DRAFT REPORT

SOIL AND GROUNDWATER INVESTIGATION OF EASTERN AREA

International Paper, Longview

Prepared for

INTERNATIONAL PAPER

International Paper
Longview, Washington

February 7, 2000

URS Greiner Woodward Clyde

1501 Fourth Avenue, Suite 1500
Seattle, Washington 98101-1662
(206) 343-7933
9900003

TABLE OF CONTENTS

Tables

Figures

Appendices

bgs	below ground surface
cPAH	carcinogenic polyaromatic hydrocarbons
DQO	data quality objective
FID/PID	flame ionization detector/photoionization detector
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
msl	Mean Sea Level
MTCA	Model Toxics Control Act
ncPAH	noncarcinogenic polyaromatic hydrocarbons
NGVD	National Geodetic Vertical Datum
PAH	polyaromatic hydrocarbon
PCB	polychlorinated biphenyl
PCMP	Performance and Compliance Monitoring Plan
PVC	polyvinyl chloride
QA/QC	quality assurance/quality control
QAPP	quality assurance project plan
SOP	standard operating procedure
SVOC	semivolatile organic compound
TPH	total petroleum hydrocarbons
TWP	treated wood products
VOC	volatile organic compound
WAC	Washington Administrative Code

1.1 PROJECT BACKGROUND

An environmental site investigation was performed by URS Greiner Woodward Clyde at two areas on a site adjacent to the former treated wood products (TWP) area at the International Paper facility in Longview, Washington. Both of the investigated areas are currently owned by the Port of Longview.

This report presents the results from one of the two areas investigated, the "Eastern Area." The results from the investigation of the second area (the "Western Area") are presented in a separate report (URS Greiner Woodward Clyde 2000).

The Washington State Department of Ecology (Ecology) described in a letter dated November 7, 1997, three areas of concern that were identified during subsurface barrier wall construction activities in the fall of 1997. The three areas included:

- The area along the west side of the barrier wall (Area 1)
- The southwest corner of the barrier wall, near the location where a 24-inch-diameter fire control line was encountered (Area 2)
- The area along the south side of the barrier wall, near the location of well PW-3 (Area 3)

An investigation was performed in July 1998 to evaluate potential impacts to soils in these areas. Soil samples were collected from each area using a hollow-stem auger drill rig and submitted for laboratory analysis. Results from this investigation were presented in *Investigation of Areas of Soil Impact Outside the Containment Area Report* (Woodward-Clyde 1998). The results indicated that a limited area along the west side of the barrier wall may have been impacted by total petroleum hydrocarbons (TPH) and polyaromatic hydrocarbons (PAHs).

As a result of this finding, the historical aerial photographs were re-examined to identify potential sources of the TPH and PAHs and potential migration pathways. The aerial photograph review revealed a linear feature that was interpreted by Ecology to be a ditch leading from the TWP area westerly to a low lying area on the western portion of the Port of Longview property. On later photographs of this area (beginning in about 1957), the apparent ditch location changed and connected the TWP area with a rectangular impoundment on the eastern side of the Port of Longview property, approximately 450 yards northwest of the former TWP area.

Ecology requested an investigation of both of these potential impoundment areas based on concerns that the linear features, interpreted to be ditches, may have transported chemicals of concern associated with the former TWP area to the impoundment areas. A review of historical documents and aerial photographs for the Eastern Area indicated that it was owned by Long Bell Lumber/International Paper until 1965, when it was purchased by the Port of Longview. Aerial photographs show that the rectangular area still appeared to contain liquid in 1967, and it was eventually infilled in 1968.

Ecology believed that the ponded area may have been associated with historical operations in the former TWP area or other operations at nearby sites. Based on Ecology's concerns, and in accordance with Consent Decree 97-2-01088-9 between International Paper and Ecology, International Paper agreed to perform an environmental investigation of both the Western and Eastern Areas.

1.2 SITE DESCRIPTION

As discussed above, the two offsite areas that were investigated were identified based on a review of historical information. One area is located on the western side of the Port of Longview property, consisting of a larger sub-area to the south and a smaller sub-area to the north. For discussion purposes, these two sub-areas are considered as one larger area referred to as the Western Area. The Eastern Area consists of a single rectangular area.

Boundaries for each of the areas were delineated on the basis of a review of aerial photographs from the period between 1948 and 1968. The work performed in the Eastern Area is described in this report; work performed in the Western Area is described in a separate report also prepared by URS Greiner Woodward Clyde. Both areas are shown in Figure 1-1.

The Eastern Area is approximately rectangular, with each side about 210 to 220 feet in length. The resultant area is slightly larger than an acre. It is located in a heavy industrial setting where ongoing operations include log storage and movement with heavy machinery, as well as truck washing and other industrial activities. The area is bordered to the west by a utility corridor and to the south by the Port of Longview vehicle maintenance facility. The Eastern Area is flat and capped by a thick layer of engineered fill and asphalt.

1.3 PROJECT OBJECTIVES

The objective for the project was to collect data to evaluate whether soil and groundwater in the Eastern Area have been impacted by chemicals of concern associated with either operations in the TWP area or the apparent ditch and impoundment features that were observed in the historical aerial photographs.

1.4 PROJECT APPROACH

The approach for evaluating potential impacts to the Eastern Area included drilling exploratory soil borings, and collecting and analyzing soil and groundwater samples. The area of investigation was delineated in the field after a review of historical documents and aerial photographs. Personnel from the Port of Longview were also interviewed on January 5, 1999 regarding previous site use.

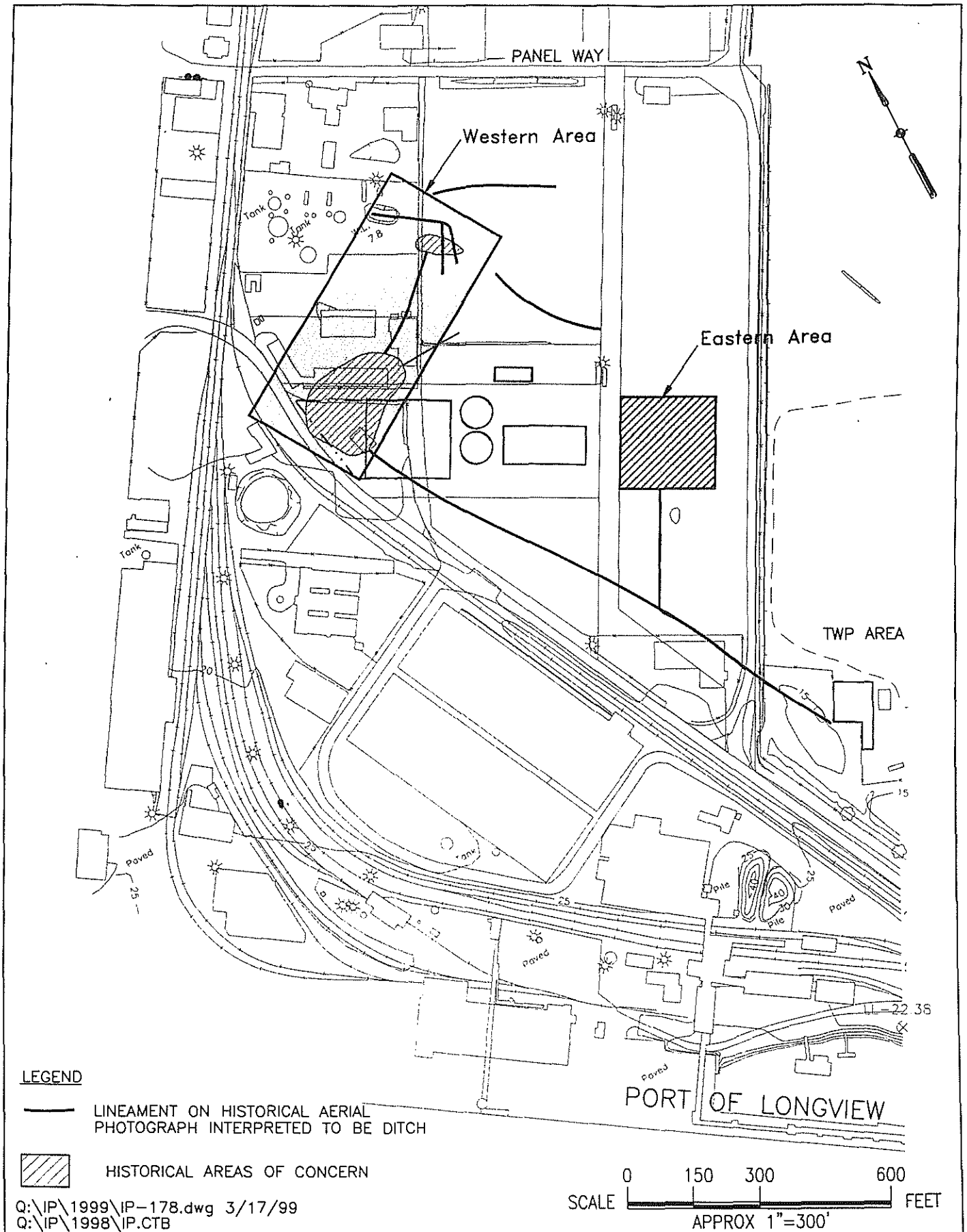
Three soil borings were drilled within the central portion of the delineated impoundment to ensure that the borings were within the boundaries of that impoundment. Soil samples were collected for analysis from depth intervals judged most likely to contain chemicals potentially present in the former impoundments. These soil intervals included the interface between the vadose zone and groundwater, and the top of the Upper Silt. Additional samples were evaluated by field screening measurements and observation, with "worst-case" samples (i.e., highest field screening measurements or visual evidence of contamination) chosen for analysis.

Monitoring wells were constructed around the estimated downgradient perimeter of the delineated impoundment, so that groundwater potentially containing chemicals derived from the impoundment would likely be intercepted by at least one monitoring well. To prevent carry-down of chemicals potentially present above the Upper Silt, installation of the monitoring wells within the delineated impoundment was avoided. Separate wells were located on the north and south sides of the impoundment in likely downgradient locations from the former impoundment.

Based on a recommendation from Ecology, the third well was located on the downwind (i.e., northeastern) side of the impoundment, as any product that may have been present during operation of the impoundment would have tended to accumulate near this location.

The purpose of the impoundments observed in the aerial photographs is unknown. The water that appeared to be contained in the impoundments could have been stormwater or wastewater. Therefore, the soil and groundwater samples collected from the Eastern Area were analyzed for a comprehensive suite of chemicals, including both organic and inorganic chemicals. Analytical results from these samples were intended to indicate whether soil and groundwater contained chemicals that may have originated in the former impoundment.

The quality assurance project plan (QAPP) prepared for the *Performance and Compliance Monitoring Plan* (PCMP) (Woodward-Clyde 1997b) provides a detailed description of the project data quality objectives (DQOs). The work was performed according to the Standard Operating Procedures (SOP) included in the project SOP binder (PTI 1996).



Q:\IP\1999\IP-178.dwg 3/17/99
Q:\IP\1998\IP.CTB

International Paper Longview, Washington	Project No. 91C0796B	Plan View of Offsite Area	Figure 1-1
URS Greiner Woodward Clyde			

2.1 SOIL BORINGS

Cascade Drilling Inc. was contracted to supply a truck-mounted CME 75 drilling rig equipped with 4 ¼-inch inner-diameter hollow stem augers. Three soil borings were advanced on January 5, 1999, within the Eastern Area. The locations of these borings, shown on Figure 2-1, are designated 99EA-SB1, 99EA-SB2, and 99EA-SB3.

The initial boring (99EA-SB1) was advanced through the Upper Silt to a depth of approximately 16 feet below ground surface (bgs) to estimate the thickness of the Upper Silt. The other two borings were advanced to the depth of the top of the Upper Silt (approximately 10 feet bgs). Soil samples were collected continuously from each probe using a 2 ½-inch-diameter sampler. The soil samples were logged in the field by a geologist to obtain detailed information on the stratigraphy. Boring logs are included in Appendix A.

Soil samples were collected from depth intervals judged most likely to contain chemicals that may have originated in the impoundments, including both the vadose zone-groundwater interface and the top of the Upper Silt. The soil samples were screened in the field. Five to seven samples from each boring were screened for volatiles using a Foxboro TVA1000 flame ionization/photoionization detector (FID/PID). These samples were also analyzed in the field for TPH using a portable Hanby TPH test kit. Two to three soil samples from each borehole were selected for laboratory analysis, including the samples from the vadose zone-groundwater interface and the top of the Upper Silt, and the worst-case soil sample based on field screening measurements and observation.

All probe locations were backfilled according to the requirements of Washington Administrative Code (WAC) 173-160-560 for abandonment of resource protection wells, and the sites were restored as closely as practicable to their previous condition. The locations and elevations of the borings were subsequently surveyed by Gibbs and Olson, Inc. (Licensed Surveyors) of Longview, Washington.

2.2 GROUNDWATER MONITORING WELLS

Following completion of the soil borings, three locations surrounding the footprint of the Eastern Area were selected for installation of monitoring wells. These locations are shown on Figure 2-1 and are designated as 99EA-1A, 99EA-2A, and 99EA-3A.

The monitoring wells were installed on January 8, 1999, using the same truck-mounted CME 75 drilling rig supplied by Cascade Drilling Inc. The borings were advanced to a depth of approximately 20 feet bgs. Soil samples were collected continuously through the Upper Silt (approximately 10 to 15 feet bgs) and at the total depth of each boring. The soil samples were logged in the field by a geologist. Boring logs are included in Appendix A.

The monitoring wells were completed inside the hollow-stem augers. The wells were constructed of 2-inch-diameter Schedule 40 polyvinyl chloride (PVC) pipe with 5-foot PVC screens. Well screens consisted of 0.02-inch slots. The screens were placed such that the top of the screen was approximately coincident with the bottom of the Upper Silt. The sand pack around the screen was placed to extend slightly above the bottom of the Upper Silt. One foot of bentonite holeplug was placed above the sand, and the remaining annular space filled with a cement bentonite grout. All the wells were capped with heavy-duty steel flush-mount protective

casings constructed to withstand heavy traffic. Details of the well construction and geology are shown on the boring logs in Appendix A. The locations and elevations of the wells were surveyed by Gibbs and Olson, Inc.

2.3 GROUNDWATER SAMPLING

The groundwater wells were developed, purged, and sampled on January 13, 1999. Depth to groundwater measurements were collected prior to development using an electrical water level indicator. Approximately 20 well volumes were removed from each well using a submersible pump. The wells were allowed to stabilize for approximately 3 hours. The wells were then purged of three casing volumes and groundwater samples were collected. Water quality parameters (pH, conductivity, temperature, and turbidity) were measured before each purge volume to ensure they had stabilized prior to sampling. These data are included in Appendix B.

2.4 ANALYTICAL METHODS

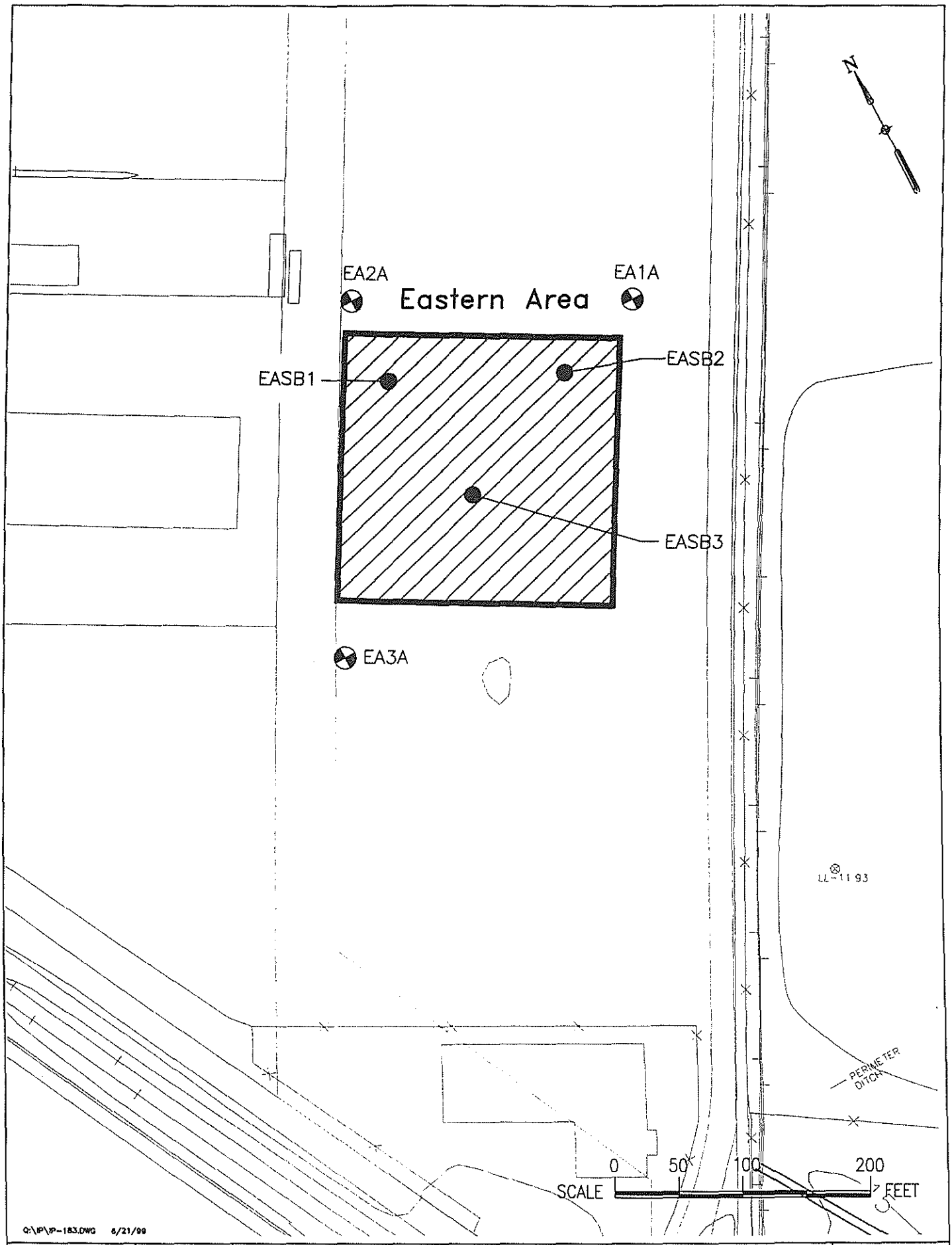
Soil and groundwater samples were submitted to Oregon Analytical Laboratories in Portland, Oregon for analysis of a full suite of analytes including TPH, PAHs, pentachlorophenol, metals, major ions, pesticides, herbicides, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and semi-volatile organic compounds (SVOCs). Table 2-1 lists the laboratory methods, sample containers, preservation methods, and holding times.

Samples were preserved in the field, as appropriate. Samples for metals analysis were centrifuged in the laboratory if the sample water was turbid. All sample handling and storage was performed under chain-of-custody procedures. Chain-of-custody forms are included in Appendix C.

Table 2-1
SAMPLE CONTAINERS AND ANALYTICAL METHODS

PARAMETER	METHOD NUMBER	CONTAINER	PRESERVATION	HOLDING TIME
SOIL				
Volatiles	EPA 8260	1-4 oz WM jar w/ septa	cool to 4o C	14 days (analysis)
Semi-volatiles	EPA 8270	1-8 oz WM jar	cool to 4o C	14 days (extraction)
PAHs (low level)	EPA 8270 SIM	use semi-volatiles jar	cool to 4o C	14 days (extraction)
Pesticides	EPA 8081	1-8 oz WM jar	cool to 4o C	14 days (extraction)
PCBs	EPA 8082	use pesticides jar	cool to 4o C	14 days (extraction)
Organophosphorous pesticides	EPA 8141A	use pesticides jar	cool to 4o C	14 days (extraction)
Herbicides	EPA 8151	use pesticides jar	cool to 4o C	14 days (extraction)
Metals	EPA 6010/200	1-8 oz WM jar	cool to 4o C	6 months
Mercury	EPA 7470	use metals jar	cool to 4o C	28 days (analysis)
Cyanide	EPA 335.1	1-8 oz WM jar	cool to 4o C	14 days (analysis)
Chloride	EPA 300 series	use cyanide jar	cool to 4o C	28 days (analysis)
Fluoride	EPA 300 series	use cyanide jar	cool to 4o C	28 days (analysis)
Nitrate	EPA 300 series	use cyanide jar	cool to 4o C	7 days (analysis)
pH	EPA 9000 series	use cyanide jar	cool to 4o C	14 days (analysis)
Sulfate	EPA 300 series	use cyanide jar	cool to 4o C	28 days (analysis)
Sulfide	EPA 376.1	1-4 oz WM jar w/septa	cool to 4o C	7 days (analysis)
Diesel range hydrocarbons	NWTPH-Dx	use semi-volatiles jar	cool to 4o C	14 days (extraction)
WATER				
Volatiles	EPA 8260	3 – 40 ml vials w/septa	cool to 4o C; HCl to pH < 2	14 days (analysis)
Semi-volatiles	EPA 8270	2 – 1 L amber glass	cool to 4o C	7 days (extraction)
PAHs (low level)	EPA 8270 SIM	1 – 1 L amber glass	cool to 4o C	7 days (extraction)
Pesticides	EPA 8081	2 – 1 L amber glass	cool to 4o C	7 days (extraction)
PCBs	EPA 8082	1 – 1 L amber glass	cool to 4o C	7 days (extraction)
Organophosphorous pesticides	EPA 8141A	1 – 1 L amber glass	cool to 4o C	7 days (extraction)
Herbicides	EPA 8151	1 – 1 L amber glass	cool to 4o C	7 days (extraction)
Metals	EPA 6010/200	1 – 1 L HDPE	cool to 4o C	6 months
Mercury	EPA 7471	1 – 500 ml HDPE	cool to 4o C	28 days (analysis)
Alkalinity	NA	1 – 500 ml HDPE	cool to 4o C	14 days (analysis)
Cyanide	EPA 335.1	1 – 500 ml HDPE	cool to 4o C; NaOH	14 days (analysis)
Chloride	EPA 300 series	1 – 500 ml HDPE	cool to 4o C	28 days (analysis)
Fluoride	EPA 300 series	1 – 500 ml HDPE	cool to 4o C	28 days (analysis)
Nitrate	EPA 300 series	1 – 500 ml HDPE	cool to 4o C	48 hours (analysis)
pH	EPA 9000 series	1 – 250 ml amber glass	cool to 4o C	24 hours (analysis)
Sulfate	EPA 300 series	1 – 500 ml HDPE	cool to 4o C	28 days (analysis)
Sulfide	EPA 376.1	1 – 500 ml HDPE	cool to 4o C; ZnOAc	7 days (analysis)
Diesel range hydrocarbons	NWTPH-Dx	1 – 1 L amber glass	cool to 4o C	7 days (extraction)

Notes:
HDPE: high density polyethylene
WM: wide mouth



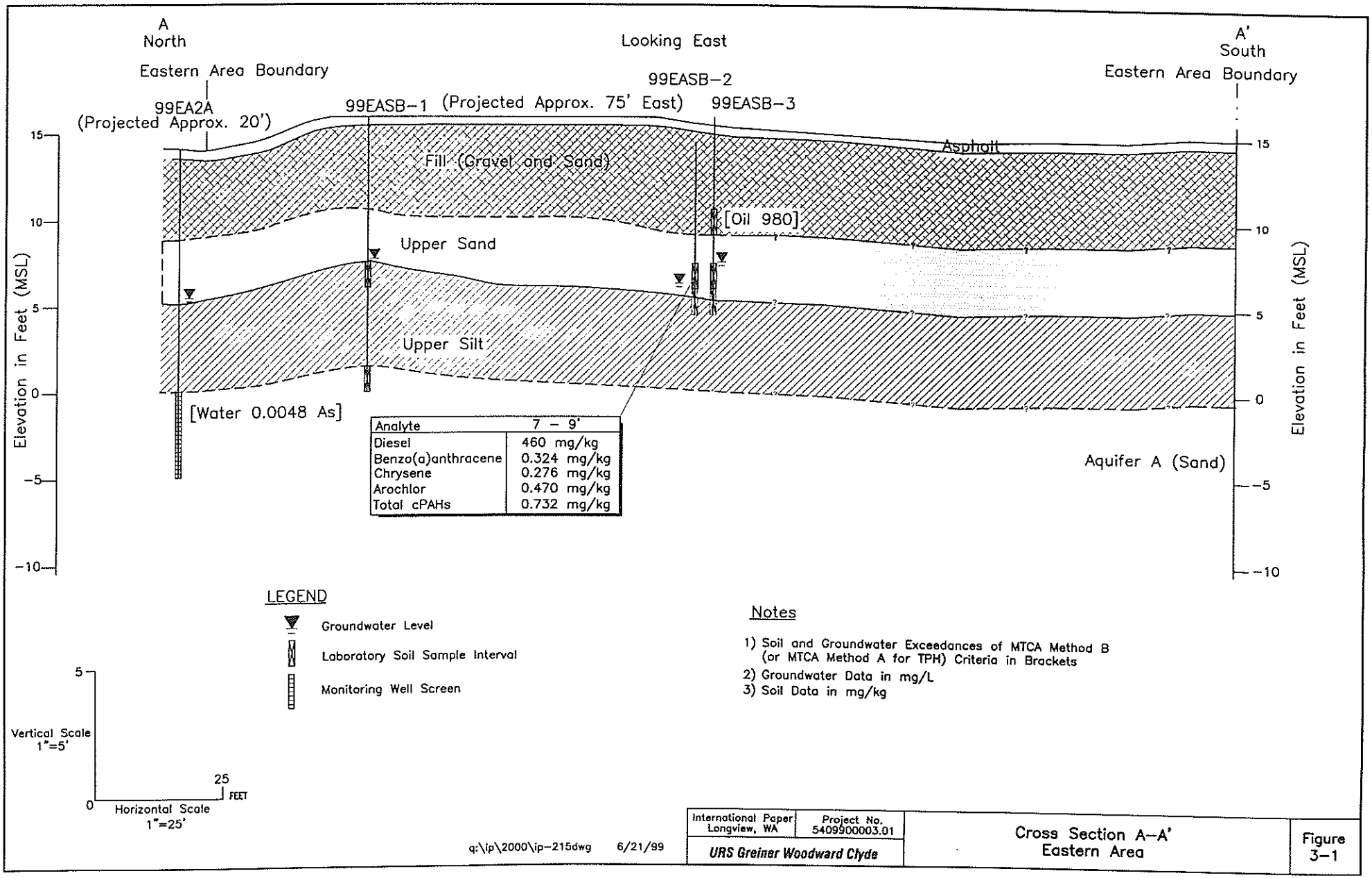
International Paper Longview, Washington / Project No. 5409900003.01	Sampling Locations Eastern Area	Figure 2-1
URS Greiner Woodward Clyde		

Based on results from previous soil investigations, the stratigraphy beneath the former TWP area and vicinity consists of the following units:

- Upper Sand, ranging in thickness from 3 to 7 feet
- Upper Silt, ranging in thickness from 2 to 6 feet
- Lower Sand, ranging in thickness from 35 to 65 feet
- Lower Silt, which is at least 32 feet thick.

The Lower Sand is the major water-bearing unit in the area and consists of two aquifers (Aquifer A and Aquifer B), separated by a thin silt layer (Intermediate Silt) at an approximate elevation of 20 to 30 feet below mean sea level (msl). The respective potentiometric surfaces in Aquifers A and B are largely flat. The net direction of groundwater flow is north-northwest (Woodward-Clyde 1996) but varies temporally in response to tidal influences from the Columbia River. Detailed descriptions of the geology and hydrogeology are found in the *Site Characterization Report* (Woodward-Clyde 1994).

As discussed in Section 1.0, the Eastern Area is paved and currently used for log storage. Based on the soil samples and drill cuttings (Appendix A), the pavement is underlain by approximately three feet of gravel fill, which is underlain by an engineered filter fabric. Below the fabric is a combination of approximately 2 feet of silty sand, gravel, and wood chips. The Upper Silt is encountered at depths of about 10 feet bgs and is about 5 to 6 feet thick. Thin sand lenses, typically less than 3 inches thick, are present within the Upper Silt. Groundwater was encountered approximately 1 to 1.5 feet above the interface of the top of the Upper Silt (at an approximate elevation of 5 feet msl) in every borehole. The Lower Sand was encountered at approximately 15 feet bgs. Subsurface conditions encountered during drilling are shown on cross section A – A' (Figure 3-1).


A
North
Looking East
A'
South
Eastern Area Boundary
Eastern Area Boundary
99EA2A
(Projected Approx. 20')
99EASB-1
(Projected Approx. 75' East)
99EASB-2
99EASB-3
Asphalt
Fill (Gravel and Sand)
[Oil 980]
Upper Sand
Upper Silt
[Water 0.0048 As]
Aquifer A (Sand)
Elevation in Feet (MSL)
15
10
5
0
-5
-10
Analyte | 7 - 9'
Diesel | 460 mg/kg
Benzo(a)anthracene | 0.324 mg/kg
Chrysene | 0.276 mg/kg
Arochlor | 0.470 mg/kg
Total cPAHs | 0.732 mg/kg
LEGEND
Groundwater Level
Laboratory Soil Sample Interval
Monitoring Well Screen
Notes
1) Soil and Groundwater Exceedances of MTCA Method B (or MTCA Method A for TPH) Criteria in Brackets
2) Groundwater Data in mg/L
3) Soil Data in mg/kg
Vertical Scale 1"=5'
Horizontal Scale 1"=25'
25 FEET
0
q:\ip\2000\ip-215dwg 6/21/99
International Paper Longview, WA
Project No. 5409900003.01
URS Greiner Woodward Clyde
Cross Section A-A' Eastern Area
Figure 3-1

4.1 FIELD MEASUREMENTS

The soil samples collected during the soil boring phase of the investigation were tested in the field using a Foxboro TVA 1000 FID/PID to measure levels of volatile constituents in each sample. The samples were also tested for TPH using a portable Hanby TPH test kit. The results from these tests, summarized in Table 4-1, were used in the selection of samples for laboratory analysis.

4.2 QUALITY ASSURANCE/QUALITY CONTROL

Seven soil samples and four water samples were submitted to Oregon Analytical Laboratories for analysis. The analytical results for these samples were subject to a quality assurance/quality control (QA/QC) review, including the following elements:

- Chain of custody and holding times
- Blank review
- Surrogate review
- Matrix/blank spike review
- Duplicate review
- Reporting limits

Based on this review, all data were considered acceptable for project use. The laboratory data sheets and results from the QA/QC review are provided in Appendix C.

4.3 LABORATORY ANALYTICAL RESULTS FOR SOIL SAMPLES

A total of seven soil samples were submitted for laboratory analysis. The analytical results are presented in Tables 4-2 and 4-3.

As outlined in the Cleanup Action Plan for the former TWP area (Woodward-Clyde 1997a), the Washington State Model Toxics Control Act (MTCA) Method C industrial soil cleanup levels represent the cleanup goals for soils in the deed-restricted area within the TWP area. Based on the rationale presented in the Cleanup Action Plan, MTCA Method C criteria should also be considered to be the appropriate criteria for soils outside of the TWP area, including the Eastern Area. As discussed in the Cleanup Action Plan, the TWP constituents present in soil do not pose a current or long-term risk to human health or the environment because of the following factors:

- The chemicals of concern are relatively insoluble and highly sorptive and, therefore, largely immobile in subsurface soils and groundwater.
- The hydraulic gradient beneath the TWP area and surrounding area, including the Eastern Area, is nearly flat, further minimizing the potential for migration of chemicals of concern in groundwater.
- Potential exposure pathways in both areas are incomplete. The impacted soils in the Eastern Area are overlain by about 5 feet of clean fill and 6 inches of pavement, isolating them from potential receptors at the surface.

- Both the TWP area and the Eastern Area will remain industrial in the long-term.
- Practicable removal or treatment options for the chemicals of concern present in subsurface soils in the Eastern Area, including soils below the water table, are unlikely to be effective in achieving MTCA Method B criteria.

Based on the considerations above, MTCA Method C criteria are also the most appropriate criteria for evaluating impacts and remedial alternatives in the Eastern Area. To be conservative, both MTCA Method B and C criteria are discussed in the following sections. For TPH, there are neither MTCA Method B nor Method C criteria. Therefore, to be conservative, comparisons were made with the MTCA Method A criteria for TPH in soils. Exceedances of MTCA criteria for soil are shown on Figure 4-1 and listed on Tables 4-2 and 4-3.

Based on the low levels of detections within and surrounding the Eastern Area, impacts to soil in this area appear to be localized in extent and minor. The detected constituents were not found in multiple borings or at multiple vertical intervals within a single boring. No exceedances of the MTCA Method C criteria were noted in the soil samples collected from this area. Four PAH compounds were detected in one soil sample (7 to 8.5 feet bgs in boring 99EA-SB2) at concentrations exceeding MTCA Method B criteria including total carcinogenic PAHs (cPAHs). No PAH compounds were detected in the deeper sample (8.5 to 10 feet bgs) from this boring. Pentachlorophenol was not detected in any of the soil samples.

TPH was detected in two locations (99EA-SB2 and 99EA-SB3) at concentrations greater than the MTCA Method A criterion. However, the detected concentrations did not exceed threshold criteria for protection for human health contact toxicity or for the soil-to-groundwater pathway calculated using the Interim Interpretive and Policy Statement (Ecology 1997). The calculations for both pathways are shown in the calculation spreadsheets (Table 4-4).

The spreadsheets for human health exposure and the soil-to-groundwater pathway were constructed using conservative default values published by Ecology for molecular weights, solubilities, effective solubilities, and dilution factors. In addition, all of the detected TPH concentrations were added to the detected PAH concentrations for the worst-case samples (99EA-SB2 and 99EA-SB3). For additional conservatism, the sum of all detected TPH and PAHs was treated as a single surrogate fraction. These single calculated surrogate fractions, which overestimate the concentration of each fraction, were entered in the spreadsheet as a single concentration. One-half of the detection limit was used in the calculation for non-detected compounds. The input data and calculated values are shown on Table 4-4.

The calculated hazard index for human health contact toxicity (non-carcinogenic) is less than "1" for the residential, commercial, and industrial scenarios. Calculated groundwater concentrations were less than the MTCA criterion of 1 milligram per liter (mg/L). Therefore, the concentrations of TPH and PAHs detected in soil samples at the site are protective of groundwater and human health. The absence of these constituents in groundwater samples from the monitoring wells confirms the calculated groundwater protection value.

Laboratory chromatograms for the TPH detections in soil samples from the Eastern Area were reviewed to evaluate potential sources. The chromatogram for sample 99EA-SB3, which is similar to the chromatogram for sample 99EA-SB2, is provided in Appendix D.

For comparison, a chromatogram is provided for a soil sample collected from boring PB04. Boring PB04 was drilled in July 1998 and is located along the western boundary of the TWP

area. The chromatogram for the TPH in this sample is considered to be representative of TPH present within the former TWP area. The diesel range hydrocarbons detected in this sample are typical of other hydrocarbons detected within the former TWP area or in the PCMP wells. In addition, laboratory standard chromatograms are provided in Appendix D for diesel range hydrocarbons and heavy oil range hydrocarbons.

The chromatograms from wells 99EA-SB2 and 99EA-SB3 show the presence of diesel-range TPH, which is similar to that detected within the former TWP area. The chromatograms also indicate the presence of a heavy oil fraction, which has not been observed in chromatograms of TPH in soil and groundwater samples from the former TWP area. The source of the heavy oil fraction is unknown but does not appear to be the former TWP area

4.4 LABORATORY ANALYTICAL RESULTS FOR WATER SAMPLES

Three groundwater samples and one duplicate sample were submitted to Oregon Analytical Laboratories for analysis. Analytical results are presented in Table 4-5. The laboratory data sheets are included in Appendix C.

According to the Cleanup Action Plan for the TWP area (Woodward-Clyde 1997a), MTCA Method B criteria are applicable for groundwater beyond the deed-restricted area. Exceedances of applicable MTCA Method B criteria for groundwater are shown on Figure 4-1.

Total arsenic was detected at concentrations exceeding the MTCA Method B criterion in all three wells. Dissolved arsenic was not detected in any of these wells. Chloroform and heptachlor were detected above their respective MTCA Method B criteria in well 99EA-3A. Pentachlorophenol was not detected in any of the wells.

Chloroform was detected in groundwater in one well (99EA-3A) at a concentration (9 micrograms per liter [µg/L]) slightly greater than the MTCA Method B criterion (7.17 µg/L). Because chloroform is a common constituent resulting from routine disinfection (i.e., chlorination) of drinking water, the U.S. Primary Drinking Water Standard for chloroform, or other trihalomethanes, is 100 µg/L. The detected concentration is well below this value. The chloroform may have been derived from minor leakage of water from nearby fire control pipelines.

Heptachlor was detected in well 99EA-3D (duplicate for 99EA-3A) at a concentration of 0.02 µg/L, slightly above the method detection limit (0.01 µg/L) and the MTCA Method B criterion (0.0194 µg/L). Heptachlor was not detected in the primary water sample from this well. The detection of heptachlor near the method detection limit in one sample, coupled with its non-detection in a duplicate sample, indicates that the detection of the compound may be attributable to laboratory bias or that the compound is not present above the MTCA Method B limit. The heptachlor, if present, is most likely derived from a historical pesticide application in this localized area.

Because arsenic was not detected in filtered groundwater samples, the arsenic detected in the unfiltered groundwater samples is likely attributable to the presence of arsenic on particulates or colloids in these samples. Background concentrations for arsenic in soil are relatively high throughout the general area, as was found in the recent investigation of International Paper's Site C (PTI 1997). According to Ecology (1994), naturally occurring arsenic concentrations in soils average 6 mg/kg in nearby Clark County and 7 mg/kg throughout the State of Washington,

similar to the concentrations measured in soil samples collected from the Eastern Area. It is likely that the arsenic detected in the groundwater samples represents naturally occurring arsenic adsorbed to colloids or desorbed from particulates. Particulates and colloids and therefore total arsenic are immobile in groundwater flow in an aquifer.

Table 4-1
FIELD MEASUREMENTS

SAMPLE ID	FID FIELD SCREENING (PPM)[1]	TPH FIELD TESTS (PPM)[2]
99EA-SB1-2-4	1000	<50
99EA-SB1-4-5.5	500	<50
99EA-SB1-5.5-7	500	<50
99EA-SB1-7-8.5	500	<50
99EA-SB1-8.5-10	20	<50
99EA-SB1-10-11.5	1500	<50
99EA-SB1-11.5-13	50	<50
99EA-SB1-13-14.5	NR	<50
99EA-SB1-14.5-16	NR	<50
99EA-SB2-2.5-4	80	<50
99EA-SB2-4-5.5	160	<50
99EA-SB2-5.5-7	610	<50
99EA-SB2-7-8.5	NR	>200
99EA-SB2-8.5-10	NR	<50
99EA-SB3-2.5-4	NR	<50
99EA-SB3-4-5.5	NR	<50
99EA-SB3-5.5-7	NR	~50
99EA-SB3-7-8.5	3	<50
99EA-SB3-8.5-10	NR	<50
99EA-SB3-10-11.5	NR	<50

Notes:
[1] =Foxboro TVA 100 PID/FID
[2] = Hanby Field TPH Test Kit
NR = Not Recorded
PPM = Parts per million

TABLE 4-2
ORGANIC COMPOUNDS DETECTED IN SOIL SAMPLES

Sample ID			99EA-SB1		99EA-SB2		99EA-SB3		
Depth		MTCA C	(8.5 - 10 ft bgs)	(14.5 - 16 ft bgs)	(7 - 8.5 ft bgs)	(8.5 - 10 ft bgs)	(5.5 - 7 ft bgs)	(8.5 - 10 ft bgs)	(10 - 11.5 ft bgs)
Date Sampled	MTCA B	Industrial	1/5/99	1/5/99	1/5/99	1/5/99	1/5/99	1/5/99	1/5/99
SVOC (µg/kg)									
Fluoranthene	3,200,000	140,000,000	330 U	330 U	**4,070**	330 U	3,300 U	330 U	330 U
Phenanthrene	NA	NA	330 U	330 U	**5,060**	330 U	3,300 U	330 U	330 U
PAH (µg/kg)									
Acenaphthene	4,800,000	210,000,000	**29**	100 U	**729**	100 U	100 U	100 U	100 U
Anthracene	24,000,000	1,050,000,000	10 U	100 U	**368**	100 U	100 U	100 U	100 U
Benzo[a]anthracene	137	18,000	10 U	100 U	**324**	100 U	100 U	100 U	100 U
Benzo[a]pyrene	137	18,000	10 U	100 U	100 U	100 U	100 U	100 U	100 U
Benzo[b]fluoranthene	137	18,000	10 U	100 U	**132**	100 U	100 U	100 U	100 U
Benzo[g,h,i]perylene	NA	NA	10 U	100 U	100 U	100 U	100 U	100 U	100 U
Benzo[k]fluoranthene	137	18,000	10 U	100 U	100 U	100 U	100 U	100 U	100 U
Chrysene	137	18,000	10 U	100 U	**276**	100 U	100 U	100 U	100 U
Dibenz[a,h]anthracene	137	18,000	10 U	100 U	100 U	100 U	100 U	100 U	100 U
Fluoranthene	3,200,000	140,000,000	10 U	100 U	**2,300**	100 U	**214**	100 U	100 U
Fluorene	3,200,000	140,000,000	**16**	100 U	**930**	100 U	100 U	100 U	100 U
Indeno[1,2,3-cd]pyrene	137	18,000	10 U	100 U	100 U	100 U	100 U	100 U	100 U
Naphthalene	3,200,000	140,000,000	10 U	100 U	**179**	100 U	100 U	100 U	100 U
Phenanthrene	NA	NA	10 U	100 U	**2,400**	100 U	100 U	100 U	100 U
Pyrene	2,400,000	105,000,000	10 U	100 U	**1,450**	100 U	**107**	100 U	100 U
Total cPAHs	548	18,000	10 U	100 U	**732**	100 U	100 U	100 U	100 U
TPH (mg/kg)									
Diesel Region	NA	200 [1]	25 U	25 U	**460**	25 U	130 U	25 U	25 U
Oil Region	NA	200 [1]	50 U	50 U	**75**	**62**	**980**	50 U	50 U
PCBs/Pesticides (µg/kg)									
4,4'-DDD	4,170	547,000	4 U	4 U	5 U	5 U	6 U	4 U	5 U
delta-BHC	NA	NA	2 U	2 U	**6**	3 U	3 U	2 U	2 U
Dieldrin	63	8,200	4 U	4 U	5 U	5 U	6 U	4 U	5 U
Arochlor 1248	130	17,000	110 U	110 U	**470**	130 U	160 U	100 U	120 U
Herbicides (µg/kg)									
Dalapon	2,400,000	105,000,000	11 U	11 U	12 U	13 U	15 U	10 U	12 U
Dicamba	2,400,000	105,000,000	11 U	11 U	12 U	13 U	15 U	10 U	12 U

Notes:
Results above MTCA Method C are **boxed.**
Results above MTCA Method B are **underlined.**
1: Criterion is MTCA Method A.
U: non-detect
J: estimated value

TABLE 4-3
METALS AND CONVENTIONALS DETECTED IN SOIL SAMPLES

Sample ID			99EA-SB1		99EA-SB2		99EA-SB3		
Depth		MTCA C	(8.5 - 10 ft bgs)	(14.5 - 16 ft bgs)	(7 - 8.5 ft bgs)	(8.5 - 10 ft bgs)	(5.5 - 7 ft bgs)	(8.5 - 10 ft bgs)	(10 - 11.5 ft bgs)
Date Sampled	MTCA B	Industrial	1/5/99	1/5/99	1/5/99	1/5/99	1/5/99	1/5/99	1/5/99
Metals (mg/kg)									
Arsenic	1.67	219	**1.1**	**1.4**	1 U	**1.1**	**1.6**	1 U	1 U
Beryllium	0.233	30.5	0.1 U	0.1 U	0.1 U	0.1 U	**0.1**	0.1 U	0.1 U
Cadmium	80	3500	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Chromium	80000 [2]	3500000 [2]	**6.68**	**7.08**	**5.93**	**6.97**	**7.17**	**4.0**	**6.41**
Copper	2960	130000	**15.4**	**18.4**	**14.4**	**15.6**	**22.6**	**11.0**	**17.8**
Lead	NA	250 [1]	**1.1**	**1.2**	**1.3**	**1.1**	**11.7**	**0.80**	**1.2**
Mercury	24	1050	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	1600	70000	**8.3**	**10.1**	**8.1**	**8.8**	**9.2**	**7.3**	**8.6**
Silver	400	17500	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U
Zinc	24000	1050000	**21.6**	**23.6**	**23.2**	**23.6**	**48.2**	**15.7**	**20.5**
Conventionals (mg/kg)									
Chloride	NA	NA	**3**	**2**	**2**	1 U	**5**	**2**	**2**
Fluoride	4800 [3]	210000 [3]	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
Nitrate as N	128000	5600000	1 U	1 U	1 U	1 U	1 U	1 U	1 U
pH (std units)	NA	NA	**6.0**	**6.2**	**5.4**	**5.6**	**5.2**	**5.3**	**6.1**
Sulfate as SO4	NA	NA	5 U	5 U	5 U	5 U	**6**	5 U	5 U

Notes:
Results above MTCA Method C are **boxed.**
Results above MTCA Method B are **underlined.**
1: Criterion is MTCA Method A.
2: Criterion is for chromium III.
3: Criterion is for fluorine, soluble fluoride.
U: non-detect
J: estimated value

Table 4-4

INTERIM TPH GUIDELINE CALCULATION SPREADSHEET
SOIL SAMPLES 99EA-SB2 and 99EA-SB3
EASTERN AREA

SOIL TO GROUNDWATER CALCULATIONS

COMPOUND	SOIL (mg/kg)	MOLE WT. (g/mol)	MOLES (mmol/kg)	MOL. FRAC. (%)	SOLUBILITY (mg/L)	EFFECT. SOL. (mg/L)	DF	CONC. WELL (mg/L)
Aliphatics								
EC8-10*	1045	130	8.0385	0.9813819	0.33	0.32385603	20	0.016193
EC10-12*	0	160	0.0000	0	0.026	0	20	0
EC12-16	0	200	0.0000	0	0.00059	0	20	0
EC16-21	0	270	0.0000	0	0.000001	0	20	0
EC21-34	0	270	0.0000	0	0.000001	0	20	0
Aromatics								
EC8-10*	18.3	120	0.1525	0.0186181	65	1.21017538	20	0.060509
EC10-12*	0	130	0.0000	0	25	0	20	0
EC12-16	0	150	0.0000	0	5.8	0	20	0
EC16-21	0	190	0.0000	0	0.51	0	20	0
EC21-34	0	240	0.0000	0	0.01	0	20	0
TOTALS:			**8.1910**	**1.000**				**0.076702**

** For NDs, one-half of the PQL was used.*

NON-CARCINOGEN–HUMAN HEALTH SOILS CONTACT

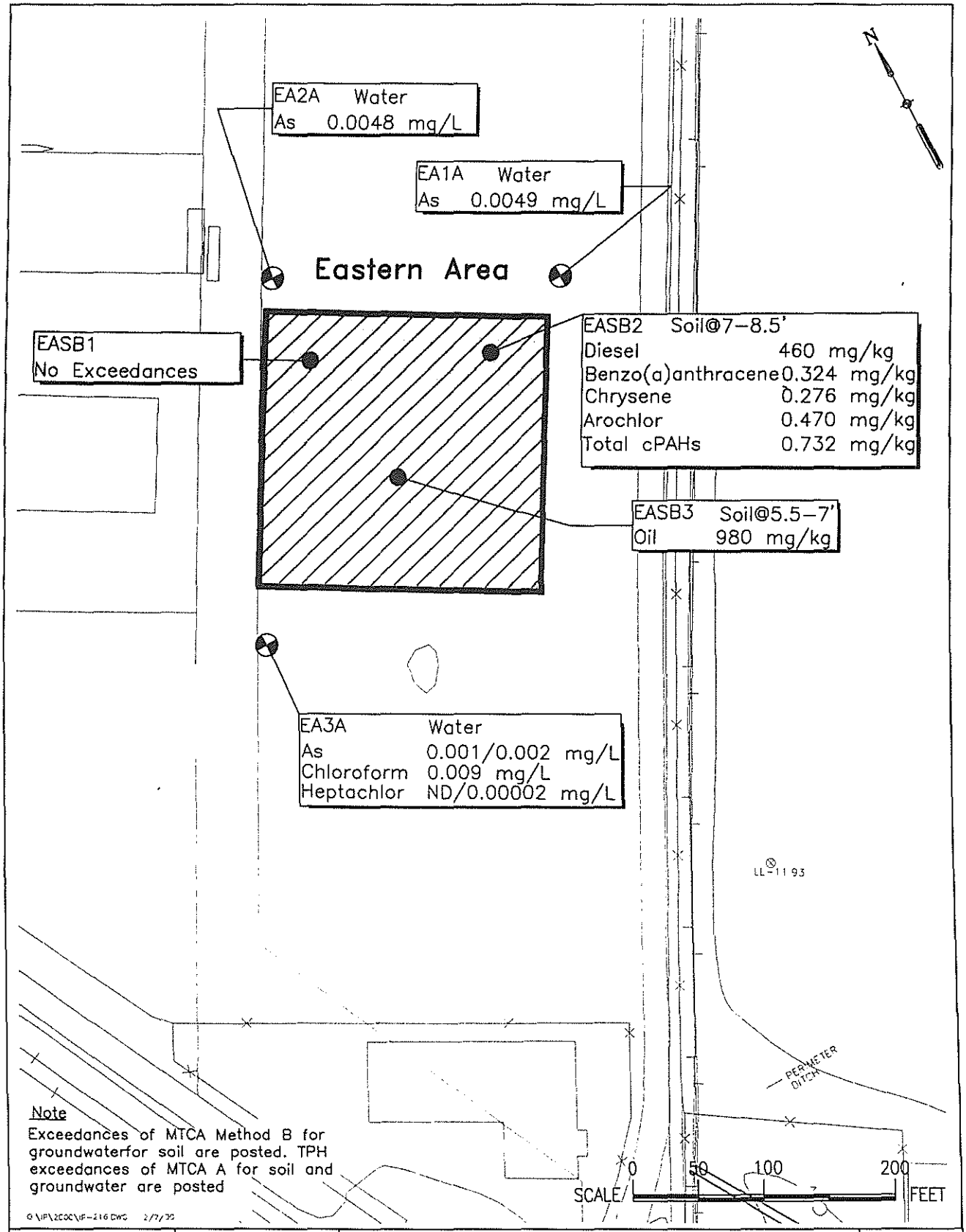
COMPOUND	SOIL CONC.	ORFD	RES. MULT	HQ	COM.MULT.	HQ	IND. MULT.	HQ
Tot. Aliph	1045	0.06	2.08E-04	0.21736	5.21E-05	0.0544445	4.77E-06	0.0004985
Tot. Arom.	18.3	0.03	4.17E-04	0.0076311	1.04E-04	0.0019032	9.53E-06	0.0000174
Hazard Index				**0.2249911**		**0.0563477**		**0.005159**

Note:
Highest PAH concentrations (measured in sample 99EA-SB2) were combined with highest TPH concentration (measured in sample 99EA-SB-3) in the above calculations.

TABLE 4-5
CONSTITUENTS DETECTED IN GROUNDWATER SAMPLES
EASTERN AREA

Sample ID Date Sampled	MTCA B Groundwater	99EA 1A 1/13/99	99EA 2A 1/13/99	99EA 3A 1/13/99	99EA 3D Dup of 3A
VOC (µg/L)					
Acetone	800	20 U	20 U	20 U	20 U
Chloroform	7.17	5	1 U	9	9
Naphthalene	320	1 U	1 U	4	3
Bromodichloromethane	0.706	1 U	1 U	1 U	1 U
o-Xylene	16000	1 U	1 U	1 U	1 U
Carbon Disulfide	800	1 U	1 U	1 U	1 U
SVOC (µg/L)					
2-Methylnaphthalene	NA	10 U	10 U	193	179
Acenaphthene	960	10 U	10 U	52	53
Fluorene	640	10 U	10 U	10	11
Naphthalene	320	10 U	10 U	15	15
PAH (µg/L)					
Acenaphthene	960	0.1 U	1.3	34.1	35.6
Fluorene	640	0.1 U	0.1 U	7.6	8.0
Naphthalene	320	0.1 U	0.1 U	10.2	11.2
Phenanthrene	NA	0.1 U	0.1 U	5.8	6.1
2-Methylnaphthalene	NA	10 U	10 U	10 U	10 U
Dibenzofuran		10 U	10 U	10 U	10 U
Anthracene	4800	10 U	10 U	10 U	10 U
TPH (mg/L)					
Diesel Region	1.0	0.25 U	0.25 U	0.87	0.95
PCB/Pesticides (µg/L)					
gamma-BHC (Lindane)	0.0673	0.01 UJ	0.01 UJ	0.01 UJ	0.05 J
Heptachlor	0.0194	0.01 UJ	0.01 UJ	0.01 UJ	0.02 J
Total Metals (mg/L)					
Arsenic	0.0000583	0.0049	0.0048	0.001	0.002
Chromium	16 [2]	0.0007	0.0009	0.0006	0.0007
Conventionals (mg/L)					
Alkalinity, Total as CaCO3	NA	100 J	150 J	210 J	220 J
Chloride	250 [1]	2.9	2.9	4.7	4.7
Fluoride	2.0 [1]	0.2	0.2	0.2	0.2
pH (std units)	NA	6.4	6.2	6.3	6.3
Sulfate as SO4	250 [1]	4.9	1.3	7.1	5.2

Notes:
Results above MTCA B Groundwater are **underlined**.
[1] Criteria are the Secondary Maximum Contaminant Levels.
[2] Criterion is for chromium III.
--: Not analyzed
NA: Not applicable
U: non-detect
J: estimated value



International Paper Longview, Washington	Project No. 91C0796B	Soil and Groundwater Exceedances Eastern Area	Figure 4–1
URS Greiner Woodward Clyde			

A review of historical documents and aerial photographs of the Eastern Area indicates that it was owned by Long Bell Lumber/International Paper until 1965, when it was purchased by the Port of Longview. The Port of Longview infilled and closed the impoundment in 1968. The former impoundment is situated under the Port of Longview log yard which has a foundation that consists of a gravel fill layer approximately 5 feet thick overlain by 6 inches of asphalt. As a result, this area is effectively capped from infiltration of precipitation and from the potential for worker exposure.

Based on the rationale presented in the Cleanup Action Plan, MTCA Method C criteria should also be considered to be the appropriate criteria for soils outside of the TWP area, including the Eastern. The TWP constituents present in soil do not pose a current or long-term risk to human health or environment because of the following factors.

Pentachlorophenol was not detected in soil samples from this area. Petroleum hydrocarbons and PAHs were detected in some soil samples collected from below the engineered fill at depths from 5 to 7 feet bgs. The TPH and ncPAHs were detected at concentrations below Interim TPH Policy cleanup criteria. cPAHs were detected at concentrations above MTCA Method B criteria in one soil sample but were below MTCA Method C criteria.

Based on the low levels of detections within and surrounding the Eastern Area, impacts to soil in this area appear to be localized in extent and minor. The detected constituents were not found in multiple borings or at multiple vertical intervals within a single boring.

Pentachlorophenol was not detected in any groundwater samples. No exceedances of MTCA Method B criteria for TWP constituents were detected in groundwater samples.

Total arsenic was detected at concentrations exceeding MTCA Method B criteria; dissolved arsenic was not detected in any of the groundwater samples. The detection of total arsenic is most likely attributable to naturally occurring arsenic sorbed to colloids or particulates.

Heptachlor was detected in a duplicate sample at a concentration exceeding the MTCA Method B criterion. Heptachlor was not detected in a duplicate sample collected from the same well. The detection of heptachlor near the method detection limit in one sample, coupled with its non-detection in a duplicate sample, indicates that the detection of the compound may be attributable to laboratory bias, or that the compound is not present above the MTCA Method B criterion. The heptachlor, if present, is most likely derived from a historical pesticide application in this area.

Chloroform was detected in groundwater in one well at a concentration slightly greater than the MTCA Method B criterion Because chloroform is a common constituent resulting from routine disinfection (i.e., chlorination) of drinking water, the U.S. Primary Drinking Water Standard for chloroform, or other trihalomethanes, is 100 µg/L. The detected concentration is well below this value.

Analytical results for a comprehensive suite of constituents indicate that groundwater has not been significantly impacted by the former impoundments. The low concentrations of detected constituents in soil, their localized distribution and low mobility, coupled with the lack of direct routes of exposure for the detected constituents, indicate that the detected constituents do not pose a significant risk to human health or groundwater quality. The entire area is capped with 6 inches of asphalt and is used as a log storage area. The entire surrounding area is heavy

industrial. Therefore, additional investigation or remediation in the Eastern Area is not recommended.

We have performed our services for this project in accordance with our Agreement; no guarantees are either expressed or implied.

There is no investigation which is thorough enough to preclude the presence of materials on the Property which presently, or in the future, may be considered hazardous. Because regulatory evaluation criteria are constantly changing, concentrations of contaminants present and considered to be acceptable may, in the future, become subject to different regulatory standards and require remediation.

Opinions and judgments expressed herein, which are based on our understanding and interpretation of current regulatory standards, should not be construed as legal opinions. No third party shall have the right to rely on URS Greiner Woodward Clyde opinions rendered in connection with the services or in this document without URS Greiner Woodward Clyde's written consent and the third party's agreement to be bound to the same conditions and limitations as client.

Ecology - see Washington State Department of Ecology

PTI Environmental Services. 1996. Standard Operating Procedures, Quality Assurance Project Plan, Health and Safety Plan, International Paper Company Facility, Longview, Washington.

PTI Environmental Services. 1997. Investigation of Site C (SWMU 6) at the International Paper Company Facility, Longview, Washington.

URS Greiner Woodward Clyde. 2000. Investigation of Western Area, International Paper Facility, Longview, Washington.

Washington State Department of Ecology (Ecology). 1994. Natural Background Soil Metal Concentrations in Washington State. Publication 94-115.

Washington State Department of Ecology (Ecology). 1996. Model Toxics Control Act Cleanup Levels and Risk Calculations (CLARCII). Update.

Washington State Department of Ecology (Ecology). 1997. Interim Interpretive and Policy Statement – Cleanup of Total Petroleum Hydrocarbons (TPH). Publication No. ECY97-600.

Woodward-Clyde, 1994. Site Characterization Report, Treated Wood Products Area, International Paper Facility, Longview, Washington.

Woodward-Clyde. 1996. Tidal Study Summary Report, International Paper Facility, Longview, Washington.

Woodward-Clyde. 1997a. Cleanup Action Plan - Former Treated Wood Products Area, International Paper Facility, Longview, Washington.

Woodward-Clyde. 1997b. Corrective Action Performance and Compliance Monitoring Plan. Former Treated Wood Products Area, International Paper Facility, Longview, Washington.

Woodward-Clyde. 1998. Investigation of Areas of Soil Impact Outside the Containment Area. Former Treated Wood Products Area, International Paper Facility, Longview, Washington.

Appendix A
Boring Logs/Well Construction Logs

Project: International Paper
Project Location: Longview WA
Project Number: 54-09900003.01

Log of Well 99EA-1A

Sheet 1 of 1

Date(s) Drilled	1/8/99	Logged By	T. Middleton	Checked By	R. Siegel
Drilling Method	Hollow Stem Auger	Drilling Contractor	Cascade Drilling, Inc	Total Depth Drilled (feet)	20.0
Drill Rig Type	CME 75 Truck Mounted	Type of Sampler	Modified California (2.5" ID)	Surface Elevation	13.7 MSL
Groundwater Level	5.92 MSL	Hammer Weight and Drop	140lb/30"	Top of PVC Elevation	13.43 MSL
Diameter of Hole (inches)	8	Diameter of Probe (inches) 2	Type of Well Casing	Schedule 40 PVC	Screen Perforation 0.010"
Type of Sand Pack	10/20	Type and Depth of Seal(s)	Cement (0-1'); grout/cement (1-13'4")		
Comments	Heavy duty flush mount protective casing				

Elevation, feet	Depth, feet	SAMPLES Type	Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID Headspace (ppm)	FID Background (ppm)	Drilling Rate (Time, 24-hour clock)	REMARKS AND FIELD/LAB TESTS
	0						6 inches of asphalt				0900	begin drilling
							1'-8'; (See 99-EA-SB2 for geology)					
10												
	5											
5				4/3/6	90		SAND (SP); saturated; gray; fine to medium sand to 9'		NR		0907	
	10			2/3/6	90		SILT (ML); gray; trace of sand and wood		NR		0910	
				6/9/10	90		fine sand increasing; saturated		NR		0915	
				2/3/3	90		very silty at 13.5'		NR		0920	
0				2/3/3	90				NR		0923	
	15						sandy lense at 14.5' (1" thick) SAND (SP); fine and medium; dark gray					
-5				15/15/20	90				NR			
	20						BORING TERMINATED AT 20 FEET BGS				0925	end drilling
-10												
	25											

Project: International Paper
Project Location: Longview WA
Project Number: 54-09900003.01

Log of Well 99EA-2A

Sheet 1 of 1

Date(s) Drilled	1/8/99	Logged By	T. Middleton	Checked By	R. Siegel
Drilling Method	Hollow Stem Auger	Drilling Contractor	Cascade Drilling, Inc	Total Depth Drilled (feet)	19.0
Drill Rig Type	CME 75 Truck Mounted	Type of Sampler	Modified California (2.5" ID)	Surface Elevation	14.2 MSL
Groundwater Level	5.5 MSL	Hammer Weight and Drop	140lb/30"	Top of PVC Elevation	13.71 MSL
Diameter of Hole (inches)	8	Diameter of Probe (inches) 2	Type of Well Casing	Schedule 40 PVC	Screen Perforation 0.010"
Type of Sand Pack	10/20	Type and Depth of Seal(s)	Cement (0-1'); grout/cement (1-12'4")		
Comments	Heavy duty flush mount protective casing				

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID Headspace (ppm)	FID Background (ppm)	Drilling Rate (Time, 24-hour clock)	REMARKS AND FIELD/LAB TESTS
	0						6 inches of asphalt				1025	begin drilling
							1'-8': (See 99-EA-SB1 for geology)					
10												
	5											
				6/7/5	90		SAND (SP); fine; dark gray; grades to gray sandy silt at 9 feet bgs		NR		1042	
5							SILT (ML); trace of fine sand; mottled color; wood present; wet					
	10			1/2/5	90				NR		1045	
				2/3/5	90		3" sand lense at 11.5'; saturated		NR		1050	
				5/7/9	90				NR		1100	
0							SAND (SP); grades to fine and medium sand; dark gray; saturated					
	15											
				7/8/11	90		saturated; silty at 18'		NR			
-5							BORING TERMINATED AT 19 FEET BGS				1101	end drilling
	20											

URS Greiner Woodward-Clyde

Report: ENV_23A; Project File: H:\LONGVIEW.GPJ; Data Template:WC_CORP1.GDT Printed: 6/24/99

Project: International Paper
Project Location: Longview WA
Project Number: 54-09900003.01

Log of Well 99EA-3A

Sheet 1 of 1

Date(s) Drilled	1/8/99	Logged By	T. Middleton	Checked By	R. Siegel
Drilling Method	Hollow Stem Auger	Drilling Contractor	Cascade Drilling, Inc	Total Depth Drilled (feet)	20.0
Drill Rig Type	CME 75 Truck Mounted	Type of Sampler	Modified California (2.5" ID)	Surface Elevation	15.1 MSL
Groundwater Level	5.88 MSL	Hammer Weight and Drop	140lb/30"	Top of PVC Elevation	14.79 MSL
Diameter of Hole (inches)	8	Diameter of Probe (inches) 2	Type of Well Casing	Schedule 40 PVC	Screen Perforation 0.010"
Type of Sand Pack	10/20	Type and Depth of Seal(s)	Cement (0-1'); grout/cement (1-13')		
Comments	Heavy duty flush mount protective casing				

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID Headspace (ppm)	FID Background (ppm)	Drilling Rate (Time, 24-hour clock)	REMARKS AND FIELD/LAB TESTS
15	0						6" of Asphalt 0.5'-8'; (See 99-EA-SB3 for geology)				1135	begin drilling
				3/3/3	90		Sandy SILT (ML); fine; saturated; dark gray				1158	
10	5			3/5/8	90						1200	
				2/3/4	90		grades to fine sand				1205	
5	10			5/7/1	90		grades to wet sandy silt				1206	
				7/8/11	90		SAND (SP); fine and medium; dark gray sand; silty interbed				1212	
0	15											
				NR	90		saturated					
-5	20						BORING TERMINATED AT 20 FEET BGS				1220	end drilling
	25											

URS Greiner Woodward-Clyde

Report: ENV_23A; Project File: H:\LONGVIEW.GPJ; Data Template:WC_CORP1.GDT Printed: 6/24/99

Project: International Paper
Project Location: Longview WA
Project Number: 54-09900003.01

Log of Boring 99EA-SB1

Sheet 1 of 1

Date(s) Drilled	1/5/99	Logged By	T. Middleton	Checked By	R. Siegel
Drilling Method	Hollow Stem Auger	Drilling Contractor	Cascade Drilling, Inc	Total Depth Drilled (feet)	16.0
Drill Rig Type	CME 75 Truck Mounted	Type of Sampler	Modified California (2.5" ID)	Surface Elevation	14.6 MSL
Groundwater Level	7.5' bgs	Hammer Weight and Drop	140lb/30"	Top of PVC Elevation	NA
Diameter of Hole (inches)	8	Diameter of Probe (inches) NA	Type of Well Casing NA	Screen Perforation	NA
Type of Sand Pack	NA	Type and Depth of Seal(s)	NA		
Comments	cement bentonite grout to surface/concrete top				

Elevation, feet	Depth, feet	SAMPLES Type	SAMPLES Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID Headspace (ppm)	FID Background (ppm)	Drilling Rate (Time, 24-hour clock)	REMARKS AND FIELD/LAB TESTS
	0						6 inches of asphalt				1145	start drilling
							Fill; sand and gravel; some roots					
									1000		1155	
							filter fabric present at 3 feet					
10				9/12/14	90		dry to moist; trace of wood chips; fill like		500		1158	
	5											
				23/20/21	90		grades to gray uniform color Silty SAND (SP); dark brown; trace of wood		500		1215	
				20/12/13	90		▽		500		1217	
				10/10/7	90		6" medium and fine sand lense from 10.5 to 11 feet Sandy SILT (ML); fine to medium; dark gray; saturated		20		1225	sample to lab
5	10			NR	90				1500		1250	
				6/6/9	90		1" sand lense at 12 feet		50		1259	
				2/3/7	90		saturated fine and medium gray sand in tip		NR		1306	
0	15			4/9/10	90		SAND (SP); fine to medium; dark gray; saturated		NR		1320	sample to lab
							BORING TERMINATED AT 16 FEET BGS					end drilling
-5	20											

URS Greiner Woodward-Clyde

Report: ENV_23A; Project File: H:\LONGVIEW.GPJ; Data Template:WC_CORP1.GDT Printed: 6/24/99

Project: International Paper
Project Location: Longview WA
Project Number: 54-09900003.01

Log of Boring 99EA-SB2

Sheet 1 of 1

Date(s) Drilled	1/5/99	Logged By	T. Middleton	Checked By	R. Siegel
Drilling Method	Hollow Stem Auger	Drilling Contractor	Cascade Drilling, Inc	Total Depth Drilled (feet)	10.0
Drill Rig Type	CME 75 Truck Mounted	Type of Sampler	Modified California (2.5" ID)	Surface Elevation	14.5 MSL
Groundwater Level	8' bgs	Hammer Weight and Drop	140lb/30"	Top of PVC Elevation	NA
Diameter of Hole (inches)	8	Diameter of Probe (inches) NA	Type of Well Casing NA	Screen Perforation	NA
Type of Sand Pack	NA	Type and Depth of Seal(s)	NA		
Comments	cement bentonite grout to surface/concrete top				

Elevation, feet	Depth, feet	SAMPLES Type	Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID Headspace (ppm)	FID Background (ppm)	Drilling Rate (Time, 24-hour clock)	REMARKS AND FIELD/LAB TESTS
	0						6" Asphalt					start drilling
							FILL; coarse gravel and sand; some roots					
				42/22/18	90				80		1430	
10							SAND (SP); fine to medium; dark brown					
	5			6/8/13	90				160		1435	
				7/7/10	90		wood chips; red staining on wood		610		1440	
				7/10/10	90		wood present down to 7'; moist; slight sheen and odor noted; grades to dark gray medium to fine sand at 7.5'; moist to wet ▽		NR		1448	sample to lab
				5/10/14	90		saturated; gray; fine to medium sand to 9'		NR		1452	sample to lab
5							Sandy SILT (ML); gray; trace of sand and wood grades to...					
	10											end drilling
0												
	15											
-5												
	20											

URS Greiner Woodward-Clyde

Report: ENV_23A; Project File: H:\LONGVIEW.GPJ; Data Template:WC_CORP1.GDT Printed: 6/24/99

Project: International Paper
Project Location: Longview WA
Project Number: 54-09900003.01

Log of Boring 99EA-SB3

Sheet 1 of 1

Date(s) Drilled	1/5/99	Logged By	T. Middleton	Checked By	R. Siegel
Drilling Method	Hollow Stem Auger	Drilling Contractor	Cascade Drilling, Inc	Total Depth Drilled (feet)	11.5
Drill Rig Type	CME 75 Truck Mounted	Type of Sampler	Modified California (2.5" ID)	Surface Elevation	15.7 MSL
Groundwater Level	7.75' bgs	Hammer Weight and Drop	140lb/30"	Top of PVC Elevation	NA
Diameter of Hole (inches)	8	Diameter of Probe (inches) NA	Type of Well Casing NA	Screen Perforation	NA
Type of Sand Pack	NA	Type and Depth of Seal(s)	NA		
Comments	cement bentonite grout to surface/concrete top				

Elevation, feet	Depth, feet	SAMPLES Type	Number	Blows per 6-inch Interval	Percent Recovery	Graphic Log	MATERIAL DESCRIPTION	Well Completion Log	FID Headspace (ppm)	FID Background (ppm)	Drilling Rate (Time, 24-hour clock)	REMARKS AND FIELD/LAB TESTS
	0						6" of Asphalt				1526	start drilling
15							SAND (SP); fine sand; trace of silt; dark brown; grades to a fine gray sand; pebbles; moist					
				23/20/13	90				NR		1530	
				22/35/25	90				NR		1535	
	5						Silty SAND (SM); fine; wood chips and sand to 5.5'; moist to wet					
10				10/13/18	90		wood chips; brown; moist		NR		1545	sample to lab
				23/25/28	90		SAND (SP); uniform; gray; moist ▽		3		1548	
				13/13/15	100		saturated		NR		1555	sample to lab
5	10			5/5/7	100				NR			sample to lab
							Sandy SILT (ML); brown; iron stained					
							BORING TERMINATED AT 11.5 FEET BGS				1610	end drilling
0	15											
	20											

URS Greiner Woodward-Clyde

Report: ENV_23A; Project File: H:\LONGVIEW.GPJ; Data Template:WC_CORP1.GDT Printed: 6/24/99

Appendix B
Groundwater Sampling Data Sheets

GROUNDWATER SAMPLING DATA SHEET

Well Number:	99EA 1A	Sample Number:	
Project Name:	TP Longview	Project/Task:	[illegible]
		Date:	1/9/99
Well Depth:	19.69	Measuring Point (MP):	TOP
Water Depth:	7.51	Elevation of MP:	—
Feet of Water:	12.18	Elevation of Water:	—
Gallons per Foot:	.16		
Well Volume:	1.94	Well Diameter:	2"
Purge Volume:	5.82		

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

Purge Method:	2" grundfos	pH meter:	Horiba
Sample Method:	bailer / pump	Eh meter:	
Water Disposal:	drum	Conductivity meter:	
Weather:	Cloudy	D.O. Meter:	
Sampler(s):	TM/RA/KG	Calibration Date:	1/17/99

QA/QC Samples

Blind Duplicate	
MS/MSD	
Replicate	
Blank	

[illegible]

Time 5:5[illegible]

Field Parameters	0 Volumes	1 Volume	2 Volumes	3 Volumes	4 Volumes	5 Volumes	Sample
Temperature	14.0	14.4	[illegible]	14.4			6 1L
pH	6.03	6.72	6.5[illegible]	6.44			1L Plastic
Conductivity	.324	.302	.2[illegible]	.241			1 500 ml
Eh	—	—	—	—			
Dissolved Oxygen	—	—	—	—			
Turbidity	350	120	95	76			
Time	15 16pm	15[illegible]	15:21	15:23			

BOTTLE REQUIREMENTS

Analysis	Bottle Type	Number	Number MS/MSD	Bottle Type	Bottle Number	Number MS/MSD

GROUNDWATER SAMPLING DATA SHEET

Well Number:	99ES2-3	Sample Number:	
Project Name:	TP	Project/Task:	5402000003
		Date:	1/13/99
Well Depth:	13.52	Measuring Point (MP):	TOC
Water Depth:	3.21	Elevation of MP:	-
Feet of Water:	10.41	Elevation of Water:	-
Gallons per Foot:	.16		
		Well Diameter:	2"
Well Volume:	1.6 -		
Purge Volume:	4.7		

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

Purge Method:	2" Grundfos	pH meter:	Horiba
Sample Method:	1 pump/Galen	Eh meter:	
Water Disposal:	drum	Conductivity meter:	
Weather:	Cloudy	D.O. Meter:	
Sampler(s):	TH/JA/KG	Calibration Date:	1/13/99

QA/QC Samples

Blind Duplicate

MS/MSD

Replicate

Blank

return ≈ 45 gallons

Field Parameters	0 Volumes	1 Volume	2 Volumes	3 Volumes	4 Volumes	5 Volumes	Sample
Temperature	14	14.6	14.3	14.5	[illegible]		[illegible]
pH	5.82	6.12	6.13	6.23	[illegible]		[illegible]
Conductivity	1436	[illegible]	[illegible]	[illegible]	[illegible]		[illegible]
Eh	-	-	-	-	-		
Dissolved Oxygen	-	-	-	-	-		
Turbidity	534	1.5	25	43	108		
Time	[illegible]	2:33pm	2:42pm	2:52	1455		

BOTTLE REQUIREMENTS

Analysis	Bottle Type	Number	Number MS/MSD	Bottle Type	Bottle Number	Number MS/MSD

Woodward-Clyde

GROUNDWATER SAMPLING DATA SHEET

Well Number:	99EA3A	Sample Number:	
Project Name:	TP	Project/Task:	54A02003A
		Date:	1/13/98
Well Depth:	20.5	Measuring Point (MP):	TOP
Water Depth:	8.91	Elevation of MP:	-
Feet of Water:	11.59	Elevation of Water:	
Gallons per Foot:	.16		
		Well Diameter:	2"
Well Volume:	1.85		
Purge Volume:	6gallons		

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

Purge Method:	2" Grundfos	pH meter:	Horiba
Sample Method:	Pump/bailer	Eh meter:	
Water Disposal:	drum	Conductivity meter:	
Weather:	cloudy	D.O. Meter:	
Sampler(s):	TM/JA/KG	Calibration Date:	1/13/98

QA/QC Samples

Blind Duplicate	99 EA3D - 12:17pm
MS/MSD	12:35
Replicate	
Blank	

dk brn - silty fine clmn ... gpm
- slow ...
≈ 35-45 gallons

Field Parameters	0 Volumes	1 Volume	2 Volumes	3 Volumes	4 Volumes	5 Volumes	Sample
Temperature	15.7	15.8	15.9	15.9	15.7	16.3	6/L x2
pH	6.27	6.33	6.35	6.33	6.32	6.31	950ml x2
Conductivity	.660	.617	.585	.575	.559	.560	1L Plast x2
Eh	-	-	-	-	-	-	
Dissolved Oxygen	-	-	-	-	-	-	6VOA
Turbidity	59	29	21	14	7	4	
Time	12:00pm	12:03pm	12:06	12:08pm	12:20	12:27	12:10

VOCs e 12:32pm
12:35pm

BOTTLE REQUIREMENTS

Analysis	Bottle Type	Number	Number MS/MSD	Bottle Type	Bottle Number	Number MS/MSD

Woodward-Clyde

Appendix C

QA/QC Review And Laboratory Data Sheets

QA/QC REVIEW OF LABORATORY ANALYTICAL DATA

The analytical results for four water and seven soil samples collected in January 1999 were subject to a QA/QC review including the following:

* Chain of custody and holding times
* Blank review
* Surrogate review
* Matrix/blank spike review
* Duplicate review
* Reporting limits

Samples were collected by URS Greiner Woodward Clyde and analyzed by Oregon Analytical Laboratory of Beaverton, Oregon and Sound Analytical Services of Tacoma, Washington. Samples were submitted to the laboratory between January 5 and 13, 1999. Samples were analyzed for one or more of the following: diesel range hydrocarbons by NWTPH-Dx, volatile organic compounds (VOC's) by United States Environmental Protection Agency (EPA) method 8260, semivolatile organic compounds (SVOC's) by EPA method 8270, low level polynuclear aromatic hydrocarbons (PAH's) by EPA method 8270 SIM, chlorinated pesticides and PCB's by EPA method 8080/8081, organophosphorous pesticides by EPA method 8141 MOD, chlorinated herbicides by EPA method 8150 MOD, total and dissolved metals by EPA method 6010/200, mercury by EPA method 7470, conventionals (cyanide, alkalinity, chloride, fluoride, nitrate, sulfide and sulfate) by EPA 300 series methods, and pH by EPA method 9045.

Summary

All analytical data are acceptable for project uses. The pesticides/PCB's and sulfide data for sample data group L9664 were qualified as estimated (J) due to missed holding times. The sulfide data for sample data group L9540 were qualified as estimated (J) due to missed hold times. The method and trip blanks were free of contaminants. No data were qualified due to surrogate percent recoveries. Seven soil samples were qualified as estimated (J) due to low fluoride blank spike percent recoveries. Four water samples were qualified as estimated (J) due to low sulfide, alkalinity and cadmium matrix and blank spike percent recoveries. Laboratory duplicate results were comparable. The laboratory reporting limits are acceptable.

Chain of Custody and Holding Times

The chain of custody forms indicate that samples were maintained under chain of custody, the forms were signed during release and receipt, and that the samples were chilled and appropriately preserved. The laboratory report is complete.

The holding times were met, with the following exceptions. The soil and water holding time for sulfide is 7 days from collection until analysis. Samples 99EA-SB1-8.5-10, 99EA-SB1-14.5-13, 99EA-SB2-7-8.5, 99EA-SB2-8.5-10, 99EA-SB3-5.5-7, 99EA-SB3-8.5-10, 99EA-SB3-10-11.5, 99EA 3A, 99EA 3D, 99EA 2A and 99EA 1A were analyzed past the holding time and are qualified as estimated (J). The water holding time for chlorinated pesticides and PCB's is 7 days from collection to extraction and 40 days from extraction to analysis. Samples 99EA 3A, 99EA 3D, 99EA 2A and 99EA 1A were extracted past the holding time and are qualified as estimated (J).

Review of Blanks

The laboratory analyzed one batch method blank for each method. The method blanks did not have detectable levels of any analyte. No data were qualified due to these results. Two trip blanks were analyzed for VOC's. The trip blanks did not have detectable levels of any analyte. No data were qualified due to these results.

Surrogate Recovery Review

Each sample was spiked with a surrogate (system monitoring compound) for applicable analyses. The surrogate percent recoveries were within the control limits with the following exceptions.

- One of the three VOC surrogate percent recoveries was above the control limits for sample 99EA-SB2-7-8.5. Associated quality control data were within the control limits; therefore no data were qualified.
- One of the three PAH (8270 SIM) surrogate recoveries was below the control limits for sample 99EA-SB2-7-8.5. Associated quality control data were within the control limits; therefore no data were qualified.
- One of the six SVOC's surrogate percent recoveries was above the control limits for samples 99EA-SB2-7-8.5, 99EA-SB2-8.5-10, and 99EA-SB3-8.5-10. Associated quality control data were within the control limits; therefore, no data were qualified.
- One of the six SVOC surrogate percent recoveries was below the control limits for sample 99EA-SB3-5.5-7. Associated quality control data were within the control limits; therefore, no data were qualified.
- One of the two pesticides/PCB's surrogate recoveries were below the control limits for samples 99EA 2A and 99EA 1A. Associated quality control data were within the control limits; therefore, no data were qualified.

Matrix Spike/Matrix Spike Duplicate Review

The laboratory analyzed a matrix spike/matrix spike duplicate or a blank spike/blank spike duplicate for all analyses. The percent recoveries and duplicate RPD's were within the control limits with the exceptions listed below.

- Water matrix spike L9664: the percent recovery was below the control limit for sulfide at 0%. The associated blank spike was within the control limits; however, associated data were qualified as estimated (J).

- Soil matrix spike L9540: the percent recovery was below the control limit for fluoride at 72%. Associated data were qualified as estimated (J).

- Soil matrix spike L9540: the percent recovery was above the control limit for selenium at 146%. Associated data were non-detect; therefore, no data were qualified.

- Water matrix spike L9664: the percent recovery was below the control limit for alkalinity at 80%. Associated data were qualified as estimated (J).

- Water blank spike L9664: the percent recovery for cadmium was below the control limit at 70%. Associated data were qualified as estimated (J).

Duplicate Review

One water field duplicate was collected during this sampling round. Field duplicate results were comparable. Laboratory duplicates were performed on the following analyses: conventionals, total and dissolved metals, and NWTPH-Dx. Duplicate results greater than five times the reporting limit, are summarized in the following table.

Sample ID/Dup ID	Analyte	Primary Result	Dup Result	RPD %
L9664	alkalinity	210 mg/L	210 mg/L	0
	chloride	21 mg/L	21 mg/L	0
	fluoride	1.0 mg/L	1.0 mg/L	0
	sulfate	5.2 mg/L	5.2 mg/L	0
	total arsenic	0.0067 mg/L	0.0068 mg/L	15
	total lead	0.0148 mg/L	0.0138 mg/L	7

Reporting Limits

The reporting limits are summarized in the table below. Many of the samples required dilution due to high analyte concentration; however, reporting limits meet the project needs.

Analyte	Water Reporting Limit µg/L	Soil Reporting Limit mg/kg
diesel	0.25 mg/L	25 to 250
VOC's	1.0 to 20	10 to 7000 µg/kg
SVOC's	10 to 50	0.33 to 165
PAH's	0.1 to 1.0	10 to10,000 µg/kg
PCB's/pesticides	0.01 to 1	2 to 320 µg/kg
organophosphorous pesticides	0.094 to 0.5	17 to 150 µg/kg
herbicides	0.093 to 0.095	8.4 to 15 µg/kg
total metals	0.05 to 20	0.1 to 2.0
dissolved metals	0.05 to 20	NA
conventionals	0.02 to 1.0 mg/L	1.0
sulfide	2.0	20
sulfate	0.5	5.0

Completeness

The laboratory reported all requested analyses and the laboratory report is complete. Based on the QA/QC review, some data were qualified as estimated (J). The following table summarizes the sample IDs and qualified results for all samples covered by this review:

Sample ID	Laboratory Sample ID	Analyte	Qualifier
99EA-SB1-8.5-10	L9540-5	sulfide fluoride	J J
99EA-SB1-14.5-16	L9540-9	sulfide fluoride	J J
99EA-SB2-7-8.5	L9540-13	sulfide fluoride	J J
99EA-SB2-8.5-10	L9540-14	sulfide fluoride	J J
99EA-SB3-5.5-7	L9540-17	sulfide fluoride	J J
99EA-SB3-8.5-10	L9540-19	sulfide fluoride	J J
99EA-SB3-10-11.5	L9540-20	sulfide fluoride	J J
99EA 3A	L9664-1	sulfide alkalinity total cadmium pesticides/PCB's	J J J J
99EA 3D	L9664-2	sulfide	J

Sample ID	Laboratory Sample ID	Analyte	Qualifier
		alkalinity	J
		total cadmium	J
		pesticides/PCB's	J
99EA 2A	L9664-3	sulfide	J
		alkalinity	J
		total cadmium	J
		pesticides/PCB's	J
99EA 1A	L9664-4	sulfide	J
		alkalinity	J
		total cadmium	J
		pesticides/PCB's	J
Trip Blank 1/13/99	L9664-5	none	

OAL

MEMO

To: Michelle McClelland, Woodward Clyde
From: Patty Boyden
Subject: IP Data L9540
Date: 1/29/99

Enclosed, please find the following:

- Final results for IP soil samples that were collected on January 5, 1999 (OAL# L9540).
- NWTPH-Dx Chromatograms
- QC data for all parameters except herbicides, pesticides +PCBs, organophosphorus pesticides and reactive sulfide. Remaining QC data will be mailed to you as soon as we receive from our subcontractor. I anticipate that we will receive by next Wednesday (February 3rd). Electronic data deliverables will be emailed to you by next Monday or Tuesday.

If you have any questions, feel free to contact me at (503) 590-1338.
Thank you,

Patty Boyden
Project Manager

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

February 2, 1999

Michelle McClelland
Woodward Clyde Consultants
1501 Fourth Avenue
Suite 1500
Seattle, WA 98101

Phone: (206) 343-7933 ext: 225
FAX: (206) 343-0513

Re: Laboratory Sample Analysis

Project: 5491C0796B.00
IP - Longview

Project Manager: Michelle McClelland

Dear Michelle McClelland:

On Wednesday, January 6, 1999, OAL received twenty (20) soil samples for analysis. The samples were analyzed utilizing EPA, ASTM, or equivalent methodology.

Should you have any questions concerning the results in this report, please contact us at (503) 590-5300. Refer to OAL login number L9540.

Sincerely,

Patty Boyden
Project Manager

Suzanne LeMay
QA/QC Officer

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Sample Summary

Sample ID	Lab #	Description	Sampled	Received
99EA-SB1-2-4	L9540-1	soil	01/05/99	01/06/99
99EA-SB1-4-5.5	L9540-2	soil	01/05/99	01/06/99
99EA-SB1-5.5-7	L9540-3	soil	01/05/99	01/06/99
99EA-SB1-7-8.5	L9540-4	soil	01/05/99	01/06/99
99EA-SB1-8.5-10	L9540-5	soil	01/05/99	01/06/99
99EA-SB1-10-11.5	L9540-6	soil	01/05/99	01/06/99
99EA-SB1-11.5-13	L9540-7	soil	01/05/99	01/06/99
99EA-SB1-13-14.5	L9540-8	soil	01/05/99	01/06/99
99EA-SB1-14.5-16	L9540-9	soil	01/05/99	01/06/99
99EA-SB2-2.5-4	L9540-10	soil	01/05/99	01/06/99
99EA-SB2-4-5.5	L9540-11	soil	01/05/99	01/06/99
99EA-SB2-5.5-7	L9540-12	soil	01/05/99	01/06/99
99EA-SB2-7-8.5	L9540-13	soil	01/05/99	01/06/99
99EA-SB2-8.5-10	L9540-14	soil	01/05/99	01/06/99
99EA-SB3-2.5-4	L9540-15	soil	01/05/99	01/06/99
99EA-SB3-4-5.5	L9540-16	soil	01/05/99	01/06/99
99EA-SB3-5.5-7	L9540-17	soil	01/05/99	01/06/99
99EA-SB3-7-8.5	L9540-18	soil	01/05/99	01/06/99
99EA-SB3-8.5-10	L9540-19	soil	01/05/99	01/06/99
99EA-SB3-10-11.5	L9540-20	soil	01/05/99	01/06/99

Definition of Terms

D	Reported value is based on a dilution.
D1	Reported value is based on a dilution due to matrix interference.
K1	Batch matrix spike recovery outside laboratory QC limits due to suspected matrix interference.
ND	Analytical result was below the reporting limit.
Y	Analysis was subcontracted. A copy of the subcontractor's final report will be made available upon request.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007

OAL

L9540

Analysts

Initials	Analyst	Title
CAC	Cindy Covey	Technician
CV	Cheryl Vezzani	Chemist
DM	Dan Miller	Organics Chemist
DMC²	Debbie McBreen-McKenzie	Chemist /Supervisor
GCK	Bill Kernion	Chemist
NB	Nancy Boss	Technician
PB	Pat Buddrus	Organics Chemist
RJ	Rick Jordan	Chemist

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007

OAL

L9540

Method Summary

Analysis	Method
8260 Volatile Organic Compounds (VOC)	EPA 8260
Antimony	EPA 200.7/6010
Arsenic	EPA 200.9
Beryllium	EPA 200.7/6010
Cadmium	EPA 200.7/6010
Chloride	EPA 300.0
Chlorinated Herbicides	EPA 8150 MOD
Chlorinated Pesticides and PCBs	EPA 8080/8081
Chromium	EPA 200.7/6010
Copper	EPA 200.7/6010
Cyanide, Total	EPA 335.3/9010
Fluoride	EPA 300.0
Lead	EPA 200.9
Mercury	EPA 245.5/7471A
Nickel	EPA 200.7/6010
Nitrate as N	EPA 300.0
Organophosphorus Pesticides	EPA 8141 MOD
Polynuclear Aromatic Hydrocarbons (PNA)	EPA 8270 SIM
Selenium	EPA 200.9
Semi-Volatile Petroleum Products	NWTPH-DX
Semivolatiles	EPA 8270
Silver	EPA 200.7/6010
Sulfate as SO4	EPA 300.0
Sulfide, Reactive	SW846 7.3.4
Thallium	EPA 200.9
Zinc	EPA 200.7/6010
pH	EPA 9045

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Inorganics

Sample ID / *Matrix* / Analyte	Result	Reporting Limit	Units	Date Analyzed / Method	Comment	Analyst / *Lab Number*
99EA-SB1-8.5-10 / *Soil*				**Sampled:** *01/05/99*		*L9540-5*
Chloride	3.	1.	mg/kg	01/08/99 EPA 300.0		CAC
Cyanide, Total	ND	1.	mg/kg	01/15/99 EPA 335.3/9010		NB
Fluoride	ND J	1.0	mg/kg	01/08/99 EPA 300.0	K1	CAC
Nitrate as N	ND	1.	mg/kg	01/08/99 EPA 300.0		CAC
Sulfate as SO4	ND	5.	mg/kg	01/08/99 EPA 300.0		CAC
Sulfide, Reactive	ND J	20	mg/kg	01/13/99 SW846 7.3.4	Y	
pH	6.0		Std Units	01/08/99 EPA 9045		CAC
99EA-SB1-14.5-16 / *Soil*				**Sampled:** *01/05/99*		*L9540-9*
Chloride	2.	1.	mg/kg	01/08/99 EPA 300.0		CAC
Cyanide, Total	ND	1.	mg/kg	01/15/99 EPA 335.3/9010		NB
Fluoride	ND J	1.0	mg/kg	01/08/99 EPA 300.0	K1	CAC
Nitrate as N	ND	1.	mg/kg	01/08/99 EPA 300.0		CAC
Sulfate as SO4	ND	5.	mg/kg	01/08/99 EPA 300.0		CAC
Sulfide, Reactive	ND J	20	mg/kg	01/13/99 SW846 7.3.4	Y	
pH	6.2		Std Units	01/08/99 EPA 9045		CAC
99EA-SB2-7-8.5 / *Soil*				**Sampled:** *01/05/99*		*L9540-13*
Chloride	2.	1.	mg/kg	01/08/99 EPA 300.0		CAC
Cyanide, Total	ND	1.	mg/kg	01/15/99 EPA 335.3/9010		NB
Fluoride	ND J	1.0	mg/kg	01/08/99 EPA 300.0	K1	CAC
Nitrate as N	ND	1.	mg/kg	01/08/99 EPA 300.0		CAC
Sulfate as SO4	ND	5.	mg/kg	01/08/99 EPA 300.0		CAC
Sulfide, Reactive	ND J	20	mg/kg	01/13/99 SW846 7.3.4	Y	
pH	5.4		Std Units	01/08/99 EPA 9045		CAC

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Inorganics

Analyte	Result	Reporting Limit	Units	Date Analyzed	Method	Comment	Analyst
99EA-SB2-8.5-10 ***Soil***				**Sampled:*01/05/99***			***L9540-14***
Chloride	ND	1.	mg/kg	01/08/99	EPA 300.0		CAC
Cyanide, Total	ND	1.	mg/kg	01/15/99	EPA 335.3/9010		NB
Fluoride	ND J	1.0	mg/kg	01/08/99	EPA 300.0	K1	CAC
Nitrate as N	ND	1.	mg/kg	01/08/99	EPA 300.0		CAC
Sulfate as SO4	ND	5.	mg/kg	01/08/99	EPA 300.0		CAC
Sulfide, Reactive	ND J	20	mg/kg	01/13/99	SW846 7.3.4	Y	
pH	5.6		Std Units	01/08/99	EPA 9045		CAC
99EA-SB3-5.5-7 ***Soil***				**Sampled:*01/05/99***			***L9540-17***
Chloride	5.	1.	mg/kg	01/08/99	EPA 300.0		CAC
Cyanide, Total	ND	1.	mg/kg	01/15/99	EPA 335.3/9010		NB
Fluoride	ND J	1.0	mg/kg	01/08/99	EPA 300.0	K1	CAC
Nitrate as N	ND	1.	mg/kg	01/08/99	EPA 300.0		CAC
Sulfate as SO4	6.	5.	mg/kg	01/08/99	EPA 300.0		CAC
Sulfide, Reactive	ND J	20	mg/kg	01/13/99	SW846 7.3.4	Y	
pH	5.2		Std Units	01/08/99	EPA 9045		CAC
99EA-SB3-8.5-10 ***Soil***				**Sampled:*01/05/99***			***L9540-19***
Chloride	2.	1.	mg/kg	01/08/99	EPA 300.0		CAC
Cyanide, Total	ND	1.	mg/kg	01/15/99	EPA 335.3/9010		NB
Fluoride	ND J	1.0	mg/kg	01/08/99	EPA 300.0	K1	CAC
Nitrate as N	ND	1.	mg/kg	01/08/99	EPA 300.0		CAC
Sulfate as SO4	ND	5.	mg/kg	01/08/99	EPA 300.0		CAC
Sulfide, Reactive	ND J	20	mg/kg	01/13/99	SW846 7.3.4	Y	
pH	5.3		Std Units	01/08/99	EPA 9045		CAC

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Inorganics

Sample ID	*Matrix*							*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units**	**Date Analyzed**	**Method**		**Comment**	**Analyst**
99EA-SB3-10-11.5	*Soil*				**Sampled:** *01/05/99*			*L9540-20*
Chloride	2.	1.	mg/kg	01/08/99	EPA 300.0			CAC
Cyanide, Total	ND	1.	mg/kg	01/15/99	EPA 335.3/9010			NB
Fluoride	ND J	1.0	mg/kg	01/08/99	EPA 300.0		K1	CAC
Nitrate as N	ND	1.	mg/kg	01/08/99	EPA 300.0			CAC
Sulfate as SO4	ND	5.	mg/kg	01/08/99	EPA 300.0			CAC
Sulfide, Reactive	ND J	20	mg/kg	01/13/99	SW846 7.3.4		Y	
pH	6.1		Std Units	01/08/99	EPA 9045			CAC

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Total Metals

Sample ID	*Matrix*							*Lab Numbe*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**	**Comment**	**Analyst**	
				Sampled: *01/05/99* ✓				
				Hot Plate Digestion EPA 200.2/3050A: *01/15/99* ✓				
99EA-SB1-8.5-10	*Soil*			**Mercury Digestion:** *01/18/99* ✓				*L9540-5*
Antimony	ND	2.0	mg/kg	01/18/99	EPA 200.7/6010		CV	
Arsenic	1.1	1.0	mg/kg	01/19/99	EPA 200.9	D1	CV	
Beryllium	ND	0.10	mg/kg	01/18/99	EPA 200.7/6010		CV	
Cadmium	ND	0.20	mg/kg	01/18/99	EPA 200.7/6010		CV	
Chromium	6.68	0.50	mg/kg	01/18/99	EPA 200.7/6010		CV	
Copper	15.4	0.20	mg/kg	01/18/99	EPA 200.7/6010		CV	
Lead	1.1	0.50	mg/kg	01/18/99	EPA 200.9	D1	GCK	
Mercury	ND	0.10	mg/kg	01/20/99	EPA 245.5/7471A		GCK	
Nickel	8.3	1.0	mg/kg	01/18/99	EPA 200.7/6010		CV	
Selenium	ND	1.0	mg/kg	01/19/99	EPA 200.9	D1	CV	
Silver	ND	0.30	mg/kg	01/18/99	EPA 200.7/6010		CV	
Thallium	ND	1.0	mg/kg	01/20/99	EPA 200.9	D1	DMC	
Zinc	21.6	1.0	mg/kg	01/18/99	EPA 200.7/6010		CV	

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Total Metals

Sample ID	*Matrix*							*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**		**Comment**	**Analys**
					Sampled: *01/05/99* ✓			
					Hot Plate Digestion EPA 200.2/3050A: *01/15/99* ✓			
99EA-SB1-14.5-16	*Soil*				**Mercury Digestion:** *01/18/99* ✓			*L9540-9*
Antimony	ND	2.0	mg/kg	01/18/99	EPA 200.7/6010			CV
Arsenic	1.4	1.0	mg/kg	01/19/99	EPA 200.9		D1	CV
Beryllium	ND	0.10	mg/kg	01/18/99	EPA 200.7/6010			CV
Cadmium	ND	0.20	mg/kg	01/18/99	EPA 200.7/6010			CV
Chromium	7.08	0.50	mg/kg	01/18/99	EPA 200.7/6010			CV
Copper	18.4	0.20	mg/kg	01/18/99	EPA 200.7/6010			CV
Lead	1.2	0.50	mg/kg	01/18/99	EPA 200.9		D1	GCK
Mercury	ND	0.10	mg/kg	01/20/99	EPA 245.5/7471A			GCK
Nickel	10.1	1.0	mg/kg	01/18/99	EPA 200.7/6010			CV
Selenium	ND	1.0	mg/kg	01/19/99	EPA 200.9		D1	CV
Silver	ND	0.30	mg/kg	01/18/99	EPA 200.7/6010			CV
Thallium	ND	1.0	mg/kg	01/20/99	EPA 200.9		D1	DMC²
Zinc	23.6	1.0	mg/kg	01/18/99	EPA 200.7/6010			CV

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Total Metals

Sample ID	*Matrix*							*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**	**Comment**	**Analyst**
					Sampled: *01/05/99*			
					Hot Plate Digestion EPA 200.2/3050A: *01/15/99*			
99EA-SB2-7-8.5	*Soil*				**Mercury Digestion:** *01/18/99*			*L9540-13*
Antimony		ND	2.0	mg/kg	01/18/99	EPA 200.7/6010		CV
Arsenic		ND	1.0	mg/kg	01/19/99	EPA 200.9	D1	CV
Beryllium		ND	0.10	mg/kg	01/18/99	EPA 200.7/6010		CV
Cadmium		ND	0.20	mg/kg	01/18/99	EPA 200.7/6010		CV
Chromium		5.93	0.50	mg/kg	01/18/99	EPA 200.7/6010		CV
Copper		14.4	0.20	mg/kg	01/18/99	EPA 200.7/6010		CV
Lead		1.3	0.50	mg/kg	01/18/99	EPA 200.9	D1	GCK
Mercury		ND	0.10	mg/kg	01/20/99	EPA 245.5/7471A		GCK
Nickel		8.1	1.0	mg/kg	01/18/99	EPA 200.7/6010		CV
Selenium		ND	1.0	mg/kg	01/19/99	EPA 200.9	D1	CV
Silver		ND	0.30	mg/kg	01/18/99	EPA 200.7/6010		CV
Thallium		ND	1.0	mg/kg	01/20/99	EPA 200.9	D1	DMC[2]
Zinc		23.2	1.0	mg/kg	01/18/99	EPA 200.7/6010		CV

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Total Metals

Sample ID	*Matrix*							*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**		**Comment**	**Analys**
					Sampled: *01/05/99* ✓			
					Hot Plate Digestion EPA 200.2/3050A: *01/15/99* ✓			
99EA-SB2-8.5-10	*Soil*				**Mercury Digestion:** *01/18/99* ✓			*L9540-14*
Antimony	ND	2.0	mg/kg	01/18/99	EPA 200.7/6010			CV
Arsenic	1.1	1.0	mg/kg	01/19/99	EPA 200.9		D1	CV
Beryllium	ND	0.10	mg/kg	01/18/99	EPA 200.7/6010			CV
Cadmium	ND	0.20	mg/kg	01/18/99	EPA 200.7/6010			CV
Chromium	6.97	0.50	mg/kg	01/18/99	EPA 200.7/6010			CV
Copper	15.6	0.20	mg/kg	01/18/99	EPA 200.7/6010			CV
Lead	1.1	0.50	mg/kg	01/18/99	EPA 200.9		D1	GCK
Mercury	ND	0.10	mg/kg	01/20/99	EPA 245.5/7471A			GCK
Nickel	8.8	1.0	mg/kg	01/18/99	EPA 200.7/6010			CV
Selenium	ND	1.0	mg/kg	01/19/99	EPA 200.9		D1	CV
Silver	ND	0.30	mg/kg	01/18/99	EPA 200.7/6010			CV
Thallium	ND	1.0	mg/kg	01/20/99	EPA 200.9		D1	DMC²
Zinc	23.6	1.0	mg/kg	01/18/99	EPA 200.7/6010			CV

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Total Metals

Sample ID	*Matrix*							*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**	**Comment**	**Analyst**	
				Sampled: *01/05/99*				
				Hot Plate Digestion EPA 200.2/3050A: *01/15/99*				
99EA-SB3-5.5-7	*Soil*			**Mercury Digestion:** *01/18/99*				*L9540-17*
Antimony	ND	2.0	mg/kg	01/18/99	EPA 200.7/6010		CV	
Arsenic	1.6	1.0	mg/kg	01/19/99	EPA 200.9	D1	CV	
Beryllium	0.10	0.10	mg/kg	01/18/99	EPA 200.7/6010		CV	
Cadmium	ND	0.20	mg/kg	01/18/99	EPA 200.7/6010		CV	
Chromium	7.17	0.50	mg/kg	01/18/99	EPA 200.7/6010		CV	
Copper	22.6	0.20	mg/kg	01/18/99	EPA 200.7/6010		CV	
Lead	11.7	0.50	mg/kg	01/18/99	EPA 200.9	D1	GCK	
Mercury	ND	0.10	mg/kg	01/20/99	EPA 245.5/7471A		GCK	
Nickel	9.2	1.0	mg/kg	01/18/99	EPA 200.7/6010		CV	
Selenium	ND	1.0	mg/kg	01/19/99	EPA 200.9	D1	CV	
Silver	ND	0.30	mg/kg	01/18/99	EPA 200.7/6010		CV	
Thallium	ND	1.0	mg/kg	01/20/99	EPA 200.9	D1	DMC[2]	
Zinc	48.2	1.0	mg/kg	01/18/99	EPA 200.7/6010		CV	

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Total Metals

Sample ID / Analyte	*Matrix* / Result	Reporting Limit	Units (ppm)	Date Analyzed	Method	Comment	*Lab Number* / Analyst
				Sampled: *01/05/99*			
				Hot Plate Digestion EPA 200.2/3050A: *01/15/99*			
99EA-SB3-8.5-10	*Soil*			Mercury Digestion: *01/18/99*			*L9540-19*
Antimony	ND	2.0	mg/kg	01/18/99	EPA 200.7/6010		CV
Arsenic	ND	1.0	mg/kg	01/19/99	EPA 200.9	D1	CV
Beryllium	ND	0.10	mg/kg	01/18/99	EPA 200.7/6010		CV
Cadmium	ND	0.20	mg/kg	01/18/99	EPA 200.7/6010		CV
Chromium	4.0	0.50	mg/kg	01/18/99	EPA 200.7/6010		CV
Copper	11.0	0.20	mg/kg	01/18/99	EPA 200.7/6010		CV
Lead	0.80	0.50	mg/kg	01/18/99	EPA 200.9	D1	GCK
Mercury	ND	0.10	mg/kg	01/20/99	EPA 245.5/7471A		GCK
Nickel	7.3	1.0	mg/kg	01/18/99	EPA 200.7/6010		CV
Selenium	ND	1.0	mg/kg	01/19/99	EPA 200.9	D1	CV
Silver	ND	0.30	mg/kg	01/18/99	EPA 200.7/6010		CV
Thallium	ND	1.0	mg/kg	01/20/99	EPA 200.9	D1	DMC[2]
Zinc	15.7	1.0	mg/kg	01/18/99	EPA 200.7/6010		CV

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Total Metals

Sample ID	*Matrix*							*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**	**Comment**	**Analyst**	
					Sampled: *01/05/99*			
					Hot Plate Digestion EPA 200.2/3050A: *01/15/99*			
99EA-SB3-10-11.5	*Soil*				**Mercury Digestion:** *01/18/99*			*L9540-20*
Antimony	ND	2.0	mg/kg	01/18/99	EPA 200.7/6010		CV	
Arsenic	ND	1.0	mg/kg	01/19/99	EPA 200.9	D1	CV	
Beryllium	ND	0.10	mg/kg	01/18/99	EPA 200.7/6010		CV	
Cadmium	ND	0.20	mg/kg	01/18/99	EPA 200.7/6010		CV	
Chromium	6.41	0.50	mg/kg	01/18/99	EPA 200.7/6010		CV	
Copper	17.8	0.20	mg/kg	01/18/99	EPA 200.7/6010		CV	
Lead	1.2	0.50	mg/kg	01/18/99	EPA 200.9	D1	GCK	
Mercury	ND	0.10	mg/kg	01/20/99	EPA 245.5/7471A		GCK	
Nickel	8.6	1.0	mg/kg	01/18/99	EPA 200.7/6010		CV	
Selenium	ND	1.0	mg/kg	01/19/99	EPA 200.9	D1	CV	
Silver	ND	0.30	mg/kg	01/18/99	EPA 200.7/6010		CV	
Thallium	ND	1.0	mg/kg	01/20/99	EPA 200.9	D1	DMC[2]	
Zinc	20.5	1.0	mg/kg	01/18/99	EPA 200.7/6010		CV	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Chlorinated Herbicides
by EPA 8150 MOD

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**

99EA-SB1-8.5-10 ***Soil*** — **Sampled:** ***01/05/99*** **Analyzed:** ***01/12/99*** — ***L9540-5***

2,4,5-T	ND	11.	µg/kg	Y
2,4,5-TP (Silvex)	ND	11.	µg/kg	Y
2,4-D	ND	11.	µg/kg	Y
2,4-DB	ND	11.	µg/kg	Y
Dalapon	ND	11.	µg/kg	Y
Dicamba	ND	11.	µg/kg	Y
Dichloroprop	ND	11.	µg/kg	Y
Dinoseb	ND	11.	µg/kg	Y
MCPA	ND	11.	µg/kg	Y
MCPP	ND	11.	µg/kg	Y

Surrogate	Recovery	Limit
2,4,6-Tribromophenol	104.%	50. - 150.

99EA-SB1-14.5-16 ***Soil*** — **Sampled:** ***01/05/99*** **Analyzed:** ***01/12/99*** — ***L9540-9***

2,4,5-T	ND	11.	µg/kg	Y
2,4,5-TP (Silvex)	ND	11.	µg/kg	Y
2,4-D	ND	11.	µg/kg	Y
2,4-DB	ND	11.	µg/kg	Y
Dalapon	ND	11.	µg/kg	Y
Dicamba	ND	11.	µg/kg	Y
Dichloroprop	ND	11.	µg/kg	Y
Dinoseb	ND	11.	µg/kg	Y
MCPA	ND	11.	µg/kg	Y
MCPP	ND	11.	µg/kg	Y

Surrogate	Recovery	Limit
2,4,6-Tribromophenol	106.%	50. - 150.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Chlorinated Herbicides
by EPA 8150 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB2-7-8.5	*Soil*				Sampled: *01/05/99* ✓ Analyzed: *01/12/99* ✓	*L9540-13*
2,4,5-T		ND	12.	µg/kg	Y	
2,4,5-TP (Silvex)		ND	12.	µg/kg	Y	
2,4-D		ND	12.	µg/kg	Y	
2,4-DB		ND	12.	µg/kg	Y	
Dalapon		ND	12.	µg/kg	Y	
Dicamba		ND	12.	µg/kg	Y	
Dichloroprop		ND	12.	µg/kg	Y	
Dinoseb		ND	12.	µg/kg	Y	
MCPA		ND	12.	µg/kg	Y	
MCPP		ND	12.	µg/kg	Y	
Surrogate				Recovery	Limit	
2,4,6-Tribromophenol				99.% ✓	50. - 150.	
99EA-SB2-8.5-10	*Soil*				Sampled: *01/05/99* Analyzed: *01/12/99* ✓	*L9540-14*
2,4,5-T		ND	13.	µg/kg	Y	
2,4,5-TP (Silvex)		ND	13.	µg/kg	Y	
2,4-D		ND	13.	µg/kg	Y	
2,4-DB		ND	13.	µg/kg	Y	
Dalapon		ND	13.	µg/kg	Y	
Dicamba		ND	13.	µg/kg	Y	
Dichloroprop		ND	13.	µg/kg	Y	
Dinoseb		ND	13.	µg/kg	Y	
MCPA		ND	13.	µg/kg	Y	
MCPP		ND	13.	µg/kg	Y	
Surrogate				Recovery	Limit	
2,4,6-Tribromophenol				97.% ✓	50. - 150.	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Chlorinated Herbicides
by EPA 8150 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB3-5.5-7	*Soil*				Sampled: *01/05/99* Analyzed: *01/12/99*	*L9540-17*
2,4,5-T		ND	15.	µg/kg	Y	
2,4,5-TP (Silvex)		ND	15.	µg/kg	Y	
2,4-D		ND	15.	µg/kg	Y	
2,4-DB		ND	15.	µg/kg	Y	
Dalapon		ND	15.	µg/kg	Y	
Dicamba		ND	15.	µg/kg	Y	
Dichloroprop		ND	15.	µg/kg	Y	
Dinoseb		ND	15.	µg/kg	Y	
MCPA		ND	15.	µg/kg	Y	
MCPP		ND	15.	µg/kg	Y	
Surrogate			Recovery		Limit	
2,4,6-Tribromophenol			109.%		50. - 150.	
99EA-SB3-8.5-10	*Soil*				Sampled: *01/05/99* Analyzed: *01/12/99*	*L9540-19*
2,4,5-T		ND	10.	µg/kg	Y	
2,4,5-TP (Silvex)		ND	10.	µg/kg	Y	
2,4-D		ND	10.	µg/kg	Y	
2,4-DB		ND	10.	µg/kg	Y	
Dalapon		ND	10.	µg/kg	Y	
Dicamba		ND	10.	µg/kg	Y	
Dichloroprop		ND	10.	µg/kg	Y	
Dinoseb		ND	10.	µg/kg	Y	
MCPA		ND	10.	µg/kg	Y	
MCPP		ND	10.	µg/kg	Y	
Surrogate			Recovery		Limit	
2,4,6-Tribromophenol			107.%		50. - 150.	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Chlorinated Herbicides
by EPA 8150 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB3-10-11.5	*Soil*				*Sampled: 01/05/99* *Analyzed: 01/12/99*	*L9540-26*
2,4,5-T		ND	12.	µg/kg	Y	
2,4,5-TP (Silvex)		ND	12.	µg/kg	Y	
2,4-D		ND	12.	µg/kg	Y	
2,4-DB		ND	12.	µg/kg	Y	
Dalapon		ND	12.	µg/kg	Y	
Dicamba		ND	12.	µg/kg	Y	
Dichloroprop		ND	12.	µg/kg	Y	
Dinoseb		ND	12.	µg/kg	Y	
MCPA		ND	12.	µg/kg	Y	
MCPP		ND	12.	µg/kg	Y	

Surrogate	Recovery	Limit
2,4,6-Tribromophenol	99.%	50. - 150.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Chlorinated Pesticides and PCBs

by EPA 8080/8081

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB1-8.5-10	*Soil*				Sampled: *01/05/99* Analyzed: *01/19/99*	*L9540-5*
4,4'-DDD		ND	4.	µg/kg	Y	
4,4'-DDE		ND	4.	µg/kg	Y	
4,4'-DDT		ND	4.	µg/kg	Y	
Aldrin		ND	2.	µg/kg	Y	
Aroclor 1016		ND	110	µg/kg	Y	
Aroclor 1221		ND	110	µg/kg	Y	
Aroclor 1232		ND	110	µg/kg	Y	
Aroclor 1242		ND	110	µg/kg	Y	
Aroclor 1248		ND	110	µg/kg	Y	
Aroclor 1254		ND	110	µg/kg	Y	
Aroclor 1260		ND	110	µg/kg	Y	
Chlordane (Technical)		ND	21.	µg/kg	Y	
Dieldrin		ND	4.	µg/kg	Y	
Endosulfan I		ND	2.	µg/kg	Y	
Endosulfan II		ND	4.	µg/kg	Y	
Endosulfan sulfate		ND	4.	µg/kg	Y	
Endrin		ND	4.	µg/kg	Y	
Endrin aldehyde		ND	4.	µg/kg	Y	
Endrin ketone		ND	4.	µg/kg	Y	
Heptachlor		ND	2.	µg/kg	Y	
Heptachlor epoxide		ND	2.	µg/kg	Y	
Methoxychlor		ND	21.	µg/kg	Y	
Toxaphene		ND	210	µg/kg	Y	
alpha-BHC		ND	2.	µg/kg	Y	
beta-BHC		ND	2.	µg/kg	Y	
delta-BHC		ND	2.	µg/kg	Y	
gamma-BHC (Lindane)		ND	2.	µg/kg	Y	

Surrogate	Recovery	Limit	
Decachlorobiphenyl	91.%	50 - 150	Y
Tetrachloro-m-xylene	138.%	50 - 150	Y

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Chlorinated Pesticides and PCBs
by EPA 8080/8081

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB1-14.5-16	*Soil*				Sampled: *01/05/99* Analyzed: *01/19/99*	*L9540-*[illegible]
4,4'-DDD		ND	4.	µg/kg	Y	
4,4'-DDE		ND	4.	µg/kg	Y	
4,4'-DDT		ND	4.	µg/kg	Y	
Aldrin		ND	2.	µg/kg	Y	
Aroclor 1016		ND	110	µg/kg	Y	
Aroclor 1221		ND	110	µg/kg	Y	
Aroclor 1232		ND	110	µg/kg	Y	
Aroclor 1242		ND	110	µg/kg	Y	
Aroclor 1248		ND	110	µg/kg	Y	
Aroclor 1254		ND	110	µg/kg	Y	
Aroclor 1260		ND	110	µg/kg	Y	
Chlordane (Technical)		ND	21.	µg/kg	Y	
Dieldrin		ND	4.	µg/kg	Y	
Endosulfan I		ND	2.	µg/kg	Y	
Endosulfan II		ND	4.	µg/kg	Y	
Endosulfan sulfate		ND	4.	µg/kg	Y	
Endrin		ND	4.	µg/kg	Y	
Endrin aldehyde		ND	4.	µg/kg	Y	
Endrin ketone		ND	4.	µg/kg	Y	
Heptachlor		ND	2.	µg/kg	Y	
Heptachlor epoxide		ND	2.	µg/kg	Y	
Methoxychlor		ND	21.	µg/kg	Y	
Toxaphene		ND	210	µg/kg	Y	
alpha-BHC		ND	2.	µg/kg	Y	
beta-BHC		ND	2.	µg/kg	Y	
delta-BHC		ND	2.	µg/kg	Y	
gamma-BHC (Lindane)		ND	2.	µg/kg	Y	

Surrogate	Recovery	Limit	
Decachlorobiphenyl	102.%	50 - 150	Y
Tetrachloro-m-xylene	122.%	50 - 150	Y

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Chlorinated Pesticides and PCBs

by EPA 8080/8081

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB2-7-8.5	*Soil*				*Sampled: 01/05/99* *Analyzed: 01/19/99*	*L9540-13*
4,4'-DDD		ND	5.	µg/kg	Y	
4,4'-DDE		ND	5.	µg/kg	Y	
4,4'-DDT		ND	5.	µg/kg	Y	
Aldrin		ND	2.	µg/kg	Y	
Aroclor 1016		ND	120	µg/kg	Y	
Aroclor 1221		ND	120	µg/kg	Y	
Aroclor 1232		ND	120	µg/kg	Y	
Aroclor 1242		ND	120	µg/kg	Y	
Aroclor 1248		**470**	**120**	**µg/kg**	**Y**	
Aroclor 1254		ND	120	µg/kg	Y	
Aroclor 1260		ND	120	µg/kg	Y	
Chlordane (Technical)		ND	24.	µg/kg	Y	
Dieldrin		ND	5.	µg/kg	Y	
Endosulfan I		ND	2.	µg/kg	Y	
Endosulfan II		ND	5.	µg/kg	Y	
Endosulfan sulfate		ND	5.	µg/kg	Y	
Endrin		ND	5.	µg/kg	Y	
Endrin aldehyde		ND	5.	µg/kg	Y	
Endrin ketone		ND	5.	µg/kg	Y	
Heptachlor		ND	2.	µg/kg	Y	
Heptachlor epoxide		ND	2.	µg/kg	Y	
Methoxychlor		ND	24.	µg/kg	Y	
Toxaphene		ND	240	µg/kg	Y	
alpha-BHC		ND	2.	µg/kg	Y	
beta-BHC		ND	2.	µg/kg	Y	
delta-BHC		**6.**	**2.**	**µg/kg**	**Y**	
gamma-BHC (Lindane)		ND	2.	µg/kg	Y	

Surrogate	Recovery	Limit	
Decachlorobiphenyl	130.%	50 - 150	Y
Tetrachloro-m-xylene	98.%	50 - 150	Y

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Chlorinated Pesticides and PCBs

by EPA 8080/8081

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB2-8.5-10	*Soil*				Sampled: *01/05/99* Analyzed: *01/19/99*	*L9540-14*
4,4'-DDD		ND	5.	µg/kg	Y	
4,4'-DDE		ND	5.	µg/kg	Y	
4,4'-DDT		ND	5.	µg/kg	Y	
Aldrin		ND	3.	µg/kg	Y	
Aroclor 1016		ND	130	µg/kg	Y	
Aroclor 1221		ND	130	µg/kg	Y	
Aroclor 1232		ND	130	µg/kg	Y	
Aroclor 1242		ND	130	µg/kg	Y	
Aroclor 1248		ND	130	µg/kg	Y	
Aroclor 1254		ND	130	µg/kg	Y	
Aroclor 1260		ND	130	µg/kg	Y	
Chlordane (Technical)		ND	27.	µg/kg	Y	
Dieldrin		ND	5.	µg/kg	Y	
Endosulfan I		ND	3.	µg/kg	Y	
Endosulfan II		ND	5.	µg/kg	Y	
Endosulfan sulfate		ND	5.	µg/kg	Y	
Endrin		ND	5.	µg/kg	Y	
Endrin aldehyde		ND	5.	µg/kg	Y	
Endrin ketone		ND	5.	µg/kg	Y	
Heptachlor		ND	3.	µg/kg	Y	
Heptachlor epoxide		ND	3.	µg/kg	Y	
Methoxychlor		ND	27.	µg/kg	Y	
Toxaphene		ND	270	µg/kg	Y	
alpha-BHC		ND	3.	µg/kg	Y	
beta-BHC		ND	3.	µg/kg	Y	
delta-BHC		ND	3.	µg/kg	Y	
gamma-BHC (Lindane)		ND	3.	µg/kg	Y	

Surrogate	Recovery	Limit	
Decachlorobiphenyl	112.%	50 - 150	Y
Tetrachloro-m-xylene	112.%	50 - 150	Y

OAL

L9540

Client: *Woodward Clyde Consultants*
Contact: *Michelle McClelland*

Project: *5491C0796B.00*
IP - Longview

Chlorinated Pesticides and PCBs

by EPA 8080/8081

Sample ID	*Matrix*				*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB3-5.5-7	*Soil*		Sampled: *01/05/99* Analyzed: *01/19/99*		*L9540-17*
4,4'-DDD	ND	6.	µg/kg	Y	
4,4'-DDE	ND	6.	µg/kg	Y	
4,4'-DDT	ND	6.	µg/kg	Y	
Aldrin	ND	3.	µg/kg	Y	
Aroclor 1016	ND	160	µg/kg	Y	
Aroclor 1221	ND	160	µg/kg	Y	
Aroclor 1232	ND	160	µg/kg	Y	
Aroclor 1242	ND	160	µg/kg	Y	
Aroclor 1248	ND	160	µg/kg	Y	
Aroclor 1254	ND	160	µg/kg	Y	
Aroclor 1260	ND	160	µg/kg	Y	
Chlordane (Technical)	ND	32.	µg/kg	Y	
Dieldrin	ND	6.	µg/kg	Y	
Endosulfan I	ND	3.	µg/kg	Y	
Endosulfan II	ND	6.	µg/kg	Y	
Endosulfan sulfate	ND	6.	µg/kg	Y	
Endrin	ND	6.	µg/kg	Y	
Endrin aldehyde	ND	6.	µg/kg	Y	
Endrin ketone	ND	6.	µg/kg	Y	
Heptachlor	ND	3.	µg/kg	Y	
Heptachlor epoxide	ND	3.	µg/kg	Y	
Methoxychlor	ND	32.	µg/kg	Y	
Toxaphene	ND	320	µg/kg	Y	
alpha-BHC	ND	3.	µg/kg	Y	
beta-BHC	ND	3.	µg/kg	Y	
delta-BHC	ND	3.	µg/kg	Y	
gamma-BHC (Lindane)	ND	3.	µg/kg	Y	

Surrogate	Recovery	Limit	
Decachlorobiphenyl	88.%	50 - 150	Y
Tetrachloro-m-xylene	99.%	50 - 150	Y

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Chlorinated Pesticides and PCBs

by EPA 8080/8081

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**

99EA-SB3-8.5-10 *Soil* — Sampled: *01/05/99* Analyzed: *01/19/99* — *L9540-19*

Analyte	Result	Reporting Limit	Units (ppb)	Comment
4,4'-DDD	ND	4.	µg/kg	Y
4,4'-DDE	ND	4.	µg/kg	Y
4,4'-DDT	ND	4.	µg/kg	Y
Aldrin	ND	2.	µg/kg	Y
Aroclor 1016	ND	100	µg/kg	Y
Aroclor 1221	ND	100	µg/kg	Y
Aroclor 1232	ND	100	µg/kg	Y
Aroclor 1242	ND	100	µg/kg	Y
Aroclor 1248	ND	100	µg/kg	Y
Aroclor 1254	ND	100	µg/kg	Y
Aroclor 1260	ND	100	µg/kg	Y
Chlordane (Technical)	ND	21.	µg/kg	Y
Dieldrin	ND	4.	µg/kg	Y
Endosulfan I	ND	2.	µg/kg	Y
Endosulfan II	ND	4.	µg/kg	Y
Endosulfan sulfate	ND	4.	µg/kg	Y
Endrin	ND	4.	µg/kg	Y
Endrin aldehyde	ND	4.	µg/kg	Y
Endrin ketone	ND	4.	µg/kg	Y
Heptachlor	ND	2.	µg/kg	Y
Heptachlor epoxide	ND	2.	µg/kg	Y
Methoxychlor	ND	21.	µg/kg	Y
Toxaphene	ND	210	µg/kg	Y
alpha-BHC	ND	2.	µg/kg	Y
beta-BHC	ND	2.	µg/kg	Y
delta-BHC	ND	2.	µg/kg	Y
gamma-BHC (Lindane)	ND	2.	µg/kg	Y

Surrogate	Recovery	Limit	
Decachlorobiphenyl	80.%	50 - 150	Y
Tetrachloro-m-xylene	95.%	50 - 150	Y

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Chlorinated Pesticides and PCBs

by EPA 8080/8081

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
99EA-SB3-10-11.5	*Soil*			**Sampled:** *01/05/99* **Analyzed:** *01/19/99*	*L9540-20*
4,4'-DDD		ND	5.	µg/kg	Y
4,4'-DDE		ND	5.	µg/kg	Y
4,4'-DDT		ND	5.	µg/kg	Y
Aldrin		ND	2.	µg/kg	Y
Aroclor 1016		ND	120	µg/kg	Y
Aroclor 1221		ND	120	µg/kg	Y
Aroclor 1232		ND	120	µg/kg	Y
Aroclor 1242		ND	120	µg/kg	Y
Aroclor 1248		ND	120	µg/kg	Y
Aroclor 1254		ND	120	µg/kg	Y
Aroclor 1260		ND	120	µg/kg	Y
Chlordane (Technical)		ND	24.	µg/kg	Y
Dieldrin		ND	5.	µg/kg	Y
Endosulfan I		ND	2.	µg/kg	Y
Endosulfan II		ND	5.	µg/kg	Y
Endosulfan sulfate		ND	5.	µg/kg	Y
Endrin		ND	5.	µg/kg	Y
Endrin aldehyde		ND	5.	µg/kg	Y
Endrin ketone		ND	5.	µg/kg	Y
Heptachlor		ND	2.	µg/kg	Y
Heptachlor epoxide		ND	2.	µg/kg	Y
Methoxychlor		ND	24.	µg/kg	Y
Toxaphene		ND	240	µg/kg	Y
alpha-BHC		ND	2.	µg/kg	Y
beta-BHC		ND	2.	µg/kg	Y
delta-BHC		ND	2.	µg/kg	Y
gamma-BHC (Lindane)		ND	2.	µg/kg	Y

Surrogate	Recovery	Limit	
Decachlorobiphenyl	106.%	50 - 150	Y
Tetrachloro-m-xylene	116.%	50 - 150	Y

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB3-5.5-7	*Soil*				**Analyzed:** *01/08/99 by DM*	*L9540-17*
Dichlorodifluoromethane		ND	700	µg/kg	D1	
Chloromethane		ND	700	µg/kg	D1	
Vinyl chloride		ND	700	µg/kg	D1	
Bromomethane		ND	700	µg/kg	D1	
Chloroethane		ND	700	µg/kg	D1	
Trichlorofluoromethane		ND	350	µg/kg	D1	
Acetone		ND	7,000	µg/kg	D1	
1,1-Dichloroethene		ND	350	µg/kg	D1	
Methylene chloride		ND	700	µg/kg	D1	
Carbon disulfide		ND	350	µg/kg	D1	
trans-1,2-Dichloroethene		ND	350	µg/kg	D1	
1,1-Dichloroethane		ND	350	µg/kg	D1	
2-Butanone		ND	7,000	µg/kg	D1	
2,2-Dichloropropane		ND	350	µg/kg	D1	
cis-1,2-Dichloroethene		ND	350	µg/kg	D1	
Bromochloromethane		ND	350	µg/kg	D1	
Chloroform		ND	350	µg/kg	D1	
1,1,1-Trichloroethane		ND	350	µg/kg	D1	
Carbon tetrachloride		ND	350	µg/kg	D1	
1,1-Dichloropropene		ND	350	µg/kg	D1	
Benzene		ND	350	µg/kg	D1	
1,2-Dichloroethane		ND	350	µg/kg	D1	
Trichloroethene		ND	350	µg/kg	D1	
1,2-Dichloropropane		ND	350	µg/kg	D1	
Dibromomethane		ND	350	µg/kg	D1	
Bromodichloromethane		ND	350	µg/kg	D1	
cis-1,3-Dichloropropene		ND	350	µg/kg	D1	
4-Methyl-2-pentanone		ND	3,500	µg/kg	D1	
Toluene		ND	350	µg/kg	D1	
2-Hexanone		ND	3,500	µg/kg	D1	
trans-1,3-Dichloropropene		ND	350	µg/kg	D1	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
				Sampled: *01/05/99*	
				Extracted: *01/08/99*	
99EA-SB3-5.5-7	*Soil*			Analyzed: *01/08/99 by DM*	*L9540-17*
1,1,2-Trichloroethane		ND	350	µg/kg	D1
Tetrachloroethene		ND	350	µg/kg	D1
1,3-Dichloropropane		ND	350	µg/kg	D1
Dibromochloromethane		ND	350	µg/kg	D1
1,2-Dibromoethane		ND	350	µg/kg	D1
Chlorobenzene		ND	350	µg/kg	D1
1,1,1,2-Tetrachloroethane		ND	350	µg/kg	D1
Ethylbenzene		ND	350	µg/kg	D1
Styrene		ND	350	µg/kg	D1
Bromoform		ND	350	µg/kg	D1
Isopropylbenzene		ND	350	µg/kg	D1
Bromobenzene		ND	350	µg/kg	D1
1,1,2,2-Tetrachloroethane		ND	350	µg/kg	D1
1,2,3-Trichloropropane		ND	350	µg/kg	D1
n-Propylbenzene		ND	350	µg/kg	D1
2-Chlorotoluene		ND	350	µg/kg	D1
4-Chlorotoluene		ND	350	µg/kg	D1
1,3,5-Trimethylbenzene		ND	350	µg/kg	D1
tert-Butylbenzene		ND	350	µg/kg	D1
1,2,4-Trimethylbenzene		ND	350	µg/kg	D1
sec-Butylbenzene		ND	350	µg/kg	D1
1,3-Dichlorobenzene		ND	350	µg/kg	D1
4-Isopropyltoluene		ND	350	µg/kg	D1
1,4-Dichlorobenzene		ND	350	µg/kg	D1
1,2-Dichlorobenzene		ND	350	µg/kg	D1
n-Butylbenzene		ND	350	µg/kg	D1
1,2-Dibromo-3-chloropropane		ND	350	µg/kg	D1
1,2,4-Trichlorobenzene		ND	350	µg/kg	D1
Hexachlorobutadiene		ND	350	µg/kg	D1
Naphthalene		ND	350	µg/kg	D1
1,2,3-Trichlorobenzene		ND	350	µg/kg	D1

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB3-5.5-7	*Soil*				**Analyzed:** *01/08/99 by DM*	*L9540-17*
Total Xylenes		ND	350	µg/kg	D1	

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	92.%	85. - 128.
Toluene-d8	91.%	76. - 132.
4-Bromofluorobenzene	96.%	79. - 121.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB1-8.5-10	*Soil*				**Analyzed:** *01/11/99 by DM*	*L9540-5*
Dichlorodifluoromethane		ND	20.	µg/kg		
Chloromethane		ND	20.	µg/kg		
Vinyl chloride		ND	20.	µg/kg		
Bromomethane		ND	20.	µg/kg		
Chloroethane		ND	20.	µg/kg		
Trichlorofluoromethane		ND	10.	µg/kg		
Acetone		ND	200	µg/kg		
1,1-Dichloroethene		ND	10.	µg/kg		
Methylene chloride		ND	20.	µg/kg		
Carbon disulfide		ND	10.	µg/kg		
trans-1,2-Dichloroethene		ND	10.	µg/kg		
1,1-Dichloroethane		ND	10.	µg/kg		
2-Butanone		ND	200	µg/kg		
2,2-Dichloropropane		ND	10.	µg/kg		
cis-1,2-Dichloroethene		ND	10.	µg/kg		
Bromochloromethane		ND	10.	µg/kg		
Chloroform		ND	10.	µg/kg		
1,1,1-Trichloroethane		ND	10.	µg/kg		
Carbon tetrachloride		ND	10.	µg/kg		
1,1-Dichloropropene		ND	10.	µg/kg		
Benzene		ND	10.	µg/kg		
1,2-Dichloroethane		ND	10.	µg/kg		
Trichloroethene		ND	10.	µg/kg		
1,2-Dichloropropane		ND	10.	µg/kg		
Dibromomethane		ND	10.	µg/kg		
Bromodichloromethane		ND	10.	µg/kg		
cis-1,3-Dichloropropene		ND	10.	µg/kg		
4-Methyl-2-pentanone		ND	100	µg/kg		
Toluene		ND	10.	µg/kg		
2-Hexanone		ND	100	µg/kg		
trans-1,3-Dichloropropene		ND	10.	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB1-8.5-10	*Soil*				**Analyzed:** *01/11/99 by DM*	*L9540-5*
1,1,2-Trichloroethane		ND	10.	µg/kg		
Tetrachloroethene		ND	10.	µg/kg		
1,3-Dichloropropane		ND	10.	µg/kg		
Dibromochloromethane		ND	10.	µg/kg		
1,2-Dibromoethane		ND	10.	µg/kg		
Chlorobenzene		ND	10.	µg/kg		
1,1,1,2-Tetrachloroethane		ND	10.	µg/kg		
Ethylbenzene		ND	10.	µg/kg		
Styrene		ND	10.	µg/kg		
Bromoform		ND	10.	µg/kg		
Isopropylbenzene		ND	10.	µg/kg		
Bromobenzene		ND	10.	µg/kg		
1,1,2,2-Tetrachloroethane		ND	10.	µg/kg		
1,2,3-Trichloropropane		ND	10.	µg/kg		
n-Propylbenzene		ND	10.	µg/kg		
2-Chlorotoluene		ND	10.	µg/kg		
4-Chlorotoluene		ND	10.	µg/kg		
1,3,5-Trimethylbenzene		ND	10.	µg/kg		
tert-Butylbenzene		ND	10.	µg/kg		
1,2,4-Trimethylbenzene		ND	10.	µg/kg		
sec-Butylbenzene		ND	10.	µg/kg		
1,3-Dichlorobenzene		ND	10.	µg/kg		
4-Isopropyltoluene		ND	10.	µg/kg		
1,4-Dichlorobenzene		ND	10.	µg/kg		
1,2-Dichlorobenzene		ND	10.	µg/kg		
n-Butylbenzene		ND	10.	µg/kg		
1,2-Dibromo-3-chloropropane		ND	10.	µg/kg		
1,2,4-Trichlorobenzene		ND	10.	µg/kg		
Hexachlorobutadiene		ND	10.	µg/kg		
Naphthalene		ND	10.	µg/kg		
1,2,3-Trichlorobenzene		ND	10.	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	

Sampled: ***01/05/99***
Extracted: ***01/08/99***

99EA-SB1-8.5-10	***Soil***	**Analyzed:** ***01/11/99 by DM***	***L9540-5***

Total Xylenes	ND	10.	µg/kg

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	100.%	85. - 128.
Toluene-d8	103.%	76. - 132.
4-Bromofluorobenzene	109.%	79. - 121.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB1-14.5-16	*Soil*				*Sampled: 01/05/99* *Extracted: 01/08/99* *Analyzed: 01/11/99 by DM*	*L9540-9*
Dichlorodifluoromethane		ND	20.	µg/kg		
Chloromethane		ND	20.	µg/kg		
Vinyl chloride		ND	20.	µg/kg		
Bromomethane		ND	20.	µg/kg		
Chloroethane		ND	20.	µg/kg		
Trichlorofluoromethane		ND	10.	µg/kg		
Acetone		ND	200	µg/kg		
1,1-Dichloroethene		ND	10.	µg/kg		
Methylene chloride		ND	20.	µg/kg		
Carbon disulfide		ND	10.	µg/kg		
trans-1,2-Dichloroethene		ND	10.	µg/kg		
1,1-Dichloroethane		ND	10.	µg/kg		
2-Butanone		ND	200	µg/kg		
2,2-Dichloropropane		ND	10.	µg/kg		
cis-1,2-Dichloroethene		ND	10.	µg/kg		
Bromochloromethane		ND	10.	µg/kg		
Chloroform		ND	10.	µg/kg		
1,1,1-Trichloroethane		ND	10.	µg/kg		
Carbon tetrachloride		ND	10.	µg/kg		
1,1-Dichloropropene		ND	10.	µg/kg		
Benzene		ND	10.	µg/kg		
1,2-Dichloroethane		ND	10.	µg/kg		
Trichloroethene		ND	10.	µg/kg		
1,2-Dichloropropane		ND	10.	µg/kg		
Dibromomethane		ND	10.	µg/kg		
Bromodichloromethane		ND	10.	µg/kg		
cis-1,3-Dichloropropene		ND	10.	µg/kg		
4-Methyl-2-pentanone		ND	100	µg/kg		
Toluene		ND	10.	µg/kg		
2-Hexanone		ND	100	µg/kg		
trans-1,3-Dichloropropene		ND	10.	µg/kg		

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB1-14.5-16	*Soil*				*Sampled: 01/05/99* *Extracted: 01/08/99* *Analyzed: 01/11/99 by DM*	*L9540-9*
1,1,2-Trichloroethane		ND	10.	µg/kg		
Tetrachloroethene		ND	10.	µg/kg		
1,3-Dichloropropane		ND	10.	µg/kg		
Dibromochloromethane		ND	10.	µg/kg		
1,2-Dibromoethane		ND	10.	µg/kg		
Chlorobenzene		ND	10.	µg/kg		
1,1,1,2-Tetrachloroethane		ND	10.	µg/kg		
Ethylbenzene		ND	10.	µg/kg		
Styrene		ND	10.	µg/kg		
Bromoform		ND	10.	µg/kg		
Isopropylbenzene		ND	10.	µg/kg		
Bromobenzene		ND	10.	µg/kg		
1,1,2,2-Tetrachloroethane		ND	10.	µg/kg		
1,2,3-Trichloropropane		ND	10.	µg/kg		
n-Propylbenzene		ND	10.	µg/kg		
2-Chlorotoluene		ND	10.	µg/kg		
4-Chlorotoluene		ND	10.	µg/kg		
1,3,5-Trimethylbenzene		ND	10.	µg/kg		
tert-Butylbenzene		ND	10.	µg/kg		
1,2,4-Trimethylbenzene		ND	10.	µg/kg		
sec-Butylbenzene		ND	10.	µg/kg		
1,3-Dichlorobenzene		ND	10.	µg/kg		
4-Isopropyltoluene		ND	10.	µg/kg		
1,4-Dichlorobenzene		ND	10.	µg/kg		
1,2-Dichlorobenzene		ND	10.	µg/kg		
n-Butylbenzene		ND	10.	µg/kg		
1,2-Dibromo-3-chloropropane		ND	10.	µg/kg		
1,2,4-Trichlorobenzene		ND	10.	µg/kg		
Hexachlorobutadiene		ND	10.	µg/kg		
Naphthalene		ND	10.	µg/kg		
1,2,3-Trichlorobenzene		ND	10.	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Numbe*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB1-14.5-16	*Soil*				**Analyzed:** *01/11/99 by DM*	*L9540-9*
Total Xylenes		ND	10.	µg/kg		

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	92.%	85. - 128.
Toluene-d8	104.%	76. - 132.
4-Bromofluorobenzene	104.%	79. - 121.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB2-7-8.5	*Soil*				**Analyzed:** *01/11/99 by DM*	*L9540-13*
Dichlorodifluoromethane		ND	20.	µg/kg		
Chloromethane		ND	20.	µg/kg		
Vinyl chloride		ND	20.	µg/kg		
Bromomethane		ND	20.	µg/kg		
Chloroethane		ND	20.	µg/kg		
Trichlorofluoromethane		ND	10.	µg/kg		
Acetone		ND	200	µg/kg		
1,1-Dichloroethene		ND	10.	µg/kg		
Methylene chloride		ND	20.	µg/kg		
Carbon disulfide		ND	10.	µg/kg		
trans-1,2-Dichloroethene		ND	10.	µg/kg		
1,1-Dichloroethane		ND	10.	µg/kg		
2-Butanone		ND	200	µg/kg		
2,2-Dichloropropane		ND	10.	µg/kg		
cis-1,2-Dichloroethene		ND	10.	µg/kg		
Bromochloromethane		ND	10.	µg/kg		
Chloroform		ND	10.	µg/kg		
1,1,1-Trichloroethane		ND	10.	µg/kg		
Carbon tetrachloride		ND	10.	µg/kg		
1,1-Dichloropropene		ND	10.	µg/kg		
Benzene		ND	10.	µg/kg		
1,2-Dichloroethane		ND	10.	µg/kg		
Trichloroethene		ND	10.	µg/kg		
1,2-Dichloropropane		ND	10.	µg/kg		
Dibromomethane		ND	10.	µg/kg		
Bromodichloromethane		ND	10.	µg/kg		
cis-1,3-Dichloropropene		ND	10.	µg/kg		
4-Methyl-2-pentanone		ND	100	µg/kg		
Toluene		ND	10.	µg/kg		
2-Hexanone		ND	100	µg/kg		
trans-1,3-Dichloropropene		ND	10.	µg/kg		

OAL

Client: *Woodward Clyde Consultants*
Contact: *Michelle McClelland*

Project: *5491C0796B.00*
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	Matrix				Lab Number
Analyte		Result	Reporting Limit	Units (ppb)	Comment

Sampled: *01/05/99*
Extracted: *01/08/99*
Analyzed: *01/11/99 by DM*

99EA-SB2-7-8.5 *Soil* *L9540-13*

Analyte	Result	Reporting Limit	Units	Comment
1,1,2-Trichloroethane	ND	10.	µg/kg	
Tetrachloroethene	ND	10.	µg/kg	
1,3-Dichloropropane	ND	10.	µg/kg	
Dibromochloromethane	ND	10.	µg/kg	
1,2-Dibromoethane	ND	10.	µg/kg	
Chlorobenzene	ND	10.	µg/kg	
1,1,1,2-Tetrachloroethane	ND	10.	µg/kg	
Ethylbenzene	ND	10.	µg/kg	
Styrene	ND	10.	µg/kg	
Bromoform	ND	10.	µg/kg	
Isopropylbenzene	ND	10.	µg/kg	
Bromobenzene	ND	10.	µg/kg	
1,1,2,2-Tetrachloroethane	ND	10.	µg/kg	
1,2,3-Trichloropropane	ND	10.	µg/kg	
n-Propylbenzene	ND	10.	µg/kg	
2-Chlorotoluene	ND	10.	µg/kg	
4-Chlorotoluene	ND	10.	µg/kg	
1,3,5-Trimethylbenzene	ND	10.	µg/kg	
tert-Butylbenzene	ND	10.	µg/kg	
1,2,4-Trimethylbenzene	ND	10.	µg/kg	
sec-Butylbenzene	ND	10.	µg/kg	
1,3-Dichlorobenzene	ND	10.	µg/kg	
4-Isopropyltoluene	ND	10.	µg/kg	
1,4-Dichlorobenzene	ND	10.	µg/kg	
1,2-Dichlorobenzene	ND	10.	µg/kg	
n-Butylbenzene	ND	10.	µg/kg	
1,2-Dibromo-3-chloropropane	ND	10.	µg/kg	
1,2,4-Trichlorobenzene	ND	10.	µg/kg	
Hexachlorobutadiene	ND	10.	µg/kg	
Naphthalene	ND	10.	µg/kg	
1,2,3-Trichlorobenzene	ND	10.	µg/kg	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB2-7-8.5	*Soil*				**Sampled:** *01/05/99* **Extracted:** *01/08/99* **Analyzed:** *01/11/99 by DM*	*L9540-13*
Total Xylenes		ND	10.	µg/kg		

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	96.%	85. - 128.
Toluene-d8	118.%	76. - 132.
4-Bromofluorobenzene	122.%	79. - 121.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB2-8.5-10	*Soil*				Analyzed: *01/11/99 by DM*	*L9540-14*
Dichlorodifluoromethane		ND	20.	µg/kg		
Chloromethane		ND	20.	µg/kg		
Vinyl chloride		ND	20.	µg/kg		
Bromomethane		ND	20.	µg/kg		
Chloroethane		ND	20.	µg/kg		
Trichlorofluoromethane		ND	10.	µg/kg		
Acetone		ND	200	µg/kg		
1,1-Dichloroethene		ND	10.	µg/kg		
Methylene chloride		ND	20.	µg/kg		
Carbon disulfide		ND	10.	µg/kg		
trans-1,2-Dichloroethene		ND	10.	µg/kg		
1,1-Dichloroethane		ND	10.	µg/kg		
2-Butanone		ND	200	µg/kg		
2,2-Dichloropropane		ND	10.	µg/kg		
cis-1,2-Dichloroethene		ND	10.	µg/kg		
Bromochloromethane		ND	10.	µg/kg		
Chloroform		ND	10.	µg/kg		
1,1,1-Trichloroethane		ND	10.	µg/kg		
Carbon tetrachloride		ND	10.	µg/kg		
1,1-Dichloropropene		ND	10.	µg/kg		
Benzene		ND	10.	µg/kg		
1,2-Dichloroethane		ND	10.	µg/kg		
Trichloroethene		ND	10.	µg/kg		
1,2-Dichloropropane		ND	10.	µg/kg		
Dibromomethane		ND	10.	µg/kg		
Bromodichloromethane		ND	10.	µg/kg		
cis-1,3-Dichloropropene		ND	10.	µg/kg		
4-Methyl-2-pentanone		ND	100	µg/kg		
Toluene		ND	10.	µg/kg		
2-Hexanone		ND	100	µg/kg		
trans-1,3-Dichloropropene		ND	10.	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB2-8.5-10	*Soil*				**Analyzed:** *01/11/99 by DM*	*L9540-14*
1,1,2-Trichloroethane		ND	10.	µg/kg		
Tetrachloroethene		ND	10.	µg/kg		
1,3-Dichloropropane		ND	10.	µg/kg		
Dibromochloromethane		ND	10.	µg/kg		
1,2-Dibromoethane		ND	10.	µg/kg		
Chlorobenzene		ND	10.	µg/kg		
1,1,1,2-Tetrachloroethane		ND	10.	µg/kg		
Ethylbenzene		ND	10.	µg/kg		
Styrene		ND	10.	µg/kg		
Bromoform		ND	10.	µg/kg		
Isopropylbenzene		ND	10.	µg/kg		
Bromobenzene		ND	10.	µg/kg		
1,1,2,2-Tetrachloroethane		ND	10.	µg/kg		
1,2,3-Trichloropropane		ND	10.	µg/kg		
n-Propylbenzene		ND	10.	µg/kg		
2-Chlorotoluene		ND	10.	µg/kg		
4-Chlorotoluene		ND	10.	µg/kg		
1,3,5-Trimethylbenzene		ND	10.	µg/kg		
tert-Butylbenzene		ND	10.	µg/kg		
1,2,4-Trimethylbenzene		ND	10.	µg/kg		
sec-Butylbenzene		ND	10.	µg/kg		
1,3-Dichlorobenzene		ND	10.	µg/kg		
4-Isopropyltoluene		ND	10.	µg/kg		
1,4-Dichlorobenzene		ND	10.	µg/kg		
1,2-Dichlorobenzene		ND	10.	µg/kg		
n-Butylbenzene		ND	10.	µg/kg		
1,2-Dibromo-3-chloropropane		ND	10.	µg/kg		
1,2,4-Trichlorobenzene		ND	10.	µg/kg		
Hexachlorobutadiene		ND	10.	µg/kg		
Naphthalene		ND	10.	µg/kg		
1,2,3-Trichlorobenzene		ND	10.	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB2-8.5-10	*Soil*				**Analyzed:** *01/11/99 by DM*	*L9540-14*
Total Xylenes		ND	10.	µg/kg		

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	94.%	85. - 128.
Toluene-d8	108.%	76. - 132.
4-Bromofluorobenzene	108.%	79. - 121.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB3-8.5-10	*Soil*				**Analyzed:** *01/11/99 by DM*	*L9540-19*
Dichlorodifluoromethane		ND	20.	µg/kg		
Chloromethane		ND	20.	µg/kg		
Vinyl chloride		ND	20.	µg/kg		
Bromomethane		ND	20.	µg/kg		
Chloroethane		ND	20.	µg/kg		
Trichlorofluoromethane		ND	10.	µg/kg		
Acetone		ND	200	µg/kg		
1,1-Dichloroethene		ND	10.	µg/kg		
Methylene chloride		ND	20.	µg/kg		
Carbon disulfide		ND	10.	µg/kg		
trans-1,2-Dichloroethene		ND	10.	µg/kg		
1,1-Dichloroethane		ND	10.	µg/kg		
2-Butanone		ND	200	µg/kg		
2,2-Dichloropropane		ND	10.	µg/kg		
cis-1,2-Dichloroethene		ND	10.	µg/kg		
Bromochloromethane		ND	10.	µg/kg		
Chloroform		ND	10.	µg/kg		
1,1,1-Trichloroethane		ND	10.	µg/kg		
Carbon tetrachloride		ND	10.	µg/kg		
1,1-Dichloropropene		ND	10.	µg/kg		
Benzene		ND	10.	µg/kg		
1,2-Dichloroethane		ND	10.	µg/kg		
Trichloroethene		ND	10.	µg/kg		
1,2-Dichloropropane		ND	10.	µg/kg		
Dibromomethane		ND	10.	µg/kg		
Bromodichloromethane		ND	10.	µg/kg		
cis-1,3-Dichloropropene		ND	10.	µg/kg		
4-Methyl-2-pentanone		ND	100	µg/kg		
Toluene		ND	10.	µg/kg		
2-Hexanone		ND	100	µg/kg		
trans-1,3-Dichloropropene		ND	10.	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB3-8.5-10	*Soil*				**Analyzed:** *01/11/99 by DM*	*L9540-19*
1,1,2-Trichloroethane		ND	10.	µg/kg		
Tetrachloroethene		ND	10.	µg/kg		
1,3-Dichloropropane		ND	10.	µg/kg		
Dibromochloromethane		ND	10.	µg/kg		
1,2-Dibromoethane		ND	10.	µg/kg		
Chlorobenzene		ND	10.	µg/kg		
1,1,1,2-Tetrachloroethane		ND	10.	µg/kg		
Ethylbenzene		ND	10.	µg/kg		
Styrene		ND	10.	µg/kg		
Bromoform		ND	10.	µg/kg		
Isopropylbenzene		ND	10.	µg/kg		
Bromobenzene		ND	10.	µg/kg		
1,1,2,2-Tetrachloroethane		ND	10.	µg/kg		
1,2,3-Trichloropropane		ND	10.	µg/kg		
n-Propylbenzene		ND	10.	µg/kg		
2-Chlorotoluene		ND	10.	µg/kg		
4-Chlorotoluene		ND	10.	µg/kg		
1,3,5-Trimethylbenzene		ND	10.	µg/kg		
tert-Butylbenzene		ND	10.	µg/kg		
1,2,4-Trimethylbenzene		ND	10.	µg/kg		
sec-Butylbenzene		ND	10.	µg/kg		
1,3-Dichlorobenzene		ND	10.	µg/kg		
4-Isopropyltoluene		ND	10.	µg/kg		
1,4-Dichlorobenzene		ND	10.	µg/kg		
1,2-Dichlorobenzene		ND	10.	µg/kg		
n-Butylbenzene		ND	10.	µg/kg		
1,2-Dibromo-3-chloropropane		ND	10.	µg/kg		
1,2,4-Trichlorobenzene		ND	10.	µg/kg		
Hexachlorobutadiene		ND	10.	µg/kg		
Naphthalene		ND	10.	µg/kg		
1,2,3-Trichlorobenzene		ND	10.	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB3-8.5-10	*Soil*				**Analyzed:** *01/11/99 by DM*	*L9540-19*
Total Xylenes		ND	10.	µg/kg		

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	94.%	85. - 128.
Toluene-d8	96.%	76. - 132.
4-Bromofluorobenzene	99.%	79. - 121.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
99EA-SB3-10-11.5	*Soil*			Sampled: *01/05/99* Extracted: *01/08/99* Analyzed: *01/11/99 by DM*	*L9540-20*
Dichlorodifluoromethane		ND	20.	µg/kg	
Chloromethane		ND	20.	µg/kg	
Vinyl chloride		ND	20.	µg/kg	
Bromomethane		ND	20.	µg/kg	
Chloroethane		ND	20.	µg/kg	
Trichlorofluoromethane		ND	10.	µg/kg	
Acetone		ND	200	µg/kg	
1,1-Dichloroethene		ND	10.	µg/kg	
Methylene chloride		ND	20.	µg/kg	
Carbon disulfide		ND	10.	µg/kg	
trans-1,2-Dichloroethene		ND	10.	µg/kg	
1,1-Dichloroethane		ND	10.	µg/kg	
2-Butanone		ND	200	µg/kg	
2,2-Dichloropropane		ND	10.	µg/kg	
cis-1,2-Dichloroethene		ND	10.	µg/kg	
Bromochloromethane		ND	10.	µg/kg	
Chloroform		ND	10.	µg/kg	
1,1,1-Trichloroethane		ND	10.	µg/kg	
Carbon tetrachloride		ND	10.	µg/kg	
1,1-Dichloropropene		ND	10.	µg/kg	
Benzene		ND	10.	µg/kg	
1,2-Dichloroethane		ND	10.	µg/kg	
Trichloroethene		ND	10.	µg/kg	
1,2-Dichloropropane		ND	10.	µg/kg	
Dibromomethane		ND	10.	µg/kg	
Bromodichloromethane		ND	10.	µg/kg	
cis-1,3-Dichloropropene		ND	10.	µg/kg	
4-Methyl-2-pentanone		ND	100	µg/kg	
Toluene		ND	10.	µg/kg	
2-Hexanone		ND	100	µg/kg	
trans-1,3-Dichloropropene		ND	10.	µg/kg	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
99EA-SB3-10-11.5	*Soil*			Sampled: *01/05/99* Extracted: *01/08/99* Analyzed: *01/11/99 by DM*	*L9540-20*
1,1,2-Trichloroethane		ND	10.	µg/kg	
Tetrachloroethene		ND	10.	µg/kg	
1,3-Dichloropropane		ND	10.	µg/kg	
Dibromochloromethane		ND	10.	µg/kg	
1,2-Dibromoethane		ND	10.	µg/kg	
Chlorobenzene		ND	10.	µg/kg	
1,1,1,2-Tetrachloroethane		ND	10.	µg/kg	
Ethylbenzene		ND	10.	µg/kg	
Styrene		ND	10.	µg/kg	
Bromoform		ND	10.	µg/kg	
Isopropylbenzene		ND	10.	µg/kg	
Bromobenzene		ND	10.	µg/kg	
1,1,2,2-Tetrachloroethane		ND	10.	µg/kg	
1,2,3-Trichloropropane		ND	10.	µg/kg	
n-Propylbenzene		ND	10.	µg/kg	
2-Chlorotoluene		ND	10.	µg/kg	
4-Chlorotoluene		ND	10.	µg/kg	
1,3,5-Trimethylbenzene		ND	10.	µg/kg	
tert-Butylbenzene		ND	10.	µg/kg	
1,2,4-Trimethylbenzene		ND	10.	µg/kg	
sec-Butylbenzene		ND	10.	µg/kg	
1,3-Dichlorobenzene		ND	10.	µg/kg	
4-Isopropyltoluene		ND	10.	µg/kg	
1,4-Dichlorobenzene		ND	10.	µg/kg	
1,2-Dichlorobenzene		ND	10.	µg/kg	
n-Butylbenzene		ND	10.	µg/kg	
1,2-Dibromo-3-chloropropane		ND	10.	µg/kg	
1,2,4-Trichlorobenzene		ND	10.	µg/kg	
Hexachlorobutadiene		ND	10.	µg/kg	
Naphthalene		ND	10.	µg/kg	
1,2,3-Trichlorobenzene		ND	10.	µg/kg	

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB3-10-11.5	*Soil*				**Analyzed:** *01/11/99 by DM*	*L9540-20*
Total Xylenes		ND	10.	µg/kg		

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	97.%	85. - 128.
Toluene-d8	100.%	76. - 132.
4-Bromofluorobenzene	102.%	79. - 121.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Organophosphorus Pesticides
by EPA 8141 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB1-8.5-10	*Soil*				Sampled: *01/05/99* Analyzed: *01/19/99*	*L9540-5*
Dichlorvos		ND	22.	µg/kg	Y	
Mevinphos		ND	22.	µg/kg	Y	
Ethoprop		ND	22.	µg/kg	Y	
Sulfotepp		ND	22.	µg/kg	Y	
Monocrotophos		ND	22.	µg/kg	Y	
Phorate		ND	110	µg/kg	Y	
Dimethoate		ND	22.	µg/kg	Y	
Demeton, o-s		ND	22.	µg/kg	Y	
Diazinon		ND	22.	µg/kg	Y	
Disulfoton		ND	110	µg/kg	Y	
Parathion, methyl		ND	22.	µg/kg	Y	
Ronnel		ND	22.	µg/kg	Y	
Chlorpyrifos		ND	22.	µg/kg	Y	
Malathion		ND	22.	µg/kg	Y	
Fenthion		ND	110	µg/kg	Y	
Parathion		ND	22.	µg/kg	Y	
Trichloronate		ND	22.	µg/kg	Y	
Tetrachlorvinphos		ND	22.	µg/kg	Y	
Merphos		ND	22.	µg/kg	Y	
Tokuthion		ND	22.	µg/kg	Y	
Fensulfothion		ND	22.	µg/kg	Y	
Bolstar		ND	110	µg/kg	Y	
EPN		ND	22.	µg/kg	Y	
Azinphos, methyl		ND	22.	µg/kg	Y	
Coumaphos		ND	22.	µg/kg	Y	
Famphur		ND	22.	µg/kg	Y	

Surrogate	Recovery	Limit	
Tributyl Phosphate	85.%		Y
Triphenyl Phosphate	89.%		Y

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Organophosphorus Pesticides

by EPA 8141 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB1-14.5-16	*Soil*				**Sampled:** *01/05/99* **Analyzed:** *01/14/99*	*L9540-9*
Dichlorvos		ND	20	µg/kg	Y	
Mevinphos		ND	20	µg/kg	Y	
Ethoprop		ND	20	µg/kg	Y	
Sulfotepp		ND	20	µg/kg	Y	
Monocrotophos		ND	20	µg/kg	Y	
Phorate		ND	100	µg/kg	Y	
Dimethoate		ND	20	µg/kg	Y	
Demeton, o-s		ND	20	µg/kg	Y	
Diazinon		ND	20	µg/kg	Y	
Disulfoton		ND	100	µg/kg	Y	
Parathion, methyl		ND	20	µg/kg	Y	
Ronnel		ND	20	µg/kg	Y	
Chlorpyrifos		ND	20	µg/kg	Y	
Malathion		ND	20	µg/kg	Y	
Fenthion		ND	100	µg/kg	Y	
Parathion		ND	20	µg/kg	Y	
Trichloronate		ND	20	µg/kg	Y	
Tetrachlorvinphos		ND	20	µg/kg	Y	
Merphos		ND	20	µg/kg	Y	
Tokuthion		ND	20	µg/kg	Y	
Fensulfothion		ND	20	µg/kg	Y	
Bolstar		ND	100	µg/kg	Y	
EPN		ND	20	µg/kg	Y	
Azinphos, methyl		ND	20	µg/kg	Y	
Coumaphos		ND	20	µg/kg	Y	
Famphur		ND	20	µg/kg	Y	

Surrogate	Recovery	Limit
Tributyl Phosphate	80.%	Y
Triphenyl Phosphate	88.%	Y

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Organophosphorus Pesticides
by EPA 8141 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB2-7-8.5	*Soil*				*Sampled: 01/05/99* *Analyzed: 01/14/99*	*L9540-13*
Dichlorvos		ND	24.	µg/kg	Y	
Mevinphos		ND	24.	µg/kg	Y	
Ethoprop		ND	24.	µg/kg	Y	
Sulfotepp		ND	24.	µg/kg	Y	
Monocrotophos		ND	24.	µg/kg	Y	
Phorate		ND	120	µg/kg	Y	
Dimethoate		ND	24.	µg/kg	Y	
Demeton, o-s		ND	24.	µg/kg	Y	
Diazinon		ND	24.	µg/kg	Y	
Disulfoton		ND	120	µg/kg	Y	
Parathion, methyl		ND	24.	µg/kg	Y	
Ronnel		ND	24.	µg/kg	Y	
Chlorpyrifos		ND	24.	µg/kg	Y	
Malathion		ND	24.	µg/kg	Y	
Fenthion		ND	120	µg/kg	Y	
Parathion		ND	24.	µg/kg	Y	
Trichloronate		ND	24.	µg/kg	Y	
Tetrachlorvinphos		ND	24.	µg/kg	Y	
Merphos		ND	24.	µg/kg	Y	
Tokuthion		ND	24.	µg/kg	Y	
Fensulfothion		ND	24.	µg/kg	Y	
Bolstar		ND	120	µg/kg	Y	
EPN		ND	24.	µg/kg	Y	
Azinphos, methyl		ND	24.	µg/kg	Y	
Coumaphos		ND	24.	µg/kg	Y	
Famphur		ND	24.	µg/kg	Y	

Surrogate	Recovery	Limit
Tributyl Phosphate	67.%	Y
Triphenyl Phosphate	114.%	Y

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Organophosphorus Pesticides
by EPA 8141 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB2-8.5-10	*Soil*				**Sampled:** *01/05/99* **Analyzed:** *01/14/99*	*L9540-1*
Dichlorvos		ND	27.	µg/kg	Y	
Mevinphos		ND	27	µg/kg	Y	
Ethoprop		ND	27.	µg/kg	Y	
Sulfotepp		ND	27.	µg/kg	Y	
Monocrotophos		ND	27.	µg/kg	Y	
Phorate		ND	130	µg/kg	Y	
Dimethoate		ND	27.	µg/kg	Y	
Demeton, o-s		ND	27.	µg/kg	Y	
Diazinon		ND	27.	µg/kg	Y	
Disulfoton		ND	130	µg/kg	Y	
Parathion, methyl		ND	27.	µg/kg	Y	
Ronnel		ND	27.	µg/kg	Y	
Chlorpyrifos		ND	27.	µg/kg	Y	
Malathion		ND	27.	µg/kg	Y	
Fenthion		ND	130	µg/kg	Y	
Parathion		ND	27.	µg/kg	Y	
Trichloronate		ND	27.	µg/kg	Y	
Tetrachlorvinphos		ND	27.	µg/kg	Y	
Merphos		ND	27.	µg/kg	Y	
Tokuthion		ND	27.	µg/kg	Y	
Fensulfothion		ND	27.	µg/kg	Y	
Bolstar		ND	130	µg/kg	Y	
EPN		ND	27.	µg/kg	Y	
Azinphos, methyl		ND	27.	µg/kg	Y	
Coumaphos		ND	27.	µg/kg	Y	
Famphur		ND	27.	µg/kg	Y	

Surrogate	Recovery	Limit
Tributyl Phosphate	77.%	Y
Triphenyl Phosphate	89.%	Y

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Organophosphorus Pesticides
by EPA 8141 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB3-5.5-7	*Soil*				**Sampled:** *01/05/99* **Analyzed:** *01/15/99*	*L9540-17*
Dichlorvos		ND	30	µg/kg	Y	
Mevinphos		ND	30	µg/kg	Y	
Ethoprop		ND	30	µg/kg	Y	
Sulfotepp		ND	30	µg/kg	Y	
Monocrotophos		ND	30	µg/kg	Y	
Phorate		ND	150	µg/kg	Y	
Dimethoate		ND	30	µg/kg	Y	
Demeton, o-s		ND	30	µg/kg	Y	
Diazinon		ND	30	µg/kg	Y	
Disulfoton		ND	150	µg/kg	Y	
Parathion, methyl		ND	30	µg/kg	Y	
Ronnel		ND	30	µg/kg	Y	
Chlorpyrifos		ND	30	µg/kg	Y	
Malathion		ND	30	µg/kg	Y	
Fenthion		ND	150	µg/kg	Y	
Parathion		ND	30	µg/kg	Y	
Trichloronate		ND	30	µg/kg	Y	
Tetrachlorvinphos		ND	30	µg/kg	Y	
Merphos		ND	30	µg/kg	Y	
Tokuthion		ND	30	µg/kg	Y	
Fensulfothion		ND	30	µg/kg	Y	
Bolstar		ND	150	µg/kg	Y	
EPN		ND	30	µg/kg	Y	
Azinphos, methyl		ND	30	µg/kg	Y	
Coumaphos		ND	30	µg/kg	Y	
Famphur		ND	30	µg/kg	Y	

Surrogate	Recovery	Limit
Tributyl Phosphate	71.%	Y
Triphenyl Phosphate	62.%	Y

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Organophosphorus Pesticides

by EPA 8141 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB3-8.5-10	*Soil*				Sampled: *01/05/99* Analyzed: *01/15/99*	*L9540-19*
Dichlorvos		ND	21.	µg/kg	Y	
Mevinphos		ND	21.	µg/kg	Y	
Ethoprop		ND	21.	µg/kg	Y	
Sulfotepp		ND	21.	µg/kg	Y	
Monocrotophos		ND	21.	µg/kg	Y	
Phorate		ND	100	µg/kg	Y	
Dimethoate		ND	21.	µg/kg	Y	
Demeton, o-s		ND	21.	µg/kg	Y	
Diazinon		ND	21.	µg/kg	Y	
Disulfoton		ND	100	µg/kg	Y	
Parathion, methyl		ND	21.	µg/kg	Y	
Ronnel		ND	21.	µg/kg	Y	
Chlorpyrifos		ND	21.	µg/kg	Y	
Malathion		ND	21.	µg/kg	Y	
Fenthion		ND	100	µg/kg	Y	
Parathion		ND	21.	µg/kg	Y	
Trichloronate		ND	21.	µg/kg	Y	
Tetrachlorvinphos		ND	21.	µg/kg	Y	
Merphos		ND	21.	µg/kg	Y	
Tokuthion		ND	21.	µg/kg	Y	
Fensulfothion		ND	21.	µg/kg	Y	
Bolstar		ND	100	µg/kg	Y	
EPN		ND	21.	µg/kg	Y	
Azinphos, methyl		ND	21.	µg/kg	Y	
Coumaphos		ND	21.	µg/kg	Y	
Famphur		ND	21.	µg/kg	Y	

Surrogate	Recovery	Limit
Tributyl Phosphate	74.%	Y
Triphenyl Phosphate	97.%	Y

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Organophosphorus Pesticides
by EPA 8141 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB3-10-11.5	*Soil*				Sampled: *01/05/99* Analyzed: *01/15/99*	*L9540-20*
Dichlorvos		ND	25.	µg/kg	Y	
Mevinphos		ND	25.	µg/kg	Y	
Ethoprop		ND	25.	µg/kg	Y	
Sulfotepp		ND	25.	µg/kg	Y	
Monocrotophos		ND	25.	µg/kg	Y	
Phorate		ND	120	µg/kg	Y	
Dimethoate		ND	25.	µg/kg	Y	
Demeton, o-s		ND	25.	µg/kg	Y	
Diazinon		ND	25.	µg/kg	Y	
Disulfoton		ND	120	µg/kg	Y	
Parathion, methyl		ND	25.	µg/kg	Y	
Ronnel		ND	25.	µg/kg	Y	
Chlorpyrifos		ND	25.	µg/kg	Y	
Malathion		ND	25.	µg/kg	Y	
Fenthion		ND	120	µg/kg	Y	
Parathion		ND	25.	µg/kg	Y	
Trichloronate		ND	25.	µg/kg	Y	
Tetrachlorvinphos		ND	25.	µg/kg	Y	
Merphos		ND	25.	µg/kg	Y	
Tokuthion		ND	25.	µg/kg	Y	
Fensulfothion		ND	25.	µg/kg	Y	
Bolstar		ND	120	µg/kg	Y	
EPN		ND	25.	µg/kg	Y	
Azinphos, methyl		ND	25.	µg/kg	Y	
Coumaphos		ND	25.	µg/kg	Y	
Famphur		ND	25.	µg/kg	Y	

Surrogate	Recovery	Limit
Tributyl Phosphate	83.%	Y
Triphenyl Phosphate	90.%	Y

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: *Woodward Clyde Consultants*
Contact: *Michelle McClelland*

Project: *5491C0796B.00*
IP - Longview

Polynuclear Aromatic Hydrocarbons (PNA)

by EPA 8270 SIM

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/11/99*	
99EA-SB1-8.5-10	*Soil*				**Analyzed:** *01/13/99 by PB*	*L9540-5*
Naphthalene		ND	10.	µg/kg		
Acenaphthylene		ND	10.	µg/kg		
Acenaphthene		**29.**	**10.**	**µg/kg**		
Fluorene		**16.**	**10.**	**µg/kg**		
Pentachlorophenol		ND	100	µg/kg		
Phenanthrene		ND	10.	µg/kg		
Anthracene		ND	10.	µg/kg		
Fluoranthene		ND	10.	µg/kg		
Pyrene		ND	10.	µg/kg		
Benzo[a]anthracene		ND	10.	µg/kg		
Chrysene		ND	10.	µg/kg		
Benzo[b]fluoranthene		ND	10.	µg/kg		
Benzo[k]fluoranthene		ND	10.	µg/kg		
Benzo[a]pyrene		ND	10.	µg/kg		
Indeno[1,2,3-cd]pyrene		ND	10.	µg/kg		
Dibenz[a,h]anthracene		ND	10.	µg/kg		
Benzo[g,h,i]perylene		ND	10.	µg/kg		

Surrogate	Recovery	Limit
1,2-Dichlorobenzene-d4	94.%	
Nitrobenzene-d5	120.%	
2-Fluorobiphenyl	97.%	

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Polynuclear Aromatic Hydrocarbons (PNA)

by EPA 8270 SIM

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/11/99* ✓	
99EA-SB1-14.5-16	*Soil*				**Analyzed:** *01/12/99 by PB*	*L9540-9*
Naphthalene		ND	100	µg/kg	D1	
Acenaphthylene		ND	100	µg/kg	D1	
Acenaphthene		ND	100	µg/kg	D1	
Fluorene		ND	100	µg/kg	D1	
Pentachlorophenol		ND	1,000	µg/kg	D1	
Phenanthrene		ND	100	µg/kg	D1	
Anthracene		ND	100	µg/kg	D1	
Fluoranthene		ND	100	µg/kg	D1	
Pyrene		ND	100	µg/kg	D1	
Benzo[a]anthracene		ND	100	µg/kg	D1	
Chrysene		ND	100	µg/kg	D1	
Benzo[b]fluoranthene		ND	100	µg/kg	D1	
Benzo[k]fluoranthene		ND	100	µg/kg	D1	
Benzo[a]pyrene		ND	100	µg/kg	D1	
Indeno[1,2,3-cd]pyrene		ND	100	µg/kg	D1	
Dibenz[a,h]anthracene		ND	100	µg/kg	D1	
Benzo[g,h,i]perylene		ND	100	µg/kg	D1	

Surrogate	Recovery	Limit
1,2-Dichlorobenzene-d4	100.% ✓	
Nitrobenzene-d5	70.% ✓	
2-Fluorobiphenyl	102.% ✓	

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Polynuclear Aromatic Hydrocarbons (PNA)

by EPA 8270 SIM

Sample ID	*Matrix*				*Lab Numbe*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
					Sampled: *01/05/99*
					Extracted: *01/11/99*
99EA-SB2-7-8.5	*Soil*				Analyzed: *01/12/99 by PB* — *L9540-13*
Naphthalene		**179.**	**100**	**µg/kg**	D1
Acenaphthylene		ND	100	µg/kg	D1
Acenaphthene		**729.**	**100**	**µg/kg**	D1
Fluorene		**930.**	**100**	**µg/kg**	D1
Pentachlorophenol		ND	1,000	µg/kg	D1
Phenanthrene		**2,400**	**100**	**µg/kg**	D1
Anthracene		**368.**	**100**	**µg/kg**	D1
Fluoranthene		**2,300**	**100**	**µg/kg**	D1
Pyrene		**1,450**	**100**	**µg/kg**	D1
Benzo[a]anthracene		**324.**	**100**	**µg/kg**	D1
Chrysene		**276.**	**100**	**µg/kg**	D1
Benzo[b]fluoranthene		**132.**	**100**	**µg/kg**	D1
Benzo[k]fluoranthene		ND	100	µg/kg	D1
Benzo[a]pyrene		ND	100	µg/kg	D1
Indeno[1,2,3-cd]pyrene		ND	100	µg/kg	D1
Dibenz[a,h]anthracene		ND	100	µg/kg	D1
Benzo[g,h,i]perylene		ND	100	µg/kg	D1

Surrogate	Recovery	Limit
1,2-Dichlorobenzene-d4	89.%	
Nitrobenzene-d5	62.%	
2-Fluorobiphenyl	89.%	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Polynuclear Aromatic Hydrocarbons (PNA)

by EPA 8270 SIM

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/11/99*	
99EA-SB2-8.5-10	*Soil*				**Analyzed:** *01/12/99 by PB*	*L9540-14*
Naphthalene		ND	100	µg/kg	D1	
Acenaphthylene		ND	100	µg/kg	D1	
Acenaphthene		ND	100	µg/kg	D1	
Fluorene		ND	100	µg/kg	D1	
Pentachlorophenol		ND	1,000	µg/kg	D1	
Phenanthrene		ND	100	µg/kg	D1	
Anthracene		ND	100	µg/kg	D1	
Fluoranthene		ND	100	µg/kg	D1	
Pyrene		ND	100	µg/kg	D1	
Benzo[a]anthracene		ND	100	µg/kg	D1	
Chrysene		ND	100	µg/kg	D1	
Benzo[b]fluoranthene		ND	100	µg/kg	D1	
Benzo[k]fluoranthene		ND	100	µg/kg	D1	
Benzo[a]pyrene		ND	100	µg/kg	D1	
Indeno[1,2,3-cd]pyrene		ND	100	µg/kg	D1	
Dibenz[a,h]anthracene		ND	100	µg/kg	D1	
Benzo[g,h,i]perylene		ND	100	µg/kg	D1	

Surrogate	Recovery	Limit
1,2-Dichlorobenzene-d4	96.%	
Nitrobenzene-d5	72.%	
2-Fluorobiphenyl	96.%	

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Polynuclear Aromatic Hydrocarbons (PNA)

by EPA 8270 SIM

Sample ID	*Matrix*					*Lab Numbe*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/11/99*	
99EA-SB3-5.5-7	*Soil*				Analyzed: *01/12/99 by PB*	*L9540-17*
Naphthalene		ND	100	µg/kg	D1	
Acenaphthylene		ND	100	µg/kg	D1	
Acenaphthene		ND	100	µg/kg	D1	
Fluorene		ND	100	µg/kg	D1	
Pentachlorophenol		ND	1,000	µg/kg	D1	
Phenanthrene		ND	100	µg/kg	D1	
Anthracene		ND	100	µg/kg	D1	
Fluoranthene		**214.**	**100**	**µg/kg**	**D1**	
Pyrene		**107.**	**100**	**µg/kg**	**D1**	
Benzo[a]anthracene		ND	100	µg/kg	D1	
Chrysene		ND	100	µg/kg	D1	
Benzo[b]fluoranthene		ND	100	µg/kg	D1	
Benzo[k]fluoranthene		ND	100	µg/kg	D1	
Benzo[a]pyrene		ND	100	µg/kg	D1	
Indeno[1,2,3-cd]pyrene		ND	100	µg/kg	D1	
Dibenz[a,h]anthracene		ND	100	µg/kg	D1	
Benzo[g,h,i]perylene		ND	100	µg/kg	D1	

Surrogate	Recovery	Limit
1,2-Dichlorobenzene-d4	91.%	
Nitrobenzene-d5	77.%	
2-Fluorobiphenyl	89.%	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Polynuclear Aromatic Hydrocarbons (PNA)

by EPA 8270 SIM

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/11/99*	
99EA-SB3-8.5-10	*Soil*				**Analyzed:** *01/12/99 by PB*	*L9540-19*
Naphthalene		ND	100	µg/kg	D1	
Acenaphthylene		ND	100	µg/kg	D1	
Acenaphthene		ND	100	µg/kg	D1	
Fluorene		ND	100	µg/kg	D1	
Pentachlorophenol		ND	1,000	µg/kg	D1	
Phenanthrene		ND	100	µg/kg	D1	
Anthracene		ND	100	µg/kg	D1	
Fluoranthene		ND	100	µg/kg	D1	
Pyrene		ND	100	µg/kg	D1	
Benzo[a]anthracene		ND	100	µg/kg	D1	
Chrysene		ND	100	µg/kg	D1	
Benzo[b]fluoranthene		ND	100	µg/kg	D1	
Benzo[k]fluoranthene		ND	100	µg/kg	D1	
Benzo[a]pyrene		ND	100	µg/kg	D1	
Indeno[1,2,3-cd]pyrene		ND	100	µg/kg	D1	
Dibenz[a,h]anthracene		ND	100	µg/kg	D1	
Benzo[g,h,i]perylene		ND	100	µg/kg	D1	

Surrogate	Recovery	Limit
1,2-Dichlorobenzene-d4	100.%	
Nitrobenzene-d5	91.%	
2-Fluorobiphenyl	102.%	

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Polynuclear Aromatic Hydrocarbons (PNA)

by EPA 8270 SIM

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/11/99*	
99EA-SB3-10-11.5	*Soil*				**Analyzed:** *01/12/99 by PB*	*L9540-20*
Naphthalene		ND	100	µg/kg	D1	
Acenaphthylene		ND	100	µg/kg	D1	
Acenaphthene		ND	100	µg/kg	D1	
Fluorene		ND	100	µg/kg	D1	
Pentachlorophenol		ND	1,000	µg/kg	D1	
Phenanthrene		ND	100	µg/kg	D1	
Anthracene		ND	100	µg/kg	D1	
Fluoranthene		ND	100	µg/kg	D1	
Pyrene		ND	100	µg/kg	D1	
Benzo[a]anthracene		ND	100	µg/kg	D1	
Chrysene		ND	100	µg/kg	D1	
Benzo[b]fluoranthene		ND	100	µg/kg	D1	
Benzo[k]fluoranthene		ND	100	µg/kg	D1	
Benzo[a]pyrene		ND	100	µg/kg	D1	
Indeno[1,2,3-cd]pyrene		ND	100	µg/kg	D1	
Dibenz[a,h]anthracene		ND	100	µg/kg	D1	
Benzo[g,h,i]perylene		ND	100	µg/kg	D1	

Surrogate	Recovery	Limit
1,2-Dichlorobenzene-d4	97.%	
Nitrobenzene-d5	87.%	
2-Fluorobiphenyl	100.%	

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semi-Volatile Petroleum Products
by NWTPH-DX

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppm)**	**Comment**	

					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB1-8.5-10	*Soil*				**Analyzed:** *01/08/99 by RJ*	*L9540-5*
Diesel Region		ND	25.	mg/kg		
Oil Region		ND	50.	mg/kg		

Surrogate	Recovery	Limit
2-Fluorobiphenyl	83.%	50 - 150
O-terphenyl	95.%	50 - 150

					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB1-14.5-16	*Soil*				**Analyzed:** *01/08/99 by RJ*	*L9540-9*
Diesel Region		ND	25.	mg/kg		
Oil Region		ND	50.	mg/kg		

Surrogate	Recovery	Limit
2-Fluorobiphenyl	79.%	50 - 150
O-terphenyl	86.%	50 - 150

					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB2-7-8.5	*Soil*				**Analyzed:** *01/08/99 by RJ*	*L9540-13*
Diesel Region		**460**	**25.**	**mg/kg**	**1**	
Oil Region		**75.**	**50.**	**mg/kg**	**2**	

Surrogate	Recovery	Limit
2-Fluorobiphenyl	98.%	50 - 150
O-terphenyl	95.%	50 - 150

[1] Product appears to be diesel.
[2] Product appears to be oil.

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semi-Volatile Petroleum Products
by NWTPH-DX

Sample ID	*Matrix*	Analyte	Result	Reporting Limit	Units (ppm)	Comment	*Lab Number*
						Sampled: *01/05/99*	
						Extracted: *01/08/99*	
99EA-SB2-8.5-10	*Soil*					Analyzed: *01/08/99 by RJ*	*L9540-14*
		Diesel Region	ND	25.	mg/kg		
		Oil Region	**62.**	**50.**	**mg/kg**	1	

Surrogate	Recovery	Limit
2-Fluorobiphenyl	78.%	50 - 150
O-terphenyl	87.%	50 - 150

[1] Product appears to be oil.

Sample ID	*Matrix*	Analyte	Result	Reporting Limit	Units (ppm)	Comment	*Lab Number*
						Sampled: *01/05/99*	
						Extracted: *01/08/99*	
99EA-SB3-5.5-7	*Soil*					Analyzed: *01/11/99 by RJ*	*L9540-17*
		Diesel Region	ND	130	mg/kg	D	
		Oil Region	**980**	**250**	**mg/kg**	1,D	

Surrogate	Recovery	Limit
2-Fluorobiphenyl	81.%	50 - 150
O-terphenyl	106.%	50 - 150

[1] Product appears to be oil.

Sample ID	*Matrix*	Analyte	Result	Reporting Limit	Units (ppm)	Comment	*Lab Number*
						Sampled: *01/05/99*	
						Extracted: *01/08/99*	
99EA-SB3-8.5-10	*Soil*					Analyzed: *01/08/99 by RJ*	*L9540-19*
		Diesel Region	ND	25.	mg/kg		
		Oil Region	ND	50.	mg/kg		

Surrogate	Recovery	Limit
2-Fluorobiphenyl	82.%	50 - 150
O-terphenyl	96.%	50 - 150

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semi-Volatile Petroleum Products

by NWTPH-DX

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppm)**	**Comment**	

					Sampled: *01/05/99*	
					Extracted: *01/08/99*	
99EA-SB3-10-11.5	*Soil*				**Analyzed:** *01/08/99 by RJ*	*L9540-20*
Diesel Region		ND	25.	mg/kg		
Oil Region		ND	50.	mg/kg		

Surrogate	Recovery	Limit
2-Fluorobiphenyl	77.%	50 - 150
O-terphenyl	88.%	50 - 150

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Numbe*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/13/99*	
99EA-SB1-8.5-10	*Soil*				**Analyzed:** *01/14/99*	*L9540-5*
Phenol		ND	330	µg/kg		
bis(2-Chloroethyl)ether		ND	330	µg/kg		
2-Chlorophenol		ND	330	µg/kg		
1,3-Dichlorobenzene		ND	330	µg/kg		
1,4-Dichlorobenzene		ND	330	µg/kg		
Benzyl Alcohol		ND	660	µg/kg		
1,2-Dichlorobenzene		ND	330	µg/kg		
2-Methylphenol		ND	330	µg/kg		
bis(2-Chloroisopropyl)ether		ND	330	µg/kg		
4-Methylphenol		ND	330	µg/kg		
N-Nitroso-di-n-propylamine		ND	330	µg/kg		
Hexachloroethane		ND	330	µg/kg		
Nitrobenzene		ND	330	µg/kg		
Isophorone		ND	330	µg/kg		
2-Nitrophenol		ND	330	µg/kg		
2,4-Dimethylphenol		ND	330	µg/kg		
Benzoic Acid		ND	1,650	µg/kg		
bis(2-Chloroethoxy)methane		ND	330	µg/kg		
2,4-Dichlorophenol		ND	330	µg/kg		
1,2,4-Trichlorobenzene		ND	330	µg/kg		
Naphthalene		ND	330	µg/kg		
4-Chloroaniline		ND	660	µg/kg		
Hexachlorobutadiene		ND	330	µg/kg		
4-Chloro-3-methylphenol		ND	660	µg/kg		
2-Methylnaphthalene		ND	330	µg/kg		
Hexachlorocyclopentadiene		ND	330	µg/kg		
2,4,6-Trichlorophenol		ND	330	µg/kg		
2,4,5-Trichlorophenol		ND	330	µg/kg		
2-Chloronaphthalene		ND	330	µg/kg		
2-Nitroaniline		ND	1,650	µg/kg		
Acenaphthylene		ND	330	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB1-8.5-10	*Soil*				**Sampled:** *01/05/99* **Extracted:** *01/13/99* **Analyzed:** *01/14/99*	*L9540-5*
Dimethylphthalate		ND	330	µg/kg		
2,6-Dinitrotoluene		ND	330	µg/kg		
Acenaphthene		ND	330	µg/kg		
3-Nitroaniline		ND	1,650	µg/kg		
2,4-Dinitrophenol		ND	1,650	µg/kg		
Dibenzofuran		ND	330	µg/kg		
2,4-Dinitrotoluene		ND	330	µg/kg		
4-Nitrophenol		ND	1,650	µg/kg		
Fluorene		ND	330	µg/kg		
4-Chlorophenyl-phenylether		ND	330	µg/kg		
Diethylphthalate		ND	330	µg/kg		
4-Nitroaniline		ND	1,650	µg/kg		
1,2-Diphenylhydrazine		ND	1,650	µg/kg		
4,6-Dinitro-2-methylphenol		ND	1,650	µg/kg		
n-Nitrosodiphenylamine		ND	330	µg/kg		
4-Bromophenyl-phenylether		ND	330	µg/kg		
Hexachlorobenzene		ND	330	µg/kg		
Pentachlorophenol		ND	1,650	µg/kg		
Phenanthrene		ND	330	µg/kg		
Anthracene		ND	330	µg/kg		
Di-n-butylphthalate		ND	330	µg/kg		
Fluoranthene		ND	330	µg/kg		
Pyrene		ND	330	µg/kg		
Butylbenzylphthalate		ND	330	µg/kg		
3,3'-Dichlorobenzidine		ND	660	µg/kg		
Benzo[a]anthracene		ND	330	µg/kg		
Chrysene		ND	330	µg/kg		
bis(2-Ethylhexyl)phthalate		ND	330	µg/kg		
Di-n-octylphthalate		ND	330	µg/kg		
Benzo[b]fluoranthene		ND	330	µg/kg		
Benzo[k]fluoranthene		ND	330	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB1-8.5-10	*Soil*				**Sampled:** *01/05/99* **Extracted:** *01/13/99* **Analyzed:** *01/14/99*	*L9540-5*
Benzo[a]pyrene		ND	330	µg/kg		
Indeno[1,2,3-cd]pyrene		ND	330	µg/kg		
Dibenz[a,h]anthracene		ND	330	µg/kg		
Benzo[g,h,i]perylene		ND	330	µg/kg		

Surrogate	Recovery	Limit
2-Fluorophenol	105.%	
Phenol-d6	110.%	
2,4,6-Tribromophenol	77.%	
1,2-Dichlorobenzene-d4	95.%	
Nitrobenzene-d5	107.%	
2-Fluorobiphenyl	98.%	

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB1-14.5-16	*Soil*				**Sampled:** *01/05/99* **Extracted:** *01/13/99* **Analyzed:** *01/14/99*	*L9540-9*
Phenol		ND	330	µg/kg		
bis(2-Chloroethyl)ether		ND	330	µg/kg		
2-Chlorophenol		ND	330	µg/kg		
1,3-Dichlorobenzene		ND	330	µg/kg		
1,4-Dichlorobenzene		ND	330	µg/kg		
Benzyl Alcohol		ND	660	µg/kg		
1,2-Dichlorobenzene		ND	330	µg/kg		
2-Methylphenol		ND	330	µg/kg		
bis(2-Chloroisopropyl)ether		ND	330	µg/kg		
4-Methylphenol		ND	330	µg/kg		
N-Nitroso-di-n-propylamine		ND	330	µg/kg		
Hexachloroethane		ND	330	µg/kg		
Nitrobenzene		ND	330	µg/kg		
Isophorone		ND	330	µg/kg		
2-Nitrophenol		ND	330	µg/kg		
2,4-Dimethylphenol		ND	330	µg/kg		
Benzoic Acid		ND	1,650	µg/kg		
bis(2-Chloroethoxy)methane		ND	330	µg/kg		
2,4-Dichlorophenol		ND	330	µg/kg		
1,2,4-Trichlorobenzene		ND	330	µg/kg		
Naphthalene		ND	330	µg/kg		
4-Chloroaniline		ND	660	µg/kg		
Hexachlorobutadiene		ND	330	µg/kg		
4-Chloro-3-methylphenol		ND	660	µg/kg		
2-Methylnaphthalene		ND	330	µg/kg		
Hexachlorocyclopentadiene		ND	330	µg/kg		
2,4,6-Trichlorophenol		ND	330	µg/kg		
2,4,5-Trichlorophenol		ND	330	µg/kg		
2-Chloronaphthalene		ND	330	µg/kg		
2-Nitroaniline		ND	1,650	µg/kg		
Acenaphthylene		ND	330	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/13/99*	
99EA-SB1-14.5-16	*Soil*				**Analyzed:** *01/14/99*	*L9540-9*
Dimethylphthalate		ND	330	µg/kg		
2,6-Dinitrotoluene		ND	330	µg/kg		
Acenaphthene		ND	330	µg/kg		
3-Nitroaniline		ND	1,650	µg/kg		
2,4-Dinitrophenol		ND	1,650	µg/kg		
Dibenzofuran		ND	330	µg/kg		
2,4-Dinitrotoluene		ND	330	µg/kg		
4-Nitrophenol		ND	1,650	µg/kg		
Fluorene		ND	330	µg/kg		
4-Chlorophenyl-phenylether		ND	330	µg/kg		
Diethylphthalate		ND	330	µg/kg		
4-Nitroaniline		ND	1,650	µg/kg		
1,2-Diphenylhydrazine		ND	1,650	µg/kg		
4,6-Dinitro-2-methylphenol		ND	1,650	µg/kg		
n-Nitrosodiphenylamine		ND	330	µg/kg		
4-Bromophenyl-phenylether		ND	330	µg/kg		
Hexachlorobenzene		ND	330	µg/kg		
Pentachlorophenol		ND	1,650	µg/kg		
Phenanthrene		ND	330	µg/kg		
Anthracene		ND	330	µg/kg		
Di-n-butylphthalate		ND	330	µg/kg		
Fluoranthene		ND	330	µg/kg		
Pyrene		ND	330	µg/kg		
Butylbenzylphthalate		ND	330	µg/kg		
3,3'-Dichlorobenzidine		ND	660	µg/kg		
Benzo[a]anthracene		ND	330	µg/kg		
Chrysene		ND	330	µg/kg		
bis(2-Ethylhexyl)phthalate		ND	330	µg/kg		
Di-n-octylphthalate		ND	330	µg/kg		
Benzo[b]fluoranthene		ND	330	µg/kg		
Benzo[k]fluoranthene		ND	330	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/13/99*	
99EA-SB1-14.5-16	*Soil*				**Analyzed:** *01/14/99*	*L9540-9*
Benzo[a]pyrene		ND	330	µg/kg		
Indeno[1,2,3-cd]pyrene		ND	330	µg/kg		
Dibenz[a,h]anthracene		ND	330	µg/kg		
Benzo[g,h,i]perylene		ND	330	µg/kg		

Surrogate	Recovery	Limit
2-Fluorophenol	99.%	
Phenol-d6	107.%	
2,4,6-Tribromophenol	67.%	
1,2-Dichlorobenzene-d4	86.%	
Nitrobenzene-d5	106.%	
2-Fluorobiphenyl	90.%	

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/13/99*	
99EA-SB2-7-8.5	*Soil*				**Analyzed:** *01/15/99 by PB*	*L9540-13*
Phenol		ND	3,300	µg/kg	D1	
bis(2-Chloroethyl)ether		ND	3,300	µg/kg	D1	
2-Chlorophenol		ND	3,300	µg/kg	D1	
1,3-Dichlorobenzene		ND	3,300	µg/kg	D1	
1,4-Dichlorobenzene		ND	3,300	µg/kg	D1	
Benzyl Alcohol		ND	6,600	µg/kg	D1	
1,2-Dichlorobenzene		ND	3,300	µg/kg	D1	
2-Methylphenol		ND	3,300	µg/kg	D1	
bis(2-Chloroisopropyl)ether		ND	3,300	µg/kg	D1	
4-Methylphenol		ND	3,300	µg/kg	D1	
N-Nitroso-di-n-propylamine		ND	3,300	µg/kg	D1	
Hexachloroethane		ND	3,300	µg/kg	D1	
Nitrobenzene		ND	3,300	µg/kg	D1	
Isophorone		ND	3,300	µg/kg	D1	
2-Nitrophenol		ND	3,300	µg/kg	D1	
2,4-Dimethylphenol		ND	3,300	µg/kg	D1	
Benzoic Acid		ND	16,500	µg/kg	D1	
bis(2-Chloroethoxy)methane		ND	3,300	µg/kg	D1	
2,4-Dichlorophenol		ND	3,300	µg/kg	D1	
1,2,4-Trichlorobenzene		ND	3,300	µg/kg	D1	
Naphthalene		ND	3,300	µg/kg	D1	
4-Chloroaniline		ND	6,600	µg/kg	D1	
Hexachlorobutadiene		ND	3,300	µg/kg	D1	
4-Chloro-3-methylphenol		ND	6,600	µg/kg	D1	
2-Methylnaphthalene		ND	3,300	µg/kg	D1	
Hexachlorocyclopentadiene		ND	3,300	µg/kg	D1	
2,4,6-Trichlorophenol		ND	3,300	µg/kg	D1	
2,4,5-Trichlorophenol		ND	3,300	µg/kg	D1	
2-Chloronaphthalene		ND	3,300	µg/kg	D1	
2-Nitroaniline		ND	16,500	µg/kg	D1	
Acenaphthylene		ND	3,300	µg/kg	D1	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB2-7-8.5	*Soil*				**Sampled:** *01/05/99* **Extracted:** *01/13/99* **Analyzed:** *01/15/99 by PB*	*L9540-13*
Dimethylphthalate		ND	3,300	µg/kg	D1	
2,6-Dinitrotoluene		ND	3,300	µg/kg	D1	
Acenaphthene		ND	3,300	µg/kg	D1	
3-Nitroaniline		ND	16,500	µg/kg	D1	
2,4-Dinitrophenol		ND	16,500	µg/kg	D1	
Dibenzofuran		ND	3,300	µg/kg	D1	
2,4-Dinitrotoluene		ND	3,300	µg/kg	D1	
4-Nitrophenol		ND	16,500	µg/kg	D1	
Fluorene		ND	3,300	µg/kg	D1	
4-Chlorophenyl-phenylether		ND	3,300	µg/kg	D1	
Diethylphthalate		ND	3,300	µg/kg	D1	
4-Nitroaniline		ND	16,500	µg/kg	D1	
1,2-Diphenylhydrazine		ND	16,500	µg/kg	D1	
4,6-Dinitro-2-methylphenol		ND	16,500	µg/kg	D1	
n-Nitrosodiphenylamine		ND	3,300	µg/kg	D1	
4-Bromophenyl-phenylether		ND	3,300	µg/kg	D1	
Hexachlorobenzene		ND	3,300	µg/kg	D1	
Pentachlorophenol		ND	16,500	µg/kg	D1	
Phenanthrene		**5,060**	**3,300**	**µg/kg**	**D1**	
Anthracene		ND	3,300	µg/kg	D1	
Di-n-butylphthalate		ND	3,300	µg/kg	D1	
Fluoranthene		**4,070**	**3,300**	**µg/kg**	**D1**	
Pyrene		ND	3,300	µg/kg	D1	
Butylbenzylphthalate		ND	3,300	µg/kg	D1	
3,3'-Dichlorobenzidine		ND	6,600	µg/kg	D1	
Benzo[a]anthracene		ND	3,300	µg/kg	D1	
Chrysene		ND	3,300	µg/kg	D1	
bis(2-Ethylhexyl)phthalate		ND	3,300	µg/kg	D1	
Di-n-octylphthalate		ND	3,300	µg/kg	D1	
Benzo[b]fluoranthene		ND	3,300	µg/kg	D1	
Benzo[k]fluoranthene		ND	3,300	µg/kg	D1	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/13/99*	
99EA-SB2-7-8.5	*Soil*				**Analyzed:** *01/15/99 by PB*	*L9540-13*
Benzo[a]pyrene		ND	3,300	µg/kg	D1	
Indeno[1,2,3-cd]pyrene		ND	3,300	µg/kg	D1	
Dibenz[a,h]anthracene		ND	3,300	µg/kg	D1	
Benzo[g,h,i]perylene		ND	3,300	µg/kg	D1	

Surrogate	Recovery	Limit
2-Fluorophenol	90.%	
Phenol-d6	114.%	
2,4,6-Tribromophenol	54.%	
1,2-Dichlorobenzene-d4	84.%	
Nitrobenzene-d5	111.%	
2-Fluorobiphenyl	82.%	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB2-8.5-10	*Soil*				*Sampled: 01/05/99* *Extracted: 01/13/99* *Analyzed: 01/14/99*	*L9540-14*
Phenol		ND	330	µg/kg		
bis(2-Chloroethyl)ether		ND	330	µg/kg		
2-Chlorophenol		ND	330	µg/kg		
1,3-Dichlorobenzene		ND	330	µg/kg		
1,4-Dichlorobenzene		ND	330	µg/kg		
Benzyl Alcohol		ND	660	µg/kg		
1,2-Dichlorobenzene		ND	330	µg/kg		
2-Methylphenol		ND	330	µg/kg		
bis(2-Chloroisopropyl)ether		ND	330	µg/kg		
4-Methylphenol		ND	330	µg/kg		
N-Nitroso-di-n-propylamine		ND	330	µg/kg		
Hexachloroethane		ND	330	µg/kg		
Nitrobenzene		ND	330	µg/kg		
Isophorone		ND	330	µg/kg		
2-Nitrophenol		ND	330	µg/kg		
2,4-Dimethylphenol		ND	330	µg/kg		
Benzoic Acid		ND	1,650	µg/kg		
bis(2-Chloroethoxy)methane		ND	330	µg/kg		
2,4-Dichlorophenol		ND	330	µg/kg		
1,2,4-Trichlorobenzene		ND	330	µg/kg		
Naphthalene		ND	330	µg/kg		
4-Chloroaniline		ND	660	µg/kg		
Hexachlorobutadiene		ND	330	µg/kg		
4-Chloro-3-methylphenol		ND	660	µg/kg		
2-Methylnaphthalene		ND	330	µg/kg		
Hexachlorocyclopentadiene		ND	330	µg/kg		
2,4,6-Trichlorophenol		ND	330	µg/kg		
2,4,5-Trichlorophenol		ND	330	µg/kg		
2-Chloronaphthalene		ND	330	µg/kg		
2-Nitroaniline		ND	1,650	µg/kg		
Acenaphthylene		ND	330	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		Result	Reporting Limit	Units (ppb)	Comment	
					Sampled: *01/05/99*	
					Extracted: *01/13/99*	
99EA-SB2-8.5-10	*Soil*				Analyzed: *01/14/99*	*L9540-14*
Dimethylphthalate		ND	330	µg/kg		
2,6-Dinitrotoluene		ND	330	µg/kg		
Acenaphthene		ND	330	µg/kg		
3-Nitroaniline		ND	1,650	µg/kg		
2,4-Dinitrophenol		ND	1,650	µg/kg		
Dibenzofuran		ND	330	µg/kg		
2,4-Dinitrotoluene		ND	330	µg/kg		
4-Nitrophenol		ND	1,650	µg/kg		
Fluorene		ND	330	µg/kg		
4-Chlorophenyl-phenylether		ND	330	µg/kg		
Diethylphthalate		ND	330	µg/kg		
4-Nitroaniline		ND	1,650	µg/kg		
1,2-Diphenylhydrazine		ND	1,650	µg/kg		
4,6-Dinitro-2-methylphenol		ND	1,650	µg/kg		
n-Nitrosodiphenylamine		ND	330	µg/kg		
4-Bromophenyl-phenylether		ND	330	µg/kg		
Hexachlorobenzene		ND	330	µg/kg		
Pentachlorophenol		ND	1,650	µg/kg		
Phenanthrene		ND	330	µg/kg		
Anthracene		ND	330	µg/kg		
Di-n-butylphthalate		ND	330	µg/kg		
Fluoranthene		ND	330	µg/kg		
Pyrene		ND	330	µg/kg		
Butylbenzylphthalate		ND	330	µg/kg		
3,3'-Dichlorobenzidine		ND	660	µg/kg		
Benzo[a]anthracene		ND	330	µg/kg		
Chrysene		ND	330	µg/kg		
bis(2-Ethylhexyl)phthalate		ND	330	µg/kg		
Di-n-octylphthalate		ND	330	µg/kg		
Benzo[b]fluoranthene		ND	330	µg/kg		
Benzo[k]fluoranthene		ND	330	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	

					Sampled: *01/05/99*	
					Extracted: *01/13/99*	
99EA-SB2-8.5-10	*Soil*				**Analyzed:** *01/14/99*	*L9540-14*
Benzo[a]pyrene		ND	330	µg/kg		
Indeno[1,2,3-cd]pyrene		ND	330	µg/kg		
Dibenz[a,h]anthracene		ND	330	µg/kg		
Benzo[g,h,i]perylene		ND	330	µg/kg		

Surrogate	Recovery	Limit
2-Fluorophenol	112.%	
Phenol-d6	124.%	
2,4,6-Tribromophenol	71.%	
1,2-Dichlorobenzene-d4	99.%	
Nitrobenzene-d5	119.%	
2-Fluorobiphenyl	98.%	

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB3-5.5-7	*Soil*				Sampled: *01/05/99* Extracted: *01/13/99* Analyzed: *01/14/99*	*L9540-17*
Phenol		ND	3,300	µg/kg	D1	
bis(2-Chloroethyl)ether		ND	3,300	µg/kg	D1	
2-Chlorophenol		ND	3,300	µg/kg	D1	
1,3-Dichlorobenzene		ND	3,300	µg/kg	D1	
1,4-Dichlorobenzene		ND	3,300	µg/kg	D1	
Benzyl Alcohol		ND	6,600	µg/kg	D1	
1,2-Dichlorobenzene		ND	3,300	µg/kg	D1	
2-Methylphenol		ND	3,300	µg/kg	D1	
bis(2-Chloroisopropyl)ether		ND	3,300	µg/kg	D1	
4-Methylphenol		ND	3,300	µg/kg	D1	
N-Nitroso-di-n-propylamine		ND	3,300	µg/kg	D1	
Hexachloroethane		ND	3,300	µg/kg	D1	
Nitrobenzene		ND	3,300	µg/kg	D1	
Isophorone		ND	3,300	µg/kg	D1	
2-Nitrophenol		ND	3,300	µg/kg	D1	
2,4-Dimethylphenol		ND	3,300	µg/kg	D1	
Benzoic Acid		ND	16,500	µg/kg	D1	
bis(2-Chloroethoxy)methane		ND	3,300	µg/kg	D1	
2,4-Dichlorophenol		ND	3,300	µg/kg	D1	
1,2,4-Trichlorobenzene		ND	3,300	µg/kg	D1	
Naphthalene		ND	3,300	µg/kg	D1	
4-Chloroaniline		ND	6,600	µg/kg	D1	
Hexachlorobutadiene		ND	3,300	µg/kg	D1	
4-Chloro-3-methylphenol		ND	6,600	µg/kg	D1	
2-Methylnaphthalene		ND	3,300	µg/kg	D1	
Hexachlorocyclopentadiene		ND	3,300	µg/kg	D1	
2,4,6-Trichlorophenol		ND	3,300	µg/kg	D1	
2,4,5-Trichlorophenol		ND	3,300	µg/kg	D1	
2-Chloronaphthalene		ND	3,300	µg/kg	D1	
2-Nitroaniline		ND	16,500	µg/kg	D1	
Acenaphthylene		ND	3,300	µg/kg	D1	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/13/99*	
99EA-SB3-5.5-7	*Soil*				**Analyzed:** *01/14/99*	*L9540-17*
Dimethylphthalate		ND	3,300	µg/kg	D1	
2,6-Dinitrotoluene		ND	3,300	µg/kg	D1	
Acenaphthene		ND	3,300	µg/kg	D1	
3-Nitroaniline		ND	16,500	µg/kg	D1	
2,4-Dinitrophenol		ND	16,500	µg/kg	D1	
Dibenzofuran		ND	3,300	µg/kg	D1	
2,4-Dinitrotoluene		ND	3,300	µg/kg	D1	
4-Nitrophenol		ND	16,500	µg/kg	D1	
Fluorene		ND	3,300	µg/kg	D1	
4-Chlorophenyl-phenylether		ND	3,300	µg/kg	D1	
Diethylphthalate		ND	3,300	µg/kg	D1	
4-Nitroaniline		ND	16,500	µg/kg	D1	
1,2-Diphenylhydrazine		ND	16,500	µg/kg	D1	
4,6-Dinitro-2-methylphenol		ND	16,500	µg/kg	D1	
n-Nitrosodiphenylamine		ND	3,300	µg/kg	D1	
4-Bromophenyl-phenylether		ND	3,300	µg/kg	D1	
Hexachlorobenzene		ND	3,300	µg/kg	D1	
Pentachlorophenol		ND	16,500	µg/kg	D1	
Phenanthrene		ND	3,300	µg/kg	D1	
Anthracene		ND	3,300	µg/kg	D1	
Di-n-butylphthalate		ND	3,300	µg/kg	D1	
Fluoranthene		ND	3,300	µg/kg	D1	
Pyrene		ND	3,300	µg/kg	D1	
Butylbenzylphthalate		ND	3,300	µg/kg	D1	
3,3'-Dichlorobenzidine		ND	6,600	µg/kg	D1	
Benzo[a]anthracene		ND	3,300	µg/kg	D1	
Chrysene		ND	3,300	µg/kg	D1	
bis(2-Ethylhexyl)phthalate		ND	3,300	µg/kg	D1	
Di-n-octylphthalate		ND	3,300	µg/kg	D1	
Benzo[b]fluoranthene		ND	3,300	µg/kg	D1	
Benzo[k]fluoranthene		ND	3,300	µg/kg	D1	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	

Sampled: *01/05/99*
Extracted: *01/13/99*
Analyzed: *01/14/99*

99EA-SB3-5.5-7	*Soil*					*L9540-17*
Benzo[a]pyrene		ND	3,300	µg/kg	D1	
Indeno[1,2,3-cd]pyrene		ND	3,300	µg/kg	D1	
Dibenz[a,h]anthracene		ND	3,300	µg/kg	D1	
Benzo[g,h,i]perylene		ND	3,300	µg/kg	D1	

Surrogate	Recovery	Limit
2-Fluorophenol	83.%	
Phenol-d6	100.%	
2,4,6-Tribromophenol	55.%	
1,2-Dichlorobenzene-d4	82.%	
Nitrobenzene-d5	95.%	
2-Fluorobiphenyl	75.%	37 - 115

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB3-8.5-10	*Soil*				*Sampled: 01/05/99* *Extracted: 01/13/99* *Analyzed: 01/15/99*	*L9540-19*
Phenol		ND	330	µg/kg		
bis(2-Chloroethyl)ether		ND	330	µg/kg		
2-Chlorophenol		ND	330	µg/kg		
1,3-Dichlorobenzene		ND	330	µg/kg		
1,4-Dichlorobenzene		ND	330	µg/kg		
Benzyl Alcohol		ND	660	µg/kg		
1,2-Dichlorobenzene		ND	330	µg/kg		
2-Methylphenol		ND	330	µg/kg		
bis(2-Chloroisopropyl)ether		ND	330	µg/kg		
4-Methylphenol		ND	330	µg/kg		
N-Nitroso-di-n-propylamine		ND	330	µg/kg		
Hexachloroethane		ND	330	µg/kg		
Nitrobenzene		ND	330	µg/kg		
Isophorone		ND	330	µg/kg		
2-Nitrophenol		ND	330	µg/kg		
2,4-Dimethylphenol		ND	330	µg/kg		
Benzoic Acid		ND	1,650	µg/kg		
bis(2-Chloroethoxy)methane		ND	330	µg/kg		
2,4-Dichlorophenol		ND	330	µg/kg		
1,2,4-Trichlorobenzene		ND	330	µg/kg		
Naphthalene		ND	330	µg/kg		
4-Chloroaniline		ND	660	µg/kg		
Hexachlorobutadiene		ND	330	µg/kg		
4-Chloro-3-methylphenol		ND	660	µg/kg		
2-Methylnaphthalene		ND	330	µg/kg		
Hexachlorocyclopentadiene		ND	330	µg/kg		
2,4,6-Trichlorophenol		ND	330	µg/kg		
2,4,5-Trichlorophenol		ND	330	µg/kg		
2-Chloronaphthalene		ND	330	µg/kg		
2-Nitroaniline		ND	1,650	µg/kg		
Acenaphthylene		ND	330	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB3-8.5-10	*Soil*				*Sampled: 01/05/99* *Extracted: 01/13/99* *Analyzed: 01/15/99*	*L9540-19*
Dimethylphthalate		ND	330	µg/kg		
2,6-Dinitrotoluene		ND	330	µg/kg		
Acenaphthene		ND	330	µg/kg		
3-Nitroaniline		ND	1,650	µg/kg		
2,4-Dinitrophenol		ND	1,650	µg/kg		
Dibenzofuran		ND	330	µg/kg		
2,4-Dinitrotoluene		ND	330	µg/kg		
4-Nitrophenol		ND	1,650	µg/kg		
Fluorene		ND	330	µg/kg		
4-Chlorophenyl-phenylether		ND	330	µg/kg		
Diethylphthalate		ND	330	µg/kg		
4-Nitroaniline		ND	1,650	µg/kg		
1,2-Diphenylhydrazine		ND	1,650	µg/kg		
4,6-Dinitro-2-methylphenol		ND	1,650	µg/kg		
n-Nitrosodiphenylamine		ND	330	µg/kg		
4-Bromophenyl-phenylether		ND	330	µg/kg		
Hexachlorobenzene		ND	330	µg/kg		
Pentachlorophenol		ND	1,650	µg/kg		
Phenanthrene		ND	330	µg/kg		
Anthracene		ND	330	µg/kg		
Di-n-butylphthalate		ND	330	µg/kg		
Fluoranthene		ND	330	µg/kg		
Pyrene		ND	330	µg/kg		
Butylbenzylphthalate		ND	330	µg/kg		
3,3'-Dichlorobenzidine		ND	660	µg/kg		
Benzo[a]anthracene		ND	330	µg/kg		
Chrysene		ND	330	µg/kg		
bis(2-Ethylhexyl)phthalate		ND	330	µg/kg		
Di-n-octylphthalate		ND	330	µg/kg		
Benzo[b]fluoranthene		ND	330	µg/kg		
Benzo[k]fluoranthene		ND	330	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	

					Sampled: *01/05/99*	
					Extracted: *01/13/99*	
99EA-SB3-8.5-10	*Soil*				**Analyzed:** *01/15/99*	*L9540-19*
Benzo[a]pyrene		ND	330	µg/kg		
Indeno[1,2,3-cd]pyrene		ND	330	µg/kg		
Dibenz[a,h]anthracene		ND	330	µg/kg		
Benzo[g,h,i]perylene		ND	330	µg/kg		

Surrogate	Recovery	Limit
2-Fluorophenol	105.%	
Phenol-d6	115.%	
2,4,6-Tribromophenol	67.%	
1,2-Dichlorobenzene-d4	93.%	
Nitrobenzene-d5	113.%	
2-Fluorobiphenyl	95.%	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA-SB3-10-11.5	*Soil*				**Sampled:** *01/05/99* **Extracted:** *01/13/99* **Analyzed:** *01/15/99*	*L9540-20*
Phenol		ND	330	µg/kg		
bis(2-Chloroethyl)ether		ND	330	µg/kg		
2-Chlorophenol		ND	330	µg/kg		
1,3-Dichlorobenzene		ND	330	µg/kg		
1,4-Dichlorobenzene		ND	330	µg/kg		
Benzyl Alcohol		ND	660	µg/kg		
1,2-Dichlorobenzene		ND	330	µg/kg		
2-Methylphenol		ND	330	µg/kg		
bis(2-Chloroisopropyl)ether		ND	330	µg/kg		
4-Methylphenol		ND	330	µg/kg		
N-Nitroso-di-n-propylamine		ND	330	µg/kg		
Hexachloroethane		ND	330	µg/kg		
Nitrobenzene		ND	330	µg/kg		
Isophorone		ND	330	µg/kg		
2-Nitrophenol		ND	330	µg/kg		
2,4-Dimethylphenol		ND	330	µg/kg		
Benzoic Acid		ND	1,650	µg/kg		
bis(2-Chloroethoxy)methane		ND	330	µg/kg		
2,4-Dichlorophenol		ND	330	µg/kg		
1,2,4-Trichlorobenzene		ND	330	µg/kg		
Naphthalene		ND	330	µg/kg		
4-Chloroaniline		ND	660	µg/kg		
Hexachlorobutadiene		ND	330	µg/kg		
4-Chloro-3-methylphenol		ND	660	µg/kg		
2-Methylnaphthalene		ND	330	µg/kg		
Hexachlorocyclopentadiene		ND	330	µg/kg		
2,4,6-Trichlorophenol		ND	330	µg/kg		
2,4,5-Trichlorophenol		ND	330	µg/kg		
2-Chloronaphthalene		ND	330	µg/kg		
2-Nitroaniline		ND	1,650	µg/kg		
Acenaphthylene		ND	330	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/05/99*	
					Extracted: *01/13/99*	
99EA-SB3-10-11.5	*Soil*				**Analyzed:** *01/15/99*	*L9540-20*
Dimethylphthalate		ND	330	µg/kg		
2,6-Dinitrotoluene		ND	330	µg/kg		
Acenaphthene		ND	330	µg/kg		
3-Nitroaniline		ND	1,650	µg/kg		
2,4-Dinitrophenol		ND	1,650	µg/kg		
Dibenzofuran		ND	330	µg/kg		
2,4-Dinitrotoluene		ND	330	µg/kg		
4-Nitrophenol		ND	1,650	µg/kg		
Fluorene		ND	330	µg/kg		
4-Chlorophenyl-phenylether		ND	330	µg/kg		
Diethylphthalate		ND	330	µg/kg		
4-Nitroaniline		ND	1,650	µg/kg		
1,2-Diphenylhydrazine		ND	1,650	µg/kg		
4,6-Dinitro-2-methylphenol		ND	1,650	µg/kg		
n-Nitrosodiphenylamine		ND	330	µg/kg		
4-Bromophenyl-phenylether		ND	330	µg/kg		
Hexachlorobenzene		ND	330	µg/kg		
Pentachlorophenol		ND	1,650	µg/kg		
Phenanthrene		ND	330	µg/kg		
Anthracene		ND	330	µg/kg		
Di-n-butylphthalate		ND	330	µg/kg		
Fluoranthene		ND	330	µg/kg		
Pyrene		ND	330	µg/kg		
Butylbenzylphthalate		ND	330	µg/kg		
3,3'-Dichlorobenzidine		ND	660	µg/kg		
Benzo[a]anthracene		ND	330	µg/kg		
Chrysene		ND	330	µg/kg		
bis(2-Ethylhexyl)phthalate		ND	330	µg/kg		
Di-n-octylphthalate		ND	330	µg/kg		
Benzo[b]fluoranthene		ND	330	µg/kg		
Benzo[k]fluoranthene		ND	330	µg/kg		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	

					Sampled: *01/05/99*	
					Extracted: *01/13/99*	
99EA-SB3-10-11.5	*Soil*				**Analyzed:** *01/15/99*	*L9540-20*
Benzo[a]pyrene		ND	330	µg/kg		
Indeno[1,2,3-cd]pyrene		ND	330	µg/kg		
Dibenz[a,h]anthracene		ND	330	µg/kg		
Benzo[g,h,i]perylene		ND	330	µg/kg		

Surrogate	Recovery	Limit
2-Fluorophenol	91.%	
Phenol-d6	103.%	
2,4,6-Tribromophenol	65.%	
1,2-Dichlorobenzene-d4	77.%	
Nitrobenzene-d5	101.%	
2-Fluorobiphenyl	86.%	

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

Blank

Inorganics - Soils (mg/kg)

Analyte	Result	Reporting Limit	Q	Date Analyzed
Chloride	ND	1		01/08/99
Cyanide, Total	ND	1		01/15/99
Fluoride	ND	1		01/08/99
Nitrate as N	ND	1		01/08/99
pH	NA	0.1		01/08/99
Sulfate as SO4	ND	5		01/08/99

Comments: Cyanide Batch QC for L9540-5 & -9.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

Blank

Inorganics - Soils (mg/kg)

Analyte	Result	Reporting Limit	Q	Date Analyzed
Cyanide, Total	ND	1		01/15/99

Comments: Cyanide Batch QC for L9540-13, -14, -17, -19, & -20.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

LCSW

Inorganics - Soils (mg/kg)

Analyte	True Value	Result	% Recovery	% Limit	Date Analyzed
Chloride	10.00	9.34	93	90-110	01/08/99
Cyanide, Total	60	53	88	85-115	01/15/99
Fluoride	4.00	3.90	98	90-110	01/08/99
Nitrate as N	5.00	4.50	90	90-110	01/08/99
pH	8.0	8.0	100	0.1 †	01/08/99
Sulfate as SO4	30.0	28.5	95	90-110	01/08/99

Comments: † Limit for pH is calculated using the difference of results.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

Duplicate

Inorganics - Soils (mg/kg)

Analyte	Result	Duplicate Result	Reporting Limit	RPD	RPD Limit	Q	Date Analyzed
Chloride	3	2	1	40	20	‡	01/08/99
Cyanide, Total	ND	ND	1	<1	20		01/15/99
Fluoride	ND	ND	1	<1	20		01/08/99
Nitrate as N	ND	ND	1	<1	20		01/08/99
pH	6.0	5.9	0.1	0.1	±0.1 †		01/08/99
Sulfate as SO4	ND	ND	5	<1	20		01/08/99

Comments: † Limit for pH is calculated using the difference of results, not Relative Percent Difference (RPD).
‡ QC limits do not apply when the sample or duplicate result is less than 5 times the reporting limit

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

Spike

Inorganics - Soils (mg/kg)

Analyte	Spike Result	Sample Result	Spike Added	% Recovery	% Limit	Q	Date Analyzed
Chloride	72	3	78	88	75-125		01/08/99
Cyanide, Total	25	ND	26	96	75-125		01/15/99
Fluoride	28	ND	39	72	75-125	K1	01/08/99
Nitrate as N	34	ND	39	87	75-125		01/08/99
pH	NA	NA	NA	NA			01/08/99
Sulfate as SO4	220	ND	235	94	75-125		01/08/99

Comments: K1 = Batch matrix spike recovery outside laboratory QC limits due to suspected matrix interfernce.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

Method Blank

Metals / Total by Weight (mg/kg)

Analyte	Result	Reporting Limit	Q	Date Analyzed
Antimony	ND	2.0		01/18/99
Arsenic	ND	0.20		01/19/99
Beryllium	ND	0.10		01/18/99
Cadmium	ND	0.20		01/18/99
Chromium	ND	0.50		01/18/99
Copper	ND	0.20		01/18/99
Lead	ND	0.10		01/18/99
Mercury	ND	0.10		01/20/99
Nickel	ND	1.0		01/18/99
Selenium	ND	0.20		01/19/99
Silver	ND	0.30		01/18/99
Thallium	ND	0.20		01/20/99
Zinc	ND	1.0		01/18/99

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1-800-644-0967

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

LCSW

Metals / Total by Volume (mg/L)

Analyte	True Value	Result	% Recovery	% Limit	Date Analyzed
Antimony	1.00	0.991	99	80-120	01/18/99
Arsenic	0.0800	0.0820	103	80-120	01/19/99
Beryllium	0.100	0.0995	100	80-120	01/18/99
Cadmium	0.100	0.0956	96	80-120	01/18/99
Chromium	0.400	0.386	97	80-120	01/18/99
Copper	0.500	0.487	97	80-120	01/18/99
Lead	0.0400	0.0399	100	80-120	01/18/99
Mercury	0.00200	0.0018	90	80-120	01/20/99
Nickel	1.00	0.962	96	80-120	01/18/99
Selenium	0.0200	0.0225	113	80-120	01/19/99
Silver	0.100	0.0932	93	80-120	01/18/99
Thallium	0.100	0.0938	94	80-120	01/20/99
Zinc	1.00	0.946	95	80-120	01/18/99

Comments: LCSW = Laboratory Control Sample: Water

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1-800-644-0967

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

LCSS

Metals / Total by Weight (mg/kg)

Analyte	Mean Value	Result	% Recovery	mg/kg Limit	Date Analyzed
Antimony	129	127	98	89.0 - 170	01/18/99
Arsenic	68.9	77.6	113	45.5 -92.2	01/19/99
Beryllium	105	106	101	90.6 - 120	01/18/99
Cadmium	58.0	57.8	100	49.6 - 66.3	01/18/99
Chromium	92.3	85.7	93	74.2 - 110	01/18/99
Copper	178	172	97	151 - 205	01/18/99
Lead	147	133	90	78.8 - 216	01/18/99
Mercury	3.96	4.60	116	2.82 - 5.11	01/20/99
Nickel	70.4	71.2	101	61.1 - 79.7	01/18/99
Selenium	75.3	87.6	116	57.8 - 92.8	01/19/99
Silver	72.8	71.5	98	61.4 - 84.2	01/18/99
Thallium	58.5	75.1	128	56.2 - 108*	01/20/99
Zinc	92.0	88.9	97	77.2 - 107	01/18/99

Comments: LCSS: Laboratory Control Sample: Solid Control limits are based on OAL control charts
* = less then 20 points have been collected, therefore manufactures control limits are being used

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1-800-644-0967

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

Duplicate
Metals / Total by Weight (mg/kg)

Analyte	Result	Duplicate Result	Reporting Limit	RPD	RPD Limit	Q	Date Analyzed
Antimony	ND	ND	2.0	NA	35		01/18/99
Arsenic	1.1	1.3	1.0	17	35		01/19/99
Beryllium	ND	ND	0.10	NA	35		01/18/99
Cadmium	ND	ND	0.20	NA	35		01/18/99
Chromium	6.68	8.72	0.50	26	35		01/18/99
Copper	15.4	17.7	0.20	14	35		01/18/99
Lead	1.1	1.2	0.50	9	35		01/18/99
Mercury	ND	ND	0.10	NA	35		01/20/99
Nickel	8.3	9.8	1.0	17	35		01/18/99
Selenium	ND	ND	1.0	NA	35		01/19/99
Silver	ND	ND	0.30	NA	35		01/18/99
Thallium	ND	ND	1.0	NA	35		01/20/99
Zinc	21.6	24.7	1.0	13	35		01/18/99

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1-800-644-0967

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

Spike

Metals / Total by Weight (mg/kg)

Analyte	Spike Result	Sample Result	Spike Added	% Recovery	% Limit	Q	Date Analyzed
Antimony	78.3	ND	98.1	80	75-125		01/18/99
Arsenic	7.79	1.1	7.93	84	75-125		01/19/99
Beryllium	9.57	ND	9.81	98	75-125		01/18/99
Cadmium	9.01	ND	9.81	92	75-125		01/18/99
Chromium	43.7	6.68	39.3	94	75-125		01/18/99
Copper	61.8	15.4	49.1	95	75-125		01/18/99
Lead	5.10	1.1	4.00	100	75-125		01/18/99
Mercury	1.86	ND	1.84	101	75-125		01/20/99
Nickel	98.2	8.3	98.1	92	75-125		01/18/99
Selenium	2.9	ND	1.98	146	75-125	‡	01/19/99
Silver	8.81	ND	9.81	90	75-125		01/18/99
Thallium	9.1	ND	9.92	92	75-125		01/20/99
Zinc	113	21.6	98.1	93	75-125		01/18/99

Comments: ‡ All samples associated with this batch were less than the reporting limit, therefore no flag was needed.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1-800-644-0967

OAL

L9540

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **5491C0796B.00**

Volatiles LCS
by EPA Method 8260

Lab Number

CAS #	Analyte	Results	Amount Spiked	Units	Recovery
Analyzed : *01/11/99*					*LCS0111*
75-35-4	1,1-Dichloroethene	41	40	ug/Kg	103%
71-43-2	Benzene	43	40	ug/Kg	106%
79-01-6	Trichloroethene	43	40	ug/Kg	108%
108-88-3	Toluene	41	40	ug/Kg	103%
108-90-7	Chlorobenzene	41	40	ug/Kg	103%

Surrogates	Recovery LCS0111
1,2-Dichloroethane-d4	105%
Toluene-d8	101%
4-Bromofluorobenzene	101%

none detected = nd

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **5491C0796B.00**

Volatiles MS/MSD
by EPA Method 8260

Sample ID	Analyte	MS % Recovery	MSD % Recovery	RPD	Comment	*Lab Number*
XXXXX	*Soil*					*L9521-4*
CAS #						
75-35-4	1,1-Dichloroethene	97%	99%	3%		
71-43-2	Benzene	95%	95%	0%		
79-01-6	Trichloroethene	96%	95%	1%		
108-88-3	Toluene	91%	98%	8%		
108-90-7	Chlorobenzene	94%	98%	4%		

Surrogates	Recovery MS	Recovery MSD
1,2-Dichloroethane-d4	102%	99%
Toluene-d8	98%	105%
4-Bromofluorobenzene	100%	97%

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **5491C0796B.00**

Volatiles Blank
by EPA Method 8260

Sample ID	Analyte	Result	Reporting Limit	Units	Comment
MB0108Z					Analyzed : 01/08/99
CAS #					
75-71-8	Dichlorodifluoromethane	nd	200	ug/Kg	
74-87-3	Chloromethane	nd	200	ug/Kg	
75-01-4	Vinyl chloride	nd	200	ug/Kg	
74-83-9	Bromomethane	nd	200	ug/Kg	
75-00-3	Chloroethane	nd	200	ug/Kg	
75-69-4	Trichlorofluoromethane	nd	100	ug/Kg	
67-64-1	Acetone	nd	2,000	ug/Kg	
75-35-4	1,1-Dichloroethene	nd	100	ug/Kg	
75-09-2	Methylene chloride	nd	200	ug/Kg	
75-15-0	Carbon disulfide	nd	100	ug/Kg	
156-60-5	trans-1,2-Dichloroethene	nd	100	ug/Kg	
75-34-3	1,1-Dichloroethane	nd	100	ug/Kg	
78-93-3	2-Butanone	nd	2,000	ug/Kg	
590-20-7	2,2-Dichloropropane	nd	100	ug/Kg	
156-59-4	cis-1,2-Dichloroethene	nd	100	ug/Kg	
74-97-5	Bromochloromethane	nd	100	ug/Kg	
67-66-3	Chloroform	nd	100	ug/Kg	
71-55-6	1,1,1-Trichloroethane	nd	100	ug/Kg	
56-23-5	Carbon tetrachloride	nd	100	ug/Kg	
563-58-6	1,1-Dichloropropene	nd	100	ug/Kg	
71-43-2	Benzene	nd	100	ug/Kg	
107-06-2	1,2-Dichloroethane	nd	100	ug/Kg	
79-01-6	Trichloroethene	nd	100	ug/Kg	

none detected = nd
Sample: L9540-17

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1 800 644 0967

OAL

L9540

Client: Woodward Clyde Consultants
Contact: Michelle McClelland

Project: 5491C0796B.00

Volatiles Blank
by EPA Method 8260

Sample ID / CAS #	Analyte	Result	Reporting Limit	Units	Comment
MB01082					Analyzed : 01/08/99
78-87-5	1,2-Dichloropropane	nd	100	ug/Kg	
74-95-3	Dibromomethane	nd	100	ug/Kg	
75-27-4	Bromodichloromethane	nd	100	ug/Kg	
10061-01-5	cis-1,3-Dichloropropene	nd	100	ug/Kg	
108-10-1	4-Methyl-2-pentanone	nd	1,000	ug/Kg	
108-88-3	Toluene	nd	100	ug/Kg	
591-78-6	2-Hexanone	nd	1,000	ug/Kg	
10061-02-6	trans-1,3-Dichloropropene	nd	100	ug/Kg	
79-00-5	1,1,2-Trichloroethane	nd	100	ug/Kg	
127-18-4	Tetrachloroethene	nd	100	ug/Kg	
542-75-6	1,3-Dichloropropane	nd	100	ug/Kg	
124-48-1	Dibromochloromethane	nd	100	ug/Kg	
106-93-4	1,2-Dibromoethane	nd	100	ug/Kg	
108-90-7	Chlorobenzene	nd	100	ug/Kg	
630-20-6	1,1,1,2-Tetrachloroethane	nd	100	ug/Kg	
100-41-4	Ethylbenzene	nd	100	ug/Kg	
100-42-5	Styrene	nd	100	ug/Kg	
75-25-2	Bromoform	nd	100	ug/Kg	
98-82-8	Isopropylbenzene	nd	100	ug/Kg	
108-86-1	Bromobenzene	nd	100	ug/Kg	
79-34-5	1,1,2,2-Tetrachloroethane	nd	100	ug/Kg	
96-18-4	1,2,3-Trichloropropane	nd	100	ug/Kg	
103-65-1	n-Propylbenzene	nd	100	ug/Kg	

none detected = nd
Sample: L9540-17

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll Free 1 800 644 0967

OAL

L9540

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **5491C0796B.00**

Volatiles Blank
by EPA Method 8260

Sample ID	Analyte	Result	Reporting Limit	Units	Comment
MB0108Z					Analyzed : *01/08/99*
CAS #					
95-49-8	2-Chlorotoluene	nd	100	ug/Kg	
106-43-4	4-Chlorotoluene	nd	100	ug/Kg	
108-67-8	1,3,5-Trimethylbenzene	nd	100	ug/Kg	
98-06-6	tert-Butylbenzene	nd	100	ug/Kg	
95-63-6	1,2,4-Trimethylbenzene	nd	100	ug/Kg	
135-98-8	sec-Butylbenzene	nd	100	ug/Kg	
541-73-1	1,3-Dichlorobenzene	nd	100	ug/Kg	
99-87-6	4-Isopropyltoluene	nd	100	ug/Kg	
106-46-7	1,4-Dichlorobenzene	nd	100	ug/Kg	
95-50-1	1,2-Dichlorobenzene	nd	100	ug/Kg	
104-51-8	n-Butylbenzene	nd	100	ug/Kg	
96-12-8	1,2-Dibromo-3-chloropropane	nd	100	ug/Kg	
120-82-1	1,2,4-Trichlorobenzene	nd	100	ug/Kg	
87-68-3	Hexachlorobutadiene	nd	100	ug/Kg	
91-20-3	Naphthalene	nd	100	ug/Kg	
87-61-6	1,2,3-Trichlorobenzene	nd	100	ug/Kg	
	Total Xylenes	nd	100	ug/Kg	

Surrogates	Recovery MB0108Z
1,2-Dichloroethane-d4	94%
Toluene-d8	91%
4-Bromofluorobenzene	98%

none detected = nd
Sample: L9540-17

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll Free 1 800-644-0967

OAL

L9540

Client: Woodward Clyde Consultants
Contact: Michelle McClelland

Project: 5491C0796B.00

Volatiles Blank
by EPA Method 8260

Sample ID / Analyte		Result	Reporting Limit	Units	Comment
MB0108W					Analyzed : 01/11/99
CAS #					
75-71-8	Dichlorodifluoromethane	nd	20	ug/Kg	
74-87-3	Chloromethane	nd	20	ug/Kg	
75-01-4	Vinyl chloride	nd	20	ug/Kg	
74-83-9	Bromomethane	nd	20	ug/Kg	
75-00-3	Chloroethane	nd	20	ug/Kg	
75-69-4	Trichlorofluoromethane	nd	10	ug/Kg	
67-64-1	Acetone	nd	200	ug/Kg	
75-35-4	1,1-Dichloroethene	nd	10	ug/Kg	
75-09-2	Methylene chloride	nd	20	ug/Kg	
75-15-0	Carbon disulfide	nd	10	ug/Kg	
156-60-5	trans-1,2-Dichloroethene	nd	10	ug/Kg	
75-34-3	1,1-Dichloroethane	nd	10	ug/Kg	
78-93-3	2-Butanone	nd	200	ug/Kg	
590-20-7	2,2-Dichloropropane	nd	10	ug/Kg	
156-59-4	cis-1,2-Dichloroethene	nd	10	ug/Kg	
74-97-5	Bromochloromethane	nd	10	ug/Kg	
67-66-3	Chloroform	nd	10	ug/Kg	
71-55-6	1,1,1-Trichloroethane	nd	10	ug/Kg	
56-23-5	Carbon tetrachloride	nd	10	ug/Kg	
563-58-6	1,1-Dichloropropene	nd	10	ug/Kg	
71-43-2	Benzene	nd	10	ug/Kg	
107-06-2	1,2-Dichloroethane	nd	10	ug/Kg	
79-01-6	Trichloroethene	nd	10	ug/Kg	

none detected = nd
Samples: L9540-5, -9, -13, -14, -19, -20

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1 800 644 0967

OAL

L9540

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **5491C0796B.00**

Volatiles Blank
by EPA Method 8260

Sample ID / Analyte	Result	Reporting Limit	Units	Comment
MB0108W				Analyzed : *01/11/99*
CAS #				
78-87-5 1,2-Dichloropropane	nd	10	ug/Kg	
74-95-3 Dibromomethane	nd	10	ug/Kg	
75-27-4 Bromodichloromethane	nd	10	ug/Kg	
10061-01-5 cis-1,3-Dichloropropene	nd	10	ug/Kg	
108-10-1 4-Methyl-2-pentanone	nd	100	ug/Kg	
108-88-3 Toluene	nd	10	ug/Kg	
591-78-6 2-Hexanone	nd	100	ug/Kg	
10061-02-6 trans-1,3-Dichloropropene	nd	10	ug/Kg	
79-00-5 1,1,2-Trichloroethane	nd	10	ug/Kg	
127-18-4 Tetrachloroethene	nd	10	ug/Kg	
542-75-6 1,3-Dichloropropane	nd	10	ug/Kg	
124-48-1 Dibromochloromethane	nd	10	ug/Kg	
106-93-4 1,2-Dibromoethane	nd	10	ug/Kg	
108-90-7 Chlorobenzene	nd	10	ug/Kg	
630-20-6 1,1,1,2-Tetrachloroethane	nd	10	ug/Kg	
100-41-4 Ethylbenzene	nd	10	ug/Kg	
100-42-5 Styrene	nd	10	ug/Kg	
75-25-2 Bromoform	nd	10	ug/Kg	
98-82-8 Isopropylbenzene	nd	10	ug/Kg	
108-86-1 Bromobenzene	nd	10	ug/Kg	
79-34-5 1,1,2,2-Tetrachloroethane	nd	10	ug/Kg	
96-18-4 1,2,3-Trichloropropane	nd	10	ug/Kg	
103-65-1 n-Propylbenzene	nd	10	ug/Kg	

none detected = nd
Samples: L9540-5, -9, -13, -14, -19, -20

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590 5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-free 1 800 644 0967

OAL

L9540

Client: Woodward Clyde Consultants
Contact: Michelle McClelland

Project: 5491C0796B.00

Volatiles Blank
by EPA Method 8260

Sample ID	Analyte	Result	Reporting Limit	Units	Comment
MB0108W				Analyzed : 01/11/99	
CAS #					
95-49-8	2-Chlorotoluene	nd	10	ug/Kg	
106-43-4	4-Chlorotoluene	nd	10	ug/Kg	
108-67-8	1,3,5-Trimethylbenzene	nd	10	ug/Kg	
98-06-6	tert-Butylbenzene	nd	10	ug/Kg	
95-63-6	1,2,4-Trimethylbenzene	nd	10	ug/Kg	
135-98-8	sec-Butylbenzene	nd	10	ug/Kg	
541-73-1	1,3-Dichlorobenzene	nd	10	ug/Kg	
99-87-6	4-Isopropyltoluene	nd	10	ug/Kg	
106-46-7	1,4-Dichlorobenzene	nd	10	ug/Kg	
95-50-1	1,2-Dichlorobenzene	nd	10	ug/Kg	
104-51-8	n-Butylbenzene	nd	10	ug/Kg	
96-12-8	1,2-Dibromo-3-chloropropane	nd	10	ug/Kg	
120-82-1	1,2,4-Trichlorobenzene	nd	10	ug/Kg	
87-68-3	Hexachlorobutadiene	nd	10	ug/Kg	
91-20-3	Naphthalene	nd	10	ug/Kg	
87-61-6	1,2,3-Trichlorobenzene	nd	10	ug/Kg	
	Total Xylenes	nd	10	ug/Kg	

Surrogates	Recovery MB0108W
1,2-Dichloroethane-d4	98%
Toluene-d8	112%
4-Bromofluorobenzene	113%

none detected = nd
Samples: L9540-5, -9, -13, -14, -19, -20

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590 1404
www.oalab.com/oal • Toll-Free 1-800-644-0967

OAL

L9540

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **5491C0796B.00**

EPA Method 8310 Polynuclear Aromatic Hydrocarbons Blank by modified EPA method 8270 (SIM)

Sample ID					Lab Number
Analyte	Blank Result	Reporting Limit	Units	COMMENT	

MB011IF SOIL MB011IF Analyzed: 01/12/99 MB011IF

CAS#				
91-20-3	Naphthalene	nd	10	ug/Kg
208-96-8	Acenaphthylene	nd	10	ug/Kg
83-32-9	Acenaphthene	nd	10	ug/Kg
86-73-7	Fluorene	nd	10	ug/Kg
87-86-5	Pentachlorophenol	nd	100	ug/Kg
85-01-8	Phenanthrene	nd	10	ug/Kg
120-12-7	Anthracene	nd	10	ug/Kg
206-44-0	Fluoranthene	nd	10	ug/Kg
129-00-0	Pyrene	nd	10	ug/Kg
56-55-3	Benzo[a]anthracene	nd	10	ug/Kg
218-01-9	Chrysene	nd	10	ug/Kg
205-99-2	Benzo[b]fluoranthene	nd	10	ug/Kg
207-08-9	Benzo[k]fluoranthene	nd	10	ug/Kg
50-32-8	Benzo[a]pyrene	nd	10	ug/Kg
193-39-5	Indeno[1,2,3-cd]pyrene	nd	10	ug/Kg
53-70-3	Dibenz[a,h]anthracene	nd	10	ug/Kg
191-24-2	Benzo[g,h,i]perylene	nd	10	ug/Kg

Acid Surrogates:	Recovery MB011IF
2-Fluorophenol	99%
Phenol-d4	98%
2,4,6-Tribromophenol	63%

Base / Neutral Surrogates:	MB011IF
1,2-Dichlorobenzene-d4	102%
Nitrobenzene-d5	89%
2-Fluorobiphenyl	101%

none detected = nd
Samples: L9540-5,9,13,14,17,19,20

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503 590 5300 • Fax 503 590-1404
www.oalab.com/oal • Toll-Free 1 800-644 0967

OAL

L9540

Client: *Woodward Clyde Consultants*
Contact: *Michelle McClelland*

Project: *5491C0796B.00*
IP - Longview

Batch Q.C.

Method Blank

NWTPH-Dx/Soil (mg/kg)

Analyte	Result	Reporting Limit	Q	Date Analyzed
NWTPH-Dx				
Diesel range	ND	25		01/08/99
Oil range	ND	50		

Surrogates	% Recovery
Fluorobiphenyl	97
O-terphenyl	113

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalb.com/oal • Toll Free 1-800-644-0867

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

LCS

NWTPH-Dx/Soil (mg/kg)

Analyte	Result	True Value	% Recovery	Q	Date Analyzed
NWTPH-Dx	135	128	105		01/06/99

Surrogates	% Recovery
Fluorobiphenyl	104
O-terphenyl	110

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***5491C0796B.00***
IP - Longview

Batch Q.C.

MS

NWTPH-Dx/Soil (mg/kg)

Analyte	Sample Result	MS Result	True Value	% Recovery	Q	Date Analyzed
NWTPH-Dx	ND	137	124	110		01/06/99

Surrogates	% Recovery Sample	% Recovery MS
Fluorobiphenyl	93	113
O-terphenyl	100	112

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: *Woodward Clyde Consultants*
Contact: *Michelle McClelland*

Project: *5491C0796B.00*
IP - Longview

Batch Q.C.

Duplicate

NWTPH-Dx/Soil (mg/kg)

Analyte	Result	Duplicate Result	RPD	Reporting Limit	Q	Date Analyzed
NWTPH-Dx						
Diesel range	ND	ND	NA	25		01/06/99
Oil range	ND	ND	NA	50		

Surrogates	% Recovery Sample	% Recovery Duplicate
Fluorobiphenyl	93	81
O-terphenyl	100	81

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **5491C0796B.00**

Semivolatiles Matrix Spike
by EPA Method 8270

Sample ID		Lab Number	Lab Number		
	Analyte	Recovery	Recovery	RPD	COMMENT
	SOIL	*L9540-5MS*	*L9540-5MSD*		**Sampled:** *NA* **Analyzed:** *01/14/99*
CAS#					
108-95-2	Phenol	107%	115%	8%	
95-57-8	2-Chlorophenol	90%	96%	6%	
106-46-7	1,4-Dichlorobenzene	62%	66%	6%	
621-64-7	N-Nitroso-di-n-propylamine	86%	95%	9%	
120-82-1	1,2,4-Trichlorobenzene	45%	47%	4%	
59-50-7	4-Chloro-3-methylphenol	88%	91%	3%	
83-32-9	Acenaphthene	73%	79%	9%	
121-14-2	2,4-Dinitrotoluene	58%	61%	5%	
100-02-7	4-Nitrophenol	101%	111%	9%	
87-86-5	Pentachlorophenol	60%	65%	7%	
129-00-0	Pyrene	71%	78%	9%	

	Recovery *L9540-5MS*	Recovery *L9540-5MSD*
Acid Surrogates:		
2-Fluorophenol	102%	105%
Phenol-d6	111%	113%
2,4,6-Tribromophenol	80%	79%
Base / Neutral Surrogates:		
1,2-Dichlorobenzene d-4	95%	92%
Nitrobenzene-d5	111%	112%
2-Fluorobiphenyl	99%	98%

none detected = nd

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll Free 1-800-644-0867

OAL

L9540

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **5491C0796B.00**

Semivolatiles LCS
by EPA Method 8270

Sample ID	Lab Number	
	Analyte	**Recovery**	**COMMENT**

	SOIL	*LCS0113F*	**Sampled:** *NA*
CAS#			**Analyzed:** *01/14/99*
108-95-2	Phenol	105%	
95-57-8	2-Chlorophenol	94%	
106-46-7	1,4-Dichlorobenzene	100%	
621-64-7	N-Nitroso-di-n-propylamine	128%	
120-82-1	1,2,4-Trichlorobenzene	77%	
59-50-7	4-Chloro-3-methylphenol	89%	
83-32-9	Acenaphthene	116%	
121-14-2	2,4-Dinitrotoluene	91%	
100-02-7	4-Nitrophenol	98%	
87-86-5	Pentachlorophenol	69%	
129-00-0	Pyrene	117%	

	Recovery
Acid Surrogates:	*LCS0113F*
2-Fluorophenol	101%
Phenol-d6	103%
2,4,6-Tribromophenol	89%
Base / Neutral Surrogates:	
1,2-Dichlorobenzene d-4	97%
Nitrobenzene-d5	106%
2-Fluorobiphenyl	99%

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9540

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **5491C0796B.00**

Semivolatiles Blank
by EPA Method 8270

Sample ID	Analyte	Blank Result	Reporting Limit	Units	COMMENT	Lab Number
MB0113F	SOIL	MB0113F			Analyzed: 01/14/99	MB0113F
CAS#						
108-95-2	Phenol	nd	330	ug/Kg		
111-44-4	bis(2-Chloroethyl)ether	nd	330	ug/Kg		
95-57-8	2-Chlorophenol	nd	330	ug/Kg		
541-73-1	1,3-Dichlorobenzene	nd	330	ug/Kg		
106-46-7	1,4-Dichlorobenzene	nd	330	ug/Kg		
100-51-4	Benzyl alcohol	nd	660	ug/Kg		
95-50-1	1,2-Dichlorobenzene	nd	330	ug/Kg		
95-48-7	2-Methylphenol	nd	330	ug/Kg		
108-60-1	bis(2-chloroisopropyl)ether	nd	330	ug/Kg		
106-44-5	4-Methylphenol	nd	330	ug/Kg		
621-64-7	N-Nitroso-di-n-propylamine	nd	330	ug/Kg		
67-72-1	Hexachloroethane	nd	330	ug/Kg		
98-95-3	Nitrobenzene	nd	330	ug/Kg		
78-59-1	Isophorone	nd	330	ug/Kg		
88-75-5	2-Nitrophenol	nd	330	ug/Kg		
105-67-9	2,4-Dimethylphenol	nd	330	ug/Kg		
65-85-0	Benzoic acid	nd	1,650	ug/Kg		
111-91-1	bis(2-Chloroethoxy)methane	nd	330	ug/Kg		
120-83-2	2,4-Dichlorophenol	nd	330	ug/Kg		
120-82-1	1,2,4-Trichlorobenzene	nd	330	ug/Kg		
91-20-3	Naphthalene	nd	330	ug/Kg		
106-47-8	4-Chloroaniline	nd	660	ug/Kg		
87-68-3	Hexachlorobutadiene	nd	330	ug/Kg		
59-50-7	4-Chloro-3-methylphenol	nd	660	ug/Kg		
91-57-6	2-Methylnaphthalene	nd	330	ug/Kg		
77-47-4	Hexachlorocyclopentadiene	nd	330	ug/Kg		

none detected = nd
Samples: L9540-5,9,13,14,17,19,20

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590 5300 • Fax 503-590-1404
www.oalab.com/oal • Toll Free 1 800-644-0967

OAL

L9540

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **5491C0796B.00**

Semivolatiles Blank
by EPA Method 8270

Sample ID	Analyte	Blank Result	Reporting Limit	Units	COMMENT	Lab Number
MB0113F	SOIL	MB0113F			Analyzed: 01/14/99	MB0113F
CAS#						
88-06-2	2,4,6-Trichlorophenol	nd	330	ug/Kg		
95-95-4	2,4,5-Trichlorophenol	nd	330	ug/Kg		
91-58-7	2-Chloronaphthalene	nd	330	ug/Kg		
88-74-4	2-Nitroaniline	nd	1,650	ug/Kg		
208-96-8	Acenaphthylene	nd	330	ug/Kg		
131-11-3	Dimethylphthalate	nd	330	ug/Kg		
606-20-2	2,6-Dinitrotoluene	nd	330	ug/Kg		
83-32-9	Acenaphthene	nd	330	ug/Kg		
99-09-2	3-Nitroaniline	nd	1,650	ug/Kg		
51-28-5	2,4-Dinitrophenol	nd	1,650	ug/Kg		
132-64-9	Dibenzofuran	nd	330	ug/Kg		
121-14-2	2,4-Dinitrotoluene	nd	330	ug/Kg		
100-02-7	4-Nitrophenol	nd	1,650	ug/Kg		
86-73-7	Fluorene	nd	330	ug/Kg		
7005-72-3	4-Chlorophenyl-phenylether	nd	330	ug/Kg		
84-66-2	Diethylphthalate	nd	330	ug/Kg		
100-01-6	4-Nitroaniline	nd	1,650	ug/Kg		
122-66-7	1,2-Diphenylhydrazine	nd	1,650	ug/Kg		
534-52-1	4,6-Dinitro-2-methylphenol	nd	1,650	ug/Kg		
86-30-6	n-Nitrosodiphenylamine	nd	330	ug/Kg		
101-55-3	4-Bromophenyl-phenylether	nd	330	ug/Kg		
118-74-1	Hexachlorobenzene	nd	330	ug/Kg		
87-86-5	Pentachlorophenol	nd	1,650	ug/Kg		
85-01-8	Phenanthrene	nd	330	ug/Kg		
120-12-7	Anthracene	nd	330	ug/Kg		
84-74-2	Di-n-butylphthalate	nd	330	ug/Kg		

none detected = nd
Samples: L9540-5,9,13,14,17,19,20

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590 5300 • Fax 503 590 1404
www.oalab.com/oal • Toll-Free 1-800-644 0967

OAL

L9540

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **5491C0796B.00**

Semivolatiles Blank
by EPA Method 8270

Sample ID	Analyte	Blank Result	Reporting Limit	Units	COMMENT	Lab Number
MB0113F	SOIL	MB0113F			Analyzed: 01/14/99	MB0113F
CAS#						
206-44-0	Fluoranthene	nd	330	ug/Kg		
129-00-0	Pyrene	nd	330	ug/Kg		
85-68-7	Butylbenzylphthalate	nd	330	ug/Kg		
91-94-1	3,3'-Dichlorobenzidine	nd	660	ug/Kg		
56-55-3	Benzo[a]anthracene	nd	330	ug/Kg		
218-01-9	Chrysene	nd	330	ug/Kg		
117-81-7	bis(2-Ethylhexyl)phthalate	nd	330	ug/Kg		
117-84-0	Di-n-octylphthalate	nd	330	ug/Kg		
205-99-2	Benzo[b]fluoranthene	nd	330	ug/Kg		
207-08-9	Benzo[k]fluoranthene	nd	330	ug/Kg		
50-32-8	Benzo[a]pyrene	nd	330	ug/Kg		
193-39-5	Indeno[1,2,3-cd]pyrene	nd	330	ug/Kg		
53-70-3	Dibenz[a,h]anthracene	nd	330	ug/Kg		
191-24-2	Benzo[g,h,i]perylene	nd	330	ug/Kg		

	Recovery MB0113F
Acid Surrogates:	
2-Fluorophenol	101%
Phenol-d6	100%
2,4,6-Tribromophenol	92%
Base / Neutral Surrogates:	
1,2-Dichlorobenzene d-4	98%
Nitrobenzene-d5	103%
2-Fluorobiphenyl	101%

none detected = nd
Samples: L9540-5,9,13,14,17,19,20

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1-800-644-0967

URSGWC
CHAIN OF CUSTODY RECORD

1501 4th Avenue, Suite 1500, Seattle, WA 98101-1662
Phone: (206) 343-7933 Fax: (206) 343-0513

~~Groundwater~~ Sampling: OFF Site

Site Name: IP - Longview

URSGWC Project Number: 5491C0796B.00
URSGWC Proj. Mgr.: Randy Siegal Ph/Fax: 206-343-7933 / 298

Shipping Form Tracking No.:
Lab: No of Coolers:
Sampler (Signature): M. McClelland
Turn Around Time (circle): 48 hrs. 5 days (STD) Other:
Printed Name: M. McClelland
Page 1 of

(X) As per M. McClelland add organophos pest + herbicides 1/7/99 - PLB + conventional pollutants

Date 1999	Time	Sample Identification	Matrix	Lab ID	Analyses: Indicators 8270 sim[1]	PAHs Only 8270 sim[2]	NWTPH-Dx[3]	VOCs 8260	SVOCs 8270	Pest/PCBs	total ~~and diss~~ metals (13)	Convent. * (1)	OrganoPhos Pest (2)	Herbicides (3)	HOLD	Preservatives Y/N	Number of Containers
5Jan		99EA-SB1-2-4	Soil	L9540-1											X	N	6
		99EA-SB1-4-5.5		-2											X		6
		99EA-SB1-5.5-7		-3											X		5 @
		99EA-SB1-7-8.5		-4											X		6
		99EA-SB1-8.5-10		-5	X	X	X	X	X	X	X	X	X	X			6
		99EA-SB1-10-11.5		-6											X		4
		99EA-SB1-11.5-13		-7											X		
		99EA-SB1-13-14.5		-8											X		
		99EA-SB1-14.5-16		-9	X	X	X	X	X	X	X	X	X	X			
		99EA-SB2-2.5-4		-10											X		
		99EA-SB2-4-5.5		-11											X		
		99EA-SB2-5.5-7		-12											X		
		99EA-SB2-7-8.5		-13	X	X	X	X	X	X	X	X	X	X			
		99EA-SB2-8.5-10		-14	X	X	X	X	X	X	X	X	X	X			
		99EA-SB3-2.5-4		-15											X		
		99EA-SB3-4-5.5		-16											X		
		99EA-SB3-5.5-7		-17	X	X	X	X	X	X	X	X	X	X			
		99EA-SB3-7-8.5		-18											X		
		99EA-SB3-8.5-10		-19	X	X	X	X	X	X	X	X	X	X			
↓		99EA-SB3-10-11.5	↓	-20	X	X	X	X	X	X	X	X	X	X		↓	↓

Comments: Please call Michelle McClelland with questions.
1: Report naphthalene, benzo(a)anthracene, chrysene and pentachlorophenol only.
2: PAHs Only will also include Pentachlorophenol.
3: Include chromatograms with all NWTPH analyses.
* CN, Chloride, Fluoride, Nitrate, pH, Sulfate, Sulfide

Total Number of Containers 90
2 ICD 25 40z. JARS & 65 80z. JARS @ 1°C. PL

Relinquished By (signature):	Date/Time	Relinquished By (signature):	Date/Time
M. McClelland	6 Jan 99 1345	[signature]	6-1-99 11:00
Received By (signature):	**Date/Time**	**~~Relinquished~~ Received By (signature):**	**Date/Time**
[signature]	6-1-99 1345	[signature]	1/6/99 1600

i:\forms\field\IP-chain.xls 11/19/98

@ SB1-5.5-7 BROKE 1 40z. JAR 1/6/99 PL

OAL

MEMO

To: Michelle McClelland, Woodward Clyde
From: Patty Boyden
Subject: IP Data (OAL# L9664)
Date: 2/4/99

Attached, please find the following:

- Final data for L9664
- NWTPH-Dx Chromatograms (L9664-1,-2)
- Batch QC for all parameters
- Table with surrogate recoveries for GCMS 8270

Base/Neutral Surrogates:

Compound	% Recovery (Soil)	% Recovery (H2O)
1,2-Dichlorobenzene	56-148	73-114
2-Fluorbiphenyl	77-115	66-132
Nitrobenzene-d5	64-143	47-150

***Acid Surrogates:**

Compound	% Recovery (Soil)	% Recovery (H2O)
2-Fluorophenol	25-121	21-110
Phenol-d6	24-113	10-110
2,4,6-Tribromophenol	19-122	10-123

*Source = Environmental Laboratory Data Evaluation, Smith-1996, Genium Publishing.

If you have any questions, feel free to contact me at 590-1338.

Thank you,

Patty Boyden,
Project Manager

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

February 3, 1999

Michelle McClelland
Woodward Clyde Consultants
1501 Fourth Avenue
Suite 1500
Seattle, WA 98101

Phone: (206) 343-7933 ext: 225
FAX: (206) 343-0513

Re: Laboratory Sample Analysis

Project: 540990003-01
IP - Longview

Project Manager: Michelle McClelland

Dear Michelle McClelland:

On Wednesday, January 13, 1999, OAL received five (5) water samples for analysis. The samples were analyzed utilizing EPA, ASTM, or equivalent methodology.

Should you have any questions concerning the results in this report, please contact us at (503) 590-5300. Refer to OAL login number L9664.

Sincerely,

Patty Boyden
Project Manager

Suzanne LeMay
QA/QC Officer

OAL

L9664

Sample Summary

Sample ID	Lab #	Description	Sampled	Received
99EA 3A	L9664-1	water	01/13/99 12:17	01/13/99
99EA 3D	L9664-2	water	01/13/99 12:35	01/13/99
99EA 2A	L9664-3	water	01/13/99 14:55	01/13/99
99EA 1A	L9664-4	water	01/13/99 15:25	01/13/99
VOC TRIP BLANK	L9664-5	water	01/13/99	01/13/99

Definition of Terms

H Sample was analyzed past its hold time.

K Batch matrix spike recovery outside laboratory QC limits.

K1 Batch matrix spike recovery outside laboratory QC limits due to suspected matrix interference.

ND Analytical result was below the reporting limit.

Y Analysis was subcontracted. A copy of the subcontractor's final report will be made available upon request.

Analysts

Initials	Analyst	Title
CAC	Cindy Covey	Technician
DM	Dan Miller	Organics Chemist
DMC²	Debbie McBreen-McKenzie	Chemist /Supervisor
GCK	Bill Kernion	Chemist
JD	Jason Davendonis	Technician
KDK	Kirk Keyes	Chemist
NB	Nancy Boss	Technician
NM	Nick Miller	Technician
PB	Pat Buddrus	Organics Chemist
RJ	Rick Jordan	Chemist
SHS	Sophia Hussein-Swoboda	Technician

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Method Summary

Analysis	Method
8260 Volatile Organic Compounds (VOC)	EPA 8260
Alkalinity, Total as CaCO3	EPA 310.1 / SM 2320B
Antimony	EPA 200.7/6010
Arsenic	EPA 200.9
Beryllium	EPA 200.7/6010
Cadmium	EPA 200.9
Chloride	EPA 300.0
Chlorinated Herbicides	EPA 8150 MOD
Chlorinated Pesticides and PCBs	EPA 8080/8081
Chromium	EPA 200.9
Copper	EPA 200.7/6010
Cyanide, Total	EPA 335.3/9010
Fluoride	EPA 300.0
Lead	EPA 200.9
Mercury	EPA 245.1/7470A
Nickel	EPA 200.7/6010
Nitrate as N	EPA 300.0
Organophosphorus Pesticides	EPA 8141 MOD
Polynuclear Aromatic Hydrocarbons (PNA)	EPA 8270 SIM
Selenium	EPA 200.9
Semi-Volatile Petroleum Products	NWTPH-DX
Semivolatiles	EPA 8270
Silver	EPA 200.9
Sulfate as SO4	EPA 300.0
Sulfide	EPA 376.1/9030
Thallium	EPA 200.9
Zinc	EPA 200.7/6010
pH	EPA 150.1/9040
pH Temperature	EPA 150.1/9040

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Dissolved Metals

Sample ID	*Matrix*							*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**		**Comment**	**Analyst**
				Sampled: *01/13/99*				
				Filtration EPA 3005A: *01/20/99*				
99EA 3A	*Water*			**Mercury Digestion:** *01/21/99*				*L9664-1*
Antimony	ND	0.020	mg/L	01/27/99	EPA 200.7/6010			GCK
Arsenic	ND	0.0005	mg/L	01/25/99	EPA 200.9		1	DMC²
Beryllium	ND	0.0002	mg/L	01/27/99	EPA 200.7/6010		2	GCK
Cadmium	ND	0.000050	mg/L	01/26/99	EPA 200.9			SHS
Chromium	ND	0.00050	mg/L	01/25/99	EPA 200.9			DMC²
Copper	ND	0.0020	mg/L	01/27/99	EPA 200.7/6010			GCK
Lead	ND	0.0010	mg/L	01/21/99	EPA 200.9			GCK
Mercury	ND	0.00020	mg/L	01/22/99	EPA 245.1/7470A			JD
Nickel	ND	0.010	mg/L	01/27/99	EPA 200.7/6010			GCK
Selenium	ND	0.0020	mg/L	01/25/99	EPA 200.9			DMC²
Silver	ND	0.00020	mg/L	01/28/99	EPA 200.9			DMC²
Thallium	ND	0.0010	mg/L	01/28/99	EPA 200.9			DMC²
Zinc	ND	0.010	mg/L	01/27/99	EPA 200.7/6010			GCK

[1] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

[2] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Dissolved Metals

Sample ID	*Matrix*							*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**		**Comment**	**Analyst**
					Sampled: *01/13/99* ✓			
					Filtration EPA 3005A: *01/20/99* ✓			
99EA 3D	*Water*				**Mercury Digestion:** *01/21/99* ✓			*L9664-2*
Antimony	ND	0.020	mg/L	01/27/99	EPA 200.7/6010			GCK
Arsenic	ND	0.0005	mg/L	01/25/99	EPA 200.9		1	DMC²
Beryllium	ND	0.0002	mg/L	01/27/99	EPA 200.7/6010		2	GCK
Cadmium	ND	0.000050	mg/L	01/26/99	EPA 200.9			SHS
Chromium	ND	0.00050	mg/L	01/25/99	EPA 200.9			DMC²
Copper	ND	0.0020	mg/L	01/27/99	EPA 200.7/6010			GCK
Lead	ND	0.0010	mg/L	01/21/99	EPA 200.9			GCK
Mercury	ND	0.00020	mg/L	01/22/99	EPA 245.1/7470A			JD
Nickel	ND	0.010	mg/L	01/27/99	EPA 200.7/6010			GCK
Selenium	ND	0.0020	mg/L	01/25/99	EPA 200.9			DMC²
Silver	ND	0.00020	mg/L	01/28/99	EPA 200.9			DMC²
Thallium	ND	0.0010	mg/L	01/28/99	EPA 200.9			DMC²
Zinc	ND	0.010	mg/L	01/27/99	EPA 200.7/6010			GCK

[1] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

[2] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Dissolved Metals

Sample ID	*Matrix*							*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**	**Comment**	**Analys**
					Sampled: *01/13/99*			
					Filtration EPA 3005A: *01/20/99*			
99EA 2A	*Water*				**Mercury Digestion:** *01/21/99*			*L9664-3*
Antimony		ND	0.020	mg/L	01/27/99	EPA 200.7/6010		GCK
Arsenic		ND	0.0005	mg/L	01/25/99	EPA 200.9	1	DMC²
Beryllium		ND	0.0002	mg/L	01/27/99	EPA 200.7/6010	2	GCK
Cadmium		ND	0.000050	mg/L	01/26/99	EPA 200.9		SHS
Chromium		ND	0.00050	mg/L	01/25/99	EPA 200.9		DMC²
Copper		ND	0.0020	mg/L	01/27/99	EPA 200.7/6010		GCK
Lead		ND	0.0010	mg/L	01/21/99	EPA 200.9		GCK
Mercury		ND	0.00020	mg/L	01/22/99	EPA 245.1/7470A		JD
Nickel		ND	0.010	mg/L	01/27/99	EPA 200.7/6010		GCK
Selenium		ND	0.0020	mg/L	01/25/99	EPA 200.9		DMC²
Silver		ND	0.00020	mg/L	01/28/99	EPA 200.9		DMC²
Thallium		ND	0.0010	mg/L	01/28/99	EPA 200.9		DMC²
Zinc		ND	0.010	mg/L	01/27/99	EPA 200.7/6010		GCK

[1] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

[2] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Dissolved Metals

Sample ID	*Matrix*							*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**	**Comment**	**Analyst**	
99EA 1A	*Water*			**Sampled:** *01/13/99* ✓ **Filtration EPA 3005A:** *01/20/99* ✓ **Mercury Digestion:** *01/21/99* ✓				*L9664-4*
Antimony	ND	0.02	mg/L	01/27/99	EPA 200.7/6010		GCK	
Arsenic	ND	0.0005	mg/L	01/25/99	EPA 200.9	1	DMC	
Beryllium	ND	0.0002	mg/L	01/27/99	EPA 200.7/6010	2	GCK	
Cadmium	ND	0.000050	mg/L	01/26/99	EPA 200.9		SHS	
Chromium	ND	0.00050	mg/L	01/25/99	EPA 200.9		DMC	
Copper	ND	0.0020	mg/L	01/27/99	EPA 200.7/6010		GCK	
Lead	ND	0.0010	mg/L	01/21/99	EPA 200.9		GCK	
Mercury	ND	0.00020	mg/L	01/22/99	EPA 245.1/7470A		JD	
Nickel	ND	0.010	mg/L	01/27/99	EPA 200.7/6010		GCK	
Selenium	ND	0.0020	mg/L	01/25/99	EPA 200.9		DMC	
Silver	ND	0.00020	mg/L	01/28/99	EPA 200.9		DMC	
Thallium	ND	0.0010	mg/L	01/28/99	EPA 200.9		DMC	
Zinc	ND	0.010	mg/L	01/27/99	EPA 200.7/6010		GCK	

[1] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

[2] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Inorganics

Analyte	Result	Reporting Limit	Units	Date Analyzed	Method	Comment	Analyst
Sample ID: 99EA 3A ***Matrix: Water***				**Sampled:** ***01/13/99***			***Lab Number: L9664-1***
Alkalinity, Total as CaCO3	210. J	1.	mg/L	01/20/99	EPA 310.1 / SM 2320B	K1	CAC
Chloride	4.7	0.1	mg/L	01/14/99	EPA 300.0		KDK
Cyanide, Total	ND	0.02	mg/L	01/26/99	EPA 335.3/9010		NM
Fluoride	0.2	0.1	mg/L	01/14/99	EPA 300.0		KDK
Nitrate as N	ND	0.1	mg/L	01/14/99	EPA 300.0		KDK
Sulfate as SO4	7.1	0.5	mg/L	01/14/99	EPA 300.0		KDK
Sulfide	ND	2.	mg/L	01/22/99	EPA 376.1/9030	H	NB
pH	6.3		Std Units	01/14/99	EPA 150.1/9040		NB
pH Temperature	12.1		°C	01/14/99	EPA 150.1/9040		NB
Sample ID: 99EA 3D ***Matrix: Water***				**Sampled:** ***01/13/99***			***Lab Number: L9664-2***
Alkalinity, Total as CaCO3	220. J	1.	mg/L	01/20/99	EPA 310.1 / SM 2320B	K1	CAC
Chloride	4.7	0.1	mg/L	01/14/99	EPA 300.0		KDK
Cyanide, Total	ND	0.02	mg/L	01/26/99	EPA 335.3/9010		NM
Fluoride	0.2	0.1	mg/L	01/14/99	EPA 300.0		KDK
Nitrate as N	ND	0.1	mg/L	01/14/99	EPA 300.0		KDK
Sulfate as SO4	5.2	0.5	mg/L	01/14/99	EPA 300.0		KDK
Sulfide	ND	2.	mg/L	01/22/99	EPA 376.1/9030	H	NB
pH	6.3		Std Units	01/14/99	EPA 150.1/9040		NB
pH Temperature	13.8		°C	01/14/99	EPA 150.1/9040		NB

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Inorganics

Analyte	Result	Reporting Limit	Units	Date Analyzed	Method	Comment	Analyst
Sample ID: 99EA 2A ***Matrix: Water***				**Sampled:** ***01/13/99***			***Lab Number: L9664-3***
Alkalinity, Total as CaCO3	150. J	1.	mg/L	01/20/99	EPA 310.1 / SM 2320B	K1	CAC
Chloride	2.9	0.1	mg/L	01/14/99	EPA 300.0		KDK
Cyanide, Total	ND	0.02	mg/L	01/26/99	EPA 335.3/9010		NM
Fluoride	0.2	0.1	mg/L	01/14/99	EPA 300.0		KDK
Nitrate as N	ND	0.1	mg/L	01/14/99	EPA 300.0		KDK
Sulfate as SO4	1.3	0.5	mg/L	01/14/99	EPA 300.0		KDK
Sulfide	ND J	2.	mg/L	01/22/99	EPA 376.1/9030	H	NB
pH	6.2		Std Units	01/14/99	EPA 150.1/9040		NB
pH Temperature	19.2		°C	01/14/99	EPA 150.1/9040		NB
Sample ID: 99EA 1A ***Matrix: Water***				**Sampled:** ***01/13/99***			***Lab Number: L9664-4***
Alkalinity, Total as CaCO3	100. J	1.	mg/L	01/20/99	EPA 310.1 / SM 2320B	K1	CAC
Chloride	2.9	0.1	mg/L	01/14/99	EPA 300.0		KDK
Cyanide, Total	ND	0.02	mg/L	01/26/99	EPA 335.3/9010		NM
Fluoride	0.2	0.1	mg/L	01/14/99	EPA 300.0		KDK
Nitrate as N	ND	0.1	mg/L	01/14/99	EPA 300.0		KDK
Sulfate as SO4	4.9	0.5	mg/L	01/14/99	EPA 300.0		KDK
Sulfide	ND	2.	mg/L	01/22/99	EPA 376.1/9030	H	NB
pH	6.4		Std Units	01/14/99	EPA 150.1/9040		NB
pH Temperature	14.0		°C	01/14/99	EPA 150.1/9040		NB

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Total Metals

Sample ID	*Matrix*							*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**		**Comment**	**Analyst**
					Sampled: *01/13/99*			
					Hot Plate Digestion EPA 200.2/3005A: *01/20/99*			
99EA 3A	*Water*				**Mercury Digestion:** *01/21/99*			*L9664-1*
Antimony	ND	0.020	mg/L	01/27/99	EPA 200.7/6010			GCK
Arsenic	0.001	0.0005	mg/L	01/25/99	EPA 200.9		1	DMC[2]
Beryllium	ND	0.0002	mg/L	01/27/99	EPA 200.7/6010		2	GCK
Cadmium	ND	0.000050	mg/L	01/26/99	EPA 200.9		K	SHS
Chromium	0.00063	0.00050	mg/L	01/25/99	EPA 200.9			DMC[2]
Copper	ND	0.0020	mg/L	01/27/99	EPA 200.7/6010			GCK
Lead	ND	0.0010	mg/L	01/26/99	EPA 200.9			GCK
Mercury	ND	0.00020	mg/L	01/22/99	EPA 245.1/7470A			JD
Nickel	ND	0.010	mg/L	01/27/99	EPA 200.7/6010			GCK
Selenium	ND	0.0020	mg/L	01/25/99	EPA 200.9			DMC[2]
Silver	ND	0.00020	mg/L	01/27/99	EPA 200.9			SHS
Thallium	ND	0.0010	mg/L	01/28/99	EPA 200.9			DMC[2]
Zinc	ND	0.010	mg/L	01/27/99	EPA 200.7/6010			GCK

[1] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.
[2] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Total Metals

Sample ID	*Matrix*							*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**	**Comment**	**Analyst**	
				Sampled: *01/13/99*				
				Hot Plate Digestion EPA 200.2/3005A: *01/20/99*				
99EA 3D	*Water*			**Mercury Digestion:** *01/21/99*				*L9664-2*
Antimony	ND	0.020	mg/L	01/27/99	EPA 200.7/6010			GCK
Arsenic	0.002	0.0005	mg/L	01/25/99	EPA 200.9	1		DMC[2]
Beryllium	ND	0.0002	mg/L	01/27/99	EPA 200.7/6010	2		GCK
Cadmium	ND	0.000050	mg/L	01/26/99	EPA 200.9	K		SHS
Chromium	0.00065	0.00050	mg/L	01/25/99	EPA 200.9			DMC[2]
Copper	ND	0.0020	mg/L	01/27/99	EPA 200.7/6010			GCK
Lead	ND	0.0010	mg/L	01/26/99	EPA 200.9			GCK
Mercury	ND	0.00020	mg/L	01/22/99	EPA 245.1/7470A			JD
Nickel	ND	0.010	mg/L	01/27/99	EPA 200.7/6010			GCK
Selenium	ND	0.0020	mg/L	01/25/99	EPA 200.9			DMC[2]
Silver	ND	0.00020	mg/L	01/27/99	EPA 200.9			SHS
Thallium	ND	0.0010	mg/L	01/28/99	EPA 200.9			DMC[2]
Zinc	ND	0.010	mg/L	01/27/99	EPA 200.7/6010			GCK

[1] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.
[2] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Total Metals

Sample ID	*Matrix*							*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**	**Comment**	**Analyst**	
				Sampled: *01/13/99*				
				Hot Plate Digestion EPA 200.2/3005A: *01/20/99*				
99EA 2A	*Water*			**Mercury Digestion:** *01/21/99*				*L9664-3*
Antimony	ND	0.020	mg/L	01/27/99	EPA 200.7/6010			GCK
Arsenic	0.0048	0.0005	mg/L	01/25/99	EPA 200.9	1		DMC[2]
Beryllium	ND	0.0002	mg/L	01/27/99	EPA 200.7/6010	2		GCK
Cadmium	ND	0.000050	mg/L	01/26/99	EPA 200.9	K		SHS
Chromium	0.00085	0.00050	mg/L	01/25/99	EPA 200.9			DMC[2]
Copper	ND	0.0020	mg/L	01/27/99	EPA 200.7/6010			GCK
Lead	ND	0.0010	mg/L	01/26/99	EPA 200.9			GCK
Mercury	ND	0.00020	mg/L	01/22/99	EPA 245.1/7470A			JD
Nickel	ND	0.010	mg/L	01/27/99	EPA 200.7/6010			GCK
Selenium	ND	0.0020	mg/L	01/25/99	EPA 200.9			DMC[2]
Silver	ND	0.00020	mg/L	01/27/99	EPA 200.9			SHS
Thallium	ND	0.0010	mg/L	01/28/99	EPA 200.9			DMC[2]
Zinc	ND	0.010	mg/L	01/27/99	EPA 200.7/6010			GCK

[1] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.
[2] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Total Metals

Sample ID	*Matrix*							*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppm)**	**Date Analyzed**	**Method**	**Comment**	**Analyst**
					Sampled: *01/13/99*			
					Hot Plate Digestion EPA 200.2/3005A: *01/20/99*			
99EA 1A	*Water*				**Mercury Digestion:** *01/21/99*			*L9664-4*
Antimony		ND	0.020	mg/L	01/27/99	EPA 200.7/6010		GCK
Arsenic		0.0049	0.0005	mg/L	01/25/99	EPA 200.9	1	DMC[2]
Beryllium		ND	0.0002	mg/L	01/27/99	EPA 200.7/6010	2	GCK
Cadmium		ND	0.000050	mg/L	01/26/99	EPA 200.9	K	SHS
Chromium		0.00069	0.00050	mg/L	01/25/99	EPA 200.9		DMC[2]
Copper		ND	0.0020	mg/L	01/27/99	EPA 200.7/6010		GCK
Lead		ND	0.0010	mg/L	01/26/99	EPA 200.9		GCK
Mercury		ND	0.00020	mg/L	01/22/99	EPA 245.1/7470A		JD
Nickel		ND	0.010	mg/L	01/27/99	EPA 200.7/6010		GCK
Selenium		ND	0.0020	mg/L	01/25/99	EPA 200.9		DMC[2]
Silver		ND	0.00020	mg/L	01/27/99	EPA 200.9		SHS
Thallium		ND	0.0010	mg/L	01/28/99	EPA 200.9		DMC[2]
Zinc		ND	0.010	mg/L	01/27/99	EPA 200.7/6010		GCK

[1] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.
[2] The reporting limit is lower than OAL's normal reporting limit, but above the instruments detection limit.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Chlorinated Herbicides
by EPA 8150 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 3A	*Water*				Sampled: *01/13/99* Analyzed: *01/22/99*	*L9664-1*
2,4,5-T		ND	0.093	µg/L	Y	
2,4,5-TP (Silvex)		ND	0.093	µg/L	Y	
2,4-D		ND	0.093	µg/L	Y	
2,4-DB		ND	0.093	µg/L	Y	
Dalapon		ND	0.093	µg/L	Y	
Dicamba		ND	0.093	µg/L	Y	
Dichloroprop		ND	0.093	µg/L	Y	
Dinoseb		ND	0.093	µg/L	Y	
MCPA		ND	0.093	µg/L	Y	
MCPP		ND	0.093	µg/L	Y	
Surrogate				Recovery	Limit	
2,4,6-Tribromophenol				98.%	50. - 150.	

99EA 3D	*Water*				Sampled: *01/13/99* Analyzed: *01/22/99*	*L9664-2*
2,4,5-T		ND	0.095	µg/L	Y	
2,4,5-TP (Silvex)		ND	0.095	µg/L	Y	
2,4-D		ND	0.095	µg/L	Y	
2,4-DB		ND	0.095	µg/L	Y	
Dalapon		ND	0.095	µg/L	Y	
Dicamba		ND	0.095	µg/L	Y	
Dichloroprop		ND	0.095	µg/L	Y	
Dinoseb		ND	0.095	µg/L	Y	
MCPA		ND	0.095	µg/L	Y	
MCPP		ND	0.095	µg/L	Y	
Surrogate				Recovery	Limit	
2,4,6-Tribromophenol				84.%	50. - 150.	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Chlorinated Herbicides
by EPA 8150 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	

99EA 2A	*Water*				Sampled: *01/13/99* Analyzed: *01/22/99*	*L9664-3*
2,4,5-T		ND	0.094	µg/L	Y	
2,4,5-TP (Silvex)		ND	0.094	µg/L	Y	
2,4-D		ND	0.094	µg/L	Y	
2,4-DB		ND	0.094	µg/L	Y	
Dalapon		ND	0.094	µg/L	Y	
Dicamba		ND	0.094	µg/L	Y	
Dichloroprop		ND	0.094	µg/L	Y	
Dinoseb		ND	0.094	µg/L	Y	
MCPA		ND	0.094	µg/L	Y	
MCPP		ND	0.094	µg/L	Y	

Surrogate	Recovery	Limit
2,4,6-Tribromophenol	94.%	50. - 150.

99EA 1A	*Water*				Sampled: *01/13/99* Analyzed: *01/22/99*	*L9664-4*
2,4,5-T		ND	0.095	µg/L	Y	
2,4,5-TP (Silvex)		ND	0.095	µg/L	Y	
2,4-D		ND	0.095	µg/L	Y	
2,4-DB		ND	0.095	µg/L	Y	
Dalapon		ND	0.095	µg/L	Y	
Dicamba		ND	0.095	µg/L	Y	
Dichloroprop		ND	0.095	µg/L	Y	
Dinoseb		ND	0.095	µg/L	Y	
MCPA		ND	0.095	µg/L	Y	
MCPP		ND	0.095	µg/L	Y	

Surrogate	Recovery	Limit
2,4,6-Tribromophenol	69.%	50. - 150.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Chlorinated Pesticides and PCBs
by EPA 8080/8081

Sample ID	*Matrix*				*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 3A	*Water*			Sampled: *01/13/99* Analyzed: *01/22/99*	*L9664-1*
4,4'-DDD	ND	0.2	µg/L	Y	
4,4'-DDE	ND	0.2	µg/L	Y	
4,4'-DDT	ND	0.2	µg/L	Y	
Aldrin	ND	0.01	µg/L	Y	
Aroclor 1016	ND	0.5	µg/L	Y	
Aroclor 1221	ND	0.5	µg/L	Y	
Aroclor 1232	ND	0.5	µg/L	Y	
Aroclor 1242	ND	0.5	µg/L	Y	
Aroclor 1248	ND	0.5	µg/L	Y	
Aroclor 1254	ND	0.5	µg/L	Y	
Aroclor 1260	ND	0.5	µg/L	Y	
Chlordane (Technical)	ND	0.1	µg/L	Y	
Dieldrin	ND	0.2	µg/L	Y	
Endosulfan I	ND	0.01	µg/L	Y	
Endosulfan II	ND	0.2	µg/L	Y	
Endosulfan sulfate	ND	0.2	µg/L	Y	
Endrin	ND	0.2	µg/L	Y	
Endrin aldehyde	ND	0.2	µg/L	Y	
Endrin ketone	ND	0.2	µg/L	Y	
Heptachlor	ND	0.01	µg/L	Y	
Heptachlor epoxide	ND	0.01	µg/L	Y	
Methoxychlor	ND	0.1	µg/L	Y	
Toxaphene	ND	0.9	µg/L	Y	
alpha-BHC	ND	0.01	µg/L	Y	
beta-BHC	ND	0.01	µg/L	Y	
delta-BHC	ND	0.01	µg/L	Y	
gamma-BHC (Lindane)	ND	0.01	µg/L	Y	

Surrogate	Recovery	Limit	
Decachlorobiphenyl	68.%	50 - 150	Y
Tetrachloro-m-xylene	53.%	50 - 150	Y

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Chlorinated Pesticides and PCBs

by EPA 8080/8081

Sample ID	*Matrix*	*Lab Number*

Analyte	Result	Reporting Limit	Units (ppb)	Comment
99EA 3D	***Water***		Sampled: *01/13/99* Analyzed: *01/22/99*	***L9664-2***
4,4'-DDD	ND	0.02	µg/L	Y
4,4'-DDE	ND	0.02	µg/L	Y
4,4'-DDT	ND	0.02	µg/L	Y
Aldrin	ND	0.01	µg/L	Y
Aroclor 1016	ND	0.5	µg/L	Y
Aroclor 1221	ND	0.5	µg/L	Y
Aroclor 1232	ND	0.5	µg/L	Y
Aroclor 1242	ND	0.5	µg/L	Y
Aroclor 1248	ND	0.5	µg/L	Y
Aroclor 1254	ND	0.5	µg/L	Y
Aroclor 1260	ND	0.5	µg/L	Y
Chlordane (Technical)	ND	0.1	µg/L	Y
Dieldrin	ND	0.02	µg/L	Y
Endosulfan I	ND	0.01	µg/L	Y
Endosulfan II	ND	0.02	µg/L	Y
Endosulfan sulfate	ND	0.02	µg/L	Y
Endrin	ND	0.02	µg/L	Y
Endrin aldehyde	ND	0.02	µg/L	Y
Endrin ketone	ND	0.02	µg/L	Y
Heptachlor	**0.02**	**0.01**	**µg/L**	1,Y
Heptachlor epoxide	ND	0.01	µg/L	Y
Methoxychlor	ND	0.1	µg/L	Y
Toxaphene	ND	1.	µg/L	Y
alpha-BHC	ND	0.01	µg/L	Y
beta-BHC	ND	0.01	µg/L	Y
delta-BHC	ND	0.01	µg/L	Y
gamma-BHC (Lindane)	**0.05**	**0.01**	**µg/L**	2,Y

Surrogate	Recovery	Limit	
Decachlorobiphenyl	61.%	50 - 150	Y
Tetrachloro-m-xylene	67.%	50 - 150	Y

[1] Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be >40%. The higher result was reported unless anomalies were noted.

[2]

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Chlorinated Pesticides and PCBs
by EPA 8080/8081

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 3D	*Water*				**Sampled:** *01/13/99* **Analyzed:** *01/22/99*	*L9664-2*

Second column confirmation was performed. The RPD between the results on the two columns was evaluated and determined to be<40%.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Chlorinated Pesticides and PCBs

by EPA 8080/8081

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 2A	*Water*			Sampled: *01/13/99* Analyzed: *01/22/99*		*L9664-3*
4,4'-DDD		ND	0.02	µg/kg	Y	
4,4'-DDE		ND	0.02	µg/kg	Y	
4,4'-DDT		ND	0.02	µg/kg	Y	
Aldrin		ND	0.01	µg/kg	Y	
Aroclor 1016		ND	0.5	µg/kg	Y	
Aroclor 1221		ND	0.5	µg/kg	Y	
Aroclor 1232		ND	0.5	µg/kg	Y	
Aroclor 1242		ND	0.5	µg/kg	Y	
Aroclor 1248		ND	0.5	µg/kg	Y	
Aroclor 1254		ND	0.5	µg/kg	Y	
Aroclor 1260		ND	0.5	µg/kg	Y	
Chlordane (Technical)		ND	0.1	µg/kg	Y	
Dieldrin		ND	0.02	µg/kg	Y	
Endosulfan I		ND	0.01	µg/kg	Y	
Endosulfan II		ND	0.02	µg/kg	Y	
Endosulfan sulfate		ND	0.02	µg/kg	Y	
Endrin		ND	0.02	µg/kg	Y	
Endrin aldehyde		ND	0.02	µg/kg	Y	
Endrin ketone		ND	0.02	µg/kg	Y	
Heptachlor		ND	0.01	µg/kg	Y	
Heptachlor epoxide		ND	0.01	µg/kg	Y	
Methoxychlor		ND	0.1	µg/kg	Y	
Toxaphene		ND	0.9	µg/kg	Y	
alpha-BHC		ND	0.01	µg/kg	Y	
beta-BHC		ND	0.01	µg/kg	Y	
delta-BHC		ND	0.01	µg/kg	Y	
gamma-BHC (Lindane)		ND	0.01	µg/kg	Y	

Surrogate	Recovery	Limit	
Decachlorobiphenyl	64.%	50 - 150	Y
Tetrachloro-m-xylene	(42.%)	50 - 150	Y

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Chlorinated Pesticides and PCBs

by EPA 8080/8081

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
99EA 1A	*Water*			Sampled: *01/13/99* Analyzed: *01/22/99*	*L9664-4*
4,4'-DDD		ND	0.02	µg/kg	Y
4,4'-DDE		ND	0.02	µg/kg	Y
4,4'-DDT		ND	0.02	µg/kg	Y
Aldrin		ND	0.01	µg/kg	Y
Aroclor 1016		ND	0.5	µg/kg	Y
Aroclor 1221		ND	0.5	µg/kg	Y
Aroclor 1232		ND	0.5	µg/kg	Y
Aroclor 1242		ND	0.5	µg/kg	Y
Aroclor 1248		ND	0.5	µg/kg	Y
Aroclor 1254		ND	0.5	µg/kg	Y
Aroclor 1260		ND	0.5	µg/kg	Y
Chlordane (Technical)		ND	0.1	µg/kg	Y
Dieldrin		ND	0.02	µg/kg	Y
Endosulfan I		ND	0.01	µg/kg	Y
Endosulfan II		ND	0.02	µg/kg	Y
Endosulfan sulfate		ND	0.02	µg/kg	Y
Endrin		ND	0.02	µg/kg	Y
Endrin aldehyde		ND	0.02	µg/kg	Y
Endrin ketone		ND	0.02	µg/kg	Y
Heptachlor		ND	0.01	µg/kg	Y
Heptachlor epoxide		ND	0.01	µg/kg	Y
Methoxychlor		ND	0.1	µg/kg	Y
Toxaphene		ND	1.0	µg/kg	Y
alpha-BHC		ND	0.01	µg/kg	Y
beta-BHC		ND	0.01	µg/kg	Y
delta-BHC		ND	0.01	µg/kg	Y
gamma-BHC (Lindane)		ND	0.01	µg/kg	Y

Surrogate	Recovery	Limit	
Decachlorobiphenyl	72.%	50 - 150	Y
Tetrachloro-m-xylene	47.%	50 - 150	Y

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 3A	*Water*				**Sampled:** *01/13/99* **Analyzed:** *01/18/99 by DM*	*L9664-*
Dichlorodifluoromethane		ND	2.0	µg/L		
Chloromethane		ND	2.0	µg/L		
Vinyl chloride		ND	2.0	µg/L		
Bromomethane		ND	2.0	µg/L		
Chloroethane		ND	2.0	µg/L		
Trichlorofluoromethane		ND	1.0	µg/L		
Acetone		ND	20.	µg/L		
1,1-Dichloroethene		ND	1.0	µg/L		
Methylene chloride		ND	2.0	µg/L		
Carbon disulfide		ND	1.0	µg/L		
trans-1,2-Dichloroethene		ND	1.0	µg/L		
1,1-Dichloroethane		ND	1.0	µg/L		
2-Butanone		ND	20.	µg/L		
2,2-Dichloropropane		ND	1.0	µg/L		
cis-1,2-Dichloroethene		ND	1.0	µg/L		
Bromochloromethane		ND	1.0	µg/L		
Chloroform		**9.0**	**1.0**	**µg/L**		
1,1,1-Trichloroethane		ND	1.0	µg/L		
Carbon tetrachloride		ND	1.0	µg/L		
1,1-Dichloropropene		ND	1.0	µg/L		
Benzene		ND	1.0	µg/L		
1,2-Dichloroethane		ND	1.0	µg/L		
Trichloroethene		ND	1.0	µg/L		
1,2-Dichloropropane		ND	1.0	µg/L		
Dibromomethane		ND	1.0	µg/L		
Bromodichloromethane		ND	1.0	µg/L		
cis-1,3-Dichloropropene		ND	1.0	µg/L		
4-Methyl-2-pentanone		ND	10.	µg/L		
Toluene		ND	1.0	µg/L		
2-Hexanone		ND	10.	µg/L		
trans-1,3-Dichloropropene		ND	1.0	µg/L		
1,1,2-Trichloroethane		ND	1.0	µg/L		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/13/99*	
99EA 3A	*Water*				**Analyzed:** *01/18/99 by DM*	*L9664-1*
Tetrachloroethene		ND	1.0	µg/L		
1,3-Dichloropropane		ND	1.0	µg/L		
Dibromochloromethane		ND	1.0	µg/L		
1,2-Dibromoethane		ND	1.0	µg/L		
Chlorobenzene		ND	1.0	µg/L		
1,1,1,2-Tetrachloroethane		ND	1.0	µg/L		
Ethylbenzene		ND	1.0	µg/L		
Styrene		ND	1.0	µg/L		
Bromoform		ND	1.0	µg/L		
Isopropylbenzene		ND	1.0	µg/L		
Bromobenzene		ND	1.0	µg/L		
1,1,2,2-Tetrachloroethane		ND	1.0	µg/L		
1,2,3-Trichloropropane		ND	1.0	µg/L		
n-Propylbenzene		ND	1.0	µg/L		
2-Chlorotoluene		ND	1.0	µg/L		
4-Chlorotoluene		ND	1.0	µg/L		
1,3,5-Trimethylbenzene		ND	1.0	µg/L		
tert-Butylbenzene		ND	1.0	µg/L		
1,2,4-Trimethylbenzene		ND	1.0	µg/L		
sec-Butylbenzene		ND	1.0	µg/L		
1,3-Dichlorobenzene		ND	1.0	µg/L		
4-Isopropyltoluene		ND	1.0	µg/L		
1,4-Dichlorobenzene		ND	1.0	µg/L		
1,2-Dichlorobenzene		ND	1.0	µg/L		
n-Butylbenzene		ND	1.0	µg/L		
1,2-Dibromo-3-chloropropane		ND	1.0	µg/L		
1,2,4-Trichlorobenzene		ND	1.0	µg/L		
Hexachlorobutadiene		ND	1.0	µg/L		
Naphthalene		**4.0**	**1.0**	**µg/L**		
1,2,3-Trichlorobenzene		ND	1.0	µg/L		
Total Xylenes		ND	1.0	µg/L		
Surrogate					Recovery	Limit

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 3A	*Water*				**Sampled:** *01/13/99* **Analyzed:** *01/18/99 by DM*	*L9664-1*

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	96.%	79. - 121.
Toluene-d8	84.%	76. - 132.
4-Bromofluorobenzene	98.%	79. - 121.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 3D	*Water*				Sampled: *01/13/99* Analyzed: *01/18/99 by DM*	*L9664-2*
Dichlorodifluoromethane		ND	2.0	µg/L		
Chloromethane		ND	2.0	µg/L		
Vinyl chloride		ND	2.0	µg/L		
Bromomethane		ND	2.0	µg/L		
Chloroethane		ND	2.0	µg/L		
Trichlorofluoromethane		ND	1.0	µg/L		
Acetone		ND	20.	µg/L		
1,1-Dichloroethene		ND	1.0	µg/L		
Methylene chloride		ND	2.0	µg/L		
Carbon disulfide		ND	1.0	µg/L		
trans-1,2-Dichloroethene		ND	1.0	µg/L		
1,1-Dichloroethane		ND	1.0	µg/L		
2-Butanone		ND	20.	µg/L		
2,2-Dichloropropane		ND	1.0	µg/L		
cis-1,2-Dichloroethene		ND	1.0	µg/L		
Bromochloromethane		ND	1.0	µg/L		
Chloroform		**9.0**	**1.0**	**µg/L**		
1,1,1-Trichloroethane		ND	1.0	µg/L		
Carbon tetrachloride		ND	1.0	µg/L		
1,1-Dichloropropene		ND	1.0	µg/L		
Benzene		ND	1.0	µg/L		
1,2-Dichloroethane		ND	1.0	µg/L		
Trichloroethene		ND	1.0	µg/L		
1,2-Dichloropropane		ND	1.0	µg/L		
Dibromomethane		ND	1.0	µg/L		
Bromodichloromethane		ND	1.0	µg/L		
cis-1,3-Dichloropropene		ND	1.0	µg/L		
4-Methyl-2-pentanone		ND	10.	µg/L		
Toluene		ND	1.0	µg/L		
2-Hexanone		ND	10.	µg/L		
trans-1,3-Dichloropropene		ND	1.0	µg/L		
1,1,2-Trichloroethane		ND	1.0	µg/L		

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		Result	Reporting Limit	Units (ppb)	Comment	
99EA 3D	*Water*				Sampled: *01/13/99* Analyzed: *01/18/99 by DM*	*L9664-2*
Tetrachloroethene		ND	1.0	µg/L		
1,3-Dichloropropane		ND	1.0	µg/L		
Dibromochloromethane		ND	1.0	µg/L		
1,2-Dibromoethane		ND	1.0	µg/L		
Chlorobenzene		ND	1.0	µg/L		
1,1,1,2-Tetrachloroethane		ND	1.0	µg/L		
Ethylbenzene		ND	1.0	µg/L		
Styrene		ND	1.0	µg/L		
Bromoform		ND	1.0	µg/L		
Isopropylbenzene		ND	1.0	µg/L		
Bromobenzene		ND	1.0	µg/L		
1,1,2,2-Tetrachloroethane		ND	1.0	µg/L		
1,2,3-Trichloropropane		ND	1.0	µg/L		
n-Propylbenzene		ND	1.0	µg/L		
2-Chlorotoluene		ND	1.0	µg/L		
4-Chlorotoluene		ND	1.0	µg/L		
1,3,5-Trimethylbenzene		ND	1.0	µg/L		
tert-Butylbenzene		ND	1.0	µg/L		
1,2,4-Trimethylbenzene		ND	1.0	µg/L		
sec-Butylbenzene		ND	1.0	µg/L		
1,3-Dichlorobenzene		ND	1.0	µg/L		
4-Isopropyltoluene		ND	1.0	µg/L		
1,4-Dichlorobenzene		ND	1.0	µg/L		
1,2-Dichlorobenzene		ND	1.0	µg/L		
n-Butylbenzene		ND	1.0	µg/L		
1,2-Dibromo-3-chloropropane		ND	1.0	µg/L		
1,2,4-Trichlorobenzene		ND	1.0	µg/L		
Hexachlorobutadiene		ND	1.0	µg/L		
Naphthalene		**3.0**	**1.0**	**µg/L**		
1,2,3-Trichlorobenzene		ND	1.0	µg/L		
Total Xylenes		ND	1.0	µg/L		
Surrogate					Recovery	Limit

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	

99EA 3D	*Water*	**Sampled:** *01/13/99* **Analyzed:** *01/18/99 by DM*	*L9664-2*

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	99.%	79. - 121.
Toluene-d8	83.%	76. - 132.
4-Bromofluorobenzene	98.%	79. - 121.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 2A	*Water*				Sampled: *01/13/99* Analyzed: *01/18/99 by DM*	*L9664-3*
Dichlorodifluoromethane		ND	2.0	µg/L		
Chloromethane		ND	2.0	µg/L		
Vinyl chloride		ND	2.0	µg/L		
Bromomethane		ND	2.0	µg/L		
Chloroethane		ND	2.0	µg/L		
Trichlorofluoromethane		ND	1.0	µg/L		
Acetone		ND	20.	µg/L		
1,1-Dichloroethene		ND	1.0	µg/L		
Methylene chloride		ND	2.0	µg/L		
Carbon disulfide		ND	1.0	µg/L		
trans-1,2-Dichloroethene		ND	1.0	µg/L		
1,1-Dichloroethane		ND	1.0	µg/L		
2-Butanone		ND	20.	µg/L		
2,2-Dichloropropane		ND	1.0	µg/L		
cis-1,2-Dichloroethene		ND	1.0	µg/L		
Bromochloromethane		ND	1.0	µg/L		
Chloroform		ND	1.0	µg/L		
1,1,1-Trichloroethane		ND	1.0	µg/L		
Carbon tetrachloride		ND	1.0	µg/L		
1,1-Dichloropropene		ND	1.0	µg/L		
Benzene		ND	1.0	µg/L		
1,2-Dichloroethane		ND	1.0	µg/L		
Trichloroethene		ND	1.0	µg/L		
1,2-Dichloropropane		ND	1.0	µg/L		
Dibromomethane		ND	1.0	µg/L		
Bromodichloromethane		ND	1.0	µg/L		
cis-1,3-Dichloropropene		ND	1.0	µg/L		
4-Methyl-2-pentanone		ND	10.	µg/L		
Toluene		ND	1.0	µg/L		
2-Hexanone		ND	10.	µg/L		
trans-1,3-Dichloropropene		ND	1.0	µg/L		
1,1,2-Trichloroethane		ND	1.0	µg/L		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/13/99*	
99EA 2A	*Water*				**Analyzed:** *01/18/99 by DM*	*L9664-3*
Tetrachloroethene		ND	1.0	µg/L		
1,3-Dichloropropane		ND	1.0	µg/L		
Dibromochloromethane		ND	1.0	µg/L		
1,2-Dibromoethane		ND	1.0	µg/L		
Chlorobenzene		ND	1.0	µg/L		
1,1,1,2-Tetrachloroethane		ND	1.0	µg/L		
Ethylbenzene		ND	1.0	µg/L		
Styrene		ND	1.0	µg/L		
Bromoform		ND	1.0	µg/L		
Isopropylbenzene		ND	1.0	µg/L		
Bromobenzene		ND	1.0	µg/L		
1,1,2,2-Tetrachloroethane		ND	1.0	µg/L		
1,2,3-Trichloropropane		ND	1.0	µg/L		
n-Propylbenzene		ND	1.0	µg/L		
2-Chlorotoluene		ND	1.0	µg/L		
4-Chlorotoluene		ND	1.0	µg/L		
1,3,5-Trimethylbenzene		ND	1.0	µg/L		
tert-Butylbenzene		ND	1.0	µg/L		
1,2,4-Trimethylbenzene		ND	1.0	µg/L		
sec-Butylbenzene		ND	1.0	µg/L		
1,3-Dichlorobenzene		ND	1.0	µg/L		
4-Isopropyltoluene		ND	1.0	µg/L		
1,4-Dichlorobenzene		ND	1.0	µg/L		
1,2-Dichlorobenzene		ND	1.0	µg/L		
n-Butylbenzene		ND	1.0	µg/L		
1,2-Dibromo-3-chloropropane		ND	1.0	µg/L		
1,2,4-Trichlorobenzene		ND	1.0	µg/L		
Hexachlorobutadiene		ND	1.0	µg/L		
Naphthalene		ND	1.0	µg/L		
1,2,3-Trichlorobenzene		ND	1.0	µg/L		
Total Xylenes		ND	1.0	µg/L		
	Surrogate				Recovery	Limit

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		Result	Reporting Limit	Units (ppb)	Comment	

99EA 2A	*Water*	Sampled: *01/13/99* Analyzed: *01/18/99 by DM*		*L9664-3*

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	97.%	79. - 121.
Toluene-d8	88.%	76. - 132.
4-Bromofluorobenzene	100.%	79. - 121.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		Result	Reporting Limit	Units (ppb)	Comment	
99EA 1A	*Water*				Sampled: *01/13/99* Analyzed: *01/18/99 by DM*	*L9664-4*
Dichlorodifluoromethane		ND	2.0	µg/L		
Chloromethane		ND	2.0	µg/L		
Vinyl chloride		ND	2.0	µg/L		
Bromomethane		ND	2.0	µg/L		
Chloroethane		ND	2.0	µg/L		
Trichlorofluoromethane		ND	1.0	µg/L		
Acetone		ND	20.	µg/L		
1,1-Dichloroethene		ND	1.0	µg/L		
Methylene chloride		ND	2.0	µg/L		
Carbon disulfide		ND	1.0	µg/L		
trans-1,2-Dichloroethene		ND	1.0	µg/L		
1,1-Dichloroethane		ND	1.0	µg/L		
2-Butanone		ND	20.	µg/L		
2,2-Dichloropropane		ND	1.0	µg/L		
cis-1,2-Dichloroethene		ND	1.0	µg/L		
Bromochloromethane		ND	1.0	µg/L		
Chloroform		**5.0**	**1.0**	**µg/L**		
1,1,1-Trichloroethane		ND	1.0	µg/L		
Carbon tetrachloride		ND	1.0	µg/L		
1,1-Dichloropropene		ND	1.0	µg/L		
Benzene		ND	1.0	µg/L		
1,2-Dichloroethane		ND	1.0	µg/L		
Trichloroethene		ND	1.0	µg/L		
1,2-Dichloropropane		ND	1.0	µg/L		
Dibromomethane		ND	1.0	µg/L		
Bromodichloromethane		ND	1.0	µg/L		
cis-1,3-Dichloropropene		ND	1.0	µg/L		
4-Methyl-2-pentanone		ND	10.	µg/L		
Toluene		ND	1.0	µg/L		
2-Hexanone		ND	10.	µg/L		
trans-1,3-Dichloropropene		ND	1.0	µg/L		
1,1,2-Trichloroethane		ND	1.0	µg/L		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		Result	Reporting Limit	Units (ppb)	Comment	
99EA 1A	*Water*				Sampled: *01/13/99* Analyzed: *01/18/99 by DM*	*L9664-4*
Tetrachloroethene		ND	1.0	µg/L		
1,3-Dichloropropane		ND	1.0	µg/L		
Dibromochloromethane		ND	1.0	µg/L		
1,2-Dibromoethane		ND	1.0	µg/L		
Chlorobenzene		ND	1.0	µg/L		
1,1,1,2-Tetrachloroethane		ND	1.0	µg/L		
Ethylbenzene		ND	1.0	µg/L		
Styrene		ND	1.0	µg/L		
Bromoform		ND	1.0	µg/L		
Isopropylbenzene		ND	1.0	µg/L		
Bromobenzene		ND	1.0	µg/L		
1,1,2,2-Tetrachloroethane		ND	1.0	µg/L		
1,2,3-Trichloropropane		ND	1.0	µg/L		
n-Propylbenzene		ND	1.0	µg/L		
2-Chlorotoluene		ND	1.0	µg/L		
4-Chlorotoluene		ND	1.0	µg/L		
1,3,5-Trimethylbenzene		ND	1.0	µg/L		
tert-Butylbenzene		ND	1.0	µg/L		
1,2,4-Trimethylbenzene		ND	1.0	µg/L		
sec-Butylbenzene		ND	1.0	µg/L		
1,3-Dichlorobenzene		ND	1.0	µg/L		
4-Isopropyltoluene		ND	1.0	µg/L		
1,4-Dichlorobenzene		ND	1.0	µg/L		
1,2-Dichlorobenzene		ND	1.0	µg/L		
n-Butylbenzene		ND	1.0	µg/L		
1,2-Dibromo-3-chloropropane		ND	1.0	µg/L		
1,2,4-Trichlorobenzene		ND	1.0	µg/L		
Hexachlorobutadiene		ND	1.0	µg/L		
Naphthalene		ND	1.0	µg/L		
1,2,3-Trichlorobenzene		ND	1.0	µg/L		
Total Xylenes		ND	1.0	µg/L		
Surrogate					Recovery	Limit

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	

		Sampled: *01/13/99*		
99EA 1A	*Water*	**Analyzed:** *01/18/99 by DM*		*L9664-4*

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	98.%	79. - 121.
Toluene-d8	87.%	76. - 132.
4-Bromofluorobenzene	99.%	79. - 121.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
VOC TRIP BLANK	*Water*			Sampled: *01/13/99* Analyzed: *01/18/99 by DM*	*L9664-5*
Dichlorodifluoromethane		ND	2.0	µg/L	
Chloromethane		ND	2.0	µg/L	
Vinyl chloride		ND	2.0	µg/L	
Bromomethane		ND	2.0	µg/L	
Chloroethane		ND	2.0	µg/L	
Trichlorofluoromethane		ND	1.0	µg/L	
Acetone		ND	20.	µg/L	
1,1-Dichloroethene		ND	1.0	µg/L	
Methylene chloride		ND	2.0	µg/L	
Carbon disulfide		ND	1.0	µg/L	
trans-1,2-Dichloroethene		ND	1.0	µg/L	
1,1-Dichloroethane		ND	1.0	µg/L	
2-Butanone		ND	20.	µg/L	
2,2-Dichloropropane		ND	1.0	µg/L	
cis-1,2-Dichloroethene		ND	1.0	µg/L	
Bromochloromethane		ND	1.0	µg/L	
Chloroform		ND	1.0	µg/L	
1,1,1-Trichloroethane		ND	1.0	µg/L	
Carbon tetrachloride		ND	1.0	µg/L	
1,1-Dichloropropene		ND	1.0	µg/L	
Benzene		ND	1.0	µg/L	
1,2-Dichloroethane		ND	1.0	µg/L	
Trichloroethene		ND	1.0	µg/L	
1,2-Dichloropropane		ND	1.0	µg/L	
Dibromomethane		ND	1.0	µg/L	
Bromodichloromethane		ND	1.0	µg/L	
cis-1,3-Dichloropropene		ND	1.0	µg/L	
4-Methyl-2-pentanone		ND	10.	µg/L	
Toluene		ND	1.0	µg/L	
2-Hexanone		ND	10.	µg/L	
trans-1,3-Dichloropropene		ND	1.0	µg/L	
1,1,2-Trichloroethane		ND	1.0	µg/L	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
VOC TRIP BLANK	*Water*			Sampled: *01/13/99* Analyzed: *01/18/99 by DM*	*L9664-5*
Tetrachloroethene		ND	1.0	µg/L	
1,3-Dichloropropane		ND	1.0	µg/L	
Dibromochloromethane		ND	1.0	µg/L	
1,2-Dibromoethane		ND	1.0	µg/L	
Chlorobenzene		ND	1.0	µg/L	
1,1,1,2-Tetrachloroethane		ND	1.0	µg/L	
Ethylbenzene		ND	1.0	µg/L	
Styrene		ND	1.0	µg/L	
Bromoform		ND	1.0	µg/L	
Isopropylbenzene		ND	1.0	µg/L	
Bromobenzene		ND	1.0	µg/L	
1,1,2,2-Tetrachloroethane		ND	1.0	µg/L	
1,2,3-Trichloropropane		ND	1.0	µg/L	
n-Propylbenzene		ND	1.0	µg/L	
2-Chlorotoluene		ND	1.0	µg/L	
4-Chlorotoluene		ND	1.0	µg/L	
1,3,5-Trimethylbenzene		ND	1.0	µg/L	
tert-Butylbenzene		ND	1.0	µg/L	
1,2,4-Trimethylbenzene		ND	1.0	µg/L	
sec-Butylbenzene		ND	1.0	µg/L	
1,3-Dichlorobenzene		ND	1.0	µg/L	
4-Isopropyltoluene		ND	1.0	µg/L	
1,4-Dichlorobenzene		ND	1.0	µg/L	
1,2-Dichlorobenzene		ND	1.0	µg/L	
n-Butylbenzene		ND	1.0	µg/L	
1,2-Dibromo-3-chloropropane		ND	1.0	µg/L	
1,2,4-Trichlorobenzene		ND	1.0	µg/L	
Hexachlorobutadiene		ND	1.0	µg/L	
Naphthalene		ND	1.0	µg/L	
1,2,3-Trichlorobenzene		ND	1.0	µg/L	
Total Xylenes		ND	1.0	µg/L	
Surrogate				Recovery	Limit

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

8260 Volatile Organic Compounds (VOC)

by EPA 8260

Sample ID	*Matrix*				*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	

VOC TRIP BLANK	*Water*	**Sampled:** *01/13/99* **Analyzed:** *01/18/99 by DM*	*L9664-5*

Surrogate	Recovery	Limit
1,2-Dichloroethane-d4	99.%	79. - 121.
Toluene-d8	96.%	76. - 132.
4-Bromofluorobenzene	102.%	79. - 121.

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Organophosphorus Pesticides
by EPA 8141 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 3A	*Water*				Sampled: *01/13/99* Analyzed: *01/20/99*	*L9664-1*
Dichlorvos		ND	0.47	µg/L	Y	
Mevinphos		ND	0.094	µg/L	Y	
Ethoprop		ND	0.094	µg/L	Y	
Sulfotepp		ND	0.094	µg/L	Y	
Monocrotophos		ND	0.094	µg/L	Y	
Phorate		ND	0.47	µg/L	Y	
Dimethoate		ND	0.094	µg/L	Y	
Demeton, o-s		ND	0.47	µg/L	Y	
Diazinon		ND	0.094	µg/L	Y	
Disulfoton		ND	0.094	µg/L	Y	
Parathion, methyl		ND	0.094	µg/L	Y	
Ronnel		ND	0.094	µg/L	Y	
Chlorpyrifos		ND	0.094	µg/L	Y	
Malathion		ND	0.094	µg/L	Y	
Fenthion		ND	0.47	µg/L	Y	
Parathion		ND	0.094	µg/L	Y	
Trichloronate		ND	0.094	µg/L	Y	
Tetrachlorvinphos		ND	0.094	µg/L	Y	
Merphos		ND	0.47	µg/L	Y	
Tokuthion		ND	0.47	µg/L	Y	
Fensulfothion		ND	0.47	µg/L	Y	
Bolstar		ND	0.47	µg/L	Y	
EPN		ND	0.47	µg/L	Y	
Azinphos, methyl		ND	0.094	µg/L	Y	
Coumaphos		ND	0.094	µg/L	Y	
Famphur		ND	0.094	µg/L	Y	

Surrogate	Recovery	Limit	
Tributyl Phosphate	73.%	[illegible]	Y
Triphenyl Phosphate	77.%	[illegible]	Y

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Organophosphorus Pesticides
by EPA 8141 MOD

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 3D	*Water*				Sampled: *01/13/99* Analyzed: *01/20/99*	*L9664-2*
Dichlorvos		ND	0.48	µg/L	Y	
Mevinphos		ND	0.095	µg/L	Y	
Ethoprop		ND	0.095	µg/L	Y	
Sulfotepp		ND	0.095	µg/L	Y	
Monocrotophos		ND	0.095	µg/L	Y	
Phorate		ND	0.48	µg/L	Y	
Dimethoate		ND	0.095	µg/L	Y	
Demeton, o-s		ND	0.48	µg/L	Y	
Diazinon		ND	0.095	µg/L	Y	
Disulfoton		ND	0.095	µg/L	Y	
Parathion, methyl		ND	0.095	µg/L	Y	
Ronnel		ND	0.095	µg/L	Y	
Chlorpyrifos		ND	0.095	µg/L	Y	
Malathion		ND	0.095	µg/L	Y	
Fenthion		ND	0.48	µg/L	Y	
Parathion		ND	0.095	µg/L	Y	
Trichloronate		ND	0.095	µg/L	Y	
Tetrachlorvinphos		ND	0.095	µg/L	Y	
Merphos		ND	0.48	µg/L	Y	
Tokuthion		ND	0.48	µg/L	Y	
Fensulfothion		ND	0.48	µg/L	Y	
Bolstar		ND	0.48	µg/L	Y	
EPN		ND	0.48	µg/L	Y	
Azinphos, methyl		ND	0.095	µg/L	Y	
Coumaphos		ND	0.095	µg/L	Y	
Famphur		ND	0.095	µg/L	Y	

Surrogate	Recovery	Limit
Tributyl Phosphate	70.%	Y
Triphenyl Phosphate	76.%	Y

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Organophosphorus Pesticides
by EPA 8141 MOD

Sample ID	*Matrix*				*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 2A	*Water*			Sampled: *01/13/99* Analyzed: *01/20/99*	*L9664-3*
Dichlorvos	ND	0.5	µg/L	Y	
Mevinphos	ND	0.1	µg/L	Y	
Ethoprop	ND	0.1	µg/L	Y	
Sulfotepp	ND	0.1	µg/L	Y	
Monocrotophos	ND	0.1	µg/L	Y	
Phorate	ND	0.5	µg/L	Y	
Dimethoate	ND	0.1	µg/L	Y	
Demeton, o-s	ND	0.5	µg/L	Y	
Diazinon	ND	0.1	µg/L	Y	
Disulfoton	ND	0.1	µg/L	Y	
Parathion, methyl	ND	0.1	µg/L	Y	
Ronnel	ND	0.1	µg/L	Y	
Chlorpyrifos	ND	0.1	µg/L	Y	
Malathion	ND	0.1	µg/L	Y	
Fenthion	ND	0.5	µg/L	Y	
Parathion	ND	0.1	µg/L	Y	
Trichloronate	ND	0.1	µg/L	Y	
Tetrachlorvinphos	ND	0.1	µg/L	Y	
Merphos	ND	0.5	µg/L	Y	
Tokuthion	ND	0.5	µg/L	Y	
Fensulfothion	ND	0.5	µg/L	Y	
Bolstar	ND	0.5	µg/L	Y	
EPN	ND	0.5	µg/L	Y	
Azinphos, methyl	ND	0.1	µg/L	Y	
Coumaphos	ND	0.1	µg/L	Y	
Famphur	ND	0.1	µg/L	Y	

Surrogate	Recovery	Limit
Tributyl Phosphate	72.%	Y
Triphenyl Phosphate	89.%	Y

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Organophosphorus Pesticides
by EPA 8141 MOD

Sample ID	*Matrix*				*Lab Number*
Analyte	**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
99EA 1A	*Water*			Sampled: *01/13/99* Analyzed: *01/20/99*	*L9664-4*
Dichlorvos	ND	0.48	µg/L	Y	
Mevinphos	ND	0.095	µg/L	Y	
Ethoprop	ND	0.095	µg/L	Y	
Sulfotepp	ND	0.095	µg/L	Y	
Monocrotophos	ND	0.095	µg/L	Y	
Phorate	ND	0.48	µg/L	Y	
Dimethoate	ND	0.095	µg/L	Y	
Demeton, o-s	ND	0.48	µg/L	Y	
Diazinon	ND	0.095	µg/L	Y	
Disulfoton	ND	0.095	µg/L	Y	
Parathion, methyl	ND	0.095	µg/L	Y	
Ronnel	ND	0.095	µg/L	Y	
Chlorpyrifos	ND	0.095	µg/L	Y	
Malathion	ND	0.095	µg/L	Y	
Fenthion	ND	0.48	µg/L	Y	
Parathion	ND	0.095	µg/L	Y	
Trichloronate	ND	0.095	µg/L	Y	
Tetrachlorvinphos	ND	0.095	µg/L	Y	
Merphos	ND	0.48	µg/L	Y	
Tokuthion	ND	0.48	µg/L	Y	
Fensulfothion	ND	0.48	µg/L	Y	
Bolstar	ND	0.48	µg/L	Y	
EPN	ND	0.48	µg/L	Y	
Azinphos, methyl	ND	0.095	µg/L	Y	
Coumaphos	ND	0.095	µg/L	Y	
Famphur	ND	0.095	µg/L	Y	

Surrogate	Recovery	Limit
Tributyl Phosphate	78.%	Y
Triphenyl Phosphate	78.%	Y

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Polynuclear Aromatic Hydrocarbons (PNA)

by EPA 8270 SIM

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
				Sampled: *01/13/99*	
				Extracted: *01/20/99*	
99EA 3A	*Water*			Analyzed: *01/22/99 by PB*	*L9664-1*
Naphthalene		**10.2**	**0.1**	**µg/L**	
Acenaphthylene		ND	0.1	µg/L	
Acenaphthene		**34.1**	**0.1**	**µg/L**	
Fluorene		**7.6**	**0.1**	**µg/L**	
Pentachlorophenol		ND	1.0	µg/L	
Phenanthrene		**5.8**	**0.1**	**µg/L**	
Anthracene		ND	0.1	µg/L	
Fluoranthene		ND	0.1	µg/L	
Pyrene		ND	0.1	µg/L	
Benzo[a]anthracene		ND	0.1	µg/L	
Chrysene		ND	0.1	µg/L	
Benzo[b]fluoranthene		ND	0.1	µg/L	
Benzo[k]fluoranthene		ND	0.1	µg/L	
Benzo[a]pyrene		ND	0.1	µg/L	
Indeno[1,2,3-cd]pyrene		ND	0.1	µg/L	
Dibenz[a,h]anthracene		ND	0.1	µg/L	
Benzo[g,h,i]perylene		ND	0.1	µg/L	

Surrogate	Recovery	Limit
1,2-Dichlorobenzene-d4	97.%	
Nitrobenzene-d5	103.%	
2-Fluorobiphenyl	105.%	

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Polynuclear Aromatic Hydrocarbons (PNA)
by EPA 8270 SIM

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/13/99*	
					Extracted: *01/20/99*	
99EA 3D	*Water*				**Analyzed:** *01/22/99 by PB*	*L9664-2*
Naphthalene		**11.2**	**0.1**	**µg/L**		
Acenaphthylene		ND	0.1	µg/L		
Acenaphthene		**35.6**	**0.1**	**µg/L**		
Fluorene		**8.0**	**0.1**	**µg/L**		
Pentachlorophenol		ND	1.0	µg/L		
Phenanthrene		**6.1**	**0.1**	**µg/L**		
Anthracene		ND	0.1	µg/L		
Fluoranthene		ND	0.1	µg/L		
Pyrene		ND	0.1	µg/L		
Benzo[a]anthracene		ND	0.1	µg/L		
Chrysene		ND	0.1	µg/L		
Benzo[b]fluoranthene		ND	0.1	µg/L		
Benzo[k]fluoranthene		ND	0.1	µg/L		
Benzo[a]pyrene		ND	0.1	µg/L		
Indeno[1,2,3-cd]pyrene		ND	0.1	µg/L		
Dibenz[a,h]anthracene		ND	0.1	µg/L		
Benzo[g,h,i]perylene		ND	0.1	µg/L		

Surrogate	Recovery	Limit
1,2-Dichlorobenzene-d4	101.%	
Nitrobenzene-d5	106.%	
2-Fluorobiphenyl	108.%	

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Polynuclear Aromatic Hydrocarbons (PNA)
by EPA 8270 SIM

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**

99EA 2A — *Water* — Sampled: *01/13/99* — Extracted: *01/20/99* — Analyzed: *01/22/99 by PB* — *L9664-3*

Naphthalene	ND	0.1	µg/L
Acenaphthylene	ND	0.1	µg/L
Acenaphthene	**1.3**	**0.1**	**µg/L**
Fluorene	ND	0.1	µg/L
Pentachlorophenol	ND	1.0	µg/L
Phenanthrene	ND	0.1	µg/L
Anthracene	ND	0.1	µg/L
Fluoranthene	ND	0.1	µg/L
Pyrene	ND	0.1	µg/L
Benzo[a]anthracene	ND	0.1	µg/L
Chrysene	ND	0.1	µg/L
Benzo[b]fluoranthene	ND	0.1	µg/L
Benzo[k]fluoranthene	ND	0.1	µg/L
Benzo[a]pyrene	ND	0.1	µg/L
Indeno[1,2,3-cd]pyrene	ND	0.1	µg/L
Dibenz[a,h]anthracene	ND	0.1	µg/L
Benzo[g,h,i]perylene	ND	0.1	µg/L

Surrogate	Recovery	Limit
1,2-Dichlorobenzene-d4	101.%	
Nitrobenzene-d5	103.%	
2-Fluorobiphenyl	104.%	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Polynuclear Aromatic Hydrocarbons (PNA)

by EPA 8270 SIM

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
99EA 1A	*Water*			Sampled: *01/13/99* Extracted: *01/20/99* Analyzed: *01/22/99 by PB*	*L9664-4*
Naphthalene		ND	0.1	µg/L	
Acenaphthylene		ND	0.1	µg/L	
Acenaphthene		ND	0.1	µg/L	
Fluorene		ND	0.1	µg/L	
Pentachlorophenol		ND	1.0	µg/L	
Phenanthrene		ND	0.1	µg/L	
Anthracene		ND	0.1	µg/L	
Fluoranthene		ND	0.1	µg/L	
Pyrene		ND	0.1	µg/L	
Benzo[a]anthracene		ND	0.1	µg/L	
Chrysene		ND	0.1	µg/L	
Benzo[b]fluoranthene		ND	0.1	µg/L	
Benzo[k]fluoranthene		ND	0.1	µg/L	
Benzo[a]pyrene		ND	0.1	µg/L	
Indeno[1,2,3-cd]pyrene		ND	0.1	µg/L	
Dibenz[a,h]anthracene		ND	0.1	µg/L	
Benzo[g,h,i]perylene		ND	0.1	µg/L	

Surrogate	Recovery	Limit
1,2-Dichlorobenzene-d4	101.%	
Nitrobenzene-d5	105.%	
2-Fluorobiphenyl	106.%	

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semi-Volatile Petroleum Products
by NWTPH-DX

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppm)**	**Comment**	

					Sampled: *01/13/99*	
					Extracted: *01/19/99*	
99EA 3A	*Water*				**Analyzed:** *01/19/99 by RJ*	*L9664-1*
Diesel Region		**0.87**	**0.25**	**mg/L**	**1**	
Oil Region		ND	0.50	mg/L		

Surrogate	Recovery	Limit
2-Fluorobiphenyl	80.%	50 - 150
O-terphenyl	101.%	50 - 150

[1] Non-typical diesel range product. Product appears to be weathered gasoline.

					Sampled: *01/13/99*	
					Extracted: *01/19/99*	
99EA 3D	*Water*				**Analyzed:** *01/19/99 by RJ*	*L9664-2*
Diesel Region		**0.95**	**0.25**	**mg/L**	**1**	
Oil Region		ND	0.50	mg/L		

Surrogate	Recovery	Limit
2-Fluorobiphenyl	89.%	50 - 150
O-terphenyl	110.%	50 - 150

[1] Non-typical diesel range product. Product appears to be weathered gasoline.

					Sampled: *01/13/99*	
					Extracted: *01/19/99*	
99EA 2A	*Water*				**Analyzed:** *01/19/99 by RJ*	*L9664-3*
Diesel Region		ND	0.25	mg/L		
Oil Region		ND	0.50	mg/L		

Surrogate	Recovery	Limit
2-Fluorobiphenyl	73.%	50 - 150
O-terphenyl	102.%	50 - 150

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semi-Volatile Petroleum Products
by NWTPH-DX

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppm)**	**Comment**	
					Sampled: *01/13/99*	
					Extracted: *01/19/99*	
99EA 1A	*Water*				**Analyzed:** *01/19/99 by RJ*	*L9664-4*
Diesel Region		ND	0.25	mg/L		
Oil Region		ND	0.50	mg/L		

Surrogate	Recovery	Limit
2-Fluorobiphenyl	77.%	50 - 150
O-terphenyl	107.%	50 - 150

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
					Sampled: *01/13/99*
					Extracted: *01/19/99*
99EA 3A	*Water*				Analyzed: *01/20/99* *L9664-1*
Phenol		ND	10.	µg/L	
bis(2-Chloroethyl)ether		ND	10.	µg/L	
2-Chlorophenol		ND	10.	µg/L	
1,3-Dichlorobenzene		ND	10.	µg/L	
1,4-Dichlorobenzene		ND	10.	µg/L	
Benzyl Alcohol		ND	20.	µg/L	
1,2-Dichlorobenzene		ND	10.	µg/L	
2-Methylphenol		ND	10.	µg/L	
bis(2-Chloroisopropyl)ether		ND	10.	µg/L	
4-Methylphenol		ND	10.	µg/L	
N-Nitroso-di-n-propylamine		ND	10.	µg/L	
Hexachloroethane		ND	10.	µg/L	
Nitrobenzene		ND	10.	µg/L	
Isophorone		ND	10.	µg/L	
2-Nitrophenol		ND	10.	µg/L	
2,4-Dimethylphenol		ND	10.	µg/L	
Benzoic Acid		ND	50.	µg/L	
bis(2-Chloroethoxy)methane		ND	10.	µg/L	
2,4-Dichlorophenol		ND	10.	µg/L	
1,2,4-Trichlorobenzene		ND	10.	µg/L	
Naphthalene		**15.**	**10.**	**µg/L**	
4-Chloroaniline		ND	20.	µg/L	
Hexachlorobutadiene		ND	10.	µg/L	
4-Chloro-3-methylphenol		ND	20.	µg/L	
2-Methylnaphthalene		**193.**	**10.**	**µg/L**	
Hexachlorocyclopentadiene		ND	10.	µg/L	
2,4,6-Trichlorophenol		ND	10.	µg/L	
2,4,5-Trichlorophenol		ND	10.	µg/L	
2-Chloronaphthalene		ND	10.	µg/L	
2-Nitroaniline		ND	50.	µg/L	
Acenaphthylene		ND	10.	µg/L	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
99EA 3A	*Water*			Sampled: *01/13/99* Extracted: *01/19/99* Analyzed: *01/20/99*	*L9664-1*
Dimethylphthalate		ND	10.	µg/L	
2,6-Dinitrotoluene		ND	10.	µg/L	
Acenaphthene		**52.**	**10.**	**µg/L**	
3-Nitroaniline		ND	50.	µg/L	
2,4-Dinitrophenol		ND	50.	µg/L	
Dibenzofuran		ND	10.	µg/L	
2,4-Dinitrotoluene		ND	10.	µg/L	
4-Nitrophenol		ND	50.	µg/L	
Fluorene		**10.**	**10.**	**µg/L**	
4-Chlorophenyl-phenylether		ND	10.	µg/L	
Diethylphthalate		ND	10.	µg/L	
4-Nitroaniline		ND	50.	µg/L	
1,2-Diphenylhydrazine		ND	50.	µg/L	
4,6-Dinitro-2-methylphenol		ND	50.	µg/L	
n-Nitrosodiphenylamine		ND	10.	µg/L	
4-Bromophenyl-phenylether		ND	10.	µg/L	
Hexachlorobenzene		ND	10.	µg/L	
Pentachlorophenol		ND	50.	µg/L	
Phenanthrene		ND	10.	µg/L	
Anthracene		ND	10.	µg/L	
Di-n-butylphthalate		ND	10.	µg/L	
Fluoranthene		ND	10.	µg/L	
Pyrene		ND	10.	µg/L	
Butylbenzylphthalate		ND	10.	µg/L	
3,3'-Dichlorobenzidine		ND	20.	µg/L	
Benzo[a]anthracene		ND	10.	µg/L	
Chrysene		ND	10.	µg/L	
bis(2-Ethylhexyl)phthalate		ND	10.	µg/L	
Di-n-octylphthalate		ND	10.	µg/L	
Benzo[b]fluoranthene		ND	10.	µg/L	
Benzo[k]fluoranthene		ND	10.	µg/L	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**

Sampled: *01/13/99*
Extracted: *01/19/99*
Analyzed: *01/20/99*

99EA 3A	*Water*				*L9664-1*
Benzo[a]pyrene		ND	10.	µg/L	
Indeno[1,2,3-cd]pyrene		ND	10.	µg/L	
Dibenz[a,h]anthracene		ND	10.	µg/L	
Benzo[g,h,i]perylene		ND	10.	µg/L	

Surrogate	Recovery	Limit
2-Fluorophenol	69.%	
Phenol-d6	47.%	
2,4,6-Tribromophenol	104.%	
1,2-Dichlorobenzene-d4	87.%	
Nitrobenzene-d5	105.%	
2-Fluorobiphenyl	101.%	

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**
99EA 3D	*Water*			Sampled: *01/13/99* Extracted: *01/19/99* Analyzed: *01/27/99*	*L9664-2*
Phenol		ND	10.	µg/L	
bis(2-Chloroethyl)ether		ND	10.	µg/L	
2-Chlorophenol		ND	10.	µg/L	
1,3-Dichlorobenzene		ND	10.	µg/L	
1,4-Dichlorobenzene		ND	10.	µg/L	
Benzyl Alcohol		ND	20.	µg/L	
1,2-Dichlorobenzene		ND	10.	µg/L	
2-Methylphenol		ND	10.	µg/L	
bis(2-Chloroisopropyl)ether		ND	10.	µg/L	
4-Methylphenol		ND	10.	µg/L	
N-Nitroso-di-n-propylamine		ND	10.	µg/L	
Hexachloroethane		ND	10.	µg/L	
Nitrobenzene		ND	10.	µg/L	
Isophorone		ND	10.	µg/L	
2-Nitrophenol		ND	10.	µg/L	
2,4-Dimethylphenol		ND	10.	µg/L	
Benzoic Acid		ND	50.	µg/L	
bis(2-Chloroethoxy)methane		ND	10.	µg/L	
2,4-Dichlorophenol		ND	10.	µg/L	
1,2,4-Trichlorobenzene		ND	10.	µg/L	
Naphthalene		**15.**	**10.**	**µg/L**	
4-Chloroaniline		ND	20.	µg/L	
Hexachlorobutadiene		ND	10.	µg/L	
4-Chloro-3-methylphenol		ND	20.	µg/L	
2-Methylnaphthalene		**179.**	**10.**	**µg/L**	
Hexachlorocyclopentadiene		ND	10.	µg/L	
2,4,6-Trichlorophenol		ND	10.	µg/L	
2,4,5-Trichlorophenol		ND	10.	µg/L	
2-Chloronaphthalene		ND	10.	µg/L	
2-Nitroaniline		ND	50.	µg/L	
Acenaphthylene		ND	10.	µg/L	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		Result	Reporting Limit	Units (ppb)	Comment	
					Sampled: *01/13/99*	
					Extracted: *01/19/99*	
99EA 3D	*Water*				Analyzed: *01/27/99*	*L9664-2*
Dimethylphthalate		ND	10.	µg/L		
2,6-Dinitrotoluene		ND	10.	µg/L		
Acenaphthene		**53.**	**10.**	**µg/L**		
3-Nitroaniline		ND	50.	µg/L		
2,4-Dinitrophenol		ND	50.	µg/L		
Dibenzofuran		ND	10.	µg/L		
2,4-Dinitrotoluene		ND	10.	µg/L		
4-Nitrophenol		ND	50.	µg/L		
Fluorene		**11.**	**10.**	**µg/L**		
4-Chlorophenyl-phenylether		ND	10.	µg/L		
Diethylphthalate		ND	10.	µg/L		
4-Nitroaniline		ND	50.	µg/L		
1,2-Diphenylhydrazine		ND	50.	µg/L		
4,6-Dinitro-2-methylphenol		ND	50.	µg/L		
n-Nitrosodiphenylamine		ND	10.	µg/L		
4-Bromophenyl-phenylether		ND	10.	µg/L		
Hexachlorobenzene		ND	10.	µg/L		
Pentachlorophenol		ND	50.	µg/L		
Phenanthrene		ND	10.	µg/L		
Anthracene		ND	10.	µg/L		
Di-n-butylphthalate		ND	10.	µg/L		
Fluoranthene		ND	10.	µg/L		
Pyrene		ND	10.	µg/L		
Butylbenzylphthalate		ND	10.	µg/L		
3,3'-Dichlorobenzidine		ND	20.	µg/L		
Benzo[a]anthracene		ND	10.	µg/L		
Chrysene		ND	10.	µg/L		
bis(2-Ethylhexyl)phthalate		ND	10.	µg/L		
Di-n-octylphthalate		ND	10.	µg/L		
Benzo[b]fluoranthene		ND	10.	µg/L		
Benzo[k]fluoranthene		ND	10.	µg/L		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*				*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**

Sampled: *01/13/99*
Extracted: *01/19/99*
Analyzed: *01/27/99*

99EA 3D	*Water*				*L9664-2*
Benzo[a]pyrene		ND	10.	µg/L	
Indeno[1,2,3-cd]pyrene		ND	10.	µg/L	
Dibenz[a,h]anthracene		ND	10.	µg/L	
Benzo[g,h,i]perylene		ND	10.	µg/L	

Surrogate	Recovery	Limit
2-Fluorophenol	61.%	
Phenol-d6	40.%	
2,4,6-Tribromophenol	108.%	
1,2-Dichlorobenzene-d4	82.%	
Nitrobenzene-d5	85.%	
2-Fluorobiphenyl	93.%	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		Result	Reporting Limit	Units (ppb)	Comment	
					Sampled: *01/13/99*	
					Extracted: *01/19/99*	
99EA 2A	*Water*				Analyzed: *01/27/99*	*L9664-3*
Phenol		ND	10.	µg/L		
bis(2-Chloroethyl)ether		ND	10.	µg/L		
2-Chlorophenol		ND	10.	µg/L		
1,3-Dichlorobenzene		ND	10.	µg/L		
1,4-Dichlorobenzene		ND	10.	µg/L		
Benzyl Alcohol		ND	20.	µg/L		
1,2-Dichlorobenzene		ND	10.	µg/L		
2-Methylphenol		ND	10.	µg/L		
bis(2-Chloroisopropyl)ether		ND	10.	µg/L		
4-Methylphenol		ND	10.	µg/L		
N-Nitroso-di-n-propylamine		ND	10.	µg/L		
Hexachloroethane		ND	10.	µg/L		
Nitrobenzene		ND	10.	µg/L		
Isophorone		ND	10.	µg/L		
2-Nitrophenol		ND	10.	µg/L		
2,4-Dimethylphenol		ND	10.	µg/L		
Benzoic Acid		ND	50.	µg/L		
bis(2-Chloroethoxy)methane		ND	10.	µg/L		
2,4-Dichlorophenol		ND	10.	µg/L		
1,2,4-Trichlorobenzene		ND	10.	µg/L		
Naphthalene		ND	10.	µg/L		
4-Chloroaniline		ND	20.	µg/L		
Hexachlorobutadiene		ND	10.	µg/L		
4-Chloro-3-methylphenol		ND	20.	µg/L		
2-Methylnaphthalene		ND	10.	µg/L		
Hexachlorocyclopentadiene		ND	10.	µg/L		
2,4,6-Trichlorophenol		ND	10.	µg/L		
2,4,5-Trichlorophenol		ND	10.	µg/L		
2-Chloronaphthalene		ND	10.	µg/L		
2-Nitroaniline		ND	50.	µg/L		
Acenaphthylene		ND	10.	µg/L		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		Result	Reporting Limit	Units (ppb)	Comment	
					Sampled: *01/13/99*	
					Extracted: *01/19/99*	
99EA 2A	*Water*				Analyzed: *01/27/99*	*L9664-3*
Dimethylphthalate		ND	10.	µg/L		
2,6-Dinitrotoluene		ND	10.	µg/L		
Acenaphthene		ND	10.	µg/L		
3-Nitroaniline		ND	50.	µg/L		
2,4-Dinitrophenol		ND	50.	µg/L		
Dibenzofuran		ND	10.	µg/L		
2,4-Dinitrotoluene		ND	10.	µg/L		
4-Nitrophenol		ND	50.	µg/L		
Fluorene		ND	10.	µg/L		
4-Chlorophenyl-phenylether		ND	10.	µg/L		
Diethylphthalate		ND	10.	µg/L		
4-Nitroaniline		ND	50.	µg/L		
1,2-Diphenylhydrazine		ND	50.	µg/L		
4,6-Dinitro-2-methylphenol		ND	50.	µg/L		
n-Nitrosodiphenylamine		ND	10.	µg/L		
4-Bromophenyl-phenylether		ND	10.	µg/L		
Hexachlorobenzene		ND	10.	µg/L		
Pentachlorophenol		ND	50.	µg/L		
Phenanthrene		ND	10.	µg/L		
Anthracene		ND	10.	µg/L		
Di-n-butylphthalate		ND	10.	µg/L		
Fluoranthene		ND	10.	µg/L		
Pyrene		ND	10.	µg/L		
Butylbenzylphthalate		ND	10.	µg/L		
3,3'-Dichlorobenzidine		ND	20.	µg/L		
Benzo[a]anthracene		ND	10.	µg/L		
Chrysene		ND	10.	µg/L		
bis(2-Ethylhexyl)phthalate		ND	10.	µg/L		
Di-n-octylphthalate		ND	10.	µg/L		
Benzo[b]fluoranthene		ND	10.	µg/L		
Benzo[k]fluoranthene		ND	10.	µg/L		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	

Sampled: *01/13/99*
Extracted: *01/19/99*
Analyzed: *01/27/99*

99EA 2A	*Water*				*L9664-3*
Benzo[a]pyrene		ND	10.	µg/L	
Indeno[1,2,3-cd]pyrene		ND	10.	µg/L	
Dibenz[a,h]anthracene		ND	10.	µg/L	
Benzo[g,h,i]perylene		ND	10.	µg/L	

Surrogate	Recovery	Limit
2-Fluorophenol	62.%	
Phenol-d6	41.%	
2,4,6-Tribromophenol	111.%	
1,2-Dichlorobenzene-d4	88.%	
Nitrobenzene-d5	90.%	
2-Fluorobiphenyl	98.%	

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		Result	Reporting Limit	Units (ppb)	Comment	
99EA 1A	*Water*				Sampled: *01/13/99* Extracted: *01/19/99* Analyzed: *01/27/99*	*L9664-4*
Phenol		ND	10.	µg/L		
bis(2-Chloroethyl)ether		ND	10.	µg/L		
2-Chlorophenol		ND	10.	µg/L		
1,3-Dichlorobenzene		ND	10.	µg/L		
1,4-Dichlorobenzene		ND	10.	µg/L		
Benzyl Alcohol		ND	20.	µg/L		
1,2-Dichlorobenzene		ND	10.	µg/L		
2-Methylphenol		ND	10.	µg/L		
bis(2-Chloroisopropyl)ether		ND	10.	µg/L		
4-Methylphenol		ND	10.	µg/L		
N-Nitroso-di-n-propylamine		ND	10.	µg/L		
Hexachloroethane		ND	10.	µg/L		
Nitrobenzene		ND	10.	µg/L		
Isophorone		ND	10.	µg/L		
2-Nitrophenol		ND	10.	µg/L		
2,4-Dimethylphenol		ND	10.	µg/L		
Benzoic Acid		ND	50.	µg/L		
bis(2-Chloroethoxy)methane		ND	10.	µg/L		
2,4-Dichlorophenol		ND	10.	µg/L		
1,2,4-Trichlorobenzene		ND	10.	µg/L		
Naphthalene		ND	10.	µg/L		
4-Chloroaniline		ND	20.	µg/L		
Hexachlorobutadiene		ND	10.	µg/L		
4-Chloro-3-methylphenol		ND	20.	µg/L		
2-Methylnaphthalene		ND	10.	µg/L		
Hexachlorocyclopentadiene		ND	10.	µg/L		
2,4,6-Trichlorophenol		ND	10.	µg/L		
2,4,5-Trichlorophenol		ND	10.	µg/L		
2-Chloronaphthalene		ND	10.	µg/L		
2-Nitroaniline		ND	50.	µg/L		
Acenaphthylene		ND	10.	µg/L		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	
					Sampled: *01/13/99*	
					Extracted: *01/19/99*	
99EA 1A	*Water*				**Analyzed:** *01/27/99*	*L9664-4*
Dimethylphthalate		ND	10.	µg/L		
2,6-Dinitrotoluene		ND	10.	µg/L		
Acenaphthene		ND	10.	µg/L		
3-Nitroaniline		ND	50.	µg/L		
2,4-Dinitrophenol		ND	50.	µg/L		
Dibenzofuran		ND	10.	µg/L		
2,4-Dinitrotoluene		ND	10.	µg/L		
4-Nitrophenol		ND	50.	µg/L		
Fluorene		ND	10.	µg/L		
4-Chlorophenyl-phenylether		ND	10.	µg/L		
Diethylphthalate		ND	10.	µg/L		
4-Nitroaniline		ND	50.	µg/L		
1,2-Diphenylhydrazine		ND	50.	µg/L		
4,6-Dinitro-2-methylphenol		ND	50.	µg/L		
n-Nitrosodiphenylamine		ND	10.	µg/L		
4-Bromophenyl-phenylether		ND	10.	µg/L		
Hexachlorobenzene		ND	10.	µg/L		
Pentachlorophenol		ND	50.	µg/L		
Phenanthrene		ND	10.	µg/L		
Anthracene		ND	10.	µg/L		
Di-n-butylphthalate		ND	10.	µg/L		
Fluoranthene		ND	10.	µg/L		
Pyrene		ND	10.	µg/L		
Butylbenzylphthalate		ND	10.	µg/L		
3,3'-Dichlorobenzidine		ND	20.	µg/L		
Benzo[a]anthracene		ND	10.	µg/L		
Chrysene		ND	10.	µg/L		
bis(2-Ethylhexyl)phthalate		ND	10.	µg/L		
Di-n-octylphthalate		ND	10.	µg/L		
Benzo[b]fluoranthene		ND	10.	µg/L		
Benzo[k]fluoranthene		ND	10.	µg/L		

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Semivolatiles
by EPA 8270

Sample ID	*Matrix*					*Lab Number*
Analyte		**Result**	**Reporting Limit**	**Units (ppb)**	**Comment**	

					Sampled: *01/13/99*	
					Extracted: *01/19/99*	
99EA 1A	*Water*				**Analyzed:** *01/27/99*	*L9664-4*
Benzo[a]pyrene		ND	10.	µg/L		
Indeno[1,2,3-cd]pyrene		ND	10.	µg/L		
Dibenz[a,h]anthracene		ND	10.	µg/L		
Benzo[g,h,i]perylene		ND	10.	µg/L		

Surrogate	Recovery	Limit
2-Fluorophenol	57.%	
Phenol-d6	37.%	
2,4,6-Tribromophenol	109.%	
1,2-Dichlorobenzene-d4	87.%	
Nitrobenzene-d5	87.%	
2-Fluorobiphenyl	100.%	

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Batch Q.C.

Blank

Inorganics - Waters (mg/L)

Analyte	Result	Reporting Limit	Q	Date Analyzed
Alkalinity, Total as CaCO3	ND	1		01/20/99
Chloride	ND	0.1		01/14/99
Cyanide, Total	ND	0.02		01/26/99
Fluoride	ND	0.1		01/14/99
Nitrate as N	ND	0.1		01/14/99
pH	NA	0.1		01/14/99
Sulfate as SO4	ND	0.5		01/14/99
Sulfide	ND	2		01/22/98

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Batch Q.C.

LCSW

Inorganics - Waters (mg/L)

Analyte	True Value	Result	% Recovery	% Limit	Date Analyzed
Alkalinity, Total as CaCO3	100	105	105	90-110	01/20/99
Chloride	10.00	9.51	95	90-110	01/14/99
Cyanide, Total	0.19	0.18	95	85-115	01/26/99
Fluoride	4.00	3.92	98	90-110	01/14/99
Nitrate as N	5.00	4.59	92	90-110	01/14/99
pH	6.0	6.0	100	0.1 †	01/14/99
Sulfate as SO4	30.0	29.3	98	90-110	01/14/99
Sulfide	NA	NA	NA		01/22/98

Comments: † Limit for pH is calculated using the difference of results.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Batch Q.C.

Duplicate

Inorganics - Waters (mg/L)

Analyte	Result	Duplicate Result	Reporting Limit	RPD	RPD Limit	Q	Date Analyzed
Alkalinity, Total as CaCO3	210	210	1	<1	2.5		01/20/99
Chloride	21	21	0.1	<1	20		01/14/99
Cyanide, Total	ND	ND	0.02	<1	20		01/26/99
Fluoride	1.0	1.0	0.1	<1	20		01/14/99
Nitrate as N	ND	ND	0.1	<1	20		01/14/99
pH	6.7	6.7	0.1	<1	±0.1 †		01/14/99
Sulfate as SO4	5.2	5.2	0.5	<1	20		01/14/99
Sulfide	NA	NA	2	NA	20		01/22/98

Comments: † Limit for pH is calculated using the difference of results, not Relative Percent Difference (RPD).

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: *Woodward Clyde Consultants*
Contact: *Michelle McClelland*

Project: *540990003-01*
IP - Longview

Batch Q.C.

Spike

Inorganics - Waters (mg/L)

Analyte	Spike Result	Sample Result	Spike Added	% Recovery	% Limit	Q	Date Analyzed
Alkalinity, Total as CaCO3	250	210	50	80	90-110	K1	01/20/99
Chloride	26	21	6.0	83	75-125		01/14/99
Cyanide, Total	0.09	ND	0.10	90	75-125		01/26/99
Fluoride	3.9	1.0	3.0	97	75-125		01/14/99
Nitrate as N	2.7	ND	3.0	90	75-125		01/14/99
pH	NA	NA	NA	NA			01/14/99
Sulfate as SO4	23	5.2	18	99	75-125		01/14/99
Sulfide	NA	NA	NA	NA			01/22/98

Comments: K1 = Batch matrix spike recovery outside laboratory QC limits due to suspected matrix interference.

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Batch Q.C.

Method Blank

Metals / Dissolved (mg/L)

Analyte	Result	Reporting Limit	Q	Date Analyzed
Antimony	ND	0.020		01/27/99
Arsenic	ND	0.0005		01/25/99
Beryllium	ND	0.0002		01/27/99
Cadmium	ND	0.000050		01/26/99
Chromium	ND	0.00050		01/25/99
Copper	ND	0.0020		01/27/99
Lead	ND	0.0010		01/21/99
Mercury	ND	0.00020		01/22/99
Nickel	ND	0.010		01/27/99
Selenium	ND	0.0020		01/25/99
Silver	ND	0.00020		01/28/99
Thallium	ND	0.0010		01/28/99
Zinc	ND	0.010		01/27/99

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: *Woodward Clyde Consultants*
Contact: *Michelle McClelland*

Project: *540990003-01*
IP - Longview

Batch Q.C.

LCSW

Metals / Dissolved (mg/L)

Analyte	True Value	Result	% Recovery	% Limit	Date Analyzed
Antimony	0.500	0.510	102	80-120	01/27/99
Arsenic	0.0400	0.0379	95	80-120	01/25/99
Beryllium	0.500	0.518	104	80-120	01/27/99
Cadmium	0.00500	0.00452	90	80-120	01/26/99
Chromium	0.0100	0.00922	92	80-120	01/25/99
Copper	0.500	0.528	106	80-120	01/27/99
Lead	0.0200	0.0198	99	80-120	01/21/99
Mercury	0.00200	0.0019	95	80-120	01/22/99
Nickel	0.500	0.514	103	80-120	01/27/99
Selenium	0.010	0.010	100	80-120	01/25/99
Silver	0.00500	0.00506	101	80-120	01/28/99
Thallium	0.0500	0.0501	100	80-120	01/28/99
Zinc	0.500	0.522	104	80-120	01/27/99

Comments LCSW = Laboratory Control Sample: Water

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Batch Q.C.

Duplicate

Metals / Dissolved (mg/L)

Analyte	Result	Duplicate Result	Reporting Limit	RPD	RPD Limit	Q	Date Analyzed
Antimony	ND	ND	0.020	NA	20		01/27/99
Arsenic	ND	ND	0.0005	NA	20		01/25/99
Beryllium	ND	ND	0.0002	NA	20		01/27/99
Cadmium	ND	ND	0.000050	NA	20		01/26/99
Chromium	ND	ND	0.00050	NA	20		01/25/99
Copper	ND	ND	0.0020	NA	20		01/27/99
Lead	ND	ND	0.0010	NA	20		01/21/99
Mercury	ND	ND	0.00020	NA	20		01/22/99
Nickel	ND	ND	0.010	NA	20		01/27/99
Selenium	ND	ND	0.0020	NA	20		01/25/99
Silver	ND	ND	0.00020	NA	20		01/28/99
Thallium	ND	ND	0.0010	NA	20		01/28/99
Zinc	ND	ND	0.010	NA	20		01/27/99

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Batch Q.C.

Spike
Metals / Dissolved (mg/L)

Analyte	Spike Result	Sample Result	Spike Added	% Recovery	% Limit	Q	Date Analyzed
Antimony	0.503	ND	0.500	101	75-125		01/27/99
Arsenic	0.0419	ND	0.0400	105	75-125		01/25/99
Beryllium	0.0497	ND	0.0500	99	75-125		01/27/99
Cadmium	0.00462	ND	0.00500	92	75-125		01/26/99
Chromium	0.0102	ND	0.0100	102	75-125		01/25/99
Copper	0.248	ND	0.250	99	75-125		01/27/99
Lead	0.0211	ND	0.0200	106	75-125		01/21/99
Mercury	0.0019	ND	0.00200	95	75-125		01/22/99
Nickel	0.474	ND	0.500	95	75-125		01/27/99
Selenium	0.011	ND	0.010	110	75-125		01/25/99
Silver	0.00374	ND	0.00500	75	75-125		01/28/99
Thallium	0.0468	ND	0.0500	94	75-125		01/28/99
Zinc	0.473	ND	0.500	95	75-125		01/27/99

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Batch Q.C.

Method Blank

Metals / Total by Volume (mg/L)

Analyte	Result	Reporting Limit	Q	Date Analyzed
Antimony	ND	0.020		01/27/99
Arsenic	ND	0.0005		01/25/99
Beryllium	ND	0.0002		01/27/99
Cadmium	ND	0.000050		01/26/99
Chromium	ND	0.00050		01/25/99
Copper	ND	0.0020		01/27/99
Lead	ND	0.0010		01/26/99
Mercury	ND	0.00020		01/22/99
Nickel	ND	0.010		01/27/99
Selenium	ND	0.0020		01/25/99
Silver	ND	0.00020		01/27/99
Thallium	ND	0.0010		01/28/99
Zinc	ND	0.010		01/27/99

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: *Woodward Clyde Consultants*
Contact: *Michelle McClelland*

Project: *540990003-01*
IP - Longview

Batch Q.C.

LCSW

Metals / Total by Volume (mg/L)

Analyte	True Value	Result	% Recovery	% Limit	Date Analyzed
Antimony	0.500	0.521	104	80-120	01/27/99
Arsenic	0.0400	0.0404	101	80-120	01/25/99
Beryllium	0.0500	0.0508	102	80-120	01/27/99
Cadmium	0.00500	0.00412	82	80-120	01/26/99
Chromium	0.200	0.183	92	80-120	01/25/99
Copper	0.250	0.254	102	80-120	01/27/99
Lead	0.0200	0.0219	110	80-120	01/26/99
Mercury	0.00200	0.0019	95	80-120	01/22/99
Nickel	0.500	0.498	100	80-120	01/27/99
Selenium	0.010	0.010	100	80-120	01/25/99
Silver	0.0500	0.0458	92	80-120	01/27/99
Thallium	0.0500	0.0501	100	80-120	01/28/99
Zinc	0.500	0.490	98	80-120	01/27/99

Comments LCSW = Laboratory Control Sample: Water

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: ***Woodward Clyde Consultants***
Contact: ***Michelle McClelland***

Project: ***540990003-01***
IP - Longview

Batch Q.C.

Duplicate

Metals / Total by Volume (mg/L)

Analyte	Result	Duplicate Result	Reporting Limit	RPD	RPD Limit	Q	Date Analyzed
Antimony	ND	ND	0.020	NA	20		01/27/99
Arsenic	0.0067	0.0068	0.0005	1	20		01/25/99
Beryllium	ND	ND	0.0002	NA	20		01/27/99
Cadmium	0.00018	0.00026	0.000050	36	‡		01/26/99
Chromium	0.0012	0.0013	0.00050	8	20		01/25/99
Copper	ND	ND	0.0020	NA	20		01/27/99
Lead	0.0148	0.0138	0.0010	7	20		01/26/99
Mercury	ND	ND	0.00020	NA	20		01/22/99
Nickel	ND	ND	0.010	NA	20		01/27/99
Selenium	0.0021	0.0020	0.0020	5	20		01/25/99
Silver	ND	ND	0.00020	NA	20		01/27/99
Thallium	ND	ND	0.0010	NA	20		01/28/99
Zinc	ND	ND	0.010	NA	20		01/27/99

Comments: ‡ QC limits do not apply when the sample or duplicate result is less than 5 times the reporting limit

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: *Woodward Clyde Consultants*
Contact: *Michelle McClelland*

Project: *540990003-01*
IP - Longview

Batch Q.C.

Spike

Metals / Total by Volume (mg/L)

Analyte	Spike Result	Sample Result	Spike Added	% Recovery	% Limit	Q	Date Analyzed
Antimony	0.481	ND	0.500	96	75-125		01/27/99
Arsenic	0.0455	0.0067	0.0400	97	75-125		01/25/99
Beryllium	0.0480	ND	0.0500	96	75-125		01/27/99
Cadmium	0.00370	0.00018	0.00500	70	75-125	K	01/26/99
Chromium	0.00593	0.0012	0.00500	95	75-125		01/25/99
Copper	0.240	ND	0.250	96	75-125		01/27/99
Lead	0.0329	0.0148	0.0200	91	75-125		01/26/99
Mercury	0.0019	ND	0.00200	95	75-125		01/22/99
Nickel	0.453	ND	0.500	91	75-125		01/27/99
Selenium	0.011	0.0021	0.010	89	75-125		01/25/99
Silver	0.00397	ND	0.00500	79	75-125		01/27/99
Thallium	0.0491	ND	0.0500	98	75-125		01/28/99
Zinc	0.458	ND	0.500	92	75-125		01/27/99

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **540990003-01**

Volatiles LCS
by EPA Method 8260

Lab Number

Analyte	Results	Amount Spiked	Units	Recovery

Analyzed : *01/18/99* *LCS0118*

CAS #	Analyte	Results	Amount Spiked	Units	Recovery
75-35-4	1,1-Dichloroethene	20.1	20.0	ug/L	100%
71-43-2	Benzene	21.0	20.0	ug/L	105%
79-01-6	Trichloroethene	21.5	20.0	ug/L	108%
108-88-3	Toluene	20.0	20.0	ug/L	100%
108-90-7	Chlorobenzene	21.0	20.0	ug/L	105%

Surrogates	Recovery LCS0118
1,2-Dichloroethane-d4	98%
Toluene-d8	96%
4-Bromofluorobenzene	99%

none detected = nd

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **540990003-01**

Volatiles MS/MSD
by EPA Method 8260

Sample ID	Analyte	Recovery MS	Recovery MSD	RPD	*Lab Number*
99EA 2A WATER		%	%	%	**Analyzed :** *01/18/99* *L9664-3*
CAS #					
75-35-4	1,1-Dichloroethene	105	105	<1	
71-43-2	Benzene	107	107	<1	
79-01-6	Trichloroethene	106	105	<1	
108-88-3	Toluene	96	95	<1	
108-90-7	Chlorobenzene	108	106	2	
	Surrogates				
	1,2-Dichloroethane-d4	100	103		
	Toluene-d8	95	95		
	4-Bromofluorobenzene	104	102		

none detected = nd

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **540990003-01**

Volatiles Blank
by EPA Method 8260

Sample ID	Analyte	Result	Reporting Limit	Units	Comment
MB0118					Analyzed : 01/18/99
CAS #					
75-71-8	Dichlorodifluoromethane	nd	2	ug/L	
74-87-3	Chloromethane	nd	2	ug/L	
75-01-4	Vinyl chloride	nd	2	ug/L	
74-83-9	Bromomethane	nd	2	ug/L	
75-00-3	Chloroethane	nd	2	ug/L	
75-69-4	Trichlorofluoromethane	nd	1	ug/L	
67-64-1	Acetone	nd	20	ug/L	
75-35-4	1,1-Dichloroethene	nd	1	ug/L	
75-09-2	Methylene chloride	nd	2	ug/L	
75-15-0	Carbon disulfide	nd	1	ug/L	
156-60-5	trans-1,2-Dichloroethene	nd	1	ug/L	
75-34-3	1,1-Dichloroethane	nd	1	ug/L	
78-93-3	2-Butanone	nd	20	ug/L	
590-20-7	2,2-Dichloropropane	nd	1	ug/L	
156-59-4	cis-1,2-Dichloroethene	nd	1	ug/L	
74-97-5	Bromochloromethane	nd	1	ug/L	
67-66-3	Chloroform	nd	1	ug/L	
71-55-6	1,1,1-Trichloroethane	nd	1	ug/L	
56-23-5	Carbon tetrachloride	nd	1	ug/L	
563-58-6	1,1-Dichloropropene	nd	1	ug/L	
71-43-2	Benzene	nd	1	ug/L	
107-06-2	1,2-Dichloroethane	nd	1	ug/L	
79-01-6	Trichloroethene	nd	1	ug/L	

none detected = nd
Samples: L9664-1, -2, -3, -4, -5

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1-800-644-0967

OAL

L9664

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **540990003-01**

Volatiles Blank
by EPA Method 8260

Sample ID / CAS #	Analyte	Result	Reporting Limit	Units	Comment
MB0118					Analyzed : 01/18/99
78-87-5	1,2-Dichloropropane	nd	1	ug/L	
74-95-3	Dibromomethane	nd	1	ug/L	
75-27-4	Bromodichloromethane	nd	1	ug/L	
10061-01-5	cis-1,3-Dichloropropene	nd	1	ug/L	
108-10-1	4-Methyl-2-pentanone	nd	10	ug/L	
108-88-3	Toluene	nd	1	ug/L	
591-78-6	2-Hexanone	nd	10	ug/L	
10061-02-6	trans-1,3-Dichloropropene	nd	1	ug/L	
79-00-5	1,1,2-Trichloroethane	nd	1	ug/L	
127-18-4	Tetrachloroethene	nd	1	ug/L	
542-75-6	1,3-Dichloropropane	nd	1	ug/L	
124-48-1	Dibromochloromethane	nd	1	ug/L	
106-93-4	1,2-Dibromoethane	nd	1	ug/L	
108-90-7	Chlorobenzene	nd	1	ug/L	
630-20-6	1,1,1,2-Tetrachloroethane	nd	1	ug/L	
100-41-4	Ethylbenzene	nd	1	ug/L	
100-42-5	Styrene	nd	1	ug/L	
75-25-2	Bromoform	nd	1	ug/L	
98-82-8	Isopropylbenzene	nd	1	ug/L	
108-86-1	Bromobenzene	nd	1	ug/L	
79-34-5	1,1,2,2-Tetrachloroethane	nd	1	ug/L	
96-18-4	1,2,3-Trichloropropane	nd	1	ug/L	
103-65-1	n-Propylbenzene	nd	1	ug/L	

none detected = nd
Samples: L9664-1, -2, -3, -4, -5

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1-800-644-0967

OAL

L9664

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **540990003-01**

Volatiles Blank
by EPA Method 8260

Sample ID

CAS #	Analyte	Result	Reporting Limit	Units	Comment
MB0118					*Analyzed : 01/18/99*
95-49-8	2-Chlorotoluene	nd	1	ug/L	
106-43-4	4-Chlorotoluene	nd	1	ug/L	
108-67-8	1,3,5-Trimethylbenzene	nd	1	ug/L	
98-06-6	tert-Butylbenzene	nd	1	ug/L	
95-63-6	1,2,4-Trimethylbenzene	nd	1	ug/L	
135-98-8	sec-Butylbenzene	nd	1	ug/L	
541-73-1	1,3-Dichlorobenzene	nd	1	ug/L	
99-87-6	4-Isopropyltoluene	nd	1	ug/L	
106-46-7	1,4-Dichlorobenzene	nd	1	ug/L	
95-50-1	1,2-Dichlorobenzene	nd	1	ug/L	
104-51-8	n-Butylbenzene	nd	1	ug/L	
96-12-8	1,2-Dibromo-3-chloropropane	nd	1	ug/L	
120-82-1	1,2,4-Trichlorobenzene	nd	1	ug/L	
87-68-3	Hexachlorobutadiene	nd	1	ug/L	
91-20-3	Naphthalene	nd	1	ug/L	
87-61-6	1,2,3-Trichlorobenzene	nd	1	ug/L	
	Total Xylenes	nd	1	ug/L	

Surrogates	Recovery *MB0118*
1,2-Dichloroethane-d4	95%
Toluene-d8	91%
4-Bromofluorobenzene	99%

none detected = nd
Samples: L9664-1, -2, -3, -4, -5

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503 590 5300 • Fax 503 590 1404
www.oalab.com/oal • Toll-Free 1-800-644-0967

OAL

L9664

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **540990003-01**

PNA LCS & LCSD

by modified EPA method 8270 (SIM)

Sample ID		Lab Number	Lab Number		
	Analyte	**Recovery**	**Recovery**	**RPD**	**COMMENT**

Sampled: *NA*
Analyzed: *01/21/99*

CAS#		*LCS0118F*	*LCSD0118*	
91-20-3	Naphthalene	96%	98%	2%
208-96-8	Acenaphthylene	90%	94%	5%
83-32-9	Acenaphthene	100%	104%	4%
86-73-7	Fluorene	99%	105%	5%
87-86-5	Pentachlorophenol	89%	102%	13%
85-01-8	Phenanthrene	107%	113%	5%
120-12-7	Anthracene	96%	101%	5%
206-44-0	Fluoranthene	104%	112%	7%
129-00-0	Pyrene	106%	113%	7%
56-55-3	Benzo[a]anthracene	98%	105%	7%
218-01-9	Chrysene	103%	109%	5%
205-99-2	Benzo[b]fluoranthene	89%	96%	8%
207-08-9	Benzo[k]fluoranthene	93%	99%	7%
50-32-8	Benzo[a]pyrene	91%	95%	5%
193-39-5	Indeno[1,2,3-cd]pyrene	81%	89%	10%
53-70-3	Dibenz[a,h]anthracene	78%	85%	9%
191-24-2	Benzo[g,h,i]perylene	81%	87%	6%

Acid Surrogates:	Recovery *LCS0118F*	Recovery *LCSD0118*
2-Fluorophenol	71%	66%
Phenol-d4	47%	44%
2,4,6-Tribromophenol	110%	117%

Base / Neutral Surrogates:	*LCS0118F*	*LCSD0118*
1,2-Dichlorobenzene-d4	99%	95%
Nitrobenzene-d5	94%	93%
2-Fluorobiphenyl	104%	106%

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **540990003-01**

EPA Method 8310 Polynuclear Aromatic Hydrocarbons Blank
by modified EPA method 8270 (SIM)

Sample ID	Analyte	Blank Result	Reporting Limit	Units	COMMENT	Lab Number
MB01203	WATER	MB01203			Analyzed: 01/23/99	MB01303
CAS#						
91-20-3	Naphthalene	nd	0.1	ug/L		
208-96-8	Acenaphthylene	nd	0.1	ug/L		
83-32-9	Acenaphthene	nd	0.1	ug/L		
86-73-7	Fluorene	nd	0.1	ug/L		
87-86-5	Pentachlorophenol	nd	1.0	ug/L		
85-01-8	Phenanthrene	nd	0.1	ug/L		
120-12-7	Anthracene	nd	0.1	ug/L		
206-44-0	Fluoranthene	nd	0.1	ug/L		
129-00-0	Pyrene	nd	0.1	ug/L		
56-55-3	Benzo[a]anthracene	nd	0.1	ug/L		
218-01-9	Chrysene	nd	0.1	ug/L		
205-99-2	Benzo[b]fluoranthene	nd	0.1	ug/L		
207-08-9	Benzo[k]fluoranthene	nd	0.1	ug/L		
50-32-8	Benzo[a]pyrene	nd	0.1	ug/L		
193-39-5	Indeno[1,2,3-cd]pyrene	nd	0.1	ug/L		
53-70-3	Dibenz[a,h]anthracene	nd	0.1	ug/L		
191-24-2	Benzo[g,h,i]perylene	nd	0.1	ug/L		

	Recovery
Acid Surrogates:	MB01203
2-Fluorophenol	77%
Phenol-d4	50%
2,4,6-Tribromophenol	130%
Base / Neutral Surrogates:	MB01303
1,2-Dichlorobenzene-d4	102%
Nitrobenzene-d5	105%
2-Fluorobiphenyl	108%

none detected = nd
Samples: L9664-1,2,3,4

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590 5300 • Fax 503-590-1404
www.oalab.com/oal • Toll Free 1-800-644 0967

OAL

L9664

Client: *Woodward Clyde Consultants*
Contact: *Michelle McClelland*

Project: *540990003-01*
IP - Longview

Batch Q.C.

Method Blank

NWTPH-Dx/Water (mg/L)

Analyte	Result	Reporting Limit	Q	Date Analyzed
NWTPH-Dx				
Diesel range	ND	0.25		01/19/99
Oil range	ND	0.50		

Surrogates	% Recovery
Fluorobiphenyl	67
O-terphenyl	102

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: *Woodward Clyde Consultants*
Contact: *Michelle McClelland*

Project: *540990003-01*
IP - Longview

Batch Q.C.

LCS

NWTPH-Dx/Water (mg/L)

Analyte	Result	True Value	% Recovery	Q	Date Analyzed
NWTPH-Dx	1.45	1.28	113		01/21/09

Surrogates	% Recovery
Fluorobiphenyl	92
O-terphenyl	123

Comments:

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404

OAL

L9664

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **540990003-1 s**

Semivolatiles LCS & LCSD
by EPA Method 8270

Sample ID / Analyte	Lab Number Recovery	Lab Number Recovery	RPD	COMMENT
WATER	LCS01115	LCSD01115		Sampled: NA Analyzed: 01/11/99
CAS#				
108-95-2 Phenol	50%	51%	1%	
95-57-8 2-Chlorophenol	98%	94%	4%	
106-46-7 1,4-Dichlorobenzene	105%	98%	7%	
621-64-7 N-Nitroso-di-n-propylamine	97%	92%	5%	
120-82-1 1,2,4-Trichlorobenzene	104%	97%	7%	
59-50-7 4-Chloro-3-methylphenol	90%	85%	6%	
83-32-9 Acenaphthene	116%	108%	7%	
121-14-2 2,4-Dinitrotoluene	90%	91%	1%	
100-02-7 4-Nitrophenol	35%	39%	11%	
87-86-5 Pentachlorophenol	89%	88%	4%	
129-00-0 Pyrene	110%	102%	8%	

	Recovery LCS01115	Recovery LCSD01115
Acid Surrogates:		
2-Fluorophenol	78%	83%
Phenol-d6	55%	60%
2,4,6-Tribromophenol	105%	108%
Base / Neutral Surrogates:		
1,2-Dichlorobenzene d-4	81%	80%
Nitrobenzene-d5	98%	103%
2-Fluorobiphenyl	95%	98%

none detected = nd

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503 590 1404
www.oalab.com/oal • Toll Free 1-800-644 0967

OAL

L9664

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **540990003-1**

Semivolatiles Blank
by EPA Method 8270

Sample ID	Analyte	Blank Result	Reporting Limit	Units	COMMENT	Lab Number
MB011 6L	WATER	MB0119L			Analyzed: 01/20/99	MB0119L
CAS#						
108-95-2	Phenol	nd	10	ug/L		
111-44-4	bis(2-Chloroethyl)ether	nd	10	ug/L		
95-57-8	2-Chlorophenol	nd	10	ug/L		
541-73-1	1,3-Dichlorobenzene	nd	10	ug/L		
106-46-7	1,4-Dichlorobenzene	nd	10	ug/L		
100-51-4	Benzyl alcohol	nd	20	ug/L		
95-50-1	1,2-Dichlorobenzene	nd	10	ug/L		
95-48-7	2-Methylphenol	nd	10	ug/L		
108-60-1	bis(2-chloroisopropyl)ether	nd	10	ug/L		
106-44-5	4-Methylphenol	nd	10	ug/L		
621-64-7	N-Nitroso-di-n-propylamine	nd	10	ug/L		
67-72-1	Hexachloroethane	nd	10	ug/L		
98-95-3	Nitrobenzene	nd	10	ug/L		
78-59-1	Isophorone	nd	10	ug/L		
88-75-5	2-Nitrophenol	nd	10	ug/L		
105-67-9	2,4-Dimethylphenol	nd	10	ug/L		
65-85-0	Benzoic acid	nd	50	ug/L		
111-91-1	bis(2-Chloroethoxy)methane	nd	10	ug/L		
120-83-2	2,4-Dichlorophenol	nd	10	ug/L		
120-82-1	1,2,4-Trichlorobenzene	nd	10	ug/L		
91-20-3	Naphthalene	nd	10	ug/L		
106-47-8	4-Chloroaniline	nd	20	ug/L		
87-68-3	Hexachlorobutadiene	nd	10	ug/L		
59-50-7	4-Chloro-3-methylphenol	nd	20	ug/L		
91-57-6	2-Methylnaphthalene	nd	10	ug/L		
77-47-4	Hexachlorocyclopentadiene	nd	10	ug/L		

none detected = nd
Samples: L9664-1,2,3,4

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1 800 644 0967

OAL

L9664

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **540990003-1**

Semivolatiles Blank
by EPA Method 8270

Sample ID	Analyte	Blank Result	Reporting Limit	Units	COMMENT	Lab Number
MB0116L	WATER	MB0119L			Analyzed: 01/20/99	MB0119L
CAS#						
88-06-2	2,4,6-Trichlorophenol	nd	10	ug/L		
95-95-4	2,4,5-Trichlorophenol	nd	10	ug/L		
91-58-7	2-Chloronaphthalene	nd	10	ug/L		
88-74-4	2-Nitroaniline	nd	50	ug/L		
208-96-8	Acenaphthylene	nd	10	ug/L		
131-11-3	Dimethylphthalate	nd	10	ug/L		
606-20-2	2,6-Dinitrotoluene	nd	10	ug/L		
83-32-9	Acenaphthene	nd	10	ug/L		
99-09-2	3-Nitroaniline	nd	50	ug/L		
51-28-5	2,4-Dinitrophenol	nd	50	ug/L		
132-64-9	Dibenzofuran	nd	10	ug/L		
121-14-2	2,4-Dinitrotoluene	nd	10	ug/L		
100-02-7	4-Nitrophenol	nd	50	ug/L		
86-73-7	Fluorene	nd	10	ug/L		
7005-72-3	4-Chlorophenyl-phenylether	nd	10	ug/L		
84-66-2	Diethylphthalate	nd	10	ug/L		
100-01-6	4-Nitroaniline	nd	50	ug/L		
122-66-7	1,2-Diphenylhydrazine	nd	50	ug/L		
534-52-1	4,6-Dinitro-2-methylphenol	nd	50	ug/L		
86-30-6	n-Nitrosodiphenylamine	nd	10	ug/L		
101-55-3	4-Bromophenyl-phenylether	nd	10	ug/L		
118-74-1	Hexachlorobenzene	nd	10	ug/L		
87-86-5	Pentachlorophenol	nd	50	ug/L		
85-01-8	Phenanthrene	nd	10	ug/L		
120-12-7	Anthracene	nd	10	ug/L		
84-74-2	Di-n-butylphthalate	nd	10	ug/L		

none detected = nd
Samples: L9664-1,2,3,4

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503-590-5300 • Fax 503-590-1404
www.oalab.com/oal • Toll-Free 1 800 644 0967

OAL

L9664

Client: **Woodward Clyde Consultants**
Contact: **Michelle McClelland**

Project: **640990003-1**

Semivolatiles Blank
by EPA Method 8270

Sample ID	Analyte	Blank Result	Reporting Limit	Units	COMMENT	Lab Number
MB0116L	WATER	MB0119L			Analyzed: 01/20/99	MB0119L
CAS#						
206-44-0	Fluoranthene	nd	10	ug/L		
129-00-0	Pyrene	nd	10	ug/L		
85-68-7	Butylbenzylphthalate	nd	10	ug/L		
91-94-1	3,3'-Dichlorobenzidine	nd	20	ug/L		
56-55-3	Benzo[a]anthracene	nd	10	ug/L		
218-01-9	Chrysene	nd	10	ug/L		
117-81-7	bis(2-Ethylhexyl)phthalate	nd	10	ug/L		
117-84-0	Di-n-octylphthalate	nd	10	ug/L		
205-99-2	Benzo[b]fluoranthene	nd	10	ug/L		
207-08-9	Benzo[k]fluoranthene	nd	10	ug/L		
50-32-8	Benzo[a]pyrene	nd	10	ug/L		
193-39-5	Indeno[1,2,3-cd]pyrene	nd	10	ug/L		
53-70-3	Dibenz[a,h]anthracene	nd	10	ug/L		
191-24-2	Benzo[g,h,i]perylene	nd	10	ug/L		

	Recovery MB0119L
Acid Surrogates:	
2-Fluorophenol	69%
Phenol-d6	48%
2,4,6-Tribromophenol	100%
Base / Neutral Surrogates:	
1,2-Dichlorobenzene d-4	82%
Nitrobenzene-d5	102%
2-Fluorobiphenyl	96%

none detected = nd
Samples: L9664-1,2,3,4

OREGON ANALYTICAL LABORATORY
A Division of Portland General Electric
14855 S.W. Scholls Ferry Road, Beaverton, OR 97007
Phone 503 590 5300 • Fax 503-590-1404
www.oalab.com/oal • Toll Free 1 800-644-0967

URSGWC
CHAIN OF CUSTODY RECORD

1501 4th Avenue, Suite 1500, Seattle, WA 98101-1662
Phone: (206) 343-7933 Fax: (206) 343-0513

Groundwater Sampling Offsite

Site Name IP - Longview

URSGWC Project Number: ~~5491C0796B.00~~ 5409900008-01
URSGWC Proj. Mgr.: Randy Siegal Ph/Fax: 206-343-7933 / 298

Shipping Form Tracking No.:
Sampler (Signature): [signature]
Printed Name: Thomas Mitchell

Lab:
No of Coolers: 5
Turn Around Time (circle): 48 hrs. 5 days (STD) Other:
Page 1 of 1

Date	Time	Sample Identification	Matrix	Lab ID	Indicators 8270 sim[1]	PAHs Only 8270 sim[2]	NWTPH-Dx[3]	VOCs 8260	SVOCs 8270	Pest/PCBs	total and diss metals (13)	8141 organophos	8151 herb	Convent. *		Preservatives Y/N	Number of Containers
1/13/99	12:17	99EA 3A	Water	19844-1		X	X	X	X	X	X	X	X	X			
1/13/99	12:35	99EA 3D	Water	-2		X	X	X	X	X	X	X	X	X			
1/13/99	14:55	99EA 2A	Water	-3		X	X	X	X	X	X	X	X	X			
1/13/99	15:25	99EA 1A	Water	-4		X	X	X	X	X	X	X	X	X			
1/13/99	-	VOC Trip Blank	Water	-5				X									2

Comments: Please call Michelle McClelland with questions.
1: Report naphthalene, benzo(a)anthracene, chrysene and pentachlorophenol only.
2: PAHs Only will also include Pentachlorophenol.
3: Include chromatograms with all NWTPH analyses.
* CN, Chloride, Alkalinity, fluoride, nitrate, sulfate, pH, sulfide.

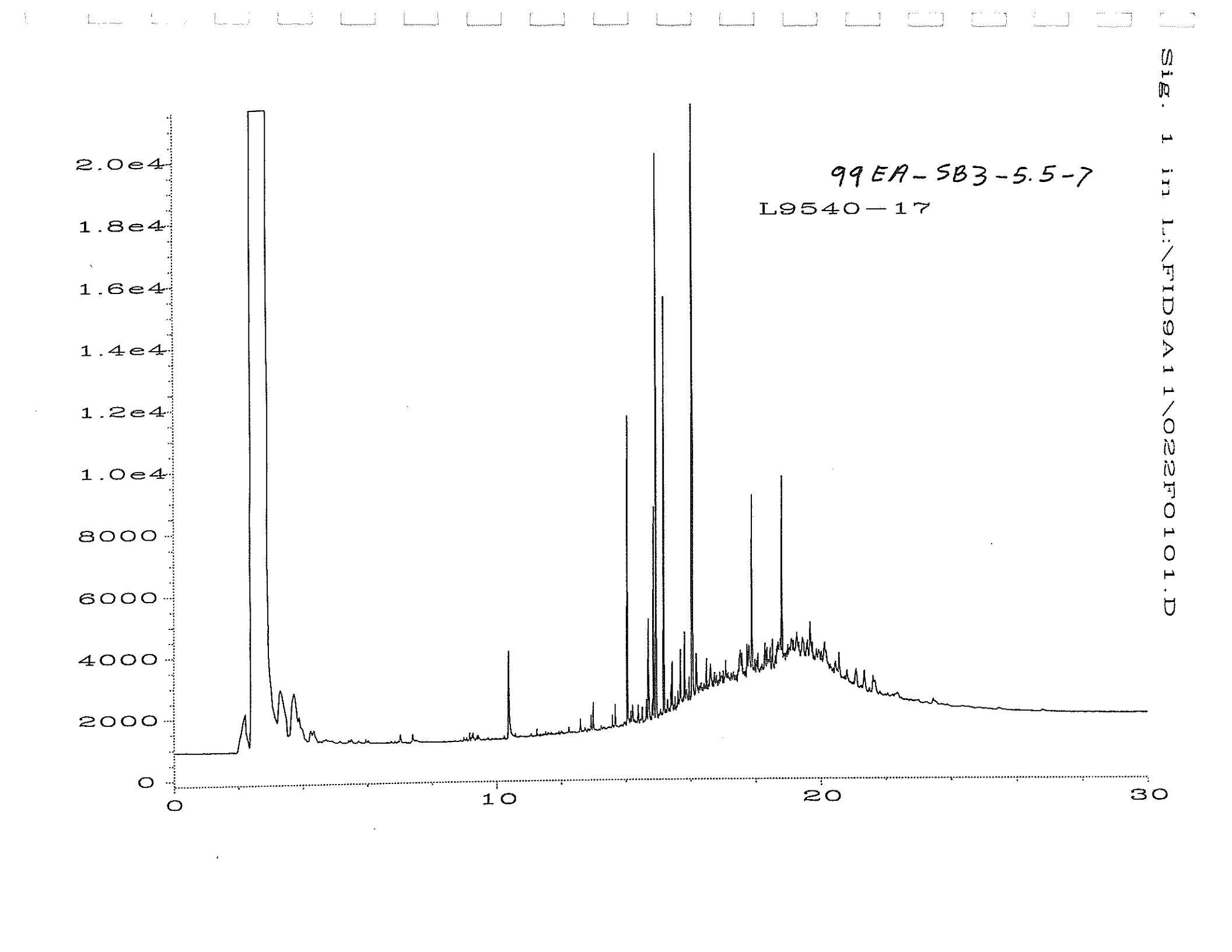
Total Number of Containers
RC'D 24 1L GLASS, 20 PLASTIC, & 10 VOAS.

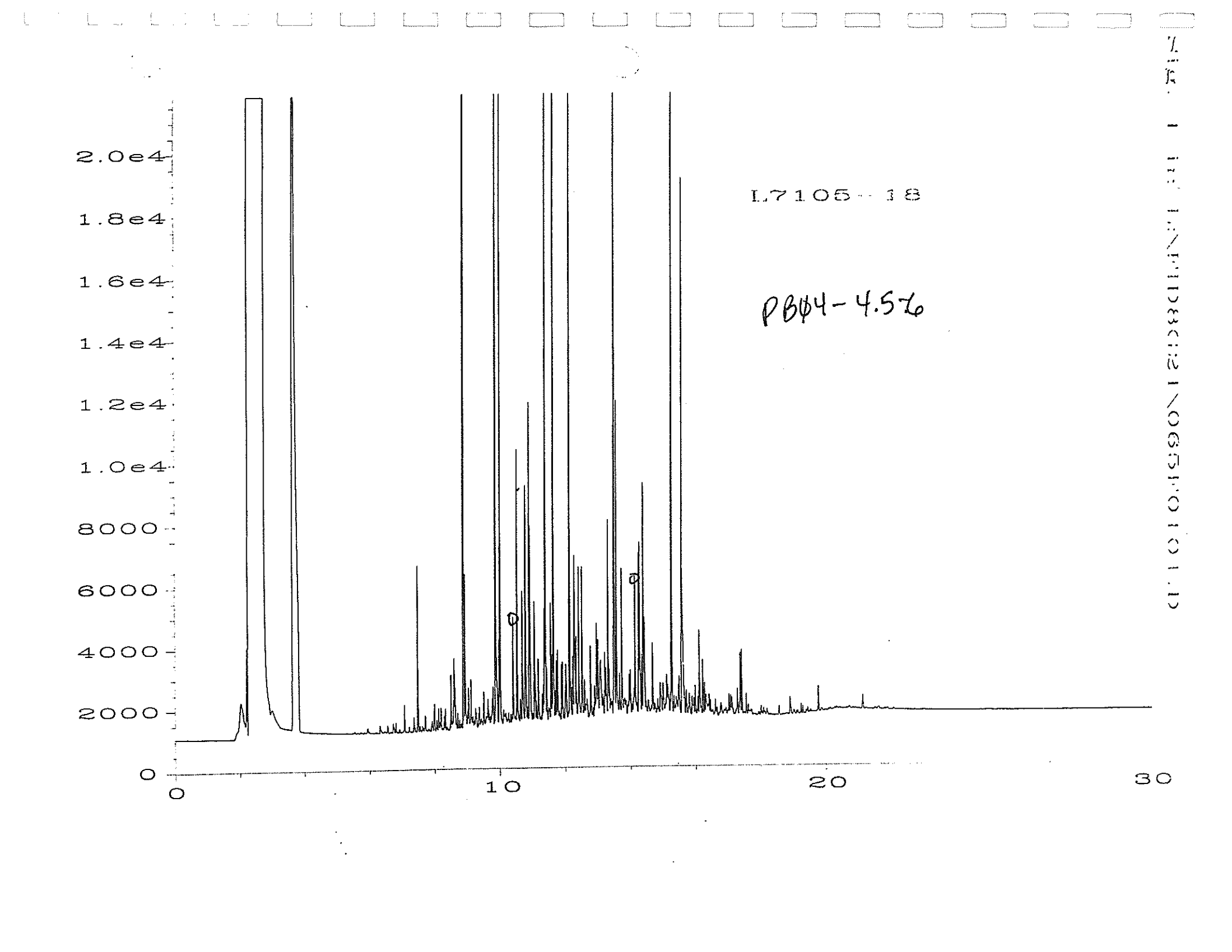
Relinquished By (signature):	Date/Time	Relinquished By (signature):	Date/Time
[signature]	1/13/99 1800		
Received By (signature):	**Date/Time**	**Relinquished By (signature):**	**Date/Time**
[signature]	1/13/99 1800		

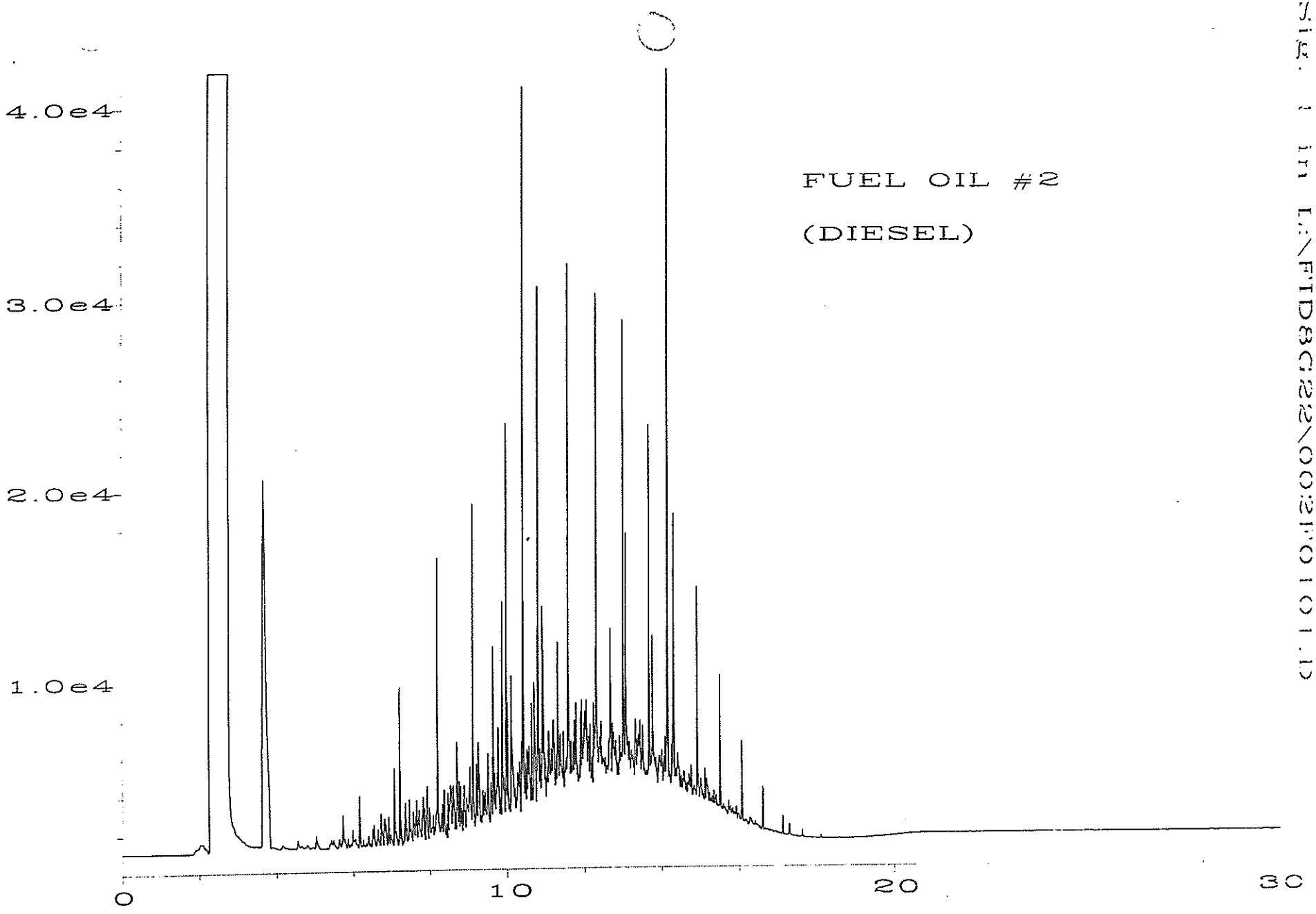
i:\forms\field\IP-chain.xls 11/19/98

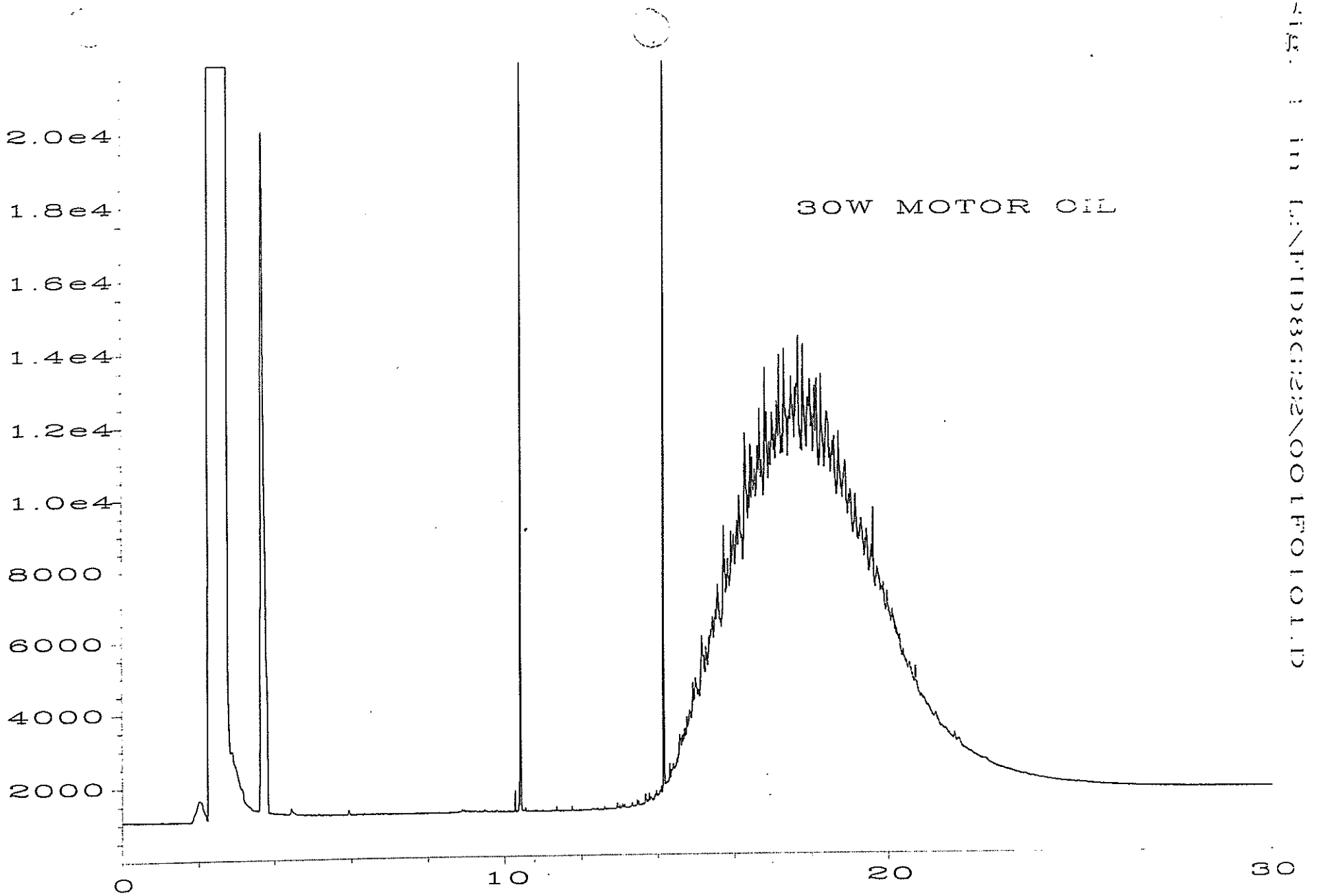
NO COURIER CHARGE!

Appendix D
Chromatograms


99EA-SB3-5.5-7
L9540-17
Sig. 1 in L:\FID9A11\022F0101.D
2.0e4
1.8e4
1.6e4
1.4e4
1.2e4
1.0e4
8000
6000
4000
2000
0
0
10
20
30


L7105-18
PB#4-4.5%
2.0e4
1.8e4
1.6e4
1.4e4
1.2e4
1.0e4
8000
6000
4000
2000
0
0
10
20
30


4.0e4
3.0e4
2.0e4
1.0e4
0
10
20
30
FUEL OIL #2
(DIESEL)


30W MOTOR OIL
2.0e4
1.8e4
1.6e4
1.4e4
1.2e4
1.0e4
8000
6000
4000
2000
0
10
20
30