-JAN-2003 at 15:10

Injection Report

Acquired on 13-JAN-2003 at 18:55

VAX MULTICHROM V2.11

Analyst Name : BC
Lims Id : 8330
Comment : 200uL Injection
Method Title : 8330
Sample Name : W1LCSD
Sample Id : W1LCSD
Sample Type : Sample Amount=1.00000
Bottle No : 59

PEAK INFORMATION

Peak	GRP	Cal	Flags	RT mins	RT Exp	Hght uV	Area uVs	ppb	Peak name	Type
1				5.028	5.010	3761	106680	373.162	2,6-DA/2,4-DA	M
2				5.970	5.820	2450	29954	194.779	NB	M
3				6.743	6.660	6840	151938	403.385	1,3,5-TNB/1,3-DNB	UMOF
4				7.394	7.250	3752	71057	827.925	2-NT/4-NT/3-NT	UMOL
5				8.128	7.980	4624	29555	178.083	2,6-DNT	UMOF
6				8.240	8.240	11428	115955	418.980	2,4-DNT/2,4,6-TNT	UMOL
7	1			8.817	8.790	2737	26183	192.812	1,2-DNB	MOF
8				9.117	0.000	159	1031	0.000		MOL
9				9.390	9.299	5051	46592	193.909	4-am-2,6-DNT	
10				9.799	9.770	4827	46991	195.683	2-am-4,6-DNT	M
11				10.228	10.310	642	5368	4098.431	NG	UMOF
12				10.463	10.530	2554	23948	206.316	RDX	UMOL
13				10.863	0.000	288	1733	0.000		M
14				11.061	0.000	74	307	0.000		M
15				11.154	0.000	55	168	0.000		OF
16				11.219	0.000	75	186	0.000		MOL
17				11.472	11.480	4316	28380	170.727	Tetryl	UO
18				11.897	11.900	4143	23836	190.689	HMX	UO
19				13.046	13.060	482	4514	3354.251	PETN	M
20				13.541	0.000	185	1468	0.000		M

Totals			
Unknowns	837	4893	0.000
Named	57607	710952	10999.134
Grand Total	58443	715845	10999.134

MISSING PEAKS

RT mins	Peak name
6.350	TNX
7.610	PICRIC ACID
8.190	DNX
9.410	MNX
16.280	2,2-AZOXY
16.510	4,4-AZOXY
16.750	PYX

PEAK GROUP INFORMATION

Peak GRP	Hght uV	Area uVs	ppb	Peak name
G 1	2737	26183	96.406	1,2-DINITROBENZENE % RECOVERY

ANALYSIS SUMMARY

Method..... 040202_1
Run sequence..... 042102_4
Calibration..... 040202_3
External standard calibration using area
Method last modified on 30-DEC-2002 at 11:33

Uncalibrated peaks use user factor (0.0000)

STL BURL TON

8330MMR:EX Porapak RDX Cartridges); Water

CLIENT: URSCOR, [redacted]
CASE: 21015, 22041
SDG: BON005, [redacted]
ETR: 91624, 91649
DATE: 1/13/03

ANALYST: JLH
SPIKER: JLH
WITNESS: CGC
MMR Supp. MTX Lot#: B2060389-1A
*LCSD required if a MS/MD is not extracted in the batch.

Prep Start Time: 0800
SURR LOT # OP1227020
MTX LOT # OP1115020
Acetonitrile LOT # X34477
Porapak Cart. LOT # W2267B3

564/24

STL ID	CLIENT ID	Sample Volume (500 mL). For the BLK and LCS only, use 25% Spring water/ 75% Nanopure.	Surr: 50 uL Surr (40 ppm) to all samples	Mtx: 50 uL 8330 MTX (40 ppm) to MS/MD/LCS only	Mtx: 50 uL 8330 MMR supplemental MTX (40/800ppm) to MS/MSD/LCS only	Elute 10 mL Methylene Chloride(at a gravity flow rate) thru Porapak RDX Cartridge (discard)	Elute 15 mL ACN (at a gravity flow rate) thru Porapak RDX Cartridge (discard)	Elute 30 mL Nanopure water thru cartridge (discard)	Elute sample (500 mLs) thru cartridge (discard)	Elute 5 mLs ACN (at a gravity flow rate) thru cartridge (collect)	Add 5 mLs Nanopure water to 5ml ACN extract	Place the 10ml extract in a 0.45um autovial	Shake, discard approx. 4mls of the extract	Collect remaining sample in a 4ml labeled amber vial.	Give extract w/paperwork to HPLC.
	BLK W1	500	✓	X	X	JLH	JLH	JLH	JLH	JLH	JLH	JLH	JLH	JLH	JLH
	LCS	500	✓	✓	X										
	*LCSD	500	✓	✓	✓										
514220	GWSSMW02B	500	✓	X	X										
514221	GWSSMW03B	500	✓	X	X										
514221MS	GWSSMW03BMS	500	✓	✓	✓										
514221MD	GWSSMW03BMSD	500	✓	✓	✓										
514222	GWSSMW10	500	✓	X	X										
514223	GW505MW02B	500	✓	X	X										
514224	GW1005MW03B	500	✓	X	X										
514446	00355	500	✓	X	X										
514447	00357	500	✓	X	X										
514448	00359	500	✓	X	X										
514449	00773	500	✓	X	X										
514450	00772	500	✓	X	X										
514451	00797	500	✓	X	X										
514452	00783	500	✓	X	X										
514453	00780	500	✓	X	X										
514454	00776	500	✓	X	X										
514455	00777	500	✓	X	X										
514456	00787	500	✓	X	X										

JLH 1/13/03

1/13/03

JLH

024

SEVERN TRENT LABORATORIES-VT
HPLC RUN LOG

Analysis: Nitroaromatics/Nitramines by 8330 Date: 10/16/02

HPLC ID: LC1488 Ch.45 HPLC Operator: AC

Column ID(s): Phenomenex Kromasil C-18 (380575) Project: 100102

Client ID: URSCOR 50N605

Notes: 200ul injection Standards:

EK: 101602_1

160ct02

1513

No.	Sample Description	
01	BLANK	
02	MMRSTD1(LC10150206)	
03	MMRSTD2(LC10150205)	
04	MMRSTD3(LC10150204)	
05	MMRSTD4(LC10150203)	
06	MMRSTD5(LC10150202)	
07	MMRSTD6(LC10150201)	
08	ICV(LC10140202)	
09	BLANK	
10	EBLKD8 ✓	c
11	D8LCS ✓	c
12	D8LCSD ✓	c
13	505520 ✓	c
14	505521 ✓	
15	505522 ✓	
16	505523 ✓	c
17	505524 ✓	
18	505525 ✓	
19	505526 ✓	
20	Blank	
21	MMRSTD4 @	
22	505527 ✓	
23	505528 ✓	
24	505516 ✓	
25	505517 ✓	
26	505518 ✓	c
27	505519 ✓	
28	505529 ✓	c
29	505530 ✓	c
30	505533 ✓	
31	505535 ✓	
32	Blank	
33	MMRSTD4 ok	
34	505536 ✓	c
35	505538 ✓	
36	EBLKE1 ✓	c
37	E1LCS ✓	c
38	E1LCSD ✓	c
39	505701 ✓	
40	505702 ✓	
41	505703 ✓	
42	505705 ✓	c
43	505704 ✓	
44	BLANK	
45	MMRSTD4 ok	
46	505697 ✓	
47	505698 ✓	
48	505699 ✓	
49	505710 ✓	c
50	505711 ✓	c

No.	Sample Description	
51	505716 ✓	c
52	505706 ✓	
53	505707 ✓	
54	505708 ✓	
55	505709 ✓	
56	BLANK	
57	MMRSTD4 ok	
58	505712 ✓	
59	505713 ✓	c
60	505714 ✓	c
61	505715 ✓	
62	505717 ✓	c
63	EBLKC8	
64	C8LCS	
65	C8LCSD	
66	505093	
67	505094	
68	BLANK	
69	MMRSTD4 ok	
70	EBLKD7	
71	D7LCS	
72	505083	
73	505084	
74	505085	
75	505086	
76	505087	
77	505088	
78	505089	
79	505090	
80	BLANK	
81	MMRSTD4 ok	
82	505091	
83	505092	
84	505095	
85	505096	
86	505083MS	
87	505083MD	
88	EBLKE5 ✓	
89	E5LCS ✓	
90	505897 ✓	
91	505899 ✓	
92		
93		
94		
95		
96		
97	WB 10/22/02	
98		
99		
100		

0278

0065

SEVERN TRENT LABORATORIES-VT

HPLC RUN LOG

Analysis: Nitroaromatics/Nitramines by 8330 Date: 01/10/03

HPLC ID: LC1488 Ch 45 HPLC Operator: WRB

olumn ID(s): Phenomenex Kromasil C-18 (380575) Project: 100102

Client ID: URSCOR ~~91625~~ BONDOS

WRB 1/17/03

Notes: 200ul injection

Standards:

	No.	Sample Description
5	01	S13596
6	02	S13597
7	03	S13598
8	04	S13599
9	05	S13600
10	06	S13601
11	07	S13602
12	08	S13598MS
13	09	BLANK
14	10	MMRSTD4 OK
15	11	S13598MD
16	12	EBLKV8 ✓ C
17	13	V8LCS ✓ C
18	14	S14075 ✓
19	15	S14077 ✓ C
20	16	S14078 ✓ C
21	17	S14079 ✓ C
22	18	S14072 ✓
23	19	S14073 ✓
24	20	S14074 ✓
25	21	BLANK
26	22	MMRSTD4
27	23	S14076 ✓
28	24	S14080 ✓
29	25	S14083 ✓
30	26	S14084 ✓
31	27	S14085 ✓ C
32	28	S14086 ✓ C
33	29	S14087 ✓ C
34	30	S14088 ✓ C
35	31	S14089 ✓ WRB 1/11/03
36	32	~~S14071~~ ~~S14072MS~~ no window
37	33	~~BLANK~~ S14072MS ✓ 11 in window
38	34	~~MMRSTD4 OK~~ BLANK
39	35	MMRSTD4 ~~S14072MD OK~~
40	36	~~S14087MR~~ S14072MD ✓
41	37	~~S14087MD~~ S14087MS ✓ C
42	38	S14087MD ✓ C
43	39	BLANK
44	40	MMRSTD4
1	41	BLANK
2	42	MMRSTD4 OK
3	43	EBLKW1 ✓ C
4	44	W1LCS ✓ C
5	45	W1LCSD ✓ C
6	46	S14446 ✓
7	47	S14447 ✓ C
8	48	S14448 ✓
9	49	S14449 ✓
10	50	S14450 ✓
11	51	S14451 ✓
12	52	S14452 ✓
13	53	BLANK
14	54	MMRSTD4 OK
15	55	S14453 ✓
16	56	S14454 ✓
17	57	S14455 ✓
18	58	S14456 ✓ C
19	59	~~S14420~~ S14220 ✓ Neats DL C
20	60	~~S14421~~ S14221 ✓
21	61	S14222 ✓ C
22	62	S14223 ✓
23	63	S14224 ✓
24	64	S14221MS ✓
25	65	BLANK
26	66	MMRSTD4 OK
27	67	S14221MD ✓
28	68	S13581DL 1:50 ✓ C
29	69	S13597DL 1:20 ✓ C
30	70	BLANK
31	71	MMRSTD4 OK
32	72	S13594PDA
33	73	S13595PDA
34	74	S13596PDA
35	75	S13597PDA
36	76	S13598PDA
37	77	S13599PDA
38	78	~~S13~~ S13600PDA
39	79	S13601PDA
40	80	S13602PDA
41	81	BLANK
42	82	MMRSTD4
43	83	S14220DL 1:6 ✓ C
44	84	EBLKV9 ✓ C
45	85	V9LCS ✓ C
46	86	S14249 ✓
47	87	S14251 ✓ ~~S14250~~ Neats 1:2 C
48	88	S14252 ✓
49	89	S14253 ✓
50	90	S14251MS ✓ C
51	91	S14251MD ✓ C
52	92	S14250 ✓
53	93	BLANK
54	94	MMRSTD4 OK
55	95	~~CAL-TOP~~ EBLKW4 - Re Run
56	96	W4LCS
57	97	508643R1 ✓ C
58	98	508645R1 ✓
59	99	S14648 ✓ C
60	100	S14649 ✓

101902-4

08JAN03

1241

EB 101902-5

07JAN03

1446

0279

p.1 of 3

0017

SEVERN TRENT LABORATORIES-VERMONT
HPLC RUN LOG

Analysis: Nitroaromatics/Nitramines Conf. by 8330 Date: 4/2/02 MBR

HPLC ID: LC3330 Ch.46 HPLC Operator: RV

Column ID(s): Pinnacle CN (00060027C) Project: 040102 04/03/02

Client ID: UESCER BOMBS

Notes: 100ul injection Standards:

GM, EC: 040202-1

ER: 040202-1

02APR02 0855

No.	Sample Description
01	BLANK
02	EXPSTD1(LC03300212)
03	EXPSTD2(LC03300211)
04	EXPSTD3(LC03300210)
05	EXPSTD4(LC03300209)
06	EXPSTD5(LC03300208)
07	EXPSTD6(LC03300207)
08	SUPPSTD1(LC03300218)
09	SUPPSTD2(LC03300217)
10	SUPPSTD3(LC03300216)
11	SUPPSTD4(LC03300215)
12	SUPPSTD5(LC03300214)
13	SUPPSTD6(LC03300213)
14	EXPICV(LC04010203)
15	SUPPICV(LC04010204)
16	BLANK
17	GBLKX7 ✓
18	X7LCS ✓
19	X7LCSD ✓
20	480986 ✓
21	480989 ✓
22	480994 ✓
23	EBLK42 ✓
24	Y2LCS ✓
25	481258 x
26	481259 ✓
27	BLANK
28	EXPSTD4 OK
29	SUPPSTD4 OK
30	481260 ✓
31	481261 x
32	481262 ✓
33	481263 ✓
34	481264 ✓
35	481265 ✓
36	481266 ✓
37	481270 ✓
38	481271 x
39	481267 x
40	BLANK
41	EXPSTD4 OK
42	SUPPSTD4 OK
43	481257 x
44	481257MS x
45	481257MD x
46	481258MS x
47	481258MD x
48	481229
49	EBLKV6
50	V6LCS

0280

No.	Sample Description
51	V6LCSD
52	479245
53	BLANK
54	EXPSTD4 OK
55	SUPPSTD4 OK
56	479246
57	479247
58	479248
59	479249
60	479250
61	479253
62	479254
63	479255
64	479256
65	479257
66	BLANK
67	EXPSTD4 OK
68	SUPPSTD4 OK
69	479258
70	479259
71	479260
72	479261
73	479262
74	479263
75	479264
76	479265
77	BLANK
78	EXPSTD4 OK
79	SUPPSTD4 OK
80	EBLK47 ✓
81	Y7LCS ✓
82	481432 X
83	481433 ✓
84	481434 ✓
85	481435 ✓
86	481436 ✓
87	481437 ✓
88	481438 ✓
89	481439 ✓
90	
91	
92	
93	
94	
95	4/4/02
96	MBR
97	
98	
99	
100	

continues 040202-2 Pg 18

0026

SEVERN TRENT LABORATORIES-VERMONT

HPLC RUN LOG

Analysis: Nitroaromatics/Nitramines Conf. by 8330 Date: 01/14/03

HPLC ID: LC3330 Ch.46 HPLC Operator: WBr

Column ID(s): Pinnacle CN (00060027C) Project: ~~040102~~ 100102

Client ID: URSCor BONDS

Notes: 100ul injection

Standards:

ER 042102_1

07JAN03

1723

ER 042102_2

08JAN03

1858

ER 042102_3

09JAN03

1621

ER 042102_4

13JAN03

1633

	No.	Sample Description
28	01	EXPSTD4 ac
29	02	SUPPSTD4 ac
30	03	S13944 ✓
31	04	BLANK
23	05	EXPSTD4 ac
33	06	SUPPSTD4 ac
1	07	BLANK
2	08	EXPSTD4
3	09	SUPPSTD4
4	10	EBLKV7 ✓
5	11	V7LCS ✓
6	12	V7LCSD ✓
7	13	S13985 ✓
8	14	S13986 ✓
9	15	S13987 ✓
10	16	S13989 ✓
11	17	S13982 ✓
12	18	S13983 ✓
13	19	S13984 ✓
14	20	BLANK
15	21	EXPSTD4 ac
16	22	SUPPSTD4 ac
17	23	S13990 ✓
18	24	S13995 ✓
19	25	BLANK
20	26	EXPSTD4 ac
21	27	SUPPSTD4
1	28	BLANK
2	29	EXPSTD4 ac
3	30	SUPPSTD4 ac
4	31	EBLKV8 ✓
5	32	V8LCS ✓
6	33	S14075 ✓
7	34	S14077 ✓
8	35	S14078 ✓
9	36	S14079 ✓
10	37	S14072 ✓
11	38	S14073 ✓
12	39	S14074 ✓
13	40	S14076 ✓
14	41	BLANK
15	42	EXPSTD4 ac
16	43	SUPPSTD4 ac
17	44	S14080 ✓
18	45	S14083 ✓
19	46	S14084 ✓
20	47	S14085 ✓
21	48	S14086 ✓
22	49	S14087 ✓
23	50	S14088 ✓

	No.	Sample Description
24	51	S14089 ✓
25	52	S14081 ✓
26	53	S14072MS ✓
27	54	BLANK
28	55	EXPSTD4
29	56	SUPPSTD4
30	57	S14072MD ✓
31	58	S14087MS ✓
32	59	S14087MD
33	60	BLANK
34	61	EXPSTD4 ac
35	62	SUPPSTD4 ac
1	63	BLANK
2	64	EXPSTD4 ac
3	65	SUPPSTD4 ac
4	66	EBLKW1 ✓
5	67	W1LCS ✓
6	68	W1LCSD ✓
7	69	S14446 ✓
8	70	S14447 ✓
9	71	S14448 ✓
10	72	S14444 ✓
11	73	S14450 ✓
12	74	S14451 ✓
13	75	S14452 ✓
14	76	BLANK
15	77	EXPSTD4 ac
16	78	SUPPSTD4 ac
17	79	S14453 ✓
18	80	S14454 ✓
19	81	S14455 ✓
20	82	S14456 ✓
21	83	BLANK
22	84	EXPSTD4 ac
23	85	SUPPSTD4 ac
	86	
	87	
	88	
	89	
	90	
	91	
	92	
	93	
	94	
	95	
	96	
	97	
	98	
	99	
	100	

WBr 1/15/03

0281

0027

SEVERN TRENT LABORATORIES-VERMONT
HPLC RUN LOG

Analysis: Nitroaromatics/Nitramines Conf. by 8330
Date: 01/15/03
HPLC ID: LC3330 Ch.46
HPLC Operator: WBR
Column ID(s): Pinnacle CN (00060027C)
Project: ~~040102~~ 10D102
Client ID: USRCOR BON005
1/23/03 LAM

Notes: 100ul injection

Standards:

ER 042102-5
14JAN03
1056

No.	Sample Description
01	BLANK
02	EXPS1D4 OK
03	SUPPS1D4 OK
04	EBLKU8
05	U8LCS
06	513576
07	513579
08	513580
09	513581D1; 1:50
10	513581
11	513582
12	513583
13	513584
14	BLANK
15	EXPS1D4 OK
16	SUPPS1D4 OK
17	513585
18	513586
19	513587
20	513588
21	513589
22	513580MS
23	513580MD
24	EBLKU9 ~~513~~ WBR 1/15/03
25	~~513~~ U9LCS
26	513590
27	BLANK
28	EXPS1D4 OK
29	SUPPS1D4 OK
30	513591
31	513592
32	513593
33	513594
34	513595
35	513596
36	513597D1; 1:20
37	513597
38	513598
39	513599
40	BLANK
41	EXPS1D4 OK
42	SUPPS1D4 OK
43	513600
44	513601
45	513602
46	513598MS
47	513598MD
48	514220D1 ~~514220D1~~; 1:6
49	514220 514220
50	~~514221~~ 514221 WBR 1/15/03

ER 042102-6
16JAN03
1035

No.	Sample Description
51	WBR ~~514422~~ 514222
52	WBR ~~514423~~ 514223
53	BLANK
54	EXPS1D4 OK
55	SUPPS1D4 OK
56	~~514424~~ 514224
57	WBR 1/15/03 514221MS 514221MS
58	~~514421MD~~ 514221MD
59	EBLKV9
60	V9LCS
61	514249
62	514251 Needs 1:2
63	514252
64	514253
65	514250
66	BLANK
67	EXPS1D4 OK
68	SUPPS1D4 OK
69	WBR ~~514244MS~~ 514251MS
70	1/15/03 ~~514244MD~~ 514251MD
71	513583R1
72	514251D1; 1:2
73	BLANK
74	#SB602D1; 1:2
75	BLANK
76	EXPS1D4 OK
77	SUPPS1D4 OK
78	BLANK
79	EXPS1D4 OK
80	SUPPS1D4 OK
81	513583DL; 1:10
82	513584DL; 1:10
83	513585DL; 1:10
84	513586DL; 1:10
85	513587DL; 1:10
86	513590DL; 1:10
87	513591DL; 1:10
88	513592DL; 1:10
89	513602DL; 1:10
90	BLANK
91	EXPS1D4 OK
92	SUPPS1D4 OK
93	
94	
95	
96	
97	
98	
99	
100	

0282

SEVERN TRENT LABORATORIES LOG-IN SHEET - Form DC-1

Lab Name: STL Burlington

Received By (Print or Type Name): Angela M. Henry

Log-in Date: 01/09/03

Received By (Signature): Angela Henry

Case Number:	21015
Sample Delivery Group No.:	BON005
ETR Number:	91624

REMARKS:

1. Custody Seal	Absent*
2. Custody Seal Nos:	NA
3. Chain-of-Custody Records	Present
4. Sample Information Sheets	Absent*
5. Airbill Present	As Airbill
6. Airbill Number(s):	810854064841
7. Sample Tags	Absent*
8. Tag Nos. Listed on COC	N/A
9. Sample Condition:	Intact
10. VOA Vial Bubbles	N/A
11. Does info on the custody records, sample info sheets, sample tags and labels agree?	Yes
12. Date Received at Lab:	01/09/03
13. Time Received at Lab:	0930
14. Cooler Temperature(s):	2.5 C

SAMPLE TRANSFER:

Fraction(s):	ALL
Area Number:	Level 4 Storage
Transferred By:	AMH
Transferred On:	01/09/03

CORRESPONDING			
CLIENT SAMPLE #	SAMPLE TAG #	ASSIGNED LAB #	REMARKS: CONDITION OF SAMPLE SHIPMENT ETC.
GW05MW02B	NA	514220	
GW05MW07B	NA	514221	trip blank
GW05MW10	NA	514222	
GW505MW07B	NA	514223	
GW1005MW07B	NA	514224	

AMH 1/9/03

0285

* *Contact Project Director*

Reviewed By: JM Date: 1/13/3

** COOLER RECEIPT CHECKLIST **

List ETR 91602

WERE CUSTODY SEALS PRESENT ON THE COOLERS?

YES NO

WERE THE CUSTODY SEALS SIGNED?

YES NO

WERE THERE CUSTODY SEAL NUMBERS?

YES NO

LIST THE CUSTODY SEAL NUMBERS. _____ _____

WHAT TYPE OF COOLING WAS UTILIZED?

ICE MELTED ICE PACKS NONE

COOLER TEMPERATURE (degrees c): 2 (2-6 °C Acceptable)

DATE AND TIME COOLER RECEIVED: 1/9/03 0930

DO SAMPLES APPEAR TO BE INTACT: YES NO

DO ANY SAMPLES HAVE SHORT HOLDING TIMES?
(less than seven days)

WET CHEM	YES	NO
EXTRACTABLES	YES	NO
UNPRES VOA	YES	NO

RADIATION SCREEN RESULTS <0.05 MR/HR YES NO

U286

** COOLER RECEIPT CHECKLIST **

List ETR 91624

WERE CUSTODY SEALS PRESENT ON THE COOLERS?

YES (NO)

WERE THE CUSTODY SEALS SIGNED?

YES (NO)

WERE THERE CUSTODY SEAL NUMBERS?

YES (NO)

LIST THE CUSTODY SEAL NUMBERS. _____ _____

WHAT TYPE OF COOLING WAS UTILIZED?

(ICE) MELTED ICE PACKS NONE

COOLER TEMPERATURE (degrees c): 5 (2-6 °C Acceptable)

DATE AND TIME COOLER RECEIVED: 1/9/03 0930

DO SAMPLES APPEAR TO BE INTACT: (YES) NO

DO ANY SAMPLES HAVE SHORT HOLDING TIMES?
(less than seven days)

WET CHEM YES. (NO)

EXTRACTABLES YES (NO)

UNPRES VOA YES (NO)

RADIATION SCREEN RESULTS <0.05 MR/HR 0.03 MR/HR (YES) NO

Analytical Resources, Incorporated
Analytical Chemists and Consultants

January 30, 2003

Steve Wolfe
URS Corporation
2401 4th Avenue, Suite 808
Seattle, WA 98121

Client Project Name: Camp Bonneville
Contract No.: DACA67-98-D-1005, 53-F-0072323
ARI Job Nos. FD27

Dear Mr. Wolfe:

Please find enclosed the original Chain-of-Custody record and the final data package for the samples from the project referenced above. Five water samples and a trip blank were received in good condition on January 9, 2003. The samples were received at a cooler temperature of –1.5 and 3.5 degrees Celsius. There were no discrepancies between the COC and sample containers.

The samples were analyzed for Semivolatile organics by 8270C, Volatile organic's by 8260B, Herbicides by 8151A, TPH-Dx, TPH-G, Metals by 6010/7000 and Conventional's as listed on the COC.

Problems associated with these analyses are discussed in the case narrative.

A copy of this package will remain on file at ARI. Should you have any questions, please contact me at your convenience.

Sincerely,
ANALYTICAL RESOURCES, INC.

Susan Snyder
Project Manager
206/389-6167
Susan@arilabs.com

Enclosures
cc: Mr. Raleigh Farlow, DMD Inc.
File FD27

ANALYTICAL RESOURCES INCORPORATED

Case Narrative

Project Name: Camp Bonneville
DACA67-98-D-1005
ARI Job Nos. FD27
Date: January 30, 2003

Semivolatile Organic Compounds:

The samples were extracted on 4/29/02 & 4/30/02 and analyzed within the recommended holding time.

The surrogates d4-1,2-dichlorobenzene and 2-fluorobiphenyl were outside the control limits in sample **MB-011303.** The surrogate d4-1,2-dichlorobenzene was outside control limits in the **LCSD-011303.**

The matrix spike and matrix spike duplicate for **GW05MW07B** were within control limits for all analytes. The LCS analyzed on 1/15/03 was outside criteria for two analytes: 1,4-dichlorobenzene (58.4%) and 1,2,4-trichlorobenzene (58.4%). The LCSD was outside criteria for 1,4-dichlorobenzene (59.6%)

Voaltile Organic Compounds:

All samples were received preserved with a pH <2.0. The samples were analyzed on 1/16/03 & 1/17/03 within the recommended holding time. All samples were "J" flagged down to half the MDL per client request. The percent recoveries for all surrogates were within acceptable QC limits of 80-120% and 70-130%.

The matrix spike and matrix spike duplicate (**GW05MW07B**) was outside specified criteria for vinyl acetate (50.4%,53.4%) and trans-1,4-dichloro-2-butene (61.4%, 63.6%)

The LCS for 1/16/03 was outside criteria (80-120%) for two analytes. The LCSD was outside criteria for two analytes. Project QC allows for up to five analytes per LCS as exceptions.

The LCS on 1/17/03 was outside criteria for two analytes. The LCSD was outside criteria for six analytes. Project QC allows for up to five analytes as exceptions for each LCS.

Herbicides:

The samples were extracted on 1/13/03 and analyzed on 1/24/03 within the recommended holding time. Extracts were derivitized prior to analysis.

All surrogates were within the designated control limits.

The last continuing calibration (#3) for dichloroprop failed at 27.8% on the CLP1 column. As there were no hits for this analyte in any of the samples, the data was reported.

The matrix spike and matrix spike duplicate were within criteria. The associated LCS's were within control limits.

NWTPH-Gx

The samples were preserved with pH <2.0. The samples were analyzed on 1/13/03 within the recommended holding time. All surrogates were within the designated control limits. The matrix spike and matrix spike duplicate were within the designated control limits. The LCS and LCSD were also within specified control limits.

NWTPH-Dx

The samples were extracted on 1/12/03 & 1/17/03 and analyzed on 1/15/03 and 1/21/03 within the recommended holding time.

All surrogates were within the designated control limit.

The extracts were originally analyzed on 1/15/03. The method blank, LCS's and all samples showed a pattern in the motor oil range that appeared to be an extraction contamination. The entire batch was re-extracted outside the holding time and re-analyzed. In both cases the samples were non-detect for the analytes of interest. Both sets of data have been reported.

The matrix spike and matrix spike duplicate were done on sample **GW05MW07B** in both extraction batches. In both cases the recoveries were within the designated 50-150% control limits.

The LCS for 1/15/03 had a diesel recovery low (72%) just outside the 75-125% control limit. The LCS and LCSD were both outside the control limit low (73% and 72%) for 1/21/03.

Conventionals:

All samples were analyzed within the acceptable holding times. The duplicate analysis for total suspended solids was above the RPD at 22.2% All other QA/QC was within the designated control limits.

Metals:

The total metals were analyzed within the recommended holding time.

The dissolved metals were analyzed within the recommended holding time.

A matrix duplicate and matrix spike for the total metals was done on sample **GW05MW07B.** The duplicate and matrix spike was within specified criteria for all analytes.

A matrix duplicate and matrix spike for the dissolved metals was done on sample **GW05MW07B.** The duplicate and matrix spike was within specified criteria for all analytes.

The associated blank spiked were also within the designated control limits.

ORGANIC COMPOUND
DATA REPORTING QUALIFIERS

U Indicates the compound was undetected at the reported concentration. (Same as ND).

J Indicates an estimated concentration when the value is less than the calculated reporting limit.

D Indicates the surrogate/spike(s) was not detected, due to dilution of extract.

NR Indicates the surrogate recovery cannot be reported due to matrix interference.

E Indicates a value above the linear range of the detector. Sample dilution required.

S Indicates no value reported due to saturation of the detector. Sample dilution required.

NA Indicates compound not analyzed for.

M Indicate's an estimated value of analyte found and confirmed by analyst but with a low spectral match (GC/MS), or high RPD and no obvious interference (dual column GC).

B Indicates possible/probable blank contamination. Flagged when the analyte is detected in the blank as well as the sample.

Y Indicates raised reporting limit due to background interference or to activity on the instrument. Compound is still not detected at or above the raised level.

C Indicates a probable hit that cannot be confirmed due to matrix interference (GC).

ANALYTICAL RESOURCES INCORPORATED

WATER VOLATILE SYSTEM MONITORING COMPOUND SUMMARY

Matrix: Water 5 mL

QC Report No: FD27

Lab ID	Client ID	DCE	TOL	BFB	DCB	TOT OUT
011603MB	Method Blank	107%	107%	105%	114%	0
FD27LCS	Lab Cntrl Sample	104%	108%	110%	112%	0
FD27LCSD	Lab Cntrl Sample Dp	106%	108%	108%	112%	0
FD27A	GW05MW02B	106%	107%	105%	112%	0
FD27A-RE	GW05MW02B	106%	106%	105%	112%	0
011703MB	Method Blank	106%	107%	107%	112%	0
FD27LCS	Lab Cntrl Sample	103%	108%	109%	110%	0
FD27LCSD	Lab Cntrl Sample Dp	109%	107%	107%	113%	0
FD27B	GW05MW07B	104%	106%	106%	113%	0
FD27B-MS	GW05MW07B	103%	107%	109%	112%	0
FD27B-MSD	GW05MW07B	104%	107%	109%	112%	0
FD27C	GW05MW10	105%	107%	106%	113%	0
FD27D	GW505MW07B	106%	107%	105%	112%	0
FD27E	GW1005MW07B	105%	106%	105%	114%	0
FD27F	Trip Blank	106%	107%	106%	113%	0

SW8260B	LCS/MB LIMITS	QC LIMITS
(DCE) = 1,2-Dichloroethane-d4	(74-133)	(74-142)
(TOL) = Toluene-d8	(77-131)	(84-129)
(BFB) = Bromofluorobenzene	(79-127)	(77-122)
(DCB) = 1,2-Dichlorobenzene-d4	(84-132)	(85-135)

\# Column to be used to flag recovery values

* Values outside of required QC limits

D System Monitoring Compound diluted out

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: MB-011603**
Page 1 of 2 **METHOD BLANK**

Lab Sample ID: MB-011603 QC Report No: FD27-URS Operating Services, Inc.
LIMS ID: 03-186 Project: Camp Bonneville
Matrix: Water 53-F-0072323
Data Release Authorized: Date Sampled: NA
Reported: 01/27/03 Date Received: NA

Instrument/Analyst: NT3/JA Sample Amount: 5.00 mL
Date Analyzed: 01/16/03 17:15 Purge Volume: 5.0 mL

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: MB-011603**
 METHOD BLANK

Lab Sample ID: MB-011603 QC Report No: FD27-URS Operating Services, Inc.
LIMS ID: 03-186 Project: Camp Bonneville
Matrix: Water 53-F-0072323
Date Analyzed: 01/16/03 17:15

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	107%
d8-Toluene	107%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	114%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: MB-011703**
Page 1 of 2 **METHOD BLANK**

Lab Sample ID: MB-011703
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Instrument/Analyst: NT3/JA
Date Analyzed: 01/17/03 11:07

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: MB-011703**
 METHOD BLANK

Lab Sample ID: MB-011703 QC Report No: FD27-URS Operating Services, Inc.
LIMS ID: 03-187 Project: Camp Bonneville
Matrix: Water 53-F-0072323
Date Analyzed: 01/17/03 11:07

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	107%
Bromofluorobenzene	107%
d4-1,2-Dichlorobenzene	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW07B**
Page 1 of 2 **SAMPLE**

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Instrument/Analyst: NT3/JA
Date Analyzed: 01/17/03 12:43

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U

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ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW07B**
 SAMPLE

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Date Analyzed: 01/17/03 12:43

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	106%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	113%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW02B**
Page 1 of 2 **SAMPLE**

Lab Sample ID: FD27A
LIMS ID: 03-186
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Instrument/Analyst: NT3/JA
Date Analyzed: 01/16/03 18:51

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	**1,1-Dichloroethene**	**23**
75-34-3	**1,1-Dichloroethane**	**30**
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	**1,1,1-Trichloroethane**	**160**
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	9.8 UJ
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**0.6 J**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**32**
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW02B**
Page 2 of 2 **SAMPLE**

Lab Sample ID: FD27A
LIMS ID: 03-186
Matrix: Water
Date Analyzed: 01/16/03 18:51

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	**Dichlorodifluoromethane**	**39**
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	107%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW02B**
Page 1 of 2 **REANALYSIS**

Lab Sample ID: FD27A
LIMS ID: 03-186
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Instrument/Analyst: NT3/JA
Date Analyzed: 01/17/03 11:55

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	**1,1-Dichloroethene**	**20**
75-34-3	**1,1-Dichloroethane**	**28**
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	**1,2-Dichloroethane**	**4.2**
78-93-3	2-Butanone	5.0 U
71-55-6	**1,1,1-Trichloroethane**	**150**
56-23-5	**Carbon Tetrachloride**	**26**
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**0.5 J**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	**1,1,2-Trichloro-1,2,2-trifluoroethane**	**20**
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B

Sample ID: GW05MW02B
REANALYSIS

Lab Sample ID: FD27A
LIMS ID: 03-186
Matrix: Water
Date Analyzed: 01/17/03 11:55

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	**Dichlorodifluoromethane**	**26**
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	106%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW07B**
Page 1 of 2 **MATRIX SPIKE**

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Instrument/Analyst: NT3/JA
Date Analyzed: 01/17/03 14:19

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	---
74-83-9	Bromomethane	---
75-01-4	Vinyl Chloride	---
75-00-3	Chloroethane	---
75-09-2	Methylene Chloride	---
67-64-1	Acetone	---
75-15-0	Carbon Disulfide	---
75-35-4	1,1-Dichloroethene	---
75-34-3	1,1-Dichloroethane	---
156-60-5	trans-1,2-Dichloroethene	---
156-59-2	cis-1,2-Dichloroethene	---
67-66-3	Chloroform	---
107-06-2	1,2-Dichloroethane	---
78-93-3	2-Butanone	---
71-55-6	1,1,1-Trichloroethane	---
56-23-5	Carbon Tetrachloride	---
108-05-4	Vinyl Acetate	---
75-27-4	Bromodichloromethane	---
78-87-5	1,2-Dichloropropane	---
10061-01-5	cis-1,3-Dichloropropene	---
79-01-6	Trichloroethene	---
124-48-1	Dibromochloromethane	---
79-00-5	1,1,2-Trichloroethane	---
71-43-2	Benzene	---
10061-02-6	trans-1,3-Dichloropropene	---
110-75-8	2-Chloroethylvinylether	---
75-25-2	Bromoform	---
108-10-1	4-Methyl-2-Pentanone (MIBK)	---
591-78-6	2-Hexanone	---
127-18-4	Tetrachloroethene	---
79-34-5	1,1,2,2-Tetrachloroethane	---
108-88-3	Toluene	---
108-90-7	Chlorobenzene	---
100-41-4	Ethylbenzene	---
100-42-5	Styrene	---
75-69-4	Trichlorofluoromethane	---
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	---
1330-20-7	m,p-Xylene	---
95-47-6	o-Xylene	---
95-50-1	1,2-Dichlorobenzene	---
541-73-1	1,3-Dichlorobenzene	---
106-46-7	1,4-Dichlorobenzene	---
107-02-8	Acrolein	---
74-88-4	Methyl Iodide	---
74-96-4	Bromoethane	---
107-13-1	Acrylonitrile	---
563-58-6	1,1-Dichloropropene	---
74-95-3	Dibromomethane	---
630-20-6	1,1,1,2-Tetrachloroethane	---
96-12-8	1,2-Dibromo-3-chloropropane	---

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW07B**
 MATRIX SPIKE

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Date Analyzed: 01/17/03 14:19

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	---
110-57-6	trans-1,4-Dichloro-2-butene	---
108-67-8	1,3,5-Trimethylbenzene	---
95-63-6	1,2,4-Trimethylbenzene	---
87-68-3	Hexachlorobutadiene	---
106-93-4	Ethylene Dibromide	---
74-97-5	Bromochloromethane	---
75-71-8	Dichlorodifluoromethane	---
594-20-7	2,2-Dichloropropane	---
142-28-9	1,3-Dichloropropane	---
98-82-8	Isopropylbenzene	---
103-65-1	n-Propylbenzene	---
108-86-1	Bromobenzene	---
95-49-8	2-Chlorotoluene	---
106-43-4	4-Chlorotoluene	---
98-06-6	tert-Butylbenzene	---
135-98-8	sec-Butylbenzene	---
99-87-6	4-Isopropyltoluene	---
104-51-8	n-Butylbenzene	---
120-82-1	1,2,4-Trichlorobenzene	---
91-20-3	Naphthalene	---
87-61-6	1,2,3-Trichlorobenzene	---

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	103%
d8-Toluene	107%
Bromofluorobenzene	109%
d4-1,2-Dichlorobenzene	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW07B**
Page 1 of 2 **MATRIX SPIKE DUPLICATE**

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Instrument/Analyst: NT3/JA
Date Analyzed: 01/17/03 14:43

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	---
74-83-9	Bromomethane	---
75-01-4	Vinyl Chloride	---
75-00-3	Chloroethane	---
75-09-2	Methylene Chloride	---
67-64-1	Acetone	---
75-15-0	Carbon Disulfide	---
75-35-4	1,1-Dichloroethene	---
75-34-3	1,1-Dichloroethane	---
156-60-5	trans-1,2-Dichloroethene	---
156-59-2	cis-1,2-Dichloroethene	---
67-66-3	Chloroform	---
107-06-2	1,2-Dichloroethane	---
78-93-3	2-Butanone	---
71-55-6	1,1,1-Trichloroethane	---
56-23-5	Carbon Tetrachloride	---
108-05-4	Vinyl Acetate	---
75-27-4	Bromodichloromethane	---
78-87-5	1,2-Dichloropropane	---
10061-01-5	cis-1,3-Dichloropropene	---
79-01-6	Trichloroethene	---
124-48-1	Dibromochloromethane	---
79-00-5	1,1,2-Trichloroethane	---
71-43-2	Benzene	---
10061-02-6	trans-1,3-Dichloropropene	---
110-75-8	2-Chloroethylvinylether	---
75-25-2	Bromoform	---
108-10-1	4-Methyl-2-Pentanone (MIBK)	---
591-78-6	2-Hexanone	---
127-18-4	Tetrachloroethene	---
79-34-5	1,1,2,2-Tetrachloroethane	---
108-88-3	Toluene	---
108-90-7	Chlorobenzene	---
100-41-4	Ethylbenzene	---
100-42-5	Styrene	---
75-69-4	Trichlorofluoromethane	---
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	---
1330-20-7	m,p-Xylene	---
95-47-6	o-Xylene	---
95-50-1	1,2-Dichlorobenzene	---
541-73-1	1,3-Dichlorobenzene	---
106-46-7	1,4-Dichlorobenzene	---
107-02-8	Acrolein	---
74-88-4	Methyl Iodide	---
74-96-4	Bromoethane	---
107-13-1	Acrylonitrile	---
563-58-6	1,1-Dichloropropene	---
74-95-3	Dibromomethane	---
630-20-6	1,1,1,2-Tetrachloroethane	---
96-12-8	1,2-Dibromo-3-chloropropane	---

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW07B**
 MATRIX SPIKE DUPLICATE

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Date Analyzed: 01/17/03 14:43

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	---
110-57-6	trans-1,4-Dichloro-2-butene	---
108-67-8	1,3,5-Trimethylbenzene	---
95-63-6	1,2,4-Trimethylbenzene	---
87-68-3	Hexachlorobutadiene	---
106-93-4	Ethylene Dibromide	---
74-97-5	Bromochloromethane	---
75-71-8	Dichlorodifluoromethane	---
594-20-7	2,2-Dichloropropane	---
142-28-9	1,3-Dichloropropane	---
98-82-8	Isopropylbenzene	---
103-65-1	n-Propylbenzene	---
108-86-1	Bromobenzene	---
95-49-8	2-Chlorotoluene	---
106-43-4	4-Chlorotoluene	---
98-06-6	tert-Butylbenzene	---
135-98-8	sec-Butylbenzene	---
99-87-6	4-Isopropyltoluene	---
104-51-8	n-Butylbenzene	---
120-82-1	1,2,4-Trichlorobenzene	---
91-20-3	Naphthalene	---
87-61-6	1,2,3-Trichlorobenzene	---

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	104%
d8-Toluene	107%
Bromofluorobenzene	109%
d4-1,2-Dichlorobenzene	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW10**
Page 1 of 2 **SAMPLE**

Lab Sample ID: FD27C
LIMS ID: 03-188
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Instrument/Analyst: NT3/JA
Date Analyzed: 01/17/03 13:07

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	**Vinyl Chloride**	**5.2**
75-00-3	Chloroethane	1.0 U
75-09-2	**Methylene Chloride**	**2.8**
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	**Trichloroethene**	**5.1**
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	**Tetrachloroethene**	**3.2**
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	**Toluene**	**10**
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW10**
 SAMPLE

Lab Sample ID: FD27C
LIMS ID: 03-188
Matrix: Water
Date Analyzed: 01/17/03 13:07

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	107%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	113%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW505MW07B**
Page 1 of 2 **SAMPLE**

Lab Sample ID: FD27D
LIMS ID: 03-189
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Instrument/Analyst: NT3/JA
Date Analyzed: 01/17/03 13:31

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW505MW07B**
 SAMPLE

Lab Sample ID: FD27D
LIMS ID: 03-189
Matrix: Water
Date Analyzed: 01/17/03 13:31

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	107%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW1005MW07B**
Page 1 of 2 **SAMPLE**

Lab Sample ID: FD27E
LIMS ID: 03-190
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Instrument/Analyst: NT3/JA
Date Analyzed: 01/17/03 13:55

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	**Acetone**	**4.0 MJ**
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	**2-Butanone**	**14**
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW1005MW07B**
 SAMPLE

Lab Sample ID: FD27E
LIMS ID: 03-190
Matrix: Water
Date Analyzed: 01/17/03 13:55

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	105%
d8-Toluene	106%
Bromofluorobenzene	105%
d4-1,2-Dichlorobenzene	114%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: Trip Blank**
Page 1 of 2 **SAMPLE**

Lab Sample ID: FD27F
LIMS ID: 03-191
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Instrument/Analyst: NT3/JA
Date Analyzed: 01/17/03 11:31

Sample Amount: 5.00 mL
Purge Volume: 5.0 mL

CAS Number	Analyte	µg/L
74-87-3	Chloromethane	1.0 U
74-83-9	Bromomethane	1.0 U
75-01-4	Vinyl Chloride	1.0 U
75-00-3	Chloroethane	1.0 U
75-09-2	Methylene Chloride	2.0 U
67-64-1	Acetone	5.0 U
75-15-0	Carbon Disulfide	1.0 U
75-35-4	1,1-Dichloroethene	1.0 U
75-34-3	1,1-Dichloroethane	1.0 U
156-60-5	trans-1,2-Dichloroethene	1.0 U
156-59-2	cis-1,2-Dichloroethene	1.0 U
67-66-3	Chloroform	1.0 U
107-06-2	1,2-Dichloroethane	1.0 U
78-93-3	2-Butanone	5.0 U
71-55-6	1,1,1-Trichloroethane	1.0 U
56-23-5	Carbon Tetrachloride	1.0 U
108-05-4	Vinyl Acetate	5.0 U
75-27-4	Bromodichloromethane	1.0 U
78-87-5	1,2-Dichloropropane	1.0 U
10061-01-5	cis-1,3-Dichloropropene	1.0 U
79-01-6	Trichloroethene	1.0 U
124-48-1	Dibromochloromethane	1.0 U
79-00-5	1,1,2-Trichloroethane	1.0 U
71-43-2	Benzene	1.0 U
10061-02-6	trans-1,3-Dichloropropene	1.0 U
110-75-8	2-Chloroethylvinylether	5.0 U
75-25-2	Bromoform	1.0 U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0 U
591-78-6	2-Hexanone	5.0 U
127-18-4	Tetrachloroethene	1.0 U
79-34-5	1,1,2,2-Tetrachloroethane	1.0 U
108-88-3	Toluene	1.0 U
108-90-7	Chlorobenzene	1.0 U
100-41-4	Ethylbenzene	1.0 U
100-42-5	Styrene	1.0 U
75-69-4	Trichlorofluoromethane	1.0 U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	2.0 U
1330-20-7	m,p-Xylene	1.0 U
95-47-6	o-Xylene	1.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
107-02-8	Acrolein	50 U
74-88-4	Methyl Iodide	1.0 U
74-96-4	Bromoethane	2.0 U
107-13-1	Acrylonitrile	1.0 U
563-58-6	1,1-Dichloropropene	1.0 U
74-95-3	Dibromomethane	1.0 U
630-20-6	1,1,1,2-Tetrachloroethane	1.0 U
96-12-8	1,2-Dibromo-3-chloropropane	5.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: Trip Blank**
 SAMPLE

Lab Sample ID: FD27F
LIMS ID: 03-191
Matrix: Water
Date Analyzed: 01/17/03 11:31

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
96-18-4	1,2,3-Trichloropropane	3.0 U
110-57-6	trans-1,4-Dichloro-2-butene	5.0 U
108-67-8	1,3,5-Trimethylbenzene	1.0 U
95-63-6	1,2,4-Trimethylbenzene	1.0 U
87-68-3	Hexachlorobutadiene	5.0 U
106-93-4	Ethylene Dibromide	1.0 U
74-97-5	Bromochloromethane	1.0 U
75-71-8	Dichlorodifluoromethane	1.0 U
594-20-7	2,2-Dichloropropane	1.0 U
142-28-9	1,3-Dichloropropane	1.0 U
98-82-8	Isopropylbenzene	1.0 U
103-65-1	n-Propylbenzene	1.0 U
108-86-1	Bromobenzene	1.0 U
95-49-8	2-Chlorotoluene	1.0 U
106-43-4	4-Chlorotoluene	1.0 U
98-06-6	tert-Butylbenzene	1.0 U
135-98-8	sec-Butylbenzene	1.0 U
99-87-6	4-Isopropyltoluene	1.0 U
104-51-8	n-Butylbenzene	1.0 U
120-82-1	1,2,4-Trichlorobenzene	5.0 U
91-20-3	Naphthalene	5.0 U
87-61-6	1,2,3-Trichlorobenzene	5.0 U

Volatile Surrogate Recovery

d4-1,2-Dichloroethane	106%
d8-Toluene	107%
Bromofluorobenzene	106%
d4-1,2-Dichlorobenzene	113%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW07B**
Page 1 of 2 **MS/MSD**

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Instrument/Analyst MS: NT3/JA
MSD: NT3/JA
Date Analyzed MS: 01/17/03 14:19
MSD: 01/17/03 14:43

Sample Amount MS: 5.00 mL
MSD: 5.00 mL
Purge Volume MS: 5.0 mL
MSD: 5.0 mL

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Chloromethane	< 1.0	43.3	50.0	86.6%	46.6	50.0	93.2%	7.3%
Bromomethane	< 1.0	42.8	50.0	85.6%	45.8	50.0	91.6%	6.8%
Vinyl Chloride	< 1.0	39.8	50.0	79.6%	41.7	50.0	83.4%	4.7%
Chloroethane	< 1.0	46.8	50.0	93.6%	50.0	50.0	100%	6.6%
Methylene Chloride	< 2.0	47.2	50.0	94.4%	50.8	50.0	102%	7.3%
Acetone	< 5.0	275	250	110%	290	250	116%	5.3%
Carbon Disulfide	< 1.0	43.3	50.0	86.6%	45.0	50.0	90.0%	3.9%
1,1-Dichloroethene	< 1.0	47.7	50.0	95.4%	50.9	50.0	102%	6.5%
1,1-Dichloroethane	< 1.0	49.2	50.0	98.4%	52.4	50.0	105%	6.3%
trans-1,2-Dichloroethene	< 1.0	47.4	50.0	94.8%	50.2	50.0	100%	5.7%
cis-1,2-Dichloroethene	< 1.0	50.9	50.0	102%	54.2	50.0	108%	6.3%
Chloroform	< 1.0	49.6	50.0	99.2%	52.5	50.0	105%	5.7%
1,2-Dichloroethane	< 1.0	51.5	50.0	103%	54.7	50.0	109%	6.0%
2-Butanone	< 5.0	284	250	114%	301	250	120%	5.8%
1,1,1-Trichloroethane	< 1.0	50.2	50.0	100%	54.0	50.0	108%	7.3%
Carbon Tetrachloride	< 1.0	51.6	50.0	103%	54.0	50.0	108%	4.5
Vinyl Acetate	< 5.0	25.2	50.0	50.4%	26.7	50.0	53.4%	5.8
Bromodichloromethane	< 1.0	50.7	50.0	101%	53.2	50.0	106%	4.8%
1,2-Dichloropropane	< 1.0	52.8	50.0	106%	56.1	50.0	112%	6.1%
cis-1,3-Dichloropropene	< 1.0	52.7	50.0	105%	55.8	50.0	112%	5.7%
Trichloroethene	< 1.0	50.2	50.0	100%	52.6	50.0	105%	4.7%
Dibromochloromethane	< 1.0	50.1	50.0	100%	53.4	50.0	107%	6.4%
1,1,2-Trichloroethane	< 1.0	53.2	50.0	106%	56.3	50.0	113%	5.7%
Benzene	< 1.0	49.6	50.0	99.2%	52.1	50.0	104%	4.9%
trans-1,3-Dichloropropene	< 1.0	49.8	50.0	99.6%	53.3	50.0	107%	6.8%
2-Chloroethylvinylether	< 5.0	< 5.0	50.0	NA	< 5.0	50.0	NA	NA
Bromoform	< 1.0	49.3	50.0	98.6%	52.0	50.0	104%	5.3%
4-Methyl-2-Pentanone (MIBK)	< 5.0	287	250	115%	294	250	118%	2.4%
2-Hexanone	< 5.0	289	250	116%	300	250	120%	3.7%
Tetrachloroethene	< 1.0	50.1	50.0	100%	52.0	50.0	104%	3.7%
1,1,2,2-Tetrachloroethane	< 1.0	52.5	50.0	105%	56.2	50.0	112%	6.8%
Toluene	< 1.0	51.5	50.0	103%	54.1	50.0	108%	4.9%
Chlorobenzene	< 1.0	49.5	50.0	99.0%	51.6	50.0	103%	4.2%
Ethylbenzene	< 1.0	51.1	50.0	102%	53.3	50.0	107%	4.2%
Styrene	< 1.0	53.9	50.0	108%	56.2	50.0	112%	4.2%
Trichlorofluoromethane	< 1.0	44.9	50.0	89.8%	47.5	50.0	95.0%	5.6%
1,1,2-Trichloro-1,2,2-trifl	< 2.0	48.1	50.0	96.2%	48.9	50.0	97.8%	1.6%
m,p-Xylene	< 1.0	102	100	102%	107	100	107%	4.8%
o-Xylene	< 1.0	52.9	50.0	106%	55.4	50.0	111%	4.6%
1,2-Dichlorobenzene	< 1.0	47.3	50.0	94.6%	49.5	50.0	99.0%	4.5%
1,3-Dichlorobenzene	< 1.0	47.5	50.0	95.0%	49.2	50.0	98.4%	3.5%
1,4-Dichlorobenzene	< 1.0	46.8	50.0	93.6%	49.0	50.0	98.0%	4.6%
Acrolein	< 50.0	263	250	105%	288	250	115%	9.1%
Methyl Iodide	< 1.0	44.5	50.0	89.0%	47.9	50.0	95.8%	7.4%
Bromoethane	< 2.0	46.7	50.0	93.4%	48.5	50.0	97.0%	3.8%
Acrylonitrile	< 1.0	49.7	50.0	99.4%	52.3	50.0	105%	5.1%
1,1-Dichloropropene	< 1.0	50.2	50.0	100%	53.3	50.0	107%	6.0%
Dibromomethane	< 1.0	52.0	50.0	104%	54.6	50.0	109%	4.9

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: GW05MW07B**
 MS/MSD

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Date Analyzed MS: 01/17/03 14:19
MSD: 01/17/03 14:43

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Purge Volume MS: 5.0 mL
MSD: 5.0 mL

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
1,1,1,2-Tetrachloroethane	< 1.0	53.9	50.0	108%	57.0	50.0	114%	5.6%
1,2-Dibromo-3-chloropropane	< 5.0	53.5	50.0	107%	58.3	50.0	117%	8.6%
1,2,3-Trichloropropane	< 3.0	54.5	50.0	109%	57.8	50.0	116%	5.9%
trans-1,4-Dichloro-2-butene	< 5.0	30.7	50.0	61.4%	31.8	50.0	63.6%	3.5%
1,3,5-Trimethylbenzene	< 1.0	52.1	50.0	104%	54.9	50.0	110%	5.2%
1,2,4-Trimethylbenzene	< 1.0	53.0	50.0	106%	55.8	50.0	112%	5.1%
Hexachlorobutadiene	< 5.0	52.1	50.0	104%	55.2	50.0	110%	5.8%
Ethylene Dibromide	< 1.0	52.9	50.0	106%	56.6	50.0	113%	6.8%
Bromochloromethane	< 1.0	50.0	50.0	100%	53.6	50.0	107%	6.9%
Dichlorodifluoromethane	< 1.0	40.1	50.0	80.2%	42.3	50.0	84.6%	5.3%
2,2-Dichloropropane	< 1.0	47.4	50.0	94.8%	50.8	50.0	102%	6.9%
1,3-Dichloropropane	< 1.0	52.3	50.0	105%	55.3	50.0	111%	5.6%
Isopropylbenzene	< 1.0	51.8	50.0	104%	54.4	50.0	109%	4.9%
n-Propylbenzene	< 1.0	51.3	50.0	103%	54.0	50.0	108%	5.1%
Bromobenzene	< 1.0	49.6	50.0	99.2%	52.5	50.0	105%	5.7%
2-Chlorotoluene	< 1.0	48.8	50.0	97.6%	51.5	50.0	103%	5.4%
4-Chlorotoluene	< 1.0	49.8	50.0	99.6%	52.9	50.0	106%	6.0%
tert-Butylbenzene	< 1.0	51.3	50.0	103%	54.6	50.0	109%	6.2%
sec-Butylbenzene	< 1.0	50.8	50.0	102%	53.5	50.0	107%	5.2%
4-Isopropyltoluene	< 1.0	51.1	50.0	102%	53.8	50.0	108%	5.1%
n-Butylbenzene	< 1.0	48.5	50.0	97.0%	51.4	50.0	103%	5.8%
1,2,4-Trichlorobenzene	< 5.0	49.1	50.0	98.2%	51.7	50.0	103%	5.2%
Naphthalene	< 5.0	51.7	50.0	103%	56.0	50.0	112%	8.0%
1,2,3-Trichlorobenzene	< 5.0	49.4	50.0	98.8%	52.1	50.0	104%	5.3%

Results reported in µg/L
NA-No recovery due to high concentration of analyte in original sample, or calculated negative recovery, or undetected spike.
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: LCS-011603**
Page 1 of 2 **LCS/LCSD**

Lab Sample ID: LCS-011603
LIMS ID: 03-186
Matrix: Water
Data Release Authorized:
Reported: 01/27/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Instrument/Analyst LCS: NT3/JA
LCSD: NT3/JA
Date Analyzed LCS: 01/16/03 16:03
LCSD: 01/16/03 16:27

Sample Amount LCS: 5.00 mL
LCSD: 5.00 mL
Purge Volume LCS: 5.0 mL
LCSD: 5.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	47.2	50.0	94.4%	50.0	50.0	100%	5.8%
Bromomethane	44.6	50.0	89.2%	47.4	50.0	94.8%	6.1%
Vinyl Chloride	42.5	50.0	85.0%	44.4	50.0	88.8%	4.4%
Chloroethane	46.6	50.0	93.2%	51.6	50.0	103%	10.2%
Methylene Chloride	47.4	50.0	94.8%	50.6	50.0	101%	6.5%
Acetone	275	250	110%	282	250	113%	2.5%
Carbon Disulfide	54.9	50.0	110%	57.9	50.0	116%	5.3%
1,1-Dichloroethene	48.8	50.0	97.6%	51.9	50.0	104%	6.2%
1,1-Dichloroethane	49.7	50.0	99.4%	53.3	50.0	107%	7.0%
trans-1,2-Dichloroethene	48.0	50.0	96.0%	51.0	50.0	102%	6.1%
cis-1,2-Dichloroethene	51.6	50.0	103%	55.0	50.0	110%	6.4%
Chloroform	50.1	50.0	100%	53.6	50.0	107%	6.8%
1,2-Dichloroethane	52.1	50.0	104%	54.3	50.0	109%	4.1%
2-Butanone	273	250	109%	298	250	119%	8.8%
1,1,1-Trichloroethane	51.3	50.0	103%	54.9	50.0	110%	6.8%
Carbon Tetrachloride	52.6	50.0	105%	55.1	50.0	110%	4.6%
Vinyl Acetate	27.6	50.0	55.2%	29.6	50.0	59.2%	7.0%
Bromodichloromethane	51.7	50.0	103%	54.1	50.0	108%	4.5%
1,2-Dichloropropane	53.5	50.0	107%	56.7	50.0	113%	5.8%
cis-1,3-Dichloropropene	54.9	50.0	110%	57.6	50.0	115%	4.8%
Trichloroethene	51.2	50.0	102%	53.5	50.0	107%	4.4%
Dibromochloromethane	52.4	50.0	105%	54.9	50.0	110%	4.7%
1,1,2-Trichloroethane	52.7	50.0	105%	55.7	50.0	111%	5.5%
Benzene	50.0	50.0	100%	52.6	50.0	105%	5.1%
trans-1,3-Dichloropropene	52.2	50.0	104%	54.5	50.0	109%	4.3%
2-Chloroethylvinylether	56.0	50.0	112%	57.6	50.0	115%	2.8%
Bromoform	54.5	50.0	109%	58.4	50.0	117%	6.9%
4-Methyl-2-Pentanone (MIBK)	276	250	110%	301	250	120%	8.7%
2-Hexanone	278	250	111%	302	250	121%	8.3%
Tetrachloroethene	51.4	50.0	103%	53.1	50.0	106%	3.3%
1,1,2,2-Tetrachloroethane	51.3	50.0	103%	55.7	50.0	111%	8.2%
Toluene	52.1	50.0	104%	54.5	50.0	109%	4.5%
Chlorobenzene	49.8	50.0	99.6%	51.8	50.0	104%	3.9%
Ethylbenzene	51.8	50.0	104%	53.9	50.0	108%	4.0%
Styrene	55.2	50.0	110%	57.5	50.0	115%	4.1%
Trichlorofluoromethane	46.1	50.0	92.2%	48.8	50.0	97.6%	5.7%
1,1,2-Trichloro-1,2,2-trifl	51.4	50.0	103%	53.3	50.0	107%	3.6%
m,p-Xylene	105	100	105%	108	100	108%	2.8%
o-Xylene	53.8	50.0	108%	55.8	50.0	112%	3.6%
1,2-Dichlorobenzene	47.7	50.0	95.4%	51.0	50.0	102%	6.7%
1,3-Dichlorobenzene	48.4	50.0	96.8%	51.3	50.0	103%	5.8%
1,4-Dichlorobenzene	48.1	50.0	96.2%	50.5	50.0	101%	4.9%
Acrolein	238	250	95.2%	257	250	103%	7.7%
Methyl Iodide	47.4	50.0	94.8%	49.6	50.0	99.2%	4.5%
Bromoethane	48.1	50.0	96.2%	50.8	50.0	102%	5.5%
Acrylonitrile	50.7	50.0	101%	54.9	50.0	110%	8.0%
1,1-Dichloropropene	51.7	50.0	103%	54.2	50.0	108%	4.7%
Dibromomethane	51.6	50.0	103%	54.3	50.0	109%	5.1%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: LCS-011603**
 LCS/LCSD

Lab Sample ID: LCS-011603 QC Report No: FD27-URS Operating Services, Inc.
LIMS ID: 03-186 Project: Camp Bonneville
Matrix: Water 53-F-0072323
Date Analyzed: 01/16/03 16:03 Purge Volume: 5.0 mL
LCSD: 01/16/03 16:27 LCSD: 5.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1,1,2-Tetrachloroethane	54.6	50.0	109%	57.1	50.0	114%	4.5%
1,2-Dibromo-3-chloropropane	52.1	50.0	104%	57.2	50.0	114%	9.3%
1,2,3-Trichloropropane	52.7	50.0	105%	58.0	50.0	116%	9.6%
trans-1,4-Dichloro-2-butene	39.1	50.0	78.2%	42.4	50.0	84.8%	8.1%
1,3,5-Trimethylbenzene	54.5	50.0	109%	57.3	50.0	115%	5.0%
1,2,4-Trimethylbenzene	55.1	50.0	110%	58.1	50.0	116%	5.3%
Hexachlorobutadiene	58.7	50.0	117%	59.7	50.0	119%	1.7%
Ethylene Dibromide	53.2	50.0	106%	56.1	50.0	112%	5.3%
Bromochloromethane	50.6	50.0	101%	54.2	50.0	108%	6.9%
Dichlorodifluoromethane	45.5	50.0	91.0%	48.4	50.0	96.8%	6.2%
2,2-Dichloropropane	51.5	50.0	103%	54.8	50.0	110%	6.2%
1,3-Dichloropropane	52.4	50.0	105%	55.0	50.0	110%	4.8%
Isopropylbenzene	53.5	50.0	107%	56.6	50.0	113%	5.6%
n-Propylbenzene	53.9	50.0	108%	56.8	50.0	114%	5.2%
Bromobenzene	50.5	50.0	101%	53.0	50.0	106%	4.8%
2-Chlorotoluene	49.8	50.0	99.6%	55.4	50.0	111%	10.6%
4-Chlorotoluene	52.3	50.0	105%	52.5	50.0	105%	0.4%
tert-Butylbenzene	53.2	50.0	106%	56.3	50.0	113%	5.7%
sec-Butylbenzene	54.1	50.0	108%	56.4	50.0	113%	4.2%
4-Isopropyltoluene	54.6	50.0	109%	57.1	50.0	114%	4.5%
n-Butylbenzene	53.9	50.0	108%	55.7	50.0	111%	3.3%
1,2,4-Trichlorobenzene	52.7	50.0	105%	54.8	50.0	110%	3.9%
Naphthalene	52.1	50.0	104%	56.3	50.0	113%	7.7%
1,2,3-Trichlorobenzene	51.2	50.0	102%	54.2	50.0	108%	5.7%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	104%	106%
d8-Toluene	108%	108%
Bromofluorobenzene	110%	108%
d4-1,2-Dichlorobenzene	112%	112%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: LCS-011703**
Page 1 of 2 **LCS/LCSD**

Lab Sample ID: LCS-011703 QC Report No: FD27-URS Operating Services, Inc.
LIMS ID: 03-187 Project: Camp Bonneville
Matrix: Water 53-F-0072323
Data Release Authorized: Date Sampled: NA
Reported: 01/27/03 Date Received: NA

Instrument/Analyst LCS: NT3/JA Sample Amount LCS: 5.00 mL
LCSD: NT3/JA LCSD: 5.00 mL
Date Analyzed LCS: 01/17/03 10:20 Purge Volume LCS: 5.0 mL
LCSD: 01/17/03 15:07 LCSD: 5.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	44.4	50.0	88.8%	45.9	50.0	91.8%	3.3%
Bromomethane	42.2	50.0	84.4%	46.5	50.0	93.0%	9.7%
Vinyl Chloride	42.2	50.0	84.4%	41.6	50.0	83.2%	1.4%
Chloroethane	46.4	50.0	92.8%	50.6	50.0	101%	8.7%
Methylene Chloride	46.4	50.0	92.8%	51.1	50.0	102%	9.6%
Acetone	280	250	112%	304	250	122%	8.2%
Carbon Disulfide	53.4	50.0	107%	57.4	50.0	115%	7.2%
1,1-Dichloroethene	47.5	50.0	95.0%	51.6	50.0	103%	8.3%
1,1-Dichloroethane	48.6	50.0	97.2%	53.2	50.0	106%	9.0%
trans-1,2-Dichloroethene	47.1	50.0	94.2%	51.9	50.0	104%	9.7%
cis-1,2-Dichloroethene	50.3	50.0	101%	55.4	50.0	111%	9.6%
Chloroform	49.0	50.0	98.0%	53.8	50.0	108%	9.3%
1,2-Dichloroethane	50.5	50.0	101%	53.6	50.0	107%	6.0%
2-Butanone	288	250	115%	317	250	127%	9.6%
1,1,1-Trichloroethane	50.4	50.0	101%	55.1	50.0	110%	8.9%
Carbon Tetrachloride	51.1	50.0	102%	53.9	50.0	108%	5.3%
Vinyl Acetate	27.9	50.0	55.8%	30.0	50.0	60.0%	7.3%
Bromodichloromethane	50.2	50.0	100%	52.2	50.0	104%	3.9%
1,2-Dichloropropane	52.4	50.0	105%	54.5	50.0	109%	3.9%
cis-1,3-Dichloropropene	53.9	50.0	108%	55.9	50.0	112%	3.6%
Trichloroethene	49.8	50.0	99.6%	52.1	50.0	104%	4.5%
Dibromochloromethane	51.6	50.0	103%	52.7	50.0	105%	2.1%
1,1,2-Trichloroethane	51.5	50.0	103%	54.8	50.0	110%	6.2%
Benzene	48.7	50.0	97.4%	51.2	50.0	102%	5.0%
trans-1,3-Dichloropropene	51.0	50.0	102%	52.8	50.0	106%	3.5%
2-Chloroethylvinylether	57.5	50.0	115%	59.3	50.0	119%	3.1%
Bromoform	54.1	50.0	108%	52.3	50.0	105%	3.4%
4-Methyl-2-Pentanone (MIBK)	289	250	116%	301	250	120%	4.1%
2-Hexanone	296	250	118%	307	250	123%	3.6%
Tetrachloroethene	49.7	50.0	99.4%	53.6	50.0	107%	7.6%
1,1,2,2-Tetrachloroethane	52.0	50.0	104%	57.2	50.0	114%	9.5%
Toluene	50.8	50.0	102%	53.4	50.0	107%	5.0%
Chlorobenzene	48.6	50.0	97.2%	51.8	50.0	104%	6.4%
Ethylbenzene	50.5	50.0	101%	53.8	50.0	108%	6.3%
Styrene	54.4	50.0	109%	57.4	50.0	115%	5.4%
Trichlorofluoromethane	44.0	50.0	88.0%	48.4	50.0	96.8%	9.5%
1,1,2-Trichloro-1,2,2-trifl	50.2	50.0	100%	54.6	50.0	109%	8.4%
m,p-Xylene	102	100	102%	108	100	108%	5.7%
o-Xylene	52.7	50.0	105%	55.7	50.0	111%	5.5%
1,2-Dichlorobenzene	47.2	50.0	94.4%	51.6	50.0	103%	8.9%
1,3-Dichlorobenzene	47.6	50.0	95.2%	51.6	50.0	103%	8.1%
1,4-Dichlorobenzene	47.4	50.0	94.8%	51.4	50.0	103%	8.1%
Acrolein	226	250	90.4%	339	250	136%	40.0%
Methyl Iodide	46.6	50.0	93.2%	50.5	50.0	101%	8.0%
Bromoethane	47.2	50.0	94.4%	51.8	50.0	104%	9.3%
Acrylonitrile	50.0	50.0	100%	56.7	50.0	113%	12.6%
1,1-Dichloropropene	50.8	50.0	102%	52.8	50.0	106%	3.9%
Dibromomethane	50.4	50.0	101%	53.2	50.0	106%	5.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Volatiles by Purge & Trap GC/MS-Method 8260B **Sample ID: LCS-011703**
 LCS/LCSD

Lab Sample ID: LCS-011703
LIMS ID: 03-187
Matrix: Water
Date Analyzed: 01/17/03 10:20
LCSD: 01/17/03 15:07

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Purge Volume: 5.0 mL
LCSD: 5.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1,1,2-Tetrachloroethane	53.2	50.0	106%	56.6	50.0	113%	6.2%
1,2-Dibromo-3-chloropropane	52.7	50.0	105%	58.6	50.0	117%	10.6%
1,2,3-Trichloropropane	52.6	50.0	105%	58.2	50.0	116%	10.1%
trans-1,4-Dichloro-2-butene	39.8	50.0	79.6%	35.2	50.0	70.4%	12.3%
1,3,5-Trimethylbenzene	53.9	50.0	108%	58.2	50.0	116%	7.7%
1,2,4-Trimethylbenzene	54.5	50.0	109%	59.1	50.0	118%	8.1%
Hexachlorobutadiene	55.7	50.0	111%	61.7	50.0	123%	10.2%
Ethylene Dibromide	52.2	50.0	104%	55.3	50.0	111%	5.8%
Bromochloromethane	49.9	50.0	99.8%	54.4	50.0	109%	8.6%
Dichlorodifluoromethane	42.7	50.0	85.4%	40.4	50.0	80.8%	5.5%
2,2-Dichloropropane	50.2	50.0	100%	55.0	50.0	110%	9.1%
1,3-Dichloropropane	51.4	50.0	103%	54.5	50.0	109%	5.9%
Isopropylbenzene	53.0	50.0	106%	57.5	50.0	115%	8.1%
n-Propylbenzene	53.2	50.0	106%	57.3	50.0	115%	7.4%
Bromobenzene	48.9	50.0	97.8%	53.7	50.0	107%	9.4%
2-Chlorotoluene	49.3	50.0	98.6%	53.7	50.0	107%	8.5%
4-Chlorotoluene	51.6	50.0	103%	55.6	50.0	111%	7.5%
tert-Butylbenzene	52.9	50.0	106%	57.4	50.0	115%	8.2%
sec-Butylbenzene	53.2	50.0	106%	57.6	50.0	115%	7.9%
4-Isopropyltoluene	54.2	50.0	108%	57.9	50.0	116%	6.6%
n-Butylbenzene	53.0	50.0	106%	56.9	50.0	114%	7.1%
1,2,4-Trichlorobenzene	51.8	50.0	104%	56.4	50.0	113%	8.5%
Naphthalene	53.4	50.0	107%	58.4	50.0	117%	8.9%
1,2,3-Trichlorobenzene	50.6	50.0	101%	56.0	50.0	112%	10.1%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

Volatile Surrogate Recovery

	LCS	LCSD
d4-1,2-Dichloroethane	103%	109%
d8-Toluene	108%	107%
Bromofluorobenzene	109%	107%
d4-1,2-Dichlorobenzene	110%	113%

ANALYTICAL RESOURCES INCORPORATED

SW8270 SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

Client ID	NBZ	FBP	TPH	DCB	PHL	2FP	TBP	2CP	TOT OUT
MB-011303	65.4%	58.4%	70.2%	49.0%	59.3%	57.2%	68.4%	58.8%	0
LCS-011303	87.7%	76.2%	88.5%	62.6%	75.6%	68.2%	95.5%	73.7%	0
LCSD-011303	74.4%	69.1%	73.3%	54.5%	66.4%	61.0%	83.8%	62.2%	0
GW05MW07B	74.9%	66.2%	79.5%	56.4%	66.8%	62.1%	80.5%	64.9%	0
GW05MW07B MS	74.5%	64.1%	75.6%	55.1%	66.1%	60.3%	83.3%	62.5%	0
GW05MW07B MSD	79.1%	69.2%	77.5%	61.8%	74.7%	67.0%	87.7%	70.6%	0
GW505MW07B	65.3%	61.3%	69.8%	55.5%	62.7%	62.1%	66.4%	62.0%	0
GW1005MW07B	63.3%	62.6%	74.1%	56.0%	59.8%	57.8%	69.5%	59.4%	0

	LCS/MB LIMITS	QC LIMITS
(NBZ) = d5-Nitrobenzene	(49-114)	(49-118)
(FBP) = 2-Fluorobiphenyl	(46-109)	(53-106)
(TPH) = d14-p-Terphenyl	(59-126)	(45-126)
(DCB) = d4-1,2-Dichlorobenzene	(39-91)	(39-92)
(PHL) = d5-Phenol	(49-105)	(43-112)
(2FP) = 2-Fluorophenol	(41-109)	(47-109)
(TBP) = 2,4,6-Tribromophenol	(40-125)	(34-142)
(2CP) = d4-2-Chlorophenol	(51-109)	(51-110)

Prep Method: SW3520C
Log Number Range: 03-187 to 03-190

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample ID: MB-011303
METHOD BLANK

Lab Sample ID: MB-011303
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/16/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Date Extracted: 01/13/03
Date Analyzed: 01/15/03 14:42
Instrument/Analyst: FINN8/PK

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 2 of 2

Sample ID: MB-011303
METHOD BLANK

Lab Sample ID: MB-011303
LIMS ID: 03-187
Matrix: Water
Date Analyzed: 01/15/03 14:42

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**1.3**
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatile Surrogate Recovery

d5-Nitrobenzene	65.4%	2-Fluorobiphenyl	58.4%
d14-p-Terphenyl	70.2%	d4-1,2-Dichlorobenzene	49.0%
d5-Phenol	59.3%	2-Fluorophenol	57.2%
2,4,6-Tribromophenol	68.4%	d4-2-Chlorophenol	58.8%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: Method Blank

Lab Sample ID: FD27MB
LIMS ID: 03-187
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 01/31/03

Date Analyzed: 01/15/03

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 1 of 2

Sample ID: GW05MW07B
SAMPLE

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/16/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted: 01/13/03
Date Analyzed: 01/15/03 17:14
Instrument/Analyst: FINN8/PK

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample ID: GW05MW07B
SAMPLE

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Date Analyzed: 01/15/03 17:14

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatile Surrogate Recovery

d5-Nitrobenzene	74.9%	2-Fluorobiphenyl	66.2%
d14-p-Terphenyl	79.5%	d4-1,2-Dichlorobenzene	56.4%
d5-Phenol	66.8%	2-Fluorophenol	62.1%
2,4,6-Tribromophenol	80.5%	d4-2-Chlorophenol	64.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW05MW07B

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/31/03

Date Analyzed: 01/15/03

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample ID: GW05MW07B
MATRIX SPIKE

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/16/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted: 01/13/03
Date Analyzed: 01/15/03 18:05
Instrument/Analyst: FINN8/PK

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
108-95-2	Phenol	---
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	---
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	---
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	---
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	---
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	---
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	---
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	---
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U
121-14-2	2,4-Dinitrotoluene	---
84-66-2	Diethylphthalate	---
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	---
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	---
85-01-8	Phenanthrene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS **Sample ID: GW05MW07B**
 MATRIX SPIKE

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Date Analyzed: 01/15/03 18:05

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	---
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	---
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	**bis(2-Ethylhexyl)phthalate**	**1.2 B**
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatile Surrogate Recovery

d5-Nitrobenzene	74.5%	2-Fluorobiphenyl	64.1%
d14-p-Terphenyl	75.6%	d4-1,2-Dichlorobenzene	55.1%
d5-Phenol	66.1%	2-Fluorophenol	60.3%
2,4,6-Tribromophenol	83.3%	d4-2-Chlorophenol	62.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample ID: GW05MW07B
MSDUPLICATE

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/16/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted: 01/13/03
Date Analyzed: 01/15/03 18:56
Instrument/Analyst: FINN8/PK

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
108-95-2	Phenol	---
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	---
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	---
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	---
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	---
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	---
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	---
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	---
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U
121-14-2	2,4-Dinitrotoluene	---
84-66-2	Diethylphthalate	---
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	---
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	---
85-01-8	Phenanthrene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS **Sample ID: GW05MW07B**
Page 2 of 2 **MSDUPLICATE**

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Date Analyzed: 01/15/03 18:56

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	---
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	---
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatile Surrogate Recovery

d5-Nitrobenzene	79.1%	2-Fluorobiphenyl	69.2%
d14-p-Terphenyl	77.5%	d4-1,2-Dichlorobenzene	61.8%
d5-Phenol	74.7%	2-Fluorophenol	67.0%
2,4,6-Tribromophenol	87.7%	d4-2-Chlorophenol	70.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample ID: GW505MW07B
SAMPLE

Lab Sample ID: FD27D
LIMS ID: 03-189
Matrix: Water
Data Release Authorized:
Reported: 01/16/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted: 01/13/03
Date Analyzed: 01/15/03 19:47
Instrument/Analyst: FINN8/PK

Sample Amount: 500 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
108-95-2	Phenol	2.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.0 U
95-57-8	2-Chlorophenol	1.0 U
541-73-1	1,3-Dichlorobenzene	1.0 U
106-46-7	1,4-Dichlorobenzene	1.0 U
100-51-6	Benzyl Alcohol	5.0 U
95-50-1	1,2-Dichlorobenzene	1.0 U
95-48-7	2-Methylphenol	1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0 U
106-44-5	4-Methylphenol	1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.0 U
67-72-1	Hexachloroethane	2.0 U
98-95-3	Nitrobenzene	1.0 U
78-59-1	Isophorone	1.0 U
88-75-5	2-Nitrophenol	5.0 U
105-67-9	2,4-Dimethylphenol	3.0 U
65-85-0	Benzoic Acid	50 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0 U
120-83-2	2,4-Dichlorophenol	3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0 U
91-20-3	Naphthalene	1.0 U
106-47-8	4-Chloroaniline	3.0 U
87-68-3	Hexachlorobutadiene	2.0 U
59-50-7	4-Chloro-3-methylphenol	2.0 U
91-57-6	2-Methylnaphthalene	1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0 U
91-58-7	2-Chloronaphthalene	1.0 U
88-74-4	2-Nitroaniline	5.0 U
131-11-3	Dimethylphthalate	1.0 U
208-96-8	Acenaphthylene	1.0 U
99-09-2	3-Nitroaniline	6.0 U
83-32-9	Acenaphthene	1.0 U
51-28-5	2,4-Dinitrophenol	25 U
100-02-7	4-Nitrophenol	5.0 U
132-64-9	Dibenzofuran	1.0 U
606-20-2	2,6-Dinitrotoluene	5.0 U
121-14-2	2,4-Dinitrotoluene	5.0 U
84-66-2	Diethylphthalate	1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0 U
86-73-7	Fluorene	1.0 U
100-01-6	4-Nitroaniline	5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	15 U
86-30-6	N-Nitrosodiphenylamine	1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0 U
118-74-1	Hexachlorobenzene	1.0 U
87-86-5	Pentachlorophenol	5.0 U
85-01-8	Phenanthrene	1.0 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 2 of 2

Sample ID: GW505MW07B
SAMPLE

Lab Sample ID: FD27D
LIMS ID: 03-189
Matrix: Water
Date Analyzed: 01/15/03 19:47

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
86-74-8	Carbazole	1.0 U
120-12-7	Anthracene	1.0 U
84-74-2	Di-n-Butylphthalate	1.0 U
206-44-0	Fluoranthene	1.0 U
129-00-0	Pyrene	1.0 U
85-68-7	Butylbenzylphthalate	1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0 U
56-55-3	Benzo(a)anthracene	1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0 U
218-01-9	Chrysene	1.0 U
117-84-0	Di-n-Octyl phthalate	1.0 U
205-99-2	Benzo(b)fluoranthene	1.0 U
207-08-9	Benzo(k)fluoranthene	1.0 U
50-32-8	Benzo(a)pyrene	1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0 U

Semivolatile Surrogate Recovery

d5-Nitrobenzene	65.3%	2-Fluorobiphenyl	61.3%
d14-p-Terphenyl	69.8%	d4-1,2-Dichlorobenzene	55.5%
d5-Phenol	62.7%	2-Fluorophenol	62.1%
2,4,6-Tribromophenol	66.4%	d4-2-Chlorophenol	62.0%

ANALYTICAL RESOURCES INCORPORATED

RGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW505MW07B

Lab Sample ID: FD27D
LIMS ID: 03-189
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/31/03

Date Analyzed: 01/15/03

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 1 of 2

Sample ID: GW1005MW07B
SAMPLE

Lab Sample ID: FD27E
LIMS ID: 03-190
Matrix: Water
Data Release Authorized:
Reported: 01/16/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted: 01/13/03
Date Analyzed: 01/15/03 20:39
Instrument/Analyst: FINN8/PK

Sample Amount: 450 mL
Final Extract Volume: 0.50 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
108-95-2	Phenol	2.2 U
111-44-4	Bis-(2-Chloroethyl) Ether	2.2 U
95-57-8	2-Chlorophenol	1.1 U
541-73-1	1,3-Dichlorobenzene	1.1 U
106-46-7	1,4-Dichlorobenzene	1.1 U
100-51-6	Benzyl Alcohol	5.6 U
95-50-1	1,2-Dichlorobenzene	1.1 U
95-48-7	2-Methylphenol	1.1 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.1 U
106-44-5	4-Methylphenol	1.1 U
621-64-7	N-Nitroso-Di-N-Propylamine	2.2 U
67-72-1	Hexachloroethane	2.2 U
98-95-3	Nitrobenzene	1.1 U
78-59-1	Isophorone	1.1 U
88-75-5	2-Nitrophenol	5.6 U
105-67-9	2,4-Dimethylphenol	3.3 U
65-85-0	Benzoic Acid	56 U
111-91-1	bis(2-Chloroethoxy) Methane	1.1 U
120-83-2	2,4-Dichlorophenol	3.3 U
120-82-1	1,2,4-Trichlorobenzene	1.1 U
91-20-3	Naphthalene	1.1 U
106-47-8	4-Chloroaniline	3.3 U
87-68-3	Hexachlorobutadiene	2.2 U
59-50-7	4-Chloro-3-methylphenol	2.2 U
91-57-6	2-Methylnaphthalene	1.1 U
77-47-4	Hexachlorocyclopentadiene	5.6 U
88-06-2	2,4,6-Trichlorophenol	5.6 U
95-95-4	2,4,5-Trichlorophenol	5.6 U
91-58-7	2-Chloronaphthalene	1.1 U
88-74-4	2-Nitroaniline	5.6 U
131-11-3	Dimethylphthalate	1.1 U
208-96-8	Acenaphthylene	1.1 U
99-09-2	3-Nitroaniline	6.7 U
83-32-9	Acenaphthene	1.1 U
51-28-5	2,4-Dinitrophenol	28 U
100-02-7	4-Nitrophenol	5.6 U
132-64-9	Dibenzofuran	1.1 U
606-20-2	2,6-Dinitrotoluene	5.6 U
121-14-2	2,4-Dinitrotoluene	5.6 U
84-66-2	Diethylphthalate	1.1 U
7005-72-3	4-Chlorophenyl-phenylether	1.1 U
86-73-7	Fluorene	1.1 U
100-01-6	4-Nitroaniline	5.6 U
534-52-1	4,6-Dinitro-2-Methylphenol	17 U
86-30-6	N-Nitrosodiphenylamine	1.1 U
101-55-3	4-Bromophenyl-phenylether	1.1 U
118-74-1	Hexachlorobenzene	1.1 U
87-86-5	Pentachlorophenol	5.6 U
85-01-8	Phenanthrene	1.1 U

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS

Sample ID: GW1005MW07B
SAMPLE

Lab Sample ID: FD27E
LIMS ID: 03-190
Matrix: Water
Date Analyzed: 01/15/03 20:39

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

CAS Number	Analyte	µg/L
86-74-8	Carbazole	1.1 U
120-12-7	Anthracene	1.1 U
84-74-2	Di-n-Butylphthalate	1.1 U
206-44-0	Fluoranthene	1.1 U
129-00-0	Pyrene	1.1 U
85-68-7	Butylbenzylphthalate	1.1 U
91-94-1	3,3'-Dichlorobenzidine	5.6 U
56-55-3	Benzo(a)anthracene	1.1 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.1 U
218-01-9	Chrysene	1.1 U
117-84-0	Di-n-Octyl phthalate	1.1 U
205-99-2	Benzo(b)fluoranthene	1.1 U
207-08-9	Benzo(k)fluoranthene	1.1 U
50-32-8	Benzo(a)pyrene	1.1 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.1 U
53-70-3	Dibenz(a,h)anthracene	1.1 U
191-24-2	Benzo(g,h,i)perylene	1.1 U

Semivolatile Surrogate Recovery

d5-Nitrobenzene	63.3%	2-Fluorobiphenyl	62.6%
d14-p-Terphenyl	74.1%	d4-1,2-Dichlorobenzene	56.0%
d5-Phenol	59.8%	2-Fluorophenol	57.8%
2,4,6-Tribromophenol	69.5%	d4-2-Chlorophenol	59.4%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Tentatively Identified Compounds

Sample No: GW1005MW07B

Lab Sample ID: FD27E
LIMS ID: 03-190
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/31/03

Date Analyzed: 01/15/03

	CAS Number	Tentative Identification	RT	Fraction	ug/L
1.	-------NO UNKNOWNS FOUND >10% IS PEAK HT----------				
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 1 of 1

Sample ID: GW05MW07B
MS/MSD

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/16/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted MS/MSD: 01/13/03

Date Analyzed MS: 01/15/03 18:05
MSD: 01/15/03 18:56
Instrument/Analyst MS: FINN8/PK
MSD: FINN8/PK
GPC Cleanup: NO

Sample Amount MS: 500 mL
MSD: 500 mL
Final Extract Volume MS: 0.5 mL
MSD: 0.5 mL
Dilution Factor MS: 1.00
MSD: 1.00

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
Phenol	< 2.0	32.8	37.5	87.5%	36.3	37.5	96.8%	10.1%
2-Chlorophenol	< 1.0	30.3	37.5	80.8%	35.4	37.5	94.4%	15.5%
1,4-Dichlorobenzene	< 1.0	13.6	25.0	54.4%	15.1	25.0	60.4%	10.5%
N-Nitroso-Di-N-Propylamine	< 2.0	20.6	25.0	82.4%	22.0	25.0	88.0%	6.6%
1,2,4-Trichlorobenzene	< 1.0	13.7	25.0	54.8%	14.9	25.0	59.6%	8.4%
4-Chloro-3-methylphenol	< 2.0	26.6	37.5	70.9%	28.4	37.5	75.7%	6.5%
Acenaphthene	< 1.0	17.8	25.0	71.2%	19.4	25.0	77.6%	8.6%
4-Nitrophenol	< 5.0	31.9	37.5	85.1%	33.3	37.5	88.8%	4.3%
2,4-Dinitrotoluene	< 5.0	19.0	25.0	76.0%	20.4	25.0	81.6%	7.1%
Diethylphthalate	< 1.0	21.9	25.0	87.6%	21.7	25.0	86.8%	0.9%
N-Nitrosodiphenylamine	< 1.0	17.0	25.0	68.0%	18.6	25.0	74.4%	9.0%
Pentachlorophenol	< 5.0	35.1	37.5	93.6%	36.2	37.5	96.5%	3.1%
Di-n-Butylphthalate	< 1.0	18.4	25.0	73.6%	18.8	25.0	75.2%	2.2%
Pyrene	< 1.0	19.4	25.0	77.6%	19.9	25.0	79.6%	2.5%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Semivolatiles by SW8270C GC/MS
Page 1 of 1

Sample ID: LCS-011303
LCS/LCSD

Lab Sample ID: LCS-011303
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/16/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted LCS/LCSD: 01/13/03

Date Analyzed LCS: 01/15/03 15:31
LCSD: 01/15/03 16:23
Instrument/Analyst LCS: FINN8/PK
LCSD: FINN8/PK

Sample Amount LCS: 500 mL
LCSD: 500 mL
Final Extract Volume LCS: 0.50 mL
LCSD: 0.50 mL
Dilution Factor LCS: 1.00
LCSD: 1.00

GPC Cleanup: NO

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Phenol	33.9	37.5	90.4%	35.2	37.5	93.9%	3.8%
2-Chlorophenol	34.2	37.5	91.2%	32.8	37.5	87.5%	4.2%
1,4-Dichlorobenzene	14.6	25.0	58.4%	14.9	25.0	59.6%	2.0%
N-Nitroso-Di-N-Propylamine	22.4	25.0	89.6%	21.7	25.0	86.8%	3.2%
1,2,4-Trichlorobenzene	14.6	25.0	58.4%	15.3	25.0	61.2%	4.7%
4-Chloro-3-methylphenol	28.8	37.5	76.8%	28.1	37.5	74.9%	2.5%
Acenaphthene	19.6	25.0	78.4%	19.6	25.0	78.4%	0.0%
4-Nitrophenol	37.0	37.5	98.7%	33.4	37.5	89.1%	10.2%
2,4-Dinitrotoluene	21.6	25.0	86.4%	20.7	25.0	82.8%	4.3%
Diethylphthalate	23.7	25.0	94.8%	21.7	25.0	86.8%	8.8%
N-Nitrosodiphenylamine	19.4	25.0	77.6%	20.4	25.0	81.6%	5.0%
Pentachlorophenol	34.1	37.5	90.9%	35.3	37.5	94.1%	3.5%
Di-n-Butylphthalate	20.3	25.0	81.2%	20.2	25.0	80.8%	0.5%
Pyrene	21.2	25.0	84.8%	20.0	25.0	80.0%	5.8%

Semivolatile Surrogate Recovery

	LCS	LCSD
d5-Nitrobenzene	87.7%	74.4%
2-Fluorobiphenyl	76.2%	69.1%
d14-p-Terphenyl	88.5%	73.3%
d4-1,2-Dichlorobenzene	62.6%	54.5%
d5-Phenol	75.6%	66.4%
2-Fluorophenol	68.2%	61.0%
2,4,6-Tribromophenol	95.5%	83.8%
d4-2-Chlorophenol	73.7%	62.2%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

WATER HERB SURROGATE SUMMARY

Matrix: Water

QC Report No: FD27
Project: Camp Bonneville
53-F-0072323

LIMS ID	Lab ID	Client ID	DCPA	TOT OUT
03-187MB	011303MB	Method Blank	71.2%	0
03-187LCS	011303LCS	Lab Control	65.5%	0
03-187LCSD	011303LCSD	Lab Control Duplicate	73.0%	0
03-187	FD27B	GW05MW07B	83.9%	0
03-187	FD27BMS	GW05MW07B	84.5%	0
03-187	FD27BMSD	GW05MW07B	81.2%	0
03-189	FD27D	GW505MW07B	76.6%	0
03-190	FD27E	GW1005MW07B	78.6%	0

QC Surrogate LIMITS

	MB/LCS	Samples
(DCPA) = Dichlorophenylacetic Acid	(45-128)	(49-132)

\# Column to be used to flag recovery values

* Values outside of required QC limits

D Surrogate Compound diluted out

000060

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by SW8151 GC/ECD
Page 1 of 1

Sample ID: MB-011303
METHOD BLANK

Lab Sample ID: MB-011303
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/28/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Date Extracted: 01/13/03
Date Analyzed: 01/24/03 21:41
Instrument/Analyst: ECD2/YZ

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
93-72-1	2,4,5-TP (Silvex)	0.050 U
93-76-5	2,4,5-T	0.050 U
88-85-7	Dinoseb	0.20 U
1918-00-9	Dicamba	0.10 U
94-75-7	2,4-D	0.20 U
94-82-6	2,4-DB	1.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	100 U
120-36-5	Dichloroprop	0.20 U
93-65-2	MCPP	100 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid	71.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by SW8151 GC/ECD **Sample ID: GW05MW07B**
Page 1 of 1 **SAMPLE**

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/28/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted: 01/13/03
Date Analyzed: 01/25/03 00:49
Instrument/Analyst: ECD2/YZ

Sample Amount: 500 mL
Final Extract Volume: 10 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
93-72-1	2,4,5-TP (Silvex)	0.050 U
93-76-5	2,4,5-T	0.050 U
88-85-7	Dinoseb	0.070 Y
1918-00-9	Dicamba	0.10 U
94-75-7	2,4-D	0.20 U
94-82-6	2,4-DB	1.0 U
75-99-0	Dalapon	0.40 U
94-74-6	MCPA	100 U
120-36-5	Dichloroprop	0.20 U
93-65-2	MCPP	100 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid	83.9%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by SW8151 GC/ECD
Page 1 of 1

Sample ID: GW05MW07B
MATRIX SPIKE

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/28/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted: 01/13/03
Date Analyzed: 01/25/03 03:25
Instrument/Analyst: ECD2/YZ

Sample Amount: 490 mL
Final Extract Volume: 10 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
93-72-1	2,4,5-TP (Silvex)	---
93-76-5	2,4,5-T	0.051 U
88-85-7	Dinoseb	0.060 Y
1918-00-9	Dicamba	---
94-75-7	2,4-D	---
94-82-6	2,4-DB	1.0 U
75-99-0	Dalapon	0.41 U
94-74-6	MCPA	100 U
120-36-5	Dichloroprop	0.20 U
93-65-2	MCPP	100 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid	84.5%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by SW8151 GC/ECD
Page 1 of 1

Sample ID: GW05MW07B
MATRIX SPIKE DUP

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/28/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted: 01/13/03
Date Analyzed: 01/25/03 03:56
Instrument/Analyst: ECD2/YZ

Sample Amount: 490 mL
Final Extract Volume: 10 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
93-72-1	2,4,5-TP (Silvex)	---
93-76-5	2,4,5-T	0.051 U
88-85-7	Dinoseb	0.060 Y
1918-00-9	Dicamba	---
94-75-7	2,4-D	---
94-82-6	2,4-DB	1.0 U
75-99-0	Dalapon	0.41 U
94-74-6	MCPA	100 U
120-36-5	Dichloroprop	0.20 U
93-65-2	MCPP	100 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid	81.2%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by SW8151 GC/ECD
Page 1 of 1

Sample ID: GW505MW07B
SAMPLE

Lab Sample ID: FD27D
LIMS ID: 03-189
Matrix: Water
Data Release Authorized:
Reported: 01/28/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted: 01/13/03
Date Analyzed: 01/25/03 04:27
Instrument/Analyst: ECD2/YZ

Sample Amount: 475 mL
Final Extract Volume: 10 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
93-72-1	2,4,5-TP (Silvex)	0.053 U
93-76-5	2,4,5-T	0.053 U
88-85-7	Dinoseb	0.21 U
1918-00-9	Dicamba	0.11 U
94-75-7	2,4-D	0.21 U
94-82-6	2,4-DB	1.1 U
75-99-0	Dalapon	0.42 U
94-74-6	MCPA	110 U
120-36-5	Dichloroprop	0.21 U
93-65-2	MCPP	110 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid	76.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by SW8151 GC/ECD
Page 1 of 1

Sample ID: GW1005MW07B
SAMPLE

Lab Sample ID: FD27E
LIMS ID: 03-190
Matrix: Water
Data Release Authorized:
Reported: 01/28/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted: 01/13/03
Date Analyzed: 01/25/03 04:59
Instrument/Analyst: ECD2/YZ

Sample Amount: 465 mL
Final Extract Volume: 10 mL
Dilution Factor: 1.00

CAS Number	Analyte	µg/L
93-72-1	2,4,5-TP (Silvex)	0.054 U
93-76-5	2,4,5-T	0.054 U
88-85-7	Dinoseb	0.22 U
1918-00-9	Dicamba	0.11 U
94-75-7	2,4-D	0.22 U
94-82-6	2,4-DB	1.1 U
75-99-0	Dalapon	0.43 U
94-74-6	MCPA	110 U
120-36-5	Dichloroprop	0.22 U
93-65-2	MCPP	110 U

Herbicide Surrogate Recovery

2,4-Dichlorophenylacetic Acid	78.6%

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by SW8151 GC/ECD
Page 1 of 1

Sample ID: GW05MW07B
MS/MSD

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/28/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted MS/MSD: 01/13/03

Date Analyzed MS: 01/25/03 03:25
MSD: 01/25/03 03:56
Instrument/Analyst MS: ECD2/YZ
MSD: ECD2/YZ

Sample Amount MS: 490 mL
MSD: 490 mL
Final Extract Volume MS: 10 mL
MSD: 10 mL
Dilution Factor MS: 1.00
MSD: 1.00

Analyte	Sample	MS	Spike Added-MS	MS Recovery	MSD	Spike Added-MSD	MSD Recovery	RPD
2,4,5-TP (Silvex)	< 0.050	0.460	0.510	90.2%	0.440	0.510	86.3%	4.4%
Dicamba	< 0.100	0.870	1.02	85.3%	0.820	1.02	80.4%	5.9%
2,4-D	< 0.200	1.34	2.04	65.7%	1.32	2.04	64.7%	1.5%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

ORGANICS ANALYSIS DATA SHEET
Herbicides by SW8151 GC/ECD
Page 1 of 1

Sample ID: LCS-011303
LCS/LCSD

Lab Sample ID: LCS-011303
LIMS ID: 03-187
Matrix: Water
Data Release Authorized:
Reported: 01/28/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Date Extracted LCS/LCSD: 01/13/03

Sample Amount LCS: 500 mL
LCSD: 500 mL

Date Analyzed LCS: 01/24/03 22:13
LCSD: 01/24/03 22:44

Final Extract Volume LCS: 10 mL
LCSD: 10 mL

Instrument/Analyst LCS: ECD2/YZ
LCSD: ECD2/YZ

Dilution Factor LCS: 1.00
LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
2,4,5-TP (Silvex)	0.350	0.500	70.0%	0.420	0.500	84.0%	18.2%
Dicamba	0.660	1.00	66.0%	0.740	1.00	74.0%	11.4%
2,4-D	1.05	2.00	52.5%	1.18	2.00	59.0%	11.7%

Herbicide Surrogate Recovery

	LCS	LCSD
2,4-Dichlorophenylacetic	65.5%	73.0%

Results reported in µg/L
RPD calculated using sample concentrations per SW846.

ANALYTICAL RESOURCES INCORPORATED

WATER TPHg SYSTEM MONITORING COMPOUND SUMMARY

Matrix: Water

QC Report No: FD27

LIMS ID	Lab ID	Client ID	TFT	BB	TOT OUT
03-187MB	011303MB	Method Blank	98.3%	98.7%	0
03-187LC	011303LC	Lab Control	116%	99.9%	0
03-187LCD	011303LCD	Lab Control Dup	117%	98.3%	0
03-187	FD27B	GW05MW07B	103%	98.1%	0
03-187	FD27B-MS	GW05MW07B	128%	105%	0
03-187	FD27B-MSD	GW05MW07B	128%	108%	0
03-189	FD27D	GW505MW07B	103%	96.4%	0
03-190	FD27E	GW1005MW07B	103%	95.8%	0
03-191	FD27F	Trip Blank	93.7%	91.4%	0

	MB/LCS QC LIMITS	SAMPLE QC LIMITS
(TFT) = Trifluorotoluene	(74-126)	(66-129)
(BB) = Bromobenzene	(75-121)	(69-124)

Limits Updated - 07/01/02

\# Column to be used to flag recovery values

* Values outside of required QC limits

D System Monitoring Compound diluted out

FORM-II TPHg

ANALYTICAL RESOURCES INCORPORATED

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg - Toluene to Naphthalene

QC Report No: FD27-URS Operating Services, Inc.
Matrix: Water — Project: Camp Bonneville
53-F-0072323
Data Release Authorized: GP — Date Received: 01/09/03
Reported: 01/14/03

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Gas Range	Gas ID	Surr A Rec	Surr B Rec
011303MB	Method Blank	01/13/03	1:1	0.25 U	NO	98.3%	98.7%
03-187-FD27B	GW05MW07B	01/13/03	1:1	0.25 U	NO	103%	98.1%
03-189-FD27D	GW505MW07B	01/13/03	1:1	0.25 U	NO	103%	96.4%
03-190-FD27E	GW1005MW07B	01/13/03	1:1	0.25 U	NO	103%	95.8%
03-191-FD27F	Trip Blank	01/13/03	1:1	0.25 U	NO	93.7%	91.4%

Surrogate A is Trifluorotoluene.
Surrogate B is Bromobenzene.

Values reported in ppm (mg/L).
Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

Data Qualifiers

U	Compound not detected at the given detection limit.
X	Value detected above linear range of instrument. Dilution required.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
NR	Indicates no recovery due to matrix interference.

FORM-1 TPH-g

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg - Toluene to Naphthalene

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water

Data Release Authorized: JB
Reported: 01/14/03

Sample No: GW05MW07B
QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: 01/09/03

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Analyzed 01/13/03

CONSTITUENT	SAMPLE VALUE	SPIKE FOUND	SPIKE ADDED	% RECOVERY	RPD
MATRIX SPIKE					
Gasoline Range Hydrocarbons	< 0.25	2.43	2.50	97.2%	
MATRIX SPIKE DUPLICATE					
Gasoline Range Hydrocarbons	< 0.25	2.60	2.50	104%	6.76%

TPHg Surrogate Recovery

Matrix Spike	Trifluorotoluene	128%
Matrix Spike	Bromobenzene	105%
MS Duplicate	Trifluorotoluene	128%
MS Duplicate	Bromobenzene	108%

Values reported in parts per million (mg/L)

TOTAL GASOLINE RANGE HYDROCARBONS
NWTPHg - Toluene to Naphthalene

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: 011303LC
LIMS ID: 03-187
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

Data Release Authorized: JW
Reported: 01/14/03

LABORATORY CONTROL SAMPLE RECOVERY REPORT
Analyzed 01/13/03

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% REC	RPD
LABORATORY CONTROL SAMPLE				
Gasoline Range Hydrocarbons	2.22	2.50	88.8%	
LCS DUPLICATE SAMPLE				
Gasoline Range Hydrocarbons	2.30	2.50	92.0%	3.5%

TPHg Surrogate Rec	LC	LCD
Trifluorotoluene	116%	117%
Bromobenzene	99.9%	98.3%

Values reported in parts per million (mg/L)

ANALYTICAL RESOURCES INCORPORATED

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

Client ID	O-TER	TOT OUT
MB-011203	80.8%	0
LCS-011203	82.8%	0
LCSD-011203	85.2%	0
GW05MW07B	83.2%	0
GW05MW07B MS	111%	0
GW05MW07B MSD	106%	0
GW505MW07B	78.2%	0
GW505MW07B RE	86.1%	0
GW1005MW07B	92.6%	0
GW1005MW07B RE	80.9%	0
MB-011703	85.3%	0
LCS-011703	81.4%	0
LCSD-011703	79.4%	0
GW05MW07B	84.1%	0
GW05MW07B MS	76.7%	0
GW05MW07B MSD	80.4%	0

	LCS/MB LIMITS	QC LIMITS
(O-TER) = o-Terphenyl	(55-110)	(32-116)

Prep Method: SW3510C
Log Number Range: 03-187 to 03-513

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID
and Motor Oil

ANALYTICAL RESOURCES INCORPORATED

Lab ID: 03-187
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/22/03

Lab ID	Sample ID	Date Extracted	Date Analyzed	Dilution Factor	Diesel Range	*HC ID	Motor Oil Range	Surr Rec
011203MB1	Method Blank	01/12/03	01/15/03	1:1	0.25 U	---	0.50 U	80.8%
FD27B	GW05MW07B	01/12/03	01/15/03	1:1	0.25 U	---	0.50 U	83.2%
FD27D	GW505MW07B	01/12/03	01/15/03	1:1	0.25 U	---	0.50 U	78.2%
FD27DR	GW505MW07B	01/17/03	01/21/03	1:1	0.25 U	---	0.50 U	86.1%
FD27E	GW1005MW07B	01/12/03	01/15/03	1:1	0.25 U	---	0.50 U	92.6%
FD27ER	GW1005MW07B	01/17/03	01/21/03	1:1	0.25 U	---	0.50 U	80.9%
011703MB1	Method Blank	01/17/03	01/21/03	1:1	0.25 U	---	0.50 U	85.3%
FD27B	GW05MW07B	01/17/03	01/21/03	1:1	0.25 U	---	0.50 U	84.1%

Surrogate is o-Terphenyl

* ID indicates, in the opinion of the analyst, the petroleum product with the best pattern match. 'NO' indicates that there was not a good match for any of the requested products.
Values reported in ppm (mg/L)
Diesel quantitation on total peaks in the range from C12 to C24.
Motor Oil quantitation on total peaks in the range from C24 to C38.

Data Qualifiers

U	Compound not detected at the given detection limit.
J	Indicates an estimated value below the calculated detection limit.
S	No value reported due to saturation of the detector. Dilution required.
D	Indicates the surrogate was not detected because of dilution of the extract.
E	Indicates a value above the linear range of the detector. Dilution required.
NR	Indicates no recovery due to matrix interference.
B	Indicates compound also detected in the method blank.

FORM-1 TPHD

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water

Data Release Authorized:
Reported: 01/22/03

Sample No: GW05MW07B
QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: 01/09/03

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Extracted: 01/12/03
Analyzed: 01/15/03

CONSTITUENT	SAMPLE VALUE	SPIKE VALUE	SPIKE AMT	% RECOVERY	RPD
MATRIX SPIKE					
Diesel Range Hydrocarbons	0.25 U	2.26	3.09	73.1%	
MATRIX SPIKE DUPLICATE					
Diesel Range Hydrocarbons	0.25 U	2.21	3.09	71.5%	2.2%

TPHD Surrogate Recovery

	MS	MSD
o-Terphenyl	111%	106%

Values reported in parts per million (mg/L)

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID

Lab Sample ID: FD27B
LIMS ID: 03-513
Matrix: Water

Data Release Authorized:
Reported: 01/22/03

Sample No: GW05MW07B
QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: 01/09/03

MATRIX SPIKE/SPIKE DUPLICATE RECOVERY

Extracted: 01/17/03
Analyzed: 01/21/03

CONSTITUENT	SAMPLE VALUE	SPIKE VALUE	SPIKE AMT	% RECOVERY	RPD
MATRIX SPIKE					
Diesel Range Hydrocarbons	0.25 U	2.34	3.33	70.3%	
ATRIX SPIKE DUPLICATE					
Diesel Range Hydrocarbons	0.25 U	2.53	3.33	76.0%	7.8%

TPHD Surrogate Recovery

	MS	MSD
o-Terphenyl	76.7%	80.4%

Values reported in parts per million (mg/L)

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID

Lab Sample ID: 011203LCS1
LIMS ID: 03-187
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

Data Release Authorized:
Reported: 01/22/03

LABORATORY CONTROL SAMPLE RECOVERY REPORT
Extracted: 01/12/03
Analyzed: 01/15/03

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY	RPD
Diesel Range Hydrocarbons-LCS	2.16	3.00	72.0%	
Diesel Range Hydrocarbons-LCSD	2.29	3.00	76.3%	5.8%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	82.8%	85.2%

Values reported in parts per million (mg/L)

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS
NWTPHD Range C12 to C24 by GC/FID

Lab Sample ID: 011703LCS1
LIMS ID: 03-513
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323

Data Release Authorized:
Reported: 01/22/03

LABORATORY CONTROL SAMPLE RECOVERY REPORT
Extracted: 01/17/03
Analyzed: 01/21/03

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY	RPD
Diesel Range Hydrocarbons-LCS	2.20	3.00	73.3%	
Diesel Range Hydrocarbons-LCSD	2.16	3.00	72.0%	1.8%

TPHD Surrogate Recovery

	LCS	LCSD
o-Terphenyl	81.4%	79.4%

Values reported in parts per million (mg/L)

ANALYTICAL RESOURCES INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT

ARI Job: FD27
Matrix: Water — Project: Camp Bonneville
Date Received: 01/09/03 — 53-F-0072323

ARI ID	Client ID	Sample Amt	Final Vol	Prep Date
03-187-011203MB1	Method Blank	500 mL	1.00 mL	01/12/03
03-187-011203LCS1	Lab Control	500 mL	1.00 mL	01/12/03
03-187-011203LCSD1	Lab Control Dup	500 mL	1.00 mL	01/12/03
03-187-FD27B	GW05MW07B	500 mL	1.00 mL	01/12/03
03-187-FD27BMS	GW05MW07B	485 mL	1.00 mL	01/12/03
03-187-FD27BMSD	GW05MW07B	485 mL	1.00 mL	01/12/03
03-189-FD27D	GW505MW07B	480 mL	1.00 mL	01/12/03
03-189-FD27DRE	GW505MW07B	485 mL	1.00 mL	01/17/03
03-190-FD27E	GW1005MW07B	470 mL	1.00 mL	01/12/03
03-190-FD27ERE	GW1005MW07B	475 mL	1.00 mL	01/17/03
03-513-011703MB1	Method Blank	500 mL	1.00 mL	01/17/03
03-513-011703LCS1	Lab Control	500 mL	1.00 mL	01/17/03
03-513-011703LCSD1	Lab Control Dup	500 mL	1.00 mL	01/17/03
03-513-FD27B	GW05MW07B	500 mL	1.00 mL	01/17/03
03-513-FD27BMS	GW05MW07B	450 mL	1.00 mL	01/17/03
03-513-FD27BMSD	GW05MW07B	450 mL	1.00 mL	01/17/03

Cover Page

INORGANIC ANALYSIS DATA PACKAGE

ANALYTICAL RESOURCES INCORPORATED

CLIENT: URS Operating Servic

PROJECT: Camp Bonneville

SDG: FD27

CLIENT ID	ARI ID	ARI LIMS ID	REPREP
GW05MW07B	FD27B	03-187	
GW05MW07BD	FD27BDUP	03-187	
GW05MW07BS	FD27BSPK	03-187	
GW505MW07B	FD27D	03-189	
PBW	FD27MB1	03-189	
LCSW	FD27MB1SPK	03-189	
GW1005MW07B	FD27E	03-190	
GW05MW07B	FD27G	03-196	
GW05MW07BD	FD27GDUP	03-196	
GW05MW07BS	FD27GSPK	03-196	
GW505MW07B	FD27H	03-197	
PBW	FD27MB2	03-197	
LCSW	FD27MB2SPK	03-197	
GW1005MW07B	FD27I	03-198	

Were ICP interelement corrections applied ? Yes/No YES

Were ICP background corrections applied ? Yes/No YES

If yes - were raw data generated before application of background corrections ? Yes/No NO

Comments: _____

THIS DATA PACKAGE HAS BEEN REVIEWED AND AUTHORIZED FOR RELEASE BY:

Signature: Jay Kuhn Name: Jay Kuhn

Date: 1/27/03 Title: Inorganics Manager

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW05MW07B**
TOTAL METALS

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/24/03

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/14/03	6010B	01/16/03	7440-36-0	Antimony	50	50 U
200.8	**01/14/03**	**200.8**	**01/17/03**	**7440-38-2**	**Arsenic**	**0.2**	**0.3**
3010A	01/14/03	6010B	01/16/03	7440-39-3	Barium	3	3 U
3010A	01/14/03	6010B	01/16/03	7440-41-7	Beryllium	1	1 U
3010A	01/14/03	6010B	01/16/03	7440-43-9	Cadmium	2	2 U
3010A	**01/14/03**	**6010B**	**01/16/03**	**7440-70-2**	**Calcium**	**50**	**7,270**
3010A	**01/14/03**	**6010B**	**01/16/03**	**7440-47-3**	**Chromium**	**5**	**9**
3010A	01/14/03	6010B	01/16/03	7440-50-8	Copper	2	2 U
3010A	**01/14/03**	**6010B**	**01/16/03**	**7439-89-6**	**Iron**	**50**	**110**
200.8	01/14/03	200.8	01/17/03	7439-92-1	Lead	1	1 U
3010A	**01/14/03**	**6010B**	**01/16/03**	**7439-95-4**	**Magnesium**	**50**	**4,790**
7470	01/14/03	7470A	01/17/03	7439-97-6	Mercury	0.1	0.1 U
3010A	01/14/03	6010B	01/16/03	7440-02-0	Nickel	10	10 U
3010A	**01/14/03**	**6010B**	**01/16/03**	**7440-09-7**	**Potassium**	**500**	**1,540**
200.8	01/14/03	200.8	01/17/03	7782-49-2	Selenium	0.5	0.5 U
3010A	01/14/03	6010B	01/16/03	7440-22-4	Silver	3	3 U
3010A	**01/14/03**	**6010B**	**01/16/03**	**7440-23-5**	**Sodium**	**500**	**8,720**
200.8	01/14/03	200.8	01/17/03	7440-28-0	Thallium	0.2	0.2 U
3010A	01/14/03	6010B	01/16/03	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water

Sample No: GW05MW07B
QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/24/03

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Sample ug/L	Duplicate ug/L	RPD	Control Limit	Q
Antimony	50 U	50 U	0.0%	+/- 50	L
Arsenic	0.3	0.3	0.0%	+/- 0.2	L
Barium	3 U	3 U	0.0%	+/- 3	L
Beryllium	1 U	1 U	0.0%	+/- 1	L
Cadmium	2 U	2 U	0.0%	+/- 2	L
Calcium	7270	7400	1.8%	+/- 20 %	
Chromium	9	9	0.0%	+/- 5	L
Copper	2 U	2 U	0.0%	+/- 2	L
Iron	110	100	9.5%	+/- 50	L
Lead	1 U	1 U	0.0%	+/- 1	L
Magnesium	4790	4890	2.1%	+/- 20 %	
Mercury	0.1 U	0.1 U	0.0%	+/- 0.1	L
Nickel	10 U	10 U	0.0%	+/- 10	L
Potassium	1540	1500	2.6%	+/- 500	L
Selenium	0.5 U	0.5 U	0.0%	+/- 0.5	L
Silver	3 U	3 U	0.0%	+/- 3	L
Sodium	8720	8960	2.7%	+/- 20 %	
Thallium	0.2 U	0.2 U	0.0%	+/- 0.2	L
Zinc	6 U	6 U	0.0%	+/- 6	L

'Q' codes: * = control limit not met
L = RPD not valid, alternate limit = detection limit

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW05MW07B
Lab Sample ID: FD27B — QC Report No: FD27-URS Operating Services, Inc.
LIMS ID: 03-187 — Project: Camp Bonneville
Matrix: Water — 53-F-0072323
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/24/03

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Sample ug/L		Spike ug/L	Spike Added	% Recovery	Q
Antimony	50	U	1780	2000	89.0%	
Arsenic	0.3		27.2	25.0	108%	
Barium	3	U	2000	2000	100%	
Beryllium	1	U	509	500	102%	
Cadmium	2	U	497	500	99.4%	
Calcium	7270		17100	10000	98.3%	
Chromium	9		514	500	101%	
Copper	2	U	508	500	102%	
Iron	114		2180	2000	103%	
Lead	1	U	27	25	108%	
Magnesium	4790		14700	10000	99.1%	
Mercury	0.1	U	1.1	1.0	110%	
Nickel	10	U	503	500	101%	
Potassium	1540		11600	10000	101%	
Selenium	0.5	U	78.6	80.0	98.2%	
Silver	3	U	477	500	95.4%	
Sodium	8720		18200	10000	94.8%	
Thallium	0.2	U	25.3	25.0	101%	
Zinc	6	U	503	500	101%	

'Q' codes:
- N = control limit not met
- H = %R not applicable, sample concentration too high
- * = RPD control limit not met
- NA = Not applicable - analyte not spiked

Control Limits:
- Percent Recovery: 75-125%
- RPD: +/-20%

FORM-V

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW505MW07B**
TOTAL METALS

Lab Sample ID: FD27D
LIMS ID: 03-189
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/24/03

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/14/03	6010B	01/16/03	7440-36-0	Antimony	50	50 U
200.8	**01/14/03**	**200.8**	**01/17/03**	**7440-38-2**	**Arsenic**	**0.2**	**0.4**
3010A	01/14/03	6010B	01/16/03	7440-39-3	Barium	3	3 U
3010A	01/14/03	6010B	01/16/03	7440-41-7	Beryllium	1	1 U
3010A	01/14/03	6010B	01/16/03	7440-43-9	Cadmium	2	2 U
3010A	**01/14/03**	**6010B**	**01/16/03**	**7440-70-2**	**Calcium**	**50**	**7,510**
3010A	**01/14/03**	**6010B**	**01/16/03**	**7440-47-3**	**Chromium**	**5**	**7**
3010A	01/14/03	6010B	01/16/03	7440-50-8	Copper	2	2 U
3010A	**01/14/03**	**6010B**	**01/16/03**	**7439-89-6**	**Iron**	**50**	**90**
200.8	01/14/03	200.8	01/23/03	7439-92-1	Lead	1	1 U
3010A	**01/14/03**	**6010B**	**01/16/03**	**7439-95-4**	**Magnesium**	**50**	**5,000**
7470	01/14/03	7470A	01/17/03	7439-97-6	Mercury	0.1	0.1 U
3010A	01/14/03	6010B	01/16/03	7440-02-0	Nickel	10	10 U
3010A	**01/14/03**	**6010B**	**01/16/03**	**7440-09-7**	**Potassium**	**500**	**1,510**
200.8	01/14/03	200.8	01/17/03	7782-49-2	Selenium	0.5	0.5 U
3010A	01/14/03	6010B	01/16/03	7440-22-4	Silver	3	3 U
3010A	**01/14/03**	**6010B**	**01/16/03**	**7440-23-5**	**Sodium**	**500**	**8,680**
200.8	01/14/03	200.8	01/17/03	7440-28-0	Thallium	0.2	0.2 U
3010A	01/14/03	6010B	01/16/03	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW1005MW07B**
TOTAL METALS

Lab Sample ID: FD27E
LIMS ID: 03-190
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/24/03

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/14/03	6010B	01/16/03	7440-36-0	Antimony	50	50 U
200.8	01/14/03	200.8	01/17/03	7440-38-2	Arsenic	0.2	0.2 U
3010A	01/14/03	6010B	01/16/03	7440-39-3	Barium	3	3 U
3010A	01/14/03	6010B	01/16/03	7440-41-7	Beryllium	1	1 U
3010A	01/14/03	6010B	01/16/03	7440-43-9	Cadmium	2	2 U
3010A	01/14/03	6010B	01/16/03	7440-70-2	Calcium	50	50 U
3010A	01/14/03	6010B	01/16/03	7440-47-3	Chromium	5	5 U
3010A	01/14/03	6010B	01/16/03	7440-50-8	Copper	2	2 U
3010A	01/14/03	6010B	01/16/03	7439-89-6	Iron	50	50 U
200.8	01/14/03	200.8	01/17/03	7439-92-1	Lead	1	1 U
3010A	01/14/03	6010B	01/16/03	7439-95-4	Magnesium	50	50 U
7470	01/14/03	7470A	01/17/03	7439-97-6	Mercury	0.1	0.1 U
3010A	01/14/03	6010B	01/16/03	7440-02-0	Nickel	10	10 U
3010A	01/14/03	6010B	01/16/03	7440-09-7	Potassium	500	500 U
200.8	01/14/03	200.8	01/17/03	7782-49-2	Selenium	0.5	0.5 U
3010A	01/14/03	6010B	01/16/03	7440-22-4	Silver	3	3 U
3010A	01/14/03	6010B	01/16/03	7440-23-5	Sodium	500	500 U
200.8	01/14/03	200.8	01/17/03	7440-28-0	Thallium	0.2	0.2 U
3010A	01/14/03	6010B	01/16/03	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW05MW07B**
DISSOLVED METALS

Lab Sample ID: FD27G
LIMS ID: 03-196
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/24/03

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/14/03	6010B	01/16/03	7440-36-0	Antimony	50	50 U
200.8	**01/14/03**	**200.8**	**01/17/03**	**7440-38-2**	**Arsenic**	**0.2**	**0.4**
6010B	01/14/03	6010B	01/16/03	7440-39-3	Barium	3	3 U
6010B	01/14/03	6010B	01/16/03	7440-41-7	Beryllium	1	1 U
6010B	01/14/03	6010B	01/16/03	7440-43-9	Cadmium	2	2 U
6010B	**01/14/03**	**6010B**	**01/16/03**	**7440-70-2**	**Calcium**	**50**	**7,210**
6010B	01/14/03	6010B	01/16/03	7440-47-3	Chromium	5	5 U
6010B	01/14/03	6010B	01/16/03	7440-50-8	Copper	2	2 U
6010B	01/14/03	6010B	01/16/03	7439-89-6	Iron	50	50 U
200.8	01/14/03	200.8	01/23/03	7439-92-1	Lead	1	1 U
6010B	**01/14/03**	**6010B**	**01/16/03**	**7439-95-4**	**Magnesium**	**50**	**4,780**
7470	01/14/03	7470A	01/17/03	7439-97-6	Mercury	0.1	0.1 U
6010B	**01/14/03**	**6010B**	**01/16/03**	**7440-02-0**	**Nickel**	**10**	**10**
6010B	**01/14/03**	**6010B**	**01/16/03**	**7440-09-7**	**Potassium**	**500**	**1,470**
200.8	01/14/03	200.8	01/17/03	7782-49-2	Selenium	0.5	0.5 U
6010B	01/14/03	6010B	01/16/03	7440-22-4	Silver	3	3 U
6010B	**01/14/03**	**6010B**	**01/16/03**	**7440-23-5**	**Sodium**	**500**	**8,980**
200.8	01/14/03	200.8	01/17/03	7440-28-0	Thallium	0.2	0.2 U
6010B	01/14/03	6010B	01/16/03	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

ANALYTICAL RESOURCES INCORPORATED

Lab Sample ID: FD27G
LIMS ID: 03-196
Matrix: Water

Data Release Authorized:
Reported: 01/24/03

Sample No: GW05MW07B
QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: 01/09/03

MATRIX DUPLICATE QUALITY CONTROL REPORT

Analyte	Sample ug/L	Duplicate ug/L	RPD	Control Limit	Q
Antimony	50 U	50 U	0.0%	+/- 50	L
Arsenic	0.4	0.3	28.6%	+/- 0.2	L
Barium	3 U	3 U	0.0%	+/- 3	L
Beryllium	1 U	1 U	0.0%	+/- 1	L
Cadmium	2 U	2 U	0.0%	+/- 2	L
Calcium	7210	7270	0.8%	+/- 20 %	
Chromium	5 U	5 U	0.0%	+/- 5	L
Copper	2 U	2 U	0.0%	+/- 2	L
Iron	50 U	50 U	0.0%	+/- 50	L
Lead	1 U	1 U	0.0%	+/- 1	L
Magnesium	4780	4830	1.0%	+/- 20 %	
Mercury	0.1 U	0.1 U	0.0%	+/- 0.1	L
Nickel	10	10 U	0.0%	+/- 10	L
Potassium	1470	1420	3.5%	+/- 500	L
Selenium	0.5 U	0.5 U	0.0%	+/- 0.5	L
Silver	3 U	3 U	0.0%	+/- 3	L
Sodium	8980	8920	0.7%	+/- 20 %	
Thallium	0.2 U	0.2 U	0.0%	+/- 0.2	L
Zinc	6 U	6 U	0.0%	+/- 6	L

'Q' codes: * = control limit not met
L = RPD not valid, alternate limit = detection limit

FORM-VI

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

ANALYTICAL RESOURCES INCORPORATED

Sample No: GW05MW07B
Lab Sample ID: FD27G
QC Report No: FD27-URS Operating Services, Inc.
LIMS ID: 03-196
Project: Camp Bonneville
Matrix: Water
53-F-0072323
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/24/03

MATRIX SPIKE QUALITY CONTROL REPORT

Analyte	Sample ug/L		Spike ug/L	Spike Added	% Recovery	Q
Antimony	50	U	2040	2000	102%	
Arsenic	0.4		28.4	25.0	112%	
Barium	3	U	2060	2000	103%	
Beryllium	1	U	527	500	105%	
Cadmium	2	U	527	500	105%	
Calcium	7210		17500	10000	103%	
Chromium	5	U	524	500	105%	
Copper	2	U	527	500	105%	
Iron	50	U	2130	2000	106%	
Lead	1	U	26	25	104%	
Magnesium	4780		15300	10000	105%	
Mercury	0.1	U	1.1	1.0	110%	
Nickel	10		530	500	104%	
Potassium	1470		11700	10000	102%	
Selenium	0.5	U	88.1	80.0	110%	
Silver	3	U	391	500	78.2%	
Sodium	8980		18600	10000	96.2%	
Thallium	0.2	U	28.0	25.0	112%	
Zinc	6	U	545	500	109%	

'Q' codes:
N = control limit not met
H = %R not applicable, sample concentration too high
* = RPD control limit not met
NA = Not applicable - analyte not spiked

Control Limits:
Percent Recovery: 75-125%
RPD: +/-20%

FORM-V

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET
DISSOLVED METALS

Sample No: GW505MW07B

Lab Sample ID: FD27H
LIMS ID: 03-197
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/24/03

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/14/03	6010B	01/16/03	7440-36-0	Antimony	50	50 U
200.8	**01/14/03**	**200.8**	**01/17/03**	**7440-38-2**	**Arsenic**	**0.2**	**0.3**
6010B	01/14/03	6010B	01/16/03	7440-39-3	Barium	3	3 U
6010B	01/14/03	6010B	01/16/03	7440-41-7	Beryllium	1	1 U
6010B	01/14/03	6010B	01/16/03	7440-43-9	Cadmium	2	2 U
6010B	**01/14/03**	**6010B**	**01/16/03**	**7440-70-2**	**Calcium**	**50**	**6,730**
6010B	01/14/03	6010B	01/16/03	7440-47-3	Chromium	5	5 U
6010B	01/14/03	6010B	01/16/03	7440-50-8	Copper	2	2 U
6010B	01/14/03	6010B	01/16/03	7439-89-6	Iron	50	50 U
200.8	01/14/03	200.8	01/17/03	7439-92-1	Lead	1	1 U
6010B	**01/14/03**	**6010B**	**01/16/03**	**7439-95-4**	**Magnesium**	**50**	**4,420**
7470	01/14/03	7470A	01/17/03	7439-97-6	Mercury	0.1	0.1 U
6010B	01/14/03	6010B	01/16/03	7440-02-0	Nickel	10	10 U
6010B	**01/14/03**	**6010B**	**01/16/03**	**7440-09-7**	**Potassium**	**500**	**1,420**
200.8	01/14/03	200.8	01/17/03	7782-49-2	Selenium	0.5	0.5 U
6010B	01/14/03	6010B	01/16/03	7440-22-4	Silver	3	3 U
6010B	**01/14/03**	**6010B**	**01/16/03**	**7440-23-5**	**Sodium**	**500**	**8,210**
200.8	01/14/03	200.8	01/17/03	7440-28-0	Thallium	0.2	0.2 U
6010B	01/14/03	6010B	01/16/03	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: GW1005MW07B**
DISSOLVED METALS

Lab Sample ID: FD27I
LIMS ID: 03-198
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/24/03

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/14/03	6010B	01/16/03	7440-36-0	Antimony	50	50 U
200.8	01/14/03	200.8	01/17/03	7440-38-2	Arsenic	0.2	0.2 U
6010B	01/14/03	6010B	01/16/03	7440-39-3	Barium	3	3 U
6010B	01/14/03	6010B	01/16/03	7440-41-7	Beryllium	1	1 U
6010B	01/14/03	6010B	01/16/03	7440-43-9	Cadmium	2	2 U
6010B	01/14/03	6010B	01/16/03	7440-70-2	Calcium	50	50 U
6010B	01/14/03	6010B	01/16/03	7440-47-3	Chromium	5	5 U
6010B	01/14/03	6010B	01/16/03	7440-50-8	Copper	2	2 U
6010B	01/14/03	6010B	01/16/03	7439-89-6	Iron	50	50 U
200.8	01/14/03	200.8	01/17/03	7439-92-1	Lead	1	1 U
6010B	01/14/03	6010B	01/16/03	7439-95-4	Magnesium	50	50 U
7470	01/14/03	7470A	01/17/03	7439-97-6	Mercury	0.1	0.1 U
6010B	01/14/03	6010B	01/16/03	7440-02-0	Nickel	10	10 U
6010B	01/14/03	6010B	01/16/03	7440-09-7	Potassium	500	500 U
200.8	01/14/03	200.8	01/17/03	7782-49-2	Selenium	0.5	0.5 U
6010B	01/14/03	6010B	01/16/03	7440-22-4	Silver	3	3 U
6010B	01/14/03	6010B	01/16/03	7440-23-5	Sodium	500	500 U
200.8	01/14/03	200.8	01/17/03	7440-28-0	Thallium	0.2	0.2 U
6010B	01/14/03	6010B	01/16/03	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
TOTAL METALS

Lab Sample ID: FD27MB
LIMS ID: 03-189
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 01/24/03

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
3010A	01/14/03	6010B	01/16/03	7440-36-0	Antimony	50	50 U
200.8	01/14/03	200.8	01/17/03	7440-38-2	Arsenic	0.2	0.2 U
3010A	01/14/03	6010B	01/16/03	7440-39-3	Barium	3	3 U
3010A	01/14/03	6010B	01/16/03	7440-41-7	Beryllium	1	1 U
3010A	01/14/03	6010B	01/16/03	7440-43-9	Cadmium	2	2 U
3010A	01/14/03	6010B	01/16/03	7440-70-2	Calcium	50	50 U
3010A	01/14/03	6010B	01/16/03	7440-47-3	Chromium	5	5 U
3010A	01/14/03	6010B	01/16/03	7440-50-8	Copper	2	2 U
3010A	01/14/03	6010B	01/16/03	7439-89-6	Iron	50	50 U
200.8	01/14/03	200.8	01/17/03	7439-92-1	Lead	1	1 U
3010A	01/14/03	6010B	01/16/03	7439-95-4	Magnesium	50	50 U
7470	01/14/03	7470A	01/17/03	7439-97-6	Mercury	0.1	0.1 U
3010A	01/14/03	6010B	01/16/03	7440-02-0	Nickel	10	10 U
3010A	01/14/03	6010B	01/16/03	7440-09-7	Potassium	500	500 U
200.8	01/14/03	200.8	01/17/03	7782-49-2	Selenium	0.5	0.5 U
3010A	01/14/03	6010B	01/16/03	7440-22-4	Silver	3	3 U
3010A	01/14/03	6010B	01/16/03	7440-23-5	Sodium	500	500 U
200.8	01/14/03	200.8	01/17/03	7440-28-0	Thallium	0.2	0.2 U
3010A	01/14/03	6010B	01/16/03	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

ANALYTICAL RESOURCES INCORPORATED

METALS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: GW505MW07B
Lab Sample ID: FD27LCS
QC Report No: FD27-URS Operating Services, Inc.
LIMS ID: 03-189
Project: Camp Bonneville
Matrix: Water
53-F-0072323
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/24/03

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Spike ug/L	Spike Added	% Recovery	Q
Antimony	2030	2000	102%	
Arsenic	25.5	25.0	102%	
Barium	2050	2000	102%	
Beryllium	519	500	104%	
Cadmium	511	500	102%	
Calcium	10400	10000	104%	
Chromium	518	500	104%	
Copper	519	500	104%	
Iron	2140	2000	107%	
Lead	26.0	25.0	104%	
Magnesium	10600	10000	106%	
Mercury	2.10	2.00	105%	
Nickel	510	500	102%	
Potassium	10200	10000	102%	
Selenium	74.0	80.0	92.5%	
Silver	494	500	98.8%	
Sodium	10100	10000	101%	
Thallium	24.9	25.0	99.6%	
Zinc	520	500	104%	

'Q' codes: N = control limit not met

Control Limits: 80-120%

FORM-VII

ANALYTICAL RESOURCES INCORPORATED

INORGANICS ANALYSIS DATA SHEET **Sample No: Method Blank**
DISSOLVED METALS

Lab Sample ID: FD27MB
LIMS ID: 03-197
Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 01/24/03

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	ug/L
6010B	01/14/03	6010B	01/16/03	7440-36-0	Antimony	50	50 U
200.8	01/14/03	200.8	01/17/03	7440-38-2	Arsenic	0.2	0.2 U
6010B	01/14/03	6010B	01/16/03	7440-39-3	Barium	3	3 U
6010B	01/14/03	6010B	01/16/03	7440-41-7	Beryllium	1	1 U
6010B	01/14/03	6010B	01/16/03	7440-43-9	Cadmium	2	2 U
6010B	01/14/03	6010B	01/16/03	7440-70-2	Calcium	50	50 U
6010B	01/14/03	6010B	01/16/03	7440-47-3	Chromium	5	5 U
6010B	01/14/03	6010B	01/16/03	7440-50-8	Copper	2	2 U
6010B	01/14/03	6010B	01/16/03	7439-89-6	Iron	50	50 U
200.8	01/14/03	200.8	01/23/03	7439-92-1	Lead	1	1 U
6010B	01/14/03	6010B	01/16/03	7439-95-4	Magnesium	50	50 U
7470	01/14/03	7470A	01/17/03	7439-97-6	Mercury	0.1	0.1 U
6010B	01/14/03	6010B	01/16/03	7440-02-0	Nickel	10	10 U
6010B	01/14/03	6010B	01/16/03	7440-09-7	Potassium	500	500 U
200.8	01/14/03	200.8	01/17/03	7782-49-2	Selenium	0.5	0.5 U
6010B	01/14/03	6010B	01/16/03	7440-22-4	Silver	3	3 U
6010B	01/14/03	6010B	01/16/03	7440-23-5	Sodium	500	500 U
200.8	01/14/03	200.8	01/17/03	7440-28-0	Thallium	0.2	0.2 U
6010B	01/14/03	6010B	01/16/03	7440-66-6	Zinc	6	6 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

ANALYTICAL RESOURCES INCORPORATED

METALS ANALYSIS DATA SHEET
DISSOLVED METALS

Lab Sample ID: FD27LCS
LIMS ID: 03-197
Matrix: Water

Sample No: GW505MW07B
QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: 01/09/03

Data Release Authorized:
Reported: 01/24/03

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Spike ug/L	Spike Added	% Recovery	Q
Antimony	1950	2000	97.5%	
Arsenic	26.3	25.0	105%	
Barium	1950	2000	97.5%	
Beryllium	506	500	101%	
Cadmium	503	500	101%	
Calcium	9980	10000	99.8%	
Chromium	498	500	99.6%	
Copper	505	500	101%	
Iron	2010	2000	100%	
Lead	25	25	100%	
Magnesium	10000	10000	100%	
Mercury	2.3	2.0	115%	
Nickel	500	500	100%	
Potassium	9620	10000	96.2%	
Selenium	80.9	80.0	101%	
Silver	425	500	85.0%	
Sodium	9870	10000	98.7%	
Thallium	26.3	25.0	105%	
Zinc	508	500	102%	

'Q' codes: N = control limit not met

Control Limits: 80-120%

FORM-VII

ANALYTICAL RESOURCES INCORPORATED

QA Report - Method Blank Analysis

Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: NA

Data Release Authorized: ad
Reported: 01/22/03

METHOD BLANK RESULTS
CONVENTIONALS

Analysis Date & Batch	Constituent	Units	Result
01/10/03 01103#1	Total Suspended Solids	mg/L	< 1.0 U
01/13/03 01133#1	Chloride	mg/L	< 1.0 U
01/20/03 01203#1	Total Cyanide	mg/L	< 0.005 U
01/09/03 01093#2	N-Nitrite	mg-N/L	< 0.010 U
01/09/03 01093#1	Nitrate + Nitrite (NO3+NO2)	mg-N/L	< 0.010 U
01/14/03 01143#1	Sulfate	mg/L	< 2.5 U
01/14/03 01143#1	Total Organic Carbon	mg/L	< 1.5 U
01/14/03 01143#1	Dissolved Organic Carbon	mg/L	< 1.5 U

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW05MW07B

Lab Sample ID: FD27B
LIMS ID: 03-187
Matrix: Water

Data Release Authorized: dlp
Reported: 01/22/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/13/03 01133#1	SM 2320	1.0	mg/L CaCO3	38
Carbonate (Alkalinity)	01/13/03 01133#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/13/03 01133#1	SM 2320	1.0	mg/L CaCO3	38
Total Suspended Solids	01/10/03 01103#1	EPA 160.2	2.5	mg/L	2.8
Chloride	01/13/03 01133#1	EPA 325.2	1.0	mg/L	15
Total Cyanide	01/20/03 01203#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/09/03	Calculated	0.010	mg-N/L	0.16
N-Nitrite	01/09/03 01093#2	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/09/03 01093#1	EPA 353.2	0.010	mg-N/L	0.16
Sulfate	01/14/03 01143#1	EPA 375.2	2.5	mg/L	2.6
Total Organic Carbon	01/14/03 01143#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/14/03 01143#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for FD27 received 01/09/03

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW505MW07B

Lab Sample ID: FD27D
LIMS ID: 03-189
Matrix: Water

Data Release Authorized: [signature]
Reported: 01/22/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/13/03 01133#1	SM 2320	1.0	mg/L CaCO3	40
Carbonate (Alkalinity)	01/13/03 01133#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/13/03 01133#1	SM 2320	1.0	mg/L CaCO3	40
Total Suspended Solids	01/10/03 01103#1	EPA 160.2	2.5	mg/L	< 2.5 U
Chloride	01/13/03 01133#1	EPA 325.2	1.0	mg/L	14
Total Cyanide	01/20/03 01203#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/09/03	Calculated	0.010	mg-N/L	0.13
N-Nitrite	01/09/03 01093#2	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/09/03 01093#1	EPA 353.2	0.010	mg-N/L	0.13
Sulfate	01/14/03 01143#1	EPA 375.2	2.5	mg/L	< 2.5 U
Total Organic Carbon	01/14/03 01143#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/14/03 01143#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for FD27 received 01/09/03

ANALYTICAL RESOURCES INCORPORATED

Final Report
Laboratory Analysis of Conventional Parameters

Sample No: GW1005MW07B

Lab Sample ID: FD27E
LIMS ID: 03-190
Matrix: Water

Data Release Authorized: QAP
Reported: 01/22/03

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Sampled: 01/08/03
Date Received: 01/09/03

Analyte	Analysis Date & Batch	Method	RL	Units	Result
Alkalinity	01/13/03 01133#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Carbonate (Alkalinity)	01/13/03 01133#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Bicarbonate (Alkalinity)	01/13/03 01133#1	SM 2320	1.0	mg/L CaCO3	< 1.0 U
Total Suspended Solids	01/10/03 01103#1	EPA 160.2	2.5	mg/L	< 2.5 U
Chloride	01/13/03 01133#1	EPA 325.2	1.0	mg/L	< 1.0 U
Total Cyanide	01/20/03 01203#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Nitrate	01/09/03	Calculated	0.010	mg-N/L	0.053
N-Nitrite	01/09/03 01093#2	EPA 353.2	0.010	mg-N/L	< 0.010 U
Nitrate + Nitrite (NO3+NO2)	01/09/03 01093#1	EPA 353.2	0.010	mg-N/L	0.053
Sulfate	01/14/03 01143#1	EPA 375.2	2.5	mg/L	< 2.5 U
Total Organic Carbon	01/14/03 01143#1	EPA 415.1	1.5	mg/L	< 1.5 U
Dissolved Organic Carbon	01/14/03 01143#1	EPA 415.1	1.5	mg/L	< 1.5 U

RL Analytical reporting limit
U Undetected at reported detection limit

Report for FD27 received 01/09/03

ANALYTICAL RESOURCES INCORPORATED

QA Report - Laboratory Control Samples

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: NA

Data Release Authorized: ap
Reported: 01/22/03

LABORATORY CONTROL SAMPLES
CONVENTIONALS

Constituent	Units	Measured Value	True Value	Recovery
Laboratory Control Sample				
Alkalinity	mg/L CaCO3	125	118	106%
Date analyzed: 01/13/03	Batch ID: 01133#1			

000103

ANALYTICAL RESOURCES INCORPORATED

QA Report - Standard Reference Material Analysis

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: NA

Data Release Authorized: qmp
Reported: 01/22/03

STANDARD REFERENCE MATERIAL ANALYSIS
CONVENTIONALS

Constituent	Units	Value	True Value	Recovery
ERA P088-506				
Alkalinity	mg/L CaCO3	69.2	65.3	106%
Date analyzed: 01/13/03	Batch ID: 01133#1			
ERA #12081				
Chloride	mg/L	25.5	25.0	102%
Date analyzed: 01/13/03	Batch ID: 01133#1			
ERA #05032				
Total Cyanide	mg/L	0.155	0.150	103%
Date analyzed: 01/20/03	Batch ID: 01203#1			
ERA #17042				
N-Nitrite	mg-N/L	0.410	0.400	102%
Date analyzed: 01/09/03	Batch ID: 01093#2			
ERA #10062				
Nitrate + Nitrite (NO3+NO2)	mg-N/L	0.407	0.400	102%
Date analyzed: 01/09/03	Batch ID: 01093#1			
ERA #13062				
Sulfate	mg/L	24.5	25.0	98.0%
Date analyzed: 01/14/03	Batch ID: 01143#1			
ERA #0206-02-02				
Total Organic Carbon	mg/L	19.6	20.0	98.0%
Date analyzed: 01/14/03	Batch ID: 01143#1			
ERA #0206-02-02				
Dissolved Organic Carbon	mg/L	19.6	20.0	98.0%
Date analyzed: 01/14/03	Batch ID: 01143#1			

000104

ANALYTICAL RESOURCES INCORPORATED

QA Report - Replicate Analysis

Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: 01/09/03

Data Release Authorized: ark
Reported: 01/22/03

DUPLICATE ANALYSIS RESULTS
CONVENTIONALS

Constituent	Units	Sample Value	Duplicate Value	RPD
ARI ID: 03-187, FD27 B	**Client Sample ID: GW05MW07B**			
Alkalinity	mg/L CaCO3	38	38	0.0%
Carbonate (Alkalinity)	mg/L CaCO3	< 1.0 U	< 1.0 U	NA
Bicarbonate (Alkalinity)	mg/L CaCO3	38	38	0.0%
Total Suspended Solids	mg/L	2.8	3.5	22.2%
Chloride	mg/L	15	16	6.5%
Total Cyanide	mg/L	< 0.005 U	< 0.005 U	NA
N-Nitrite	mg-N/L	< 0.010 U	< 0.010 U	NA
Nitrate + Nitrite (NO3+NO2)	mg-N/L	0.16	0.14	13.3%
Sulfate	mg/L	2.6	2.7	3.8%
Total Organic Carbon	mg/L	< 1.5 U	< 1.5 U	NA
Dissolved Organic Carbon	mg/L	< 1.5 U	< 1.5 U	NA

000105

RPD Limits +/- 20%

ANALYTICAL RESOURCES INCORPORATED

QA Report - Matrix Spike/Matrix Spike Duplicate Analysis

Matrix: Water

QC Report No: FD27-URS Operating Services, Inc.
Project: Camp Bonneville
53-F-0072323
Date Received: 01/09/03

Data Release Authorized: MR
Reported: 01/22/03

MATRIX SPIKE/MATRIX SPIKE DUP. QA/QC REPORT
CONVENTIONALS

Constituent	Units	Sample Value	Spike Value	Spike Added	Recovery
ARI ID: 03-187, FD27 B	**Client Sample ID: GW05MW07B**				
Chloride MS	mg/L	15.4	36.0	20.0	103%
Chloride MSD	mg/L	15.4	35.0	20.0	98.0%
Total Cyanide MS	mg/L	< 0.005	0.150	0.148	101%
Total Cyanide MSD	mg/L	< 0.005	0.152	0.148	103%
N-Nitrite MS	mg-N/L	< 0.010	0.415	0.400	104%
N-Nitrite MSD	mg-N/L	< 0.010	0.417	0.400	104%
Nitrate + Nitrite (NO3+NO2) MS	mg-N/L	0.155	0.527	0.400	93.0%
Nitrate + Nitrite (NO3+NO2) MSD	mg-N/L	0.155	0.524	0.400	92.2%
Sulfate	mg/L	2.6	25.4	20.0	114%
Total Organic Carbon MS	mg/L	< 1.50	18.9	20.0	94.5%
Total Organic Carbon MSD	mg/L	< 1.50	19.1	20.0	95.5%
Dissolved Organic Carbon MS	mg/L	< 1.50	19.8	20.0	99.0%
Dissolved Organic Carbon MSD	mg/L	< 1.50	20.0	20.0	100%

MS/MSD Recovery Limits: 75 - 125 %

000106

Appendix K
Field Notes

Location _____ Date 5/30/01

Project / Client 53-F00 72323.00 03000

0630 @ hotel, meet S. Wolfe (URS), Doug McCew (HFA) - travel to Camp Bonneville

0700 Sign in @ Front gate meet Rick Garrison (USACE) + travel to Landfill 4.

0730 walk locations of wells test radio - no reply; NEED HF Radio

NEED Additional FIRST AID
- large dressing
- bottle of eyewash

Partly cloudy, ~60°F

ONSITE
Steve Wolfe (URS)
John Rapp (URS)
Doug McCew (HFA)
Rick Harrison (USACE)
Rodney La Brosse (Cascade)

Frequencies
MODE 1 - 141.075

Location _____ Date 5/30/01

Project / Client _____

Scale _____

205 - South
Stark exit - turn rt around base Mt. Taber Yu way around (middle choice) veered left back onto Stark follow to 39th
Go left 39th to Hawthorne turn rt follow 24th
Holman's Funeral Home
24th / Hawthorne
(Event Rental Comm.)
2422 SE Hawthorne
503-232-9031

1130-1330 travel to ERC to pickup radios

1340 to drop strong sites

Location _____ Date 5/30/01

Project / Client _____

Ammo storage area
- 2 drums soil
- behind locked gate

1500 Water level
L4-MW01 - 16.53' (total depth = 30.25')
L4-MW02 - 25.62' (total depth = 40.25)

Rick Garrison
work: 206-764-3312
Steve Wolfe
home: 206-524-6410

1630 EOD

Location _____ Date 5/31/01

Project / Client _____

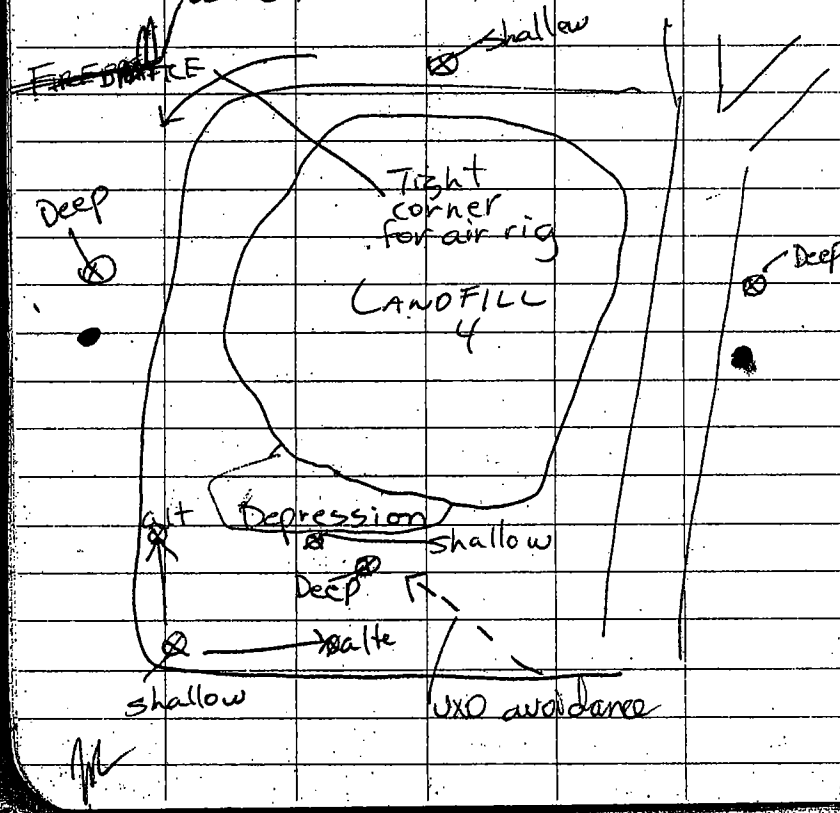
Scale _____

Partly Cloudy 55°F
0630 ONSITE, sign in
Warren requests schedule 0600-1430 for Friday
0700 present onsite
JK (URS)
SW (URS)
Doug McCew (HFA)
Mark Lewis (HFA)
Scott/Guy (Stratus)
Rick Harrison (USACE)
Complete Safety mtg.
Issues:
Road to Landfill turnaround to narrow for double trailers to turnaround need to use single trailers - unable to complete work by end of Thursday. Stratus NA on Friday.

Location _____ Date 5/31/01

Project / Client _____

0830 Decision is made to create road to shallow well on North side leave this MW flush to pass air rig over and drive around to deep MW location on west side.



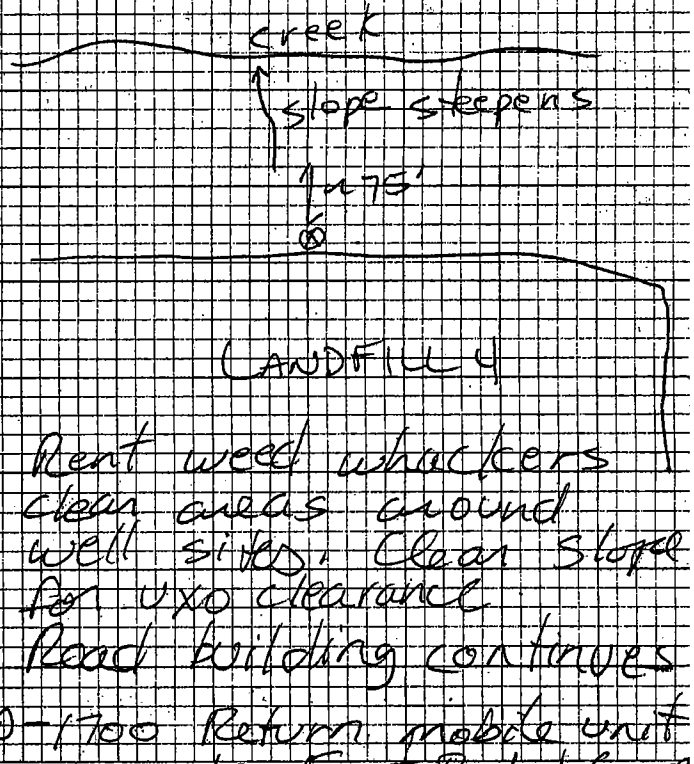
Location _____ Date 5/31/01

Project / Client _____

_____ Scale

Begin scraping fire break along northside.

0845 East of landfill max distance is ~ 50-75' that additional MWs can be advanced.



Rent weed whackers clear areas around well sites. Clear slope for UXO clearance. Road building continues

1600-1700 Return mobile unit to Event Rental Comm.

Location _____ Date 6/1/01

Project / Client _____

Partly cloudy, chance of Rain 20%

0545 office Radio channel
Channel 4, mode 6

0600 Safety Mtg.
MR, SW (URS)
DM, ML (USACE)
RG (USACE)
- down hole clearance for auger holes
- investigate slope above creek for gravel layer
- frags found on slope appear to be low velocity WWII type
* bring 100' tape next week

0620 dig around on slope above creek for gravel layer.
dig ~4' through sandy loam - no gravel layer observ.
proceed up hill ~10' advance to ~1' very stiff

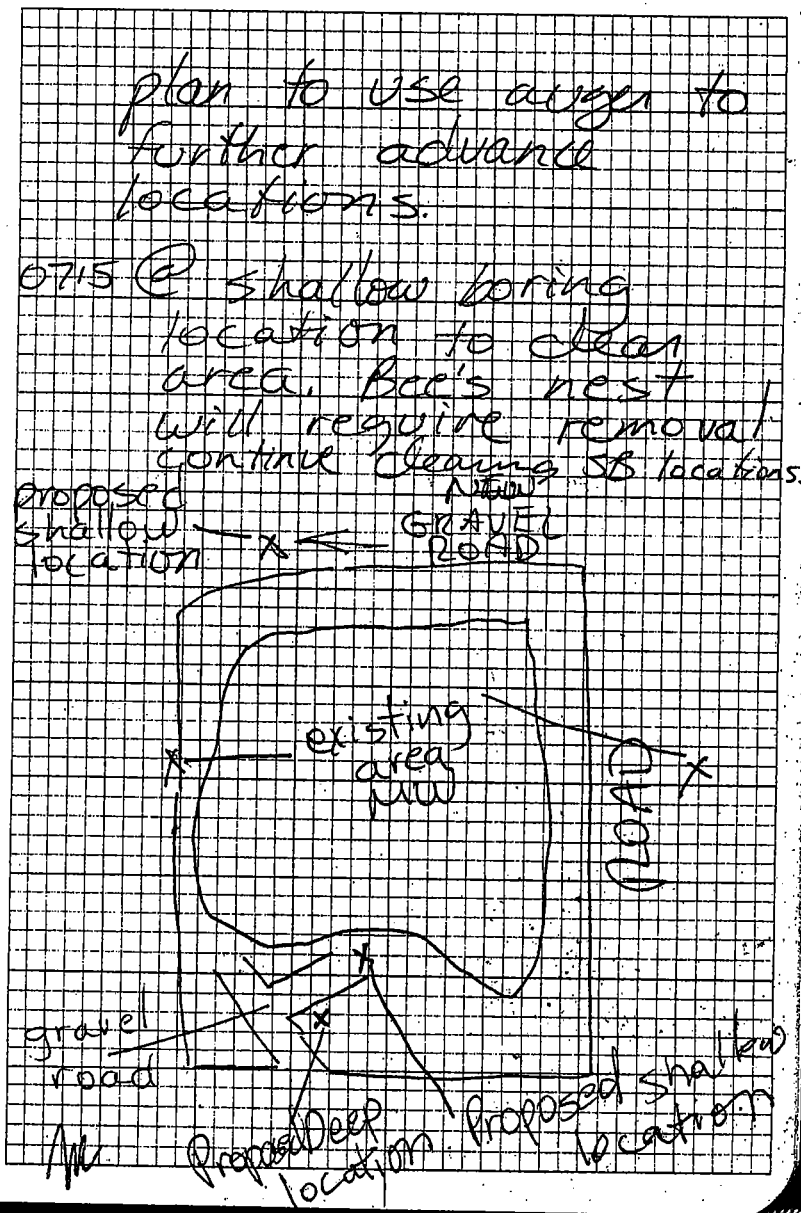
Location _____ Date 6/1/01

Project / Client _____

_____ Scale

plan to use auger to further advance locations.

0715 @ shallow boring location to clear area. Bee's nest will require removal continue clearing 5B locations.



Location _____ Date 6/1/01

Project / Client 53-F00 72323.00

1000 DM(HEA) to pickup equip at Hotel, gas/sw to contact Seattle office, Cascade, etc.

4x4
10/20 sand

1100 back at Landfill 4 Mark Lewis (HEA) using backhoe

1120 at 1st hole near creek to use hand auger to advance further down
0-2' sandy loam w/ clay
2-4' clayey silt
4-6' clay, moist, reddish-brn.
~6' more silt, drier
~~6.5'~~ → gravel layer
~ 5.8'

at 2nd hole uphill 10'
0-7' clay/silt, no gravel layer encountered.

Location _____ Date 6/1/01

Project / Client _____

_____ Scale

1230 UXO avoidance at each shallow proposed SB continues. Sweep including 5' radius around SB location. HEA uses excavator to dig down and sweep to 6' bgs. no UXO encountered.

1415 UXO clearance at shallow SB locations completed

1430 @ front gate office depart site.

1500 - 1830 travel to Seattle

Location _____ Date 6/19/01

Project / Client USACE

Camp Bonneville - Landfill 4

Mostly Sunny, cool, 65°F

0630 onsite, drillers to build decon pad for rig, decon equip, mob to MW02B

0700 Paul Anderson (USACE) onsite

0830 Safety Mtg.

1000 Decon, Todd (DI) to purchase more plywood for decon liner around MW02B

1115 Photo of decon pad

1120 DTW (MW01B) = 41' bgs

1200 set up on MW02B

1350 photos of rig decon MW02B drill pad forest area above creek

1415 Drill over MW02B location

1421 photo of MW02B drill location.

1440 begin driving 9 5/8 casing

1443 @ 5'

1450 @ ~7', silty sandy ~~Gravel~~ to sandy clayey ~~silt~~ GRAVEL

Location _____ Date 6/19/01

Project / Client USACE

Camp Bonneville - L4 Scale

1456 add 10' casing / check pipe, driller comments that @ 5' gravel. Collect 2-4oz jars of 6-7' material

1512 Casing @ ~10', SP-GP, dry, consolidated top of bedrock.

1530 Casing hits rock is pushed off center - need to pull out casing with jacks - requires cutting off casing to put on jacks. Todd (CDI) to discuss with office.

1640 attempt to pull back unscrew 10' large casing from ground 2' bgs screw on 5' to place jacks tommorow, EOD

1740

Location Bonneville - L4 Date 6/20/01

Project / Client USACE

Partly Sunny, 65°-70°F

0600 ONSITE QR (UNS) TM, HM, QR (CDI) set jack over stickup @ MW02B to remove stuck casing

0700 casing pulled out

0730 rock lip @ ~10' kicked casing off center. will try to hammer out and re-center casing

0800 photos - damaged 9" 14" air hammer

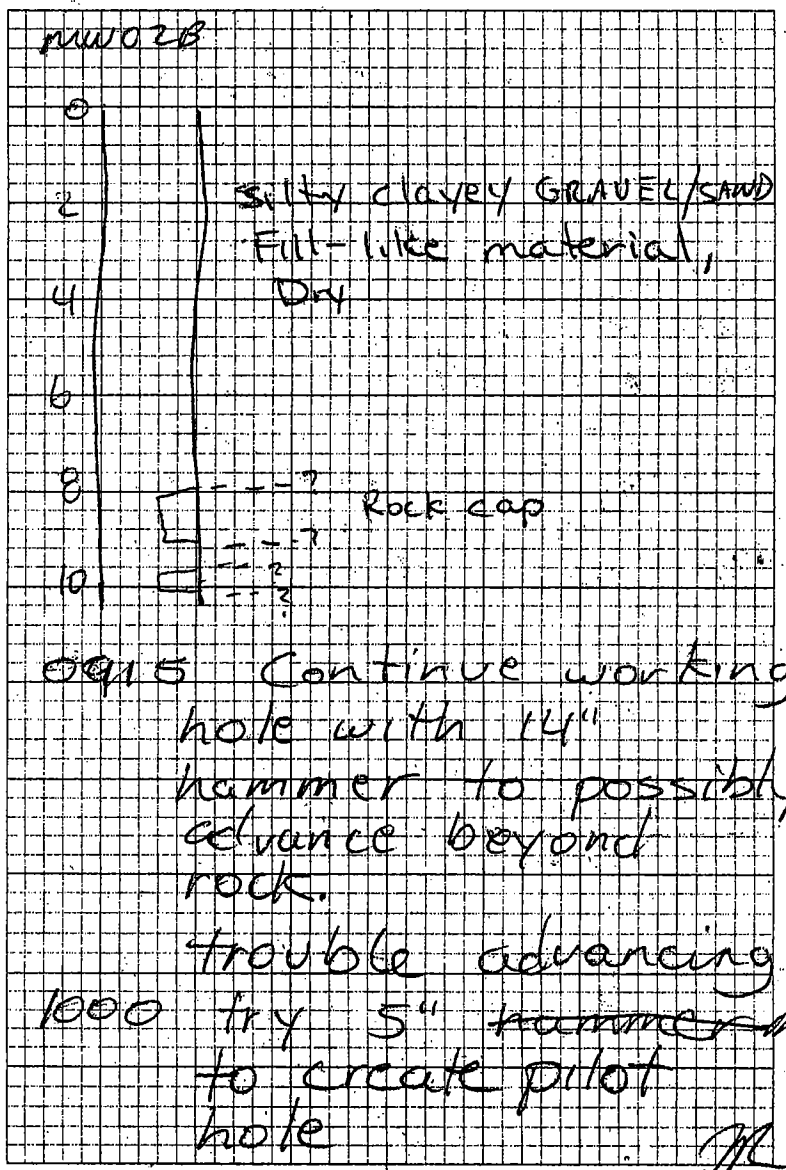
0830 phone w/ S. Wolfe - re: development technique for MWs, screen interval for MW02B - SW concurs on lowering screen relative to ZA for vertical gradients

0850 14" hammer @ ~10' to open hole

Location Bonneville - L4 Date 6/20/01

Project / Client USACE

Scale



0915 Continue working hole with 14" hammer to possibly advance beyond rock.

Trouble advancing

1000 try 5" hammer to create pilot hole

Location USACE Date 6/20/01

Project / Client Bonneville - Landfill 4

1010 5" penetrates rock to softer soil. Todd thinks hole won't be straight if 8" follows hole. Decide

1035 to try, advance slowly. Decide to bring in larger compressor to run 14" hammer

1230 Compressor onsite connect - comp. needs oil ~ 1 hour standby for oil. (Ryan / Chris)

1410 Oil arrives on site (15 gal)

1424 start compressor advance 14" hammer to T.D.

1440 @ 11.6' + 5', hole appears slightly off center

1448 Resume drilling

Location Bonneville - L4 Date 6/20/01

Project / Client USACE

Scale

1515 Hammer is hot not firing will add water to cool

1519 Resume

1524 Hammer in clay underlying rock - driller not sure @ 14'

Remove hammer, put on 9" casing

1620 Begin advancing 9"

1627 @ ~17', silty clay, some coarse sand, trace rounded gravel moist - sl. wet.

1639 Resume

1654 @ ~27' clayey sand some gravel

1720 injected 420 in

1700 @ ~ 37' very soft silty clay

Location USACE Date 6/20/01

Project / Client Bonneville - Landfill 4

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Project / Client USACE

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Location Bonneville - L4 Date 6/20/01

Project / Client USACE

1710	no real stratification noted, PA concurs - run casing to bedrock ~45' to core
1712	Resume
1716	@ ~37' + SANDY SILT
1726	Resume
1732	@ ~42 - SAME add 10'
1739	Resume
1745	@ ~48' - no bedrock
1800	will trip out 4-5 footers and replace w/ 10' "
1835	Depart site, EOD

Location Bonneville - L4 Date 6/21/01

Project / Client USACE

Cloudy, Rain likely, 55° Scale

0645 on site, gr (URS) TM, Hank, Jose (COE), trip out of MW02S borehole replace 5' with 10' - continue advancing until bedrock

0815 Casing @ ~58' - mistake made near end of shift Thursday - missed additional 10' run advanced @ ~1730

0821 5 footers out of hole

0827 @ 58'

0843 MW02S DTGW = 44.46' bgs

0850 60' of rock on

0852 Casing/stem #7 added

0857 Drive #7, hole produces 55 gal + @ 65'

0915 Resume #7

0921 @ ~69' clayey / sandy mudstone fragments

Location Bonneville - L4 Date 6/20/01

Project / Client USACE

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Location Bonneville - L4 Date 6/21/01

Project / Client USACE

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0915 Resume #7

0921 @ ~69' clayey / sandy mudstone fragments

Location Bonneville - L4 Date 6/21/01

Project / Client USACE

925 Add joint #8, bottom of casing @ ~68'
Sandy Mudstone, weathered sand grains,
930 Drive #8
938 @ ~73' bgs on bedrock weathered Andesite, black,
1005 Set seal(s) top of bedrock 764-3706
Mike Nelson
1100 PA departs, R. Garrison (onsite)
1125 Scott (Enviro-Tech) drum [206 ✝363-9000] pick-up
1240 begin coring 75'-80'
5' run, 25 gal min injection, 1,000 RPM
1312 @ ~79'
1320 @ ~80'
1345 Core barrel out, retract bottom 1.5', difficulty extracting remaining
Recovery → 50%
RQD% → 100%
1418 begin Run #2

Location Bonneville - L4 Date 6/21/01

Project / Client USACE

MW02B Scale

0 Silty SAND, dry
2
4 Gravelly SAND - Sandy GRAVEL, Fill material, Dry
6
8 Hard Rock, fine grain igneous, feldspar
10
12 Hard Drilling on Rock
14
16 Sandy Silty CLAY, trace gravel, moist, light brown
18
20
22 Silty Sandy CLAY - Clayey Sandy SILT, trace to some Gravel, moist
24

Location BONNEVILLE - L4 Date 6/21/01

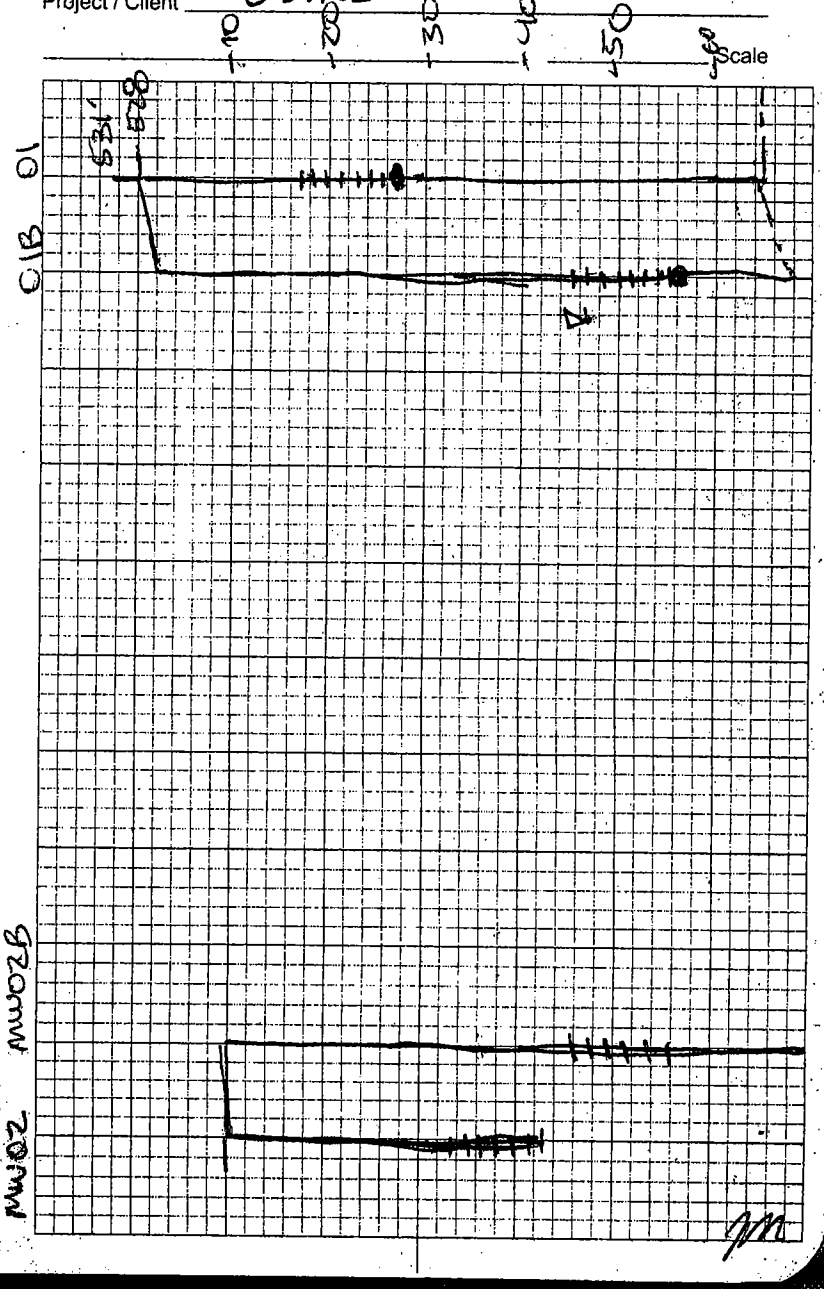
Project / Client USACE

MW02B

24	SAME
26	Silty Sandy CLAY
28	
30	Silty SAND
32	
	SANDY CLAY
34	
36	Same
38	
	Same
40	
	Soft, silty Sandy CLAY
42	possible GW level
44	
46	

Location Bonneville - L4 Date 6/21/01

Project / Client USACE



Location Bonneville - L4 Date 6/21/01

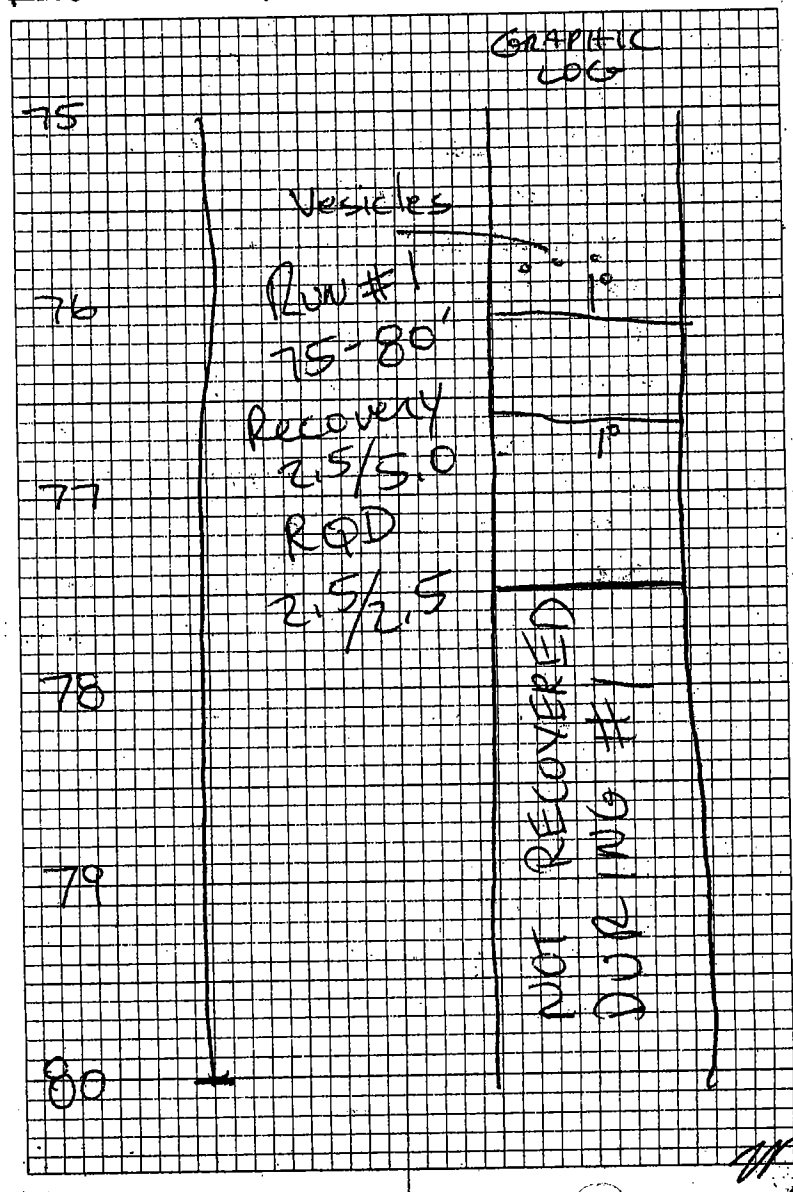
Project / Client USACE

1418	begin Run #2
1441	@ ~84'
1446	stop coring ~85' bgs
1501	extract core, ~2' protruding from core barrel. top 2' of Run #1 - no further recovery of 2nd run. Decide not to over drill 2nd run to core 85-90'. place run #2 77.5-79.5 w/ run #1 in same box. Recovery 2/5 40% RQD 100% No fractures noted
1615	continue tripping ~~out~~ in 7" to back ream bent. seal
1700	Depart site

Location Bonneville - L4 Date 6/21/01

Project / Client USACE

MW02B Rock Core Scale



Location Bonneville - L4 Date 6/22/01

Project / Client USACE

0700	onsite mp (URS) Rick Garrison (USACE) TM, Hank, Jose (CDI) install MW02B well casing, decon, setup on MW03B
0800	Label drums from MW02B cuttings/fluids
0930	Drillers installing MW centralizers @ 72' 52' 32' 15'
	Bags of SAND: IIII IIII II — Holeplug: IIII IIII IIII
0952	15' of 9" casing out
1112	total of 80' casing out hole
1145	suspend PVC casing grout @ ~14' bgs will allow to stand over weekend and complete well Monday
1200	leave decon/mob to MW03B
1430	Depart site for Seattle
1800	Seattle, EOD.

Location Bonneville - L4 Date 6/22/01

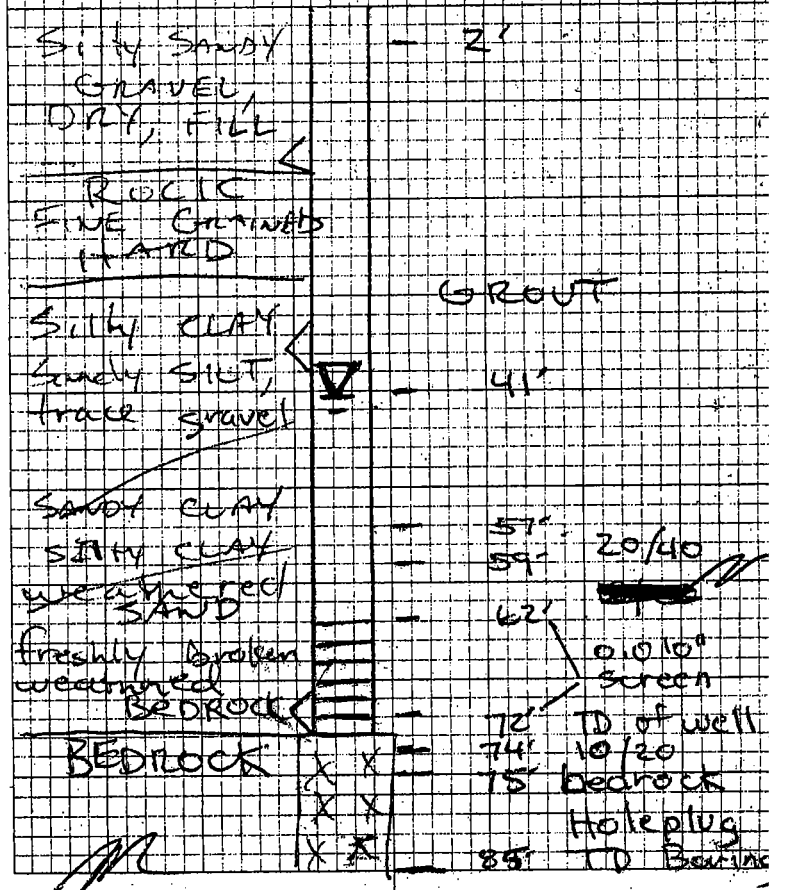
Project / Client USACE

Scale

MW02B Installation

TD of boring ~ 85'

Recovered ~41.5' core (79.5')



Location Bonneville - L4 Date 6/25/01

Project / Client USACE

0600-0930: travel to site
1000 Decon, set MW02B, mob to MW03B
1100 Add chips to MW02B to ~2' bgs
onsite: gpc(URS)
TM, HM, Jose (CDI)
Rick Garrison (USACE)
1130 bottom of well ~ 72.5' bgs
1133 DTGW = 32.8' bgs

Rig { IR T3W
Type { Ingersoll-Rand
Drill Master
Model T3W (HR2-825

1330 begin MW03B drill 9" casing
1334 @ ~7'
1342 add joint #2
1349 Resume driving 9"
1355 @ ~16'
1400 @ ~17'-18'
Need to refuel rig

MK

SURFACE CASED

Location Bonneville - L4 Date 6/25/01

Project / Client USACE

Scale

MW03B

0 Silty CLAY UXO completed to ~10'
3
6 Silty Sandy CLAY, red-brn, sl. moist, trace gravel
9
12
15 Silty CLAY = clayey SILT med. stiff, red-brn, trace sand, sl. moist
18
21
24
27
30 " SAME, some sand trace gravel

MK

Location Bonneville - L4 Date 6/25/01

Project / Client USACE

1422 add joint #3
1425 begin driving from 18'
1450 @ ~28', sand SILTY CLAY-Clayey SILT, some sandy, trace gravel, yellow-orange oxidation, SL. MOIST
Add joint #4
1457 begin driving from ~28' no water added to allow for better observation
1525 add joint #5, increasing gravel / sand still mostly clay, slightly moist to moist.
1532 begin driving from ~38'
1547 @ ~48', air surge pushes water up and out of nearby MW03A
add joint #6 (5'er)
1555 begin driving from ~48'
1603 @ ~53', add joint #7 (5'

MW

Location Bonneville - L4 Date 6/25/01

Project / Client USACE

Scale

MW03B

30 increasing sand/gravel

33 Sandy, Gravelly CLAY

36

39 increasing gravel %, moist, gravel up to 1", yellow, weathered bedrock frags

42

45

48 Silty Clay = Clayey SILT - ~20% sand / gravel, weathered bedrock / sand

51

54

57 weathered Bedrock

60

Approx. Bedrock Surface

MW

Location Bonneville - L4 Date 6/25/01

Project / Client USACE

1612 begin drilling from 53'
1618 @ ~55' weathered sand/gravel/bedrock - wet
1624 @ 57' casing on bedrock - will hole to sit and measure DTGW Tuesday.
1649 Depart site, EOD

Location Bonneville - L4 Date 6/26/01

Project / Client USACE

Scale

0630 onsite JR (URS), RG (USACE) TM, HM, AL (CDM) on phone w/ S. Wolfe re. - well development schedule/method - sampling 1 week after development?

0755. DTGW (MW038) = ~27' bgs blow out hole advance to check for competent bedrock before coring.

0830 @ MW01A to conduct recharge tests. DTGW = 16.48 TD = ~30' ~ 13.5' water = ~2 gal using .16 gal/ft

0851	=	24.55	0900 21.96
52	=	23.98	0901 21.81
53	=	23.02	0906 21.16
54	=	23.35	0911 20.44
55	=	23.04	0916 19.81
56	=	22.72	0921 19.57
57	=	22.50	0926 18.21
58	=	22.29	
59	=	22.11	

Location Bonneville - L4 Date 6/26/01

Project / Client USACE

0951 17.75' DTGW after 1 hour
0955 begin coring 60-65
1,000 RPM 1,000 PSI
1031 @ 65', pull back 1' to break off core
1040 R. La Brosse (CDI) onsite to pickup flatbed. Trouble locking onto core barrel to pull out
1100 Retreive core - 1' Recovered 100% RQD, no fractures Andesite, feldspar, biotite?
1110 ~~do~~ TM (CDI) to phone shop to discuss strategy to remove more of the core.
1225 further retrieve 2 more sections from 1st run. Total of 48" attempt to retrieve remaining 1' of core (64'-65')
1307 Retrieved ~56" of core piece together RQD = 100%

Location Bonneville - L4 Date 6/26/01

Project / Client USACE

Scale

MW03B CORE LOG

60
Mechanical Break @ 60.5'
61 Horizontal fracture @ 61' (0°)
Mechanical Break @ 61.3'
62 Fracture (30°-35°) @ 62.05'
vesicles
Mechanical Break @ 62.5'
63 Fracture @ 63'.
vesicles
64 Recovered 56" of 60"
65

1309 begin coring 65'-70'
1328 @ ~ 68'
1338 @ ~ 70'
1416 Retrieve 60" of core in 3 sections Rec 100% RQD% 100%
1430 trip out 7" to install well.
1521 trip in 7" to drill out

Location Bonneville - L4 Date 6/26/01

Project / Client USACE

1600	load pipe/bits to	
	move to CDI shop	
1640	Depart site, EOD	

Location Bonneville - L4 Date 6/26/01

Project / Client USACE

Scale

MW03B

65[illegible] MB

MB

66[illegible] MB

FRACTURE (2)

67[illegible] MB

MB

68[illegible] Healed fracture

Calcite

69[illegible] MB

70[illegible]

Location Bonneville - L4 Date 6/27/01

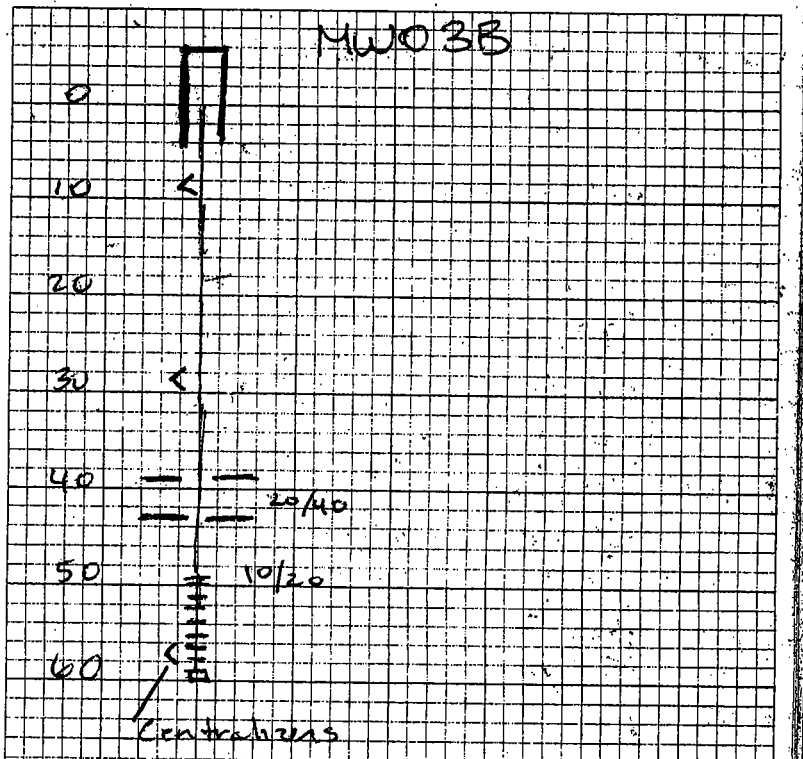
Project / Client USACE

0630	onsite JR(URS), RG(USACE), TM, HM, JL (CDI)
	Drill out MW03B, install well, construct well pads at all 3 deep MW locations.
0730	place jacks to extract 9" casing to place well, unstable ground around boring difficult
0900	begin installing MW03B centralizers on bottom screen, top 3, top 5
	Bags of Sand HHT HHT HHT IIII
0945	MW05A Recharge test
	DTGW = 24.16' btoc
	TD = 36.6' ~12' water, = ~2 gal = 1 casing vol.
1015	Heavy rain / lightening disrupt MW install and MW recharge test
1120	S. Wolfe message re: Sampling July 23, notify Range Control.

Location Bonneville - L4 Date 6/27/01

Project / Client USACE

Scale



1125	Resume pulling casing and installing well.
1225	casing out, remove jacks from over well. Re-start MW05A recharge test
1230	DTGW = 23.63' btoc

Location Bonneville - L4 Date 6/27/01

Project / Client USACE

1251	32.16
1252	32.01
53	31.58
54	31.15
55	30.74
56	30.37
57	29.99
58	29.64
59	29.31
1300	28.99
1301	28.69
1306	27.32
1311	26.46
1316	25.73
1321	25.17

Approx. 7' in 30 min

1350 Honey Bucket clean onsite

1400 begin const. monument for MW02B and general cleanup

1530

1700 2 monuments to be const on Thursday, Depart site

Location Bonneville - L4 Date 6/28/01

Project / Client USACE

Scale

0620 JL (URS) onsite

0700 onsite TM, Hyd, JL (< 02)

0830 Rick G. (USACE) onsite

2 monuments to be installed

0915 RG departs site for SEA

0940 DRUM COUNT (87)

		# of Drums
MW03A	III	3
MW04A	III	3
MW05A	II	2
MW01B	~~IIII IIII IIII IIII IIII IIII~~	26
MW02B	~~IIII IIII IIII IIII IIII~~ III	20
MW03B	~~IIII IIII IIII IIII IIII~~ III	23
DECON	IIII	10

Location Bonneville - L4 Date 6/28/01

Project / Client USACE

87 drums on pallets behind bunker

1255 Monuments completed begin mob off site.

1400 load trucks

1500 Depart Site

1530 - 1830 travel to Seattle

Location Bonneville - L4 Date 7/2/01

Project / Client USACE

Scale

0900 - 1300 travel to Fedex pick up VSI monitor

1400 13.40' DTGW MW01B

TD 55.76'

13.40

42.36

.18

254.16

4236

6.7776 gal / 1 casing vol

1415 begin bailing MW01B stainless steel bailer

1425 ~2.5 gals out very little fines

1430 place pump down well

1450 begin pumping well MW01B - initial rate 2.5 gal/min Wolf

Location Bonneville - L4 Date 7/2/01

Project / Client USACE

MW01B

VOL	~20	~~30~~ 25 ~~40~~	~~20~~ 30 ~~60~~	~~35~~ 35 ~~80~~	~~40~~ 40 ~~100~~
TIME	1500	1505	1510	1515	1520
TURB	95	35.8	25.3	19.0	13.9
Temp	10.47	10.39	10.37	10.37	10.41
pH	5.47	5.07	4.93	4.89	4.84
Cond	.026	0.026	0.026	.026	.025
Eh	223.0	243.9	259.7	268.1	272.2
DO	11.30	11.00	10.72	10.57	10.90

VOL	50	55
TIME	1530	1540
TURB	6.5	4.7
TEMP	10.50	10.81
pH	4.73	4.71
COND	.025	0.025
Eh	288.6	291.6
DO	10.38	10.10

1542 NTUs < 5.0
~55 gal purged
1551 Surge for ~15 min.
1613 start pumping
1620 battery dead - switch batteries
1625 start

Location Bonneville - L4 Date 7/2/01

Project / Client USACE

Scale

MW01B

VOL	~~10~~ 05	~~20~~ 15	~~30~~ 25	~~40~~ 35
TIME	1630	1640	1650	1700
TURB	257	98.2	38.1	~6 (bleed)
Temp	10.86	10.68	10.30	10.28
pH	4.69	4.84	4.65	4.68
COND	.029	.029	.029	.028
Eh	309.4	316.6	318.6	302.6
DO	10.69	10.64	10.69	11.12

1703 16.89' btoc
~~~45~~ 95 gallons purged
1730 set up on MW01A to surge / bail and allow to recharge overnight
1815 EOD
~~~

Location Bonneville - L4 Date 7/3/01

Project / Client USACE

0620 JL (URS) onsite
0640 Ryan Galbraith onsite (Cascade)
set up on MW02A to surge / bail
0705 MW01A DTGW = 16.99 btoc
30.6' TD = ~13.5' H2O
or ~2.25 gal = 1 vol.
0708 begin surging
0738 stop surging, bail well of fines
TD = 30.4'
bailer removes couple inches of filter pack type sand.
0800 5 gal bailed, very silty / sandy water
DTGW = 25.9' / rising
0806 DTGW ~ 24.0' / rising
0812 begin surging
0842 stop surging DTGW = 20.18'
TD = 30.2
0907 25.4" (~5 gal bailed)
~1" of fine sand at base of bucket.

Location Bonneville - L4 Date 7/3/01

Project / Client USACE

Scale

0947 start pumping MW01
~2 gal / min
0950 well dry, no parameters collected. Very silty.
1010 @ MW04A, 1st pump left on MW01
TD = 46.7' DTGW = 27.58'
Decon equip steam / soap / rinse
1028 start surging
1058 stop surging
1112 bail ~5 gal, minimal silt. pump.
1142 start pumping MW04A
1144 pump off = well dry, no parameters
1150 allow to recharge to pump and assess rate
1229 39.7 start pumping -
-stop pump malfunction
~~1233.08 2.3 gpm~~
1239 38.18
1241 Dry, 2 minutes, decide to move to MW02B to work on deep wells and allow for recharge

Location Bonneville - L4 Date 7/3/01

Project / Client USACE

1307	35.42' DTGW → MW02B
	TD = 75.1'
	~40' H20 = ~6.5 gal =
	1 casing vol.
1313	Start surging MW02B
1323	Stop surging water very
	clear - will bail.
	bail five gallons - very
	little silt.
1357	start pumping MW02B

VOL	~6
TIME	1400 ~~1410 1420 1430 1550~~
Temp	12.2
COND	0.111
pH	5.16
Eh	207
DO	1.07

1410	Stop pump - not pumping
	inline burnt out
1415	need to fix
1516	start pumping MW02B
1526	re-start pumping

Location Bonneville - L4 Date 7/3/01

Project / Client USACE

Scale

MW02B

VOL	~~5~~	~~10~~	15	20
TIME	1540	1550	1600	1610
TURB	669	148	85	78
Temp	12.22	12.36	12.18	12.15
COND	.181	.202	.211	.204
pH	5.25	5.54	5.32	5.30
Eh	~~189~~	.174	.179	.182
ORP	189.3	183.7	160.1	160.7

pump slow, start + end to give more charge to battery.

1615 new pumping rate of ~0.5 l/min

VOL	~25	30	35	40	~50	~55
TIME	1625	1635	1645	1655	1715	1730
TURB	140	155	152	163	1310*	315
COND	.187	.192	.187	.185	.152	.159
pH	5.39	5.51	5.31	5.30	5.20	5.35
Eh	~~-.188~~	~~-.188~~	-.187	-.189	-.192	-.198
ORP	151.4	~~140.8~~	164.3	171.9	196.7	187.9
DO	4.11	3.02	1.37	1.53	1.43	1.91
Temp	11.59	11.68	11.74	11.70	12.02	11.93

* pump adjusted upwards 8"

Location Bonneville - L4 Date 7/3/01

Project / Client USACE

1735 ~55 gal purged TURB ~ 300 NTUs, decide to shut down need stronger pump for 70'+ head. Ryan (COI) to bring more in line pumps to increase rate.

1745 Depart site

1800 - 2130 travel to Seattle for July 4 holiday

Location Bonneville - L4 Date 7/5/01

Project / Client USACE

Sunny, Warm 70°F Scale

0430 - 0730 travel to site

0800 onsite, JR (ORS)
Olson Engineering crew onsite to survey in (4), 3B, 9H, new and existing mws
Ryan G. (COI) onsite to continue mw dev. @ mw02B.

0900 JR to bail / surge mw02A. Ryan const. pump.

0920 DTGW = 16.53' btoc
TD = ~30.6' (mw02A)

0928 begin surge / bail mw02A

0950 ~ 3 gal / DTGW = 21.06' rising
Ryan to start surging pumping mw02B
DTGW = 34.74' (mw02B)

1005 DTGW = 26.10' rising
5 gal out

1010 start pumping mw02B

Location Bonneville - L4 Date 7/5/01

Project / Client USACE

MW02B				
	0.5 gal/min			1055
TIME	1015	1025	1035	~~1045~~
VOL	2.5	~7.5	12.5	22.5
Temp	12.27	12.91	12.70	12.62
pH	5.46	5.54	5.51	5.39
COND	.122	.113	0.97	.088
TURB	537	756	345	805
DO	3.03	1.11	1.14	1.39
ORP	187.9	187.3	193.2	199.2

1020 R. Garrison (USACE) onsite.
1039 @ MW01A DTGW = 17.78' recharge appears faster than previus.
1051 bail ~2 gal
1055 @ MW02B TURB still high - need to pump harder - will add inline further down well.
1115 decision is made to surge/bail MW02B 2 hrs then pump again.
Continue w/ MW01 - surge/bail - allow to recharge repeat

Location Bonneville - L4 Date 7/5/01

Project / Client USACE

Scale

1130 Start surging MW02B
1230 bail 15 gals from MW02B
1300 begin 3rd surge/bail on MW01A
1325 allow 3rd recharge at MW01A - continue surging MW02B
1400 surge/bail MW01A 4TH remove 5 gal/
1410 lower pump into MW02B to try again to pump until clean.
1429 23 start pump MW02B @ ~1.25 gal/min.

TIME	1435	1445	1455	1505	1515	1600	1630
VOL	7.5	20	22.5	35	47.5	103	143
DO	3.41	1.82	1.50	1.97	2.10	3.30	2.36
TEMP	11.89	11.81	11.82	11.75	11.81	11.76	11.77
TURB	1730	1199	464	172	108	78	95
pH	5.19	5.20	5.23	5.25	5.28	5.35	5.32
COND	.103	.099	.097	0.101	.107	.111	.115
ORP	248.7	243.8	240.1	237.2	235.9	236.1	235.1

Location Bonneville - L4 Date 7/5/01

Project / Client USACE

	FINAL	READING	MW02B
1700	VOL	475	
	TURB	88	
	TEMP	11.78	
	pH	5.40	
	COND	.123	
	DO	5.26	
	ORP	227.5	
1705	decide to finish MW02B as is. Move to MW02A tomorrow. pump down MW01A for 3rd time. ~40 gal removed from MW01A since Monday.		
1730	Load gear, depart site, EOD.		

Location Bonneville - L4 Date 7/6/01

Project / Client USACE

Sunny 70°F Scale

0700 onsite JH(URS) Ryan (CDI) continue MW development
DTGW (MW02A) => 27.19'
TD = 40.5' = 13' stick up
~2 Gal/casing vol

0745 Surge MW02A
0845 bail 5 gal, silty
0900 DTGW = 27.90' (MW04A)
0930 DTGW = 44.20' (MW04A) after ~5 gallons bailed, allow to recharge
1015 27.19' (MW02A), lower pump
1021 begin pumping @ 1 gal/min

TIME	1025	1035	1045	1055	1105
VOL	4	14	24 22	27	
pH	5.18	5.00	4.96	4.88	4.91
TEMP	11.10	11.24	11.24	11.34	11.31
COND	.038	.038	.037	.036	.035
DO	10.24	10.56	10.45	10.63	10.56
TURB	240	199	34.4	15.1	1.3
ORP	274.1	295.5	301.3	309.1	310.7
RATE	1	1	.75	.5	

Location Bonneville - L4 Date 7/6/01

Project / Client USACE

1110	DTGW = 28.73', mw02A complete TURB = 21.5 move to mw03B, continue hand surging/bail mw04A
1118	MW04A DTGW = 37.59'
1205	leave site to purchase batteries for YSI
1300	begin surging/bailing MW03B. DTGW = 27.12' TD = 62' = 35' H20 = 5.6 gal = 1 volume
1345	DTGW (MW04A) 30.65' pH = 6.01, TEMP = 13.9 COND = 686 uS TDS = 341 ppm
1415	DTGW = 45.76' after bailing ~6.5 gal... mw04A.
1436	mw04A = ~~43~~ 43.96'
1440	Bail MW03B, sl. silty
1500	MW03B = 32.1 rising
1502	start pumping MW03B

Location Bonneville - L4 Date 7/6/01

Project / Client USACE

~~MW03B~~ Scale

TIME	1525	1535	1555	1615
VOL	0	~~3~~10	20	~~35~~ 40
RATE	1	0.5	0.5	.25
TEMP	12.25	13.77	13.65	
TURB	1732	576	514	
pH	6.16	5.87	5.90	
COND	1.209	.939	.766	
DO	3.43	4.07	4.54	
ORP	248.1	206.7	174.5	

1622 Move flow thru cell increases turbidity = will pump again on Monday while surge/bail mw03A.

1625 Bail mw04A ~5 gal

1715 Depart site

1730-2030 travel to Seattle

Location Bonneville - L4 Date 7/9/01

Project / Client USACE

Sunny, warm, 85°F

0430-0730 travel to site

0800 onsite JA (URS) Ryan (COE) continue w/ development of MWs

0820 Surge/bail mw03A

0920 begin pumping mw03A will allow silt to (.5 gal/min) clean before pumping and recording parameters.

0940 stop pump, allow to recharge. Pump silty water w/ pump - using pump instead of bailer to remove fines.

1100 begin pumping mw03A @ 1 gal/min 26.97'
TD = 49.1 DTGW = ~~26.97~~

1316 start pumping mw03B - 2nd pump session 27.12'

Location Bonneville - L4 Date 7/9/01

Project / Client USACE

mw03A Scale

TIME	1103	1115	1125	1135	1145	1155	1205
VOL	3	15	20	25	30	35	40
TEMP	11.00	11.32	11.20	11.01	11.35	11.42	11.41
pH	5.30	5.43	5.06	5.01	4.76	4.87	4.88
COND	~~5.30~~ .447	~~.030~~	.029	.029	.029	.029	.029
DO	11.40	10.80	10.64	10.33	10.49	10.66	10.66
ORP	248.3	264.0	270.9	282.2	297.2	305.3	310.1 ~~317~~
TURB	454	357	251	727	181	218	51.7
RATE	~1	~1	.5	.5	.5	.5	.5

VOL	45	50
TIME	1215	1225
Temp	11.49	11.51
pH	4.80	4.78
cond.	.029	.029
DO	10.65	10.56
ORP	317.1	324.1
TURB	46.2	3.5

1225 End Dev mw03A

1300 bail mw01A DTGW = 16.51'

Location Bonneville - L4 Date 7/9/01

Project / Client USACE

MW01A

TIME	1310 7/9	1550 7/9
Temp	12.54	11.99
COND	.107	.113
DO	12.06	10.57
Eh	-.122	-.119
pH	5.33	5.12
ORP	226.3	242.4
TURB	1741.7	1736.2

Re-pump to bring down NTUs MW03B

TIME	1315	1330	1400	1415	1430
Temp	11.05	11.34	11.30	11.73	11.70
COND	.571	.683	.556	.283	.261
DO	8.76	6.70	8.07	11.67	11.81
Eh	-.119	-.113	-.107	-.109	-.111
pH	5.59	5.23	5.03	5.00	4.83
ORP	266.1	258.7	238.7	222.9	236.4
TURB	174.1	1338	1734	188	42
VOL	0	8	25	32	40
RATE	~1gal/min	.5/min	.5	.5	.5

Location Bonneville - L4 Date 7/9/01

Project / Client USACE

Scale

MW03B continued

TIME	1445	1500
Temp	11.74	11.76
COND	.241	.226
pH	4.74	4.74
ORP	241.3	245.1
TURB	35	2.7
VOL	48	55
RATE	.5gal/min	.5

1510 Parameters stable on MW03B - completed. Move to MW05A to surge/bail

1510 Message from S. Wolfe

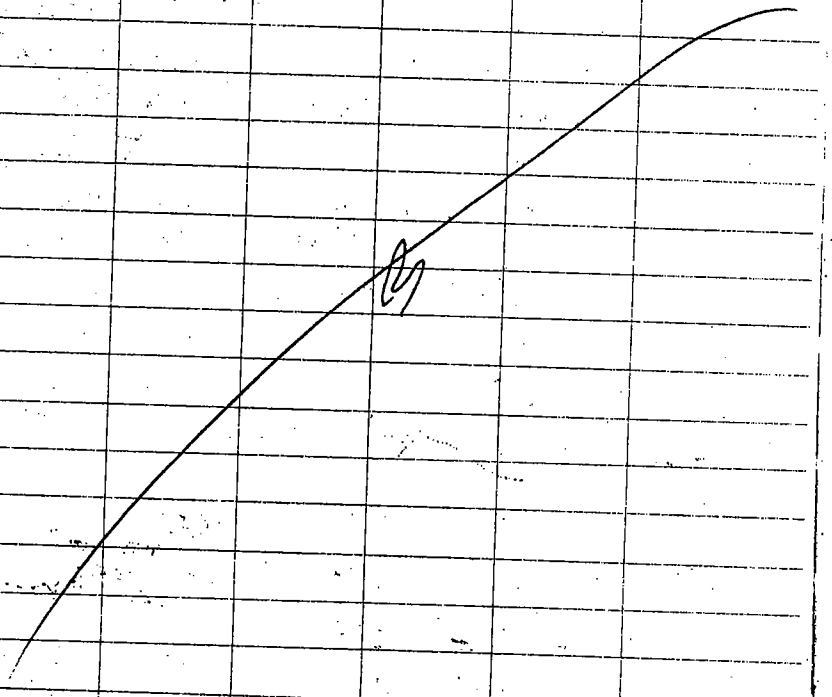
Location Bonneville - L4 Date 7/9/01

Project / Client USACE

1540 collect gal of H2O from farthest well and determine rate of settling for suspended material

1600 will pump MW05A on Tuesday

1730 Depart site



Location Bonneville - L4 Date 7/10/01

Project / Client USACE

Partly Cloudy, warm, 70°F Scale

0700 JR (URS) Ryan (COE) on site to finish MW developing. unload drums,

0800 @ MW05A to surge / bail - set up

0910 JR @ MW04A to bail surge and complete development / collect sample. DTGW 28.06'

0952 ~4 gal bailed DTGW 45.50' allow recharge to collect sample H2O

MW04A				
Time	930	1115	1300	1500
Vol	4	5	4	7
Temp	12.84	12.57	12.68	12.92
COND	.044	.047	.049	.049
DO	9.12	10.61	10.01	9.74
pH	5.92	5.78	5.46	5.62
ORP	222.6	228.1	233.4	240.4
TURB	37.8	95	105	112

Location Bonneville - L4 Date 7/10/01

Project / Client USACE

950 continue surging MW05A

1045 use pump to evacuate fines

MW05A TD = 36.10' DTGW = 24.47'

~12' 1420 or BTOC 2 gal = 1 casing volume

TIME	1250	1320	1340	1400	1420
RATE	½gal/min	1 gal/min			
Total VOL	18	20	22	24	26
Temp	10.43	10.35	10.34	10.25	10.28
COND	.036	.035	.033	.033	.033
DO	11.61	11.57	11.26	11.80	11.58
pH	5.41	5.35	5.17	5.23	5.34
ORP	384	282	306	307	304
Eh	-.188	-.188	-.179	-.180	-.182
TURB		131	269	>1000	>1000

MW05A requires recharging ~18 gal purged w/ pump ~5 casing volumes removed

1300 will continue pumping out and recording parameters w/ each volume

Location Bonneville - L4 Date 7/10/01

Project / Client USACE

Scale

1325 MW05A pumps dean for ~2 min. becomes steadily more turbid (silty) than goes dry. Repeat purging until 3 p.m.

TIME	1440	1500
RATE	~~32~~	
VOL	~~40~~	40
Temp	10.30	10.31
COND	.034	.033
DO	11.48	11.21
pH	5.31	5.27
ORP	318	342
Eh	-.190	-.188
Turb	69	72

1515 complete MW05A develop

Location Bonneville - L4 Date 7/10/01

Project / Client USACE

Drums of DEV H2O by well

MW01A	1
MW02A	1
MW03A	1
MW04A	2 ½
MW05A	1
MW01B	2
MW02B	3
MW03B	2
	12 total

9 empty drums left behind for sampling

1530 load / demob off site

Location Bonneville - L4 Date 7/23/01

Project / Client USACE

Sunny, warm 80° Scale

0900 - meet pick up truck, load equip / coolers.

1100 - 1500 travel to site JR/LW (URS)

1535 @ MW01A
TD = 30.21' btoc
DTGW = 16.60' btoc
set pump at 25' to sit over night to allow silt to settle.

1600 @ staging buildings to unpack sample bottles, etc.

1645 @ Home Depot to buy packing (Perlite) material for samples

1745 EOD

Location Bonneville - L4 Date 7/24/01

Project / Client USACE

cloudy, cool 65°

0630	pickup generator				
0800	onsite JR/CW (URS)				
0820	load gear, bottles, etc.				
0930	@ MWOIA to purge until dry - allow to recharge - then sample DTGW = 16.60'				
0940	start				
TIME	0941	0946	0950	0955	1000
VOL	~2.5L	~2.5L	3L	4.5L	6.5L
RATE	.25/min	.25/min	.3/min	.3/min	.3/min
pH	5.10	5.10	5.14	5.15	5.12
COND	.095	.087	.085	.084	.081
TURB	18.2	11.1	11.8	10.4	7.7
DO	12.42	11.24	10.55	10.07	10.69
Temp	11.47	12.36	12.93	13.49	13.32
ORP	206	206	206	208	209
WL(btoc)			18.20'	18.19'	17.90'

Location Bonneville - L4 Date 7/24/01

Project / Client USACE

Scale

MWOIA Sampling

TIME	1010	1020	1025	1030	1035	1045	1055
RATE	.02/min	.03/min	.3/min	.35/min	.35/min	.3/min	.3/min
VOL	6L	9L	12L	14L	17	20	23L
pH	5.06	4.78	4.72	4.79	4.80	4.79	4.80
COND	.075	.069	.067	.066	.064	.064	.65
TURB	5.0	25.1	12.1	6.1	6.6	10.7	18.6
DO	9.82	10.76	9.82	9.81	9.75	9.59	9.78
Temp	13.12	12.48	11.86	12.17	12.24	12.25	12.25
ORP	216	236	238	236	236	241	234
WL	18.05'	20.15'	19.65'	19.50'	19.5'	21.5'	22.5'

1100 collect Sample in GWO1 MWO1A

Location Bonneville-L4 Date 7/24/01

Project / Client USACE

1115 visitors (tour) onsite w/ corp rep.

1121 stop pump on MW01A allow to recharge before sampling. Place 2nd pump on MW01B

MW01B DTGW = 13.71' btoc
TD = 55.96' btoc

1153 begin pumping MW01B pump rate w/ gal to adjust rate

- MW01B cont. from next page

TIME	1240	1245	1315
RATE	.3		
VOL			
pH	4.96	4.95	4.92
COND	.027	.027	.027
TURB	5.3	5.1	5.5
DO	8.99	9.01	9.86
Temp	11.79	11.79	11.87
ORP	224	225	226
WL	14.29'		

Location Bonneville-L4 Date 7/24/01

Project / Client USACE

MW01B sampling Scale

Pump intake @ 51' btoc

TIME	1155	1200	1205	1215	1220	1225	1230
L/min RATE	.6 L/min	.5 L/min	.4	.3	.3	.3	
L VOL	~8L	10.5	12.5	14	15.5	17	18.5
SU pH	5.06	4.93	4.96	4.95	5.02	5.01	4.96
mS/cm COND	.028	.027	.027	.027	.027	.027	.027
NTU TURB	129	35	10.7	7.3	6.2	6.0	5.7
mg/L DO	13.76	10.29	9.39	9.16	9.04	9.06	9.01
°C Temp	10.89	11.24	11.52	11.74	11.73	11.72	11.77
mV ORP	213	219	220	220	218	220	220
ft btoc WL	14.10	14.19'	14.20'		14.21'		14.24'

Location Bonneville - L4 Date 7/24/01

Project / Client USACE

1245	collect GW01MW01B 23 containers	
1320	check plt on T. cyanicle plt by paper 712	
1330	finish sampling GW01MW01A	
1350	go to collect round of wls; LW to finish MW01A	
MW04A	28.21' btoc	1407
MW02B	31.60' btoc	1412
1415	@ 2A, wl rising after removing cap, return following 3A, 3B, 5A	
1423	MW05A 24.68' btoc	
1427	MW03B 27.19' btoc	
1430	MW03A 29.68' btoc	
1435	MW02A 27.47' btoc	
1515	samples to storage building decon pump/probe	
1640	lower pump into MW02A to sit over night.	

Location Bonneville - L4 Date 7/24/01

Project / Client USACE

Scale

1645 @ MW02A to purge and sample primary, field dup, QA dupe.

DTW = 27.47' TD = 40.5

TIME	1650	1655	1700	1705	1710	1715	1720
RATE l/min	.3	.3	.3	.3	.3		
VOL			1.5L	1.8	2.1		
pH	4.81	4.78	4.74	4.63	4.60	4.62	4.61
COND	.086	.081	.080	.078	.075	.072	.072
TURB	39	39.3	42.2	23.8	18.8	18.4	9.2
DO	13.47	9.57	9.46	9.29	9.07	9.25	9.46
Temp	12.46	14.48	14.84	14.0	13.84	13.78	13.74
ORP	198	212	218	227	228	234	235
WL	27.49'	27.51'	28.98	29.07			

Location Bonneville - L4 Date 7/24/01

Project / Client USACE

MW02A sampling parameters continued

Time	1725
RATE	
vol	
pH	4.61
cond	.071
TURB	7.2
DO	9.34
Temp	13.74
ORP	243
WL	29.10'

1745 Sample GW01MW02A

1850 complete filling 69 containers for MW02A
- primary
- dup (1800 sample time)
- USACE Lab dup (1745 sample Time)

1930 EOD

Location Bonneville - L4 Date 7/25/01

Project / Client USACE

Cloudy, cool, 60°F Scale

0800 @ site pH/Cond (ORS) to Sample MW04A, -28 collect MS/MSD at 28

MW04A intake @ 40' btoc

DTGW 27.22' btoc

HR	TIME	0950	0955	1000	1005	1010	1015	1020
L/min	RATE	.2	.2	.2	.2	.2	.2	.2
L	VOL	1.2	1.6	2.0	3.0	4.0	5.0	6.0
SU	pH	5.33	5.32	5.36	5.28	5.34	5.35	5.36
ms/cm	COND	.050	.047	.044	.042	.039	.035	.035
NTU	TURB	10.7	16.2	41.9	27.9	44.4	42.2	29.9
mg/L	DO	5.50	4.20	4.01	4.17	4.25	6.26	5.27
°C	Temp	10.07	12.32	13.06	13.34	14.24	14.37	14.36
mV	ORP	193	183	178	177	175	169	171
btoc	WL	29.85'	31.33'	31.95'	32.96'	33.40'	34.8'	

Location Bonneville - L4 Date 7/25/01

Project / Client USACE

MW04A Sampling Parameters

TIME	1025	1030	END
RATE	.2	~~.3~~	
VOC	7.0	~~8.5~~	
pH	5.36	~~5.36~~	
COND	.1035	1035	
TURB	42.9	55.1	
DO	5.08	5.16	
Temp	14.76	14.76	
ORP	175	170	
WL	35.64'	36.7'	

1030 pump off wl near top pump. allow to recharge before sampling around 1430 and ~ 1830

1050 @ MW02B to purge / sample

Location Bonneville - L4 Date 7/25/01

Project / Client USACE

Scale

MW02B DTBW 31.60'

TIME	1055	1100	1105	1110	1115	1120	1125
RATE	.4	.4	.3	.3	.3	.3	
VOC	.4	2.0					
pH	4.88	4.95	4.93	5.03	5.06	5.13	4.99
COND	.057	.059	.055	.056	.057	.058	.057
TURB	71.5	16.4	23.6	41.4	47.1	66.4	183
DO	7.58	7.74	10.96	2.87	2.49	1.39	1.15
Temp	11.63	12.49	12.93	13.04	13.26	13.65	14.06
ORP	203	196	197	191	191	187	197
WL	35.45'	37.85'	38.56'	38.91'	39.12'	41.20'	41.55'

Location Bonneville-L4 Date 7/25/01

Project / Client USACE

MW02B sampling parameters					
TIME	1130	1135	1140	1145	1150
RATE	.3	.4	.4	.4	.4
VOL					
pH	4.95	4.97	4.93	4.75	4.82
COND	.057	.058	.062	.067	.068
TURB	222	300	359	321	279
DO	1.12	1.03	1.00	1.05	1.01
Temp	13.99	14.03	14.16	13.97	14.04
ORP	194	191	198	200	200
WL	41.50'	41.51'	42.31'	43.60'	44.80

TIME	1155	1280	
RATE	.4		
VOL			
pH	4.81	4.81	4.80
COND	.068	.068	.068
TURB	200	109	58
DO	1.04	1.05	1.07
Temp	13.52	13.57	13.46
ORP	200	200	200
WL	46.66	47'	

1245 GW01 MW02B, MS/MSD

Location Bonneville-L4 Date 7/25/01

Project / Client USACE

partly cloudy Scale

B. Smolko
253-798-6156

1430 collect ½ sample mw04A

1450 decon, gas for generator, pack samples for shipment

1715 @ fedex PTA to ship STL Burlington and STL Knoxville for mw01A, -1B, -2A, 2B includes dup mw02A and MS/MSD from mw02B. 7 sets total

1800 @ mw04A to collect remaining portion of sample.

1930 @ buildings to unload gear

EOD

Location Bonneville - L4 Date 7/26/01

Project / Client USACE

mostly sunny, 70°F

0730 @ site MR LW (URS)
LW to pack samples
MR to set up on
last 3 wells to
purge/sample

1050 @ MW05A DTGW=24.54'
LW to pickup more w. filters
MW05A

TIME	1105	1110	1115	1120	1125
RATE	.3				
VOL	.3	1.5	3.0	4.5	6.0
pH	5.29	5.30	5.19	5.27	5.26
COND	.034	.035	.035	.035	.034
TURB	28.5	21.3	7.6	14.3	8.7
DO	9.28	8.36	8.73	8.25	7.86
Temp	10.46	11.75	12.23	12.53	13.36
ORP	154	160	174	173	172
WL	28.91	29.45	30.01	30.15	29.66

Location Bonneville - L4 Date 7/26/01

Project / Client USACE

Scale

MW05A continued

TIME	1130	1135	1140	1145	1150
RATE	.3				
VOL	7.5	9	10.5	12	14
pH	5.27	5.11	5.07	5.07	5.06
COND	.034	.034	.034	.034	.034
TURB	4.5	11.2	1.4	5.6	0.6
DO	7.77	8.00	8.0	7.78	7.87
TEMP	13.42	12.87	12.78	12.82	12.83
ORP	177	183	192	192	192
WL	29.20	29.75	30.05	30.09	30.10

1200 collect GW01 MW05A
move to MW03B using
2nd pump.

1235

Location Bonneville - 24 Date 7/26/01

Project / Client USACE

MW03B

TIME	1235	1240	1245	1250	1255
RATE	.3	.3	.3		
VOL	~1.3	1.5	3.0		
pH	5.34	5.44	5.39	5.39	5.40
COND	.182	.190	.166	.218	.236
TURB	8.0	2.3	0.0	.4	<1
DO	8.49	7.96	8.51	8.08	8.02
Temp	11.79	12.52	12.50	12.72	13.21
ORP	170	167	169	167	163
WL	28.99	29.98	32.80	33.95	34.70

TIME	1300	1305	1310	1315
RATE	.3			
VOL				
pH	5.49	5.49	5.48	5.49
COND	.243	.236	.236	.237
TURB	<1	<1	<1	<1
DO	8.02	7.98	7.96	8.00
Temp	13.34	13.29	13.31	13.30
ORP	157	159	154	153
WL	34.90	35.15	35.35	35.9

Location Bonneville - 24 Date

Project / Client USACE

Scale

1330 Collect GWQA MW03B

1st set 100 ft

pass Low

Rt Brodiaea Park

Rt Gravelly

1st building

Sheepdog Plaza

203 - Pierce County

water program

Location CAMP BONNEVILLE LANDFILL #4 Date 10.22.01

Project / Client USACE

DAVE LEWIS, LARRY NAMBA WEATHER: RAIN, WIND Scale

0940 Picked up RENTAL VAN

945 PICKED UP GENEARATOR AT HERTZ/AA

215 RETURNED TO OFFICE TO LOAD UP

245 LEFT SEATTLE

330 STOPPED IN TACOMA TO EXCHANGE VAN, WITH JODY FROM BUDGET, FOR TRUCK

640 ARRIVED IN VANCOUVER, CHECKED INTO LODGING

NOTE: LARRY CHECKED EQUIP. INV DIDN'T SEND CONNECTION FOR CONTROLLER TO PUMPS. HE CALLED, THEY SAID THEY'D SEND LATE FED-EX OR ON PLANE TOMMORROW.

Dave Lewis

10-22-01

CAMP BONNEVILLE

Location LANDFILL #4 Date 10-23-01

Project / Client USACE

DAVE LEWIS, LARRY NAMBA

WEATER: RAIN, 50°

0740 LOADED EQUIPMENT + COOLERS INTO TRUCK

0823 CHECKED IN AT CAMP BONNEVILLE RANGE HQ; INVENTORIED EQUIPMENT, PREPARE SAMPLES BOTTLES.
— WE NEED TO ORDER 6 ADDITIONAL La. "O5" BOTTLES AND 20-25 LITERS OF WATER FOR RINSATE

1030 CALLED LAB FOR SUPPLIES

1200 WENT TO SITE TO MEASURE WATER LEVELS + DROP PUMPS INTO MW01A, MW01B5

WELL #	TIME	WL	TD
MW01A	1208	17.52	30.26
MW01B	1209	14.97	55.56
MW04A	1214	23.17	46.51
MW02A	1218	29.12	40.28
MW02B	1220	32.58	74.56
MW03A	1227	30.30	49.01
MW03B	1229	27.62	61.95
MW05A	1231	24.29	36.70

Dave Lewis
10-23-01

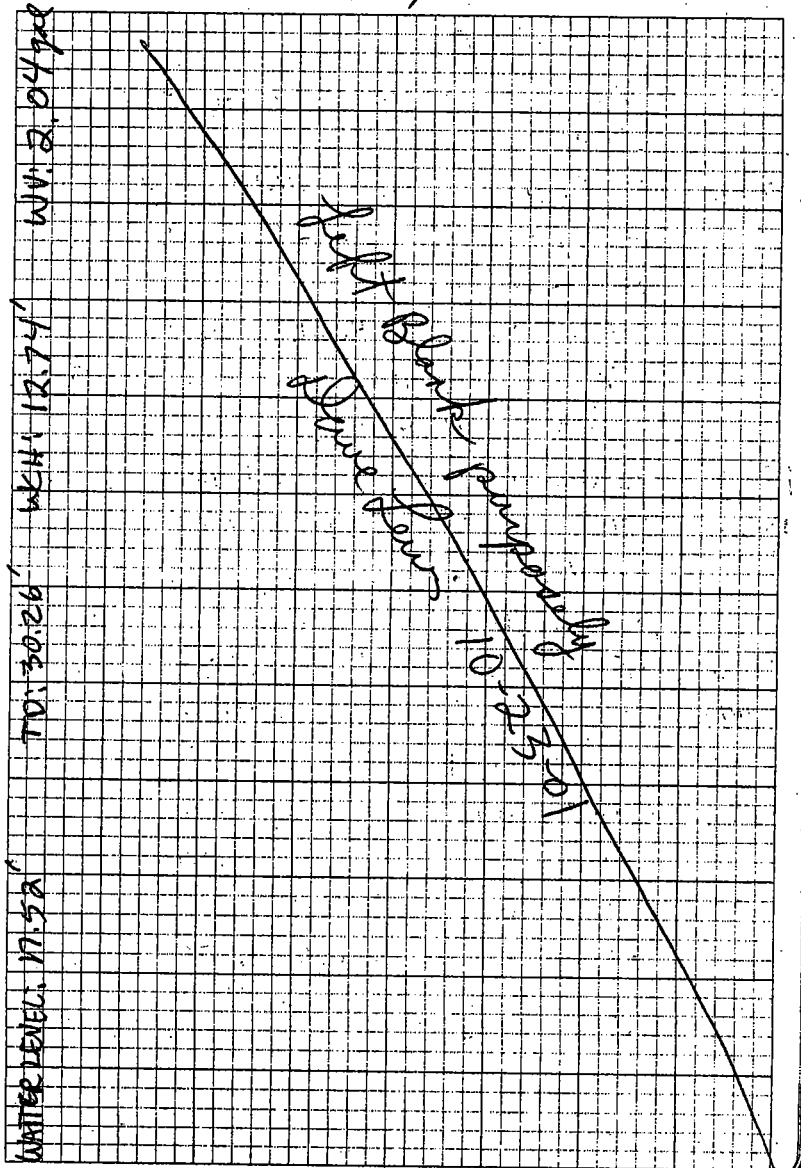
CAMP BONNEVILLE

Location LANDFILL #4 Date 10-23-01

Project / Client USACE

DAVE LEWIS, LARRY NAMBA

Scale



CAMP BONNEVILLE
Location LANDFILL #4 Date 10-23-01
Project / Client USACE
DAVE LEWIS, LARRY NAMBA

1300 LEFT SITE TO BUY SUPPLIES, PICK UP GRUNDFOS CONNECTION, + EAT LUNCH
1330 STOPPED AT BOOMSNUB TO GET FILTERS WHICH DIDN'T GET SHIPPED
1410 STOPPED AT HOME DEPOT,
1500 WENT TO AIRPORT TO GET GRUNDFOS CONNECTION, FLIGHT IS LATE
1555 PICKED UP PACKAGE AT HORIZON AIR CARGO.
1620 STOPPED AT GROCERY STORE TO BUY SUPPLIES
1645 RETURNED TO SITE
1700 SETUP AT MW01A, MW01B
1717 STARTED PUMPING MW01A
1800 SAMPLE # GW02MW01A
1945 Decon pump, liquinox, rinse w/tap water then DI water, DRUMMED PURGE H_2O
2000 DROPPED PUMP IN MW02A
2020 RETURNED TO BARRACKS TO DROP EQUIP
2040 LEFT SITE

Dave Lewis
10-23-01

CAMP BONNEVILLE
Location LANDFILL #4 Date 9-23-01
Project / Client USACE
DAVE LEWIS, LARRY NAMBA MW01A Scale

Pump DEPTH: 57.75
WELL SIZE: 2"
MW01A TOC: 1274.74
MW01B TOC: 1275.52
MW01A TOC: 1274.74
MW01B TOC: 1275.52

TIME	pH	COND	TEMP	DO	ORP	TURB	WATER LEVEL
1717	9.69	1.15	8.65	10.4	378	18.84	4.00
1741	9.69	1.10	6.77	6.29	11.5	242	18.85
1744	9.69	1.09	5.46	6.24	11.5	320	18.83
1747	9.69	1.09	5.12	6.22	11.0	298	18.87
1750	9.69	1.09	5.19	6.22	11.0	274	18.71
1753	9.69	1.09	5.19	6.22	11.9	274	18.71
1756	9.69	1.09	5.12	6.22	12.1	298	18.87
1800	9.69	1.09	5.12	6.22	12.7	242	18.95

1744	5.46	1.09	6.24	11.5	320	18.83	575
1747	5.12	1.09	6.22	11.0	298	18.87	575
1750	5.19	1.09	6.22	11.0	274	18.71	600
1753	5.19	1.09	6.22	11.9	274	18.71	600
1756	5.12	1.09	6.22	12.1	298	18.87	575
1800	5.07	1.09	6.22	12.7	242	18.95	600

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CAMP BONNEVILLE @10

Location LANDFILL #4 Date 9-24-01

Project / Client USACE

DAVE LEWIS, LARRY NAMBA

WEATHER: OVERCAST, 43°

0745 ARRIVED ON SITE, PREPARED BOTTLES, MOB

0810 CALIBRATING HORIBA U-22

	PH	TURB	COND
AUTO CAL STD	4.00	0.0	4.49
AUTO CAL READ	3.91	0.0	4.58

(HORIBA MFG.# 9262005 PINE ENV.)

0835 SET UP AT MW01B

0845 STARTED PUMPING MW01B

0915 SAMPLE # GW02MW01B

1025 DECON PUMP

1030 DRUMMED PURGEWATER

10-24-01

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CAMP BONNEVILLE

Location LANDFILL #4 Date 10-24-01

Project / Client USACE MW01B

DAVE LEWIS, LARRY NAMBA Scale

LOC: MW01B

DTW: 17.52' TO: 55.56'

WELL SIZE: 2" WATER COLUMN: 40.54' PUMP DEPTH: 53.05'

TIME	PH	COND ms/cm	TURB NTU	TEMP °C	ORP mV	DTW ft	FLO ml/min	NOTES
0845	5.65	.041	7.3	6.74	10.3	355	15.21	400	87.2 HZ
0850	5.71	.067	5.3	4.87	10.1	327	15.28	400	
0855	5.79	.045	2.2	4.02	10.3	308	15.31	400	
0900	5.81	.036	0.5	3.25	10.4	287	15.33	400	
0905	5.81	.035	0.2	3.18	10.8	270	15.35	400	
0910	5.74	.060	0.2	3.18	10.9	254	15.37	400	
0915									SAMPLE # GW02MW01B

MW/MSD COLLECTED NEXT DAY PER REQUEST OF STEVE WOLFE

10-24-01

Location CAMP BONNEVILLE LANDFILL 4 Date 10-24-01

Project / Client USACE

DAVE LEWIS, LARRY NAMBA

1040	SETUP AT MW02A, MW02B, DROPPED PUMP INTO MW02B
1100	STARTED PUMPING MW02A
1140	SAMPLE # GW02-MW02A
1250	DECON PUMP
1310	DUMPED PURGEWATER TO DRUM
1315	DROPPED PUMP INTO MW03A
1320	LEFT SITE FOR LUNCH (FIRST RETURNED TO BARRACKS TO UNLOAD SAMPLES + CALL STEVE + LORI IN SEATTLE). STEVE REQUESTED WE CHECK HILLSIDE WEST OF MW02A, MW02B FOR ANY SEEPS.

Dave Lewis 10-24-01

CAMP BONNEVILLE

Location LANDFILL 4 Date 10-24-01

Project / Client USACE

DAVE LEWIS, LARRY NAMBA MW02A Scale

PUMP DEPTH: 37.75 @ 1146

WELL SIZE: 2"

LOC: MW02A

DTW: 8.12' TD: 40.38' WATER LEVEL: 21.75 STICK UP: 1.79										
TIME	PH	COND mS/cm	TURB NTU	DO mg/L	TEMP C	ORP mV	DTW FT.	H2O mL/min	NOTES	
1104	6.00	.034	4.3	5.05	10.4	245	29.54	300		
1109	5.81	.037	21.7	5.42	11.1	228	29.48	300		
1114	5.71	.038	24.0	5.25	12.6	212	29.47	300		
1119	5.69	.039	22.1	5.27	13.3	191	29.48	300		
1124	5.68	.039	19.0	5.40	13.8	167	29.47	300		
1129	5.72	.040	11.3	5.75	14.2	132	29.48	300		
1134	5.73	.040	10.5	5.85	14.4	116	29.48	300		
1140									SAMPLE # GW02-MW02A	

Dave Lewis 10-24-01

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Location CAMP BONNEVILLE LANDFILL 4 Date 10-24-01

Project / Client USACE

D LEWIS, LNAMBA

1430 STEVE CALLED LARRY, HE SAID TO GO BACK TO MW01B TO GET MS/MSD

1450 RETURNED TO SITE + SET UP AT @ MW02B

1500 STARTED PUMPING MW02B

1515 LARRY WALKED DOWN BANK FROM MW02B TO CHECK FOR SEEPS. HE FOUND NONE. HE LOCATED THE 2 HAND AUGER HOLES + THEY WERE DRY. TRAVERSED BASE OF THE HILL FROM MW5 TO MIDWAY BTWN MW2B + MW4A.

1530 SAMPLE # ~~GW02MW02B~~ GW02MW02B

1630 DUP # ~~GW02MW02B~~ GW50ZMW02B (B)

1915 DECON PUMP

1945 DROPPED PUMP INTO MW01B FOR MS/MSD

2005 RETURNED TO BARRACKS TO DEMOB

2015 LEFT SITE

Dave Lewis 10-24-01

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Location CAMP BONNEVILLE LANDFILL 4 Date 10-24-01

Project / Client USACE

D LEWIS, LNAMBA MW02B Scale

LOC: MW02B WELL SIZE: 2" PUMP DEPTH: 72.0'

DTW: 32.58' TD: 74.54' WCH: 41.96' WV: 6.72 gal

TIME	pH	mS/cm	ORP mV	TEMP deg C	DTW Feet	NOTES
1503	5.63	.061	306	3.01	11.0	537	33.77	250	125.1 HZ
1508	5.60	.043	13.2	0.86	11.2	445	34.19	250	
1513	5.62	.062	7.1	0.00	11.4	457	34.25	250	
1518	5.62	.060	4.9	0.00	11.6	415	34.17	250	
1523	5.62	.060	5.2	0.00	11.6	374	34.16	250	
1530									SAMPLE # GW02MW02B
1630									DUP # GW50ZMW02B

Dave Lewis 10-24-01

Location CAMP BONNEVILLE LAND FILL 4 Date 10-25-01

Project / Client USACE

D LEWIS, L NAMBA

WEATHER: OVERCAST, 45°

0730	GOT GAS FOR GENERATOR
0750	STOPPED @ SAFEWAY TO GET ICE & FOOD FOR LUNCH
0815	ARRIVED AT BARRACKS TO MOB EQUIP.
0835	LEFT LARRY AT BARRACKS TO PREPARE SAMPLES,
0845	ARRIVED AT MW01B TO COLLECT MS/MSD
0855	BEGAN PUMPING, WILL RUN FOR 15 MIN. WHICH IS WHEN PARAMETERS BEGAN TO STABILIZE AT PREVIOUS PURGING.
0910	STARTED COLLECTING MS/MSD
1115	RETURNED BARRACKS TO HELP LARRY PACKAGE SAMPLES FOR SHIPMENT
1450	SETUP AT MW03A, LARRY LEAVING ME HERE TO GO TO FEDEX
1500	CALIBRATE HORIBA

	PH	COND	TURB
AUTO CAL	3.92	4.53	0

10-25-01 Dave Lewis

Location LANDFILL 4 Date 10-25-01

Project / Client USACE

D LEWIS L NAMBA MW03A Scale

LOC: MW03A WELL SIZE: 2" PUMP DEPTH: 46.50'

DTW: 30.30' TD: 49.01' WCH: 18.71' WV: 2.99 gal

TIME	PH	COND mS/cm	TURB NTU	DO mg/L	TEMP °C	ORP mV	FLO mL/min	NOTES
1515	5.47	.041	22	8.41	11.8	549	312	300	119.1 HZ
1520	5.32	.037	1.7	5.54	12.7	512	31.35	300	
1525	5.45	.031	1.9	4.11	12.9	458	31.29	200	118.7 HZ
1530	5.51	.029	1.7	3.43	13.2	416	31.30	200	
1535	3.53	.028	1.6	3.26	13.4	374	31.31	200	
1545									SAMPLE #'S GW0102MW03A

Dave Lewis 10-25-01

Location CAMP BONNEVILLE LANDFILL 4 Date 10-25-01

Project / Client USACE

DLEWIS, L NAMBA

1545	SAMPLE H GW02 MW03A
1715	DECON PUMP
1745	DROPPED PUMP INTO MW04A
1830	LARRY SHOWED UP, WAS LOCKED OUT OF GATE, WE WALKED BACK W/ KEYS
1930	RETURNED TO SITE, DECONNED OTHER PUMP, DROPPED IT DOWN MW03B.
2000	RETURNED TO BARRACKS TO DEMOB.
2030	Left Site

Dave Lewis
10-25-01

Location CAMP BONNEVILLE LANDFILL 4 Date 10-26-01

Project / Client USACE MW04A

DLEWIS, L NAMBA Scale

WELL SIZE: 2" PUMP DEPTH: 4/4'

DTW: 23.77' WCH: 23.34' WDW: 3.73 gal

TIME	pH	Cond mS/cm	Turb NTU	DO mg/L	Temp °C	ORP mV	Flo mL/min	Notes
0916	6.00	0.040	5.5	6.85	10.4	584	26.78	200
0919	5.71	0.041	14.2	4.44	10.5	559	30.07	200
0922	5.73	0.040	22.9	3.08	10.4	518	30.07	200
0925	5.76	0.040	110.0	2.34	10.5	491	30.07	200
0928	5.80	0.038	114.0	1.83	10.4	467	30.07	
0935								SAMPLE # GW02MW04A

Dave Lewis
10-26-01

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Location CAMP BONNEVILLE LAND FILL 4 Date 10-26-01

Project / Client USACE

LNAMBA, DLEWIS

WEATHER: CLOUDY, COOL

0830 ARRIVED ONSITE, MOB.

0850 LEFT BARRACKS FOR SITE. LARRY STAYED TO WORK ON BOTTLES & PE SAMPLES

0900 ARRIVED ONSITE, SET UP AT MW04A

0905 CALIBRATE HORIBA

	AUTO CAL	PH	COND	NTU
		3.92	4.56	0

0915 STARTED PUMPING MW04A

0935 SAMPLE # GW02MW04A

1145 DECON PUMP

1205 DROPPED PUMP INTO MW05A

1210 SET UP AT MW03B

1220 STARTED PUMPING MW03B

1245 SAMPLE # GW02MW03B

1425 RETURNED TO BARRACKS W/SAMPLES, PHONED IN WATER LEVELS TO STEVE.

1500 WENT FOR LUNCH

1620 LARRY DROVE ME BACKUP TO SITE

1625 PULLED PUMP FROM MW03B

1630 LARRY LEFT

Dave Lewis
10-26-01

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Location CAMP BONNEVILLE LAND FILL 4 Date 10-26-01

Project / Client USACE

DLEWIS, LNAMBA

MW03B Scale

LOC: MW03B WELL SIZE: 2" PUMP DEPTH: 57.5'

TIME	PH	COND	TURB	DO	TEMP	ORP	DTW	FEO
DTW: 27.62 TD: 61.85 WL#: 34.33' WV: 5.41gal								
*5gal with 4mL of MW								
1235	5.11	0.09	9.7	5.49	11.0	553	29.50	200
1238	5.68	0.107	8.9	4.13	11.1	520	29.56	200
1231	5.64	0.122	8.6	2.86	11.4	493	29.87	225
1234	5.64	0.122	9.3	2.15	11.8	470	29.95	225
1237	5.67	0.122	10.1	1.47	12.0	439	30.02	225
1245								

SAMPLE # GW02MW03B

Dave Lewis
10-26-01

106

Location Camp Bonneville Date 10-26-01

Project / Client Dave Lewis

Left Bank
Dave Lewis
10-26-01

107

Location Camp Bonneville Date 10-26-01

Project / Client Dave Lewis Scale

Left Bank
Dave Lewis
10-26-01

Location CAMP BONNEVILLE Date 10-26-01

Project / Client USACE

DAVE LEWIS, L NAMBA

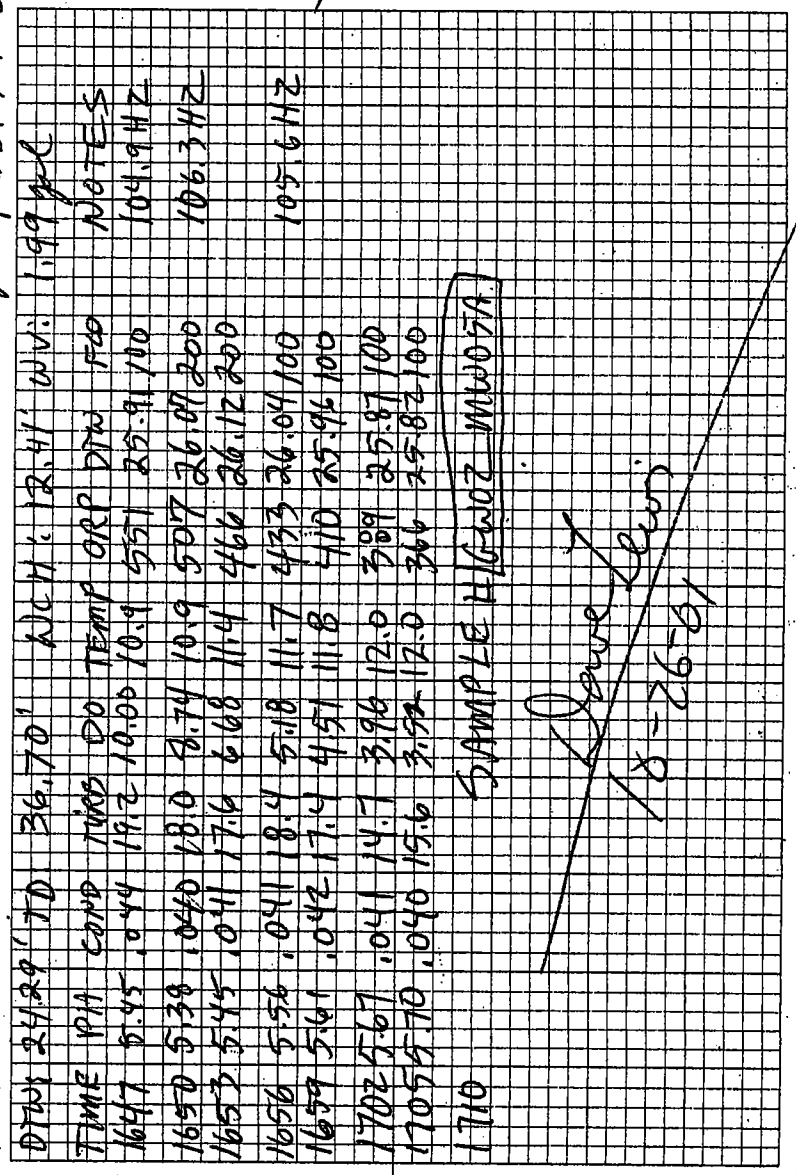
1635	SETUP AT MW05A
1640	STARTED PUMPING MW05A
1710	SAMPLE #GW02MW05A
1830	Called Larry Lee loading truck for FedEx
1930	DROPPED SAMPLES AT FED-EX
2000	RETURNED TO SITE TO PACKAGE OTHER SAMPLES + DEMOB
2400	LEFT SITE

Location CAMP BONNEVILLE Date 10-26-01

Project / Client USACE

D LEWIS, L NAMBA MW05A Scale

LOC: MW05A. WELL SIZE: 2" PUMP DEPTH: 34.20



Location CAMP BONNEVILLE Date 10-26-01

Project / Client USACE

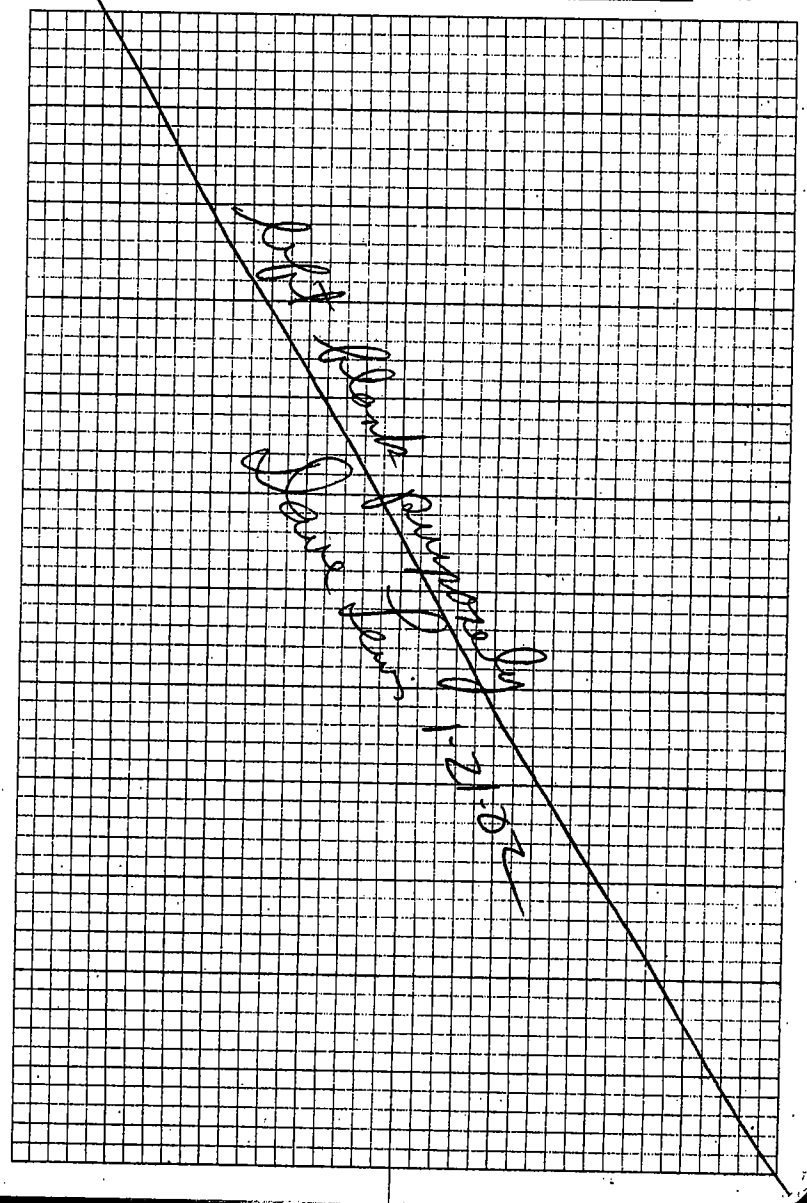
DLEWIS LNAMBA

WELL #	SAMPLE #	TIME/DATE	NOTES
MW01A	GW02_MW01A	1800/10-23	
MW02A~~A~~ 1B	GW02MW02A~~A~~ 1B	0915/10-24	MS/MSD
MW02A	GW02MW02A	1140/10-24	
MW02B	GW02MW02B	1530/10-24	
MW02B	GW50ZMW02B	1630/10-21	FIELD DUP
MW03A	GW02MW03A	1545/10-25	
MW04A	GW02MW04A	0935/10-26	
MW03B	GW02MW03B	1245/10-26	
MW05A	GW02MW05A	1710/10-26	
	GW100ZMW05A	2045/10-26	EQUIPMENT RINSATE
	GW02MW07A	1500/10-23	TB

Location _____ Date _____

Project / Client _____

_____ Scale



Location Camp Bonneville Date 1-21-02

Project / Client USACE ROUND 3

D LEWIS LNAMBA WEATHER: 30°, rain snow

0730	Mobed at Rate1 + left.
0815	At grocery store getting baggies, ice, + DI water.
0900	ARRIVED ON SITE, MOBING
1100	WENT TO LANDFILL TO MEASURE WATER LEVELS AND DROP PUMPS INTO WELLS

WATER LEVELS OPENED ALL WELLS FIRST

	WELL #	V
1115		
~~1116~~ 1122	MW01A	14.23
1124	MW01B	10.46
1127	MW04A	25.97
1129	MW02B	27.57
1131	MW02A	23.38
1133	MW03A	26.77
1134	MW03B	24.26
1136	MW05A	21.86
1139	HA-1	DRY
	HA-2	5.50

NOTE: DIFFERENCE BTWN TOP OF PVC + PLYWOOD

HA-1	1.96
HA-2	1.98

1147 BANK TO STREAM 2.48

1-22-02 Dave Lewis

Location CAMP BONNEVILLE Date 1-21-02

Project / Client USACE

Dave Lewis MW01A Scale

PUMP DEPTH: 27.75

WELL SIZE: 2"

LOC: MW01A

PURGE #1 @ 1200

SAMPLE #1 @ MW01A

TIME:	pH	COND mS/cm	TURB NTU	DO mg/L	TEMP °C	ORP mV	DTW: 14.16	TD: 30.26	WCH: 16.10	WV: 2.57 gal
1541	5.26	.070	354	7.72	9.74	266	15.41	150		NOTES
1544	5.24	.069	17.0	7.65	10.82	218	15.49	150		81.6 Hz
1547	5.43	.061	82	7.66	11.44	182	15.47	150		SLOW PRODUCING
1550	5.55	.057	59	7.68	11.57	152	15.48	140		80.8 Hz
1553	5.53	.058	46	7.69	11.56	148	15.48	140		HAD TO PUMP BELOW DESIGNATED PLS RATE
1556	5.55	.057	36	7.70	11.65	127	15.48	140		TO MINIMIZE WATER LEVEL STABILITY.
1559	5.56	.056	31	7.68	11.71	112	15.48	140		
1602	5.56	.056	11	7.65	11.76	106	15.48	140		
1605	5.55	.056	9.9	7.60	11.78	100	15.48	140		
1610										SAMPLE #1 @ MW01A
1705	FINISHED COLLECTING SAMPLES									

1-21-02 Dave Lewis

Location CAMP BONNEVILLE Date 1-21-02

Project / Client USACE

Dave Lewis

1155	DROPPED PUMPS TO MW01A, MW01B
1215	CHECKED IN AT FIRING RANGE. TALKED TO JOHN JEFFRIES (FBI). STAN ~~DEAN~~ (THE RANGE CONTROL OFFICER) WON'T BE IN ALL WEEK.
1250	WENT FOR LUNCH
1425	RETURNED TO SITE
1445	CALIBRATE HORIBA U-22 MFG. NO. T0062007

	PH	COND	NTU	DO	TEMP
AUTO CAL	4.00	4.49	0		
CALIBRATION	4.16	4.54	0	10.21	17.11

1525 SET UP AT MW01A

TRIP BLANK 012102TRIP01 (1-10-02 time: 1000)

1537 STARTED PUMPING MW01A

1610 SAMPLE # GW03MW01A

1705 FINISHED COLLECTING SAMPLES

1730 RETURNED TO BARRACKS TO PREP BOTTLES

1835 LEFT SITE

1-21-02 Dave Lewis

Location Camp Bonneville Date 1-22-02

Project / Client USACE

Dave Lewis MW01B Scale

LOC: MW01B WELL SIZE: 2" PUMP DEPTH: 53.05'

DTW: 10.57' TD: 55.56' WCH: 44.99' WV: 7.19 gal

TIME	PH	Cond. mS/cm	TEMP °C	DO mg/L	ORP mV	DTW	pump rate mL/min	NOTES
0942	5.02	.037	14.0	8.68	9.03	4502	1078	12.5Hz
0945	5.07	.034	16.2	8.86	9.29	378	10.80	200 slow producing
0948	5.28	.034	4.6	8.85	9.45	325	10.81	200 11.1Hz
0951	5.50	.033	4.3	8.88	9.67	270	10.81	200 70.7Hz
0954	5.76							get bags
0957	5.84	.032	3.5	8.87	9.40	28	10.81	200
1000	6.00	.032	3.1	8.86	9.68	194	10.81	200
1003	6.11	.032	2.9	8.89	10.04	171	10.81	200
1006	6.20	.032	2.9	8.93	10.06	157	10.81	200
1009	6.28	.032	2.6	8.96	10.04	142	10.81	200
1015								PURGE H2O: ~4.5 gal DECON H2O: 3 gal

SAMPLED GW03MW01B / GW03MW01B-MS/MSD

1-22-02 Dave Lewis

1210 FINISHED SAMPLING

Location Camp Bonneville Date 1-22-07

Project / Client USACE
Dave Lewis

Weather: high 30's, rain/snow showers

0730 Moving additional coolers, left hotel, got gas

0830 ARRIVED ON SITE.

0845 PHONED WATER LEVELS TO STEVE'S V-MAIL.

0920 ARRIVED ON LANDFILL, SET UP AT MW01B.

0940 STARTED PUMPING MW01B

1015 SAMPLE # GW03MW01B
GW03MW01BMS/MSD

1220 FINISHED COLLECTING SAMPLE + MS/MSD

1230 DECON BOTH PUMPS

1300 SETUP AT MW02A+2B, DROPPED PUMPS IN WELLS.

1310 LEFT LANDFILL FOR BARRACKS TO DROP SAMPLES + EAT LUNCH, GET ICE.

1450 RETURN TO SITE

1455 CALIBRATED HORIBA

PH	COND	TURB
3.98	4.90	0

Dave Lewis
1-22-07

Location Camp Bonneville Date 1-22-07

Project / Client USACE
Dave Lewis

2A 2B
MW02B Scale

PUMP DEPTH: 27.00'
37.75

WELL SIZE: 2"

LOC: MW02A 2B

TD: 37.67 236.9

TIME	PH	COND	TURB	TEMP	ORP	DTW	NOTES
1542	5.84	.225	12.2	9.49	377	24.50	1135 Hz
1545	5.40	.192	36.0	9.45	369	24.70	
1548	5.37	.191	32.4	9.45	283	24.70	
1551	5.11	.182	12.3	9.10	244	24.70	150 LEAKING INLET
1554	5.90	.166	0.2	9.19	214	24.70	150 REARRANGED INLET
1557	5.99	.168	0	8.90	195	24.70	300 108.2 Hz
1600	6.12	.155	0	8.99	173	24.01	300
1603	6.19	.149	0	9.03	163	24.07	300
1606	6.21	.139	0	9.03	148	24.06	300
1609	6.29	.136	0	9.08	138	24.08	300
1612	6.32	.134	0	9.04	129	24.06	300
1615	6.38	.134	0	9.16	120	24.06	300

CONTINUED ON NEXT PAGE

Dave Lewis
1-22-07

Location Camp Bonneville Date 1-22-02

Project / Client USACE

Dave Lewis

1515 RETURNED TO LANDFILL

1530 STARTED PUMPING MW02~~2B~~2A @ 2, LARRY IS RETURNING TO BARRACKS TO LABEL BOTTLES FOR SAMPLE + DUP

1627 LARRY RETURNED W/ BOTTLES

~~1635~~ 1645 SAMPLE # ~~GW03MW02B~~ GW03MW02A

~~1645~~ @ 2 DUP # ~~GW03MW02B~~

1650 DISCOVERED I WAS PUMPING 2A INSTEAD OF 2B, WILL HAVE TO ADJUST LOG BOOK ENTRIES AND LABELS

1750 LEFT LANDFILL

1865 ARRIVED AT BARRACKS, MOB FOR TOMORROW

1915 LEFT SITE

Dave Lewis 1-22-02

Location Camp Bonneville Date 1-22-02

Project / Client USACE

Dave Lewis

MW02~~2B~~2A @ 2 (cont) Scale

MW02~~2B~~2A @ 2 (cont)

TIME	pH	COND	TURB	DO	TEMP	ORP	LITW FLO	NOTES
1618	6.36	.133	0	9.22	12.09	114	24.06 300	
1621	6.36	.132	0	9.23	12.05	101	24.06 300	
1624	6.45	.132	5	9.20	12.01	100	24.06 300	
1627	6.43	.131	0	9.16	12.06	94	24.06 300	
~~1635~~ 1645 @ 2								SAMPLE # ~~GW03MW02B~~ GW03MW02A / PURGE H2O: 5.5gal
1645								DUP # ~~GW03MW02B~~

DECON EQUIP

Dave Lewis 1-22-02

120 Location Camp Bonneville Date 1-23-02

Project / Client USACE

Dave Lewis WEATHER: 40°, rain

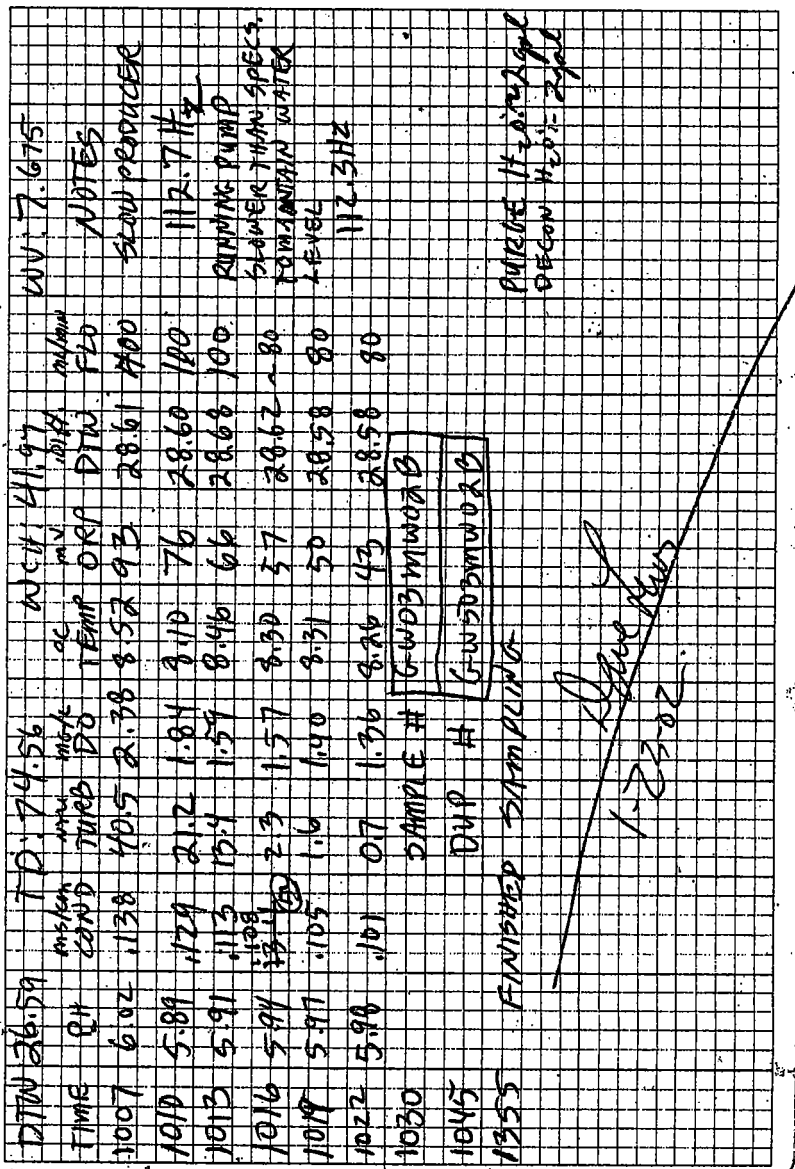
0800	LEFT HOTEL FOR SITE + FILLING 1 gal. GAS CAN			
0830	ARRIVED ON SITE TO MOB			
0845	CALIBRATED HORIBA			
		PH	COND	TURB
	AUTOCALREAD	3.99	5.29	0
	LEVEL 2 STD	6.86	53.7	40
	LEVEL 2 READ	7.14	74.6	34.7
0925	ARRIVED AT LANDFILL, LARRY IS AT BARRACKS TO PACK SAMPLES FOR FEDEX SET UP AT MW02B			
0958	STARTED PUMPING MW02B			
1010	HAD TO RUN PUMP SLOWER THAN SPECIFICATIONS TO MAINTAIN STABLE WATER LEVEL			
1030	SAMPLE # GW03MW02B			
1045	DUP # GW503MW02B			
1355	FINISHED COLLECTING SAMPLE			
1410	DROPPED PUMP INTO MW04A			
1430	RETURNED TO BARRACKS TO PROCESS SAMPLES FOR SHIPMENT.			
1535	WAITING FOR FEDEX AT GATE.			

1-23-02 Dave Lewis

121 Location Camp Bonneville Date 1-23-02

Project / Client USACE

Dave Lewis MW02B Scale



Location Camp Bonneville Date 1-23-02

Project / Client USACE

Dave Lewis

1600	FED EX SHOWED UP.
160	GOING TO EAT.
1720	RETURNED TO SITE.
1800	SET UP AT MW04A
1820	STARTED PUMPING MW04A
1840	LOSING WATER BUT I'M GOING AS SLOW AS I CAN GO WITH PUMP + STILL MAINTAIN FLOW AT ALL, 100 ML/MIN. + IRREGULAR DRIPPING + SPURTING
~~1900~~ 1810	SAMPLE # GW03MW04A
2100	DECON PUMPS
2200	LEFT SITE

1-24-02 Dave Lewis

Location Camp Bonneville Date 1-23-02

Project / Client USACE

Dave Lewis MW04A Scale

LOC: MW04A WELL SIZE: 2" PUMP DEPTH: 44.0

IDTW: 25.88 TD: 46.51 WCH: 20.63 WV: 3.30

TIME	PH	COND	TURB	TEMP	ORP	DTW	FLOW	NOTES
1830	4.47	.055	18.9	6.33	7.46	25.88	100	10HZ
1837	11.87	.052	23.1	5.28	8.08	26.48	125	40HZ
1830	5.16	.051	14.9	5.24	8.07	26.97		
1839	5.28	.051	12.8	5.28	8.01	27.04	100	10HZ
1842	5.40	.050	9.2	5.43	9.04	27.03	100	AS SLOW AS I CAN GO + STILL KEEP 1-2 DRIPS/SPURTS
1845	5.57	.049	9.1	5.57	9.18	27.07	100	
1848	5.65	.048	8.5	5.72	9.00	27.09	100	+ SPURTING
1851	5.71	.047	8.0	5.93	8.99	27.10	100	
1900								SAMPLE # GW03MW04A
2030								FINISHED SAMPLING

PURGE H2O: 2 GAL

DECON H2O: 2 GAL

Dave Lewis 1-23-02

Location Camp Bonneville Date 1-24-02

Project / Client USACE

Dave Lewis WEATHER: 40°, RAIN

0900	GOT ICE AT STORE & GAS IN CAN.
0935	ARRIVED AT LANDFILL TO SETUP AT MW03A + 3B, + DROP PUMPS INTO WELLS.
1010	RETURNED TO BARRACKS TO MOB,
1025	CALIBRATED HORIBA

	PH	COND	TURB
AUTO CAL READ	4.21	4.57	0
LEVEL 2 READ	7.19	65.0	31.8
AUTO CAL STD	4.00	4.49 ms/cm	0 NTU
LEVEL 2 STD	6.86	53.7	40

TRIP BLANK # 012302 TRIP 02 (time: 0900) 1-10-02

2 BOTTLES ~~8270B~~ 8260B

2 BOOTTLES TPH-G

PE SAMPLE #: GW03MW07A (time 0950) 1-23-02

2 BOTTLES 8260, TOTAL METAL 1 BOTTLE

2 BOTTLES 8270C, 1 BOTTLE 8330m, 2 VOAS 8330m,

1 BOTTLE 314

GW03MW07B (time: 0930) 1-23-02

2 AMBER 8330m, 2 VOAS 8330m,

1 BOTTLE 314

PE SAMPLES ARE BEYOND HOLD TIME, THEY ARRIVED TUES. JAN. 22

Location Camp Bonneville Date 1-24-02

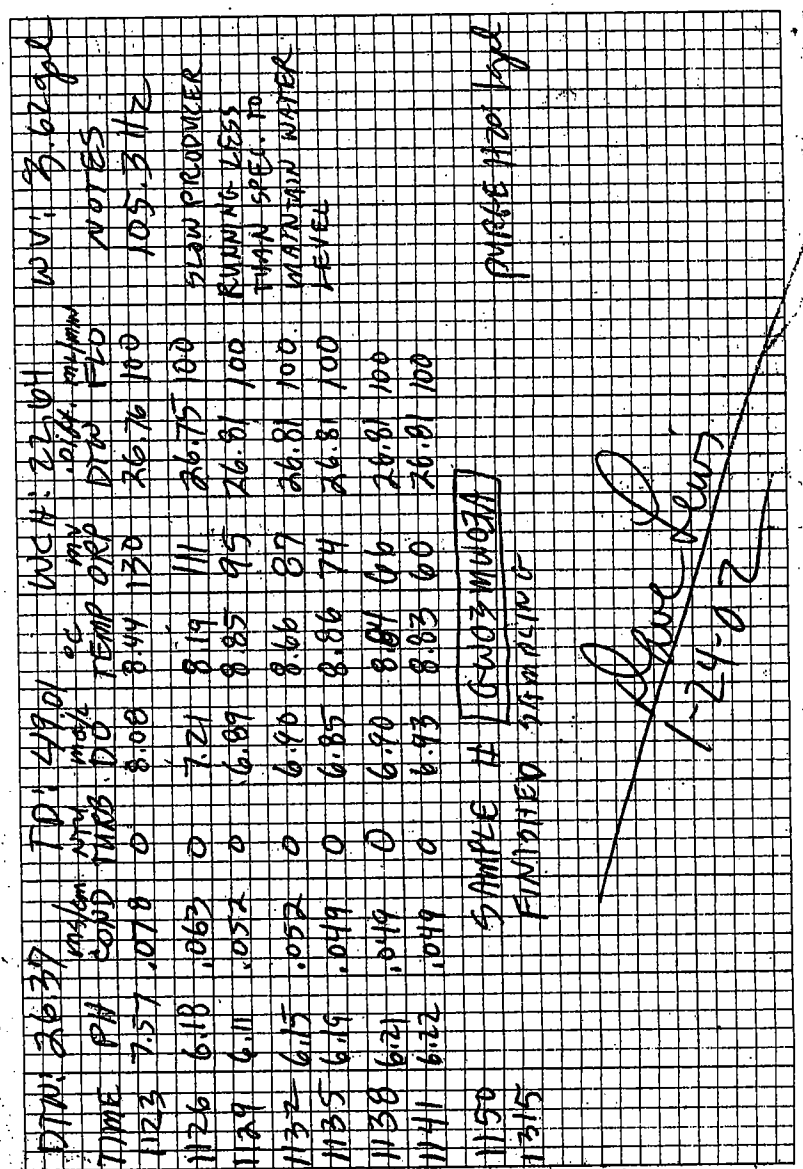
Project / Client USACE

Dave Lewis MW03A Scale

PUMP DEPTH: 246.50

WELL SIZE: 2"

LOC: MW03A



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Location Camp Bonneville Date 1-24-02

Project / Client USACE

Dave Lewis

RALEIGH FARLOW DATED PE SAMPLES 1-16-02, DATE OF SHIPMENT 1-23-02

1110 ARRIVED BACK AT LAND FILL

1120 STARTED PUMPING MW01A

1126 RUNNING FLO A 100 ML/MIN; LESS THAN SPECIFICATIONS TO MAINTAIN WATER LEVEL

1150 SAMPLE # MW03MW03A

1315 FINISHED SAMPLING 3A

1320 STARTED PUMPING 3B

1324 RUNNING > SPEC TO MAINTAIN STABLE II WATER LEVEL SLOWLY DROPPING, CANT RUN ANY SLOWER + MAINTAIN FLOW STEADY

1355 SAMPLE # GW03MW03B

1515 FINISHED SAMPLING

1545 RETURNED TO BARRAKS

1645 LEFT TO TAKE SAMPLES TO FEDEX.

1715 ARRIVED FEDEX

1745 BACK AT HOTEL TO EAT

1900 LEFT TO RETURN TO SITE

1930 ARRIVED AT LANDFILL, DECON PUMP, SET UP A MW03A & DROPPED PUMP INTO WELL.

2000 RETURNED TO BARRACKS TO DEMOB.

2030 LEFT SITE

1-24-01 Dave Lewis

127

Location Camp Bonneville Date 1-24-02

Project / Client USACE

Dave Lewis MW03B Scale

LOC: MW03B WELL SIZE: 2" PUMP DEPTH: 57.5

DTW: 24.28 TD: 61.95 WCH: 37.77 MW: 61.04 ft

TIME	pH units	COND mS/cm	TURB NTU	DO mg/L	TEMP °C	ORP mV	PID ppm	FLOW mL/min	NOTES
1321	6.01	1.441	15.1	4.94	8.41	252	25.41	140	100.0 Hz
1324	5.64	1.447	44	4.11	8.31	224	25.41	115	START PROPPER PUMPING @ STEP.
1327	5.55	1.448	5.1	3.60	7.74	182	25.77	75	10 MINUTES @ STEP.
1330	5.57	1.447	8.0	3.44	7.74	160	25.77	75	WATER LEVEL
1333	5.64	1.447	10.2	3.39	7.91	141	25.68	75	SLOWLY DROPPING
1336	5.72	1.446	10.2	3.37	7.78	120	25.68	75	CANT RUN SLOWER
1339	5.81	1.441	8.0	3.38	7.83	103	25.71	75	+ MAINTAIN STEADY FLOW
1342	5.86	1.443	7.0	3.38	7.82	90	25.72	75	
1345	5.95	1.442	4.8	3.40	7.86	77	25.73	75	
1348	5.98	1.442	3.8	3.41	7.95	60	25.74	75	
1355									SAMPLE # GW03MW03B
1515									FINISHED SAMPLING

PURGE WATER DRUM #1

DRUM #2

1-24-02 Dave Lewis

Location Camp Bonneville Date 1-25-02

Project / Client USACE

Dave Lewis Weather: 40° rain

0800	Left Hotel, got gas, ice, & DI water
0845	ARRIVED ON SITE, MOB, PREPARE SAMPLE JARS
0945	CALIBRATE HORIBA

	PH	COND	TURB
AUTO CAL READ	4.24	4.52	0
LEVEL 2 READ	7.16	65.4	31.4

1015	ARRIVED AT LANDFILL TO PUMP MW05A
1030	STARTED PUMPING MW05A
1045	PUMPIN SLOWER THAN SPECIFICATIONS; ~100 ml/min, TO MAINTAIN STEADY WATER LEVEL; WELL IS SLOW PRODUCER.
1110	SAMPLE # ~~MW05~~ GW03MW05A
1245	FINISHED SAMPLING, LOADED UP EQUIPMENT
1330	Returned to BARRACKS
1355	DECON PUMP
1430	COLLECTED RINSATE # GW1003MW05A TRIP BLANK # 012502 TRIP03 USING SAFEWAY PURIFIED WATER (TIME: 1200) 2 BOTTLES TPH-G 2 BOTTLE ~~EPA~~ 8260B

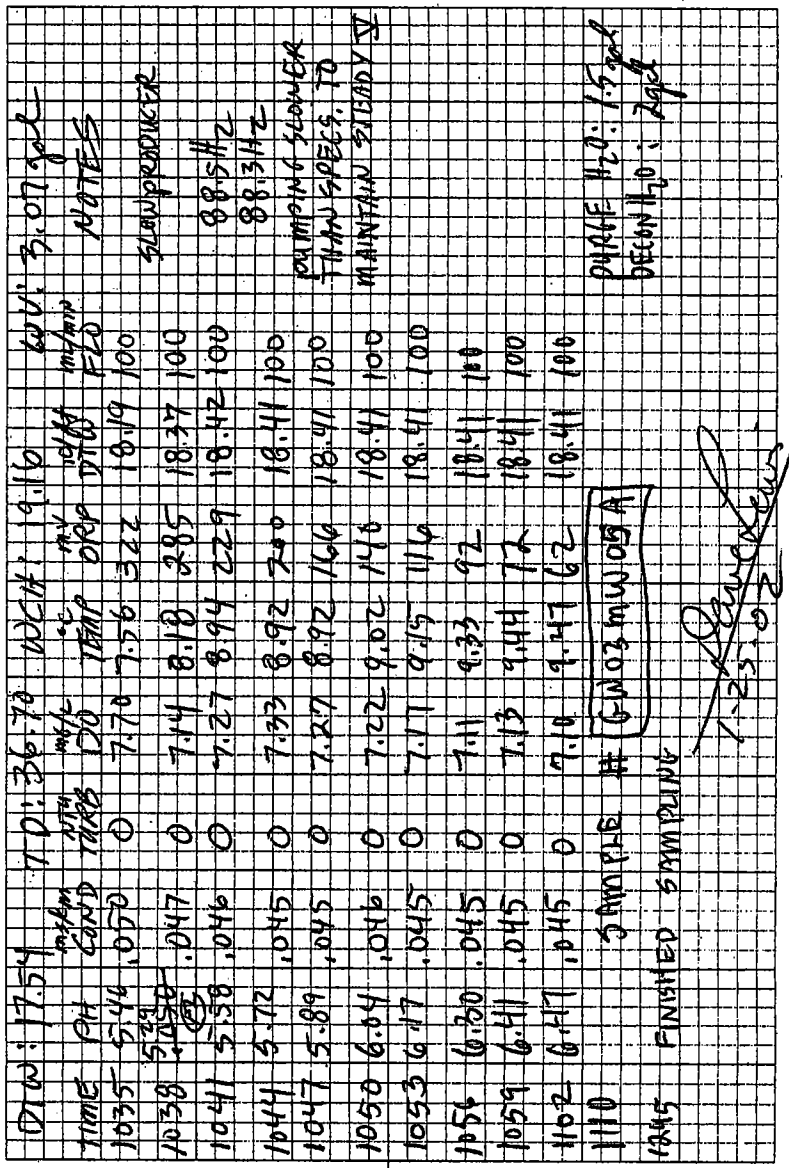
Dave Lewis
1-25-02

Location Camp Bonneville Date 1-25-02

Project / Client USACE

Dave Lewis MW05A Scale

LOC: MW05A WELL SIZE: 2" PUMP DEPTH: 34.20


PURGE H2O DISPOSAL
SAMPLE # GW03MW05A
SAMPLING COMPLETED
STEADY
STEADY
STEADY

Location Camp Bonneville Date 1-25-02

Project / Client USACE
Dave Lewis

1630	TOOK STL SAMPLES TO FEDEX
1700	DROPPED STL SAMPLES AT FEDEX
1800	RETURNED TO SITE W/ DINNER
1840	WENT TO LAND FILL TO GET GENERATOR
1920	RETURNED TO BARRACKS TO FINISH PACKING UP
2000	LEFT SITE FOR HOME
2320	STOPPED AT OFFICE TO DROP OFF EQUIPMENT.

Dave Lewis
1-25-02

Location Camp Bonneville Date 1-25-02

Project / Client

Scale

INVENTORY OF SUPPLIES LEFT ON SITE
HANFORD

1 BOX GLOVES
1 DOZ. FILTERS
3½ BAGS PEARLITE
8 WIT COOLERS
3 BOXES SMALL GARBAGBAGS
3 ROLLS PAPER TOWELS
1½ BOX 1 GAL. ZIPLOCKS
1 BOX 2 GAL. ZIPLOCKS
1½ BOXES 1QT. ZIPLOCKS
1 GAL. PURIFIED H_2O
BOX OF 15 GARBAGE BAGS
1 GALLON GAS CAN

Dave Lewis
1-25-02

Location Camp Bonneville Date 1-25-02

Project / Client USACE

Dave Lewis

SAMPLE LOG — 3rd SAMPLING ROUND

WELL #	SAMPLE #	DATE/TIME	NOTES
TRIP BLANK	012102TRIP01	1-10-02/1000	
MW01A	GW03MW01A	1-21-02/1610	
MW01B	GW03MW01B	1-22-02/1015	MS/MSD
MW02A	GW03MW02A	1-22-02/1645	
MW02B	GW03MW02B	1-23-02/1030	
MW02B	GW503MW02B	1-23-02/1045	DUP
MW04A	GW03MW04A	1-23-02/1900	
TRIP BLANK	012302TRIP02	1-10-02/0900	
P.E	GW03MW07A	1-23-02/0950	SHOULD HAVE BEEN NUMBERED GW03MW08A
P.E.	GW03MW07B	1-23-02/0930	" " 8B
MW03A	GW03MW03A	1-24-02/150	
MW03B	GW03MW03B	1-24-02/1355	
MW05A	GW03MW05A	1-25-02/1110	
RINSATE	GW1003MW05A	1-25-02/1430	
TRIP BLANK	012502TRIP03	1-25-02/1200	NO VOA-FREE H_2O LEFT USED GROCERY STORE DI H_2O

Dave Lewis
1-25-02

Location Camp Bonneville Date 1-26-02

Project / Client USACE

Dave Lewis

Scale

0915 ARRIVED AT OFFICE TO LOAD COOLERS (SAMPLES) + GENERATOR

0950 DROPPED SAMPLES AT ARI

1030 RETURNED GENERATOR TO HERTZ

Dave Lewis
1-26-02

Location Camp Bonneville Date 1-25-02

Project / Client USACE
Dave Lewis

1630	TOOK STL SAMPLES TO FEDEX
1700	DROPPED STL SAMPLES AT FEDEX
1800	RETURNED TO SITE W/ DINNER
1840	WENT TO LAND FILL TO GET GENERATOR
1920	RETURNED TO BARRACKS TO FINISH PACKING UP
2000	LEFT SITE FOR HOME
2320	STOPPED AT OFFICE TO DROP OFF EQUIPMENT.

Dave Lewis
1-25-02

Location Camp Bonneville Date 1-25-02

Project / Client

Scale

INVENTORY OF SUPPLIES LEFT ON SITE
HANFORD

1 BOX GLOVES
1 DOZ. FILTERS
3½ BAGS PEARLITE
8 WIT COOLERS
3 BOXES SMALL GARBAGBAGS
3 ROLLS PAPER TOWELS
1½ BOX 1 GAL. ZIPLOCKS
1 BOX 2 GAL. ZIPLOCKS
1½ BOXES 1QT. ZIPLOCKS
1 GAL. PURIFIED H_2O
BOX OF 15 GARBAGE BAGS
1 GALLON GAS CAN

Dave Lewis
1-25-02

Location Camp Bonneville Date 1-25-02

Project / Client USACE

Dave Lewis

SAMPLE LOG — 3rd SAMPLING ROUND

WELL #	SAMPLE #	DATE/TIME	NOTES
TRIP BLANK	012102TRIP01	1-10-02/1000	
MW01A	GW03MW01A	1-21-02/1610	
MW01B	GW03MW01B	1-22-02/1015	MS/MSD
MW02A	GW03MW02A	1-22-02/1645	
MW02B	GW03MW02B	1-23-02/1030	
MW25B	GW503MW02B	1-23-02/1045	DUP
MW04A	GW03MW04A	1-23-02/1900	
TRIP BLANK	012302TRIP02	1-10-02/0900	
P.E.	GW03MW07A	1-23-02/0950	SHOULD HAVE BEEN NUMBERED GW03MW08A
P.E.	GW03MW07B	1-23-02/0930	" " 8B
MW03A	GW03MW03A	1-24-02/1550	
MW03B	GW03MW03B	1-24-02/1355	
MW05A	GW03MW05A	1-25-02/1110	
RINSATE	GW1003MW05A	1-25-02/1430	
TRIP BLANK	012502TRIP03	1-25-02/1200	NO VOA-FREE H_2O LEFT USED GROCERY STORE DI H_2O

Dave Lewis
1-25-02

Location Camp Bonneville Date 1-26-02

Project / Client USACE

Dave Lewis

Scale

0915 ARRIVED AT OFFICE TO LOAD COOLERS (SAMPLES) & GENERATOR

0950 DROPPED SAMPLES AT ARI

1030 RETURNED GENERATOR TO HERTZ

Dave Lewis
1-26-02

Location Camp Bonneville Date 4/23/02

Project / Client USACE

Renee Prochazka & David Beedle

Well # (mw)	Date/time	Water lvl (ft)	Reference point	Depth to bottom
1A	4/23/02 @ 11am	16.18	TOC	
1B	4/23/02 @ 11:02am	12.68	TOC	
2A	4/23/02 @ 11:05am	24.46	TOC	
2B	4/23/02 @ 11:06am	27.98	TOC	75ft
3A	4/23/02 @ 11:15am	28.06	TOC	
3B	4/23/02 @ 11:20am	25.61	TOC	
4A	4/23/02 @ 11:15am	27.25	TOC	
HA-1	4/23/02	11:07am	Dry	
HA-2	4/23/02	11:08	moist @ bottom - no standing H2O	
Creek bank height 24.8ft				
5A	4/23/02 @	11:17am	23.22	TOC

#1656 Horiba U-22 calibration @ 11:36am 4/23.
pH 3.97, Cond 4.46, Turb - 1NTU
DO 10.36, Btemp 14.95

4/23/02

Start MW01A @ 12:00 Finish 1400

Start MW01B @ 1400 Finish 1520

Prochazka 4/23/02

Location Camp Bonneville Date 4/24/02

Project / Client USACE

Renee Prochazka & David Beedle Steele

For field notes refer to logs

4/24/02

Start MW02B @ 8:45 Finish @ 1000

Start MW02A @ 10:45 Finish @ 1300
→ trip duplicate called GW04MW05B

Start MW04A @ 1300 Finish @ 1445

4/25/02

Start MW05A @ Finish @

Start MW03A @ Finish @

Start MW03B @ Finish @

4/24/02

Prochazka

Location Camp Bonneville Date 4/23/02

Project / Client USACE

Renee Prochazka & David Beedle

Well # (mw)	Date/time	Water lvl (ft)	Reference point	Depth to bottom
1A	4/23/02 @ 11am	16.18	TOC	
1B	4/23/02 @ 11:02am	12.68	TOC	
2A	4/23/02 @ 11:05am	24.46	TOC	
2B	4/23/02 @ 11:06am	27.98	TOC	75ft
3A	4/23/02 @ 11:15am	28.06	TOC	
3B	4/23/02 @ 11:20am	25.61	TOC	
4A	4/23/02 @ 11:15am	27.25	TOC	
HA-1	4/23/02	11:07am	Dry	
HA-2	4/23/02	11:08	moist @ bottom - no standing H2O	
Creek bank height 24.8ft				
5A	4/23/02 @	11:17am	23.22	TOC

#1656 Horiba U-22 calibration @ 11:36am 4/23.
pH 3.97, Cond 4.46, Turb - 1NTU
DO 10.36, Btemp 14.95

4/23/02

Start MW01A @ 12:00 Finish 1400

Start MW01B @ 1400 Finish 1520

Prochazka 4/23/02

Location Camp Bonneville Date 4/24/02

Project / Client USACE

Renee Prochazka & David Beedle Steele

For field notes refer to logs

4/24/02

Start MW02B @ 8:45 Finish @ 1000

Start MW02A @ 10:45 Finish @ 1300
→ trip duplicate called GW04MW05B

Start MW04A @ 1300 Finish @ 1445

4/25/02

Start MW05A @ Finish @

Start MW03A @ Finish @

Start MW03B @ Finish @

4/24/02

Prochazka

9/9/02	C. Bonneville Landfill 4	
0830	meet @ range control Jeff Schwalm (HFA) Don (Cascade) ↳ (301) 399-7259 John R.	
0900	@ MW06A w/ hand equip to install micro-well	
0925	collect 18" drive sample 3-5' bgs	
0930	Refusal on weathered bedrock at 6' bgs V-wrap screen in 5' lengths won't work in this well - can't cut pre-wrap screens. decide to install conventional PVC - 2' screen will allow for 4' seal above screen	
1125	well to dry to develop will check tom. Cascade crew departs site.	

9/9/02 CAMP BONNEVILLE LANDFILL 4

MW-6A

0	—	Surface vegetation
1		Brown silty clay (CL-ML)
2		sl. dense, v. moist,
3		some to trace gravel,
4	X	.125" med. dia
5		5', inc. gravel -
6		weathered bedrock
7		6' refusal on
8		black bedrock
9		
10		

9/9/02 CAMP BONNEVILLE LANDFILL 4

1130 Road construction con. arrives to drop off equipment

1215 UXO Avoidance determined that amt. of anomalies prevents road from being construded w/o UXO clearance

1330 contact S. Wolfe re the UXO situation

1400 S. Wolfe to travel to site and confer about UXO situation @ MW07A/B meet @ ~12 9/10.

9/10/02 CAMP BONNEVILLE LANDFILL 4

0830 @ site
0930 meet Gregg (Ecology) drive up to MW07A/B site to look @ UXO site
0950 Jeff (HFA) arrives at location for read
1100 @ Range Control to
1115 meet Mike Nelson (USACE) Steve Wolfe (URS)
1300 Depart site

12/9/02 CAMP BONNEVILLE LANDFILL 4

0745 arrive onsite to meet w/ M. Nelson (USACE) also on site crew w/ UXB, D. Larson (Cascade)
0810 @ Landfill 4 to look at proposed 7A/B location mark proposed road location and turn-around
0940 return to range control for safety - training briefing,
1100 exclusion zone in effect.
1630 Depart site

12-10-02 CAMP BONNEVILLE LANDFILL 4

0650 on onsite, UXB to conduct QA sweep excavator and rock, to arrive earliest on 12-11-02.
0730- exclusion zone in effect
1630 Depart site

Bill Mustred (Clark County)
pager 206 993 7864
cell ? 935 1735
office 206 684 1294

12-11-02 CAMP BONNEVILLE LANDFILL 4

Bill (Straus) Road Builder
1-503-709-7990

0700 onsite,
0820 Excavator onsite
0840 @ road/new location
0855 excavator to travel to site, all non-necessary personnel to range control
0945 Crew returns to range control report that a piece of UXO has been located 2.36mm anti-tank rocket dentonation procedures put into progress
1330 blasting caps arrive UXB crew to dentonate
1415 Demo of shell takes place, all crew returns to RC.
1600 EOD

12-12-02 CAMP BONNEVILLE LANDFILL 4

0700 onsite, jp(URS) MN(USACE) TD/Crew(UXB), Bill(Stratus) to debrush road location and begin laying rock for temp. road, maintain exclusion zone for sweep during debrush
1200 1st truck loads arrive 3 total w/ trailers
1330 prepare to clear 2 boring locations while road work is in process.
1400 auger and clear 2 boring locations down to 6'
1500 2- trucks return (2nd load)
1540 truck stuck pulled out, elec. problems
1700 truck running - all crew return to range control
1730 gate locked - wait for Parsons to return to unlock
1815 Depart site

12-13-02 CAMP BONNEVILLE LANDFILL 4

0700 onsite, jp(URS), UXB, Stratus to continue laying road - safety mtg.
0730 continue at road location
0800 jp to meas. MW6A no water, excessive moisture at screen level.
0840 2- trucks w/ trailers arr.
1040 2- trucks w/ trailers arrive. D. Larson (Cascade) onsite to check hole locations decide to move both locations to provide more room at rear of rigs. UXB clears both locations, place traffic cones, over holes
1230 1- truck/trailer arrives
1305 final load dumped

12-16-02 CAMP BONNEVILLE LANDFILL 4

0400 - Travel to site
0730
0740 meet Daryl, Jeff, Tom (CDI), proceed to MW-6A location drop decon trailer at large turn-round.
0800 set up on MW-6A, safety mtg.
- UXO
- hospital location
- communication
- drilling procedures
0856 begin drilling 7A
1110 @ 40'
1300 Decision is made to abandon hole, only set air rotary well.
1345 Drum INVENTORY ~80 gallons
MW-2B 2 drums
MW-1A 1 drum MW-5A ¼ drum
MW-1B 1 drum 1 empty
MW-2A 1 drum
MW-4A ¼ drum
MW-3A ½ drum

INW 1-800-776-9355

(USACE) Rick Garrison cell
Deb - [redacted] 617-0341
764-3312

Total 9 drums onsite

23201 NE PLUSS Rd
VANCOUVER, WA
98682

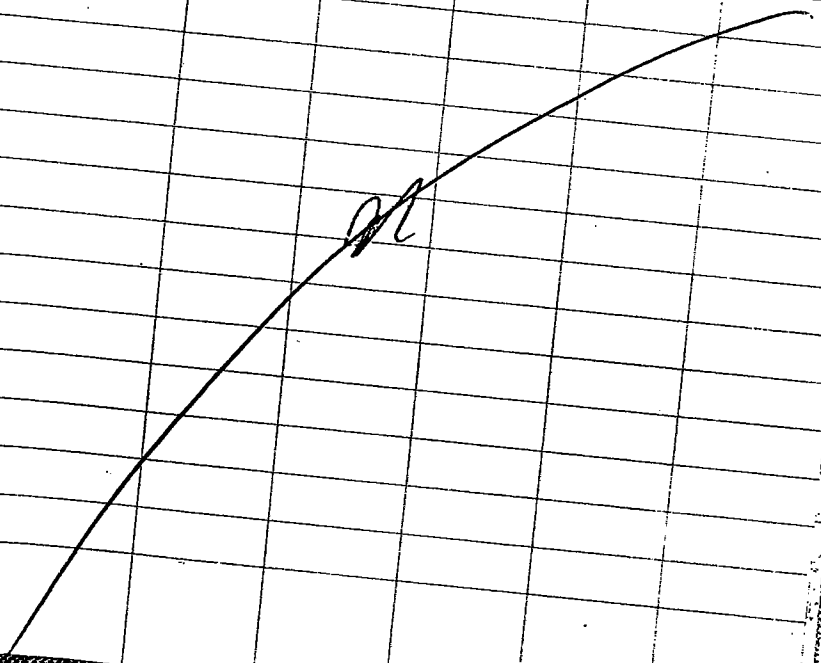
GW sampling equipment
- Grunfos Redi-Flo2
- converter
- Reel e-z sampling system
- Horriba multi-parameter meter
- Generator

CDI
Todd Mecham
cell: 206-396-1557

1630 EOD

12-18-02 CAMP BONNEVILLE - LANDFILL 4 15

0800- Travel to site,
1200
1310 D. Carson calls, rig to arr. @ 3pm
1540 air rotary rig onsite spend remaining day transferring casing and drill rig to MW07B site.
1630 Depart site



12-19-02 C. BONNEVILLE LANDFILL 4

0645 onsite, drill crew (Cascade) onsite. begin set-up on C4-MW07B.
0955 begin drilling 7B
1015 @ 15' bgs (ML-CL)
1100 @ 35' bgs (ML)
encounter GW @ ~40'
1140 @ 44' encounter weathered bedrock, advance borng to 56.4'
1300 begin to install .01 slot PVC screen centralizers @ 46', 25'
1500 well installed R. Garrison departs site, COE clean tools and decons.

MW07B set w/ 10' screen 46-56' bgs
filter pack 43-56' bgs
bentonite seal 2-43'
cement surface - 2'

1630 Depart site

12-20-02 C. Bonneville LANDFILL 4

0645 onsite, COE onsite to build monument, install bollard posts.
1040 Feded arrives w/ pump, converter and YSI wq meter to develop 7B on Monday.
1200 work completed at MW07B - well to be developed on 12-23
1315 Depart site

12-23-02 CAMP BONNEVILLE LANDFILL 4

0600 -
0900 Travel to site
0930 set-up to develop MW07B
1000 problems w/ generator's circuit breaker, pump wired to 115 volts causes generator to kick off - try inverter not enough current to run pump at depth
1115 begin surging well with disposable bailer
1200 decide to develop well with bailer and measure parameters ~~to~~ following each casing volume
1410 Remove approx. 20 gallons
1500 Return generator, depart site
1530 -
1830 travel to Seattle

Phillips (to pickup drums)
Martha Flinde
FAX 1-360-835-8872
CELL 1-503-969-5001

January 8TH

1-6-03 — Camp Bonneville Landfill 4

pickup truck, arrange for equip delivery to site

1-7-03

0500-
0800 travel to site
0900 pickup, sort through sample coolers - await FEDEX w/ pump, etc.
1045 FEDEX arrives
1100 LARRY NAMBA onsite begin arranging sample containers and necessary analyses
1430 set-up pump on 7A
1600 depart site

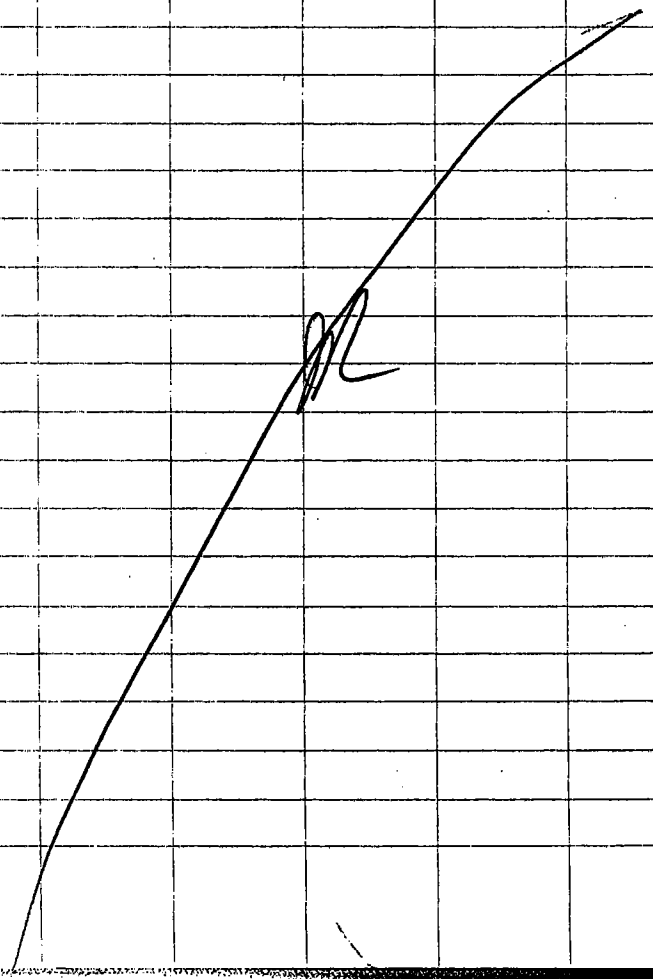
1-8-03 — Camp Bonneville Landfill 4

0730 arrive onsite to purge and sample MW07B / MW02B
1030 complete purge of MW07B, collect sample
1300 setup on MW02B to purge and collect sample
1430 collect sample - return to range control to package and fill out paperwork
1600 depart to FEDEX to send out STL samples
1650 @ FEDEX to send out STL bound samples, extra sample for ERIC W.
1710 Drop off generator @ HERTZ
LARRY NAMBA TO deliver PACE samples in person
1800 EOD

C. Bonneville
Landfill 4

1-9-03

0730 @ site to load rock core boxes and all misc. equipment
1400 Depart site
1700 EOD



Appendix L
Response to Comments on Draft Report

February 11, 2002
53-F0072323

Mr. Rodney Taie
U.S. Army Corps of Engineers, Seattle District
CENWS-PM-HW
4735 E. Marginal Way South
Seattle, WA 98134-2385

Re: Draft Expanded Site Inspection Report
Landfill 4–Demolition Area 1, Camp Bonneville, Washington
Revised Response to Comments
Contract No. DACA67-98-D-1005 (D.O. No. 0054)

Dear Mr. Taie:

This letter presents URS' revised response to comments on our "Draft Expanded Site Inspection Report for Landfill 4-Demolition Area 1, Camp Bonneville, Washington," dated November 2001. Comments were received from the U.S. Army Corps of Engineers (USACE), Washington State Department of Ecology (Ecology), and the Region 10 U.S. Environmental Protection Agency (EPA) on January 7, 2001. A meeting to discuss the comments with the USACE, Ecology, and EPA was attended on January 17, 2001. The revised responses also reflect discussions with the USACE on Wednesday, January 30, 2002. Responses are included below for each comment.

USACE COMMENTS

Michael Bailey

1. *Please change "borings logs" to "boring logs."*

URS Response:

The typographical error will be corrected.

2. *The discussion of drilling in the alluvium and presence of perched water is extremely confusing. Were borings advanced through the alluvium and into bedrock using air rotary? Build-up of heat during drilling through silt and clay seems unusual. If drilling through alluvium was accomplished using hollow stem augers, then addition of water to cool the bit is unconventional.*

URS Response:

A hollow-stem auger rig was used to drill through the alluvium for shallow well drilling and installation. Drilling continued below the contact with the underlying weathered bedrock to ensure that the bottom of the alluvial soils was reached. The auger was then retracted and

the bottom of the borehole grouted to above the contact. Water was not used during drilling and installation of the shallow wells.

Air rotary drilling was used to drill and install the deeper wells, which included drilling through the alluvial soils before reaching bedrock. Water was used in the first two deeper wells due to clumping of clay, which made removal of the cuttings difficult. On the last of the three deeper wells, no water was added although this made extraction of soils difficult. The text will be clarified in response to the comment.

3. *There appear to be inconsistencies in the discussion of seal placement. Cement grout and bentonite seals were emplaced to approximately 2 feet bgs. The concrete surface seal, however, extended as deep as 5 feet bgs. If the cement or bentonite seal was installed to 2 feet bgs, then the concrete seal could not start at 5 feet bgs.*

URS Response:

Cement or bentonite grout was placed up to 2 feet bgs in all of the wells installed. A concrete surface seal was placed from 2 feet bgs to the surface in all of the wells. The text will be clarified.

4. *It is unclear how variations in temperature, pH, conductivity, Eh, and dissolved oxygen could influence selection of pumping rate during development. Pumping rate should be determined by the capacity of the well and formation.*

URS Response:

The text incorrectly states that the pumping rate was varied based on field parameter measurements. The pumping rate was based on the capacity of the well and the ability of the surrounding formation to produce water. URS and the driller attempted to maintain a consistent flow rate while measuring field parameters. Pumping for development was unsuccessful for some of the shallow wells due to a lack of water production. These wells were developed with surging and bailing as mentioned in the Draft ESI Report. Development of the deeper wells with pumping was generally more successful.

5. *It is stated that the pumping rate was reduced if it appeared that fine-grained sediments were penetrating the well. Given that the purpose of well development is to promote flow of water into the well by removing finer grained sediments from the surrounding formation and filter pack, it does not make sense that the pumping rate would be reduced to prevent that from happening. Please comment.*

URS Response:

It is understood that one of the objectives of well development is to remove fine-grained soils from the surrounding formation and filter pack. However, considering the type of materials

observed in the drill cuttings, it seemed likely that aggressive pumping would continue to remove fine-grained material from the formation while not greatly improving the flow or clarity of groundwater. Repeated pumping or surging and bailing did not demonstrate a significant decrease in fine-grained materials. Based on the initial results of the well development, alternate methods were discussed and implemented as discussed in the Draft ESI Report.

6. *The USCS classification is not subjective in, and of, itself. The classification methodology relies on laboratory tests for complete characterization. Field classification using visual-manual methods to arrive at a USCS designation may be subjective, in that the methods are not uniformly applied by field geologists.*

URS Response:

Comment noted. The text will be clarified in accordance with the comment.

7. *Please add statement that some wells did not produce enough water to sample by low-flow methods, and reference Appendix A Deviations from Management Plan.*

URS Response:

The text will be clarified in accordance with the comment.

8. *Grundfos Redi-Flo II pumps are capable of purging at rates approaching 100 mL/min. It is not clear from purge records that pumping rates were adjusted to stabilize drawdown. For example, MW-2B was purged at 0.3 L/min, even though water levels steadily dropped. Please comment.*

URS Response:

Grundfos Redi-Flo II pumps are capable of purging rates approaching 100 mL/min. provided the groundwater being pumped does not contain much fine-grained material and the pumps are new or undergo frequent overhauls. Because the pumps used for sampling were rented, their previous condition and servicing rates are unknown. Purging was conducted at as slow a rate as possible while producing continuous pumping.

9. *Please change "that there suspended solids" to "that suspended solids."*

URS Response:

The typographical error will be corrected.

10. *"...discarded into a on rubbish offsite receptacle" does not make sense.*

URS Response:

The text will be clarified in accordance with the comment.

11. *Screen length and ability of soils to produce water are not related. The statement that "five foot screens were used in soils that appeared to produce less water" does not make sense. In the text, the preceding sentence correctly states that screen length was based on the thickness of the water-bearing formation.*

URS Response:

The text will be clarified to state that screen length was based on the thickness of the water-bearing formation.

12. *The statement that the bedrock is massive, relatively unweathered, and contains few fractures is not supported by the boring logs for MW-01B and –02B, which indicate recoveries as poor as 0-46%. Either the conclusions about the quality of the bedrock are unfounded, or coring techniques were poorly applied. Please comment.*

URS Response:

Coring was much more successful on the third coring location (L4-MW03B) than the first two (L4-MW01B and L4-MW02B). Field personnel reported that the driller had difficulties having the coring device lock onto the cores. As a result, upon extraction some of the core was lost. However, recovery was nearly 100% for the last coring, which suggests that the problems encountered in the first two corings were corrected. In addition, competent bedrock from all three corings appeared very similar in hand specimen. While coring was more successful on one of the boreholes than the other two, it is believed that the competent bedrock but would not vary markedly on a local scale as at Landfill 4, but may on a more regional scale.

13. *The statement that the alluvial soils are extremely heterogeneous is not supported by soil descriptions, soil testing results, or statements on page 6-1, which indicate that the "soils are very similar, with only subtle differences..." Please clarify.*

URS Response:

The text will be modified to state that the alluvial soils consisted of a mixture of silts, clays, and fine-grained sands.

14. *Please comment on why stainless steel bailers were used and clarify that they have been, in fact, dedicated to each well. Was there some compelling reason why expensive stainless steel bailers were used, when disposable bailers could have been used?*

URS Response:

Stainless steel bailers were used because that was the type of bailer supplied by the drilling subcontractor, whose contract included assistance with well development. The bailer was decontaminated between wells. The text regarding dedicated bailers will be removed.

15. *Please see comment #12. Conclusions about the relative impermeability of the bedrock do not seem supported in light of poor recoveries during coring.*

URS Response:

Please see the response to comment 12.

16. *Please change "waterfall" to "waterfowl."*

URS Response:

The typographical error will be corrected.

17. *General comment: This entire section is essentially a summary of observations and data discussed in the report. There are few, if any, conclusions to be found. The laundry list of "conclusions" does not highlight the significant findings of the investigation. For example, references to development techniques seem irrelevant to a conclusion. Please revise and focus on the truly important findings.*

URS Response:

The section will be rewritten in accordance with the comment.

18. *Please clarify what is meant by the statement that the silts and clays exhibit little evidence of weathering. By definition, silts and clays are the product of weathering. How would they exhibit weathering? If any changes to text are made, please search document for other references to weathering in alluvial soils.*

URS Response:

The text will be modified to state that the clays exhibited little evidence of alteration.

19. *Please change "geotechnical analysis were indicated" to "geotechnical analysis indicated."*

URS Response:

The text will be rewritten in accordance with the comment.

20. Please change "waterfall" to "waterfowl."

URS Response:

The typographical error will be corrected.

Rick Garrison

1. Pg 3-8, Section 3.4.2: Note that these sample locations are shown in Figure 5-4.

URS Response:

The text will be modified in accordance with the comment.

2. *Figure 3-3: Evidently, this map is taken from another report. The cross section location and local site outline shaped like the state of Utah, as best as I can tell, have no connection to this report. Remove or explain those features.*

URS Response:

Although it is difficult to discern, the area of Figures 3-2 and 3-3 referred to in the comment are the Historical Impact Area and the Artillery Impact Area. Because these areas are not relevant to the ESI at Landfill 4, the polygons will be removed from the two figures.

3. *Appendix B, Boring Logs: There's probably a good reason for re-sorting the logs differently than shown in the first draft (which I thought was fine, then), but don't understand why they are now sequenced 4A, 3A, then 5A.*

URS Response:

The borings logs will be presented in the following order:

- L4-MW01B (URS Well)
- L4-MW02B (URS Well)
- L4-MW03A (URS Well)
- L4-MW03B (URS Well)
- L4-MW04A (URS Well)
- L4-MW05A (URS Well)
- L4-MW01A (Shannon & Wilson well)

- L4-MW02A (Shannon & Wilson well)

4. *Appendix B, Boring Logs: One way or another, indicate on the Shannon & Wilson logs that SB-01 & SB-02 have been renamed MW-01A & MW-02A.*

URS Response:

A cover sheet will be placed before the Shannon & Wilson logs to indicate the renamed wells.

Sandy Lemlich

1. *Page 3-8, 7th Bullet. Please change "perchlorate" to "picrate".*

URS Response:

The text will be modified in accordance with the comment.

2. *Page 4.14, Section 4.10. Please state that "all of the explosives, propellants, etc SOP's were reviewed by a Corps chemist experienced in these analyses".*

URS Response:

The text will be modified in accordance with the comment.

3. *Page 5-9, Section 5.3. Please state that "the validation reports are located in Appendix G".*

URS Response:

The text will be modified in accordance with the comment.

4. *Page 5-9, Section 5.4. This section on chemical data quality assessment should include a discussion of the results of the QA split data particularly for the explosives, propellants, etc.*

URS Response:

The text will be revised upon receipt of the USACE QA laboratory report.

5. *Page 5-12, Section 5.4.4, Paragraph "Laboratory Duplicate". Please add that chromium and zinc analyses had RPD's outside the control limit and thus were j-flagged.*

URS Response:

The text will be modified in accordance with the comment. The draft text addressed only four metals of concern. The text will be revised to address all detected metals.

6. *Page 5-14, 3rd line. Please add "total" before arsenic".*

URS Response:

The text will be modified in accordance with the comment.

7. *Page 5-14, 2nd Paragraph, last Line. Table 5-4 does not show that the concentration of 2,4-Dinitrotoluene in L4-MW02B exceeds any screening criteria. Please correct the text or the table.*

URS Response:

The text and Table 5-4 will be corrected.

8. *Table 5-4. See comment 7 above.*

URS Response:

The text and Table 5-4 will be corrected.

9. *Table 5-4, Explosives and Propellants. Are these compounds non-detects in the method blanks? If so, please correct the table.*

URS Response:

The qualifier "U" will be added to the numerical values for explosives and propellants in the method blank.

10. *Table 5-6. Please delete the second reference to VOC's since the compounds in question are SVOC's.*

URS Response:

Table 5-6 will be modified in accordance with the comment.

11. *Table 5-6. Please state whether the metals are total or dissolved.*

URS Response:

Table 5-6 will be modified in accordance with the comment. Performance evaluation samples are analyzed as total metals.

12. Table 5-7. This table appears to be incomplete. Please add the remaining analytes such as VOC's, SVOC's, and metals. In addition, please add the results of the QA splits to this table.

URS Response:

Table 5-7 includes only those detected concentrations that are 5 times the PQLs (as explained in Section 5.4.4). Concentrations close to the PQL are not expected to be as precise as concentrations that are higher. An explanatory footnote will be added to Table 5-7. The results of the USACE QA laboratory analysis also will be added to Table 5-7.

13. Please discuss the Lacamas Creek and tributary surface water study that analyzed a sample of surface water from a station just before the creek exits Camp Bonneville. This study included more analytes than the one that strictly looked at samples near Landfill 4.

URS Response:

The results of the Lacamas Creek study referred to in the comment will be included in the Final Report.

DEPARTMENT OF ECOLGY COMMENTS

Christopher Maurer

1. Figure 3-4: Was the bunker shown on this figure used for munition storage or for protection of personnel during demolition operations? If it was used for storage of munitions, will the soil adjacent to the bunker be sampled?

URS Response:

The bunker has been used historically for protection of personnel during demolition activities, not for storing munitions. The building is only 3-sided and constructed of railroad ties.

2. Page 4-8, section 4.6.1: In the second paragraph, the phrase "total depth of the well" should be replaced with "depth to water."

URS Response:

The text will be modified in accordance with the comment.

3. *Page 4-15, section 4.11, bullet 2: The current version of CLARC is CLARC 3.1 rather than CLARC 3.0.*

URS Response:

Comment noted. The text and tables will be modified in accordance with the comment.

4. *Figure 4-1: Since groundwater appears to flow under Lacamus Creek, consideration should be given to a) collection of sediment samples from the stretch of the creek adjoining the landfill, b) collection of surface water samples from the creek above the sediment samples, and c) installation, depending on access, of additional monitoring wells west of the creek to determine if a plume of contamination is migrating in that direction.*

URS Response:

a) Sediment is not present in the bed of Lacamas Creek adjacent to Landfill 4, but would have been sampled if it were present during the Lacamas Creek surface water studies.

b) Surface water samples have been collected from Lacamas Creek in two surface water studies (Hart-Crowser in 1998 and 1999), upstream and downstream from Landfill 4 in 1999, including one sample collected near the exit point to Camp Bonneville. Laboratory analysis included detected concentrations of TSS, nitrate/nitrite, and several total and dissolved metals. All of the detected constituents were below screening criteria. Explosive compounds, including picric acid and PETN were not detected.

c) This comment was discussed in detail during the BCT meeting on January 17, 2002. Ecology agreed with the phased approach being implemented by the USACE. Future monitoring well placement will be considered after the initial 4 rounds of groundwater sampling are completed and slug tests performed on selected wells onsite. The most difficult issue with additional monitoring well placement is drilling rig access due to the topography and vegetation near Landfill 4.

5. *Page 6-6, last paragraph: Regarding the dam at the head of Lacamus Lake, who is the owner of the dam? Since the dam blocks passage of fish and appears to no longer be used for its original purpose (logging), Ecology may wish to require modification of the dam or to petition the owner for its removal.*

URS Response:

The Fort Lewis BRAC Environmental Coordinator (BEC) will investigate the owner of the dam and provide the information to Ecology.

ENVIRONMENTAL PROTECTION AGENCY (REGION 10) COMMENTS
(provided by Gannett Fleming)

General Comments

1. *The extent of contamination at the landfill has been discussed in past meetings with USACE as an issue of key importance to EPA. The current site conceptual model developed for Landfill 4 and presented in this report, however, does not determine the direction of groundwater flow in the weathered bedrock or the distance that contaminant plumes have migrated from Landfill 4. Identification of potential pathways and receptors for the site conceptual model cannot be conclusively drawn without a better understanding of the extent and direction of groundwater contamination. (JR)*

   Groundwater quality and Landfill 4 hydrogeology were the primary focus of this ESI investigation which provides data on contaminant concentrations present in groundwater but does not provide determination of extent of contamination. The analysis of groundwater samples collected during this investigation indicate the presence of contaminants in groundwater in the vicinity of Landfill 4 associated with explosives, propellants and solvents. (JR)

URS Response:

While preliminary data does provide some information on the direction of groundwater flow in the weathered bedrock locally at Landfill 4, URS agrees that the groundwater flow direction in the weathered bedrock on a regional scale is unknown. Also unknown is the lateral extent of the weathered bedrock. The Conceptual Site Model (CSM) will be modified to avoid prematurely eliminating human and ecological receptors without supporting data.

Second paragraph of the comment – comment noted.

2. *In the Executive Summary section in the text states, "Surface water used by on-site and off-site receptors is a potentially complete pathway for future on-site recreational users and future on-site workers. However, because of the distance from Landfill 4 to where Lacamas Creek exits Camp Bonneville, exposure to off-site recreational users, off-site residents, and off-site workers to contaminants of potential concern (COPCs) in surface water is considered to be potentially complete, but negligible in importance." How can this pathway be evaluated when the extent of groundwater and surface water contamination has not yet been determined? Please explain. (AP)*

   The Executive Summary also states "The ingestion pathway for the consumption of fish affected by site contaminants is considered potentially complete but negligible because the contaminants detected in the groundwater at Landfill 4 do not appreciably bioaccumulate in fish." This comparison of groundwater concentrations to indicate risk to fish and human health is incorrect. Risk to fish and human health should be

determined based on surface water samples, which should be located in agreed upon areas of Lacamas Creek by the agencies, and then compared to surface water criteria. Please refrain from making such statements before the pathways and extent of contamination has been determined. (AP)

URS Response:

A limited quantity of surface water data are available from previous sampling in two studies by Hart Crowser (1998 and 1999), which indicates that COPC concentrations in surface water may not be at levels of concern. We concur that additional surface water COPC data would be of use in better defining potential risks to identified receptor groups. In the absence of other data, it was assumed that the surface water concentrations would be no greater than those observed in groundwater. While the focus of this Draft ESI Report was groundwater, additional surface water sampling may be considered in the future.

The identified COPCs are primarily explosives, propellants and solvents. These organic chemical compounds generally have low octanol-water partition coefficients (K_{OW}) values, which means they are unlikely to partition substantially from surface water into fish. Risks to humans from ingestion of fish are based on the chemical concentrations in the ingested fish tissue, not the surface water or groundwater contaminant concentrations. Risks to individuals ingesting fish from a knowledge of COPC concentrations in surface water cannot be made without an estimate of the extent to which COPCs are bioconcentrated or bioaccumulated into fish tissue from the water. In the initial identification of potential exposure pathways, we believe that the use of existing knowledge of the likelihood of COPCs to physically partition between water and biota is warranted in judging the potential importance of the fish ingestion exposure pathway. The text will also be modified and the phrase "..., but negligible in importance" will be removed.

3. *The text also indicates that there is documented soil contamination at and around the Landfill 4 location, if the surface water pathway is being evaluated it should also include overland flow and the drainage area of the landfill in relation to Lacamas Creek. (AP)*

URS Response:

The only documented soil contamination at Landfill 4 above screening criteria are metals (barium, copper, and chromium). Other analytes were either not detected or detected at concentrations below screening criteria. As agreed to in the January 17, 2002 BCT meeting, the focus of the ESI is groundwater. The Conceptual Site Model presented in the Draft ESI Report is a preliminary model only and further evaluation of soil or surface water exposure pathways, if necessary, will be conducted at a later date.

4. *As mentioned during the June 11, 2001 review of the project QAPP by Gannett Fleming, the method and quality control criteria for analysis of Nitroguanadine is not provided in any project documentation. Please see previous comments generated through review of*

the QAPP for section 5.1, Page 5-1 and for Table 4-14. Without providing the method nor the quality control procedures that was used for this analysis, the data provided should be rejected. (AP)

URS Response:

The QC criteria are presented in detail in the Final Management Plan (May 2001) for all analytes, including nitroguanidine. The QC criteria are also discussed and presented in the validation reports within the Draft ESI Report. The laboratory SOPs were provided to EPA, including method 8330, which incorporated the method for nitroguanidine. Comments were received on method 8330; however, there were no specific comments regarding nitroguanidine.

5. *As mentioned during the June 11, 2001 review of the project QAPP, laboratory and sampling SOP's are referenced, however, SOP's and specific QC criteria are not provided in any project documentation. Without information such as criteria for method blanks, specification of analytical methods used, and criteria for laboratory performance, data generated during this project cannot be validated. (AP)*

URS Response:

Please see the response to comment number 4.

Specific Comments

1. *Executive Summary, Page ES-1, Third Paragraph. The text states that "The weathered bedrock surface appears capable of transmitting groundwater; however, the relatively unweathered nature of the fragments suggests that groundwater flows in the past have not been significant." Please include additional information to provide more justify this statement.*

   For instance, does the "weathered bedrock surface" refer only to the surface or the entire thickness of this zone? Groundwater movement will not be limited to the surface but would extend through the weathered basalt zone. In addition, "appears capable" does not indicate the criteria evaluated in reaching this conclusion. Based on the performance of the wells installed and sampled as part of this investigation, however, the weathered basalt does in fact produce groundwater (approximately 0.73 gpm estimated from the well development data sheet for MW02B).

   Finally, the initial round of sampling detected contaminants in MW02B that are most likely attributable to the landfill within the weathered basalt. The extent and direction(s) of movement of the contaminant plume however remain undetermined. (JR)

URS Response:

Slug tests are planned for not only the alluvial soils but also the weathered andesitic bedrock. The results of these tests, combined with well development data, will provide a better indication of the viability of the weathered bedrock to be an aquifer. While preliminary data does provide some information on the direction of groundwater flow in the weathered bedrock locally at Landfill 4, URS agrees that the groundwater flow direction in the weathered bedrock on a regional scale is unknown. As a result of the uncertain groundwater flow direction in the weathered bedrock on a more regional scale and the difficult drilling access for areas where additional wells would be beneficial, the issue of contaminant plume extent and how to assess it will continue to undergo discussion. However, Ecology agreed with the phased approach being implemented by the USACE during the January 17, 2002 BCT meeting. Future monitoring well placement will be considered after the initial 4 rounds of groundwater sampling are completed and slug tests performed on selected wells onsite.

2. *Executive Summary, page ES-2, Third and Fourth Paragraph. This portion of the text states that there are "...insufficient data to calculate a hydraulic conductivity and groundwater velocity in the weathered bedrock at this time." Based on relatively low estimates of groundwater velocity observed for the unconsolidated sediments, it would appear that hydraulic conductivity and velocity data should also be measured in the weathered bedrock. These data could provide insight to the potential extent of contaminant migration.*

   The text should include discussion of why testing to estimate aquifer characteristics in the weathered basalt and unconsolidated sedimentary interface was not conducted while the formation was open during the drilling operation. Additionally, any testing that could be performed or is planned on the current well installations to evaluate the variation in aquifer characteristics and groundwater quality as a result of seasonal fluctuation in recharge should be included.

   The text states that the "Shallow groundwater in the area of Landfill 4 historically has not been considered a viable and potable water source...." and later that "definitive information on aquifer yield would be needed to evaluate whether a minimum of 0.5 gallons could be maintained." The text should refrain from including historic assumption and report current interpretation of site conditions supported with data such as measurements of aquifer yield in specific wells, formations and contaminant concentrations. (JR)

URS Response:

Slug tests are planned for not only the alluvial soils but also the weathered andesitic bedrock. The results of these tests, combined with well development data, will provide a better indication of the viability of the weathered bedrock to be an aquifer. Slug tests during

different times of the year may to assess seasonal variability may be conducted in the future, if warranted.

3. *Section 3.1, Page 3-1, Fifth Paragraph. Please include the definition of the acronym JATO that was detonated at Landfill 4. (JR)*

URS Response:

The acronym JATO is "jet-assisted take off." This will be added to the acronym list.

4. *Section 3.3.1, Page3-3, Second Paragraph. The text states that "The area surrounding Camp Bonneville is sparsely populated with scattered residences and is used primarily for agriculture and livestock grazing." This description does not include any mention the housing developments that are increasingly being built downgradient of the Camp Bonneville area in response to population growth and development in eastern Clark County. The text should mention the rising presence of residential development in the area around Camp Bonneville and that shallow and deep aquifers are the primary source of potable water. (JR)*

URS Response:

The text will be revised to reflect the more current population and zoning around Camp Bonneville.

5. *Geologic Cross Section A-A, Figure 5-2. This figure indicates the depth of the screened zone in well L4 MW02B as 25 to 30 feet deeper than Lacamas Creek. The figure shows elevations estimated based on limited data but if the weathered basalt layer contains contaminants as the analytical results for Monitoring Well MW02B indicate the weathered basalt may transmit them to or below Lacamas Creek.*

   Previous surface water sampling in the creek was reported to have been conducted upgradient, at and downgradient of the landfill. If the weathered bedrock is below the streambed however, than a more appropriate area at which to assess impact of Landfill 4 to Lacamas Creek could be further downstream where the streambed exposes the weathered bedrock.

   The Conceptual Site Model as shown in Figure 6-1, however, does not include a complete pathway to potential receptors through the groundwater to surface water pathways. The text should discuss the potential for impact to surface water other than by seeps on the slope of the landfill to assure the validity of the model. (JR)

URS Response:

The possibility of the weathered or unweathered bedrock being exposed in Lacamas Creek

downstream of Landfill 4 was discussed at great length in the January 17, 2002 BCT meeting. To evaluate this possibility, field reconnaissance may be conducted by walking down Lacamas Creek from Landfill 4 to see if the weathered or unweathered crops out in the stream. If this reconnaissance is performed, it will most likely be performed at low-flow conditions in late summer or early fall.

We believe that the groundwater to surface water pathway is a potentially complete exposure pathway, although one of limited importance. The conceptual site model will be modified to reflect that this is a complete pathway.

6. *Section 4.3.2, Page 4-3, Third Paragraph. This section of the text states that "...cuttings from the weathered zone appeared greatly fragmented..."and that .."coring of the weathered bedrock was not performed." Later, however, in Section 4.5.2, the text includes the statement that "...the action of the air rotary bit on the weathered bedrock caused fragmentation of the weathered bedrock; therefore, coring was not attempted in the weathered bedrock."*

   As coring is not usually done with the air rotary drilling assembly down hole it is not clear why the drilling results with the down hole hammer are mentioned as precluding coring of the weathered bedrock. The author should include a discussion of the potential for coring the weathered bedrock in order to recover a sample that is more representative of the weathered bedrock structure and porosity. (JR)

URS Response:

Upon review of the cuttings generated while drilling through the weathered bedrock, it was concluded by the URS field geologist, USACE on-site representative, and the driller that successful retrieval of an intact core from the weathered bedrock was unlikely. The opinion of all of the field personnel was that any weathered material in the core barrel would fall out while removing the core barrel from the borehole. Therefore, coring was not attempted in the weathered bedrock.

7. *Section 4.3.3, Page 4-4, Second Paragraph. According to the this section of the text the deeper wells were installed "...in the weathered bedrock or competent bedrock." Figure 5-2, however, shows all the screened sections of the deeper wells were placed in the weathered bedrock. Please amend the text to state this. (JR)*

URS Response:

The text will be modified in accordance with the comment.

8. *Section 4.6.1, Page 4-8, Second Paragraph. The text include the statement that "The measurement was recorded in the field logbook and on the groundwater sampling form to a precision of 0.01 foot." In an earlier section the text, as well as in Section 4.8 of the*

text the well surveying is discussed and there is no mention of vertical resolution obtained for the well measuring points. The precision of water levels measured at the well head results from the accuracy of the actual measurement of the height of the water and includes the accuracy of the surveyed measuring point elevations. Accuracy of the measuring point survey data should be included in one of these sections. (JR)

URS Response:

The contract with the surveyor specified a precision of 0.01 feet.

9. *Section 5.1.1, Page 5-1, Third Paragraph. This section of the report describes the search for seeps downgradient of the landfill. In the opinion of Gannett Fleming, late summer may not be the opportune time to be looking for seeps especially in a year typified by drought conditions in the Pacific Northwest. Please discuss any plans to conduct this search again during the time of year more likely to result in seeps on the slope below the landfill. (JR)*

URS Response:

The hand auger borings originally examined for evidence of seeps will be checked for the presence (and elevation, if present) of water during each quarterly groundwater sampling event. The elevation of water in the hand auger borings (if present) will be compared to the water level of Lacamas Creek.

10. *Section 5.1.4, Page 5-4, Last Paragraph. Please discuss the potential to performing the same tests on the wells in the weathered basalt to estimate of hydraulic conductivity that were performed for the wells constructed in the shallow unconsolidated sediments. Evaluation of all distinct zones of potential contaminant migration should be performed to provide at least a relative evaluation of the hydraulic characteristics for individual lithologic units. (JR)*

URS Response:

Please see the response to specific comment number 2.

11. *Section 6.1, Page 6-2, Third paragraph. The text states that "...fractures in the samples were filled with zeolite mineralization or calcite." Calcite mineral deposits can be the result of secondary mineralization indicating groundwater movement through the formation. The text should state the implication of calcite as a result of secondary mineralization as an indication of groundwater movement. (JR)*

URS Response:

URS agrees that secondary mineralization is an indication of previous groundwater

movement – in geologic time. However, the groundwater movement (in geologic time) that resulted in the secondary mineralization of zeolites and calcite predates the existence of Landfill 4 and Camp Bonneville.

12. Section 6.2, Page6-4, Third Paragraph. The discussion of the potential pathway from Landfill 4 and potential receptors is considered a potential but due to the distance incomplete. Many of the contaminants associated with munitions, such as RDX, are toxic at low concentrations and persistent in the environment. The assumption that the three mile distance precludes off site release of contaminants, should be substantiated.

The text references surface water sampling conducted by Hart Crowser as support for this assumption. In the opinion of Gannett Fleming, additional data on the extent of groundwater contamination and potential groundwater to surface water pathway is required to support these assumptions. The previous surface water sampling locations may not be sufficiently downgradient of the landfill (far enough down stream from the landfill) and should include sediment samples. (JR)

URS Response:

We believe that the Hart Crowser surface water sampling data supports a contention that COPC concentrations in surface water are not at levels of concern, at least adjacent to Landfill 4. The fact that the samples were collected relatively close to the landfill provides further support for our contention, as processes such as volatilization, hydrolysis and degradation will all serve to further reduce COPC concentrations in surface water by the time the water reaches a location where potential receptor groups come in contact with the surface water. A fate and transport model which can predict COPC concentrations at various distances downstream of the landfill could also serve to substantiate the assumption that COPC concentrations are not at levels injurious to human health. The relatively low K_{OW} of many of the organic COPCs would largely preclude them from accumulating to significant concentrations in the gravel bed of Lacamas Creek. Additional downstream surface water samples may be considered in the future to evaluate the potential impact of the weathered bedrock daylighting in Lacamas Creek.

13. Section 2.0, Page 2-1 Paragraph 1. This section states that "The ESI was selected as the appropriate pre-remedial CERCLA phase in which to obtain additional data for the site." This section does not indicate if the Region 10 EPA, Washington State Department of Ecology, and the BRAC Cleanup Team were all in agreement on this pre-remedial activity and how the activities were carried out. Please specify if these agencies were in agreement. (AP)

URS Response:

The decision to evaluate Landfill 4 with an ESI was made by the U.S. Army.

14. Section 4.9.2., Page 4-13. This section states that "The laboratories were provided method-specific QC criteria (including frequency, QC limits, and corrective actions) 2 weeks prior to the start of the sampling activity." It is unknown to the reader what modifications to the EPA SW-846 methods the project laboratories were provided. Please provide the specific QC criteria which was sent to the laboratories. (AP)

URS Response:

The Final Management Plan was provided to the laboratories before fieldwork began and the QC criteria were discussed and agreed to by the laboratories prior to beginning sample analysis.

15. Table 4-5, Comparison of Laboratory Method Detection and Practical Quantitation Limits and Applicable Screening Values for Groundwater. This table identifies many analytes which were detected at Landfill 4, however, the laboratory reporting limit exceeds the screening value for one or more values. Therefore, many analytes may be present in groundwater at Landfill 4 above screening levels, but were not detected due to the laboratories high detection limits. This comment was also made during the June 11, 2001 review of this project's QAPP, in Section 2.4, Page 2-2 of the QAPP. Samples should have been analyzed with low-detection methods, and should be qualified as suspect or estimated data. (AP)

URS Response:

Laboratories were selected based on pre-qualifications, careful evaluation, and their ability to meet the QC criteria together with low detection limits and reporting limits. In addition, the laboratories selected are USACE-certified. The laboratories did report to the method detection limits with J-flagged estimated concentrations where appropriate. It is possible that some analytes may be present in groundwater above screening levels; however, the detection and reporting limits used by the laboratories were in accordance with industry standards and are limited by the currently available analytical techniques.

16. Section 5.3, Page 5-9. This section states "An emphasis was placed on the most important COPCs and the PE analytes including all explosives residues and propellants..." What does this statement mean? What level of data validation was done and was the data validation completed for all analyses? (AP)

URS Response:

The Final Management Plan provides a comprehensive list of COPC categories (VOCs, SVOCs, explosives, etc.) based on the limited information available regarding the historic use of Landfill 4 and the only groundwater sampling event conducted prior to this ESI. Data obtained from subsequent groundwater sampling events may provide an opportunity to refine the initial list of COPCs. In addition, the raw data and chromatograms were reviewed and the

calculations were checked.

17. *Section 5.4.3., Page 5-10. This section states that "The % RSD for several compounds was above the specified limits of <15 percent; however, of these compounds, only two (methylene chloride and dichlorodifluoromethane) were detected in samples." The section then states that the two compounds were J flagged as estimated. Please explain why these samples were not re-analyzed with a new calibration and or with a new continuing calibration? (AP)*

URS Response:

The laboratories performed according to the requirements of SW-846 and the QC criteria presented in the Final Management Plan. The laboratories are not required to perform recalibration when only 2 compounds slightly exceed QC control criteria (16% versus 15%), provided the average RSD is less than 15%, which is the case with the data obtained.

Appendix A

1. *Appendix A, Page A-1, First Paragraph. Please clarify the last sentence of this paragraph which states that "UXO avoidance was completed at three soil boring locations using a backhoe and a down hole magnetometer to a depth of 8-10 feet bgs." Please include additional information on how each excavation lift was screened laterally over the entire exposed surface using a down hole magnetometer having a distance sensitivity of 2 feet or less.*

   In addition, the text should state how any contaminated soils and debris were stored and disposed of and include the type of soils used for backfilling the excavation pits. Also, please provide details of how soil samples were collected and how the excavated areas were abandoned so that the disturbed soils in the pit areas would not increase infiltration of precipitation and the potential mobilization of contaminants present in the soils. (JR)

URS Response:

Soil was removed in 2-foot lifts and the entire area was then checked by UXO avoidance specialists before proceeding the next 2-foot lift. Because the drilling was performed outside of Landfill 4, there is no reason to believe that the removed soil was contaminated. During UXO avoidance, no evidence of UXO or munitions was discovered that would suggest the presence of contaminants. Shannon & Wilson discovered similar results with surface and subsurface soil samples from within the boundaries of Landfill 4.

2. *Appendix A, Page A-1, Second Paragraph. The text states that according to the workplan "...the main 10-inch casing would be advanced at least three feet into the weathered bedrock zone and filled with bentonite..." and that this would "...seal off the shallow*

water bearing zone." In this section of the report, however, the text states that "...a seal should be placed...prior to advancing ...into the weathered bedrock." According to the text, however the ".....seal was placed at the bottom of the 10-inch casing prior to advancing....".

If the casing and grout seal between the upper unconsolidated materials and the deeper lithologic unit does not actually penetrate the lower unit, how can the segregation of the two units be assured, in particular should artesian pressure develop in the lower unit during the rainy winter months? Please include a reference from WAC 173-160 Minimum Standard for Construction and Maintenance of Wells that indicates that this casing and sealing configuration is acceptable for resource Protection Wells in the State of Washington as opposed to sealing the casing within each deeper formation. (JR)

URS Response:

Drilling continued into the weathered bedrock for a minimum of approximately 3 feet to assure that the contact between the alluvium and underlying weathered bedrock was reached. Once this was confirmed by the field geologist and USACE field representative, the casing was retracted and grout was placed in the weathered bedrock and overlying alluvium.

3. *Appendix A, Page A-2, First Paragraph. This portion of the text states that "Some of the wells may have appreciable amounts of stagnant water in the water column that was sampled."*

   If the wells were slow to recharge, as the text states, and were bailed or pumped dry, then the groundwater sample could have been collected as, or immediately after, the wells recovered. The well would then provide fresh formation water and avoid "stagnant" water being collected and jeopardizing the quality of the analytical results for VOCs in particular. (JR)

URS Response:

The wells where stagnant water may have been encountered were those wells sampled with low-flow purging where the surrounding formation did not produce sufficient water to maintain a constant head in the well. Those wells that were bailed dry were allowed to recharge before collecting the groundwater samples.

Please call me if you have any questions concerning this letter.

Sincerely,
URS

Steven P. Wolfe, R.G.
Project Manager

February 4, 2003

Mr. Michael D. Nelson, PE
U.S. Army Corps of Engineers, Seattle District
CENWS-PM-HW
4735 E. Marginal Way South
Seattle, WA 98134-2385

Re: Response to Comments
Draft Letter Report, Slug Test for Six Monitoring Wells
Landfill 4-Demolition Area 1
Camp Bonneville, Washington
Contract No. DACA67-98-D-1005 (D.O. No. 0054)

Dear Mr. Nelson:

This letter presents URS' response to comments on our "Draft Letter Report, Slug Test for Six Monitoring Wells, Landfill 4-Demolition Area 1, Camp Bonneville, Washington," dated May 2002. Comments were received from the U.S. Army Corps of Engineers (USACE), Washington State Department of Ecology (Ecology) on May 24, 2002. Comments were received from the U.S. EPA on July 8, 2002. Responses are included below for each comment.

U.S. ARMY CORPS OF ENGINEERS, SEATTLE DISTRICT

Jeff Powers

INPUT PARAMETER ISSUES:

1. Saturated Aquifer Thickness – Explain rationale for selecting 20 feet as saturated aquifer thickness (B) (as shown under "Aquifer Data" on AQTESOLV sheets in Appendix A) in all cases. Based on the cross-sections referenced (Figures 5-2 and 5-3 in Draft ESI Report for LF4/Demo Area 1), my estimates for B at each well are as follows:

- *L4-MW01A, B=35 feet*
- *L4-MW02A, B=35 feet*
- *L4-MW05A, B=15 feet*
- *L4-MW01B, B=15 feet*
- *L4-MW02B, B=15 feet*
- *L4-MW03B, B=20 feet*

Therefore, averaged B for shallow wells is 28.3 feet, and 16.7 feet for deep wells. There is no need to make B the same for both overburden and bedrock unless they are monitoring the same hydrogeologic unit, which is unlikely.

URS Response:

The thicknesses cited in the comment were used when re-evaluating the data.

2. *Initial Displacement – Initial displacement (as shown under "Well Data" on AQTESOLV sheets in Appendix A) appears high when compared to theoretical displacement. Accurate K values using the Hvorslev Method depend on accurate initial displacement values because the T_o parameter (time for water to rise/fall to 37% of initial water level) is directly dependent on initial displacement. Theoretically, a 3-foot length, 1-inch diameter slug should produce only a 0.75-foot initial displacement of water in a 2-inch diameter well. Your initial displacements for falling head tests using the 3-foot slug are between 1.7 and 2.2 feet. The difference between theoretical and actual may be due to a pressure pulse or oscillation effect causing an artificially high initial displacement for a brief period when the slug first hits the water surface during falling head tests. I suggest you discard the first few erratic data points of the falling head tests and select an initial displacement value just where the displacement values are in a consistent decline (the darkened line portion of plots in Appendix, indicating many overlapping data points). This would correspond to initial displacements on the order of 1.2 to 1.3 feet (similar to rising head initial displacement values). These values are still higher than the theoretical value of 0.75-feet, but are less than the values currently used. The end result of using an initial displacement that is too high is a slightly elevated K value. It can be seen that K values for Hvorslev Method are slightly higher than those of Bouwer-Rice.*

URS Response:

The first few data points of the falling head tests were discarded on the re-evaluation as suggested by the comment.

3. *Water Column Height – The water column height input parameter (as shown under "Well Data" on AQTESOLV sheets in Appendix A) was chosen as either 15 feet or 12 feet in all cases. These values seem reasonable for the three shallow wells; however the water column height is more like 35-45 feet for the deeper wells (approx. 35 ft. for LF4-MW03B, 40 ft. for LF4-MW02B, and 45 ft. for LF4-MW01B).*

URS Response:

The water column height in the weathered bedrock wells was revised as suggested above in the re-evaluation of the data.

CURVE FITTING ISSUES:

4. *Appendix A, Well Test Analysis MW-1B Falling Head using Bouwer-Rice Confined*

First plot (analysis date: 5/16/02) - The plot is shown at too great a scale. Delete all data after Time = 1.2E+3 seconds (20 minutes) in order to better show how the curve fits

the early time data. If the curve does not fit well to the first 5-10 minutes of data, re-fit manually.

Second plot (analysis date: 5/20/02) – Discard this plot; it is not accurate. The curve should be fitted to early time data; instead, it is fitted to late time. The curve is being matched to water level changes in the well on the order of 0.01 to 0.05 feet out of a 2.26-foot original displacement (after water level has already recovered 98%).

URS Response:

The data after time = 1.2E+3 seconds (20 minutes) was deleted from the first plot as suggested by the comment. The second curve was re-evaluated and refitted based on early time data as opposed to late time data as suggested by the comment.

5. Appendix A, General – Recommend deleting all data for all Hvorslev and Bouwer-Rice tests after time = 1.2E+3 (20 minutes) in order to better show how the curves fit early time data. All data can be used for Cooper et al since time is on a log scale and hence early time is naturally accentuated. Early time data (here, on the order of 10-20 seconds to 10 minutes or so) is much more important than late time data in determining best-fit curves and K and T values. If the "important" early time data is all packed into the first 10% of the plot, it is hard to see how well the curve is actually fitting the data. With the early time data shown on an enlarged scale, you may see that some automated curve fits might not fit the data that well, and that manual fits may be necessary.

URS Response:

The data were re-evaluated and the data points were deleted for all time after 1.2E+3 (20 minutes) as recommended by the comment.

6. Appendix A, General – The following deeper well test analyses have poor curve fits to the data and should be re-analyzed by manually fitting curves to better match the data:

- *MW-1B, Rising Head, Cooper*
- *MW-1B, Rising Head 2, Cooper*
- *MW-2B, Falling Head, Bouwer-Rice, Confined*
- *MW-2B, Falling Head 2, Cooper*
- *MW-2B, Rising Head 2, Cooper*
- *MW-3B, Falling Head, Cooper*

URS Response:

The data were re-evaluated and the curves refitted to better reflect the data.

REPORTING ISSUES:

7. *Section 1, Page 1-1, 1st Paragraph – For informational purposes, state that all three deeper wells were each constructed with a 10-foot length screen. Also state that all slug-tested wells were of 2-inch diameter.*

URS Response:

The text has been revised as recommended in the comment.

8. Table 1 – Four hydraulic conductivity (K) values reported in subject summary table do not match those values on sheets in Appendix A. All four are Cooper et al results converted to K values from Transmissivity (T) values, hence conversion errors may have occurred.

- *L4-MW01B, Test 1, Cooper et al, Second Result – Should be 6.4E-4, not 7.5E-4*
- *L4-MW02B, Test 1, Cooper et al, First Result – Should be 8.3E-6, not 1.5E-4*
- *L4-MW02B, Test 1, Cooper et al, Second Result – Should be 1.0E-5, not 1.9E-5*
- *L4-MW02B, Test 2, Cooper et al, Second Result – Should be 7.0E-6, not 1.9E-5*

URS Response:

Hydraulic conductivity values were recalculated for the wells and now agree with those in the Appendix.

9. Table 1 & Section 2.1 Text – Bouwer-Rice Confined results should be reported based on matching curve to early time data, even if the results differ significantly from those of the Cooper et al method.

URS Response:

The curves generated using the Bouwer and Rice method were revised based on early time data as suggested in the comment.

ANALYTICAL SOLUTION ISSUES:

10. General – The Cooper et al and Bouwer-Rice Confined methods assume a fully penetrating well. This is clearly not the case for all wells tested, and this limitation should be recognized. If violating this assumption affects the validity of K values determined by one method more than the other, this may be a contributing factor for why Bouwer and Rice Confined and Cooper et al K values differ by about an order of magnitude. Since Bouwer-Rice was originally developed for unconfined conditions and then extrapolated to confined, the Cooper et al may provide more reliable results for the deeper wells.

URS Response:

Comment noted and the text has been revised in accordance with the comment.

ENVIRONMENTAL PROTECTION AGENCY – REGION 10 COMMENTS

Sean Sheldrake, with assistance from Gannett Fleming

1. *Section 2.4, Page 2-4. The text states that an effective porosity of 0.40 for silt and clay was used in the groundwater velocity calculations for wells constructed in the alluvial soils. The text also states that the estimated velocities for the weathered bedrock were calculated using the hydraulic conductivities obtained from the Bouwer and Rice and Cooper et al. analyses. Please state whether the same effective porosity assumed for the alluvial soils was also used to calculate the velocities in the weathered bedrock. The use of a lower effective porosity value, ie for silt and clay, would underestimate the groundwater velocity for more potentially porous formations such as weathered bedrock.*

   The bedrock formation is most likely comprised of one or more weathered silty layers but also is likely to have zones that are comprised of more coarse grained material with a higher effective porosity. The groundwater velocity estimates should include an evaluation of the potential impact of the presence of higher porosity zones within the bedrock and the effect such zones would have on the calculated groundwater velocity estimates.

URS Response:
Based on the observed silts and clays in the overburden soils, an effective porosity of 40% was used to calculate groundwater velocities. The same effective porosity was used to calculate groundwater velocity for the weathered bedrock. Review of the boring logs revealed that the zone above the competent bedrock is heavily weathered and includes a substantial amount of clay and silt. Based on discussion in Fetter, Applied Hydrogeology, range of porosity for silt is 35-50%, and for clay 33-60%. For reasons explained in the text, porosity and effective porosity are essentially the same for soils. Considering that the weathered bedrock was once unweathered and since unweathered bedrock has low porosity, 40% is thought to be a good value to use for the weathered bedrock since it falls on the low end of the ranges for silts and clays. In addition, the wide variation in hydraulic conductivities has a much greater impact on groundwater velocities than effective porosity.

2. Section 2.4, Page2-4, Last Paragraph. The data for well L4-MW01B in Appendix A does exhibit two distinct response rates with corresponding slopes as discussed in the text. In the opinion of Gannett Fleming, the use of manual curve fit for evaluation of the data was justified and resulted in similar groundwater velocity estimates as the data from the other two deep wells.

The velocity and conductivity estimates made for these wells appear to be reasonable based on the change in groundwater elevations vs. elapsed time data collected during the aquifer tests. An upper bounds estimate should be calculated, however, based on the potential presence of more coarse grained material than silt and clay within the weathered bedrock.

URS Response:
Please see the response to comment number 1.

Please call me if you have any questions concerning this letter.

Sincerely,
URS

Steven P. Wolfe, R.G
Project Manager

April 3, 2003

Mr. Michael D. Nelson, P.E.
U.S. Army Corps of Engineers, Seattle District
CENWS-PM-HW
4735 E. Marginal Way South
Seattle, WA 98134-2385

Re: Draft Final Expanded Site Inspection Report
Landfill 4–Demolition Area 1, Camp Bonneville, Washington
Revised Response to Comments
Contract No. DACA67-98-D-1005 (D.O. No. 0054)

Dear Mr. Nelson:

This letter presents URS' revised response to comments on our "Draft Final Expanded Site Inspection Report for Landfill 4-Demolition Area 1, Camp Bonneville, Washington," dated February 2003. Comments were received from the U.S. Army Corps of Engineers (USACE), Washington State Department of Ecology (Ecology), and the Region 10 U.S. Environmental Protection Agency (EPA) on March 14, 2003. A meeting was attended at the Washington Department of Ecology Lacey, Washington office on April 2, 2003 to discuss Ecology comments.

USACE COMMENTS

Jeffrey Powers

1. Executive Summary, Page ES-1, second paragraph – The descriptor "hard" is used twice to describe the competent (unweathered) andesite. Please remove the redundancy.

URS Response:

The report will be modified in accordance with the comment.

2. Section 2, Page 2-2, 7th bullet on page – GIS stands for "Geographic Information System" not "Graphic Information System." Please change "Graphic" to "Geographic."

URS Response:

The typographical error will be corrected.

3. ***Section 3.4.2, Surface Water Investigations, Page 3-9, last paragraph – Text states detections of TSS, nitrate/nitrite, and several metals in Lacamas Creek surface water samples near LF4 were observed based on the 2000 Hart Crowser report. It would be helpful to state where the detections were found (i.e., upstream of LF4, downstream, both?).***

URS Response:

Total suspended solids (TSS) were detected in the sample downstream of Landfill 4 and metals (total and dissolved) were detected in all three samples, including upstream and downstream of Landfill 4 as well as a sample collected adjacent to Landfill 4. The reference to nitrate/nitrite detection was incorrect as none of the samples contained detectable concentrations of nitrate/nitrite. This text will be clarified with this information.

4. Figure 3-1, Location of Camp Bonneville Military Installation – The figure number was cut off when holes were punched into the paper for binding. Make sure the figure number is legible for the final report, even if it means changing the location of the figure number on the page.

URS Response:

The figure number will be moved to ensure that it is present after drilling the holes for the binder.

5. Figure 3-3, Geologic Map of Camp Bonneville – In the descriptions of geologic formations in the legend, some formations have age (period or epoch) descriptors (i.e., Qls is Quaternary) while others do not. For consistency, all formations should have ages included in descriptions. This would mean adding "Quaternary" for Qa and "Quaternary to Pliocene" for Pt.

URS Response:

The ages will be added to the geologic formation on the legend.

6. Figure 3-4, Locations of Soil Borings & Initial Monitoring Wells – Because surface water sample locations are shown on the figure, figure title should be, "Locations of Soil Borings, Initial Monitoring Wells, and Surface Water Locations."

URS Response:

The figure title will be changed to "Location of Soil Borings, Initial Monitoring Wells, and Surface Water Sample Locations."

7. Section 4.4.4, Air Rotary and Rock Coring, Page 4-5 – The second sentence of the first paragraph is incomplete. What was conducted in all weathered bedrock wells except L4-MW07B? Was it sampling?

URS Response:

The text will be changed to "…rock coring was conducted in all weathered bedrock wells except L4-MW07B."

8. Section 4.4.5, Well Installation, Page 4-8, first paragraph – Take out the reference to the well lock's key type # for security.

URS Response:

The sentence stating the well lock key number will be deleted.

9. Section 4.6.1, Geotechnical Samples, Page 4-10, last 3 bullets – I'm confused. Are you saying that you composited two samples into one (for example, "L4-MW03A (25 feet bgs) and L4-MW03B (25 feet bgs)) and sent them to the lab to run all analyses on, and that you sent a total of three composited samples? Please clarify.

URS Response:

The samples were not composited and due to limited sample volume, the following geotechnical tests were conducted:

- L4-MW03A (25 feet bgs: Atterberg limits, soil identification, and laboratory soil classification)
- L4-MW03B (25 feet bgs: Atterberg limits, soil identification, and laboratory soil classification)
- L4-MW03B (35 feet bgs: particle size distribution and laboratory soil classification)
- L4-MW04A (41 feet bgs: Atterberg limits, soil identification, and laboratory soil classification, and particle size distribution)
- L4-MW05A (35 feet bgs: particle size distribution and laboratory soil classification)

The text will rewritten to improve the clarity of the discussion.

10. Section 4.7, Slug Tests, Page 4-11, third paragraph – The last sentence states that two slug tests were performed in each well (except for L4-MW05A). It looks like two falling head and two rising head tests were conducted at each well (except L4-MW05A). You should clarify that one slug test is comprised of one falling head and one rising head test.

URS Response:

Two falling head and two rising head tests were conducted in each well (except for L4-MW05A). However, the text will be clarified to state that one slug test is comprised of one falling head and one rising head test.

11. Section 4.9.2, Low-Flow Purging, Page 4-14, last paragraph – Parameter stabilization of pH, temperature, and specific conductance is mentioned in the last sentence. Corps' guidance recommends monitoring turbidity but that it is not considered a stabilization parameter, however, stabilization of DO (+/- 0.2 mg/l) and ORP (+/- 25mV) should occur in addition to the three mentioned. Based on the well purge records in Appendix B, it appears as though DO and ORP stabilized at some wells and not at others. Any thoughts on why DO and ORP stabilization did not always occur?

URS Response:

Based on the field data collected during groundwater sampling, the consistency and stabilization of the measured field parameters, including DO and ORP, improved during the third and fourth round of sampling when compared to the first two rounds of sampling. This also corresponds to an observed general improvement of groundwater production and clarity during the later rounds of groundwater sampling. When the wells were initially installed and developed, a significant amount of sediment and fines were present in the water column and several shallow wells required development with a bailer due to lack of production. During the later groundwater sampling rounds, the wells produced more groundwater that also appeared to contain much less TSS than previous rounds. It may be possible that the overall decrease in TSS also resulted in more consistent field parameter measurements.

12. Section 4.11, Topographic and Monitoring Well Surveying, Page 4-16, second paragraph – State which vertical datum was used, NGVD29 or NAVD88. Based on the annotations on the boring logs, I think it was NGVD29 but this should be clearly stated in text.

URS Response:

The vertical datum used was NGVD 29, which will be included in the text and on the boring logs.

13. Section 5.1.4, Slug Test Data Analysis, Page 5-6, first paragraph of "Summary of Slug Test Data" – First of all, I would state a range of typical hydraulic conductivities from published values instead of just using 10^{-5} cm/sec from Freeze and Cherry. For example, in Fetter (Applied Hydrogeology, 2nd Edition), K values typical of silt, sandy silts, clayey sands, and till range from 10^{-6} to 10^{-4} cm/sec. I think this range is appropriate for the materials present at the site (all except till apply), and would show that the site results may be a little closer to published values than you indicate. Secondly, I would change the wording in the latter part of the first paragraph. You don't want to state that the K values you estimated from the slug tests are not representative of the overburden geology. This statement implies either that the tests were conducted incorrectly or the analyses were done incorrectly. I don't think either is the case. A possible explanation for why the results do not match typical published values (and the values estimated from the two recharge tests conducted) could be that the volume of water displaced by the slug was insufficient to test the aquifer, and that maybe the filter pack of the well had a significant influence on the groundwater rates of recovery. The two recharge tests definitely tested the aquifer because the wells were bailed dry and hence a water column much greater than the one to two feet displaced in the slug tests was displaced in the recharge tests. Discussion added to Section 5.1.4 as a result of this comment also needs to be incorporated into the Executive Summary and Conclusions (Section 7.1, Geology).

URS Response:

The text will be revised to include a range of hydraulic conductivities from the literature. Additionally, the text will be revised to address the differences between the published values and those derived from the slug tests as discussed above. These revisions will also be discussed in the Conclusions and Executive Summary.

14. Section 5.1.5, Groundwater Flow Direction, Hydraulic Gradients, and Estimated Velocities, Page 5-8, second to last paragraph – Estimated groundwater velocities are based on very localized hydraulic gradient magnitudes specific to LF4 and the area immediately surrounding LF4. Because of the hilly topography and the shallow nature of groundwater (both overburden and weathered bedrock waters) at LF4, groundwater gradient magnitudes mimic topography and are thus high at LF4 compared to a more regional gradient magnitude. Regionally (i.e., Lacamas Creek valley and west of Camp Bonneville Reservation), groundwater gradient magnitudes are surely less steep and would in turn cause groundwater velocities to be lower as you move away from the LF. This should be considered when extrapolating travel times of groundwater from LF4 to potential receptors. Discussion added to Section 5.1.5 as a result of this comment also needs to be incorporated into the Executive Summary and Conclusions (Section 7.1, Geology).

URS Response:

Text will be added to the report that includes discussion regarding the relationship between the

groundwater velocity estimated near Landfill 4 and steeper topography as well as the groundwater velocities and the less steep regional topography.

15. Section 5.1.7, Recharge Tests, Page 5-10, last paragraph – I did a quick estimate and came up with 60 minutes, not 45, for the groundwater to return to its static level in well L4-MW05A based on the raw data presented in Table 5-6. The water level recovery in the well is not linear; it slows as the water level gets closer to static. How might the use of 60 minutes instead of 45 for recovery change the hydraulic conductivity estimates and groundwater velocity estimates derived from this well?

URS Response:

After further review of the data, URS agrees that the groundwater in well L4-MW05A would return to its static level in approximately 60 minutes. Changing the static water level recovery time to 60 minutes resulted in a change in hydraulic conductivity from 3.5×10^{-5} cm/sec stated in the Draft Final Report to 2.8×10^{-5} cm/sec. The resulting change in velocity was 11 feet/year (reported) to 9 feet/year.

16. Section 5.1.9, Geological Field Reconnaissance of Lacamas Creek, Page 5-11, second paragraph – In the next to last sentence, how about changing "a seep was tentatively identified..." to "a potential seep location was tentatively identified..." To me, a seep implies that water is actually observed flowing (albeit slowly) from the weathered bedrock, whereas a "potential seep location" may be a damp weathered bedrock surface but may require a substantial recharge event to induce actual flow. The important thing is to convey that at no location along the stream bank was there flowing water within the weathered bedrock that could be sampled at that time of year. Also, you mentioned that particular seep location was on the western stream bank. You might want to take that one step further and say that sampling along the western stream bank would be unwarranted because any groundwater entering the stream through a seep from LF4 would enter from the eastern stream bank.

URS Response:

The text will be modified in accordance with the comment to include additional discussion regarding potential seeps and their locations within Lacamas Creek.

17. Section 5.2, Groundwater Analytical Data, Page 5-13, first paragraph – Well L4-MW02B, not L4-MW03B, was sampled during the January 2003 sampling event. Please revise.

URS Response:

The typographical error will be corrected to state that well L4-MW02B was sampled during the January 2003 sampling event.

18. Section 5.3, Comparison of Data to Screening Criteria, Page 5-21, third paragraph – The first sentence is not true. RDX and perchlorate ion were not detected in monitoring well L4-MW07B.

URS Response:

Table 5-9 erroneously states that perchlorate in well L4-MW07B was not detected. It was detected at a concentration of 4.9 µg/L (duplicate at 4.8 µg/L). The table will be corrected. RDX was not detected in monitoring well L4-MW07B. The text will be clarified.

19. Table 5-1, K and Groundwater Velocity Derived from Slug Tests – In Note #3 below the table, the 3-foot slug was used in well L4-MW02A, not L4-MW03A. Please revise.

URS Response:

The note will be corrected to indicate that the 3-foot slug was used in wells L4-MW-1A and L4-MW02A.

20. Section 6.1, Potential Release and Transport Mechanisms, Page 6-2, last paragraph – The first two sentences contradict each other. If explosives and propellants were not detected in well L4-MW01B, then explosives and propellants were not detected in all wells. Additionally, these constituents were not detected in L4-MW07B, which should also be noted.

URS Response:

The text will be corrected to state that explosives and propellants were detected in all of the wells, except for L4-MW01B and that perchlorate only was detected in one round of groundwater sampling in wells L4-MW01A and L4-MW07B.

21. Section 7.2, Groundwater Sampling and Analysis, Page 7-2, first sentence – Why draw conclusions from just the first round of groundwater sampling and analysis? Conclusions should be based on all rounds of sampling and analysis.

URS Response:

The text will be corrected in accordance with the comment.

22. Appendix A, Deviations From the Management Plan – Under UXO Avoidance, you should mention that UXO avoidance was insufficient to complete the road building task to L4-MW07B, and that UXO clearance was required which caused a delay in field work of approximately three months.

Response:

The deviations will be modified to include UXO clearance activities associated with road building for well location L4-MW07B.

23. Appendix B, Boring Logs – Horizontal datum of NAD83 should be included for reference adjacent to northing and easting coordinates on all boring logs URS completed.

URS Response:

NAD83 will be added to all of the URS boring logs.

24. Appendix B, Log of Boring L4-MW06A – No survey coordinates or elevations are provided on log. Was this well surveyed? If so, provide coordinates and elevation on log. If not, why not?

URS Response:

The survey coordinates were inadvertently omitted from the boring log. They will be added to it for the final report.

Sandy Lemlich

1. Page ES-1, 6th paragraph, 1st Sentence. Please state here and in the rest of this document what WAC 173-340-720 requires for groundwater to be considered a viable and potable drinking water source.

URS Response:

There are many criteria included in WAC 173-340-720 that must be met to consider a drinking water source, which would be cumbersome to include in the text. However, one of the criteria that appears applicable to Landfill 4 is the requirement to meet a sustainable pumping rate of 0.5 gallons/minute. This criterion will be stated in the text.

2. Page ES-2, Paragraph 4, 2nd Sentence. Please mention that these wells are not contaminated and are drilled into an aquifer that is deeper than those found beneath landfill 4.

URS Response:

The text will be revised in accordance with the comment.

3. Page ES-2, Paragraph 4, Last sentence. If possible, please qualify this statement since it is inflammatory especially in conjunction with the high estimated groundwater velocities.

URS Response:

The text will be revised in accordance with the comment.

4. Page ES-2, Paragraph 5. Data to date indicate that no contaminants from groundwater located under landfill 4 is entering Lacamas Creek. Even though the sampling in the creek was conducted in October, 1999 during low flow conditions, any contaminants that theoretically may enter the creek during high flow conditions would be diluted by heavy flows in the creek. Therefore, this section should be modified to discuss these issues.

URS Response:

The text will be revised in accordance with the comment.

5. Page 3-7, 4th Full Paragraph. This paragraph discussing background concentrations should be combined with the discussion of metals in the 2nd full paragraph on this page.

URS Response:

The text will be revised in accordance with the comment.

6. Page 5-22, Last Paragraph, 4th Sentence. Please explain what indicator chemicals are and why they are being retained.

URS Response:

Indicator chemicals are those that exceed their PQL but are less than their respective screening criteria. These indicator chemicals are below concentrations believed to pose a human health and ecological risk and will not be quantitatively evaluated further in the baseline risk assessment. The text will be revised.

7. Table 5-9, MW-07B. Please remove the U from the perchlorate ion concentration since the compound was detected. Please make sure all data in this table are the same as those from the validation report in Appendix E.

URS Response:

The U will be removed from the perchlorate ion concentration and the data in Table 5-9 will be compared with the validation report.

8. Page 6-2, 4th Paragraph, 2nd Sentence. Please state whether the metals that exceeded screening criteria also exceeded background.

URS Response:

According to the data presented in the previous Landfill 4 Report (Shannon & Wilson 1999) barium, copper, and chromium exceeded screening criteria and background values. The text will be clarified.

9. Page 6-3, 1st Full Paragraph, 2nd Sentence. See Comment 2.

URS Response:

Please see the response to comment 2.

10. Page 6-3, 1st Full Paragraph, 3rd Sentence. See Comment 3.

URS Response:

Please see the response to comment 3.

11. Page 6-3, 2nd Full Paragraph, 2nd Sentence. The only way that sub-surface soil would be exposed to human receptors would be during remediation of the landfill and would be a short-term exposure. Please modify this sentence.

URS Response:

The text will be rewritten as follows: "...future on-site workers and future on-site recreational users exposed to excavated soil as part of earthwork related to possible remediation activities. However, this would be a short-term exposure."

12. Page 6-4, 3rd Full Paragraph, 3rd Sentence. Surface water from Lacamas Creek was not analyzed for perchlorate. Please correct this sentence.

URS Response:

The text will be revised in accordance with the comment.

13. Page 6-5, 1st Partial Paragraph, Last Sentence. Please add that during high flows that any groundwater from the alluvium would be diluted by water in the creek.

URS Response:

The text will be revised in accordance with the comment.

14. Page 6-6, 1st Full Paragraph, Sentences 1 and 2. See comments 4 and 13.

URS Response:

Please see the responses to comments 4 and 13.

15. Page 6-6, 1st Full Paragraph, Sentences 3-6. See comment 11.

URS Response:

The text will be revised to state that exposure to subsurface soil would be a short-term exposure.

16. Page 6-6, 2nd Full Paragraph. This paragraph should be modified to include a discussion of the data collected from Lacamas Creek so far. Also see comments 4 and 13.

URS Response:

The text will be revised in accordance with the comment. In addition, please see the responses to comments 4 and 13.

17. Page 7-2, 1st Full Paragraph, 1st Sentence. Perchlorate was detected in L4-MW01A during the 3rd quarter sampling.

URS Response:

URS agrees and the text will be corrected.

18. Page 7-2, 1st Full Paragraph, Last Sentence. Please state whether the metals also exceeded background.

URS Response:

Background values are currently not available for metals in groundwater.

WASHINGTON DEPARTMENT OF ECOLOGY COMMENTS

The report shows general groundwater flow characteristics and dissolved contaminant distribution in the area around Landfill 4/Demolition Area 1. However, further analysis of hydrogeologic data presented indicates the presence of a more complex local flow patterns that may significantly impede a successful determination of the extent of the contamination plume.

Additional groundwater investigations, which include installation of additional shallow and deep wells, may therefore be needed to better understand groundwater flow patterns and to determine dissolved contaminants distribution in the area. This may be vital in any effort towards a successful definition of the extent of the contamination plume. Results and observations of Ecology's hydrogeological analysis and rationales for need of additional investigations are presented below.

A. OVERBURDEN WELLS (SHALLOW AQUIFER)

1. Whilst the westward flow direction is true from MW01A towards MW02A, because groundwater gradient observed in this area between well MW01A to well MW02A suggests an existence of high water table in the area of well MW01A, which acts as the up gradient source for the site, the shallow groundwater does not flow beyond MW0MW02A west into the LACAMAS Creek. The westward gradient shows a falling head as you move due west towards MW02A2. This assertion is supported by the existing data (see cross section map Figure 5-2) and the surface topography contours that depict surface water drainage system in this area as shown on Figure 5-7. Ecology concurs with the Army that groundwater often is a mirror image of the surface water drainage patterns. However, as you approach MW02A, the groundwater head starts rising indicating a reversed flow towards the east with a resultant net flow trend that is due N, NW and S, SW respectively (see Ecology's map for April 2002 Figures 5 and 13, Army's cross section map Figure 5-5 and narrative discussion on page 5-7 section 5.1.5 of the Feb 2003 Report).

URS Response:

URS disagrees with the interpretation that groundwater within the alluvium flows from west to east near well L4-MW02A. The Ecology maps appear to have discounted site-specific information such as the topography at and immediately adjacent to Landfill 4 as well as the B-B' cross-section (Figure 5-3) in the report. In addition, there are several areas on Ecology's groundwater maps with ambiguous flow direction indicators (arrows) that do not enable a clear understanding of Ecology's assertion of groundwater flow, predominantly in the area of well L4-MW02A. URS does agree with Ecology's conclusion about groundwater flow to the northwest and southwest; however, it is URS' interpretation that groundwater flow within the alluvium also flows to the west.

Evidence of these flow directions can be interpreted from cross-sections A-A' and B-B' (Figures 5-2 and 5-3) of the report. The east-west cross-section in Figure 5-2 depicts a decrease in hydraulic head from well L4-MW01A to L4-MW02A. While the figure also depicts a falling head from L4-MW02A to L4-MW03A, it is important to note that well L4-MW03A is projected onto the cross-section 90 feet to the north. Figure 5-2 also demonstrates the topographic difference between wells L4-MW02A and L4-MW03A. The north-south cross-section in Figure 5-3 demonstrates the relationship between alluvial wells L4-MW02A, L4-MW04A, and L4-

MW05A. In this figure, well L4-MW02A clearly has the highest head, which falls towards L4-MW04A and L4-MW05A. Combining the data in the two cross-section suggests groundwater flow direction as depicted on Figures 5-4 through 5-7 in the report. Groundwater flow to the west from L4-MW02A is also suggested from the topography west of this well. The slope west of well L4-MW02A to Lacamas Creek has an approximate difference in topographic elevation of 40 feet. Since the alluvial groundwater flow mimics the topography at Landfill 4, it is URS' belief that alluvial groundwater also flows west at L4-MW02A. Recommendations will be added to the final ESI report that will suggest methods to evaluate the difference in interpretation of groundwater flow in the alluvium.

2. From the groundwater elevation data presented in the report, Figures 5-4 through 5-7 by the Army do not support nor reflect the GW dynamics depicted in the cross section map of Figure 5-2 that discusses the over burden wells on this page. Ecology verified only one (April 2002 Fig. 5-7) out of the four maps for the shallow wells. These maps covered two sampling events each for the 2001 and 2002 respectively.

URS Response:

Please see the response to comment 1.

These figures are misleading and must be revised. Ecology's maps that attempted to duplicate Figure 5-7 are depicted as Figures 5 and 13

URS Response:

URS disagrees that the figures are misleading and need revision. Please see the response to comment 1.

3. Figures 3 and 6 (Ecology's maps) that depicts dissolved perchlorate in groundwater for the shallow wells shows the following;

i. The shape and concentration distribution of the dissolved perchlorate plume in the groundwater overburden wells supports Ecology's Figures 5 and 13 indicating a reversed flow pattern from MW02A.

URS Response:

URS disagrees with the assertion that dissolved perchlorate concentrations support groundwater flow to the east near well L4-MW02A. The 130µg/L concentration at L4-MW02A is the duplicate sample concentration, not the primary concentration (104 µg/L), which is similar to the concentration at L4-MW02A. In addition, the perchlorate contours provided by Ecology are interpreted based on two data points, which are insufficient to develop concentrations contours

and draws conclusions from. It is URS' belief that wells L4-MW02A and L4-MW02B represent a concentration of contaminants for as yet undetermined reasons. For further discussion regarding groundwater flow in the alluvium, please see the response to comment 1.

ii. ***Because of the higher topographic surface elevation observed west in the vicinity of MW02A (see the surface topographic contour - Army - Figure 5-7), it is possible that MW02A may not be the up gradient limit of the plume to the west. Further, please note that MW02A is outside the limits of the approximate extent of the landfill and this may suggest that the extent of the landfill is beyond its current setting to the west.***

URS Response:

The slightly higher topographic elevation (approximately 3 feet) immediately west of the gravel access road is likely due to reworking and regrading of the area during the landfill's historic period of use. The outline of the landfill presented in the report on Figure 5-7 is based on ground penetrating radar data obtained during the initial investigation (Shannon & Wilson 1999). Furthermore, the boundary of the landfill is relatively discernible from site observations. The perimeter of the landfill is bounded by the access roads to the east, west, and north and topographic relief to the south and west. The absence of trees and other vegetation also suggest a similar shape and size of Landfill 4.

iii. ***The implication of this setting is that an additional well may be needed immediately west of MW02A to delineate the source extent of this plume up gradient of MW02A to the west (Data gap). It may not be technically feasible to move drill rigs to that location because of the physical limitations in this area, but it is worth noting that landfill removal may extend past the currently identified limits.***

URS Response:

URS agrees that wells positioned west of L4-MW02A and L4-MW02B would be extremely useful; however, as noted in the comment and mentioned often in discussions regarding well placement, the terrain west of the Landfill 4 precludes the safe use of drilling equipment. URS also agrees that if the landfill is removed, excavation past the perceived boundaries should be considered. However, removal of landfill material should be performed without damaging the existing wells, if possible.

iv. ***Ecology's Figure 6 suggests that the dissolved plume at MW02A would not likely flow directly to the creek (west) from that location because of the higher hydraulic head that is expected to the west; groundwater does not flow uphill neither would the dissolved perchlorate flow up gradient directly***

towards the creek from this location. (data gap noted above (3 iii) will clarify this)

URS Response:

The topography west of L4-MW02A drops precipitously toward Lacamas Creek immediately west of the reworked area adjacent to the access road. This drop in topographic relief would result in a decrease in hydraulic head, not an increase. In addition, as can be seen from cross-section A-A' (Figure 5-2), the groundwater elevation in L4-MW02A is approximately 495 feet NGVD while the elevation of Lacamas Creek is less than 480 feet NGVD. Please see the responses to comment 1 and 3ii.

v. ***This leaves the plume two alternatives as shown by Ecology's plume map Figure 6 to flow N, NW (eventually to the creek) or S, SW.***

URS Response:

Please see the responses to comment 1 and 3ii.

vi. ***The perchlorate dissolved plume (Ecology's Figure 6) appears bounded by wells MW03A and MW05A suggesting that the extent of the front plume is along a SE direction and the implication of this observation is that additional well(s) is(are) needed along this trend down gradient along the gravel dirt road (Data gap).***

URS Response:

URS disagrees that dissolved perchlorate concentrations are bounded by wells L4-MW03A and L4-MW05A. Perchlorate concentrations were consistently above screening criteria in all four rounds of groundwater sampling in these wells. Similar concentrations were also detected in well L4-MW04A. Although it would be encouraging if the boundaries of dissolved perchlorate were defined, the data suggest that the extent of dissolved perchlorate is not defined to the west, north, northwest, or southwest. Additional discussion of potential well placement should be discussed further.

vii. ***Filling this data gap is critical in determining whether the plume observed in the overburden aquifer is indeed perched and limited in extent or not. Further, filling this data gap would provide critical insights to the remedial alternative approach for the overburden perchlorate plume, its fate and transport mechanisms and dynamics and will further assist in the updating of the site's conceptual model at least for the overburden aquifer.***

URS Response:

Please see the responses to comments 1, 2, and 3 (i through iv).

viii. Groundwater flow velocities were calculated for the shallow wells using hydraulic conductivity value of 0.0013 cm/sec. An effective porosity value of 0.4 was used. Calculated average groundwater velocity from MW02A to MW04A is approx 202 feet/year, while flow velocities from MW02A to MW05A and from MW02A to MW03A ranges from 275 to 292 feet/year respectively.

URS Response:

Comment noted.

B. WEATHERED BEDROCK WELLS (DEEP AQUIFER)

1. The Ecology's map for April 2002 for the deep wells, Figure 7, is consistent with the map Figure 5-11 for the deep well developed by the Army. Again, this was based on verification by Ecology of only one map (April 2002) out of the four maps generated by the Army for the deep wells. These maps covered two sampling events each for the 2001 and 2002 respectively.

URS Response:

Comment noted.

2. *Data analysis of the deep wells depict the following:*

i. *The deep bedrock wells show a direct flow component from well 1B towards well MW02B and MW03B suggesting a resultant net flow trend that is due W, SW.*

URS Response:

Comment noted; however, the weathered bedrock groundwater flow depicted on Figures 5-8 through 5-11 is based on 3 wells only. Additional deeper wells would provide further data enabling refinement of the groundwater flow maps.

ii. *This flow direction suggests that the newly installed MW07B, which appears to be located directly south of MW05A, may be side gradient to the groundwater flow. This may imply that the low perchlorate concentration measured in MW07B does not indicate the extent of the plume, and*

additional well(s) may have to be installed directly downgradient of MW03B. This will be assessed further after the data gap observed below (v) is addressed.

URS Response:

As discussed often with and agreed to by Ecology and EPA, the placement for well L4-MW07B was the optimum location possible based on available access. The area in the vicinity and downhill from Landfill 4 was evaluated prior to the its selection. The final ESI report will include recommendations that will suggest methods to obtain a better understanding of the concentrations of dissolved contaminants.

iii. ***This flow direction also suggests that the surface water sampling locations along the north and west of the creek (HC-SW03 and HC-SW02 noted in the map with green triangles next to the creek) are unlikely to detect the perchlorate plume from the landfill that is traveling within the weathered bedrock aquifer that could be discharging to the Lacamas Creek, if any.***

URS Response:

Surface water has been sampled upstream, downstream, and adjacent to Landfill 4 at low flow conditions. Even at low flow conditions the volume of flowing water in Lacamas Creek was likely sufficient to preclude detection of potential contaminants. The volume of flowing water in Lacamas Creek increases substantially during the wet season. Evidence of this includes the size and amount of boulders, trees, and debris observed in Lacamas Creek adjacent to and downstream of Landfill 4.

iv. ***Ecology will re-visit the surface water sampling location issues again at a later date after the data gap observed below (v) is addressed.***

URS Response:

See response to comment 2iii (for Weathered Bedrock Wells).

v. ***The newly installed bedrock well MW07B (5 ug/l of perchlorate) was not plotted on the new base map with the rest of the deep wells Figures 5-8 through 5-11. Please revise or include figures that show all deep well locations. (Data gap).***

URS Response:

URS agrees and will provide a map showing all of the wells installed for this project in the final report.

vi. ***Well MW07B located 500 feet down gradient from well MW03B would have given us a better shape and orientation of the dissolved perchlorate (Ecology's Figures 1 and 8), additional insight to the groundwater flow patterns for the weathered bedrock aquifer, and where the weathered bedrock groundwater is most likely to seep out to the Lacamas Creek.***

URS Response:

See response to comment 2ii (for Weathered Bedrock Wells).

vii. ***This insight will be necessary in developing appropriate future surface water sampling location(s) as noted above.***

URS Response:

Comment noted.

viii. ***Groundwater flow velocity was calculated for the deep wells using hydraulic conductivity values of 0.00035 cm/sec. An effective porosity value of 0.4 was used. Calculated average groundwater velocity from well Mw02B is approx 33 feet/year.***

URS Response:

Comment noted.

ENVIRONMENTAL PROTECTION AGENCY (REGION 10) COMMENTS

1. ***The text has been modified to provide a more accurate description of the residential development that is changing the historic agricultural use of the land adjacent to, and downgradient of, Camp Bonneville. The text does not mention however that groundwater provides the local source of potable water in the area downgradient of the site. Many residential wells are completed at approximately 150 feet or less below land surface and larger capacity production wells in the area are constructed from approximately 350 to 500 feet below land surface. A description of groundwater use downgradient of the site should be included in the report considering the toxicity, persistence and mobility of many chemical compounds associated with explosives residues.***

URS Response:

URS agrees and will revise the text in accordance with the comment.

2. ***Section 5.2.4., Third Paragraph, Page 5-19. Rinsate blank samples collected between wells had detections of target analytes in them. Based on the potential for cross contamination, the decontamination protocol between wells should be improved to ensure that sampling equipment is properly decontaminated. Also, rinsate blank samples should be collected and analyzed for all target analytes between each well sampled in the future until it has been established that the decontamination procedure has adequately eliminated cross contamination between samples.***

URS Response:

URS agrees that continued efforts should be made to eliminate potential cross contamination issues with rinsate samples. However, it should be noted that the predominant analytes detected in the rinsate samples were metals and the principal contaminants of interest are explosives, propellants, VOCs, and SVOCs.

3. ***Section 5.2.3., Page 5-18. Laboratory performance did not meet acceptable limits in the following areas: instrument calibrations, second column confirmation, and unacceptable relative percent difference between duplicates. According to the EPA National Functional Guidelines (1994), these types of laboratory non-conformance do not require automatic rejection of the associated data, however, they do indicate that associated data may be suspect. Data should be thoroughly validated in the future in order to ensure that data that may be suspect is not used for project decision-making.***

URS Response:

Data validation was conducted for all rounds of groundwater sampling and the validation reports are presented in Appendix E of the Draft Final Report. The validation was used to make decisions regarding the quality of the data.

In addition, the analytical data were evaluated using those procedures identified in the U.S. EPA guidance *Laboratory Data Validation: Functional Guidelines for Evaluating Organic Analyses* (U.S. EPA, 1994 [EPA-540/R-94/012]), as applicable to the USACE Shell and the Final Project Management Plan. Quality control measures were evaluated against the performance criteria presented in the Final Project Management Plan.

4. ***Table 4-3. This table includes all quality control samples collected, with the exception of matrix spike/matrix spike duplicate samples (MS/MSD). Please indicate, either in tables or in the text, were documentation of the frequency of MS/MSD sample collection can be found.***

URS Response:

As the header for Table 4-3 states, the information presented in the table is the requested analyses from ARI for the July 2001 round of groundwater sampling. Information and results of MS/MSD samples are presented in Appendix D Data Quality Comparison to Data Quality Objectives and Explanation for Quality Control Exceedances and Laboratory Data Summary Tables.

Please call me if you have any questions concerning this letter.

Sincerely,

URS

Steven P. Wolfe, R.G.
Project Manager