

**Tetra Tech, Inc. and Historical Research  
Associates, Inc.: *Initial Characterization of  
Contaminants and Uses at the Cornwall Landfill  
and in Bellingham Bay***

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FINAL REPORT  
TC-0416; 0417

INITIAL CHARACTERIZATION OF CONTAMINANTS  
AND USES AT THE CORNWALL LANDFILL  
AND IN BELLINGHAM BAY

PREPARED FOR:

ATTORNEY GENERAL OF WASHINGTON

RECEIVED

ATTORNEY GENERAL'S OFFICE  
NATURAL RESOURCES DIVISION

PREPARED BY:

TETRA TECH, INC.

AND

HISTORICAL RESEARCH ASSOCIATES, INC.

30 JUNE 1995

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**TETRA TECH**



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30 June 1995

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## 1.0 INTRODUCTION

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### 1.1 REPORT SCOPE

This report investigates the historical uses and current environmental status of a parcel of land on Bellingham Bay administered by the Washington Department of Natural Resources (DNR) and the adjacent area within a quarter-mile radius. This parcel, now known as the Cornwall Avenue Landfill, has had a variety of tenants and lease holders that have used it as a dump site since at least the 1890s. It is now a designated Model Toxics Control Act (MTCA) site. DNR is interested in what pollutants there are in the site, what potential they have to migrate (e.g., into Bellingham Bay), and what their sources might have been.

The present study surveys existing data and historical sources to determine what is already known about this site, and makes recommendations regarding what further investigations may be needed. Other sources of pollution in Bellingham Bay are examined as groundwork for distinguishing the separate environmental impact of the Cornwall Avenue Landfill. The industrial history of this site is traced to determine which leaseholders may have contributed to the contamination. Five tasks were outlined as the basis for this report:

- Compile a history of the site now known as the Cornwall Avenue Landfill to determine past uses and possible contaminants at this site.
- Compile and summarize existing information on the identity and characteristics of major point source dischargers to Bellingham Bay.
- Review and compile available literature on contaminants and biological impacts in Bellingham Bay.

## 2.0 STUDY AREA DESCRIPTION

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Bellingham Bay is located along the northeast shore of the Puget Sound-Georgia Strait estuarine complex (Figure 2-1). The largest freshwater input to the bay is from the Nooksack River, which enters the north end of the bay. Historical average annual flow (1967-1993) measured at Ferndale is 3,873 cfs (Miles et al. 1994). Below Ferndale a portion of the Nooksack flow is diverted to the Lummi River which flows into Lummi Bay. A number of small creeks also discharge to the bay, including Chuckanut, Little Squalicum, Padden, Squalicum, and Whatcom creeks. The largest of these is Whatcom Creek which drains Whatcom Lake approximately 6 km inland and discharges to the bay through Whatcom Waterway.

Historically, the bay has been divided into an inner and outer bay (e.g., Broad et al. 1984; PTI Environmental Services 1989). The outer bay includes the delta formed at the mouth of the Nooksack River and the increasingly deeper waters to the south (Figure 2-2). Water depths west of Post Point exceed 30 m (100 ft). Bottom sediments of the outer bay range from delta sands deposited at the mouth of the Nooksack to relatively homogeneous muds in the central portion of the bay (Sternberg 1967). The inner bay includes the northeast portion of the bay between Post Point and the City of Bellingham (Figure 2-3), and receives runoff from Padden, Little Squalicum, Squalicum, and Whatcom creeks. Sediments of the inner bay consist of fine sands in Whatcom Creek Waterway with sand content decreasing with distance from the mouth of Whatcom Creek. The inner bay is the most urbanized and industrialized portion of Bellingham Bay.

The shoreline of inner Bellingham Bay has been extensively modified by dredging, filling, bulkheading, and riprapping to serve commercial and industrial uses. These modifications include three dredged industrial waterways (Squalicum Creek, I&J Street, and Whatcom Creek waterways), several boat harbor facilities (Squalicum Harbor marina, Hilton Harbor Marina, Central Floats Moorage, and Alaska State Ferry Terminal), and modifications associated with wastewater treatment and log storage at the Georgia-Pacific West Corporation sulfite pulp and paper mill. In addition, 37 Suspected or Confirmed Contaminated Sites have been identified by Ecology within the Bellingham city limits, including

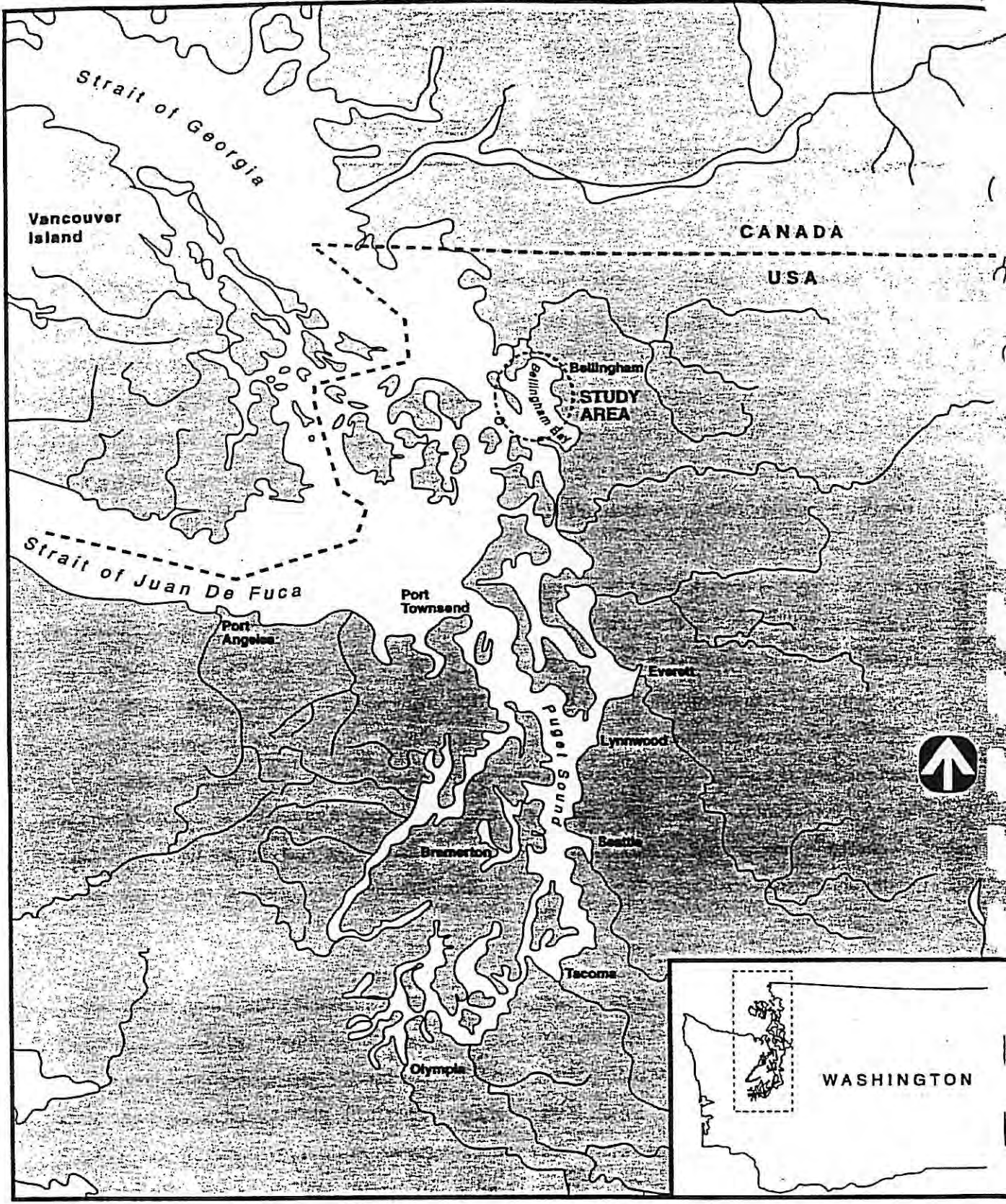


Figure 2-1. Location of Bellingham Bay Study Area.



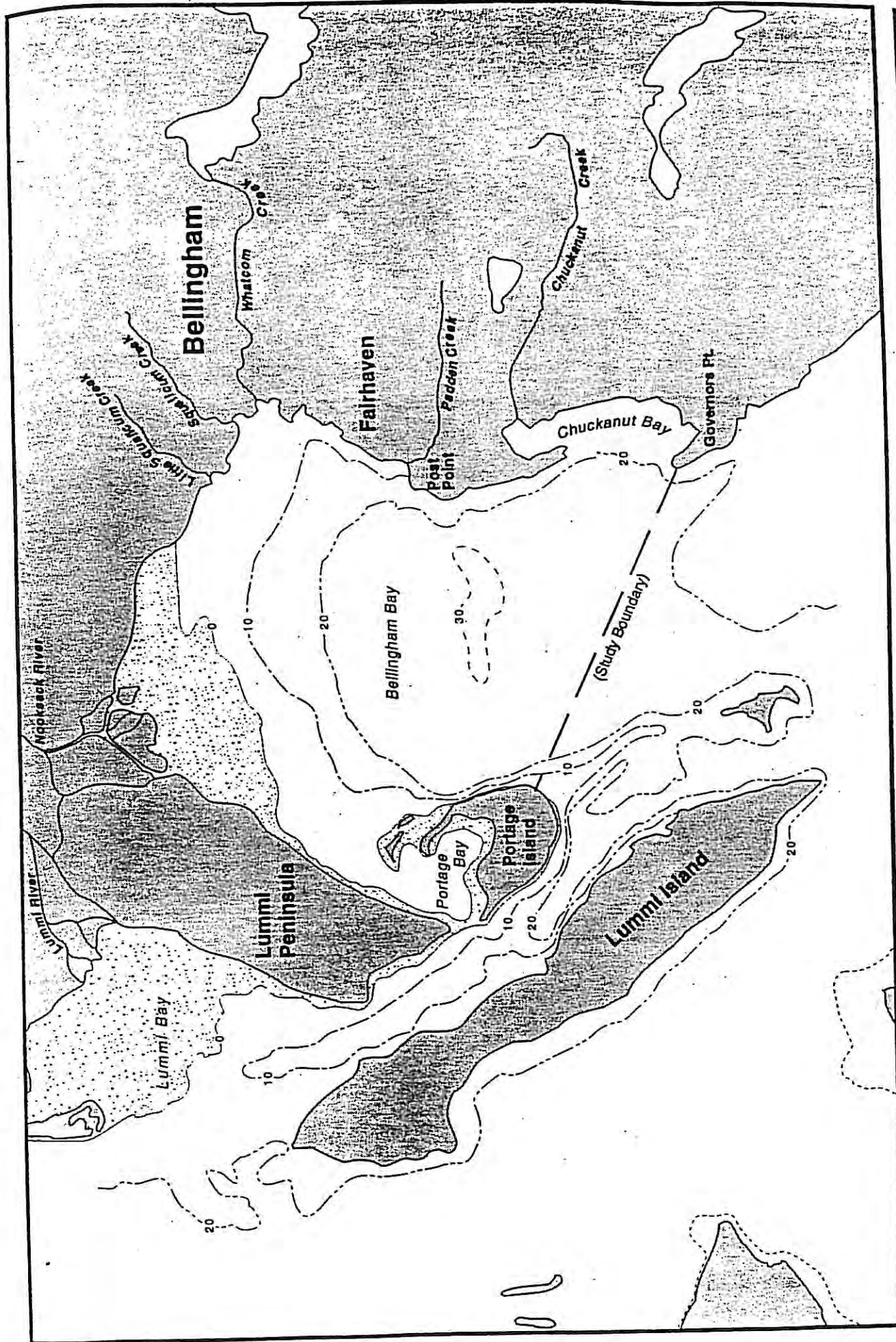


Figure 2-2. Bellingham Bay Study Area.

NOTE: Letters on dredged material disposal and fill sites relate to descriptions in text.

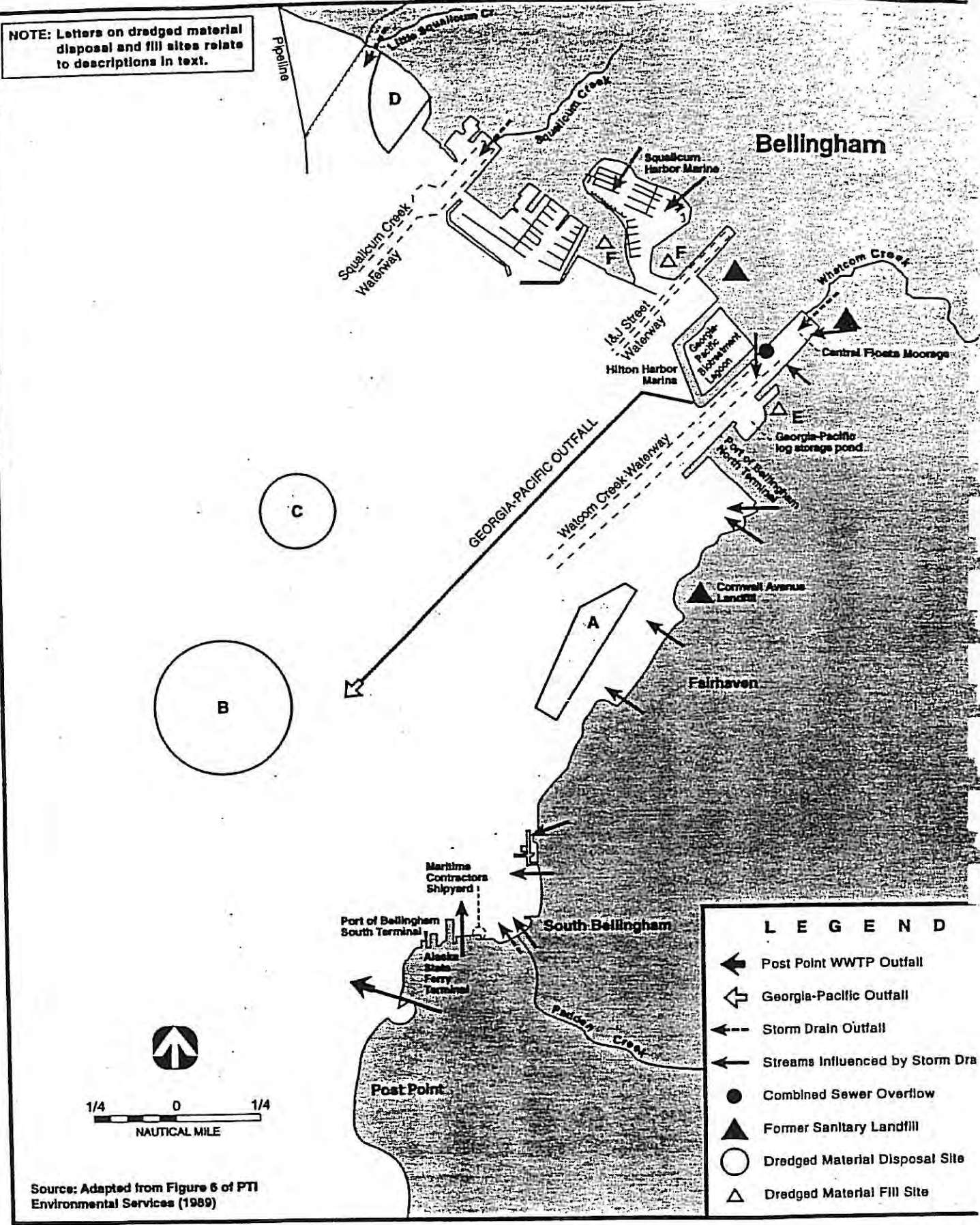


Figure 2-3. Inner Bellingham Bay and Location of Major Contaminant Sources.

Whatcom Creek Waterway. These sites include inactive sanitary landfills adjacent to the waterfront, such as the Cornwall Avenue Landfill. The inner bay has also received contaminant inputs from industrial and municipal point sources, combined sewer overflows (CSOs), storm drains, accidental spills, and atmospheric deposition.

A significant portion of the inner bay was identified as an environmental problem area during the Bellingham Bay Action Program (PTI Environmental Services 1989). This assessment was based on the levels of contaminants measured in sediments (primarily mercury) and depressions in benthic invertebrate abundance in bottom sediments. The Sediment Management and Environmental Investigations and Laboratory Services (EILS) sections of Ecology have defined an area of marine sediments that exceed state Cleanup Screening Levels in WAC 173-204 (Ecology 1994) (Figure 2-4). The Cornwall Avenue Landfill is located along the shoreline of the southernmost extent of this area.



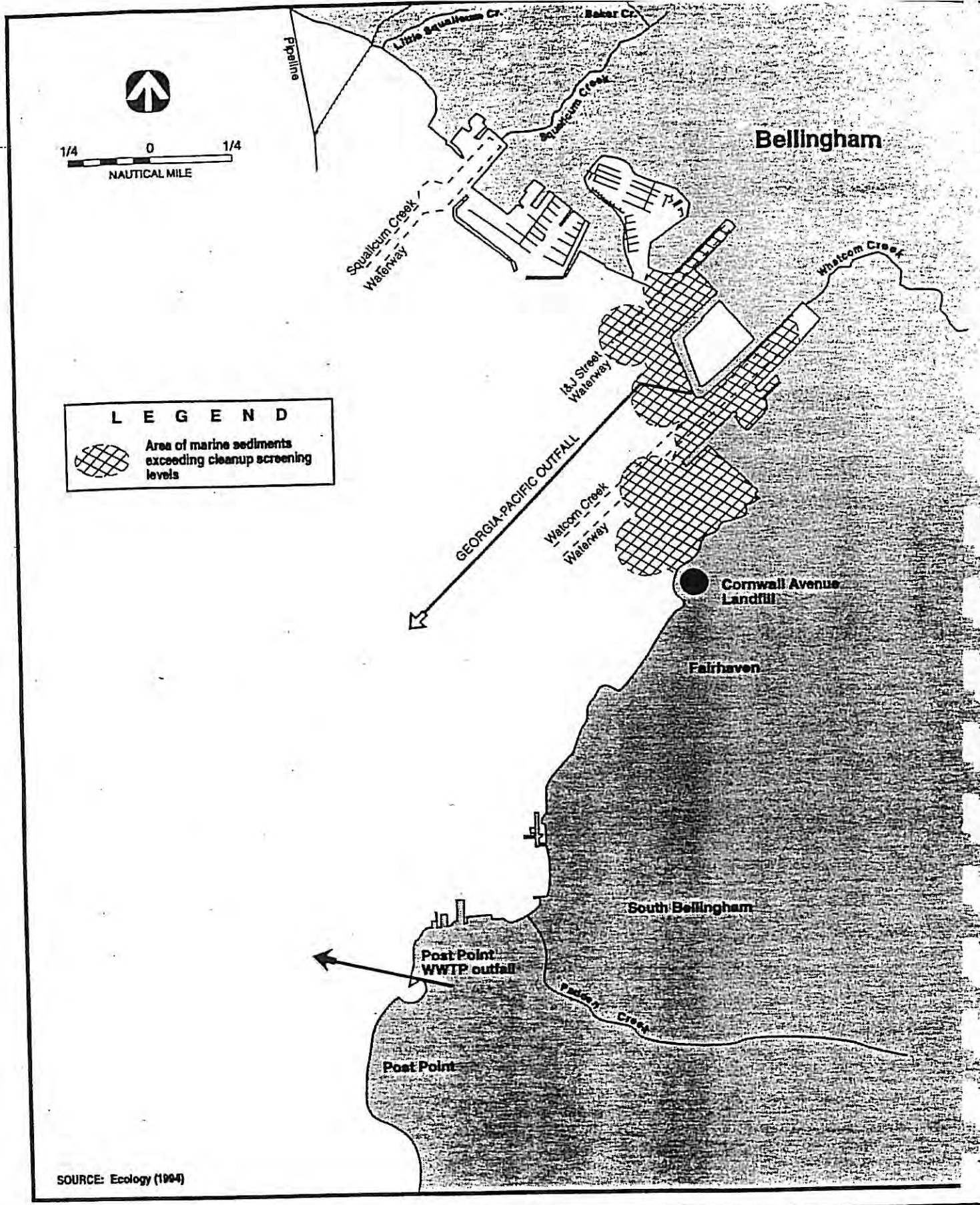


Figure 2-4. Area of Marine Sediments Defined by Ecology as Exceeding Cleanup Screening Levels.

### 3.0 INVENTORY AND CHARACTERIZATION OF CONTAMINANT SOURCES

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This chapter is divided into three sections. Section 3.1 summarizes available information on NPDES-permitted point sources. *Point* sources are defined in this report as discrete pollution sources that discharge directly and continuously, generally from an outfall, to the waters of Bellingham Bay. Discharges from point sources are comparatively easy to characterize and quantify.

Section 3.2 provides a summary of available information on non-point sources, including:

- Combined sewer overflows (CSOs)
- Surface water runoff
- Contaminated soil and groundwater sites
- Accidental spills
- Ports and marinas
- Atmospheric sources

*Non-point* sources are defined in this report as contaminant releases that occur periodically from dispersed water-based or land-based activities. Non-point pollutant sources are typically difficult to quantify because their mechanisms of transport are difficult to characterize and releases are often intermittent and sometimes unpredictable. Contaminated soil and groundwater sites included in this report are limited to sites identified as confirmed or suspected of contamination by Ecology that are located near the shoreline of Bellingham Bay.

Section 3.3 provides a summary of in-place pollutants. *In-place* pollutants in this report are relatively well-characterized sites in Bellingham Bay that have been contaminated due to historical discharges from point sources or as a result of historical disposal of contaminated dredged material. These in-place pollutants have the potential to be resuspended and transported to other locations in the bay.



The relative contaminant contribution of these three types of sources to a particular location (e.g., the intertidal area adjacent to the Cornwall Avenue Landfill) is difficult to determine. With the exception of permit monitoring programs for point sources implemented in the 1970s, few quantitative data are available to determine current and historical contaminant contribution levels from these sources. Characterization of non-permitted point sources, especially point source discharges to the bay prior to the implementation of water quality regulatory programs, is limited to a cursory overview in this study. However, non-permitted point sources, and to some extent permitted point sources, may have contributed to the non-point and in-place sources of contaminants which are characterized in this report.

### 3.1 POINT SOURCES

Current NPDES permit holders for point source discharges near Bellingham and state permit holders for discharge to municipal wastewater treatment plants and to groundwater were identified by reviewing data in the Water Quality Permit Life Cycle System (WQPLCS) maintained by the Department of Ecology. The WQPLCS data base lists names, locations, and types of facilities that have NPDES and state wastewater discharge permits. However, Ecology does not ensure the accuracy of these data due to possible undiscovered errors in the data reported by the facilities or errors made during data entry. Therefore, actual permit files of the major facilities were reviewed at Ecology offices, and the information summarized below for the major facilities is considered accurate.

For minor facilities, the WQPLCS data was verified where possible by additional data sources (e.g., PTI Environmental Services 1989). However, this information is considered only a general overview of the types of these facilities located in the vicinity of Bellingham Bay and the Cornwall Avenue Landfill.

NPDES-permitted point sources are divided by Ecology into four categories:

- Municipal Facilities - Municipal wastewater treatment plants (WWTPs) that discharge treated domestic wastewater. Some portion of the wastewater may come from industrial sources that discharge pre-treated or untreated wastewaters to the municipal wastewater collection system.

- Industrial Facilities - Private industrial plants that discharge treated process wastewater, treated sanitary wastewater, stormwater runoff, cooling tower and boiler blowdown water, contact or non-contact cooling water, water supply filter-backwash water, or water used for other industrial needs. A facility classified as industrial does not necessarily discharge industrial process wastewater.
  
- Agricultural Facilities - These facilities discharge wastewater and materials resulting from farming or animal husbandry. Carl Post Dairy is the only agricultural facility with a discharge permit in the vicinity.
  
- Aquacultural Facilities - These facilities periodically discharge fish culture wastewater, and water used to clean ponds. The Bellingham Hatchery on Whatcom Creek is permitted to discharge fish hatchery wastewater.

Each of these discharge categories are further designated as *major* or *minor*, a classification scheme used by Ecology. In general, major facilities discharge relatively large quantities of wastewater and have the greatest potential to cause environmental harm. Only two facilities that discharge to Bellingham Bay are classified as major facilities, one industrial (Georgia-Pacific West Corporation) and one municipal (Post Point WWTP). The locations of these two facilities are shown in Figure 2-3. These two major point sources are characterized below.

### 3.1.1 Georgia-Pacific West Corporation

The Georgia-Pacific West Corporation (formerly Georgia-Pacific Corporation) currently produces bleach sulfite and chemi-mechanical pulp and a variety of paper products at a location along Whatcom Waterway (Figure 2-3). This location has been a pulp and paper production site since 1925. Georgia-Pacific began operation of the facility after purchasing it from the Puget Sound Pulp and Timber Company in 1963.

The mill uses the sulfite process to produce bleached pulp and tissue paper products. In addition to these products, the mill produces a number of by-products from the spent pulping liquor, including alcohol and lignin products. The plant also produces chlorine, caustic soda, and sulfuric acid. A mercury cell chlor-alkali plant is located on site. Since 1965 the chlor-alkali plant has produced the chlorine (sodium

hypochlorite) and caustic soda (sodium chlorate) that is used in the pulp bleaching process. The chlor-alkali plant has been associated with significant historical discharge of mercury-laden wastes to the bay; first to Whatcom Waterway (1965-1979) and then to Bellingham Bay via an extended outfall (1979-present). The amount of mercury wastes discharged from Georgia-Pacific to the bay was reduced from 10-20 lbs/day (an estimated total of 10-20 tons) before controls to less than 0.2 lbs/day after initial controls were implemented in August 1970 (Dahlgren, E., 1973, personal communication). Additional treatment controls, implemented in 1974 and subsequently, have continued to decrease mercury discharges to the bay. Discharge permit limitations for the monthly average discharge of mercury have decreased from 0.5 lbs/day in 1970, to 0.2 lbs/day in 1973, 0.07 lbs/day in 1979, and 0.05 lbs/day beginning in 1985 (PTI Environmental Services 1989). The current discharge of mercury averages 0.01 lbs/day (Ecology 1988).

Until 1979, Georgia-Pacific discharged wastewaters via a number of outfalls that emptied into Whatcom Waterway and their log pond. In 1979 the facility began using a primary clarifier and aeration lagoon for treating oxygen-demanding wastes and an 2,400-m (8,000-ft) extended outfall, including a 610-m (2,000-ft) diffuser, terminating in approximately 17 m (55 ft) of water in Bellingham Bay (Figure 2-4). The diffuser section contains 500 3.8-cm (1.5-in) diameter ports (SAIC 1989).

The pulping process at the Georgia-Pacific plant separates and purifies cellulose fibers from wood, and requires that lignin, resins, and fatty acids that hold the fibers together be removed. Separation and purification happens in two steps: delignification and bleaching. Sodium hydroxide and sodium sulphide are used under high temperature and pressure to delignify an aqueous mixture of wood chips. The material extracted in this process still contains some lignin, and is further purified by bleaching. The cooking liquor from the delignification process is treated in a recovery boiler and much of the waste is recycled or used for producing by-products on-site.

In the bleaching process, elemental chlorine gas further reduces the lignin content through oxidation and chlorination. Chlorination increases the water solubility of the lignin. Bleach plant effluents are not recycled due to the corrosive chlorides present. This process step also results in the production of chlorinated organic compounds including dioxins and furans.

Effluent sampling, including analysis of centrifuged effluent solids, has identified a number of metals and organic contaminants in the wastewater discharged from this facility (Table 3-1). Metals detected in whole effluent or effluent solids include arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc. Organic compounds include volatile organic compounds (chloroform, 2-butanone, toluene), 4-methylphenol, polynuclear aromatic hydrocarbons (PAHs), and resin acids/guaiacols. One pesticide, delta-BHC, has also been reported, but the data are suspect due to the absence of the more common gamma-BHC compound (lindane) in the sample (Hallinan and Ruiz 1988).

Sediment in the vicinity of the extended wastewater outfall has been shown to contain contaminants, primarily metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc), PAHs, bis(2-ethylhexyl)phthalate, and resin acids/guaiacols (Table 3-2). However, only mercury concentrations exceeded sediment quality standards-chemical criteria (see Section 4.1). Sediment sampling in the vicinity of the former chlor-alkali plant discharge to Whatcom Waterway indicated elevated concentrations of mercury, PAHs, dibenzofuran, 2-butanone, toluene, and total xylenes. Sediment quality standards-chemical criteria were exceeded for two PAH compounds, benzo(g,h,i)perylene and indeno(1,2,3-cd)pyrene. Sediment mercury concentrations exceeded the chemical criterion by almost two orders of magnitude (Hallinan and Ruiz 1990), which was consistent with previous surveys of the Georgia-Pacific log pond (e.g., Bothner 1973; Nelson et al. 1974; Stanley 1980).

Waste streams discharged by the Georgia-Pacific facility include stormwater, hydraulic barking water, and wastewater from pulp and paper, lignin, acid, alcohol, and chlor-alkali production plants. The chlor-alkali plant and associated wastestreams are described in more detail below. This facility is also the site of two state-listed hazardous waste sites: the Georgia-Pacific biotreatment lagoon and the Georgia-Pacific mercury waste landfill (see Section 3.2).

**3.1.1.1 Chlor-alkali plant.** The chlorine gas and caustic soda used in the chemical pulping process has been produced on-site in the chlor-alkali plant since 1965. In general, chlorine gas is generated electrolytically from a salt solution using mercury-cell technology. The salt is produced from evaporated seawater and is dissolved in filtered water from Lake Whatcom prior to use in the plant. Some recycled brine contaminated with mercury is used in this process. The pH of the brine solution is raised using caustic soda to precipitate calcium, magnesium, and other impurities, including mercury. The solids are removed by settling and filtration. The pH is then lowered through the addition of acid and the solution



TABLE 3-1. RESULTS OF GEORGIA-PACIFIC EFFLUENT ANALYSES

Constituent	Effluent (µg/L)	Centrifuged Effluent Solids (mg/kg dry)
<b>Metals (Total)</b>		
Antimony	1U	2U
Arsenic	3.7	3.2
Beryllium	1.2	0.35
Cadmium	10U	7.3
Chromium	116	112
Copper	23.2	57.8
Lead	4.2	29.3
Mercury	0.39	1.89
Nickel	22.4	16.1
Selenium	1U	1.4
Silver	0.5U	0.37
Thallium	1U	0.19
Zinc	201B	585
<b>Volatile Organics</b>		
Chloroform	42	1,900
2-Butanone	3U	27,000
Toluene	1U	320
<b>Phenols</b>		
Phenol	2U	13,000U
4-Methylphenol	2U	26,000E
2,4-Dichlorophenol	4U	26,000U
2,4,6-Trichlorophenol	4U	26,000U
<b>Polyaromatic Hydrocarbons (PAHs)</b>		
Naphthalene	4U	32,000E
Acenaphthylene	2U	16,000E
Phenanthrene	2U	48,000E
Fluoranthene	2U	40,000E
Pyrene	2U	37,000E
<b>Miscellaneous</b>		
Dibenzofuran	2U	13,000U
<b>Resin Acids/Guaiacols</b>		
Isopimeric acid	6U	960U
Palustric acid	6U	960J
Abietic acid	6U	1,600
Dehydroabietic acid	6U	2,500
14-Chlorodehydroabietic acid	6U	3,000
12-Chlorodehydroabietic acid	6U	15,000
Dichlorodehydroabietic acid	6U	13,000
Guaiacol	2U	1,400
4,5-Dichloroguaiacol	2U	320
3,4,5-Trichloroguaiacol	5	3,400
4,5,6-Trichloroguaiacol	2U	1,400
Tetrachloroguaiacol	7	5,100
<b>Pesticides</b>		
Delta-BHC	0.50	8U

Source: Hallinan and Ruiz (1990).

Qualifiers:

U = Not detected at detection limit shown.

B = Also detected in method blank.

E = Estimated amount, EPA CLP holding time from extraction to analyses was exceeded.

J = Estimated amount, concentration is below method detection limit.

**TABLE 3-2. RESULTS OF SEDIMENT ANALYSES CONDUCTED  
IN THE VICINITY OF GEORGIA-PACIFIC**  
(Page 1 of 2)

Constituent	Centrifuged Effluent Solids (mg/kg dry)	Sediments (mg/kg dry)				Sediment Quality Standard (mg/kg dry)
		Field Control	At Outfall	Near Outfall	Chlorine Plant Outfall	
% Fines <sup>a</sup>	96.2	98.7	80.6	96.2	76.6	—
% Sand	3.8	1.3	19.4	3.9	23.5	—
% Gravel	<2.0	<2.0	<2.0	<2.0	<2.0	—
% TOC	37.0	2.4	2.2	3.3	8.3	—
% Dry weight	15.1	26.9	41.3	35.0	26.3	—
<b>Metal</b>						
Arsenic	3.2	7.0	9.2	11.8	6.9	57
Beryllium	0.35	0.48	0.41	0.53	0.53	—
Cadmium	7.3	0.2U <sup>b</sup>	0.2U	0.53	1.24	5.1
Chromium	112	64.7	71.0	85.8	66.2	260
Copper	57.8	41.1	50.0	52.9	68.9	390
Lead	29.3	18.2	35.3	17.6	40.9	450
Mercury	1.89	0.26	0.48	0.77	34.9	0.41
Nickel	16.1	56.3	80.0	106	66.1	—
Selenium	1.4	0.63	0.35	0.45	0.44	—
Silver	0.37	0.16	0.14	0.16	0.29	6.1
Thallium	0.19	0.13	0.17	0.17	0.43	—
Zinc	585	109	122	120	167	410
Constituent	Centrifuged Effluent Solids (µg/kg dry)	Sediments (µg/kg dry) <sup>c</sup>				Sediment Quality Standard (mg/kg dry)
		Field Control	At Outfall	Near Outfall	Chlorine Plant Outfall	
<b>Volatile Organics</b>						
Chloroform	1,900	7.0U	5.0U	5.0U	7.0U	—
2-Butanone	27,000	22.0U	15.0U	15.0U	32.0	—
Toluene	320	7.0U	5.0U	5.0U	9.0	—
Total xylenes	10.0U	7.0U	5.0U	5.0U	11.0	—
<b>Phenols</b>						
4-Methylphenol	26,000 (70)E	250U	160U	190U	250U	420 <sup>d</sup>
<b>Low Molecular Weight PAHs</b>						
Anthracene	13,000U	250U	160U	190U	890 (11)E	220
Aphthalen	32,000 (87)E	500U	320U	380U	510U	99
Acenaphthylene	16,000 (43)E	250U	160U	190U	250U	66
Acenaphthene	13,000U	250U	160U	190U	760 (9)E	66
Fluorene	13,000U	250U	160U	190U	460 (6)E	23
Phenanthrene	48,000 (130)E	250U	310 (14)E	500 (15)E	4,200 (51)E	100
Total LMW PAHs	96,000 (260)E	—	310 (14)E	500 (15)E	6,310 (76)E	370
<b>High Molecular Weight PAHs</b>						
Pyrene	37,000 (100)E	250U	370 (17)E	610 (19)E	9,900 (120)E	1,000
Fluoranthene	40,000 (110)E	250U	270 (12)E	420 (13)E	7,000 (84)E	160
Benzo(a)anthracene	13,000U	250U	160U	190U	5,200 (63)E	11
Chrysene	13,000U	250U	160U	190U	6,300 (76)E	110
Benzo(b)fluoranthene	26,000U	500U	320U	380U	—	—
Benzo(k)fluoranthene	26,000U	500U	320U	380U	13,000 (160)E	—
Benzo(a)pyrene	26,000U	500U	320U	380U	6,600 (80)E	99
Indeno(1,2,3-cd)pyrene	26,000U	500U	320U	380U	3,200 (39)E	33
Dibenzo(a,h)anthracene	26,000U	500U	320U	380U	1,300 (16)E	33
Benzo(g,h,i)perylene	26,000U	500U	320U	380U	3,100 (37)E	31
Total HMW PAHs	77,000 (210)E	—	640 (29)E	1,030 (31)E	54,600 (660)E	960

**TABLE 3-2. RESULTS OF SEDIMENT ANALYSES CONDUCTED  
IN THE VICINITY OF GEORGIA-PACIFIC  
(Page 2 of 2)**

Constituent	Centrifuged Effluent Solids (µg/kg dry)	Sediments (µg/kg dry) <sup>c</sup>				Sediment Quality Standard (mg/kg dry)
		Field Control	At Outfall	Near Outfall	Chlorine Plant Outfall	
<b>Phthalates</b>						
bis (2-Ethylhexyl)phthalate	13,000B	590 (25)E	270 (12)E	290 (9)E	1,200 (15)E	47
<b>Miscellaneous</b>						
Dibenzofuran	13,000U	250U	160U	190U	300 (3.6)E	15
Isopimeric acid	960.0U	110U	70U	110	--	--
Palustric acid	960J	110J	70J	88	--	--
Abietic acid	1,600	110U	83	260	--	--
Dehydroabietic acid	2,500	110	190	300	--	--
14-Chlorodehydroabietic acid	3,000	110U	90	190	--	--
12-Chlorodehydroabietic acid	15,000	110	520	1,100	--	--
Dichlorodehydroabietic acid	13,000	110U	330	660	--	--
Guaiacol	1,400	36	23	29	--	--
3,4,5-Trichloroguaiacol	3,400	36	23	29	--	--
4,5,6-Trichloroguaiacol	1,400	36U	23U	29	--	--
Tetrachloroguaiacol	5,100	36U	23U	29	--	--

Source: Hallinan and Ruiz (1990).

<sup>a</sup> Silt + Clay

<sup>b</sup> Qualifiers:

- U = Not detected at detection limit shown.
- J = Estimated amount, concentration is below method detection limit.
- E = Estimated amount, EPA CLP holding time from extraction to analyses was exceeded.

<sup>c</sup> Value in parentheses is concentration in mg/kg organic carbon.

<sup>d</sup> Value in µg/kg dry weight (ppb dry).

is passed through steel electrolytic cells consisting of a mercury cathode (liquid mercury flowing along the bottom of the cell) and titanium anodes. Chlorine gas forms at the anode which is collected for use in the pulp bleaching plant. Metallic sodium formed at the cathode amalgamates with the mercury and leaves the cell at the outlet.

The depleted brine is treated to remove residual chlorine and then recycled. The amalgam of mercury and sodium is cycled through a counter-current decomposer where mercury acts as the anode. The sodium is liberated and reacts with the water to form sodium hydroxide. Hydrogen gas saturated with mercury is liberated at the cathode. The hydrogen gas is used as fuel at the plant. The sodium hydroxide contains fine solids, including elemental mercury, that are filtered from the solution. At the inlet and outlet end of the cells the liquid mercury stream is covered by water to reduce volatilization of the elemental mercury. This water becomes contaminated with mercury.

Prior to 1970 the most significant mercury discharge to the bay was in water used to reduce mercury volatilization (Bothner 1973). Other direct discharges of mercury prior to 1970 included the solids collected from precipitating calcium, magnesium, and other impurities from recycled brine, and the discharge of solids removed from the sodium hydroxide produced in the counter-current decomposer. From 1965 to 1970 these wastestreams, along with non-contact cooling water, were discharged to a log pond connected to Whatcom Waterway.

In 1970 several modifications were made to reduce the amount of mercury discharged to the bay. These modifications included 1) recovering mercury from the hydrogen gas, 2) removing solids during brine recycling, 3) collecting solids removed from the sodium hydroxide rather than releasing them to the bay, and 4) recycling the water used to reduce mercury volatilization and diverting part of it to a settling pond constructed on a partial fill of the existing log pond. The overflow from the settling pond was treated with an activated charcoal filter system before discharge to the log pond. These measures reduced total mercury discharge to about 0.2 lbs/day (Bothner 1973).

In 1974 additional measures were taken to treat mercury wastes from the chlor-alkali plant. Sludge from the settling pond was removed and a new treatment system was installed to treat the removed sludge and the effluent from the settling pond prior to discharge. The treatment system consisted of a sulfide precipitation process followed by filtration to remove particulates. The treated sludge and filter backwash



from the new treatment system were disposed of in an off-site landfill. At this time the log pond was further modified through diking and filling. Approximately eight acres of the log pond were diked and filled with material dredged from the log pond and Whatcom Waterway. The dredge spoils were dewatered, covered with gravel ballast, and topped with asphalt.

In 1976, approximately 1.6 million gallons of sludge from the settling basin were removed and treated using a chemical fixing process (Chemfix®). The process involved the solidification of the sludge using a mixture of sodium silicate and Portland cement. The sludge treated with this process was landfilled on-site on 2.5 acres of land within the 1974 log pond fill area. The sludge was covered with a plastic liner, 6 inches of sand, and 4 inches of asphalt. This landfill has now been listed by the state as a hazardous waste site (see Section 3.2.3). In 1980, the settling basin sludge deposit was removed and landfilled off-site and the settling basin was filled with upland material. At this time the treated chlor-alkali plant discharge was routed to the extended outfall in Bellingham Bay.

### **3.1.2 Post Point WWTP**

Prior to 1974, the city's domestic wastes were treated at the Whatcom Creek Waterway WWTP which discharged primary treated wastewater to inner Bellingham Bay. The Post Point WWTP was constructed southwest of the City of Bellingham to the east of Post Point (Figure 2-3) and began operation in 1974, providing primary treatment for domestic and industrial wastes for Bellingham and outlying areas. The treatment plant outfall terminates approximately 610 m (2,000 ft) offshore in 25 m (82 ft) of water. The diffuser section is 130 m (427 ft) long and consists of thirty-five 15-cm (6 in) ports (CH2M Hill 1984). The facility has since been modified to provide secondary treatment. These modifications were completed in 1993. In addition to changes in the treatment system, projects to reduce the volume of stormwater discharge to the treatment plant (and combined-sewer overflows) were completed in 1986.

The Post Point WWTP has provided treatment for domestic wastewaters including household hazardous and sanitary wastes, stormwater runoff, and the wastewaters from industrial facilities. The types of wastes discharged to the WWTP have shifted over the years as industrial operations changed systems or products, or opened or closed operations. Wastewaters have been discharged to the Post Point WWTP from fish hatcheries, seafood and vegetable processing plants, and wood treatment and plywood manufacturing facilities (PTI Environmental Services 1989).

Effluent permit monitoring requirements for the Post Point WWTP are limited to biochemical oxygen demand, total suspended solids, fecal coliform bacteria, and pH. Therefore, very few data are available to determine the concentration of metals and organic contaminants in the WWTP effluent. Data provided by CH2M Hill (1984) indicate the presence of the metals antimony, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc in WWTP effluent (Table 3-3). Organic compounds detected in the effluent include bis(2-ethylhexyl)phthalate, chloroform, tetrachloroethene, toluene, pentachlorophenol, hexachlorocyclohexane, and the Aroclor PCB 1260 (Table 3-3).

Sediment sampling for metals and organic compounds in the vicinity of the WWTP discharge has also been limited (CH2M Hill 1984; Reif 1988). The detection limits achieved for organic compounds were too high for comparison to sediment management standards-chemical criteria (Table 3-4). Metals concentrations were generally below those reported for sediments collected from Puget Sound reference locations except for mercury. Mercury concentrations exceeded the sediment management standards-chemical criteria at two of the four sediment sampling locations in the vicinity of the Post Point WWTP outfall (Table 3-4).

### **3.1.3 Minor Municipal and Industrial Facilities**

In 1882, the first sewers were installed in the developed portion of the Bellingham area. These sewers discharged to creeks or directly to Bellingham Bay. Minor industries in Bellingham Bay, particularly seafood and vegetable processing facilities, discharged their wastes directly to the bay until 1974 when these wastes were diverted to the Post Point wastewater treatment plant. Other minor but significant point source discharges to Bellingham Bay and tributary creeks have included a cement plant and a number of wood treatment facilities.

There are approximately 49 permitted minor municipal, industrial, fish hatchery, and farm operations located in the vicinity of Bellingham (Table 3-5). Forty-seven of these operations are classified as industrial. These facilities operate under a variety of permits, including permits for discharge to the Post Point WWTP (14), discharge to State groundwaters (1), minor municipal discharge permits (1), minor industrial discharge permits (5), and general permits for discharge to surface waters (28) (see Table 3-5).

TABLE 3-3. CONTAMINANTS DETECTED IN WET WEATHER AND DRY WEATHER 24-HOUR COMPOSITE SAMPLES OF THE EFFLUENT FROM THE POST POINT WWTP<sup>a</sup>

Chemical	Wet Weather Effluent	Dry Weather Effluent
<b>Organic Compounds (<math>\mu\text{g/L}</math>)</b>		
Bis(2-ethylhexyl)phthalate	12	21
Chloroform	7	6
Tetrachloroethene	<5	4
Toluene	<5	9
Pentachlorophenol	<10	14
Hexachlorocyclohexane (Lindane)	<0.1	0.04
PCB-1260	<2	0.53
<b>Metals<sup>b</sup> (mg/L)</b>		
Antimony	0.001	<0.001
Arsenic	<0.005	<0.005
Beryllium	<0.02	<0.001
Cadmium	<0.01	0.01
Chromium	0.012	0.01
Copper	0.37	1.4
Lead	0.01	0.005
Mercury	<0.0002	0.0006
Nickel	<0.04	0.08
Selenium	0.002	<0.005
Silver	<0.001	0.004
Thallium	<0.005	0.01
Zinc	0.08	0.09

Source: CH2M Hill (1984).

<sup>a</sup> Wet weather period = November-April; dry weather period = May-October.

<sup>b</sup> Metals analyzed by the total metals digestion method.

TABLE 3-4. SUMMARY OF CONTAMINANTS DETECTED IN SEDIMENTS  
 SAMPLED IN THE VICINITY OF THE POST POINT WWTP

Metals	Stations	
	REO1 (mg/kg dry weight)	REO2 (mg/kg dry weight)
Arsenic	35U <sup>a</sup>	35
Chromium	80	80
Copper	54	55
Lead	22	18
Mercury	0.66	0.380
Nickel	98	110
Zinc	120	130
Volatiles	( $\mu\text{g}/\text{kg}$ dry weight)	( $\mu\text{g}/\text{kg}$ dry weight)
Acetone	91	160

Source: Reif (1988).

<sup>a</sup> Qualifiers:

U = Not detected at detection limit shown.



TABLE 3-5. MINOR NPDES AND STATE DISCHARGE PERMITTEES IN THE BELLINGHAM VICINITY

Facility	Type	Address	Zip Code	Facility Description	Location	Permit ID
ALPHA TECHNOLOGIES	Industrial	3116 MERCER STREET	98723	FISH PROCESSOR	BELLINGHAM BAY	W/AG007431A
ARROWAC FISHERIES	Industrial	207 HARRIS AVENUE	98723	Sand & Gravel GENERAL PERMIT		ST00072633A
ASSOC S & C - Y ROAD PIT	Industrial	PORTION OF SE 1/4 OF SECTION 19	98723	Sand & Gravel GENERAL PERMIT		W/AG008121A
AXTON AGGREGATES - EAST	Industrial	600 EAST AXTON	98723	Sand & Gravel GENERAL PERMIT		W/AG008121A
AXTON AGGREGATES - WEST	Industrial	440 EAST AXTON	98726	Sand & Gravel GENERAL PERMIT		W/AG008121A
AXTON PARTNERSHIP/PULLAR PIT	Industrial	640 E. AXTON ROAD	98723	Sand & Gravel GENERAL PERMIT		W/AG008121A
B & I FIBERGLASS	Industrial	4905 GUIDE MERIDIAN	98726	BOATYARD		W/AG008064A
BELLINGHAM COLD STORAGE	Industrial	SQUALICUM FILL	98723	SEAFOOD PROCESSING AND COLD STORAGE	BELLINGHAM BAY	W/AG008123B
BELLINGHAM FROZEN FOODS	Industrial	PO BOX 1016	98723	VEGETABLE PROCESSING AND FREEZING	BELLINGHAM BAY	ST0007322B
BELLINGHAM HATCHERY	Aquaculture	WHATCOM FIELDS PARK	98726	UPLAND FISH REARING	WHATCOM CREEK	W/AG133001B
BELLINGHAM MARINE INDUSTRIES INC	Industrial	1001 C STREET	98723	BOATYARD		W/AG008006A
BELLINGHAM MARINE INDUSTRIES, INC	Industrial	1001 C STREET	98723	Sand & Gravel GENERAL PERMIT		W/AG008121A
BORNSTEIN SEAFOODS INC	Industrial	1001 HILTON AVENUE	98723	BOTTOM FISH PROCESSOR	BELLINGHAM BAY	ST0007304B
BROOKS MFO	Industrial	IOWA AND PACIFIC STREETS	98723	WOOD PRESERVING	WHATCOM CREEK	W/AG008055B
CARL POST DAIRY	Agriculture	3390 SAND ROAD	98726	DAIRY GENERAL PERMIT	BELLINGHAM BAY	W/AG013002A
CASCADE SEAFOODS	Industrial	2925 ROBBER AVENUE	98723	FISH PROCESSOR		ST0007311A
CHARLES MCNALLIE - FOX PIT	Industrial	2 MILLS & OF LK SALMISH RD & COLONEY	98726	Sand & Gravel GENERAL PERMIT		W/AG008000A
COSTCO WHOLESALE	Industrial	4299 GUIDE MERIDIAN	98726	ONE HOUR PHOTO FINISHING	BELLINGHAM BAY	ST0007333A
COWDEN INC	Industrial	3463 CEDARVILLE ROAD	98726	Sand & Gravel GENERAL PERMIT		W/AG008059A
COWDEN INC	Industrial	3463 CEDARVILLE ROAD	98726	Sand & Gravel GENERAL PERMIT		W/AG008059A
COWDEN INC	Industrial	3463 CEDARVILLE ROAD	98726	Sand & Gravel GENERAL PERMIT		W/AG008059A
COWDEN INC	Industrial	3463 CEDARVILLE ROAD	98726	Sand & Gravel GENERAL PERMIT		W/AG008059A
COWDEN INC	Industrial	3463 CEDARVILLE ROAD	98726	Sand & Gravel GENERAL PERMIT		W/AG008059A
COWDEN INC	Industrial	3463 CEDARVILLE ROAD	98726	Sand & Gravel GENERAL PERMIT		W/AG008059A
COVODEN NORTHWEST	Industrial	915 NORTH CORNWALL AVENUE	98727	COGENERATION FACILITY		ST0007336A
FERNDALE READY MIX & GRAVEL - BHAM	Industrial	BAKERVUE SPUR	98723	Sand & Gravel GENERAL PERMIT	BELLINGHAM BAY	W/AG008123A
GN FLYWOOD INC DBA MT BAKER FLYWOOD	Industrial	2929 ROBBER AVE	98723	PLYWOOD MANUFACTURING	BELLINGHAM BAY	ST0007253C
HAWLEY HILTON HARBOR MARINA	Industrial	1000 HILTON AVENUE	98723	BOATYARD		W/AG008024A
HOMER POINT SEAFOODS	Industrial	2173 ROBBER AVENUE	98723	SEAFOOD PROCESSOR		ST0007363A
ICICLE SEAFOODS, INC (REPACK)	Industrial	2173 ROBBER AVENUE	98723	SEAFOOD PROCESSING		ST0007350A
ICICLE SEAFOODS, INC (SURIM)	Industrial	500 WEST ORCHARD	98727	SEAFOOD PROCESSING		ST0007349A
LAKESIDE INDUSTRIES-WHATCOM BUILDER	Industrial	703 B LAUREL ROAD	98727	Sand & Gravel GENERAL PERMIT		W/AG008120A
LUTTKE-PACIFIC TRUCKING INC	Industrial	1507 E. ILLINOIS STREET	98726	Sand & Gravel GENERAL PERMIT		W/AG008080A
LUTTKE-PACIFIC TRUCKING/WASCHKE RD	Industrial	NORTH END OF WASCHKE ROAD		Sand & Gravel GENERAL PERMIT		W/AG008079A
MARINE SERVICES NW	Industrial	2351 ROBBER AVENUE	98723	BOATYARD		W/AG008003A
MARITIME CONTRACTORS	Industrial	201 HARRIS AVENUE	98723	SHIPBUILDING AND REPAIR	BELLINGHAM BAY	W/AG008140A
NEW WEST FISHERIES	Industrial	601 WEST CHESTNUT STREET	98723	SEAFOOD PROCESSOR - HERRING ROE	BELLINGHAM BAY	ST0007343A
OCEAN STAR SEAFOODS	Industrial	6069 HANNEGAN RD	98723	SALMON PROCESSOR	GROUNDWATER	ST0007245A
OSER COMPANY	Industrial	730 MARINE DRIVE	98723	WOOD PRESERVING	BELLINGHAM BAY	W/AG008113B
PACIFIC CONCRETE	Industrial	2400 WEST STREET	98723	SAND AND GRAVEL WASHING/CONCRETE	GROUNDWATER	W/AG008028A
PACIFIC CONCRETE IND-NW PIT/HOY PIT	Industrial	3564 NORTHWEST ROAD		BATCH PLANT AND CONCRETE PRODUCT		W/AG008061A
PADDEN CREEK MARINE INC	Industrial	609 HARRIS AVENUE	98723	Sand & Gravel GENERAL PERMIT		W/AG008003A
TILBURY CEMENT-BELLINGHAM	Industrial	MARINE DRIVE	98723	BOATYARD	BELLINGHAM BAY	W/AG008191B
TRANS-OCEAN PRODUCTS, INC.	Industrial	PO BOX 5606	98727	CEMENT MANUFACTURING		ST0007354A
TRIDENT SEAFOOD (SOUTH)	Industrial	17 SQUALICUM FILL	98723	SEAFOOD PROCESSOR	BELLINGHAM BAY	ST0007303A
TRIDENT SEAFOOD (WEST)	Industrial	17 SQUALICUM FILL	98723	SEAFOOD PROCESSING	BELLINGHAM BAY	ST0008163A
WELDCRAFT STEEL & MARINE INC	Industrial	9 SQUALICUM WAY	98723	BOATYARD		W/AG0080051A
WHATCOM BUILDERS	Industrial	703 B LAUREL ROAD	98727	Sand & Gravel GENERAL PERMIT		W/AG008192A
WHATCOM BUILDERS	Industrial	703 B LAUREL ROAD	98727	Sand & Gravel GENERAL PERMIT		W/AG008192A
WHATCOM CO - ABLIS PIT	Industrial	LAUREL ROAD	98726	Sand & Gravel GENERAL PERMIT		W/AG008050A
WHATCOM CO - CLARK PIT	Industrial	VALLEY VIEW ROAD	98726	Sand & Gravel GENERAL PERMIT		W/AG008044A
WILDER CONSTRUCTION/HANNEGAN PLANT	Industrial	3176 HANNEGAN	98726	Sand & Gravel GENERAL PERMIT		W/AG0081361A

The five permitted minor industrial discharges are from Bellingham Cold Storage, Brooks Manufacturing, Maritime Contractors, Oeser Company, and Tilbury Cement (formerly Columbia Cement Corporation). Three of these facilities are listed by Ecology as Confirmed or Suspected Contaminated Sites (see Section 3.2.3). These sites include two wood treatment operations, Brooks Manufacturing and Oeser Company, which are located in the Whatcom Creek and Little Squalicum Creek drainages, respectively, and Maritime Contractors, a shipyard located near the Alaska State Ferry Terminal on Post Point.

In addition to current permittees, other wood treatment and wood products facilities have been permitted to discharge industrial waste to Bellingham Bay. From 1970 through 1975, Mount Baker Plywood discharged process wastewater to Bellingham Bay after treatment in a lagoon and seepage pond (PTI Environmental Services 1989). The R.G. Haley Company, a former wood treatment facility adjacent to the Cornwall Avenue Landfill and a state listed Suspected or Confirmed Contaminated Site, was permitted to discharge non-contact cooling water and stormwater runoff to Bellingham Bay and process wastewater to a seepage pit on site (Ecology and Environment, Inc. 1986). Because the R.G. Haley site is located adjacent to the Cornwall Avenue Landfill, the type and extent of contamination at this site is described in more detail in Section 5.2.

## 3.2 NON-POINT SOURCES

Non-point sources of contaminants as defined in this report include CSOs, surface water runoff, contaminated soil and groundwater sites, accidental spills, ports and marinas, and atmospheric sources. Due to the limited quantitative data for non-point sources, it is difficult to assess the relative importance of non-point vs. point source discharges to Bellingham Bay. However, it is likely that non-point sources may be considered a significant source of contaminants found in the bay, with the possible exception of mercury. Non-point contaminant sources are characterized below.

### 3.2.1 Combined Sewer Overflows (CSOs)

The City of Bellingham's storm water and sanitary wastewater collection systems are not entirely separate. Heavy rainfall runoff causes CSOs when combined storm and sanitary sewer capacity is exceeded. The excess flow, consisting of a mixture of storm and untreated municipal wastewater, discharges from interceptors and pump stations and eventually to surface waters. Since 1974, relatively frequent CSOs

have occurred at four locations in Bellingham. These locations are the C Street interceptor, the Oak Street pump station, the lower Cornwall pump station, and the Post Point WWTP (Figure 2-3). The City of Bellingham has implemented a program to reduce CSO discharges and currently overflows only occur at the C Street interceptor, the former location of the Whatcom Creek Waterway WWTP outfall. Overflow from this site is predominantly domestic wastewater. Industrial wastes enter the sewer collection system below this interceptor at the Oak Street pump station (PTI Environmental Services 1989).

### **3.2.2 Surface Water Runoff**

Surface water runoff enters Bellingham Bay directly from shoreline areas and indirectly via the Nooksack River and a number of creeks. These drainage areas have been divided into ten distinct basins, discussed below in Section 3.2.2.1.

The Bellingham Bay Action Program incorporated storm drain sediment sampling, in two phases, as part of the response to problem areas identified. Phase I focused on storm drain sediments at the mouths of storm drain outfalls and creeks that discharge directly to Bellingham Bay and the upper reaches of Squalicum and Whatcom Creeks (PTI Environmental Services 1991). Phase II focused on source tracing studies in four selected storm drain basins that were assigned high priority for investigation in Phase I, but did not have obvious upland contaminant sources (Cubbage 1994). Phase II also included sampling at locations in Whatcom Creek, Squalicum Harbor, and Maritime Contractors Shipyard. Results of sampling at Maritime Contractors Shipyard are reviewed in a separate report (Cubbage, J., 14 October 1993, personal communication). The results of the Phase I and Phase II storm drain studies are summarized in Section 3.2.2.2.

**3.2.2.1 Bellingham Bay Drainage Basin Overview.** The following description of the areas that drain to the Bellingham Bay study area is derived primarily from Creahan (1988).

*City of Bellingham*—The City of Bellingham has sewered the area from Little Squalicum Creek to Post Point (Figure 2-3). This system is almost entirely separated from the sanitary sewer system, with the exceptions noted above. Two storm drains discharge to Little Squalicum Creek, four to Squalicum Creek, forty-two to Whatcom Creek, and thirteen to Padden Creek. These drains route rainfall runoff from city streets, parking lots, rooftops, and the surface areas of some industrial facilities, including former wood treatment plants and the chip and log storage area (see Sections 3.1.1 and 3.2.3) at the



Georgia-Pacific chlor-alkali plant. In addition, 37 Suspected or Confirmed Contaminated Sites have been identified by Ecology within the Bellingham city limits (see Section 3.2.3).

The City of Bellingham is also underlain by coal mines which operated between 1853-1878 (Sehome Mine) and 1917-1955 (Bellingham Coal Mine) (Moen 1969). Some of the bituminous coal from these mines was shipped from Bellingham via boat and rail; loading operations would have resulted in coal spilling onto the surface and directly into the bay. A significant portion of the coal was used in local cement plants and a coal gasification plant located in the area that is now Boulevard Park. The cement plants and the gasification plant could all contribute to pollution in Bellingham Bay via former atmospheric deposition and leaching from slag. The location in Boulevard Park is on the state list of Suspected or Confirmed Contaminated Sites (see Section 3.2.3).

*Nearshore Bellingham Bay*—Rainfall runoff drains into Bellingham Bay from nearshore areas which cover a total of 16 km<sup>2</sup> (6.2 mi<sup>2</sup>) of commercial, residential, industrial, forested, and agricultural land. Nonpoint sources of contaminants from this area include, but are not limited to oil and fuel leakage, septic tank failures, runoff from the Bellingham International Airport, and runoff from a slag pile at the Taylor Avenue dock (PTI Environmental Services 1989).

*Nooksack River Basin*—The Nooksack River basin is the largest area [approximately 1,500 km<sup>2</sup> (580 mi<sup>2</sup>)] that drains into Bellingham Bay. Major urban areas in the basin include Ferndale, Lynden, and Everson. Each of these towns discharges municipal wastewater to the Nooksack River. Nonpoint contaminant sources within the basin include runoff from agricultural, residential, and urban land. Agricultural activities in the basin include dairy operations and berry farming.

Mining of metallic and non-metallic minerals has also been a significant activity in the Nooksack River drainage historically (Moen 1969). Metallic mineral deposits in the basin include chromium, copper, gold, lead, silver, and zinc (Moen 1969). Surface erosion and groundwater dissolution of mineral deposits could also contribute metals to the Nooksack River.

Mining operations have extracted gold using a mercury recovery process in at least one location (Great Excelsior Mine) in the Nooksack River basin (Moen 1969). Elevated concentrations of mercury have been measured higher up in the basin, at the mouth of Boulder Creek on the North Fork of the Nooksack



River (Babcock and Kolby 1973). This mercury was attributed to natural sulfide mineralization along the Boulder Creek fault zone. Sediment sampling conducted in the lower Nooksack River indicated lower mercury concentrations, similar to those in deep sediments deposited in Bellingham Bay that presumably represent pre-industrial background levels (Babcock and Kolby 1973).

*Little Squalicum Creek Basin*—Little Squalicum Creek basin drains forested and residential upland areas and some industrial areas near the mouth of the creek. Two storm drains enter the creek just beyond the Bellingham city limits. One of these drains property adjacent to the Oeser Cedar Company's wood treatment facilities. This facility is on the state list of confirmed and suspected contaminated sites (see Section 3.2.3). Confirmed contaminants include base/neutral/acid and phenolic compounds. Contamination with petroleum products is suspected.

*Squalicum Creek Basin*—The Squalicum Creek basin covers approximately 65 km<sup>2</sup> (25 mi<sup>2</sup>) and drains primarily forested land. However, agricultural, residential, commercial, and industrial areas are found near the mouth of the creek. The four storm drains that enter Squalicum Creek drain primarily residential runoff.

*Whatcom Creek Basin*—The Whatcom Creek drainage basin covers approximately 293 km<sup>2</sup> (113 mi<sup>2</sup>) including Whatcom Lake [2,025 ha (5,000 acres)]. Approximately 30 percent of the basin is forested and the remainder is used for residential, commercial, and industrial purposes. One storm drain directs runoff from the Brooks Manufacturing Company's wood treating facilities to Whatcom Creek via Fever Creek, a small tributary (see Section 3.2.4). The Brooks Manufacturing Company site is on the state list of Suspected or Confirmed Contaminated Sites (see Section 3.2.3).

*Padden Creek Basin*—The Padden Creek basin covers approximately 16 km<sup>2</sup> (6.2 mi<sup>2</sup>) of primarily residential areas with smaller portions of commercial, agricultural, and forested areas.

*Chuckanut Creek Basin*—The Chuckanut Creek basin covers approximately 34 km<sup>2</sup> (13 mi<sup>2</sup>) of primarily forest land. Residential and commercial areas occupy smaller areas. Runoff to Chuckanut Creek includes drainage from Interstate 5.

*Nearshore Chuckanut Bay*—Nearshore Chuckanut Bay includes runoff from primarily forested and residential areas. Runoff from this area also includes drainage from Chuckanut Drive, a popular shoreline road.

*Lummi Peninsula Basin*—The Lummi Peninsula basin drains forested land with limited residential development. Municipal wastewater from the Lummi Indian Reservation is treated and discharged to Hale Passage.

**3.2.2.2 Storm Drain Sediment Contaminant Tracing Studies.** The storm drain locations sampled in Phase I of the storm drain tracing study (PTI 1991) are shown in Figure 3-1. A total of 16 sediment samples were collected and analyzed. Results were screened against marine and freshwater sediment quality criteria and mean urban street dust contaminant concentrations. A number of contaminants exceeding the criteria and mean street dust levels were identified in 7 of the 16 samples (Table 3-6). The contaminants included arsenic, cadmium, chromium, copper, nickel, zinc, phenols, chlorinated benzenes, phthalates, PAH compounds, and the pesticide chlordane. The most contaminated storm drains were located at the mouth of Little Squalicum Creek (BELL16), storm drains to Whatcom Waterway (BELL08 and BELL09), and a storm drain just north of Padden Creek (BELL03).

Three storm drainage basins were selected for follow-up studies in Phase II (Figure 3-2). These basins were above the Phase I sampling locations BELL16 (Little Squalicum Creek), BELL09, and BELL13. The latter two locations drain to Whatcom Creek Waterway. Two marine sediment samples were collected from Squalicum Harbor, and two locations on Whatcom Creek were sampled. Several of the problem chemicals identified during the Phase I study were not identified during the Phase II study. Contaminants in Whatcom Creek that were above freshwater screening levels were pentachlorophenol and 4-methylphenol (Table 3-7). Sediments at one location in Whatcom Creek also showed evidence of toxicity to aquatic organisms (see Section 4.3). Chemicals exceeding marine sediment criteria in the BELL09 basin included lead, zinc, 4-methylphenol, and butylbenzylphthalate (Table 3-7). Chemicals exceeding marine sediment criteria in the BELL13 basin included lead, zinc, 4-methylphenol, and butylbenzylphthalate. Problem chemicals in the Squalicum Creek basin (BELL16) included copper, phenol, chlorinated phenols, 4-methylphenol, butylbenzylphthalate, and dimethylphthalate. Phenol was detected above marine sediment criteria in Squalicum Harbor marina sediments.

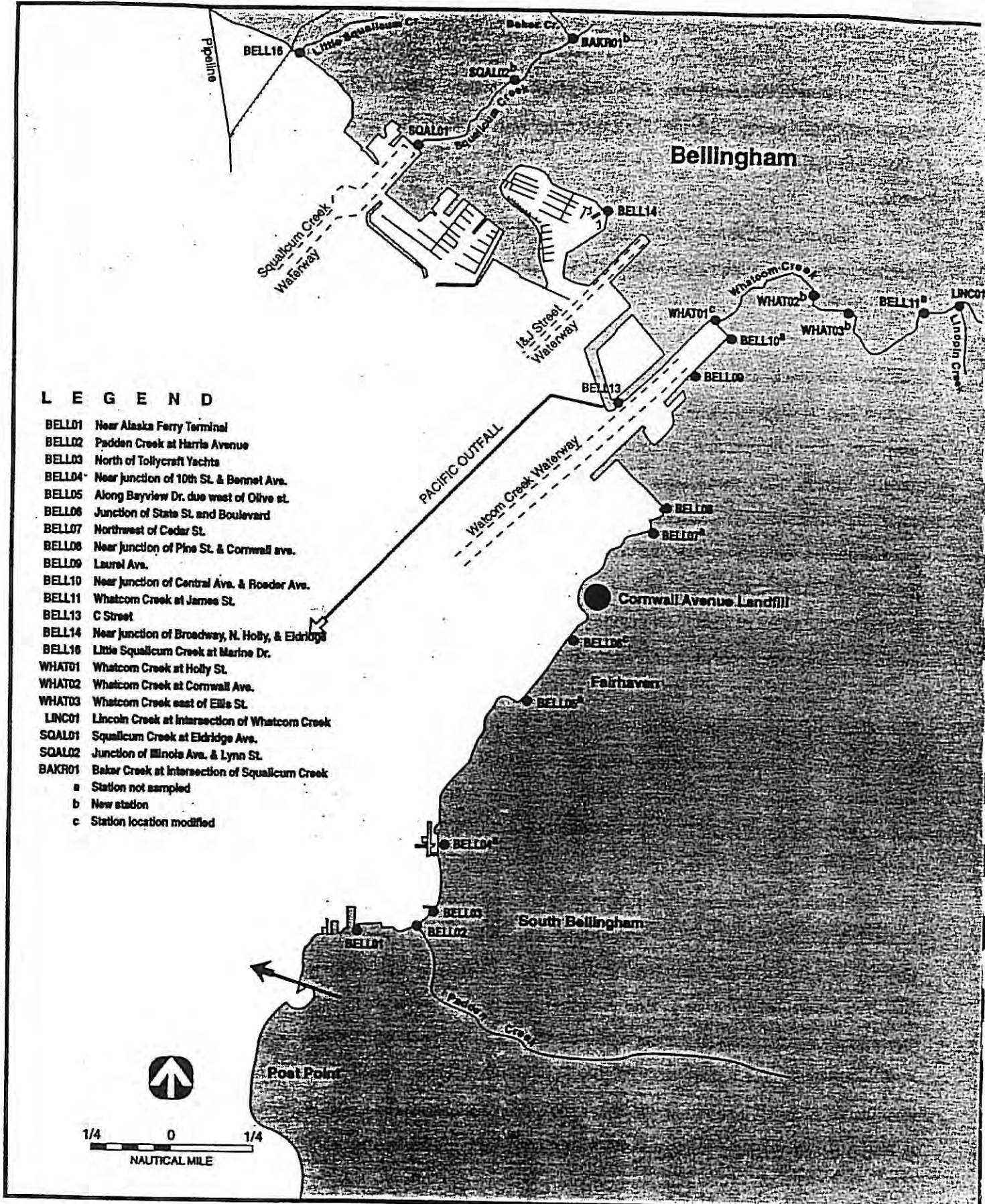


Figure 3-1. Phase I Storm Drain Source Tracing Study (PTI Environmental Services 1991) Sampling Stations.



TABLE 3-6. CHEMICALS EXCEEDING DECISION CRITERIA BY STATION DURING THE PHASE I STORM DRAIN SOURCE TRACING STUDY

Station	1	2	3	Decision Criteria
	Marine Sediment Quality Standards	Freshwater Sediment Criteria <sup>a</sup>	90th Percentile	Chemicals Exceeding Any Criteria (1, 2, or 3) and Mean Street Dust Levels
BELL02		Zinc		
BELL03	Bis(2-ethylhexyl)phthalate Benzoic acid Benzyl alcohol Butyl benzyl phthalate Phenol Zinc		Nickel	Benzoic acid <sup>b</sup> Benzyl alcohol <sup>b</sup> Phenol Nickel Zinc
BELL06	Bis(2-ethylhexyl)phthalate			
BELL08	Dibenz(a,h)anthracene Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Zinc			Dibenz(a,h)anthracene <sup>b</sup> Bis(2-ethylhexyl)phthalate Butyl benzyl phthalate Zinc
BELL09	Arsenic Cadmium Chromium Copper Zinc		Nickel	Arsenic Cadmium Chromium Copper Nickel Zinc
BELL13	1,4-Dichlorobenzene Copper Zinc			1,4-Dichlorobenzene <sup>b</sup> Copper Zinc
BELL14	Bis(2-ethylhexyl)phthalate	Total Chlordane	alpha Chlordane gamma Chlordane <sup>c</sup>	Total chlordane <sup>b</sup> alpha Chlordane <sup>b</sup> gamma Chlordane <sup>b</sup>
BELL16	Dibenz(a,h)anthracene Acenaphthene Dibenzofuran Indeno(1,2,3-cd)pyrene	Zinc		Dibenz(a,h)anthracene <sup>b</sup> Acenaphthene <sup>b</sup> Dibenzofuran <sup>b</sup> Indeno(1,2,3-cd)pyrene <sup>b</sup> Zinc
WHAT01		Lead, Zinc		
WHAT02	Bis(2-ethylhexyl)phthalate			
WHAT03	Butyl benzyl phthalate	Zinc		
LINC01	Bis(2-ethylhexyl)phthalate Indeno(1,2,3-cd)pyrene Phenanthrene	Zinc		
SQAL01		Chromium		Chromium
SQAL02	Bis-2-ethylhexyl)phthalate Butyl benzyl phthalate	Lead Zinc		
BAKR01		Zinc		

Source: PTI Environmental Services (1991).

<sup>a</sup> Freshwater criteria compared only to creek stations or storm drains that discharge to creeks: BELL02, BELL16, WHAT01, WHAT02, WHAT03, LINC01, SQAL01, SQAL02, BAKR01, JAP01, EDGE01, and POW01.

<sup>b</sup> These compounds were apparently analyzed for in street dust samples but not detected. Detection limits for the street dust samples were not available. Therefore, any detected concentrations are considered exceedances.

<sup>c</sup> Gamma chlordane had a detection frequency of <1.0% in 32 Puget Sound surveys.



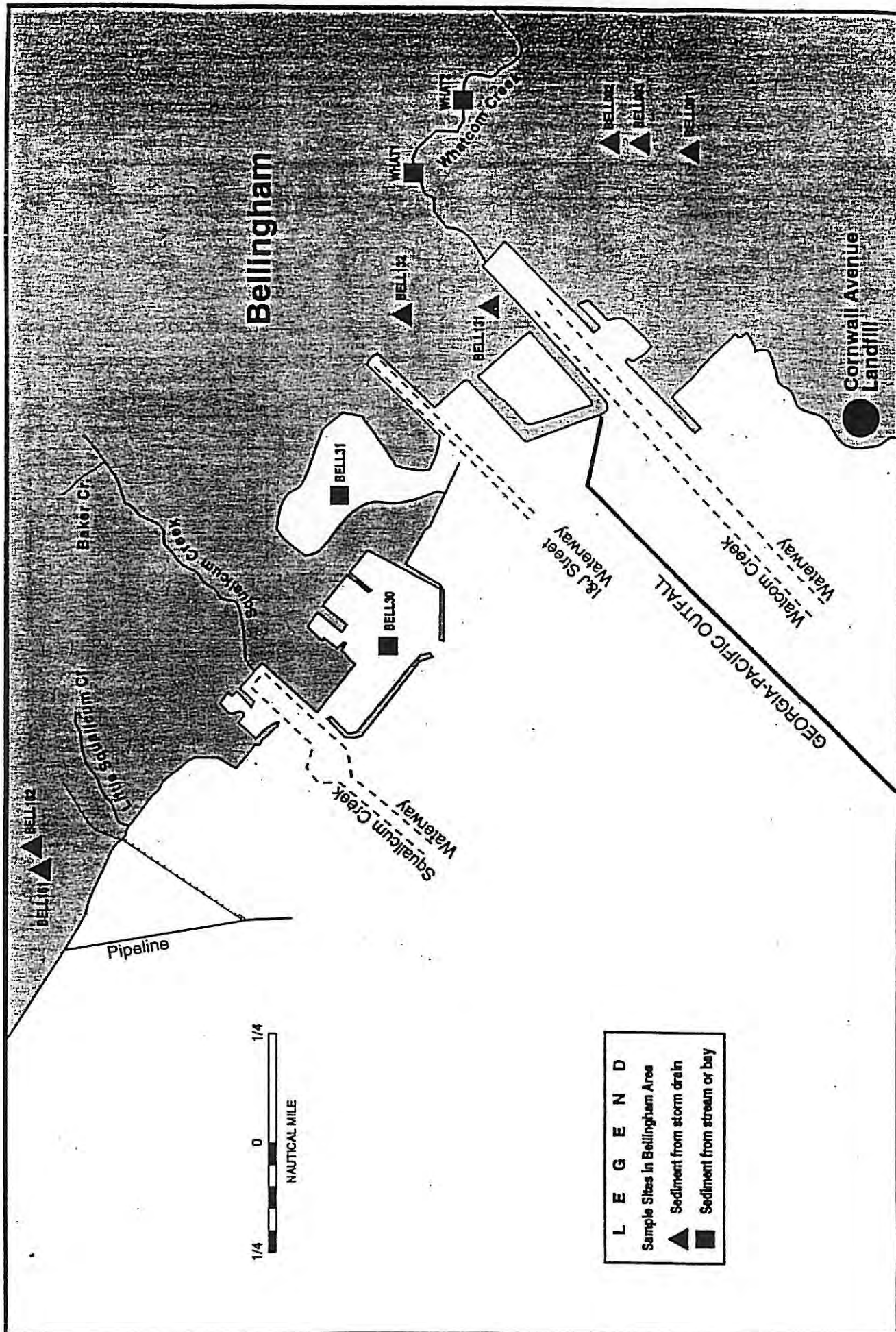


Figure 3-2. Phase II Storm Drain Tracing Study sampling Stations (Cubbage 1994).

TABLE 3-7. REVIEW OF CHEMICALS FOUND IN SEDIMENTS IN THE PHASE II STORM DRAIN SOURCE TRACING STUDY

Site	Description	Chemicals above Marine Criteria (Ecology 1991), Freshwater Guidelines (Persaud et al. 1993), and/or Significant Bioassay Results	Other Chemicals Found at Over 2X Quantification Limit (Excluding Metals)
WHAT1	Whatcom Creek near Prospect	<i>Hyalella</i> bioassay mortality; some Microtox® response, pentachlorophenol, 4-methylphenol	PAH
WHAT2	Whatcom Creek near Cornwall	4-methylphenol	pentachlorophenol, PAH
BELL30	Squalicum marina	phenol	--
BELL31	Squalicum marina	phenol	methylphenol
BELL091	Garden at E. Laurel	4-methylphenol	nitrophenol, toluene, PAH
BELL092	Parking lot near Railroad and Maple	lead, zinc, butylbenzylphthalate	toluene, acetone, xylenes, 2-butanone, 4-methylphenol, PAH
BELL093	Maple between Chestnut and Railroad	butylbenzylphthalate	toluene, xylenes, PAH
BELL131	Bottom of "C" Street	--	--
BELL132	"F" street between Holly and Roeder along alley	lead, zinc, butylbenzylphthalate, 4-methylphenol	toluene, PAH
BELL161	Marine Drive near Bennett	copper	--
BELL162	Bennett near Marine Drive	phenol, chlorinated phenols, butylbenzylphthalate, 4-methylphenol, dimethylphthalate	xylenes, acetone, PAH

Source: Cabbage (1994).

Storm Drain Source Tracing Study sampling Stations (Cabbage 1994).

### 3.2.3 Contaminated Soil and Groundwater Sites

Contaminated soil and groundwater sites in the vicinity of Bellingham Bay can contribute contaminants to the bay via both groundwater seepage and the contamination of surface water that eventually discharges to the bay. There are currently 37 sites in Bellingham listed as confirmed or suspected to have contaminated soil, drinking water, groundwater, or surface water (Table 3-8). One of these sites is Whatcom Creek Waterway, which is part of Bellingham Bay. This was identified as a problem area during the Bellingham Bay Action Program.

Twenty-three of these sites are in the inner Bellingham Bay study area (including Whatcom Creek and the Squalicum Creeks): 1) B&B Paint, 2) Bellingham National Bank, 3) Bosman Fuel, 4) Boulevard Park, 5) Chevron/Port of Bellingham, 6) Cornwall Avenue Landfill, 7) DeWilde Nursery, 8) Frank Brooks Manufacturing, 9) Georgia-Pacific biotreatment lagoon, 10) Georgia-Pacific mercury waste landfill and settling pond, 11) Maritime Contractors Inc., 12) Maritime Heritage Center Park, 13) Murray Chris-Craft Cruisers-West, 14) Oeser Cedar/Little Squalicum Creek, 15) Port of Bellingham/4th and Harris Street, 16) Port of Bellingham/Hilton Harbor, 17) Port of Bellingham/Pier 5 Oil, 18) Port of Bellingham/Squalicum Harbor, 19) R.G. Haley Intl. Corp., 20) Roeder Avenue Landfill, 21) Sunshine Cleaners, 22) Thompson Property, and 23) Unocal Bulk Plant #0042.

Confirmed contaminants identified at these sites include metals, petroleum, semi-volatile compounds (including PAHs and phenolic compounds), PCBs, pesticides, and other conventional inorganic contaminants (Table 3-8). These sites represent potential surface and groundwater sources of contaminants to inner Bellingham Bay. More detailed information is provided in Section 5.0 for the Cornwall Avenue Landfill and the former R.G. Haley International Corp. wood treatment facility, the only other site within 1/4 mile of the Cornwall Avenue Landfill.

### 3.2.4 Accidental Spills

Accidental spills of materials on land or directly in water may result in contamination of Bellingham Bay. The U.S. Coast Guard National Response Center in Washington, D.C. maintains a national data base on accidental spills of materials to land or water. This database is composed only of spills reported to the U.S. Coast Guard, and its validity is not confirmed by the Coast Guard. PTI Environmental Services (1989) summarized data available from this data base from 1973 to 1988. Detailed information was available for only one spill. This spill occurred on 1 January 1981 when a 10,000-gallon storage tank at the







TABLE 3-8. CONFIRMED AND SUSPECTED CONTAMINATED SITES IN BELLINGHAM  
(Page 2 of 4)

Site Name	Address	Zip Code	Site Star Code	Site Star	Waste Bls #	Affected Media	Status <sup>d</sup>	BNAs	HOCs	Metal/CR	Other Metals	PCB	Pesticides	Petro-Insam	Phase-iles	Non-Halogenated Solvents	Dioxin-like	PAAH	Inertive Waste	Corrosive Waste	Radioactive Waste	Conventional, Organic	Conventional, Inorganic	Ad -			
Greiner Oil Co.	1100 Sunset Dr.	98226	1			Groundwater	C							C		C											
			1			Soil	S								S		S										
			1			Surface Water	S								S		S										
Lummi Indian Reser. Dump	Chief Marlin Rd	98226	1			Drinking Wtr.	S			S	S	S	S														
			1			Groundwater	S																				
			1			Soil	S																				
			1			Surface Water	S																				
Lummi Shore Dump	Lummi Shore Dr. & Scott Rd.	98227	1			Drinking Wtr.	S		S	S	S	S	S	S								S	S	S	S		
			1			Groundwater	S																				
Maritime Contractors, Inc.	201 Harris Ave.	98225	1	1		Sediment	C			C	C	C	C						S								
			1	1		Groundwater	S																				
			1	1		Surface Water	S																				
			1	1		Soil	C		C																		
Maritime Heritage Cr Park	Central Ave. & W. Holly St.	98225	1	2		Soil	C			C	C																
			1	2		Groundwater	C																				
McGill Property	3431 Brillon rd.	98226	1			Groundwater	C							C													
			1			Drinking Wtr.	S																				
Murray Chris-Craft Cruisers-W.	9th & Harris	98225	4		2	Air	S																				
			4		2	Sediment	S																				
			4		2	Surface Water	S																				
			4		2	Groundwater	C			C																	
			4		2	Soil	S				S																
Northwest Pipeline/Bellingham	Britton Rd. & Mi. Baker Hwy.	98226	1			Soil	C			C	C																
			1			Air	S																				
Oscar Cedar/Lule Squaleum	730 Marine Dr.	98225	2		1	Air	C																				
			2		1	Groundwater	C																				
			2		1	Sediment	C																				
			2		1	Soil	C																				
Olivine Ash Landfill	928 Thomas Rd.	98226	1		1	Air	S			S	S																
			1			Groundwater	S																				
Port of Bellingham-4th/Harris	4th and Harris	98225	4	2		Groundwater	C																				
			4	2		Soil	C																				
			4	2		Air	S																				
			4	2		Sediment	S																				
Port of Bellingham/Hillon Harbor	1301 W. Holly St.	98225-2926	1	2		Groundwater	C																				
			1	2		Soil	S																				
			1	2		Sediment	S																				
			1	2		Surface Water	S																				
Port of Bellingham/Pier 3 Oil	Pier 3, Squaleum Way	98225	1			Soil	C			C	C																
			1			Surface Water	C																				
			1			Sediment	S																				



TABLE 3-8. CONFIRMED AND SUSPECTED CONTAMINATED SITES IN BELLINGHAM  
(Page 4 of 4)

Site Name	Address	Zip Code	Site <sup>a</sup> Site Code	Site <sup>b</sup> Site Stat	Warm <sup>c</sup> Site #	Affected Media	Status <sup>d</sup>	BINA	HOCs	Metals/ CN	Other Metals	PCB	Pesticides	Petro-leum	Petro-lics	Non-Halogenated Solvents	Dioxins	PAH	Res-sive Waste	Corro-sive Waste	Radi-oactive Waste	Conver-sions, On-pipe	Conver-sions, In-pipe	AJ
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<sup>a</sup> SITE STAT CODE = ECOLOGY SITE STATUS: Indicates the current status of sites relative to the MTCA cleanup process. Code choices are:

- 1 = Awaiting Site Hazard Assessment (SHA)
- 2 = Awaiting Remedial Action (RA)
- 3 = Remedial Action in Progress
- 4 = Independent Remedial Action
- 5 = Construction completed, Operation & Maintenance Underway
- 6 = RA Completed, Confidential Monitoring Underway
- 7 = RA Conducted, residual contamination left on site; on-going institutional controls required
- 8 = RA and all activities completed (no monitoring)

<sup>b</sup> IND SITE STAT = INDEPENDENT SITE STATUS: This column only applies to those sites undergoing an independent cleanup. Code choices are:

- 1 = Release report received, awaiting assessment by PFLP = Potentially Liable Person
- 2 = Independent Site Assessment or Interim RA Report received
- 3 = Final Independent RA Report received

<sup>c</sup> WARM BIN#: Indicates the outcome of the Washington Ranking Model (WARM). The WARM BIN Number will be a number between 1 and 5. A result of 1 indicates the greatest assessed risk to human health and to the environment. A result of 5 indicates the lowest assessed risk. A zero indicates that the site is either on the federal National Priorities List (NPL) or a sub-site or operable unit of an NPL site. NPL sites are ranked under the federal Hazard Ranking System (HRS).

<sup>d</sup> AFFECTED MEDIA: For each site, there may be contaminant information for up to six environmental media: Groundwater, surface water, air, soil, sediments or drinking water.

The media status column and the numbered contaminants type column may be coded:

- C(Confirmed) - The presence of hazardous substances has been confirmed by laboratory analysis (or field determination in the case of petroleum contamination).
- S(Suspected) - Due to preliminary investigations or the nature of business operations or manufacturing processes, certain contaminants are suspected to be present at the site.
- R (Remediated) - Contaminants have been treated or removed to meet cleanup levels established for the site. (This status determination may only be made by Ecology.)

- S = Suspected
- C = Confirmed
- R = Remediated

Frank Brooks Manufacturing Company ruptured and spilled oil containing 5-10 percent pentachlorophenol into Fever Creek. The oil was contained in Fever Creek by a sorbent boom until the creek water level dropped and the oil went under the boom and into Whatcom Creek. The spill was estimated to have caused the mortality of over 44,000 fish, including salmon, steelhead, and cutthroat trout.

### 3.2.5 Ports and Marinas

Port facilities and commercial and recreational marinas are potential sources of contaminants, primarily petroleum products and chemicals associated with boat maintenance and ship repair (e.g., copper- and tributyltin-based paints). The locations of these facilities is shown in Figure 2-3. Marine sediment investigations have been conducted at four locations: two locations at the Port of Bellingham, Squalicum Harbor Marina, and Maritime Contractors Shipyard. These locations and sediment sampling results are discussed below.

**3.2.5.1 Port of Bellingham.** The Port of Bellingham owns and operates two dock facilities (Figure 2-3). The North Terminal is located south of the Georgia-Pacific plant site. The South Terminal is located near Post Point just west of the mouth of Padden Creek. The South Terminal is also the location of the new Alaska State Ferry System Terminal. Several properties along or near the waterfront that belong to the Port of Bellingham have been identified as Confirmed or Suspected Contaminated Sites (see Section 3.2.3 and Table 3-8).

Sediment sampling conducted in the vicinity of the Alaska State Ferry System Terminal prior to construction did not indicate the presence of chemicals at concentrations that would cause adverse biological effects. Sediment sampling was also conducted by the Port of Bellingham in 1991 to assess possible sediment contamination in the vicinity of the Whatcom International Shipping Pier at the Port of Bellingham North Terminal near the mouth of Whatcom Creek Waterway. Sediment mercury, PAH, dibenzofuran, and pentachlorophenol concentrations detected in these samples exceeded sediment management standards-chemical criteria in at least one of the three surface sediment samples collected (see Section 4.1).

**3.2.5.2 Squalicum Harbor Marina.** The Squalicum Harbor Marina is located to the west of Whatcom Creek Waterway (Figure 2-3). Two locations in the harbor were sampled in March 1993 as part of the Phase II storm drain source tracing study (Cubbage 1994). Surface sediments were analyzed for metals, volatile organic compounds, chlorinated pesticides and PCBs, total organic carbon, grain size, chlorinated



phenols, and phenoxy herbicides. The concentration of phenol detected at both sediment sampling locations exceeded sediment management standards-chemical criteria.

**3.2.5.3 Maritime Contractors Shipyard.** The Maritime Contractors Shipyard is located west of Padden Creek near Post Point (Figure 2-3). Two subtidal sediment sampling locations and one intertidal location at the mouth of a storm drain were sampled within the shipyard in March 1993 (Cubbage, J., 14 October 1993, personal communication). Surface sediments were analyzed for grain size, total organic carbon, metals, volatile organic compounds, semi-volatile organic compounds, chlorinated pesticides and PCB, and organotin compounds. The sediment concentrations of copper, lead, and zinc at one of the subtidal stations and at the intertidal station exceeded the marine sediment criteria. Marine sediment standards for phenol were exceeded at the both subtidal locations. The Puget Sound Dredge Disposal interim screening level for tributyltin ( $30 \mu\text{g}/\text{kg}$ ) and the sediment quality standard for PCB were exceeded at all three locations. It was suggested that the shipyard was the source of PCB and tributyltin and that the storm drain was the source of the metals (Cubbage, J., 14 October, personal communication). Tributyltin was commonly used in anti-fouling bottom paint on ships, so shipyard activities would be the likely source of this contaminant.

### **3.2.6 Atmospheric Sources**

The atmospheric contribution of contaminants to aquatic environments is generally poorly known. Sources of contaminants include waste-to-energy power plants, and coal gasification plants, and non-point sources such as automobile exhaust, dust, and forest fires. Potentially significant sources of atmospheric pollutants in the Bellingham area include cement plants (which have burned coal and other fuels to produce cement), the coal gasification plant located in what is now Boulevard Park, and atmospheric emissions from the Georgia-Pacific facility, specifically from wood-waste fired power production, the chlor-alkali plant, and pulp and paper processing facilities. Contaminants associated with burning coal and wood include PAHs and metals.

## **3.3 IN-PLACE SOURCES**

In-place pollutants are found in bottom sediments in Bellingham Bay contaminated historically as the result of disposing of contaminated solids directly, or incorporated in sediments dredged from other

contaminated areas. These locations include Whatcom Waterway and sites in Bellingham Bay where sediments dredged from the waterway have been deposited (see Figure 2-3). Whatcom Creek Waterway was first dredged in 1935 and subsequent maintenance dredging occurred in 1940, 1942, 1949, 1953, and 1957. In 1961, an extensive dredging project expanded the Whatcom Creek Waterway and in 1966 maintenance dredging was performed. The disposal sites used for these operations are not known (PTI Environmental Services 1989).

In 1969, the U.S. Army Corps of Engineers (U.S. ACOE) performed maintenance dredging of Whatcom Creek Waterway using a submerged pipe dredge to remove 99,424 m<sup>3</sup> (130,042 yd<sup>3</sup>) of material which was disposed of at site A (Starr Rock) shown in Figure 2-3 (Broad et al. 1984). These sediments were likely contaminated to some degree as a result of historical pollutant discharges of Georgia-Pacific and City of Bellingham wastewater and other point and non-point discharges to Whatcom Creek Waterway. Georgia-Pacific dredged the inner waterway again in 1974. Dredge spoils from this operation were disposed of in a diked-off area within the Georgia-Pacific log pond (site E of Figure 2-3). This is the same general location where Georgia-Pacific later landfilled mercury contaminated sludge treated using the Chemfix® process (see Section 3.1.1).

The I&J Street Waterway was first dredged by the U.S. ACOE in 1966. The spoils from this project were deposited at site B shown in Figure 2-3. The U.S. ACOE began dredging the Squalicum Creek Waterway in 1931. It was dredged again in 1963, and spoils from this project were deposited at site D shown in Figure 2-3. Between 1979 and 1983 dredge spoils from a number of locations along the waterfront, including the Squalicum and I&J Street waterways, were deposited at site C shown in Figure 2-3.

In 1981, the U.S. ACOE diverted the mouth of Squalicum Creek from the inner tidal flats area back to its original location in the Squalicum Creek Waterway. The tidal flats area was then dredged to form the new small boat marina. Materials from this excavation were deposited in Site F (Figure 2-3) to form a parking area for the new marina facilities.

As part of the Puget Sound Dredge Disposal Analysis (PSDDA) program, a non-dispersive open-water disposal site has been located in the deep portion of Bellingham Bay off Post Point.

## 4.0 ENVIRONMENTAL MONITORING IN BELLINGHAM BAY

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Chemical and biological variables that have traditionally been used to evaluate the environmental effects of anthropogenic contamination in urban bays of Puget Sound include 1) sediment chemistry, 2) benthic invertebrate abundance and community structure, 3) laboratory tests of sediment toxicity, 4) tissue concentrations of contaminants in marine organisms, and 5) the occurrence of tissue abnormalities in marine organisms (e.g., liver lesions or tumors). Regulatory criteria have been developed for only the first three indicators. The available data for evaluating all five of these indicators in Bellingham Bay is summarized below.

### 4.1 SEDIMENT CHEMISTRY

Chemical analyses of Bellingham Bay sediments have been made since the 1970s (Table 4-1). Initial studies focused on sediment mercury contamination in the vicinity of Georgia-Pacific chlor-alkali plant discharges to Whatcom Creek Waterway (Bothner 1973; Nelson et al. 1974; Stanley 1980). Following diversion of these discharges in 1979 to the extended outfall in Bellingham Bay, a number of studies measured other metals and organic contaminants. Some of these studies were related to Puget Sound-wide assessments (Malins et al. 1982; Battelle 1986), including sampling conducted as part of the Puget Sound Ambient Monitoring Program (PSAMP) (Tetra Tech 1990) and surveys of DNR aquatic lands (Tetra Tech 1991). Other sediment sampling programs have focused on assessing sediment quality associated with particular discharges or dredging projects (see Table 4-1).

Sediment chemistry results for fourteen of the surveys identified in Table 4-1 have been entered into Ecology's SEDQUAL data base (Vu, T., 26 April 1995, personal communication). Sampling locations for these surveys are shown in Figure 4-1. Ecology used these data to provide a generalized sediment quality screening evaluation for the inner harbor area of Bellingham Bay (see Figure 2-4). Ecology grades SEDQUAL data into one of four levels of quality (Ecology 1991):

TABLE 4-1. SUMMARY OF SEDIMENT CONTAMINANT STUDIES IN BELLINGHAM BAY

Survey Description	Duration	Sponsor	Reference
Bellingham Bay Mercury Study	1970-1973	University of Washington	Bothner 1973; Crecellius et al. 1975; Bothner et al. 1980
1985 Puget Sound Eight-Bay Survey <sup>a</sup>	1983, 1984	U.S. EPA	Battelle 1986
Post Point WWTP Sediment Studies	n/a	City of Bellingham	CH2M Hill 1984
Columbia Cement Proposed Maintenance Dredging <sup>a</sup>	January 1986	Columbia Northwest Corp.	n/a
National Status & Trends Program	1986, 1987	NOAA	NOAA 1991
NPDES Class II Inspection - Post Point WWTP <sup>a</sup>	August 1987	Ecology	Reif 1988
NPDES Class II Inspection - Georgia-Pacific <sup>a</sup>	August 1988	Ecology	Hallinan and Ruiz 1990
Alaska Ferry Terminal Construction Survey <sup>a</sup>	March 1989	City of Bellingham	n/a
PSDDA Phase 2 Baseline Survey <sup>a</sup>	April-May 1989	Ecology	n/a
PSAMP - 1989 Sediment Survey <sup>a</sup>	1989	Ecology	Tetra Tech 1990
Maintenance Dredging of Bellingham Bay <sup>a</sup>	Nov. 1990-Nov. 1991	U.S. ACOE/Port of Bellingham	n/a
PSAMP - 1990 Sediment Survey <sup>a</sup>	1990	Ecology	n/a
Aquatic Lands Sediment Quality Reconnaissance <sup>a</sup>	February 1991	DNR	Tetra Tech 1991
PSAMP - 1991 Sediment Survey <sup>a</sup>	1991	Ecology	n/a
Port of Bellingham International Shipping Pier Replacement <sup>a</sup>	April 1991	Port of Bellingham	n/a
NPDES Class II Inspection - Georgia-Pacific <sup>a</sup>	April 1993	Ecology	Golding 1994
Sediment Sampling at Maritime Contractors Shipyard	March 1993	Ecology	Cubbage, J., 14 October 1993
Sediment Sampling at Squalicum Harbor Marina	April 1993	Ecology	Cubbage 1994
Sediment Sampling in Whatcom Creek	April 1994	Ecology	Cubbage 1994
Metals Study of Bellingham Bay <sup>a</sup>	March 1993	Ecology	Cubbage, J., 7 June 1993

<sup>a</sup> Data contained in Ecology's SEDQUAL Database.



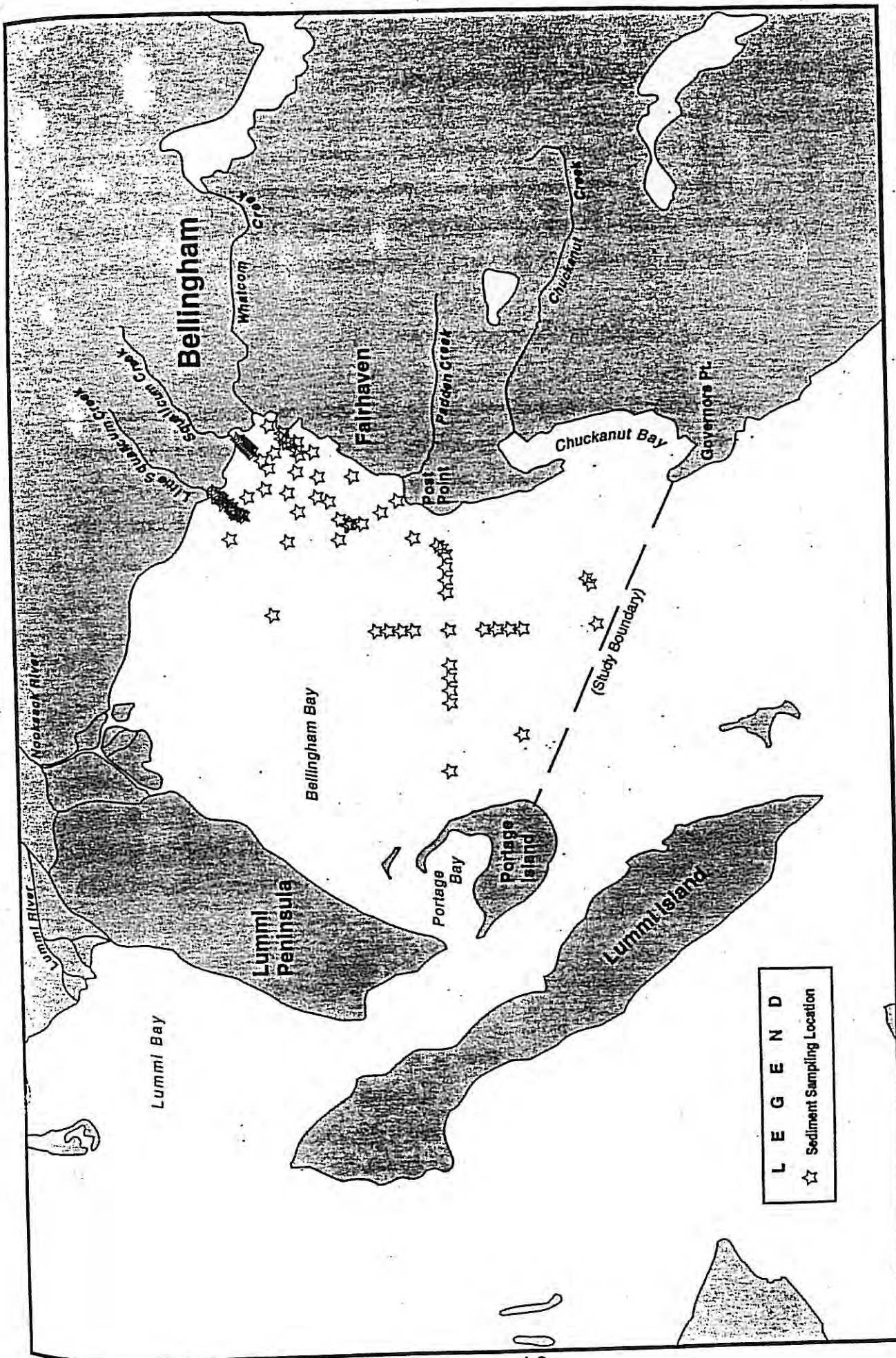


Figure 4-1. Sediment Sampling Locations in Bellingham Bay Contained in Ecology's SEDQUAL Database.

Level 1 Data are acceptable for all project uses.

The data are supported by appropriate documentation that confirms their compliance with quality assurance and quality control requirements listed in Puget Sound Estuary Program protocols or other methods authorized by Ecology and allows comparison with data that will be generated during the cleanup study.

Level 2 Data are acceptable for most project uses.

Appropriate documentation may not be available to confirm conclusions on data quality or to support legal defensibility. These data are supported by a summary of quality control information, and the environmental distribution suggested by other studies. The data are thus considered reliable and potentially comparable to data that will be produced during the cleanup study.

Level 3 Data are acceptable for screening-level analyses.

The data can be used to estimate the nature and extent of contamination. No supporting quality control information is available, but standard methods were used, and there is no reason to suspect a problem with the data based on 1) an inspection of the data, 2) their environmental distribution relative to data produced by other studies, or 3) supporting technical reports. These data should be considered estimates and used only to provide an indication of the nature and possible extent of contamination.

Level 4 Data are not acceptable for use in the cleanup decision process.

The data may have been acceptable for their original use. However, little or no supporting information is available to confirm the methods used, no quality control information is available, or there is documentation in technical reports that suggests the data may not be acceptable for use in regulatory decision-making.

The SEDQUAL data for Bellingham Bay meet the data quality requirements of Level 2 and in some cases Level 1 (Vu, T., 26 May 1995, personal communication). Therefore, these data are acceptable for use in the preliminary screening-level analysis presented below.

A preliminary screening analysis was conducted using the marine sediment quality standards-chemical criteria (Table I, WAC 173-204) and the detected metals and organic compounds for which quality standards are available. The contaminants were separated into the following groups for discussion and presentation: 1) metals, 2) low-molecular weight PAHs, 3) high-molecular weight PAHs, 4) dibenzofuran, 5) phthalates, and 6) phenols. Constituents which have organic carbon-normalized criteria but which were not accompanied by analysis of sediment total organic carbon (TOC) content were analyzed assuming a sediment TOC content of 1 percent as recommended by Ecology (1991).

#### **4.1.1 Metals**

Locations of stations exceeding the sediment quality criteria for metals are shown in Figure 4-2. The mercury criterion was exceeded at 39 stations, the copper criterion at one, and the arsenic and zinc criteria at one. Mercury contamination of sediments extends from the mouth of Whatcom Creek Waterway to offshore areas in the vicinity of the Post Point WWTP outfall.

#### **4.1.2 Low Molecular Weight PAH**

Locations of stations exceeding sediment quality criteria for low molecular weight PAHs are shown in Figure 4-3. These exceedances were for acenaphthene, anthracene, fluorene, phenanthrene, and 2-methylphenol, all measured during the Port of Bellingham Whatcom International Shipping Pier replacement project, and for phenanthrene measured in the Squalicum Creek Waterway as part of a maintenance dredging project.

#### **4.1.3 High Molecular Weight PAH**

A number of high molecular weight PAH compounds exceeded sediment criteria at a few locations in inner Bellingham Bay (Figure 4-4). Exceedances were noted at two locations sampled as part of a maintenance dredging project, one location at the Georgia-Pacific log pond sampled as part of the 1988 Class II Inspection conducted by Ecology, and at two locations sampled as part of the Whatcom International Shipping Pier replacement project.



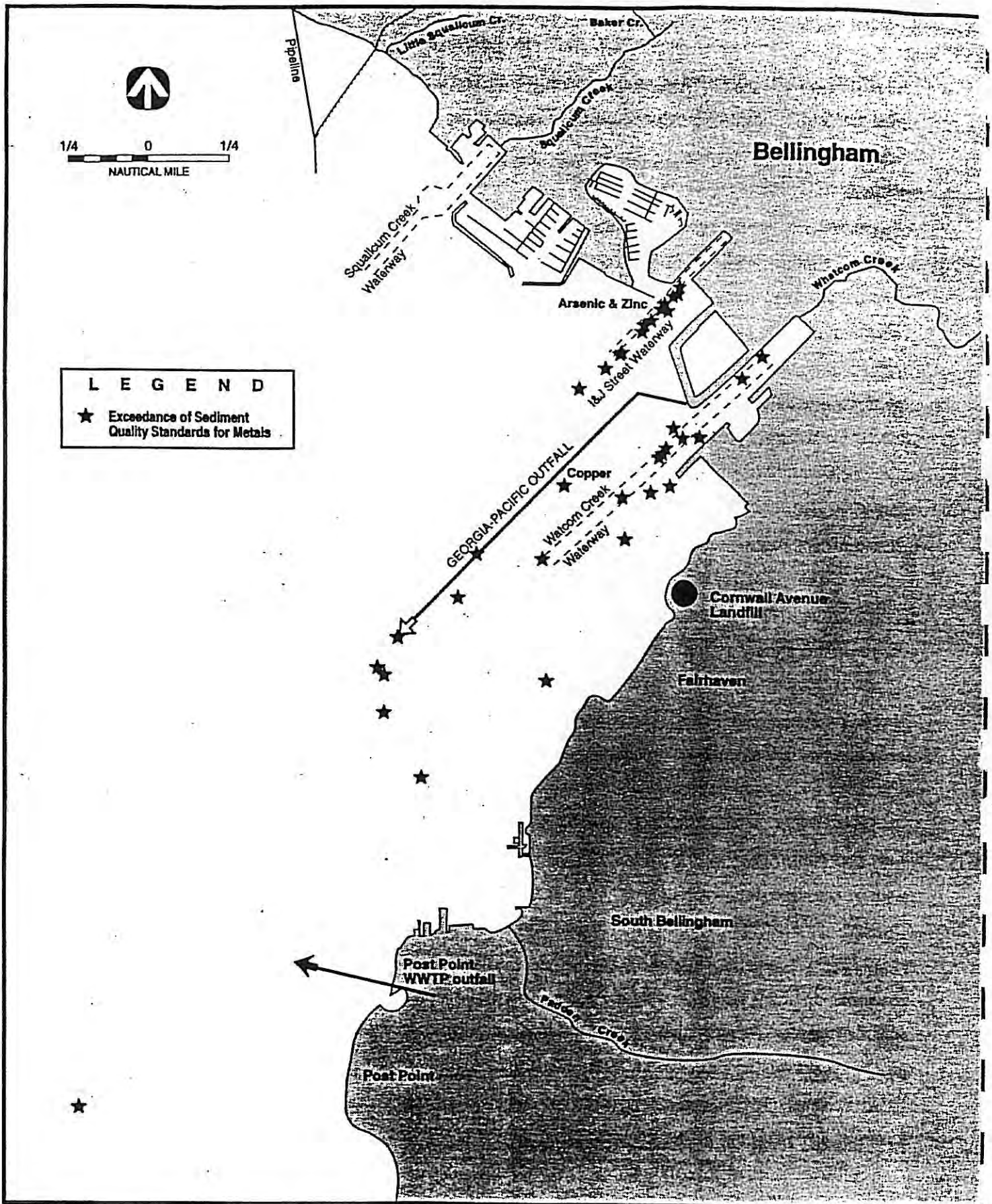


Figure 4-2. Exceedances of Sediment Quality Standards for Detected Metals. [Note: All exceedances are for mercury except where noted.]



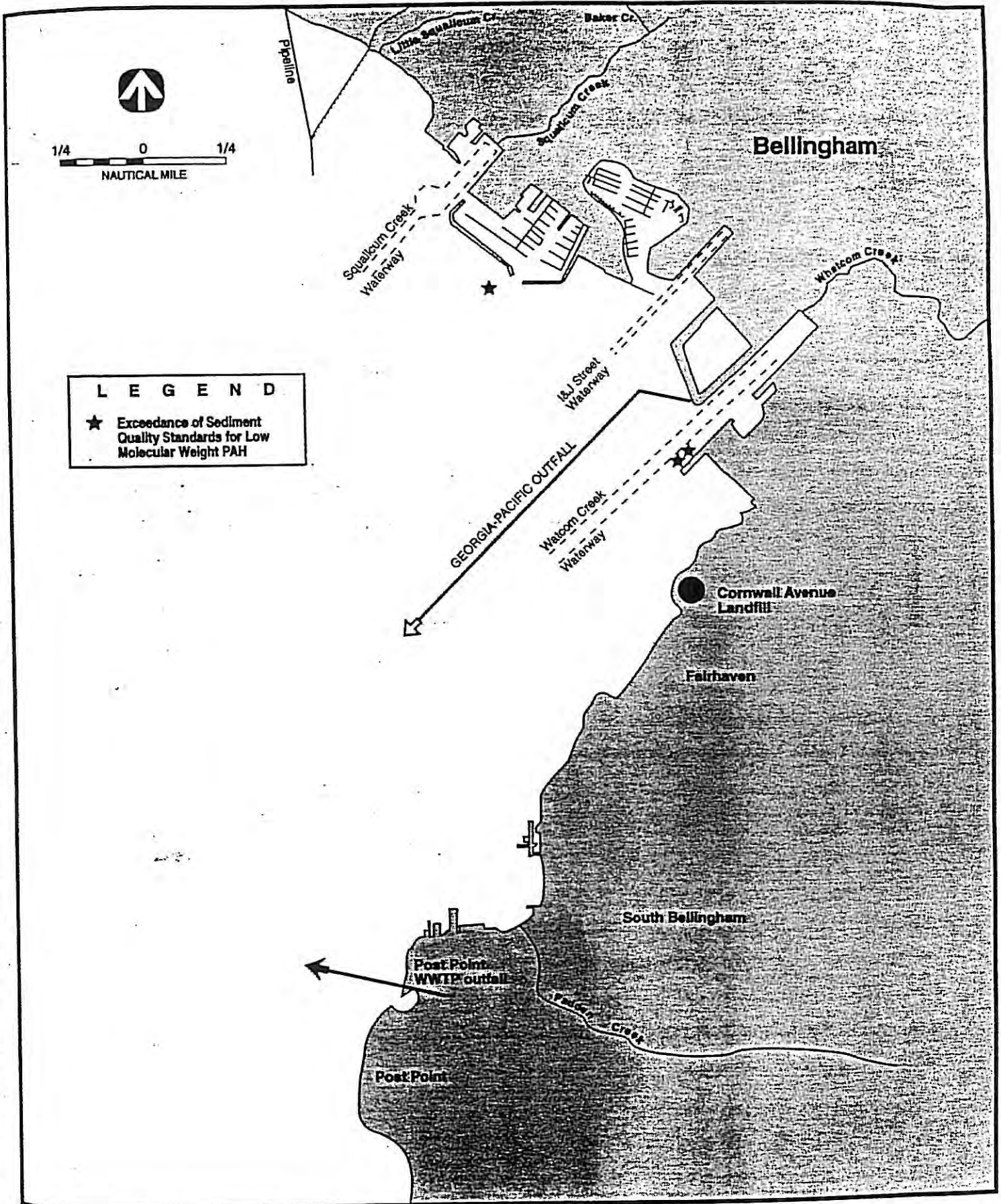


Figure 4-3. Exceedances of Sediment Quality Standards for Detected Low Molecular Weight PAH.

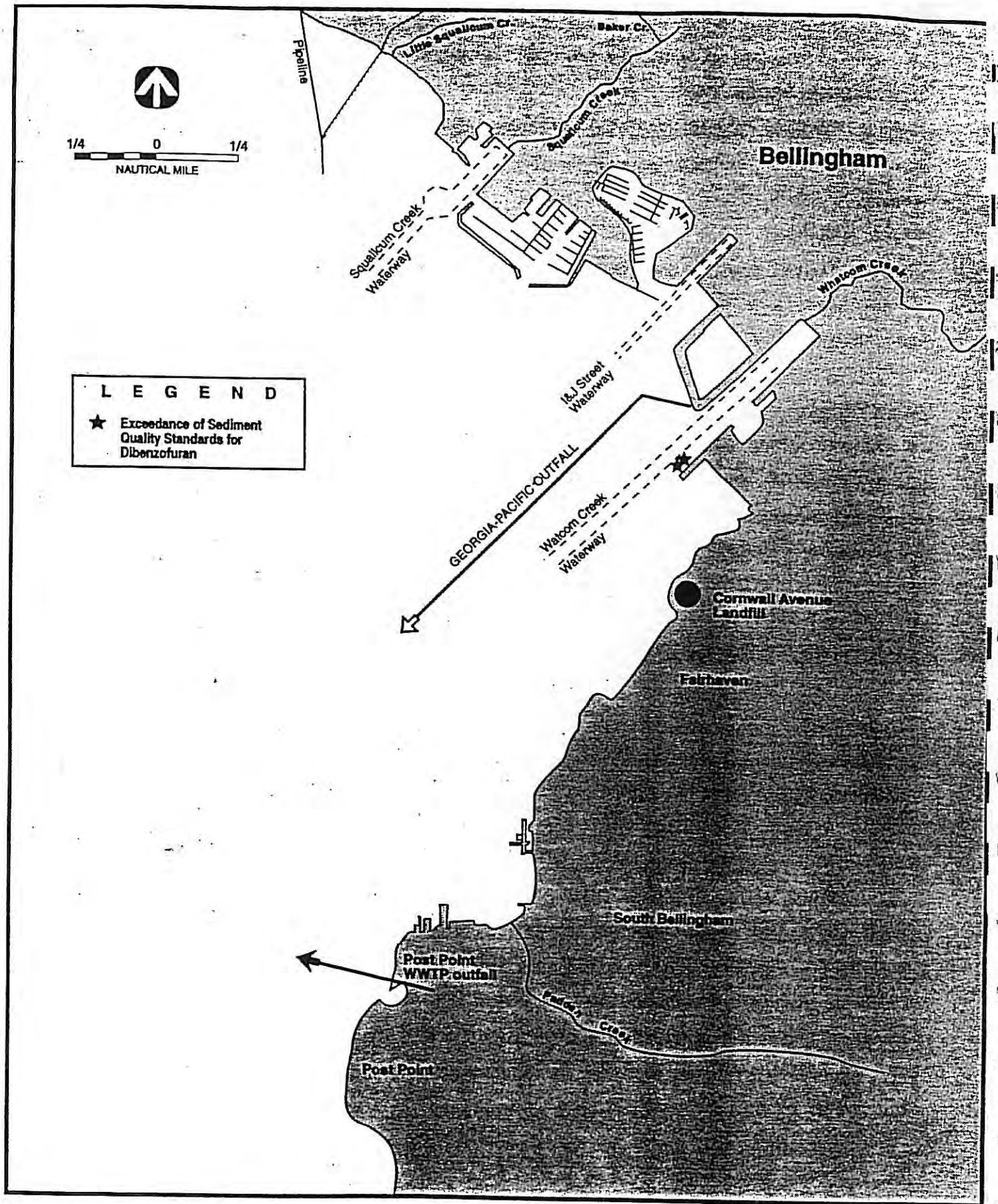


Figure 4-5. Exceedances of Sediment Quality Standard for Dibenzofuran.



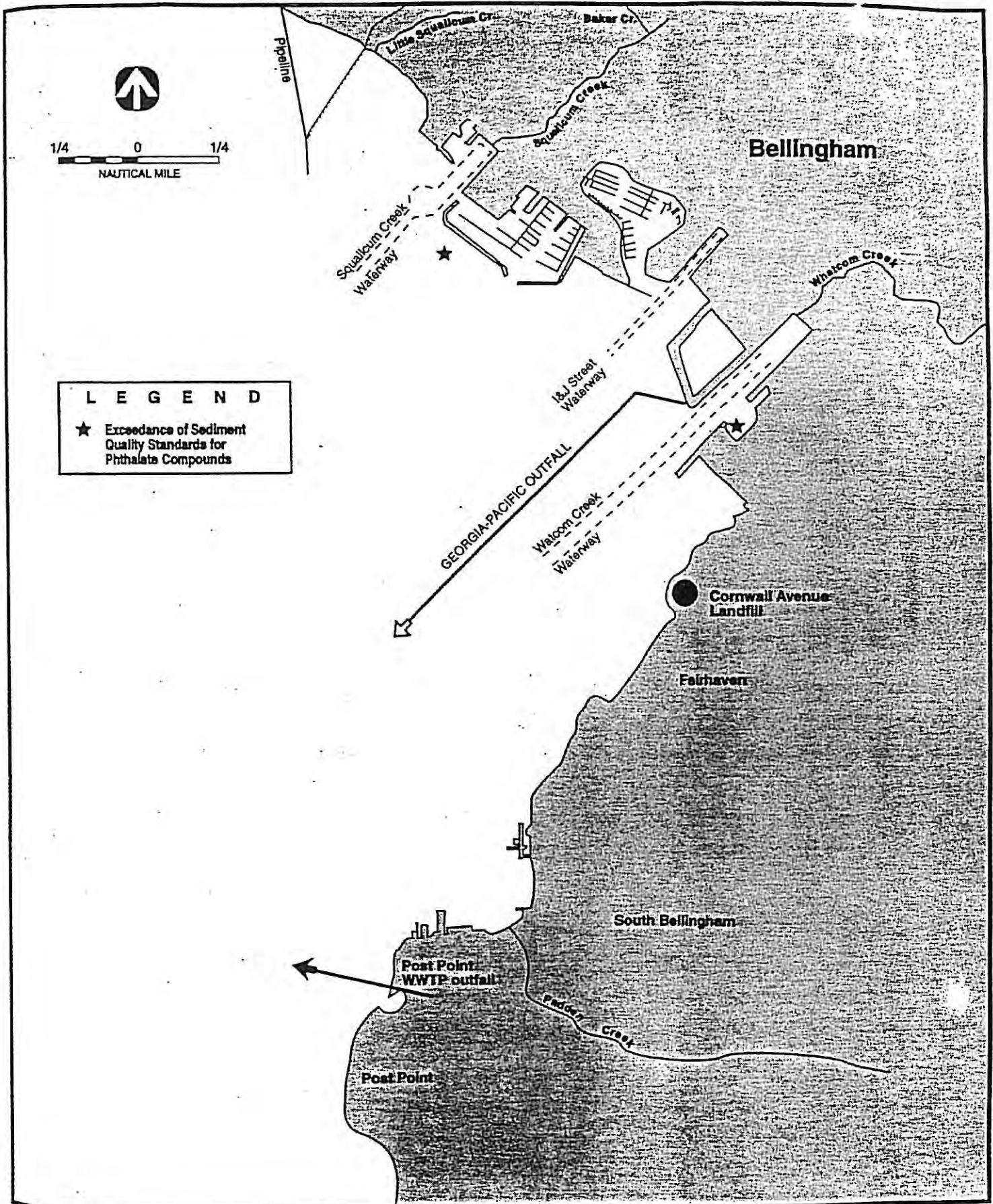


Figure 4-6. Exceedances of Sediment Quality Criteria for Detected Phthalate Compounds. [Note: Only bis(2-ethylhexyl)phthalate exceeded the standards.]

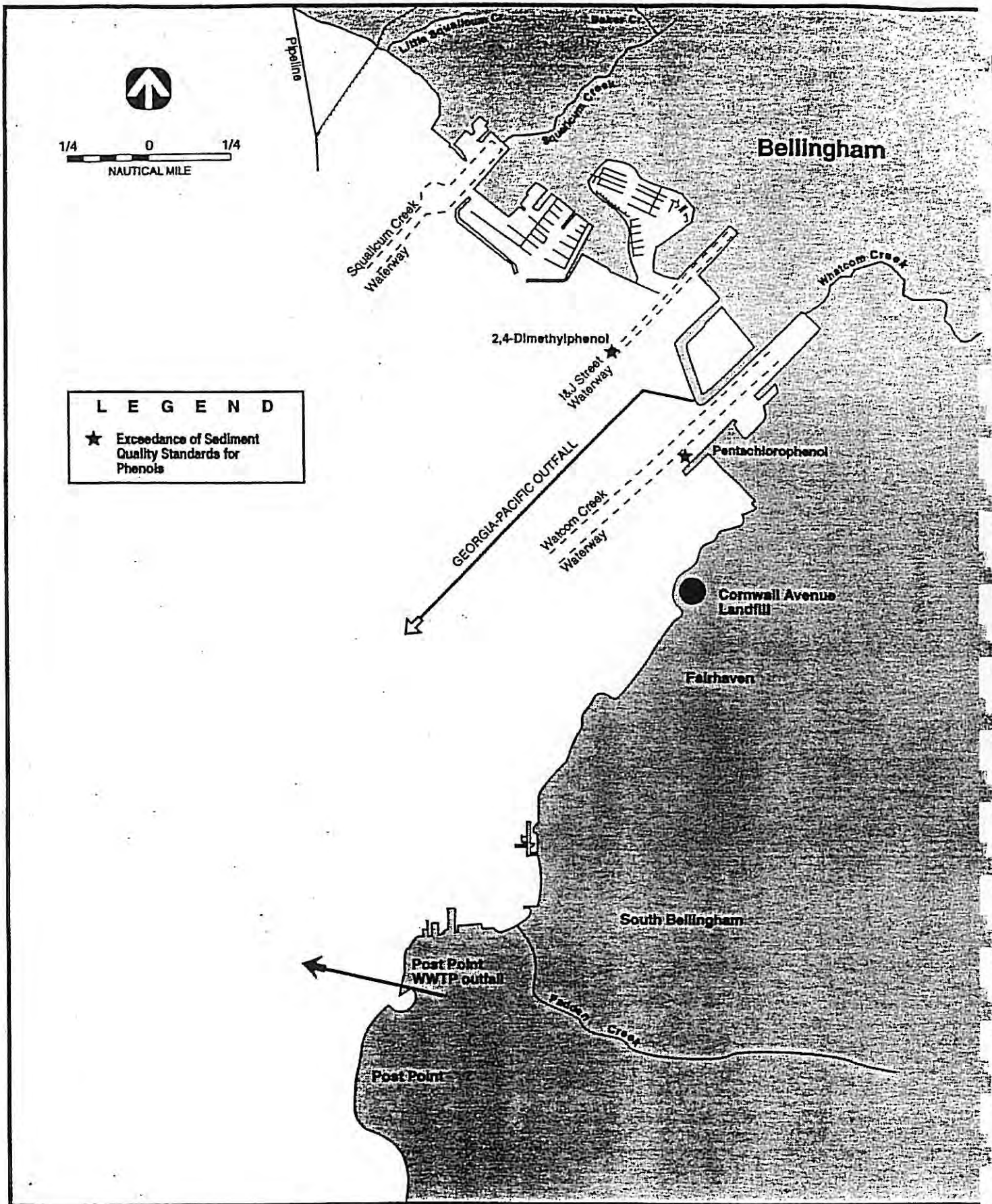


Figure 4-7. Exceedances of Sediment Quality Criteria for Detected Phenols.



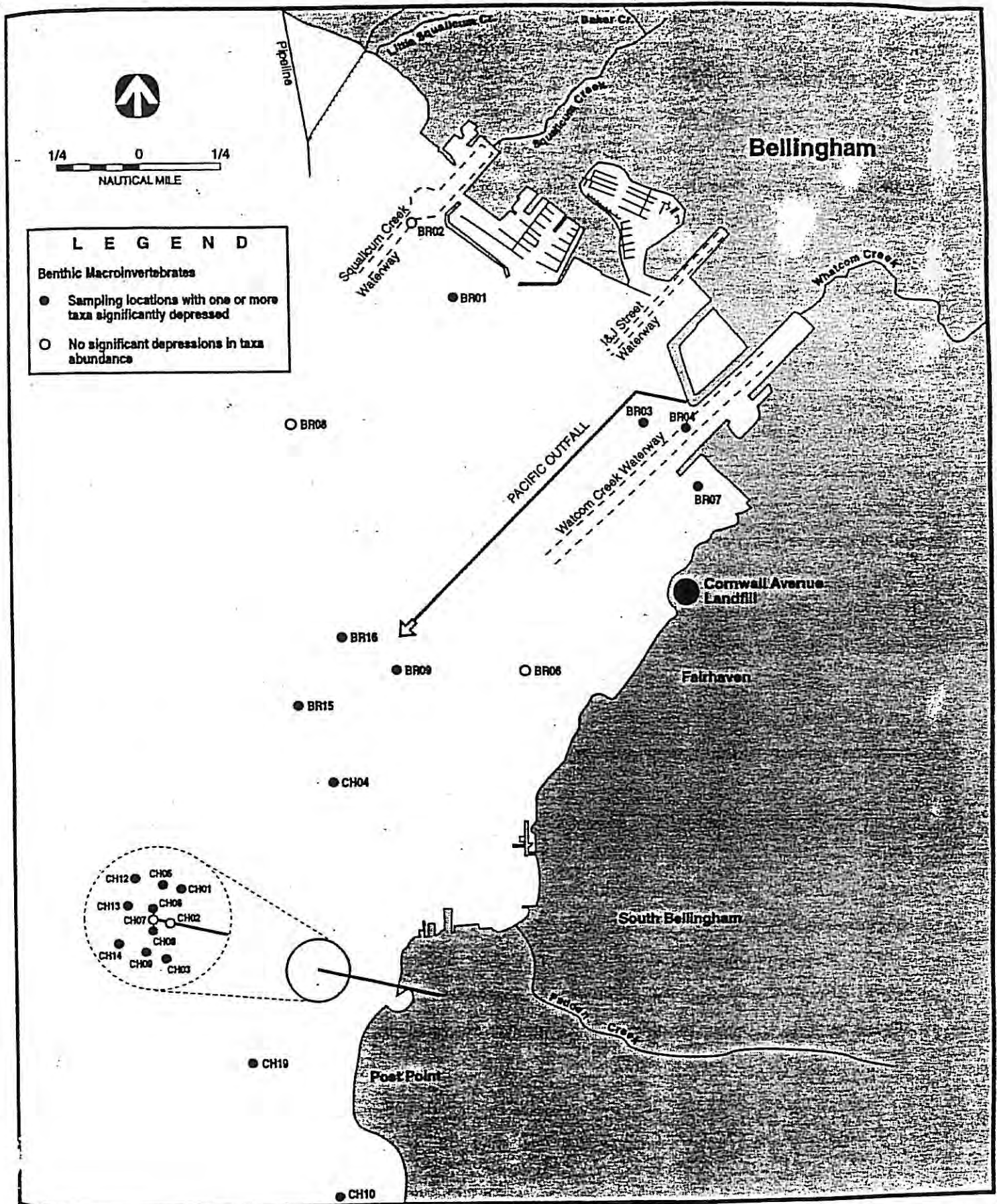


Figure 4-8. Locations of Stations Sampled for Benthic Macroinvertebrates in Inner Bellingham Bay.

### 4.3 SEDIMENT TOXICITY

Only five studies conducted in or adjacent to inner Bellingham Bay have assessed the toxicity of sediments to laboratory test organisms. These were conducted by Chapman et al. (1984), Batelle (1986), Reif (1988) near the Post Point WWTP outfall, Hallman and Ruiz (1990) at the Georgia-Pacific outfall, and Golding (1994) at the Georgia-Pacific log pond. Whatcom Creek sediments were assessed as part of the Phase II storm drain source tracing study (Cubbage 1994).

All of these studies used the acute amphipod (*Rhepoxynius abronius*) mortality test which can be used in conjunction with other acute and chronic tests to establish whether or not adverse effects to benthic organisms are likely to occur. Sediment locations where acceptable amphipod bioassays were performed are shown in Figure 4-9. Assuming that only bioassays that result in less than 75 percent survival are biologically meaningful (Mearns et al. 1986), the areas identified as potentially toxic to benthic organisms include the vicinity of the Post Point outfall (station RE01), outer Whatcom Creek Waterway (station BA05), the Georgia-Pacific log pond (station E904), and a location in Whatcom Creek (station WHAT1). The lowest amphipod survival (23 percent) was observed in sediments collected from the Georgia-Pacific log pond during a Class II inspection conducted by Ecology in 1988 (Hallinan and Ruiz 1990). The sediment concentration of mercury and two PAH compounds, benzo[g,h,i]perylene and indeno[1,2,3-cd]pyrene, exceeded sediment quality standards. Mercury exceeded the standard of 0.41 mg/kg by approximately two orders of magnitude.

The most recent complete Class II inspection of Georgia-Pacific (April 1993) sampled sediments near the extended outfall only (Golding 1994). In addition to the acute amphipod bioassay, the acute mussel (*Mytilus edulis*) larval mortality/abnormality bioassay and the acute juvenile polychaete (*Neanthes arenaceodentata*) mortality bioassay were performed on these sediments. The acute mussel larval test showed significant depressed survival at both station SED1 (65 percent) and SED2 (76 percent). The mussel test also showed significant abnormality at station SED1 (26 percent), the same station that showed significant mussel larval mortality. The *Neanthes* test indicated a biologically significant response at station SED2 (76 percent survival).

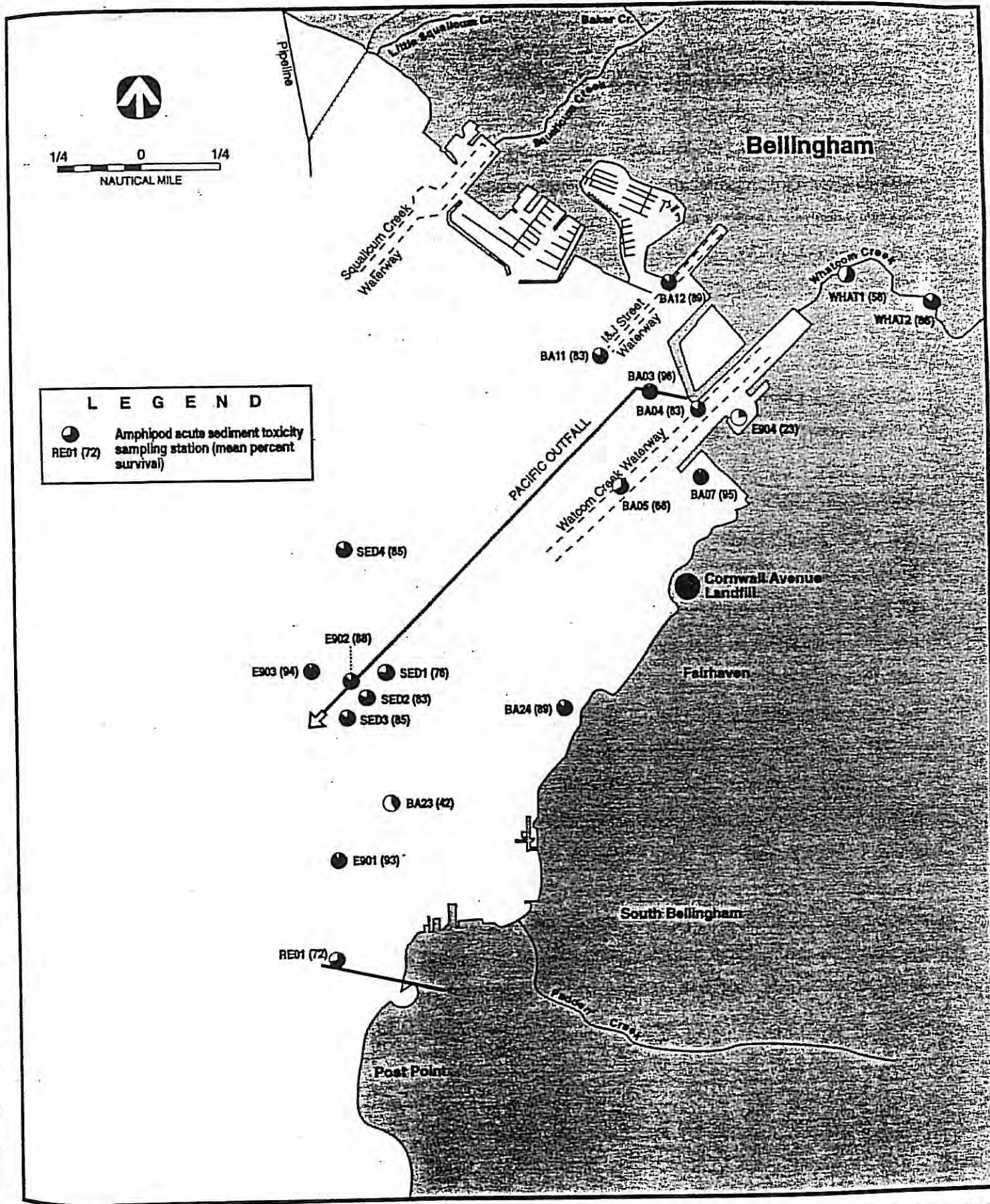


Figure 4-9. Locations of Stations Sampled for Sediment Toxicity in Inner Bellingham Bay.



#### 4.4 CONTAMINANT BIOACCUMULATION

The bioaccumulation of contaminants has the potential to cause acute and chronic toxicity to marine organisms. The consumption of certain contaminated seafoods can affect human health. There are currently no state standards for contaminant concentrations in biota to protect aquatic life or human health. Assessment of potential human health impacts is typically based on two approaches. The first approach uses the U.S. Food and Drug Administration (FDA) guidelines for contaminants in food called the FDA Action Levels (U.S. FDA 1984 and 1985). If the FDA Action Level of a particular contaminant is exceeded in a sampled food product, the product cannot be sold commercially. The second approach involves a risk-based analysis of potential carcinogenic and non-carcinogenic health effects based on assumptions regarding consumption rate and duration of exposure of humans to contaminated foods.

Mercury has been the primary focus of bioaccumulation studies conducted in Bellingham Bay since at least 1973 (Rasmussen and Williams 1975; Nelson et al. 1974; Roesijadi et al. 1981; CH2M Hill 1984). However, more recent studies have included the analysis of additional metals (arsenic, lead, cadmium), PCBs, pesticides, pentachlorophenol, and PAHs (NOAA 1989; Cubbage 1991; SAIC 1991). These more recent studies provide the most relevant data for assessing potential adverse effects to aquatic organisms and human health. Although a risk-based screening of the existing data is beyond the scope of this report, some generalizations can be made based on comparing existing data to FDA Action Levels. In general, tissue mercury concentrations in clams and crabs in Bellingham Bay have declined over time and are currently below the FDA Action Level of 1.0 mg/kg wet weight. The highest concentration of mercury measured in edible tissue collected during the two most recent studies was 0.15 mg/kg wet weight which was measured in a Dungeness crab (*Cancer magister*) sample collected from the mouth of Whatcom Creek Waterway (Cubbage 1991). FDA Action Limits were also available for comparing total PCBs (2 mg/kg wet weight), DDE (5 mg/kg wet weight), and chlordane (0.3 mg/kg wet weight) concentrations measured in these studies. All muscle tissue analyses of crab and clam indicated concentrations of PCBs, DDE, and chlordane well below the current FDA Action levels for these compounds (Cubbage 1991).



#### 4.5 TISSUE ABNORMALITIES

Tissue abnormalities have also been used as indicators of adverse environmental effects in urban bays of Puget Sound (Malins et al. 1982). The prevalence of histopathological lesions of the liver (i.e., neoplasms and necrotic lesions) in English sole (*Parophrys vetulus*) has been used as a key biological indicator. However, no information is available on tissue abnormalities in aquatic organisms collected from Bellingham Bay. Malins et al. (1982) reported no liver lesions in English sole collected off Eliza Island, approximately 2 km (1.3 mi) south of the study area.

## **5.0 CORNWALL AVENUE LANDFILL AND R.G. HALEY SITES**

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The Cornwall Avenue Landfill underlies property currently leased by DNR to the Georgia-Pacific West Corporation. The landfill has been identified by Ecology as a confirmed or suspected contaminated site under the Model Toxics Control Act, and graded 2 on a scale of 1 to 5, where grade 1 is the highest priority for investigation and remedial action (Ecology, no date, size hazard assessment). The only other site within 1/4 mile of the landfill that has been identified by Ecology as a confirmed or suspected contamination site is the former R.G. Haley International Corporation, Inc. wood treatment facility, which is adjacent to the landfill (Figure 5-1). This site has been given the grade of 3 on the above scale.

Section 5.1 is a detailed history of this site and the surrounding area prepared by HRA, Inc. Sections 5.2 and 5.3 review contaminant sampling processes and results from this site and the immediate vicinity.

### **5.1 HISTORICAL OVERVIEW OF CORNWALL AVENUE LANDFILL AND VICINITY**

#### **5.1.1 Early Industries in Bellingham Bay**

During the nineteenth century, Bellingham Bay became one of the first industrial areas in Washington. Lumbering began in the early 1850s with the development of a saw mill on Whatcom Creek. Vast stores of timber soon attracted additional lumbering operations along Bellingham Bay, which provided access to markets. During the early 1850s, settlers also discovered coal, and established the first coal mining operation in Washington Territory (Anonymous 1902, Moen 1969).

In 1853, Henry Hewitt and William Brown found an outcropping of coal while scouting for logs near Sehome Hill, south of what is now Laurel Street, between State Street and the shoreline. The claim was sold to a group of San Francisco businessmen, who organized the Bellingham Bay Coal Company. In 1855, they opened the Sehome Mine, which produced at the rate of 500 tons per year. Its shaft began at the intersection of Railroad Avenue and Myrtle Street, eventually extending as far northwest as the

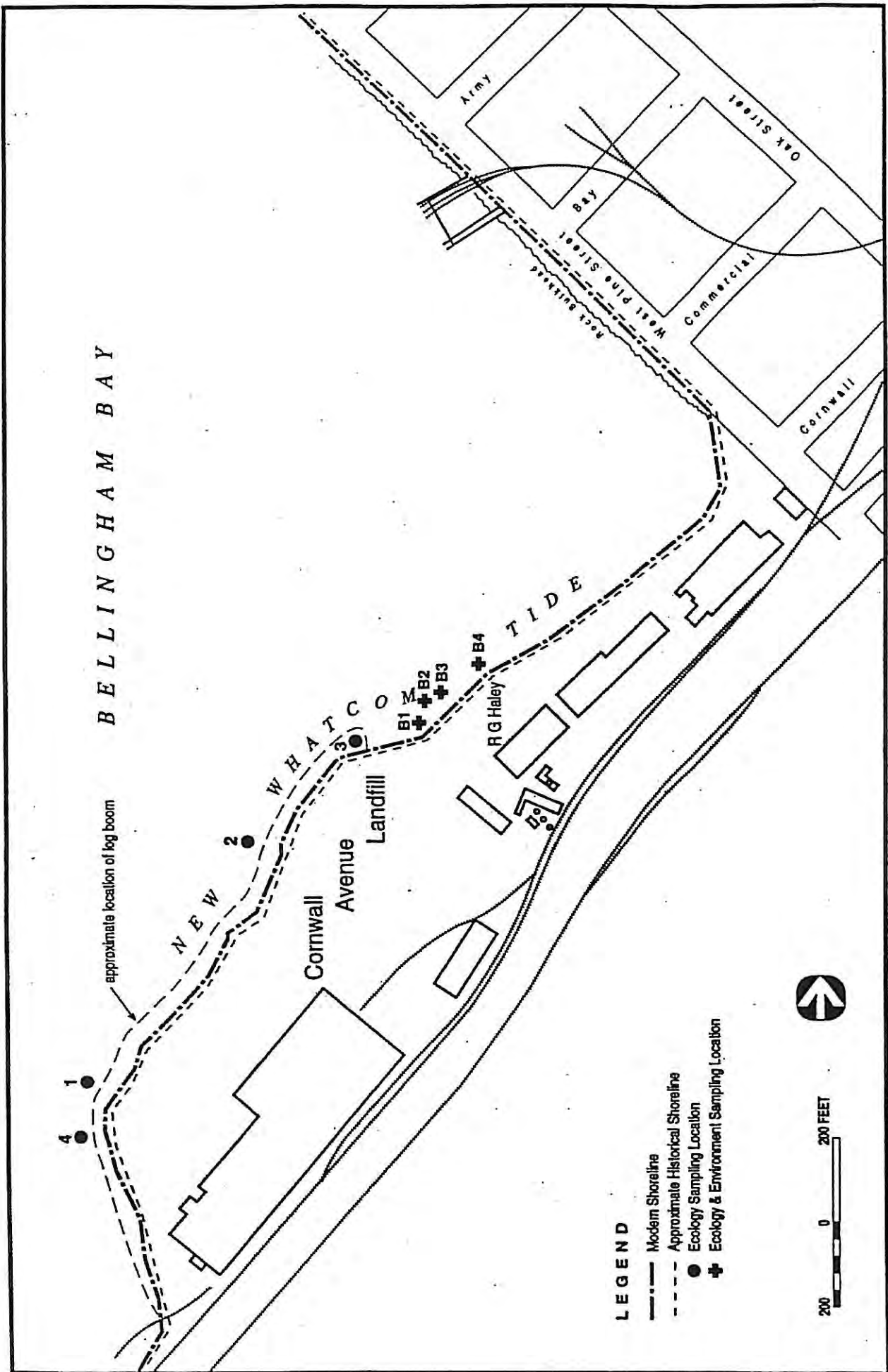


Figure 5-1. Cornwall Landfill Area and Offshore Intertidal Sampling Locations.

intersection of Champion, Unity and Dock (now Cornwall) Streets. The Sehome vein proved to be 17 feet thick, and the dip and the strike carried the seam under the waters of Bellingham Bay. The Washington State Division of Mines and Geology reported that Sehome coal was mined beneath the tidewaters (Batchelor 1982).

Operation of the Sehome Mine was periodically interrupted by fires caused by explosive gases, and flooding owing to inadequate pumping equipment. By 1878, its supply of coal had dwindled, and the mine shut down (Batchelor 1982, Tweit interview 1995). A map dated 1966 indicates that coal mining activity covered an approximate area that includes what is now the Cornwall Landfill (Washington Surveying and Rating Bureau). Coal mining continued in the Bellingham Bay area after the Sehome Mine closed. Workers loaded coal at the Sehome wharf, located at the foot of Dock Street, which became Cornwall in the mid-1920s. This structure, which remained in use through the early twentieth century, featured rail lines to the edge, and chutes to drop the coal into the cargo compartments of waiting ships (Scott and Turbeville 1980) (Figure 5-2).

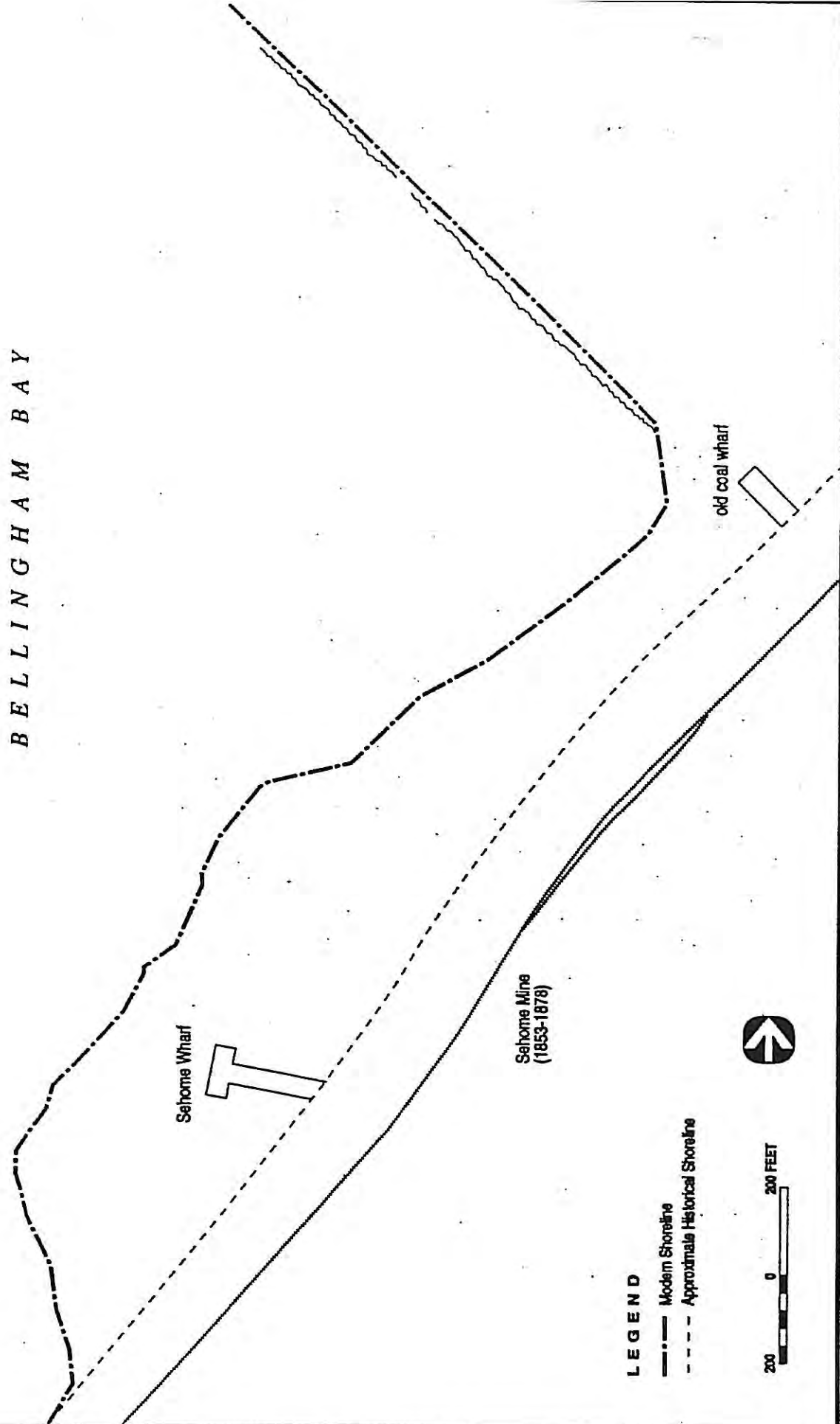
#### **5.1.2 Bellingham Bay Improvement Company**

The mild success of the coal industry encouraged additional development of the area at the foot of Dock Street. In 1883, investors in the Bellingham Bay Coal Company formed the Bellingham Bay and British Columbia Railroad Company to promote the area as a terminus for the transcontinental railroad. During the 1880s, the company constructed a rail line from the tidewater to the national boundary, where it connected with the Canadian Pacific Railroad. In 1889, Cornwall and the other investors established the Bellingham Bay Improvement Company (BBIC), to develop the Bellingham Bay area through real estate platting and sales. The Bellingham Bay and British Columbia Railroad Company operated under the BBIC's charter, which called for starting new industries and building additional transportation systems (Prosser 1903, Kraig 1981, Kraig 1989).

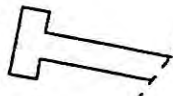
In 1891, the BBIC constructed a saw mill along the waterfront, using the Sehome wharf at the foot of Dock Street. A map of the BBIC's early facilities dated 1891 indicates that a "dump," perhaps associated with lumbering operations, was located at Elk and Beech Streets, near the project area (Whatcom County Appraiser's Map 1891). Although Historical Research Associates did not locate additional references, this map could indicate that dumping remained a longstanding use of the property. The BBIC mill, which became the second largest on Puget Sound, featured a capacity of two hundred thousand feet of lumber



B E L L I N G H A M B A Y



Sehome Wharf



Sehome Mine  
(1853-1878)

old coal wharf

LEGEND

- Modern Shoreline
- - - Approximate Historical Shoreline

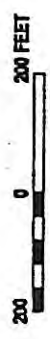


Figure 5-2. Cornwall Landfill Area 1880-1890.

every ten hours, and employed 200 workers. "Perhaps no other one company has done as much for the improvement and progress" of Bellingham, noted one historian in 1903, "for it has largely promoted industrial and commercial interests with the result that the city's growth has been augmented and its prosperity largely increased" (Prosser 1903). In 1911, the BBIC petitioned the Board of State Land Commissioners to fill in a portion of the harbor in the project area. For all its early promise, however, the BBIC proved to be short-lived. By 1912, the Bellingham Securities Syndicate had purchased its properties, and the mill and rail lines were sold to private investors, signalling the end of an era of high expectations and boosterism in the Bellingham Bay area. In 1933, the Bellingham Bay Improvement Company dissolved, and around 1940, the Bellingham Securities Syndicate also disbanded (Kraig 1989) (Figures 5-3 and 5-4).

### **5.1.3 Bloedel Donovan Lumber Company**

In 1913, the Bloedel Donovan Lumber Company purchased the mill at the foot of Dock Street. This entity resulted from the merging of the Lake Whatcom Logging Company and the Larson Lumber Company that same year (Clark 1969). By 1918, Bloedel Donovan had remodeled the mill, adding a sash and door factory as well as a box factory. The company stored 40 million feet of box lumber at the site, and maintained one of the largest privately-owned deep water docks on the Pacific Coast (Koert and Biery 1980) (Figure 5-4).

In 1925, the State of Washington leased portions of the project area to the Bloedel Donovan Lumber Company, stating that "The lessee shall not make or suffer to be made any artificial filling in of said leased area or any deposit of rock, earth, ballast, refuse, garbage or other matter within such area, except as provided by law or as approved in writing by the Commissioner of Public Lands" (State of Washington 1925). By World War II, timber reserves had become depleted, and Bloedel Donovan holdings were liquidated in 1945 and 1946. In 1942, the company assigned a portion of its lease to the Port of Bellingham, which purchased the mill in 1947 for \$75,000 (Edson, no date) (Figures 5-5 to 5-7).

### **5.1.4 Brooks Lumber Company/American Fabricators**

During the early twentieth century, Frank N. Brooks became "one of the prominent operators" in Bellingham's lumber industry. Described as a "true westerner," Brooks was a native of Minneapolis who established the Brooks Lumber Company in Michigan in 1914. Five years later, he moved his business to

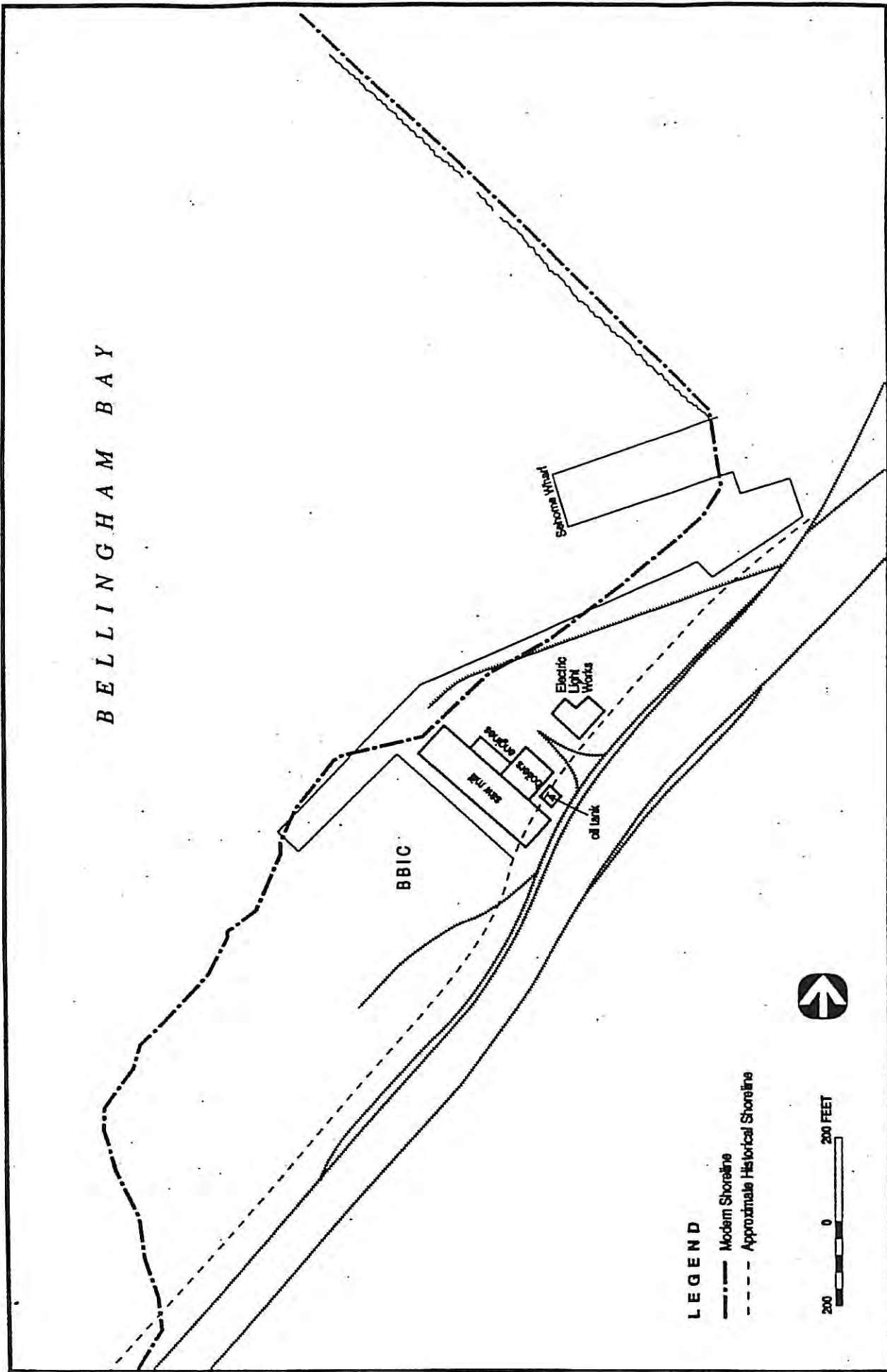


Figure 5-3: Cornwall Landfill Area 1890-1900.

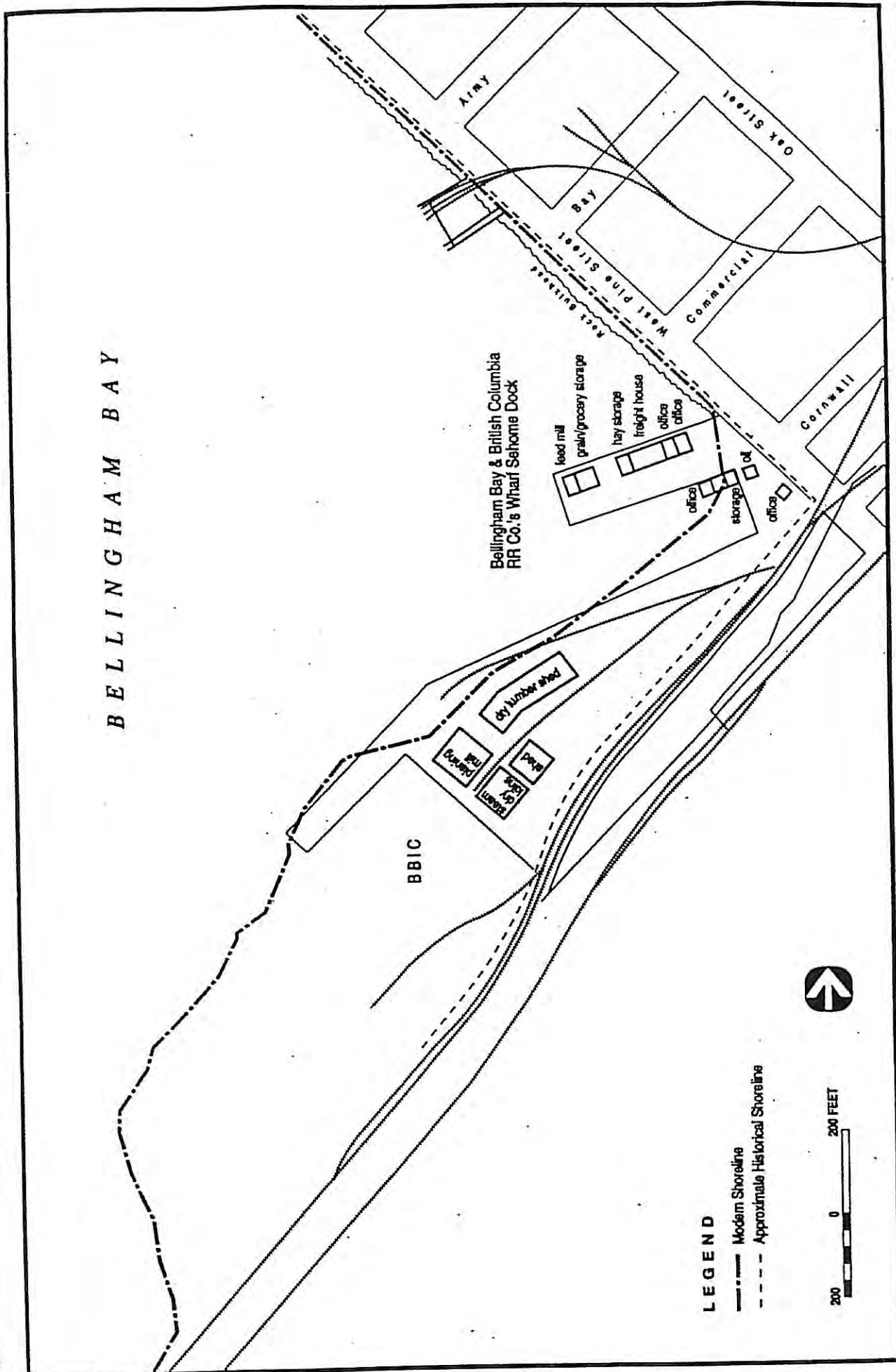
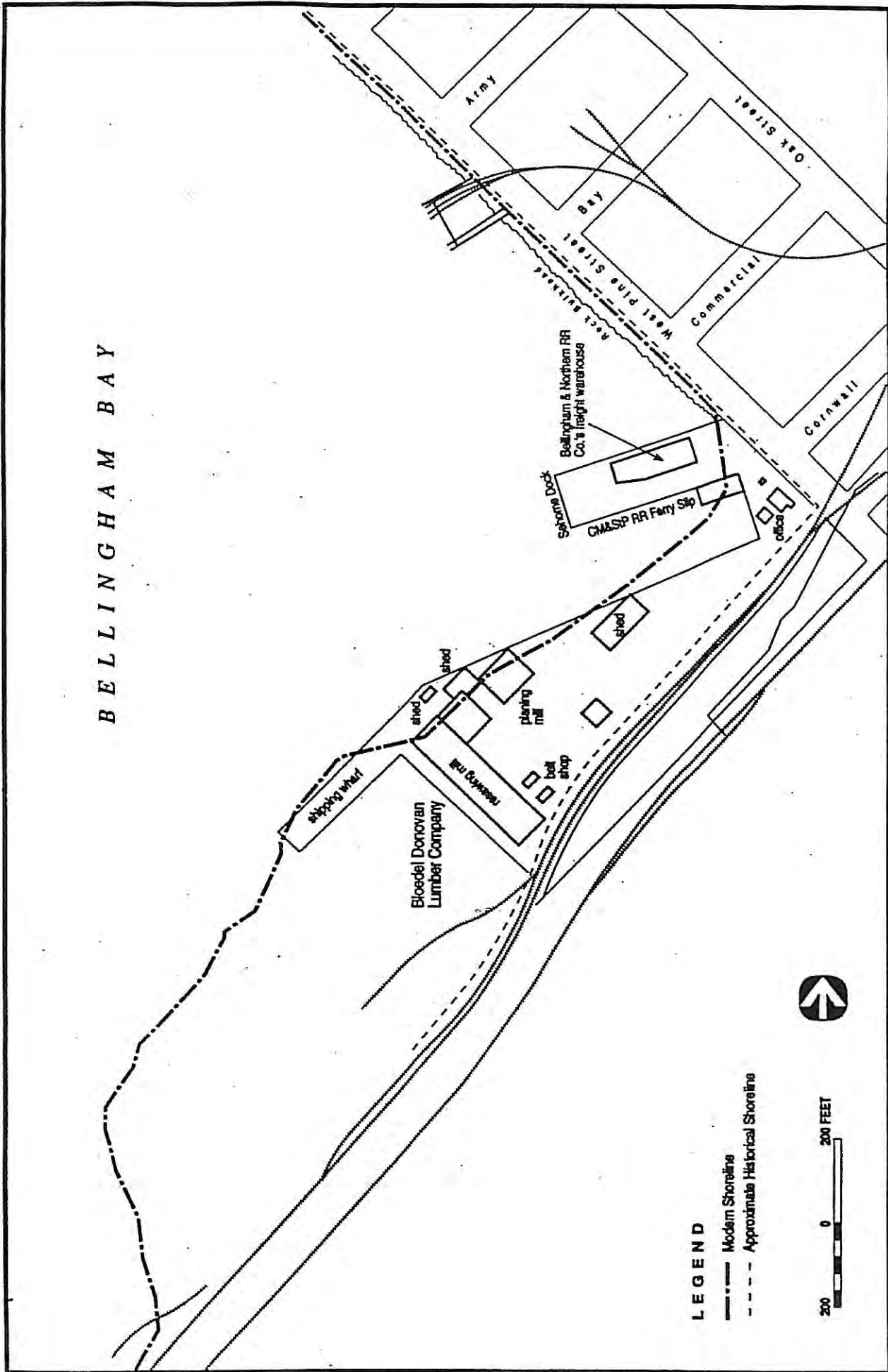


Figure 5-4 Comwall Landfill Area 1900-1910.





B E L L I N G H A M B A Y

**LEGEND**  
 ——— Modern Shoreline  
 - - - - - Approximate Historical Shoreline



Figure 5-5 Comwall Landfill Area 1910-1920.

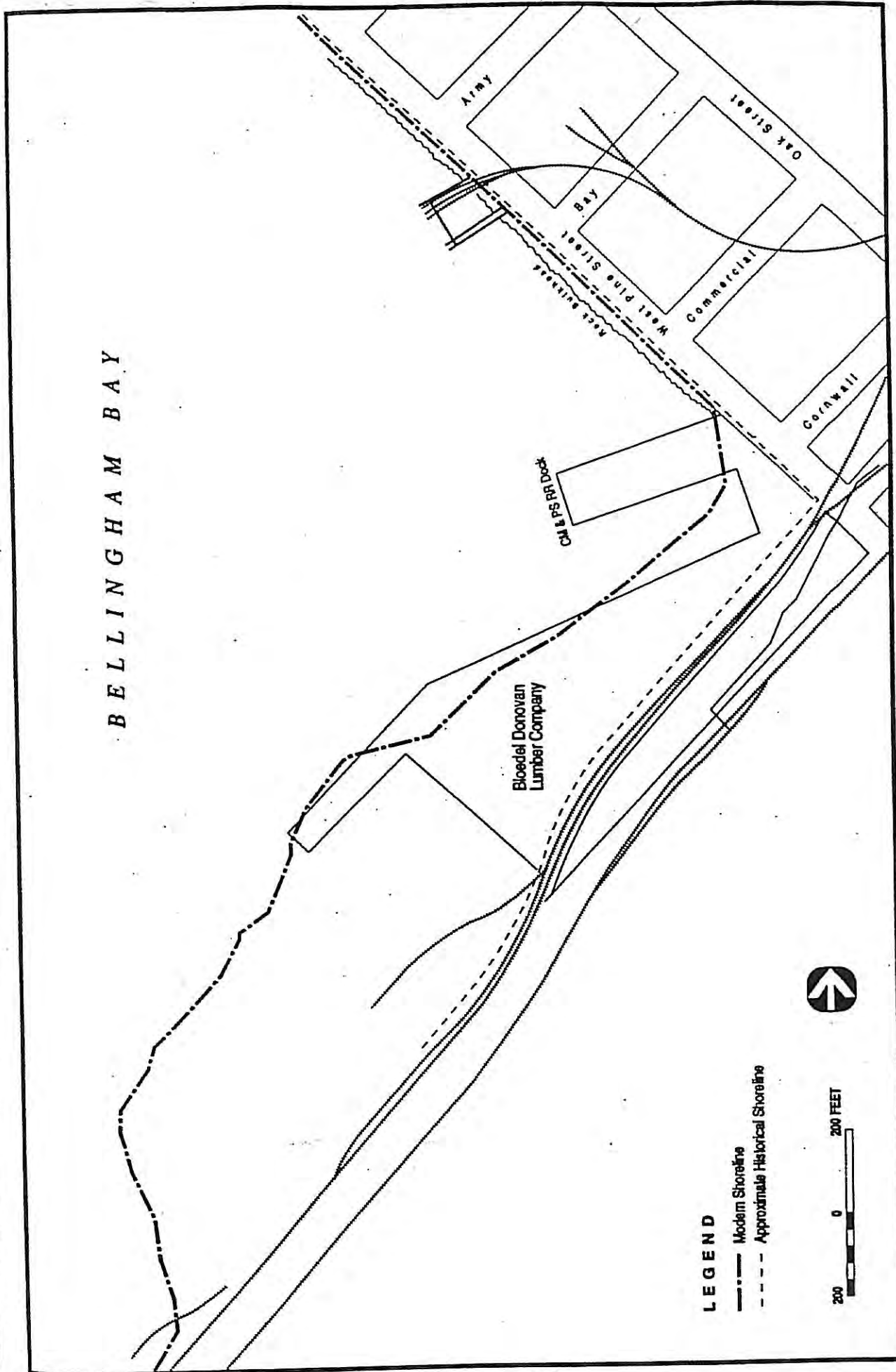
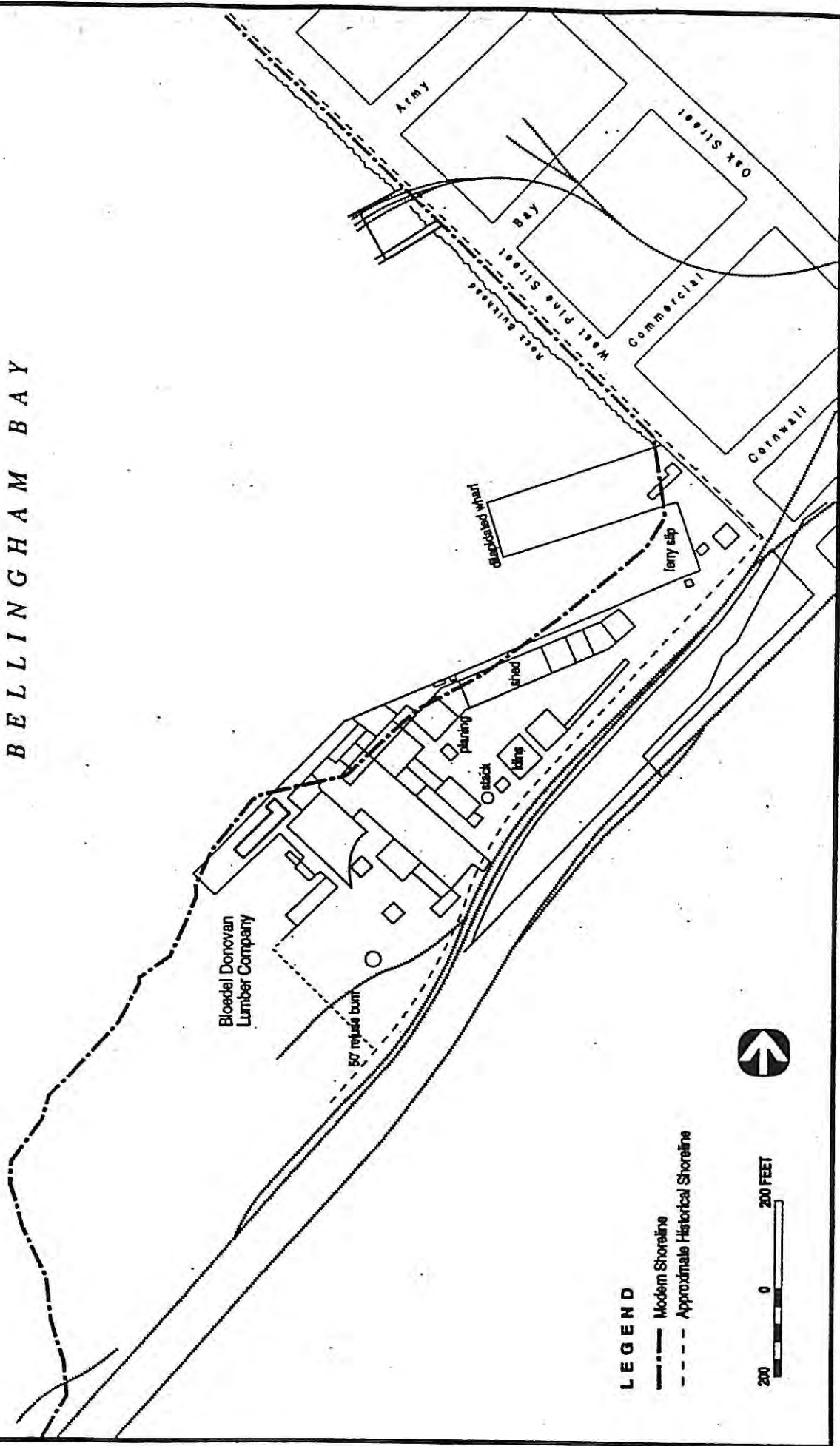


Figure 5-6 Cornwall Landfill Area 1920-1930.

B E L L I N G H A M B A Y



**LEGEND**  
—— Modern Shoreline  
- - - Approximate Historical Shoreline



200 0 200 FEET

Figure 5-7 Comwall Landfill Area 1930-1940.

Bellingham Bay (Roth 1926). Brooks Lumber Company first appeared in *Polk's Bellingham and Whatcom County Directory* in 1920-1921 (Polk 1921).

It is not clear when this company began operating in the project area. In 1927, Brooks complained that Bellingham's lack of facilities for handling lumber for water shipment had forced small mills out of business in the area. His objective was to persuade the U.S. Army Corps of Engineers to proceed with improvements on Squalicum Creek (U.S. House 1928). In 1942, the American Wood-Preservers' Association reported that the Brooks Lumber Company maintained two wood-treatment tanks, measuring 6x8x24, in Bellingham. The American Wood-Preservers' Association continued to report the wood-treating activities of the company, which became Brooks Manufacturing, through the early 1990s (American Wood-Preservers' Assn. 1942, 1990).

In 1954, *Polk's Bellingham and Whatcom County Directory* listed American Fabricators, with Frank C. Brooks, Frank N. Brooks's son, as president (Polk 1954). During the 1950s, American Fabricators, a division of Brooks Lumber Company, was located at the foot of Cornwall Avenue, suggesting that Brooks Lumber Company had been operating at this site. An interview confirmed that Brooks Lumber Company was located at the site around this time (Dahlgren interview 1995). American Fabricators was involved in glue lamination of wood structures, and operated one of the nation's largest plants devoted to this activity.

By the early 1960s, this company had purchased "the old Bloedel Donovan office buildings and site" (Hitchman 1972). In 1962, American Fabricators leased 9 1/2 acres of fill land to the City of Bellingham for an extension of the city garbage dump (Bellingham Herald 1962). Polk Directories indicate that Brooks Manufacturing and American Fabricators moved to Iowa Street in 1974 (Polk 1974). Brooks Manufacturing continues to conduct business at this location.

#### **5.1.5 International Cross Arm/R.G. Haley/G.R. Plume Company**

International Cross Arm Company first appeared in *Polk's Bellingham and Whatcom County Directory* in 1923 (Polk 1923). During the 1920s, this business operated in Victoria, British Columbia, where J.O. Cameron served as its president. International Cross Arm Company also ran a "substantial" wood by-product factory in Bellingham, where it was located at the foot of Taylor Avenue. Here it manufactured cross arms for telegraph and telephone lines, and Axel G. Bulow managed the facility (Roth 1926).



The American Wood-Preservers' Association began reporting the wood-treating activities of International Cross Arm Company during the early 1950s (American Wood-Preservers' Assn. 1952). At that time, the company was conducting its wood-treating business at 499 Cornwall Avenue, where it stored up to 2 1/2 million board feet. In 1956, the company began doing business as R.G. Haley International Corporation, with Richard Haley serving as president and Axel G. Bulow as vice-president. In 1957, the company acquired a new kiln at its Cornwall location, which allowed lumber to be cured in 10 days. Previously, the cross arm lumber was air-dried, a process that could take up to four months (Polk 1954, 1956; Bellingham Herald 1957). The facilities also included a retort, storage tanks for PCP, control room, and some large storage sheds (Ecology and Environment Inc. 1986).

Ralph Stephan, plant manager for R.G. Haley International Corporation, reported that the company stockpiled lumber on concrete pads along the waterfront. Waste waters from the wood-treatment process were released into an unlined seepage pit on the property. Before the plant closed in the 1980s, 5,000 to 6,000 gallons of sludge from the R.G. Haley plant were collected by Crosby and Overton, Inc., which disposed of the material at Chemical Security Systems, Inc. in Arlington, Oregon (Purnell 1991). According to one source, R.G. Haley International Corporation wanted to expand its operations during the 1980s, but the company was unable to secure a shoreline permit to do so (Maury interview 1995). In 1985, the facility closed its operations, and in 1991, G.R. Plume was located at the site (Polk 1991, Ecology and Environment 1986, Dahlgren interview 1995) (Figures 5-8 to 5-11).

#### **5.1.6 Georgia-Pacific Corporation**

In 1926, Ossian Anderson founded the San Juan Pulp Company, which established a pulp plant on five acres of tidelands north of the project area. Three years later, the business was reorganized as the Puget Sound Pulp and Timber Company. Anderson served as the new company's first president. By 1938, it had constructed the pulp mill on the tidelands that continues to operate at the present time. In 1941, this operation was enlarged to produce 160,000 tons annually. Encouraged by the war effort, the Defense Plant Corporation built a plant at the site to produce ethyl alcohol from the sugars present in the sulfite waste liquor of the pulp mill. The Puget Sound Pulp and Timber Company later purchased this plant. In 1946 and 1947, the company added a modern log barking and chipping plant and a paperboard manufacturing plant to its operations. Production at the paperboard plant averaged 45 tons per day, until it closed in the early 1980s (Georgia Pacific 1991).

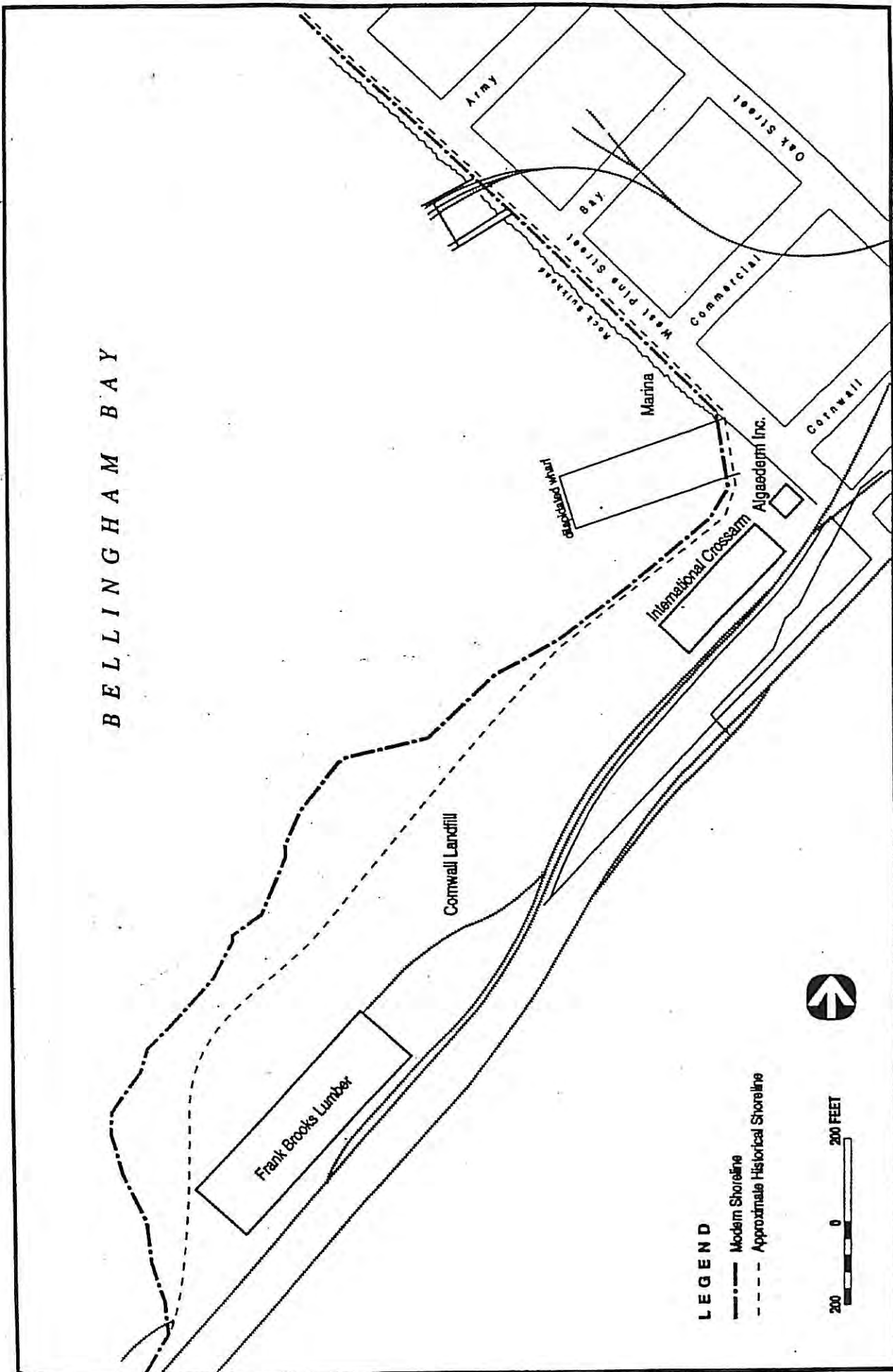
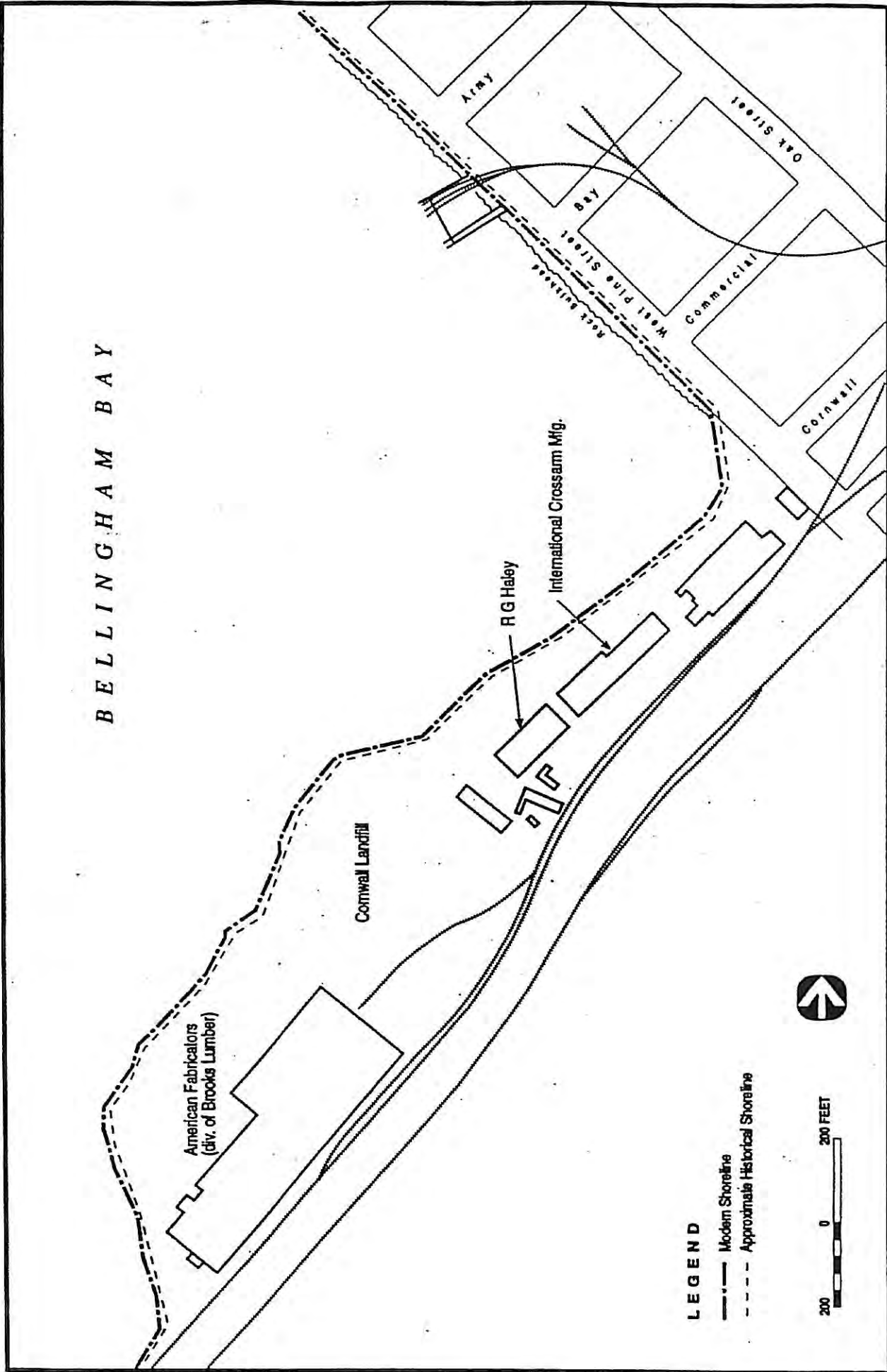


Figure 5-8 Cornwall Landfill Area 1940-1950.



B E L L I N G H A M B A Y

American Fabricators  
(div. of Brooks Lumber)

Cornwall Landfill

RG Haley

International Crossarm Mfg.



200 0 200 FEET

LEGEND

- Modern Shoreline
- - - Approximate Historical Shoreline

Figure 5-9 Cornwall Landfill Area 1950-1960.

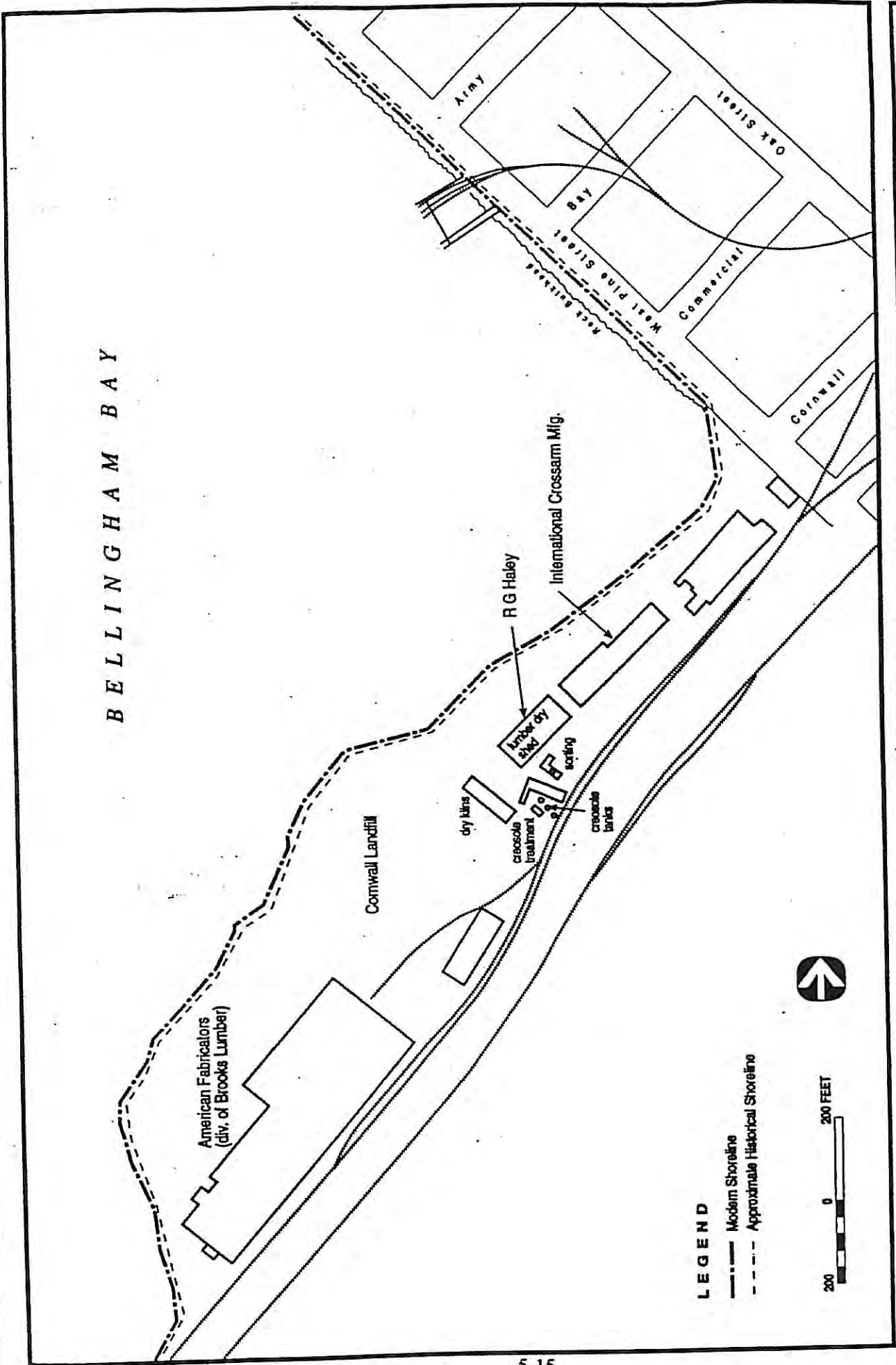


Figure 5-10 Comwall Landfill Area 1960-1970.



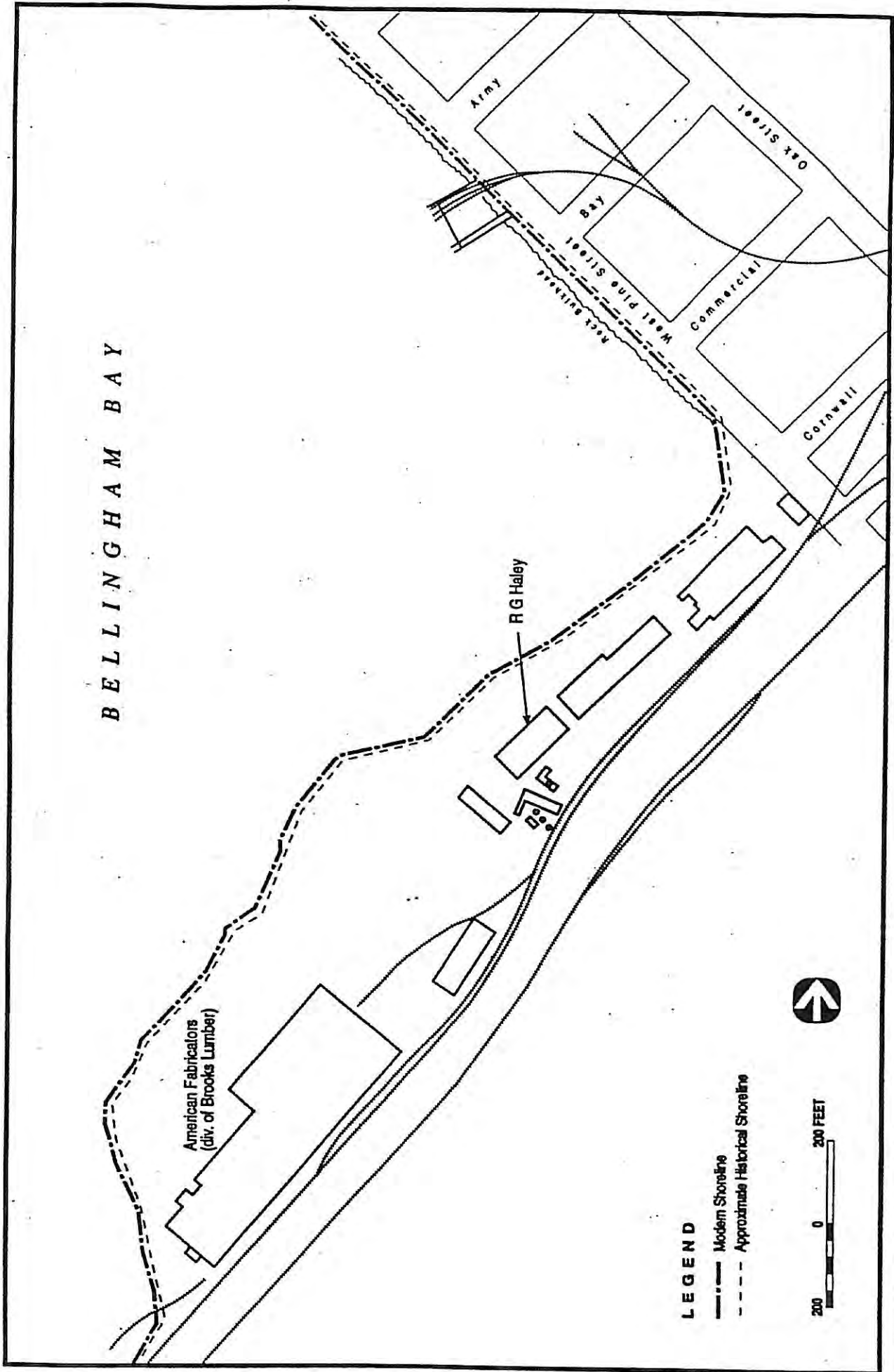


Figure 5-11 Cornwall Landfill Area 1970-1980.

By 1958, the Puget Sound Pulp and Timber Company had acquired the adjacent tissue manufacturing operations of Pacific Coast Paper Mills. In 1963, the company merged with the Georgia-Pacific Corporation, based in Atlanta with headquarters in Portland, Oregon. Georgia-Pacific continued to run the Bellingham plants, and in 1965, the company constructed a chlorine-caustic soda, sulfuric acid, and sodium chlorate plant for its pulp and tissue bleaching operations (Georgia Pacific 1991).

In 1971, Georgia-Pacific leased a portion of the project area, which it purchased from Brooks Manufacturing in 1985 (Dahlgren interview 1995). In 1972, the company added a 600-ton-per-day pulp dryer. Throughout the 1970s and 1980s, Georgia-Pacific Corporation continued to improve its facility, adding a pulp washer, additional digesters, power substations, wood-handling installations, warehousing, by-product expansions, and chip plants. It also provided primary and secondary treatment of its waste water streams (Georgia Pacific 1991).

#### **5.1.7 Sanitary Services Company**

Agostino Razore founded City Sanitary Services as a partnership in Bellingham in 1929. At that time, five employees provided refuse collection service to 500 customers. During the mid-1970s, the business incorporated and changed its name to Sanitary Service Company. By the 1990s, the company had employed 50 people, who served approximately 25,000 residential and commercial customers in Bellingham, Ferndale, Birch Bay, and the unincorporated areas of southern Whatcom County (Kenefick, A., personal communication, 1995; Sanitary Service Co. no date; Nikula interview 1995).

According to Joe Razore, municipal garbage was first landfilled in the project area, at the southwest foot of Cornwall Avenue, around 1945 (Purnell 1991). In 1951, Josie Razore and Agostino Razore signed a 10-year contract with the City of Bellingham concerning residential and commercial garbage collection. According to the contract, the company was to "furnish and properly maintain a sufficient number of vehicles suitably manned and equipped to remove all of the garbage, inflammable material and ashes of all persons, buildings and structures within the City limits." The contract also defined "garbage" as "all waste and refuse substances that may be or become a menace to public health or that will ferment or emit a disagreeable odor" (City of Bellingham 1991). For the next 40 years, the City of Bellingham and City Sanitary Services Company signed numerous agreements for garbage service.

In summary, the companies that operated at or near the project area were engaged in activities that might have produced contaminants. In the United States, the wood-preserving process began utilizing chlorinated phenols during the 1930s, and it is possible that the treating facilities of Brooks Manufacturing and R.G. Haley used pentachlorophenol (Hunt and Garratt 1953). The Georgia-Pacific Corporation, as noted, also produced a variety of chemicals in the vicinity. City Sanitary Services accepted waste from a variety of sources, including households and businesses, which could have contributed to contamination at the site.

#### 5.1.8 The Development of the Cornwall Landfill

In 1953, the Port of Bellingham leased a portion of the former Bloedel Donovan Lumber Company site to the City of Bellingham "for the dumping of waste materials of all kinds." The City and its Contractor, which was City Sanitary Services, would remain responsible for coverage of the refuse, and for maintaining the sanitary fill in accordance with the Board of Health regulations (Port of Bellingham 1953). Moreover, the lease, dated September 9, 1953, stated that "Lessee expressly agrees to hold Lessor harmless from any and all damages, or liability to any person whomsoever, arising out of fire or any other cause, resulting from the use of said leased premises by Lessee and/or its Contractor" (Zuanich interview 1995).

The following year, the superintendent of St. Joseph's Hospital complained to the City Council that rats from the garbage dump had invaded the grounds of his facility, endangering children. The City Council agreed to ask the Health Committee to study the need for bulkheading along the water side of the garbage dump (City of Bellingham 1954).

Throughout the 1950s, the Cornwall Landfill remained the city's only garbage dump. Ed Dahlgren, a longtime resident of the area and a consultant to Georgia-Pacific Corporation, recalled standing on the bluff above the dump and throwing his garbage over the edge. "Solid waste wasn't pollution in those days," he reflected (Dahlgren interview 1995).

During the 1950s, dumping was not strongly monitored. In 1954, for example, the Port complained to the City that 30 to 40 automobiles had been dumped at the site, in violation of the terms of the lease (Port of Bellingham 1954). Furthermore, numerous fires at the dump throughout the 1950s threatened adjacent businesses, including American Fabricators. Although the Board of Public Works had required that a

watchman be stationed at the dump "at all times" it was open to the public, on several occasions the dump remained unsupervised as the fires burned. Ed Dahlgren also indicated that "it is possible that Sanitary Services contracted with hospitals" for waste disposal (Port of Bellingham 1954, 1955, 1958, 1959).

In 1956, however, the Bellingham and Whatcom County Department of Public Health reported that the garbage at the dump was covered with dirt fill "within a reasonable time," rodents were under control, and few complaints about the odor had been received. Still, this agency recommended installation of a second boom to contain the debris that would sometimes break loose and float into Bellingham Bay (Port of Bellingham 1956).

During the 1950s, officials at the Port of Bellingham regarded "furnishing space for a garbage dump" as "one of the cheapest ways to acquire filled in land" (Port of Bellingham 1959). At that time, this agency planned to develop "the North Side tideland area" as a shipping terminal (Bellingham Herald 1961). In 1958, the Port's Development Plan suggested that the 20-acre area along the extension of Cornwall Avenue would provide about 2,800 feet of deep water frontage on Bellingham Bay. Although water had once covered the 20 acres, approximately 2 had been "reclaimed with sanitary fill." The proposed development would require placing approximately 600,000 cubic yards of fill material on the 18 acres that remained underwater. Providing a structure to retain the placed fill would prove costly, however, and the Plan noted that this development "was not considered to be of high priority for industrial development" (Port of Bellingham 1958). During the early 1960s, the Port further decided not to develop the old Bloedel Donovan site as a terminal (Hitchman 1972).

By 1962, as noted, American Fabricators had agreed to lease 9 1/2 acres to the City of Bellingham for an extension of its garbage dump. The fill, both parties pointed out, "could eventually become valuable for industrial sites" (State of Washington Archives 1962b). On March 13 of that year, the Bellingham and Whatcom County Department of Public Health expressed concern regarding this expansion, notifying the Washington Pollution Control Commission that the dump would operate in "15' to 30' of water much of the time." Although plans called for double booming of the site, no bulkheading had been proposed. "Loss of garbage and rubbish into the bay will continue," the Department of Public Health worried. This agency further claimed that the U.S. Army Corps of Engineers had informed the City that it could not enlarge the dump (State of Washington Archives 1962a). Even so, on March 19, 1962, the City Council passed an ordinance authorizing the extension (City of Bellingham 1962).



The "Refuse Act" of 1899 had grant the U.S. Army Corps of Engineers the authority to regulate activities – including dumping – that could impair the navigability of the nation's waterways (Cowdry 1975). By June of 1962, this agency had concluded that "adequate bulkheading" was required to prevent shoaling in the area immediately adjacent to the fill (Port of Bellingham 1952).

That year, the Port of Bellingham informed the City that it did not want the dumping to continue along the waterfront, owing to pollution of Bellingham Bay and to siltation of the Whatcom Creek Waterway. As early as 1961, the Port Commissioners expressed concern about floating garbage that had broken free of the dump. The agency, however, remained uncertain that it had the authority to close the site (Port of Bellingham 1961, 1962, 1964; Bellingham Herald 1962a). The Port complained as well that the dump had become an eyesore and an embarrassment to local residents. "There's certainly not a more unsightly place in the state," observed one Port official (Bellingham Herald no date).

The Washington State Pollution Commission and the Whatcom County Health Department also protested the dump, noting that it "presents a health hazard." Waste materials from the site could not be contained behind the boom, owing to the depth of the water. Debris "would sluff off as a result of erosion, wind and tidal action," these agencies worried, "thus presenting a menace to navigation and fouling the dredged ship channel" (Washington State Archives 1962b).

On August 21, 1962, the Pollution Commission sent a certified letter stating that the City of Bellingham operated the dump "in violation of the Pollution Control Laws of the State of Washington." This correspondence instructed the City to discontinue the disposal of garbage at the site. According to the Pollution Commission, residents of the area complained about the large numbers of seagulls attracted to the dump as well as "the foul odors which it creates" (Washington State Archives 1962c).

Charles Olson, the City's attorney, informed the Pollution Commission, however, that use of the dump would continue. "We feel that the present site is the best garbage disposal site," he explained in September, 1962, "and that adequate methods are available and within the immediate plans of the city" (Bellingham Herald 1962a,b). Throughout the early 1960s, the Cornwall dump continued to prove controversial. "We've had enough of dumps," concluded one frustrated Health Department official (Bellingham Herald 1964).

Opposition to the garbage dump prompted several City Councilmen to complain in 1963 about \$100,000 that the City had granted the Port for construction of a small boat harbor. "There is feeling that the City has received no consideration for the money and they are agitating for repayment," noted one memorandum (Port of Bellingham 1963).

In April, 1965, the Bellingham Port Commission received a request from the City to continue garbage dumping at the Cornwall site until June 1, 1965 "or until such time as the dike is completed." This request was forwarded to the Washington State Department of Resources (DNR), which named the following conditions:

- a. proof of a signed contract between the City of Bellingham and Georgia Pacific Corporation for use of property within the proposed new dumping site, and
- b. evidence of a contract between the City and a contractor to construct a dike on the offshore edge of the new dumping site.

The DNR required that these conditions be met and confirmed by its district administrator at Deming before April 30, 1965. Should the Port fail to supply the required proof, the DNR warned, its Harbor Area lease "will be subject to cancellation" (City of Bellingham 1965). Shirley Daniels, District Administrator, also noted that the DNR had protested the dump earlier, in part because the Harbor Area was under lease to the Port. "As I have stated on numerous occasions in the past," Daniels wrote the Port Commissioners in 1965, "I would like to remind both the Port of Bellingham and the City of Bellingham that this is an illegal operation on State owned lands and we take a very dim view of the entire operation" (Port of Bellingham 1965).

In the spring of 1965, the city located a new dump site off Roeder Avenue, and by June of that year, City Sanitary Services had placed a layer of dirt over much of the dump, in preparation for closure of the site (Bellingham Herald 1965a). "The changeover was quiet," noted one observer, "amazingly so, when one thinks back to the storms of controversy that marked abortive attempts to evacuate the old site and find a new one" (Bellingham Herald 1965b).

### **5.1.9 Recent Developments**

In 1970, the newly created Department of Ecology assumed the responsibilities of the Department of Water Resources and the Pollution Control Commission. In 1988, this agency identified the Cornwall dump as a site "potentially contaminated with hazardous substances" (DNR 1988). Four years later, a beachcomber discovered medical waste, including blood vials and syringes, at the site. Although its origin remained uncertain, Health Department officials determined that the material appeared on the site after the dump's closure. The Department of Ecology and the City of Bellingham then shared the cost of sampling beach seeps and intertidal sediments. The Health Department, charged with protecting the public from exposure to hazardous materials, ordered Georgia-Pacific Corporation to secure the site with patrols, fencing, and log booms (DNR 1992a). The Department of Natural Resources shared costs for sampling as part of an intertidal investigation and site fencing (DNR 1992b).

The Department of Ecology's initial investigation of the Cornwall Landfill revealed that Georgia-Pacific was using the site for raw log storage. Solid waste was exposed at the southwest corner of the landfill, and samples confirmed that the site could be contaminated. In 1992, the agency informed the Port of Bellingham, City of Bellingham, DNR, and Georgia-Pacific Corporation that, on a scale of 1 to 5, with 1 being the highest, the Cornwall Landfill ranked as a "2" under the Model Toxics Control Act (DNR no date). That year, the Health Department informed a variety of agencies, including the DNR's Division of Aquatic Lands, that "conditions at the site represent a threat to public health," concluding that "timely remediation is necessary" (DNR 1992c).

## **5.2 CONTAMINANT SAMPLING AT THE CORNWALL AVENUE LANDFILL**

Ecology's Site Hazard Assessment reports that between about 1945 and 1964, a tidelflat area at the foot of Cornwall Avenue in Bellingham was used as a municipal waste disposal site by the City of Bellingham (Ecology, no date, Site Hazard Assessment Cornwall Avenue Landfill). Ecology also reports that the refuse disposed in the area included household garbage and pulp mill waste.

### **5.2.1 Site Description**

The landfill is estimated to cover approximately 2.4 ha (6 acres) and contain from 2,550-12,750 m<sup>3</sup> (10,000-50,000 yd<sup>3</sup>) of waste covered with 15 cm (6 in) or more of uncontaminated soil. Medical wastes

have been observed at the toe of the shoreward retaining wall at the southwest corner of the property, presumably derived from the landfill due to erosion or subsidence of the wall. A lens of coal tailings up to 46 cm (18 in) thick was noted near the middle of the northeastern portion of the retaining wall (W.D. Purnell & Associates, Inc. 1991). During an initial investigation conducted by Ecology in April 1992, stained sediments were observed at the toe of the shoreward retaining wall. Drainage emanating from the slope to Bellingham Bay, presumably leachate from the landfill, was also noted.

### 5.2.2 Site Contaminants

As part of their Site Hazard Assessment, Ecology collected and analyzed four water samples (identified by Ecology as leachate samples) and two marine sediment samples (Pebles, L., 18 June 1992, personal communication; Pebles, L., 25 June 1992, personal communication). Based on Ecology's map of sampling locations, the "leachate" samples appear to be samples of water seeping from intertidal sands, offshore and beyond the retaining wall. These samples will be referred to herein as seep samples and likely represent an admixture of seawater, groundwater, and possibly a dilute portion of leachate from the landfill.

The Georgia-Pacific Corporation contracted with W.D. Purnell & Associates, Inc. (1991) to perform a Phase I Site Assessment of the property. As part of the Phase I assessment, W.D. Purnell & Associates collected and analyzed two subsurface soil samples from a stained area between two concrete pads located on the site. The results of these analyses are summarized below.

*5.2.2.1. Sampling conducted by W.D. Purnell & Associates, Inc..* The two soil samples collected by W.D. Purnell & Associates were analyzed for semi-volatile compounds only, including pentachlorophenol and PAHs. The field sampling protocols that were described indicated that proper care was taken to collect representative soil samples from the site. Quality assurance data provided in the W.D. Purnell & Associates report indicate that the data for soil sample S-1 were acceptable. Due to a laboratory extraction and dilution error, the detection limits for soil sample S-2 were elevated and therefore some compounds detected in sample S-1 may have been present in sample S-2 but at concentrations below the reported detection limit. Elevated concentrations of several low molecular weight PAHs and pentachlorophenol in both samples (Table 5-1) indicate that the contamination present in the vicinity of the concrete pads was derived from wood treatment wastes.



**TABLE 5-1. RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES  
COLLECTED AT THE CORNWALL AVENUE LANDFILL  
BY W.D. PURNELL & ASSOCIATES, INC.**

Compound	Sample S-1 Sampling Depth (17-20")	Sample S-2 Sampling Depth (11-14")
Naphthalene	3.1 mg/kg	< 81 mg/kg
2-Methylnaphthalene	110 mg/kg	4,300 mg/kg
Acenaphthene	12 mg/kg	490 mg/kg
Dibenzofuran	<0.74 mg/kg	150 mg/kg
Fluorene	14 mg/kg	8,100 mg/kg
Penatchlorophenol	810 mg/kg	59,000 mg/kg
Phenanthrene	87 mg/kg	5,200 mg/kg
Anthracene	4.1 mg/kg	190 mg/kg
Pyrene	3.8 mg/kg	150 mg/kg

Note: There are no Method A Cleanup Levels for these compounds (Table 2, Model Toxics Control Act, WAC-173-340).

**5.2.2.2 Sampling conducted by Ecology.** Sampling of beach seeps and marine sediments [surface 3 cm (1.2 in)] was conducted by Ecology on 6 May 1992 (Figure 5-12). These samples were analyzed for metals, volatile and semi-volatile organic compounds, chlorinated pesticides and PCBs, and 2,3,7,8-tetrachlorodibenzo-*p*-dioxin. No analyses of sediment grain size or TOC were reported for the sediment samples.

Few details have been provided by Ecology regarding methods used to collect the beach seep and marine sediment samples. Seep samples should have been collected from a shallow depression excavated in the beach sand. The water should have been allowed to pool in the depression and allowed to overflow for a sufficient amount of time to exchange the water in the depression at least once. Care should also have been taken to allow suspended material in the excavation to settle prior to collection of the sample. Ecology has stated only that the samples were taken with a clean glass sample jar and that they were not filtered prior to analysis (Pebles, L., 16 July 1992, personal communication). The laboratory case narrative from Analytical Resources indicated that the seep samples received were "...turbid and dark in color" (Pebles, L., 25 June 1992, personal communication).

Quality assurance data provided by Ecology indicate that the data for the seep and sediment sampling were generally acceptable. However, the mercury concentrations reported for the beach seep samples were qualified with a "B" indicating blank contamination. Ecology reported that mercury was detected in two procedural blanks at concentrations of 0.055 and 0.097  $\mu\text{g/L}$ . The seep sample mercury concentrations were reported to range from below the detection limit of 0.050  $\mu\text{g/L}$  (Station #4) to 0.242  $\mu\text{g/L}$  (station #3). Because the reported seep mercury concentrations are less than five times the mean blank concentration (0.076  $\mu\text{g/L}$ ), it is probable that the reported concentrations are positively biased due to laboratory contamination. In addition, analytical results for thallium and selenium in seep samples indicates that matrix spike recovery results were not within control limits. Analytical results for antimony, arsenic, cadmium, chromium, selenium, and silver in sediment samples were also qualified with an "N". Therefore, the reported concentrations of mercury in seep samples and arsenic, cadmium, chromium, selenium, and silver in sediment should be viewed with caution.

The metals antimony, beryllium, cadmium, chromium, silver, and thallium were not detected in the beach seep samples and antimony, beryllium, and thallium were not detected in the marine sediment samples that were analyzed. No volatile organic compounds were detected in the beach seep samples and only

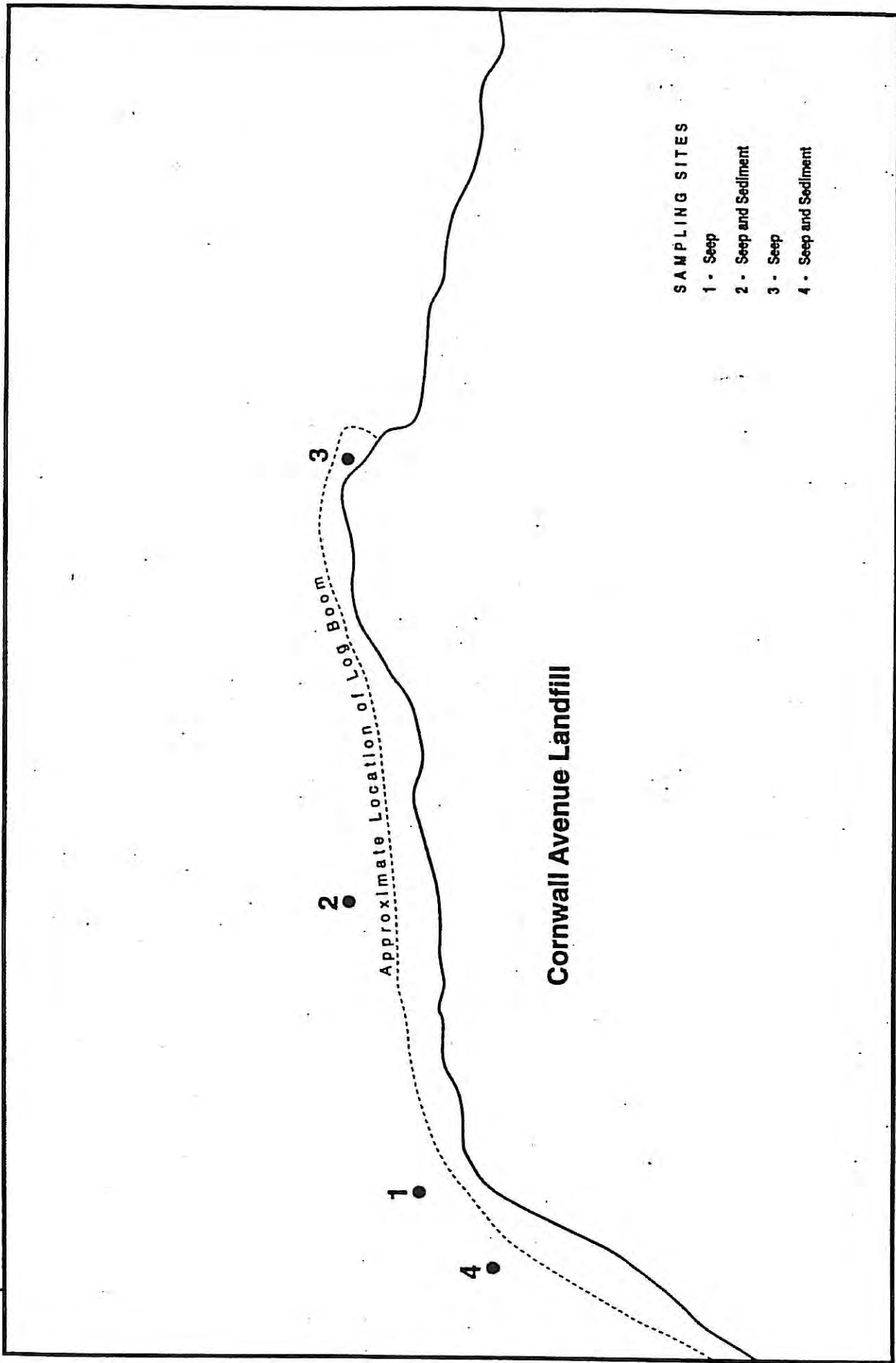


Figure 5-12. Ecology Seep and Sediment Sampling Sites at the Cornwall Avenue Landfill.

one volatile compound (methylene chloride) was detected in one of the two marine sediment samples. In general, few semi-volatile compounds were detected (including pentachlorophenol) in seep or sediment samples. Chlorinated pesticides and Aroclor PCBs were not detected in seep samples but DDT and Aroclor PCBs were detected in one sediment sample. Tetrachlorodibenzo-*p*-dioxin (2,3,7,8-TCDD) was not detected in seep or sediment samples.

The contaminants detected in the beach seep and marine sediment samples are summarized in Tables 5-2 and 5-3, respectively. The beach seep data are also compared to the Method A Cleanup Levels for groundwater and the Washington marine water quality criteria for the protection of organisms from chronic contaminant effects. The Method A Cleanup Levels for groundwater assume that the groundwater at the site is a potential drinking water source. However, Method A Cleanup Levels may not be appropriate for this site because the groundwater is likely to be brackish and already unsuitable for drinking. It should also be noted that the State standards are for dissolved (i.e., filtered) metals (recognizing that the toxic form of the metal is generally the available dissolved form) and that the data reported by Ecology are for total recoverable (i.e., unfiltered) metals. Because a portion of the metals detected in these samples was likely in a particulate form, comparison to the State standards for dissolved metals may be overly conservative.

The marine sediment data are also compared to the Method A Cleanup Levels for soils and to the marine sediment management standards. The Method A Cleanup Levels for soil assume that the site is or could be suitable for residential use. However, it is unlikely that the Cornwall Avenue Landfill site would be considered potentially residential. Comparison of marine sediment management standards to the measured levels of non-ionic organic compounds (e.g., PAHs and PCBs) is complicated by the fact that Ecology did not report measurements of total organic carbon. Sediment standards for non-ionic organic compounds are based on contaminant concentrations normalized to the organic carbon content of the sediments to account for the buffering effect organic carbon has on the toxicity of these compounds. Ecology (1991) recommends that in the absence of organic carbon data, an estimate of 1 percent can be used in screening analyses. Table 5-2, organic contaminant data were normalized using the 1 percent figure for comparison to the sediment standards.

Ignoring the weaknesses in the analytical data noted above, a list of potential problem contaminants can be made based on exceedances of Method A Cleanup Levels, chronic marine water quality criteria, or



TABLE 5-2. CONTAMINANTS DETECTED IN BEACH SEEP SAMPLES COLLECTED BY ECOLOGY IN THE VICINITY OF THE CORNWALL AVENUE LANDFILL, 6 MAY 1992.

Sample #: Station ID:	Beach Samples				Method A Cleanup Level Groundwater <sup>a</sup>	Washington Marine Chronic Water Quality Standards <sup>b</sup>
	92 198040 #1	92 198041 #2	92 198043 #3	92 198044 #4		
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Arsenic	<del>11</del>	2.1P	2.2P	1.5U	5	36
Copper	<del>4,950</del>	<del>5.1P</del>	<del>9.7P</del>	<del>16</del>		2.9 <sup>c</sup>
Iron	52,400E	6,620E	16,700E	6,360E		
Lead <sup>d</sup>	<del>185N</del>	<del>11.2N</del>	<del>14.2N</del>	2.8PN		5.8 <sup>c</sup>
Lead <sup>d</sup>	<del>22B</del>	20U	20U	20U	5	5.8 <sup>c</sup>
Mercury	<del>0.289PB</del>	<del>0.674PB</del>	<del>0.243PB</del>	0.05U	5	0.025
Nickel	<del>18</del>	10U	10U	10U	2	7.9 <sup>c</sup>
Selenium	4UN	2.2PN	2UN	2UN		71
Zinc	<del>280E</del>	29E	<del>230E</del>	46E		76.6 <sup>c</sup>
Cyanide	<del>10</del>	<del>4</del>	<del>2</del>	<del>6</del>		1.0
<b>Semivolatiles</b>						
Total Phenols	2	2	2U	2U		
1,4 Dichlorobenzene	1.4J	1U	1U	1U		
4-Methylphenol	5.5	1U	1U	1U		
<b>Total Petroleum Hydrocarbons</b> WTPH-418	2	1U	1U	1U	1,000	
<b>Tentatively Identified Compounds</b>						
Dimethylbenzene isomer						
Sulfur	2J			2500J		
Carbon disulfide	3500J	10J	1100J	5.2		

Note: Shaded values indicate exceedances of cleanup levels and/or water quality standards.

Qualifiers:

- B = Analyte was also found in the analytical method blank indicating the sample may have been contaminated.
- E = Reported result is an estimate because of the presence of interference.
- J = The analyte was positively identified. The associated numerical result is an estimate.
- N = For metals analytes the spike sample recovery is not within control limits.
- P = The analyte was detected above the instrument detection limit but below the established minimum quantitation limit.
- U = The analyte was not detected at or above the reported result.

<sup>a</sup> Table 1, Model Toxics Control Act, WAC-173-340.

<sup>b</sup> Water Quality Standards, WAC-173-201A-040.

<sup>c</sup> Washington Standards for cadmium, copper, lead, nickel, silver, and zinc are based on the concentration measured after filtering the sample through an 0.45 µm filter.

<sup>d</sup> Two analytical results were reported by the laboratory for lead.

TABLE 5-3. CONTAMINANTS DETECTED IN MARINE SEDIMENT SAMPLES COLLECTED BY ECOLOGY  
 IN THE VICINITY OF THE CORNWALL AVENUE LANDFILL, 6 MAY 1992  
 (Page 1 of 2)

Sample #: Station ID:	Marine sediment samples		Method A Cleanup Level - Soil - <sup>a</sup>	Marine Sediment Quality Standards <sup>b</sup>	Marine Sediment Cleanup Screening Levels <sup>c</sup>
	92 198042 #2	92 198045 #4			
	mg/kg-dry wt	mg/kg-dry wt	mg/kg-dry wt	mg/kg-dry wt	mg/kg-dry wt
<b>Metals</b>					
Arsenic	3.08N	1.74N	20	57	93
Cadmium	<del>4.2N</del>	1UN	2	5.1	6.7
Chromium	<del>152N</del>	82.4N	100	260	270
Copper	<del>756E</del>	378E		390	390
Iron	75,300	23,600			
Lead	<del>431</del>	<del>887</del>	250	450	530
Mercury	0.34	0.071	1	0.41	0.59
Nickel	87.3	26.8			
Selenium	0.39N	0.2UN			
Silver	<del>2.7PN</del>	1.5UN		6.1	6.1
Zinc	<del>2,140E</del>	313E		410	960
Cyanide	0.52E	0.07E			
	µg/kg-dry wt	µg/kg-dry wt	µg/kg-dry wt	µg/kg-dry wt	µg/kg-dry wt
<b>Volatiles</b>					
Methylene chloride	4.1		1.9	U	U
<b>Semivolatiles</b>					
Phenols	190	60		420	420
<b>Phthalates</b>					
Bis(2-ethylhexyl)phthalate	1,300	42J		d	d
Di-n-butylphthalate	67J	39J		d	d
<b>Low Molecular Weight PAH</b>					
Phenanthrene	44J	68U		d	d
<b>High Molecular Weight PAH</b>					
Benzo(a)anthracene <sup>e</sup>	53J	68U	1,000 <sup>e</sup>	d	d
Benzo(b,k)fluoranthene <sup>e</sup>	120	68U	1,000 <sup>e</sup>	d	d
Chrysene <sup>e</sup>	66J	68U	1,000 <sup>e</sup>	d	d
Fluoranthene	99	68U		d	d
Pyrene	96	68U		d	d
<b>Tentatively Identified Compounds</b>					
Hexadecanoic acid	1,500J				
<b>Chlorinated Pesticides/PCBs</b>					
4,4'-DDD	25	8U	1,000		
4,4'-DDT	31N	8U	1,000		
Aroclor 1242/1016	<del>160</del>	80U	1,000	d	d
Aroclor 1254	<del>160</del>	80U	1,000	d	d
<b>OC-normalized data</b>	mg/kg OC	mg/kg OC		mg/kg OC	mg/kg OC
Phenanthrene	4.4J	6.8U		480	480
Benzo(a)anthracene	5.3J	6.8U		270	270
Benzo(b,k)fluoranthene	12	6.8U		450	450
Chrysene	6.6J	6.8U		460	460
Fluoranthene	9.9	6.8U		1,200	1,200
Pyrene	9.6	6.8U		1,400	1,400
Bis(2-ethylhexyl)phthalate	<del>130</del>	4.2J		78	78
Di-n-butylphthalate	0.7J	3.9J		1,700	1,700
Aroclor 1242/1016	<del>16</del>	8U		12	65
Aroclor 1254	<del>16</del>	8U		12	65

TABLE 5-3. CONTAMINANTS DETECTED IN MARINE SEDIMENT SAMPLES COLLECTED BY ECOLOGY,  
IN THE VICINITY OF THE CORNWALL AVENUE LANDFILL, 6 MAY 1992

(Page 2 of 2)

Note: Shaded values indicate exceedance of soil cleanup level and/or marine sediment management standards. The standard or cleanup exceeded is shown in bold.

Qualifiers:

E	=	Reported result is an estimate because of the presence of interference.
J	=	The analyte was positively identified. The associated numerical result is an estimate.
N	=	For organic analytes there is evidence the analyte is present in this sample. For metals analytes the spike sample recovery is not within control limits.
P	=	The analyte was detected above the instrument detection limit but below the established minimum quantitation limit.
U	=	The analyte was not detected at or above the reported result.

<sup>a</sup> Table 2, Model Toxics Control Act, WAC-173-340.

<sup>b</sup> Table I. Sediment Management Standards, WAC-173-204.

<sup>c</sup> Table III. Sediment Management Standards, WAC-173-204.

<sup>d</sup> Marine Sediment Standards based on organic carbon-normalized contaminant data for this compound. Organic carbon-normalized values are compared to the standard at the bottom of the table.

<sup>e</sup> Method A Cleanup Level for carcinogenic PAH.

sediment management standards. Exceedances of these screening levels occurred for arsenic, copper, lead, mercury, zinc, and cyanide in beach seep samples, and cadmium, chromium, copper, lead, zinc, bis(2-ethylhexyl)phthalate, and Aroclor PCBs in marine sediments. Based on a more critical screening of the data [i.e., excluding qualified data and using only the most appropriate screening levels (i.e., marine sediment quality standards)] a more conservative list of potential problem contaminants would be identified: copper, zinc, and depending on the actual sediment organic carbon content bis(2-ethylhexyl)-phthalate and Aroclor PCB in marine sediments. However, the more extensive list of potential problem contaminants will be used in the data synthesis Section 6.0, which provides an analysis of the possible sources of identified problem contaminants and identifies data gaps that prevent: 1) confirmation of the problem contaminants at the site, and 2) identification of the sources of these contaminants.

### **5.3 CONTAMINANT SAMPLING AT THE R.G. HALEY SITE**

Ecology conducted a Site Hazard Assessment field investigation at the R.G. Haley site on 9 May 1992 (Ecology, no date, Site Hazard Assessment R.G. Haley International Corporation). Under the Model Toxics Control Act, the site has been ranked 3 on a scale of 1 to 5, where rank 1 is the highest priority for investigation and remedial action. The facility was also the focus of a site inspection conducted for the U.S. EPA in 1985 to determine if the facility warranted federal cleanup action (Ecology and Environment, Inc. 1986).

#### **5.3.1 Site Description**

The R.G. Haley site is underlain by fill material (Ecology and Environment, Inc. 1986). The types of material in the fill have been identified include boulders, large timbers, concrete blocks, bricks, and remnants of garbage. It is uncertain whether any portion of the R.G. Haley property was filled with refuse as part of the City of Bellingham's municipal land filling operation.

The wood treatment operation consisted of a building for milling lumber, a drying kiln, a retort, storage tanks for pentachlorophenol, a control room, and some large storage sheds (Ecology and Environment, Inc. 1986). Wood delivered to the facility was milled to specifications and dried in the kiln. Finished wood was loaded into the retort where it was treated with a pentachlorophenol solution in a carrier oil under high temperature and pressure. Following treatment, a vacuum was created in the retort and the



moisture in the wood evaporated. This process created an oil/water vapor that was condensed in a heat exchanger using non-contact cooling water. The condensate was directed to an oil/water separator and the oil fraction was reused in the wood treatment process. Wastewater from the oil/water separator was discharged to an unlined seepage pit, approximately 4.3 x 7.3 m (14 x 24 ft), with a depth of 1.5 m (5 ft). The facility was permitted to discharge non-contact cooling water and stormwater runoff to Bellingham Bay.

As part of the plant closure, the seepage pit was filled with gravel and capped with a 15-20 cm (6-8 in) layer of unreinforced concrete (Ecology and Environment, Inc. 1986). Pentachlorophenol-contaminated sludge from the retort and the seepage pit were disposed of at Chem-Security Systems, Inc. in Arlington, OR. However, the investigation conducted by Ecology and Environment, Inc. (1986) indicated that soil and groundwater at the site contained elevated concentrations of pentachlorophenol and PAH. Analytical results summarized by Ecology and Environment, Inc. (1986) and the sampling conducted by Ecology in their May 1992 investigation are reviewed below.

### **5.3.2 Site Contaminants**

Analysis of soil and groundwater samples at the R.G. Haley site has been limited to semi-volatile organic compounds, including pentachlorophenol and PAHs. No analyses for metals, chlorinated pesticides, or PCB compounds were identified during this review. The laboratory analyses conducted for Ecology and Environment, Inc. and the Washington Department of Ecology were of acceptable quality. Because the contaminants detected in the sampling efforts summarized below are typically found at wood treatment facilities, there is no reason to believe that the compounds were identified in error. However, some analytical interference has been encountered due to the presence of relatively high concentrations of the carrier oil in the samples.

Prior to removal of the seepage pit sludge, soil sampling was conducted for R.G. Haley by Howard Edde, Inc. (Ecology and Environment, Inc. 1986). These samples were analyzed for pentachlorophenol. The highest soil concentrations of pentachlorophenol (approximately 100 mg/kg) were measured at a depth of approximately 1.8 m (6 ft) in the vicinity of the seepage pit and retort. Samples collected at shallow depths contained lower concentrations ranging from 0.6-6.8 mg/kg. Soil concentrations as high as 1.1 mg/kg were detected at locations along the western half of the site near Bellingham Bay. Following removal of the seepage pit sludge, samples were collected from the seepage pit walls and analyzed for

pentachlorophenol. A concentration of 14,000 mg/kg of pentachlorophenol was measured in a sample from the side wall of the pit and a concentration of 720 mg/kg was measured in a sample from the bottom.

Sampling conducted by Ecology and Environment, Inc. (1986) included two groundwater monitoring wells installed to characterize subsurface soil and groundwater contamination near the seepage pit and retort, two soil borings to characterize contamination within the bermed area of the pentachlorophenol oil storage tanks, and four intertidal shallow groundwater sampling locations to the west of the site in Bellingham Bay (Figure 5-13). The monitoring wells indicated that the depth to groundwater was 6 to 7 ft and the depth to bedrock (a dark grey, friable siltstone) was approximately 13 to 15 ft. The types of lithology encountered above the bedrock included fill (bricks with variable sized cobbles and gravel in a clay matrix), gravelly silt, silty gravelly sand, sand, and clay layers.

Pentachlorophenol and the carrier oil were detected in soil and groundwater at the monitoring well sites, in soil from the bermed storage tank area, and in one intertidal groundwater sample (Tables 5-4 and 5-5). The highest soil concentration of pentachlorophenol (230 mg/kg) was measured in a soil boring from the bermed tank area at a depth of approximately 2.6-2.7 m (8.5-9 ft). The range of pentachlorophenol concentrations measured in soils sampled during installation of the monitoring wells ranged from 0.7 to 32 mg/kg. Groundwater concentrations of pentachlorophenol in the monitoring wells ranged from 0.17 to 4.4 mg/L. One shallow groundwater sample collected from the intertidal area at station B-4 contained an estimated concentration of 0.021 mg/L of pentachlorophenol.

A number of PAH compounds were also detected in soil and groundwater samples collected by Ecology and Environment, Inc. (1986) and a number of phenolic compounds were detected in soil and groundwater collected from the monitoring wells (Table 5-4 and 5-5). The PAHs identified are predominantly low molecular weight compounds that are likely derived from the carrier oil. Ecology collected and analyzed a single composite sample collected from the site on 9 May 1992. The sample was only analyzed for semi-volatile organic compounds including pentachlorophenol and PAHs. The composite sample consisted of one to two ounces of soil from visibly stained areas on the site shown in Figure 5-13. The sample also included soil from the same stained soil location at the Cornwall Avenue site (an area between two concrete pads) sampled by W.D. Purnell and Associates which was described above.

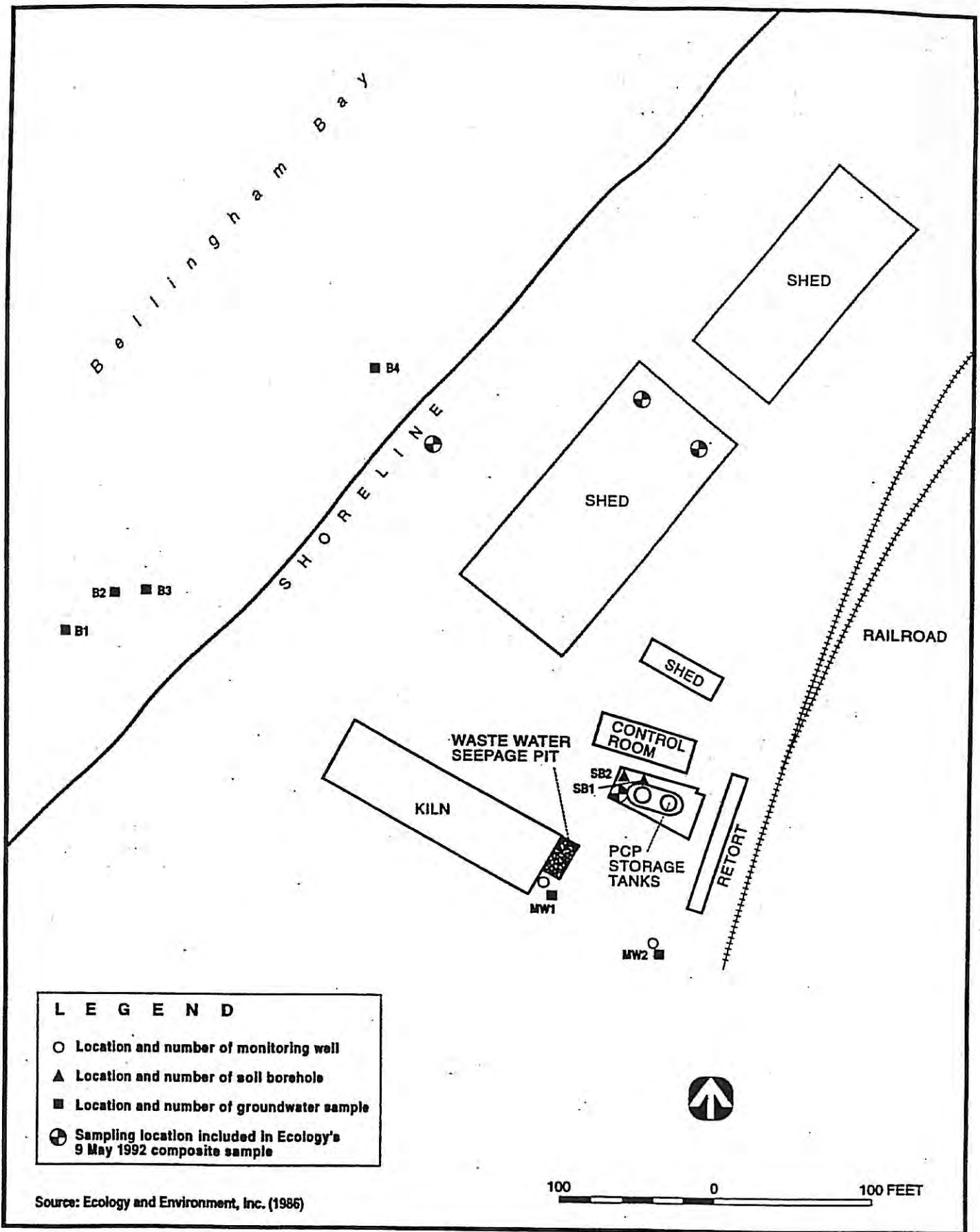


Figure 5-13. Sample Locations at the R.G. Haley International Corporation Site.

TABLE 5-4. CONCENTRATIONS OF DETECTED PRIORITY POLLUTANT BASE-NEUTRAL/ACID COMPOUNDS  
IN SOIL SAMPLES AT R.G. HALEY INTERNATIONAL CORPORATION, INC.,  
BELLINGHAM, WASHINGTON (ug/kg)

	Sample Location													Method A Cleanup Level-Soil <sup>a</sup>			
	MW1-A	MW1-B	MW1-C	MW1-D	MW2-A	MW2-B	MW2-C	MW2-D	SB1-A	SB1-B	SB1-C	SB2-A	SB2-B		SB2-C		
<b>Phenols</b>																	
2 Methylphenol								610									
4 Methylphenol							870										
2,4 Dimethylphenol							910										
2,4,5 Trichlorophenol							190J										
Phenol							3,000										
Pentachlorophenol	2,600		9,800	700J	32,000		8,400		160,000	18,000	150,000	20,000	19,000J	13,000	230,000		
<b>Low Molecular Weight PAH</b>																	
Naphthalene																	
2-Methylnaphthalene	63J		270J	73J	10,000	26,000	1,700	78,000		240J	2,100J	300J	13,000	58,000			
Anthracene			1,400	260J	63,000	130,000	5,200	160,000		1,500	25,000	1,600	41,000	240,000			
Phenanthrene	340		860	83J	23,000	23,000	1,100	14,000		11,000	14,000	2,500	47,000				
Fluorene	89J		380	43J	7,600	8,300J	650	13,000		400J	400J	580	23,000				
Acenaphthylene			250J	5,600J	5,400J	11,000		480			2,300J	140J	13,000				
Acenaphthene	34J																
<b>High Molecular Weight PAH</b>																	
Benzo(a)anthracene	100J																
Benzo(b)fluoranthene																	
Benzo(k)fluoranthene																	
Benzo(a)pyrene			250J	250J													
Fluoranthene																	
Ideno(1,2,3-cd)pyrene																	
Benzo(g,h,i)pyrene																	
Pyrene	96J		150J		3,500J		88J			250J	3,300J	1,300			6,200J		
Chrysene	96J											310J					
<b>Total PAH</b>	718J		3,310J	6,059J	112,500J	198,300J	8,738J	256,480		13,390J	4,710	7,950J	4,000	387,200J			
<b>Miscellaneous Compounds</b>																	
Bis(2-ethylhexyl)phthalate	74J					4,200J											
Dibenzofuran					2,300J	15,000											
n-Nitrosodiphenylamine																	

Source: Ecology and Environment, Inc. (1986).

J = Estimated concentration. Analytical Quality Control Criteria not completely acceptable or detection at concentrations less than Contract Required Detection Limit (CRDL).

a Table 2, Model Toxics Control Act, WAC-173-340.

b Method A Cleanup level for carcinogenic PAH. There are no Method A Cleanup levels for the other compounds that were detected.



**TABLE 5-5. CONCENTRATIONS OF DETECTED PRIORITY POLLUTANT  
BASE-NEUTRAL/ACID COMPOUNDS IN GROUNDWATER SAMPLES  
AT R.G. HALEY INTERNATIONAL CORPORATION, INC.,  
BELLINGHAM, WASHINGTON ( $\mu\text{g/L}$ )**

Compound	Sample Location					
	B-1	B-2	B-3	B-4	MW-1	MW-2
<b>Phenols</b>						
Pentachlorophenol				21J	170	3,400
2-Methylphenol						34
4-Methylphenol						65
2,4-Dimethylphenol						40
2,4-Dichlorophenol						21
2,4,5-Trichlorophenol						54
2,4,6-Trichlorophenol						5J
Dibenzofuran					4J	
n-Nitrosodiphenylamine				77		
Butyl benzyl phthalate				4J		
<b>Total Phenols</b>				21J	170	3,614
<b>Low Molecular Weight PAH</b>						
Naphthalene						170
2-Methylnaphthalene					10	310
Phenanthrene				22	8J	36
Fluorene				26	8J	20
Acenaphthene				20	10	16
<b>High Molecular Weight PAH</b>						
Pyrene				5J		
<b>Total PAHs</b>				73J	28J	552

Source: Ecology and Environment, Inc. (1986).

Note: There are no Method A Cleanup Levels for these compounds (Table 1, Model Toxics Control Act, WAC-173-340).

J = Estimated concentration. Analytical Quality Control Criteria not completely acceptable or detection at concentrations less than Contract Required Detection Limit (CRDL).

Low levels of some of the semi-volatile compounds were detected in the blank. Only concentrations greater than five times the laboratory blank concentration were considered to be present in the soil sample. Because of the relatively high concentrations of some analytes, surrogate spike recoveries could not be accurately determined. Therefore, these sample results should be viewed with caution. However, the detection of pentachlorophenol and low molecular weight PAH (Table 5-6) at relatively high concentrations is consistent with previous sampling at the site that has implicated wood treatment wastes as the source of the contaminants detected.

#### 5.4 SUMMARY

Historical review of activities in the vicinity of the Cornwall Avenue Landfill site indicate a complicated history of commercial and industrial activity beginning as early as the mid-1800s that has led to the filling of the former tidelands at the site. During the period of 1953 to 1964, portions of the area were used as a municipal landfill. It is also possible that the landfill received industrial wastes from operators of the site or other nearby industries. Due to operation of a coal mine and coal shipping wharf at the site during the 1800s and early 1900s, coal tailings are also found in the fill material.

The extent and contents of the landfill are still poorly known, but may extend beneath the R.G. Haley property to the north. Contaminant sampling for a relatively complete suite of metals and organic constituents at intertidal locations in Bellingham Bay offshore of the Cornwall Avenue Landfill site indicated the presence of several metals and possibly PCBs and bis(2-ethylhexyl)phthalate at levels exceeding relatively conservative standards or screening levels. Contaminant sampling at the R.G. Haley site has been limited to semi-volatile organic compounds. Semi-volatile compounds detected in soils and groundwater at this site include a number of low molecular weight PAHs and pentachlorophenol from historical wood treatment activities at the site. Soil contamination with PAHs and pentachlorophenol was also detected at a location between two concrete pads adjacent to the R.G. Haley site. Contamination of soil at this location may have resulted from encroachment of wood treatment activities at the R.G. Haley site.

The area of the Cornwall Avenue Landfill is composed of a heterogeneous fill material and is underlain by bedrock. The fill is covered with a permeable soil layer that could allow infiltration of runoff water. The seaward retaining wall of the landfill does not prevent the exchange of groundwater with Bellingham

## 6.0 DATA SYNTHESIS, DATA GAPS, AND RECOMMENDATIONS

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This section provides an analysis of the possible sources of the identified problem contaminants and identifies data gaps that prevent 1) confirmation of the problem contaminants at the site and 2) the identification of the sources of these contaminants.

### 6.1 POSSIBLE SOURCES OF THE TENTATIVELY IDENTIFIED PROBLEM CONTAMINANTS

In general, the data provided by Ecology suggest that the beach seeps and marine sediments in the vicinity of the Cornwall Avenue Landfill contain potentially hazardous levels of arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc, cyanide, bis(2-ethylhexyl)phthalate, and Aroclor PCBs. Although these contaminants may derive from groundwater contaminated by contact with refuse within the Cornwall Avenue Landfill, it is also possible that they derive at least in part from other sources in the vicinity of the Cornwall site. These other sources could contribute contaminants either via direct discharge to the bay or Whatcom Creek or via contamination of groundwater in the vicinity of the landfill. Potential sources other than the landfill would include both historical and current municipal and industrial activities in the vicinity of the Cornwall site. Based on the review in Section 3.0, the most significant pollutant sources in the vicinity of the site include urban runoff, pulp and paper production facilities, coal mining and processing activities, municipal wastewater discharges, ports and marinas, sawmills, and wood treatment facilities.

The contaminant data summarized in Section 3.0 and general contaminant profiles for these industries summarized by Shineldecker (1992) suggest a number of possible sources other than the landfill of the tentatively identified problem contaminants (Table 6-1). However, with the exception of mercury, these contaminants have not been measured at levels exceeding sediment quality standards at other locations in Bellingham Bay near the Cornwall site (see Section 4.1) as would be expected if other discharges to the bay had contributed significantly to the levels of these contaminants. Therefore, groundwater

**TABLE 6-1. CONTAMINANT PROFILES OF HISTORICAL AND EXISTING  
POLLUTANT SOURCES IN THE VICINITY OF  
THE CORNWALL AVENUE LANDFILL**

(Page 1 of 6)

Contaminant	Method A Cleanup Level		State Marine WQ Standards	State Marine Sediment Management Standards		a	b	c	d	e	f
	Ground water	Soil	Chronic	SQS	CSL	Urban Runoff	Pulp & Paper Industry	Coal Mining/Processing	Municipal Wastewater	Ports/Marinas	Sawmills
	*Shaded contaminants exceeded at least one of the standards or cleanup levels.			X = Indicates the availability of a State standard or cleanup level. *Shaded cells indicate the standard or screening level exceeded at the Cornwall Avenue Landfill site.			C = Confirmed discharge. S = Suspected discharge.				
<b>Metals</b>											
Antimony						S		S	C		
Arsenic	X	X	X	X	X	C	C	S	S		
Beryllium						S		S			
Cadmium	X	X	X	X	X	C	C	S	C		
Chromium	X	X	X	X	X	C	C	S	C		
Copper			X	X	X	C	C	S	C		
Lead	X	X	X	X	X	C	C	S	C	S	
Mercury	X	X	X	X	X	C	C	S	C		
Nickel			X			C	C	S	C		
Selenium			X			C	C	S	C		
Silver			X	X	X	C	C	S	C		
Thallium						C	C	S	C		
Zinc			X	X	X	C	C	S	C		S
<b>Organotin Compounds</b>										S	
<b>Cyanide</b>			X			C		S	S		
<b>Total Petroleum Hydrocarbons</b>	X	X				S			S	S	
<b>Volatile Compounds</b>											
Acetone						C			S		
Vinyl Chloride	X	X									
Methylene Chloride	X	X					C	S			
2-Butanone (MEK)						C	C		S		
1,1-Dichloroethane											
Chloroform							C	S	C		
1,1,1-Trichloroethane	X	X				S			S		
Trichloromethane						S			S		
Bromodichloromethane											
trans-1,3-Dichloropropene											
Dibromochloromethane											
Benzene	X	X				C		S	S		



**TABLE 6-1. CONTAMINANT PROFILES OF HISTORICAL AND EXISTING  
POLLUTANT SOURCES IN THE VICINITY OF  
THE CORNWALL AVENUE LANDFILL**

(Page 2 of 6)

Contaminant	Method A Cleanup Level		State Marine WQ Standards	State Marine Sediment Management Standards			a	b	c	d	e	f	g
	Ground water	Soil	Chronic	SQS	CSL	Urban Runoff	Pulp & Paper Industry	Coal Mining/Processing	Municipal Wastewater	Ports/Marinas	Sawmills	Wood Treatment Facilities	
*Shaded contaminants exceeded at least one of the standards or cleanup levels.	X = Indicates the availability of a State standard or cleanup level. *Shaded cells indicate the standard or screening level exceeded at the Cornwall Avenue Landfill site.					C = Confirmed discharge. S = Suspected discharge.							
Bromoform													
Tetrachloroethene	X	X				S			C				
Chlorobenzene													
Total xylenes	X	X				C		S	S				
Chloroethane													
1,1-Dichloroethene													
trans-1,2-Dichloroethene													
1,2-Dichloroethane	X	X											
1,2-Dibromoethane (EDB)	X	X											
Carbon tetrachloride													
1,2-Dichloropropane													
Trichloroethene	X	X											
1,1,2-Trichloroethane													
cis-1,3-Dichloropropene													
1,1,2,2-Tetrachloroethane													
Toluene	X	X				C	C	S	C				
Ethylbenzene	X	X				C			S				
Methyl chloride													
Methyl bromide													
<b>Semi-volatile Compounds</b>													
<b>Phenolic compounds</b>													
Phenol					X	X	C	C	S	S	C		C
2-Methylphenol					X	X							C
4-Methylphenol					X	X	C	C		S			C
2,4-Dimethylphenol					X	X	S						C
Pentachlorophenol			X		X	X	C	C		C	C		C
2-Chlorophenol													
4-Chlorophenol													
2,4-Dichlorophenol								C					C
2,6-Dichlorophenol													
2,4-Dinitrophenol								C					C
2-Nitrophenol							S			S			
4-Nitrophenol							S			S			

**TABLE 6-1. CONTAMINANT PROFILES OF HISTORICAL AND EXISTING POLLUTANT SOURCES IN THE VICINITY OF THE CORNWALL AVENUE LANDFILL**

(Page 3 of 6)

Contaminant	Method A Cleanup Level		State Marine WQ Standards	State Marine Sediment Management Standards		a	b	c	d	e	f	Treatments
	Ground water	Soil	Chronic	SQS	CSL	Urban Runoff	Pulp & Paper Industry	Coal Mining/Processing	Municipal Wastewater	Ports/Marinas	Sawmills	
	*Shaded contaminants exceeded at least one of the standards or cleanup levels.		X = Indicates the availability of a State standard or cleanup level. *Shaded cells indicate the standard or screening level exceeded at the Cornwall Avenue Landfill site.				C = Confirmed discharge. S = Suspected discharge.					
2,4,5-Trichlorophenol												C
2,4,6-Trichlorophenol							C					
<b>Halogenated ethers</b>												
Bis(2-chloroethyl)ether												
Bis(2-chloroethoxy)methane												
Bis(2-chloroisopropyl)ether												
4-Bromophenylphenylether												
4-Chlorophenylphenylether						S			S			
<b>Nitroaromatics</b>												
2,4-Dinitrotoluene												
2,6-Dinitrotoluene												
Nitrobenzene												
<b>Nitrosamines</b>												
N-nitroso-di-n-propylamine												
N-nitrosodiphenylamine				X	X							
N-nitrosodimethylamine						S			S			
<b>Chlorinated Naphthalenes</b>												
2-Chloronaphthalene												
<b>Polynuclear Aromatic Hydrocarbons (PAH)</b>												
<b>Low Molecular Weight PAH</b>												
Acenaphthene	X	X		X	X	C		S	S			C
Acenaphthylene	X	X		X	X	C	C	S	S			
Anthracene	X	X		X	X	C		S	S			
Fluorene	X	X		X	X	C		S	S			C
Naphthalene	X	X		X	X	S	C	S	S			
Phenanthrene	X	X		X	X	C	C	S	S			
<b>High Molecular Weight PAH</b>												
Benz(a)anthracene	X	X		X	X	C			S			
Benzo(a)pyrene	X	X		X	X	C		S	S			
Benzo(g,h,i)perylene	X	X		X	X	C		S	S			
Benzofluoranthenes(b,k)	X	X		X	X	C			S			
Chrysene	X	X		X	X	C		S	S			
Dibenzo(a,h)anthracene	X	X		X	X	C		S	S			
Fluoranthene	X	X		X	X	C	C	S	S			C

**TABLE 6-1. CONTAMINANT PROFILES OF HISTORICAL AND EXISTING  
POLLUTANT SOURCES IN THE VICINITY OF  
THE CORNWALL AVENUE LANDFILL**

(Page 4 of 6)

Contaminant	Method A Cleanup Level		State Marine WQ Standards	State Marine Sediment Management Standards		a	b	c	d	e	f	g
	Ground water	Soil	Chronic	SQS	CSL	Urban Runoff	Pulp & Paper Industry	Coal Mining/Processing	Municipal Wastewater	Ports/Marinas	Sawmills	Wood Treatment Facilities
*Shaded contaminants exceeded at least one of the standards or cleanup levels.	X = Indicates the availability of a State standard or cleanup level. *Shaded cells indicate the standard or screening level exceeded at the Cornwall Avenue Landfill site.					C = Confirmed discharge. S = Suspected discharge.						
Ideno(1,2,3-cd)pyrene	X	X		X	X	C		S	S			
Pyrene	X	X		X	X	C	C	S	S			C
<b>Chlorinated Benzenes</b>												
1,3-Dichlorobenzene												
1,2-Dichlorobenzene								S				
1,4-Dichlorobenzene								S				
1,2,4-Trichloro benzene												
Hexachlorobenzene				X	X	S			S			
<b>Hexachlorinated Compounds</b>												
Hexachlorobutadiene				X	X							
Hexachloroethane												
Hexachlorocyclopentadiene												
<b>Benzidines</b>												
3,3'-Dichlorobenzidine												
<b>Phthalate Esters</b>												
Dimethylphthalate				X	X	C			S			
Diethylphthalate				X	X	S		S	S			
Di-n-butylphthalate				X	X	C		S	S			
Butylbenzylphthalate				X	X	C		S	S			
<b>Bis(2-ethylhexyl)phthalate</b>				X	X	C		S	C			
Di-n-octylphthalate				X	X	C		S	S			
<b>Miscellaneous Extractable Compounds</b>												
Benzoic Acid				X	X	S			S			
Benzyl Alcohol				X	X	S			S			
Dibenzofuran				X	X	C			S			
2-Methylnaphthalene						C		S	S			C
<b>Pesticides</b>												
Aldrin				X								
BHC (Lindane)				X		S			C			
Chlorpyrifos				X								
Dachthal						S			S			
DDT (DDD and DDE)				X								
Dicofol												



TABLE 6-1. CONTAMINANT PROFILES OF HISTORICAL AND EXISTING POLLUTANT SOURCES IN THE VICINITY OF THE CORNWALL AVENUE LANDFILL

(Page 5 of 6)

Contaminant	Method A Cleanup Level		State Marine WQ Standards	State Marine Sediment Management Standards		a	b	c	d	e	f	g
	Ground water	Soil	Chronic	SQS	CSL	Urban Runoff	Pulp & Paper Industry	Coal Mining/Processing	Municipal Wastewater	Ports/Marinas	Sawmills	Wood Treatment Facilities
	*Shaded contaminants exceeded at least one of the standards or cleanup levels. X = Indicates the availability of a State standard or cleanup level. *Shaded cells indicate the standard or screening level exceeded at the Cornwall Avenue Landfill site. C = Confirmed discharge. S = Suspected discharge.											
Dieldrin			X			S			S			
Endosulfan (I and II)			X			S			S			
Endosulfan sulfate									S			
Endrin			X									
Endrin aldehyde												
Heptachlor			X			S			S			
Heptachlor epoxide												
Isophorone												
Malathion												
Methoxychlor												
Methyl parathion												
Mirex (dechlorane)												
Parathion												
Chlordane			X			S			S			
Toxaphene			X									
<b>Polychlorinated Biphenyl Compounds (PCB)</b>												
Aroclor 1016			X									
Aroclor 1221			X									
Aroclor 1232			X									
Aroclor 1242			X									
Aroclor 1248			X									
Aroclor 1254			X							S		
Aroclor 1260			X						C			
Aroclor 1262			X									
Aroclor 1268			X									
Total PCB			X	X	X				C	S		
<b>Dioxins and Furans</b>												
2,3,7,8-TCDD							S					
1,2,3,7,8-PeCDD												
1,2,3,4,7,8-HxCDD												
1,2,3,6,7,8-HxCDD												
1,2,3,7,8,9-HxCDD												



**TABLE 6-1. CONTAMINANT PROFILES OF HISTORICAL AND EXISTING POLLUTANT SOURCES IN THE VICINITY OF THE CORNWALL AVENUE LANDFILL**

(Page 6 of 6)

Contaminant	Method A Cleanup Level		State Marine WQ Standards	State Marine Sediment Management Standards		a	b	c	d	e	f	g
	Ground water	Soil	Chronic	SQS	CSL	Urban Runoff	Pulp & Paper Industry	Coal Mining/Processing	Municipal Wastewater	Ports/Marinas	Sawmills	Wood Treatment Facilities
*Shaded contaminants exceeded at least one of the standards or cleanup levels.	X = Indicates the availability of a State standard or cleanup level. *Shaded cells indicate the standard or screening level exceeded at the Cornwall Avenue Landfill site.					C = Confirmed discharge. S = Suspected discharge.						
1,2,3,4,6,7,8-HpCDD												
Octachlorodibenzo-p-dioxin (OCDD)												
2,3,7,8-TCDF							C					
1,2,3,7,8-PeCDF												
2,3,4,7,8-PeCDF												
1,2,3,4,7,8-HxCDF												
1,2,3,6,7,8-HxCDF												
2,3,4,6,7,8-HxCDF												
1,2,3,4,6,7,8-HpCDF												
1,2,3,4,7,8,9-HpCDF												
Octachlorodibenzofuran (OCDF)												

Note: Shaded area indicates contaminants of potential concern in marine sediment or groundwater at the Cornwall Avenue Landfill site and the standard or screening level that was exceeded.

X = Available standard or cleanup screening level.  
 SQS = Sediment Quality Standard.  
 CSL = Sediment Cleanup Screening Level.  
 C = Confirmed based on available sampling data in the vicinity of the Cornwall Avenue Landfill or Whatcom Creek Waterway summarized in Section 3.0 of this report.  
 S = Suspected based on available sampling data for other Bellingham Bay or other Puget Sound locations and general industry profile information provided in Shineldecker (1992).

a Based on the Phase I and II storm drain studies conducted in the vicinity of the Cornwall Avenue Landfill and Whatcom Creek Waterway (PTI Environmental Services 1991; Cabbage 1994).  
 b Based on sampling conducted of the Georgia-Pacific effluent reported in Hallinan and Ruiz (1990).  
 c Based on profiles of coal mining and processing industries in Pucknat (1981), U.S. EPA (1981), and Shineldecker (1992).  
 d Based on sampling conducted of Post Point WWTP effluent reported by CH2M Hill (1984).  
 Suspected contaminants identified based on confirmed or suspected presence in urban runoff.  
 e Based on sampling conducted at the Maritime Contractors Shipyard (Cabbage 14 October 1993) and general information in Shineldecker (1992).  
 f No profile information identified.  
 g Based on sampling conducted at the R.G. Haley site (Ecology and Environment, Inc. 1986).

migrating through the Cornwall Avenue Landfill is the probable source of these contaminants. However, it is still possible that some of these contaminants are present at elevated levels in groundwater upgradient of the landfill.

The potential pollutant sources identified in Table 6-1 could have also contributed directly to the contaminants measured by Ecology via disposal of wastes in the landfill. However, the sources of wastes disposed in the landfill would likely include a larger number of commercial and industrial operations than those summarized in Table 6-1. These sources would have included municipal solid waste such as newspapers, magazines, yard clippings, and household hazardous wastes (e.g., cleansers, paints, solvents, pesticides, and pharmaceutical). The general sources of the potential problem contaminants at the Cornwall Avenue Landfill site identified in Table 6-1 are summarized below. The information summarized below provides only a general overview of the domestic and industrial products and processes that might generate these contaminants and therefore it may not include all possible sources of these contaminants. Some of the potential sources identified below also may not exist, or may not have contributed contaminants to the site. The information provided below was summarized from Toxicological Profiles prepared by the U.S. Public Health Service (1989 and 1990) and the U.S. Department of Health and Human Services (1992a,b,c,d,e,f; 1993a,b; 1994) and Contaminant Hazard Reviews prepared by the U.S. Fish and Wildlife Service (Eisler 1986a,b; 1987; 1988a,b; 1991).

### **6.1.1 Metals**

Metals occur as a natural component of the earth's crust, and therefore, metals can be found in water and sediment in locations that are not influenced by human waste input. However, due to their usefulness in a wide variety of applications, metals have been mined, concentrated, and then released by humans in a variety of waste products. An overview of the predominant human sources of the potential problem metals identified at the Cornwall Avenue Landfill is provided below.

**6.1.1.1 Arsenic.** Arsenic compounds have been used in wood treating plants due to their toxic effects on wood boring insects. It is not known if arsenic has been used in wood treatment operations in the vicinity of the Cornwall Avenue Landfill. Arsenic is also present in coal and other fossil fuels and is released during combustion; it can be leached from coal tailings. Smelting of metallic ores can also result in the release of arsenic. Historically, the largest source of arsenic in Puget Sound was the ASARCO

smelter in Tacoma, Washington approximately 100 miles south of Bellingham. Arsenic is also used in dyes and glass manufacture and is present in domestic laundry detergents.

**6.1.1.2 Cadmium.** Cadmium is used in nickel-cadmium batteries, metal plating, pigments, plastics and synthetics, alloys, and phosphate fertilizers. Cadmium is also released from the combustion of fossil fuels including coal, and can be leached from coal tailings. Cadmium associated with zinc can also be released during the zinc smelting process.

**6.1.1.3 Chromium.** Chromium has been used as a wood preservative, but it is not known if chromium was used in wood treating operations near the Cornwall site. Chromium is released during the combustion of coal or oil and may be leached from coal tailings. Chromium is also used in metal plating, dyes, pigments, photocopying toner, leather tanning, and treatment of cooling tower water as a rust and corrosion inhibitor. Chromium contamination has also been associated with cement plants, rubber production, ship and boat building, drilling muds, and stainless steel welding.

**6.1.1.4 Copper.** Copper, in conjunction with chromate (i.e., chromium) has been used to treat wood. However, it is not known if copper was used at the wood treatment operation near the Cornwall site. Copper has also been used as an algicide, fungicide, and in fabric dyes, electrical wiring, and water pipes. Copper may also be released during mining and smelting operations.

**6.1.1.5 Lead.** Lead has been used in a variety of products including gasoline additives, lead-acid batteries, metal finishing products, ceramic glaze, ammunition, paints, pigments, caulking, lead-arsenate pesticides, and plumbing solder. Lead may also be found in oil filters and crankcase oil.

**6.1.1.6 Mercury.** A significant source of mercury waste in the vicinity of Cornwall Avenue is the Georgia-Pacific chlor-alkali plant. However, this plant initiated operation at about the time the Cornwall Avenue landfill was closed. Mercury has also been used by pulp and paper mills to control bacterial slimes in the organic rich process streams. No data are currently available on the types of slimicides used by pulp mill operations near the site. Additional sources of mercury include batteries, fluorescent light bulbs, pharmaceutical, medical and dental equipment, electrical switches, plastics, and anti-fouling paints. Mercury waste is also associated with smelting, ink manufacture, leather tanning, electroplating, and textile manufacture.

**6.1.1.7 Nickel.** Nickel has been used in a variety of products including nickel-cadmium batteries, metal alloys, plumbing, heat exchangers, pumps, welding electrodes, stainless steel, tableware, electrical contacts, cast iron, ceramics, pigments, and catalysts. Nickel is also released during mining and smelting operations.

**6.1.1.8 Zinc.** Zinc is primarily used as a protective coating of other metallic objects (e.g., galvanized iron). Zinc is also a component of brass and bronze alloys, common electrical apparatus, and pharmaceuticals.

### **6.1.2 Cyanide**

Cyanide in the form of organic cyanides is the basis for the manufacture of synthetic fibers, resins, plastics, dyestuffs, vitamins, solvents, elastomers, agricultural insecticides, and high pressure lubricants. Sodium cyanide is used to clean silverware and other precious metals and is generally used in industry as a metal cleaner. Cyanide has been used to extract gold and silver during mining operations. Cyanide has also been used in the electroplating industry and in the manufacture of synthetic rubber, fumigants, rodenticides, insecticides, predator control agents, rocket fuels, paints and paint finishes, paper, nylon, pharmaceutical, photographic chemicals, mirrors, cement, perfume, bleaches, soaps and detergents, fertilizers, and herbicides. Cyanide is present in the wastestreams of many industrial wastewaters including electroplating, paint, aluminum, plastics, metal finishing, coal gasification, certain mine operations, and petroleum refiners.

### **6.1.3 Bis(2-ethylhexyl)phthalate**

Bis(2-ethylhexyl)phthalate is a synthetic compound added to plastics to make them more flexible. Therefore, this compound may be found in rainwear, footwear, upholstery, imitation leather, shower curtains, food packaging, floor tiles, children's toys, flexible tubing, plastic bags, and plastic medical products. It is also used in erasable inks, cosmetics, paints, adhesives, and coatings, in paper and paperboard production, and as a component of dielectric fluids in transformers and switches.

### **6.1.4 Aroclor PCBs**

Aroclor PCBs were produced in the U.S. between 1929 and 1977 and have been used in a number of products that require good insulating properties. PCBs have been used as heat transfer agents, lubricants,



dielectric agents in transformers and capacitors, flame retardants, wax extenders, dedusting agents, plasticizers, and as waterproofing material.

## 6.2 DATA GAPS AND RECOMMENDATIONS

Additional research on the development of regulatory agencies, including the Washington State Pollution Commission, Department of Ecology, and the DNR could reveal information about the responsibilities as well as the actions of these agencies. Further investigation of specific companies, such as Brooks Manufacturing, could fill historical gaps in this report. The Secretary of State has not yet provided certain records requested last spring. It is possible that the Articles of Incorporation will provide information about the history of this and other companies discussed in this report.

An in-depth review of the industrial processes occurring in the vicinity could yield more information about possible contamination. Also, it could be useful to obtain more specific information about the waste that was collected and dumped at the site.

Because of the qualification of a number of the analytical results reported by Ecology, the limited number of samples collected, and the lack of analysis of filtered water samples and sediment organic carbon, it is not possible to confirm the problem contaminants at the site, except for sediment concentrations of copper and zinc. Because the elevated sediment concentrations are likely due to oxidation and precipitation of metals in the seep water and subsequent deposition at the sediment surface, it is likely that elevated metals levels in the sediments are confined to the immediate area of the seeps. Additional sampling is necessary to confirm this. Additional spatial sampling of sediments, both upgradient-downgradient and inshore-offshore, would also confirm that the measured contaminants are derived from the seeps and not from other sources near the landfill.

If it is confirmed that the seeps are the source of the identified contaminants, then monitoring wells should be established at upgradient, downgradient, and landfill locations to establish which contaminants are derived from the landfill. A characterization of the contaminants present in groundwater and subsurface soils at the site would provide a data base that would allow a better identification of the types of wastes present in the landfill and the potential contributors of these wastes.

In summary the identified data gaps include:

- Development of regulatory agencies
- Specific corporate historical records
- Historical information regarding industrial activities and wastes disposed at the site
- Dissolved metals concentrations in beach seeps
- Sediment organic carbon content
- Spatial gradients of sediment contaminant concentrations
- Groundwater samples from within the landfill and upgradient locations to confirm sources of identified contaminants

The recommendations for further investigation include:

- Additional historical research to address data gaps regarding government agencies, corporations, and industrial activities.
- Resampling of beach seeps and sediments following a well designed sampling plan that includes filtering of beach seep samples, measuring sediment total organic carbon, and collecting upgradient-downgradient and inshore-offshore sediment samples to confirm the problem contaminants and their source (i.e., seeps vs. offsite contributions).
- Installation and sampling of upgradient, downgradient, and landfill monitoring wells to identify the upgradient levels of contaminants in groundwater and the contaminants present within the landfill, and establish the connection between groundwater within the landfill and groundwater emanating from beach seeps near the landfill.

APPENDIX A

DATA SOURCES

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A1: HISTORICAL RESOURCES

A2: TECHNICAL RESOURCES

## APPENDIX A-1

### HISTORICAL RESOURCES

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This Appendix contains an overview of the historical research process conducted at Olympia, Seattle, and Bellingham, followed by a list of specific references.

#### OLYMPIA, WASHINGTON

During March, project personnel visited the Washington State Archives, where they requested the Articles of Incorporation for the Bellingham Bay Improvement Company, Frank Brooks Manufacturing, R.G. Haley, International Cross Arm, and Sanitary Service Company. They copied records pertaining to the Bellingham Bay Improvement Company and American Fabricators. They also reviewed records pertaining to the Cornwall Landfill listed under Department of Ecology, Water Pollution Control Branch.

HRA researchers contacted the Secretary of State to request the Articles of Incorporation for companies not located in the Washington State Archives, including R.G. Haley, International Cross Arm, and Sanitary Service Company.

Next, project personnel visited the Washington State Library, where they examined a number of secondary histories that provided context for the Bellingham Bay area. They also researched newspaper clippings files and historical maps at this location.

At the Department of Natural Resources, HRA and Tetra Tech researchers examined records pertaining to the Cornwall Landfill, including leases, correspondence, reports, and historical maps.

#### SEATTLE, WASHINGTON

During March and April, project personnel visited the Special Collections Division at the University of Washington, where they examined secondary histories and newspaper articles that provided context for the Bellingham Bay area. They did not find archival records pertaining to the companies associated with the Cornwall Landfill and vicinity.

At the University of Washington, HRA researchers examined the historical maps and aerial photographs at the Map Collection, and reviewed historical maps in microfilm. At the Forestry Library, they examined the proceedings of the American Wood-Preservers' Association, which provided information on wood treating activities at the site.

HRA researchers reviewed finding aids at the Manuscripts and University Archives at the University of Washington, where they did not find information pertaining to the companies associated with the Cornwall Landfill and vicinity.



## BELLINGHAM, WASHINGTON

During March and June, HRA and Tetra Tech researchers visited a variety of repositories in Bellingham. First, they consulted the Whatcom County Assessor and Clerk and Recorder's Office, where they examined records pertaining to ownership and leases relevant to the property. Their initial investigation revealed that much of the project area has been residential – a point confirmed by subsequent interviews. Because a chain-of-title on the property would likely prove very time-consuming without yielding useful information on the activities of relevant businesses, the Washington Attorney General and Tetra Tech agreed that HRA would focus on records – such as historical maps and photographs – that would reveal information about businesses that operated in the vicinity.

At the Whatcom County Assessors Office, HRA researchers examined aerial photographs that demonstrated the progression of the land fill from the 1950s through the 1980s.

Project personnel also examined records at a variety of repositories located at the City of Bellingham, including the Public Works Department, where they reviewed miscellaneous solid waste files; the Planning and Community Development Department, where they investigated zoning ordinances and historical maps; the Central Services Division, where they located comprehensive plans; and the Finance Department, where they researched city council meeting minutes and resolutions.

Next, HRA researchers consulted the Port of Bellingham, where they copied a number of Resolutions pertaining to the project area. They also submitted a Public Disclosure Request for Information, which, by mid-June, had yielded numerous documents pertaining to the Cornwall Landfill.

At Western Washington University, HRA and Tetra Tech researchers visited the Washington State Archives, where they examined records pertaining to the Bellingham Bay Improvement Company, an entity that operated near the site during the early twentieth century. They also visited the Center for Pacific Northwest Studies, where they obtained a variety of secondary histories, including a master's thesis concerning the development of Bellingham Bay. They consulted Special Collections at the Wilson Library, where they found few primary records pertaining to the site.

At the Bellingham Public Library, project personnel copied a variety of historical maps and photographs, as well as secondary histories pertaining to Bellingham Bay. They also examined the newspaper clippings files relevant to the Cornwall Landfill, and they reviewed the Polk Directories for Bellingham and Whatcom County, to obtain listings of relevant businesses.

Lastly, they visited the Whatcom County Museum, which offered historical maps and photographs of the project area and vicinity.

The materials obtained from these repositories provided documentation for the history of the project area.

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## APPENDIX A-2

### TECHNICAL RESOURCES

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Research for this project included review and reproduction of data files, correspondence, reports, books, and published articles relevant to characterizing the contaminant sources to Bellingham Bay and contaminant levels measured in the vicinity of the Cornwall Avenue Landfill and within Bellingham Bay. Sources of this information included current National Pollution Discharge Elimination System (NPDES) permits for major dischargers, data reports compiled by the U.S. Environmental Protection Agency (EPA), Washington Department of Ecology (Ecology), Washington Department of Natural Resources (DNR), and relevant information published in scientific journals and university technical reports. Files at DNR, Ecology, and in the office of the Attorney General were also reviewed for relevant information. Additional information was obtained from two electronic databases [SEDQUAL and Water Quality Permit Life Cycle System (WQPLCS)] managed by the Washington Department of Ecology. Four State offices were visited by Mr. Curtis DeGasperi of Tetra Tech to identify and collect relevant information. These visits were as follows:

26 April 1995	Washington Department of Natural Resources, Olympia, Washington
26 April 1995	Washington Attorney General, Olympia, Washington
4 May 1995	Washington Department of Ecology, Northwest Regional Office, Olympia, Washington
8 May 1995	Washington Department of Ecology, Industrial Section, Olympia, Washington

Relevant files were marked and photocopied at the Department of Natural Resources and at the Attorney General's office. At the Washington Department of Ecology the relevant files were marked for photocopying and the marked files were later copied by Ecology staff and forwarded to Tetra Tech. Additional visits were made to the University of Washington, National Oceanic and Atmospheric Administration, and U.S. Environmental Protection Agency libraries to obtain additional published information.

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# **Test Pit Logs, Boring Logs, and Well Construction Details**

# Soil Classification System

	MAJOR DIVISIONS	CLEAN GRAVEL (Little or no fines)	GRAPHIC SYMBOL	LETTER SYMBOL <sup>(1)</sup>	TYPICAL DESCRIPTIONS <sup>(2)(3)</sup>
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL  (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		<b>GW</b>	Well-graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		<b>GP</b>	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		<b>GM</b>	Silty gravel; gravel/sand/silt mixture(s)
	SAND AND SANDY SOIL  (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		<b>SW</b>	Well-graded sand; gravelly sand; little or no fines
		CLEAN SAND (Little or no fines)		<b>SP</b>	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		<b>SM</b>	Silty sand; sand/silt mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY  (Liquid limit less than 50)	SILT AND CLAY (Liquid limit less than 50)		<b>ML</b>	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
		SILT AND CLAY (Liquid limit less than 50)		<b>CL</b>	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
		SILT AND CLAY (Liquid limit less than 50)		<b>OL</b>	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY  (Liquid limit greater than 50)	SILT AND CLAY (Liquid limit greater than 50)		<b>MH</b>	Inorganic silt; micaceous or diatomaceous fine sand
		SILT AND CLAY (Liquid limit greater than 50)		<b>CH</b>	Inorganic clay of high plasticity; fat clay
		SILT AND CLAY (Liquid limit greater than 50)		<b>OH</b>	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL		<b>PT</b>	Peat; humus; swamp soil with high organic content	

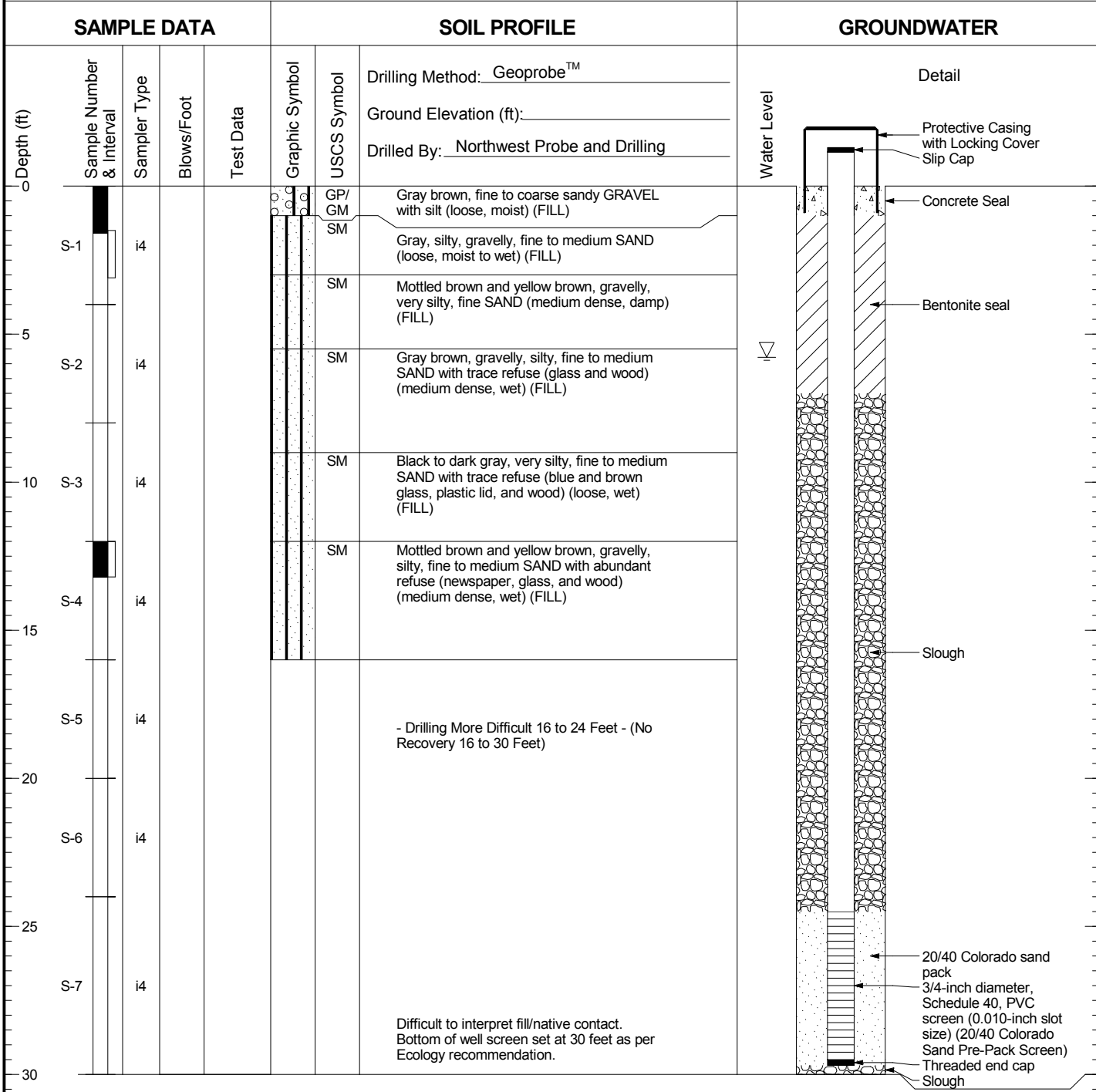
OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		<b>AC or PC</b>	Asphalt concrete pavement or Portland cement pavement
ROCK		<b>RK</b>	Rock (See Rock Classification)
WOOD		<b>WD</b>	Wood, lumber, wood chips
DEBRIS		<b>DB</b>	Construction debris, garbage

- Notes:
- USCS letter symbols correspond to symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM for sand or gravel) indicate soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
  - Soil descriptions are based on the general approach presented in the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the Standard Test Method for Classification of Soils for Engineering Purposes, as outlined in ASTM D 2487.
  - Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:
    - Primary Constituent: > 50% - "GRAVEL," "SAND," "SILT," "CLAY," etc.
    - Secondary Constituents: > 30% and ≤ 50% - "very gravelly," "very sandy," "very silty," etc.
    - > 15% and ≤ 30% - "gravelly," "sandy," "silty," etc.
    - Additional Constituents: > 5% and ≤ 15% - "with gravel," "with sand," "with silt," etc.
    - ≤ 5% - "with trace gravel," "with trace sand," "with trace silt," etc., or not noted.
  - Soil density or consistency descriptions are based on judgement using a combination of sampler penetration blow counts, drilling or excavating conditions, field tests, and laboratory tests, as appropriate.

Drilling and Sampling Key		Field and Lab Test Data
SAMPLER TYPE	SAMPLE NUMBER & INTERVAL	
Code	Description	Code
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon	PP = 1.0
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon	TV = 0.5
c	Shelby Tube	PID = 100
d	Grab Sample	W = 10
e	Single-Tube Core Barrel	D = 120
f	Double-Tube Core Barrel	-200 = 60
g	2.50-inch O.D., 2.00-inch I.D. WSDOT	GS
h	3.00-inch O.D., 2.375-inch I.D. Mod. California	AL
i	Other - See text if applicable	GT
1	300-lb Hammer, 30-inch Drop	CA
2	140-lb Hammer, 30-inch Drop	
3	Pushed	
4	Vibrocore (Rotasonic/Geoprobe)	
5	Other - See text if applicable	

Groundwater	
	Approximate water level at time of drilling (ATD)
	Approximate water level at time other than ATD

# MW-11D



Boring Completed 07/18/12  
Total Depth of Boring = 30.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. **Generalized log of MW-11D and MW-11S is shown here.**

1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG



Cornwall Avenue Landfill  
Bellingham, WA

Log of MW-11D

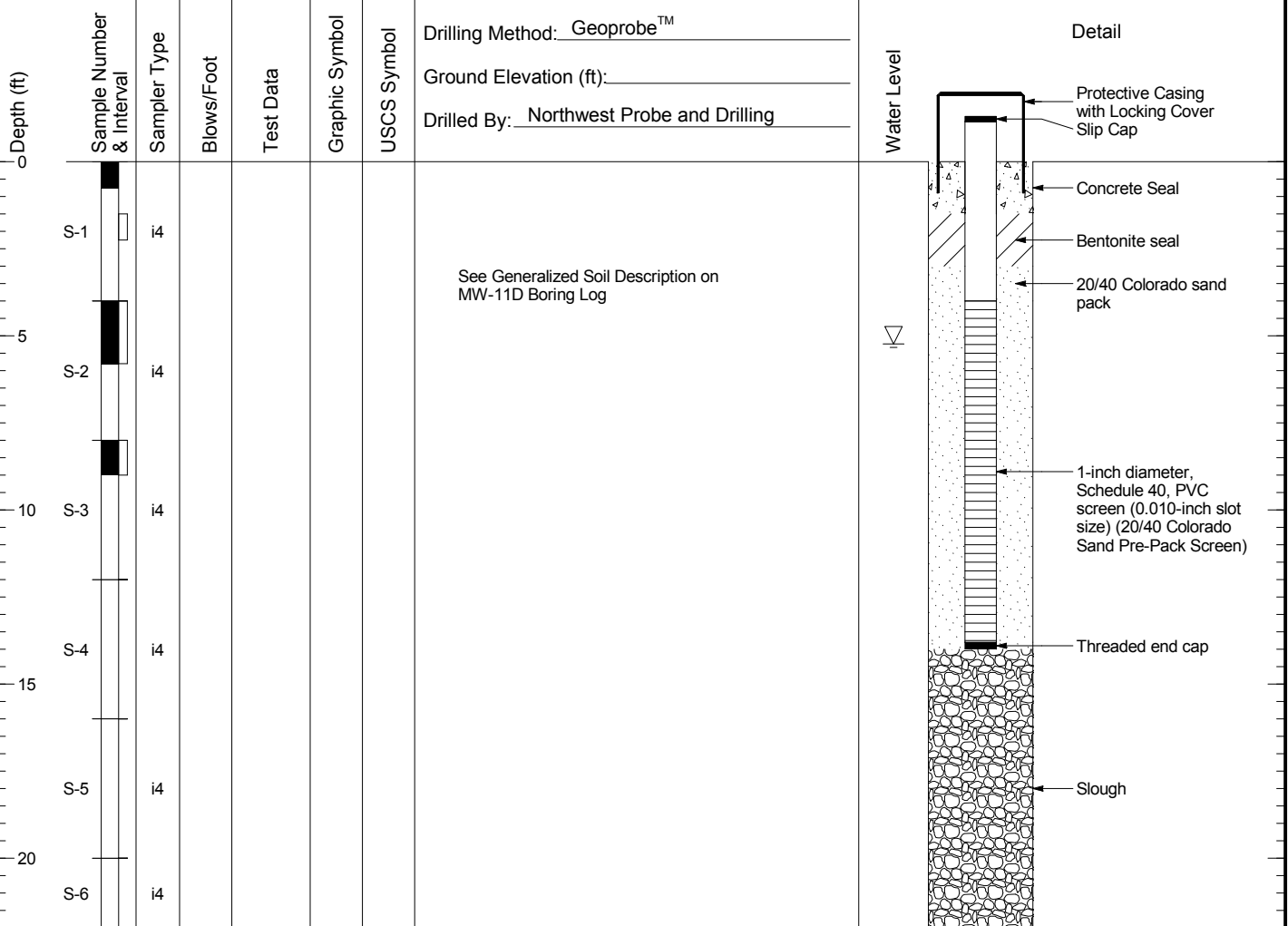
Figure  
**B-2**

# MW-11S

## SAMPLE DATA

## SOIL PROFILE

## GROUNDWATER



- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG



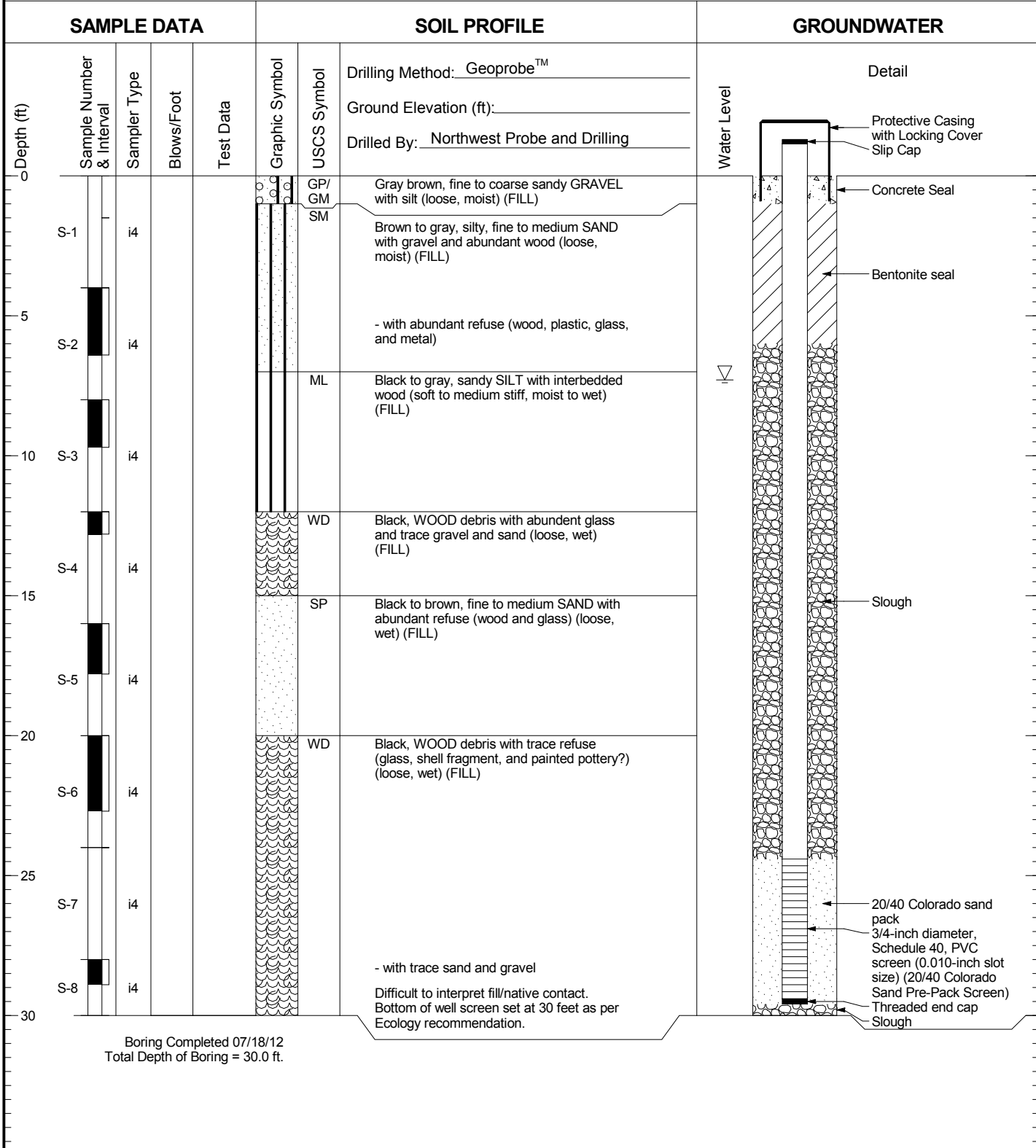
Cornwall Avenue Landfill  
Bellingham, WA

Log of MW-11S

Figure  
**B-3**



# MW-12D



Boring Completed 07/18/12  
Total Depth of Boring = 30.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Generalized log of MW-12D and MW-12S is shown here.

1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG



Cornwall Avenue Landfill  
Bellingham, WA

Log of MW-12D

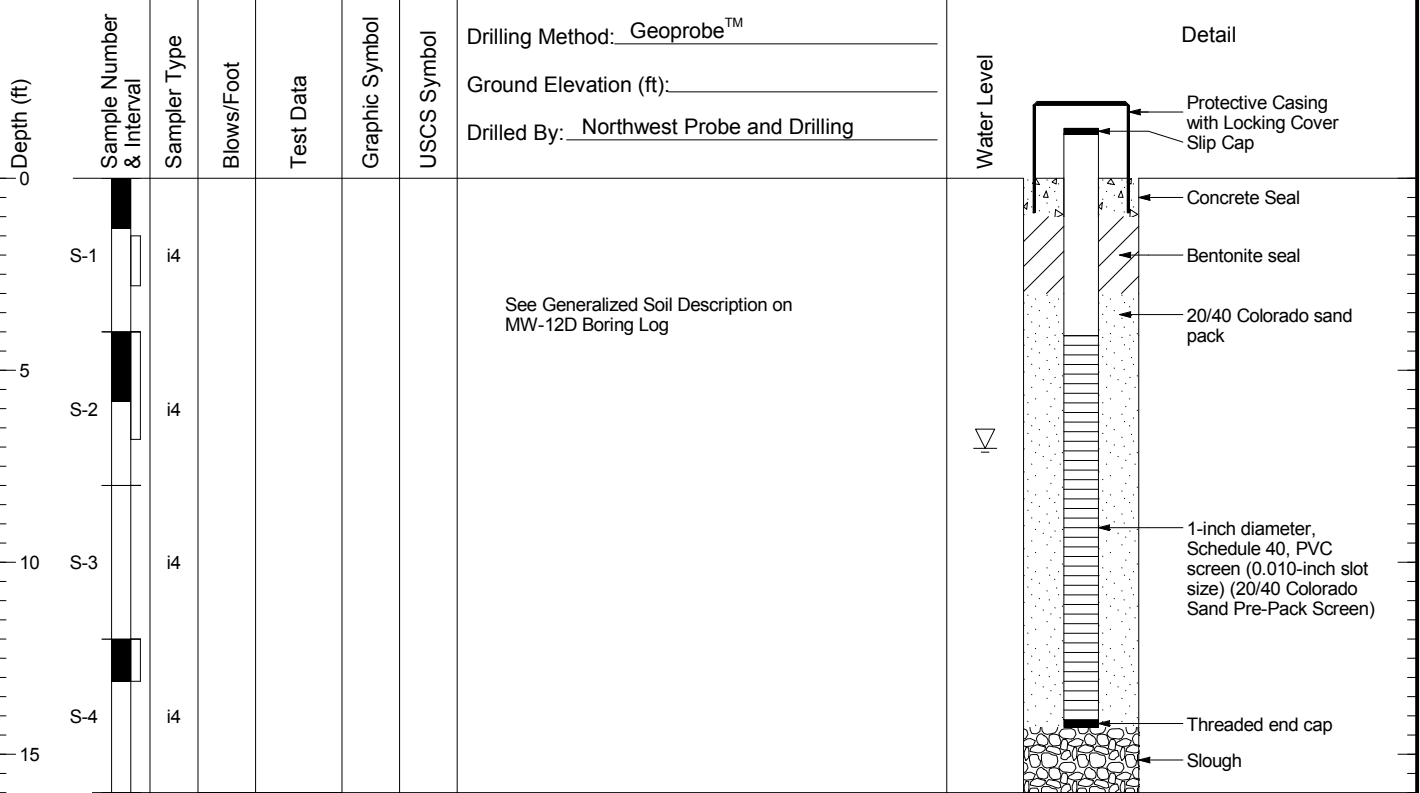
Figure  
**B-4**

# MW-12S

## SAMPLE DATA

## SOIL PROFILE

## GROUNDWATER



Boring Completed 07/18/12  
Total Depth of Boring = 16.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

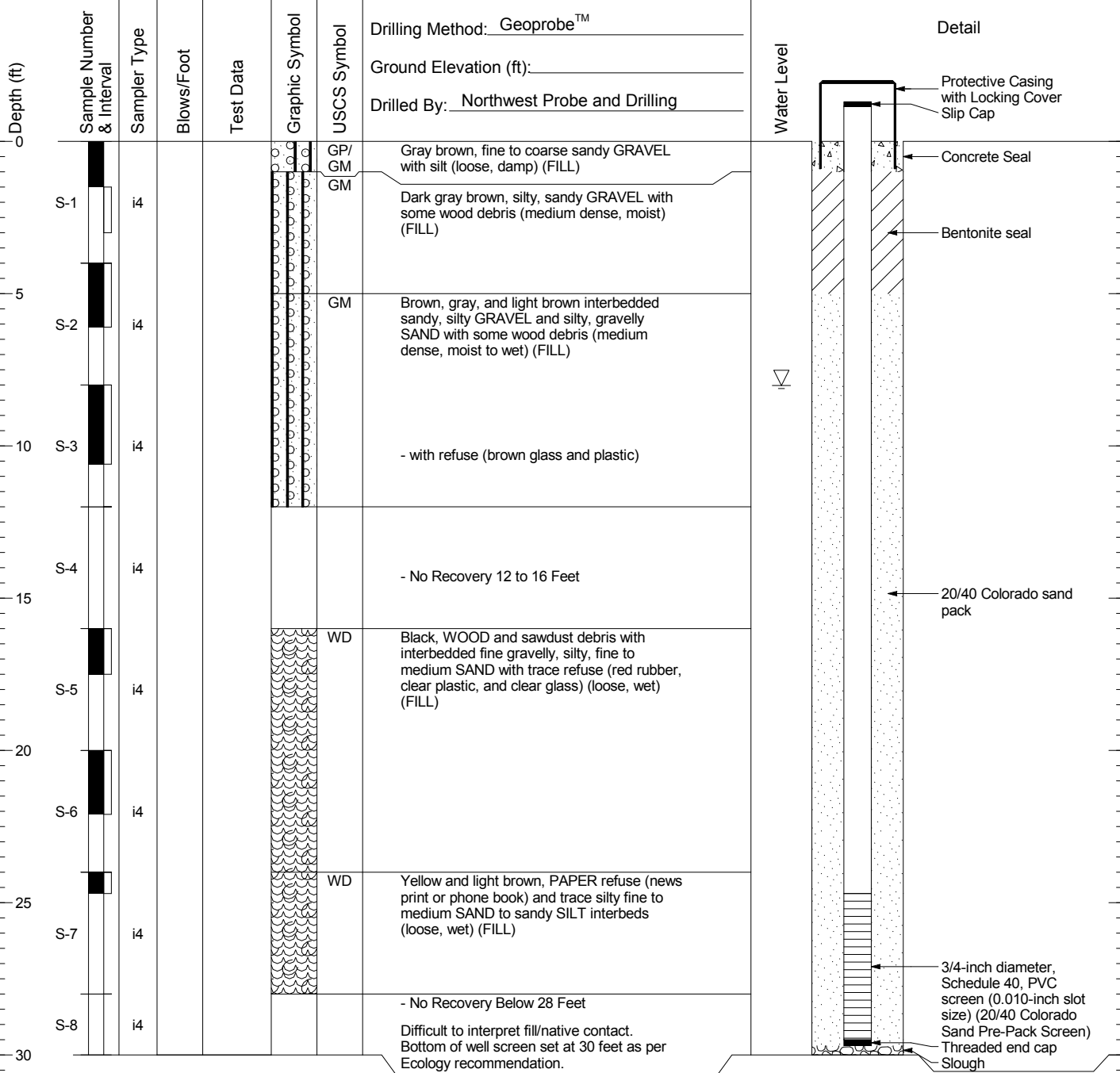
1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG

# MW-13D

## SAMPLE DATA

## SOIL PROFILE

## GROUNDWATER



Boring Completed 07/16/12  
Total Depth of Boring = 30.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Generalized log of MW-13D and MW-13S is shown here.

1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG



Cornwall Avenue Landfill  
Bellingham, WA

Log of MW-13D

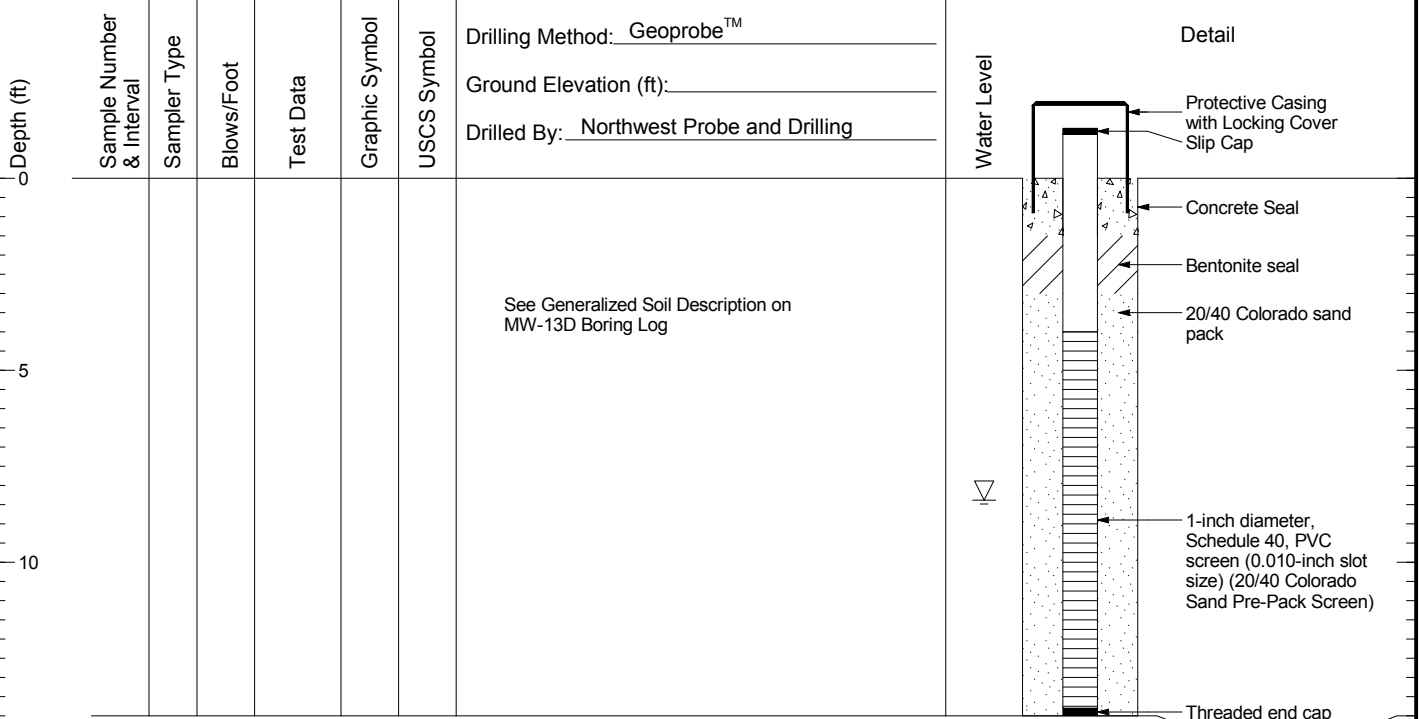
Figure  
**B-6**

# MW-13S

## SAMPLE DATA

## SOIL PROFILE

## GROUNDWATER



Boring Completed 07/16/12  
Total Depth of Boring = 14.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG



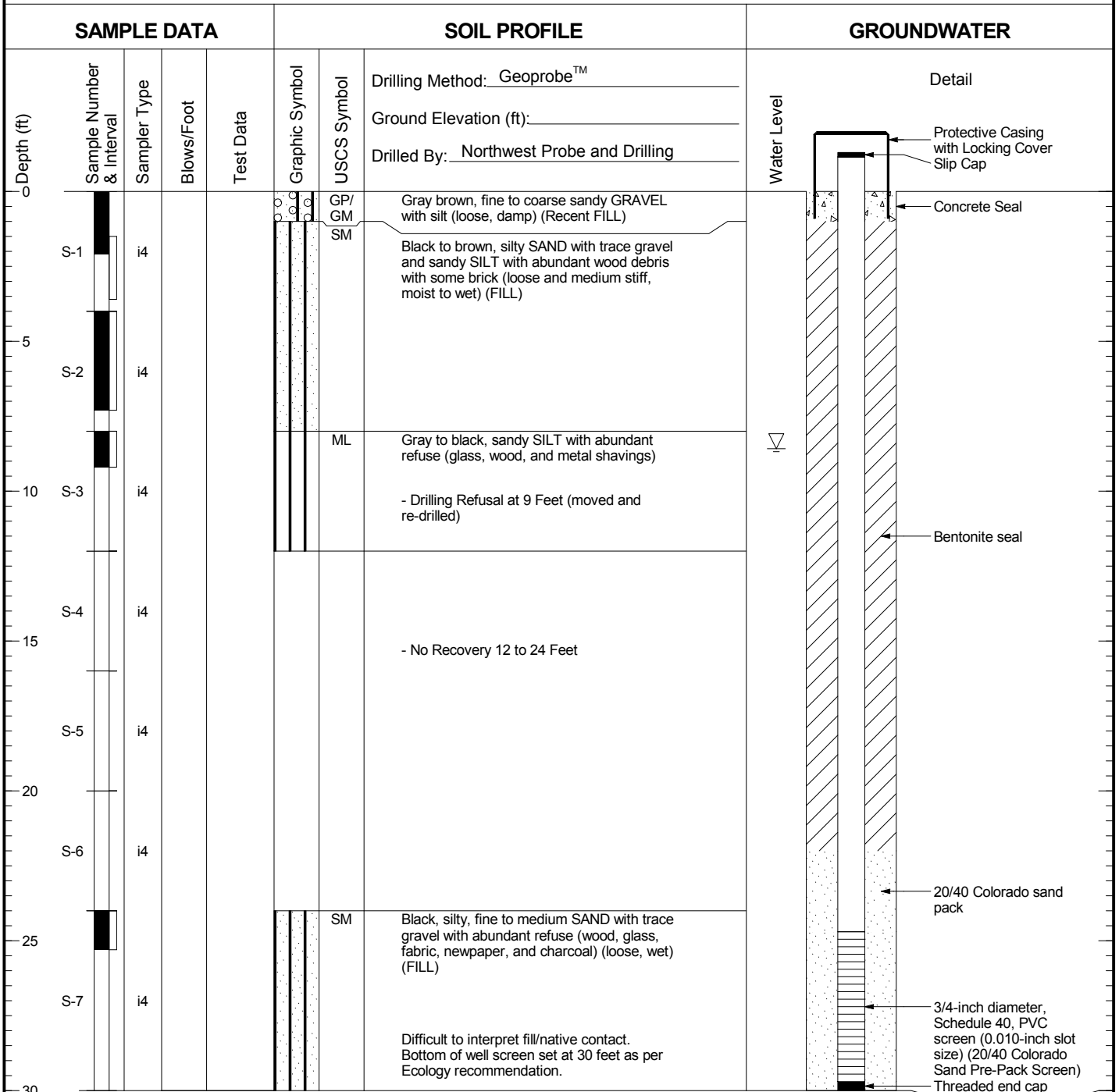
Cornwall Avenue Landfill  
Bellingham, WA

Log of MW-13S

Figure  
**B-7**



# MW-14D



Boring Completed 07/17/12  
Total Depth of Boring = 30.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Generalized log of MW-14D and MW-14S is shown here.

1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG



Cornwall Avenue Landfill  
Bellingham, WA

Log of MW-14D

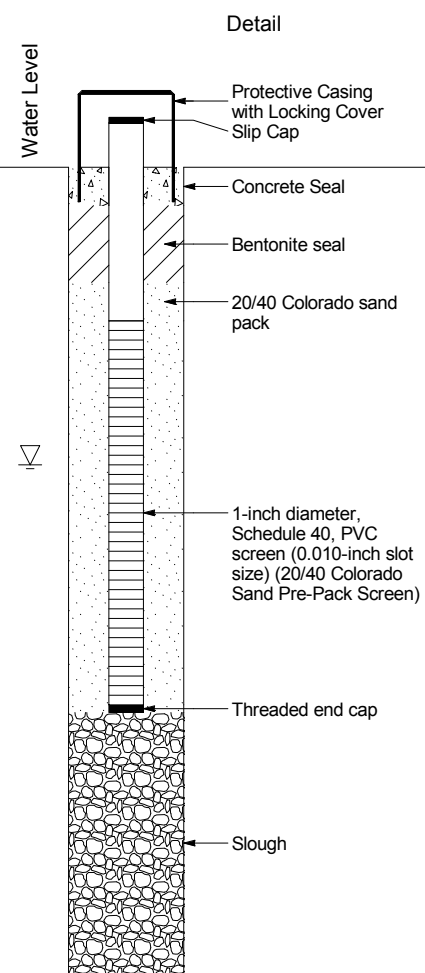
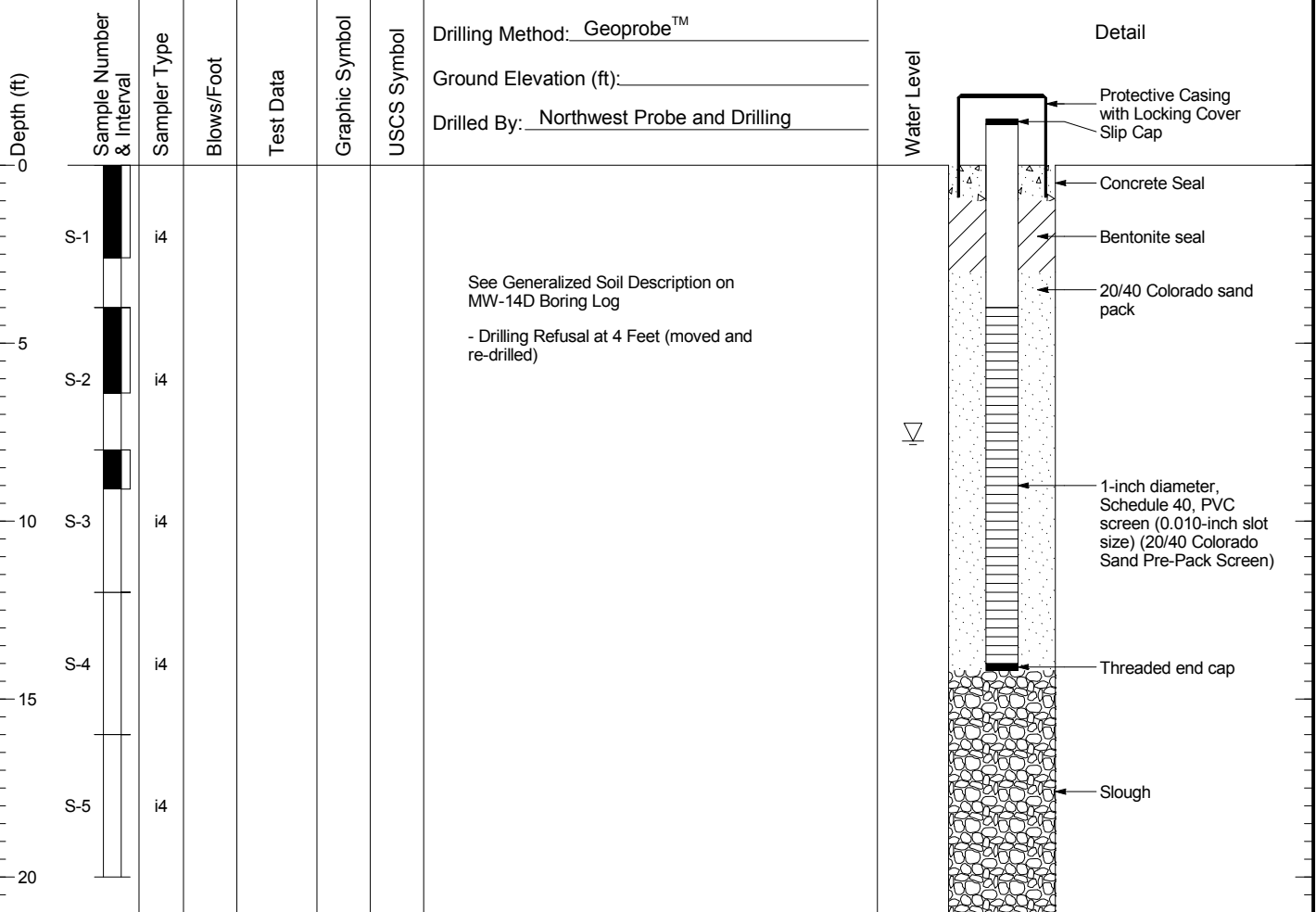
Figure  
**B-8**

# MW-14S

## SAMPLE DATA

## SOIL PROFILE

## GROUNDWATER



1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG

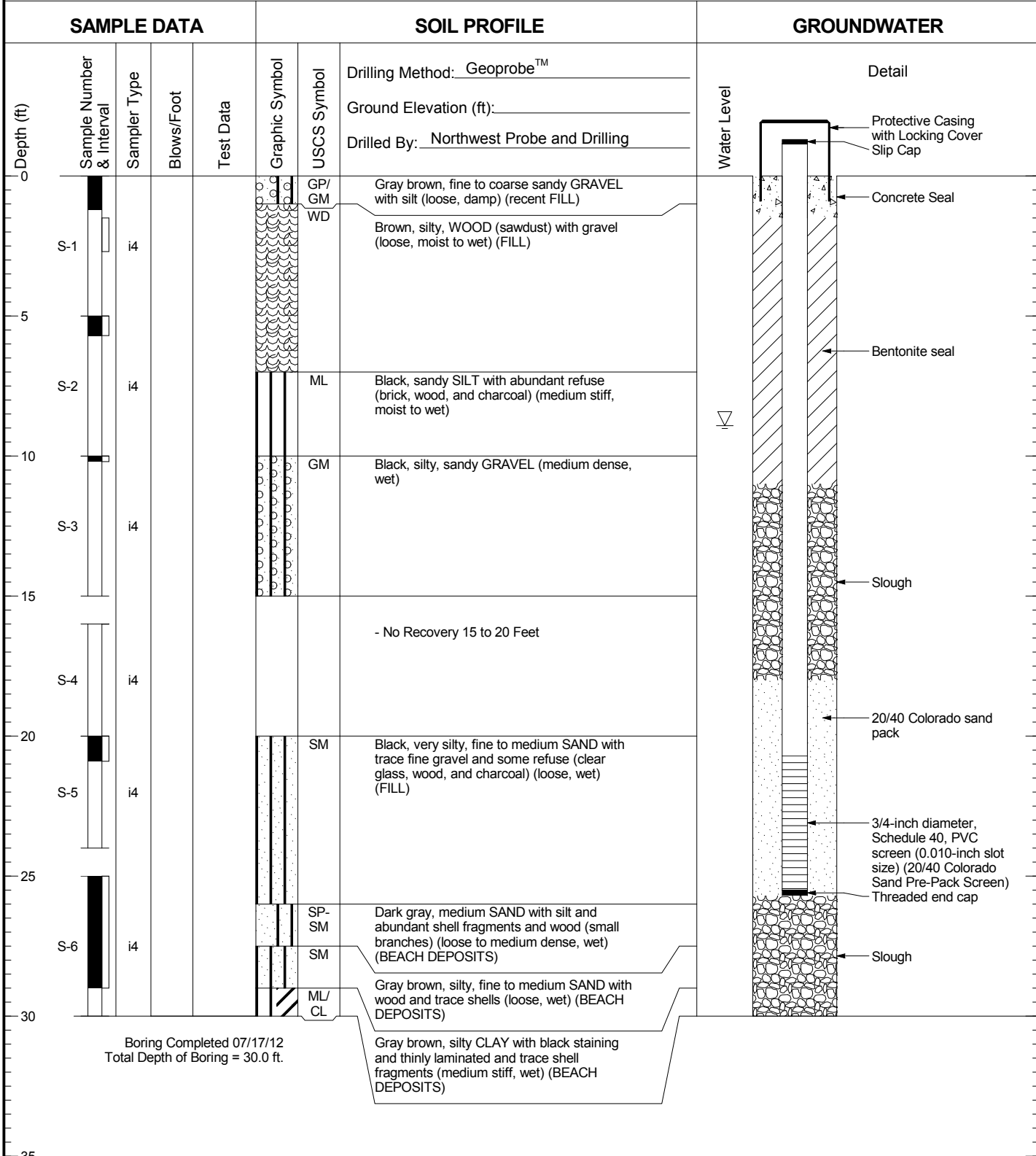


Cornwall Avenue Landfill  
Bellingham, WA

Log of MW-14S

Figure  
**B-9**

# MW-15D



Boring Completed 07/17/12  
Total Depth of Boring = 30.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Generalized log of MW-15D and MW-15S is shown here.

1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG



Cornwall Avenue Landfill  
Bellingham, WA

Log of MW-15D

Figure  
**B-10**

# MW-15S

## SAMPLE DATA

## SOIL PROFILE

## GROUNDWATER

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	Test Data	Graphic Symbol	USCS Symbol	Drilling Method: <u>Geoprobe™</u> Ground Elevation (ft): _____ Drilled By: <u>Northwest Probe and Drilling</u>	Detail 
	0							
5							See Generalized Soil Description on MW-15D Boring Log	
10								
15								

Boring Completed 07/16/12  
Total Depth of Boring = 14.0 ft.

1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.



Cornwall Avenue Landfill  
Bellingham, WA

Log of MW-15S

Figure  
**B-11**

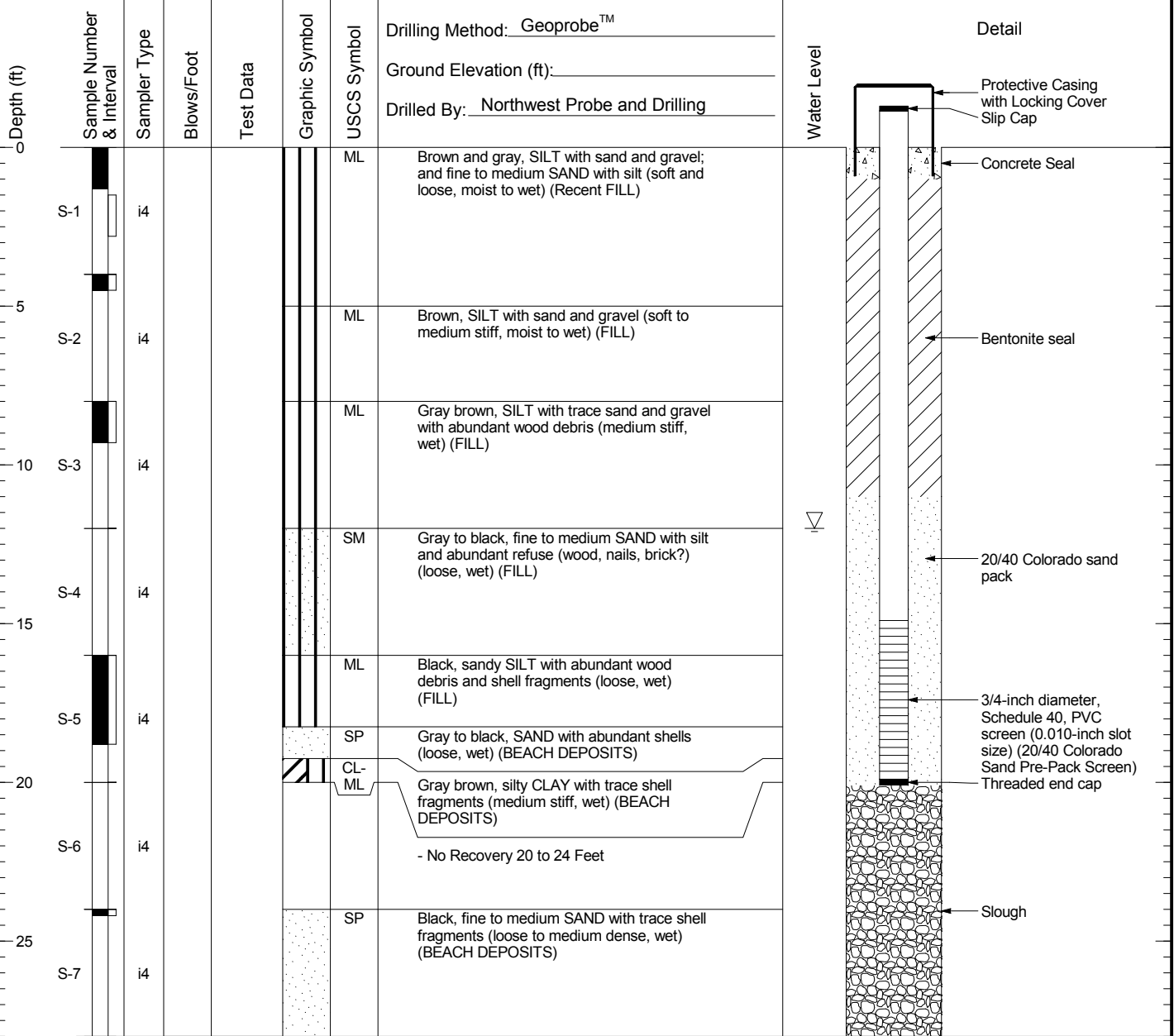


# MW-16D

## SAMPLE DATA

## SOIL PROFILE

## GROUNDWATER



Boring Completed 07/17/12  
Total Depth of Boring = 28.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Generalized log of MW-16D and MW-16S is shown here.

1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG



Cornwall Avenue Landfill  
Bellingham, WA

Log of MW-16D

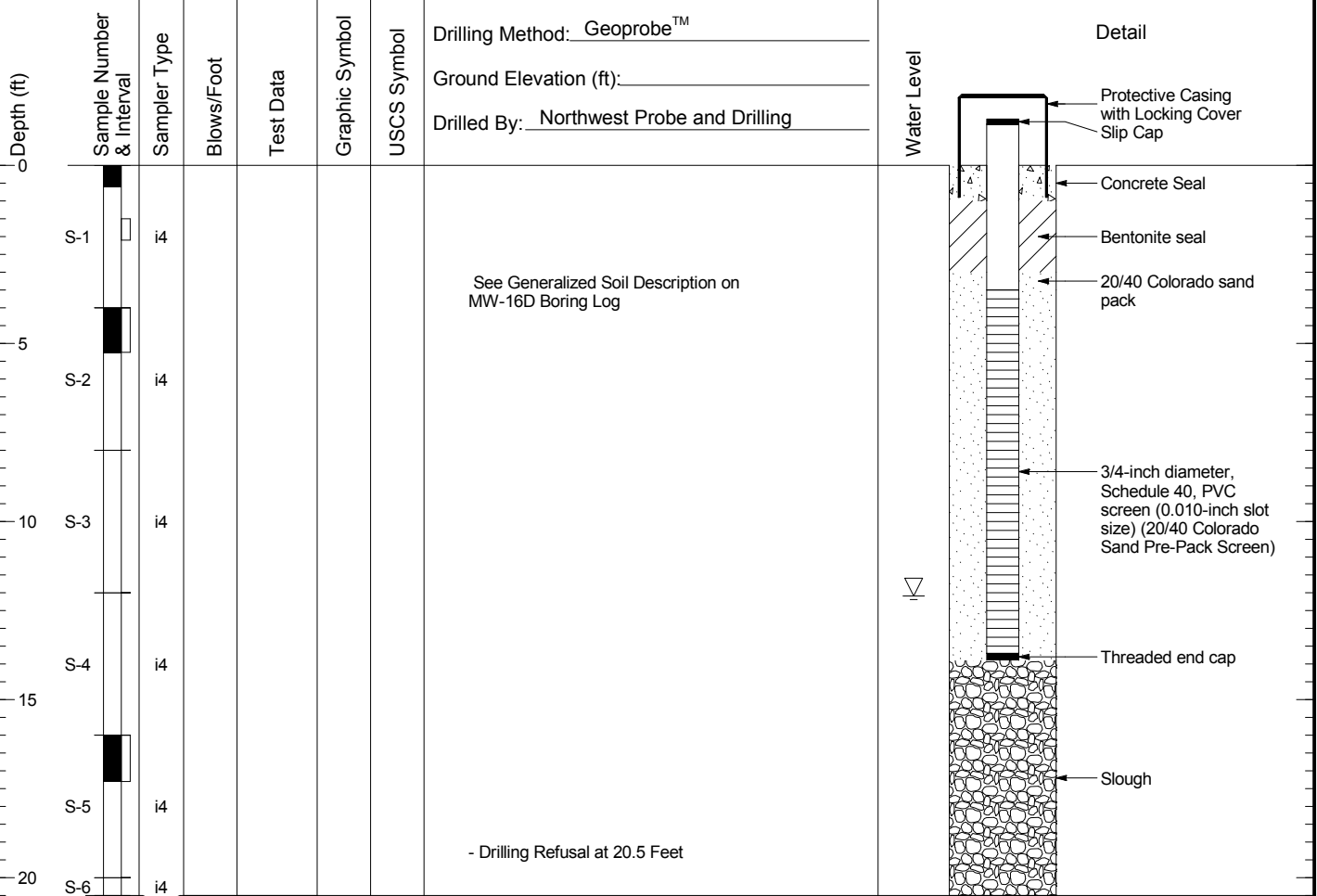
Figure  
**B-12**

# MW-16S

## SAMPLE DATA

## SOIL PROFILE

## GROUNDWATER



- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1020.400.510 2/1/13 N:\PROJECTS\1020.400.510.GPJ WELL LOG

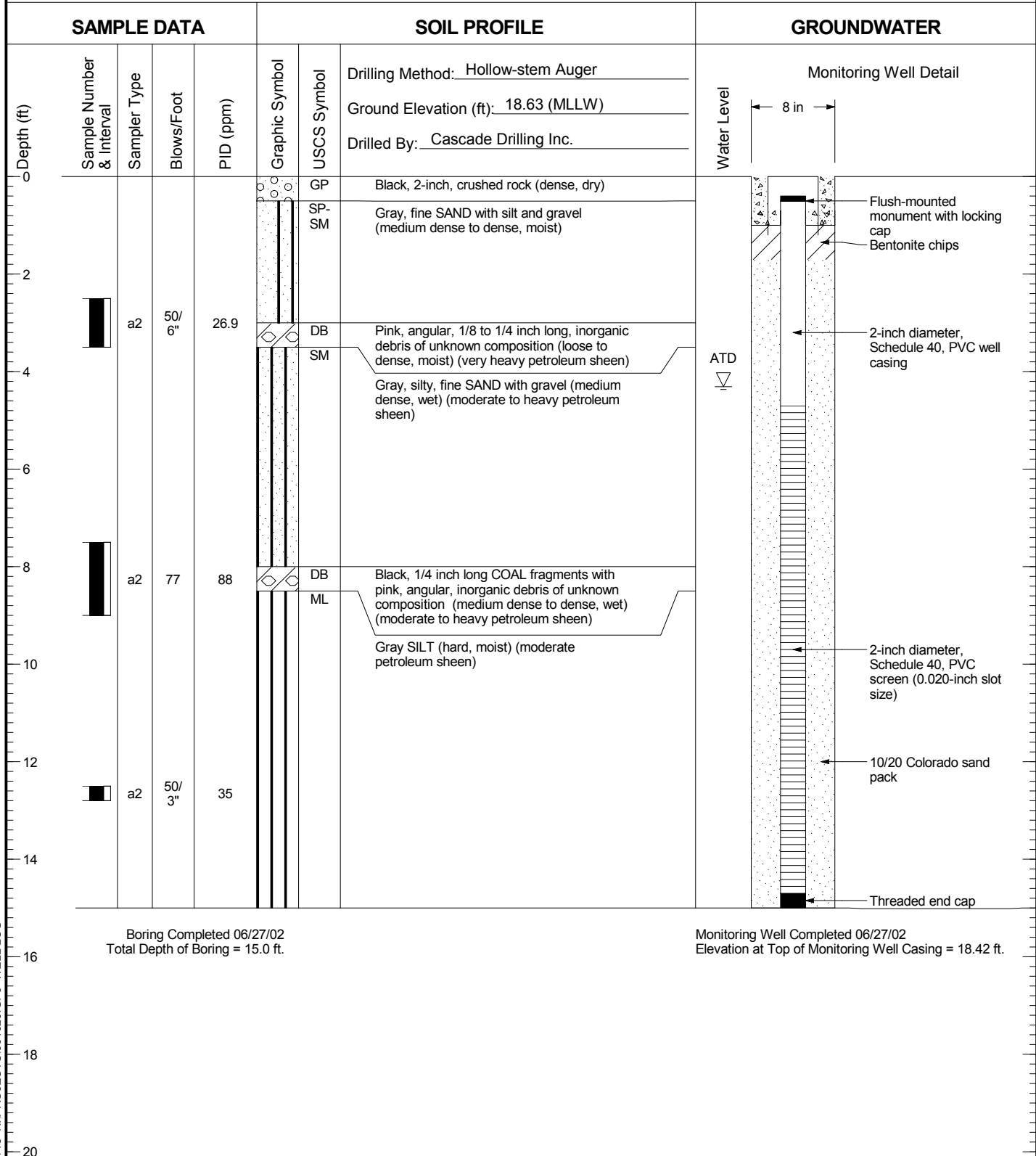


Cornwall Avenue Landfill  
Bellingham, WA

Log of MW-16S

Figure  
**B-13**

# MW-6



- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ WELL LOG

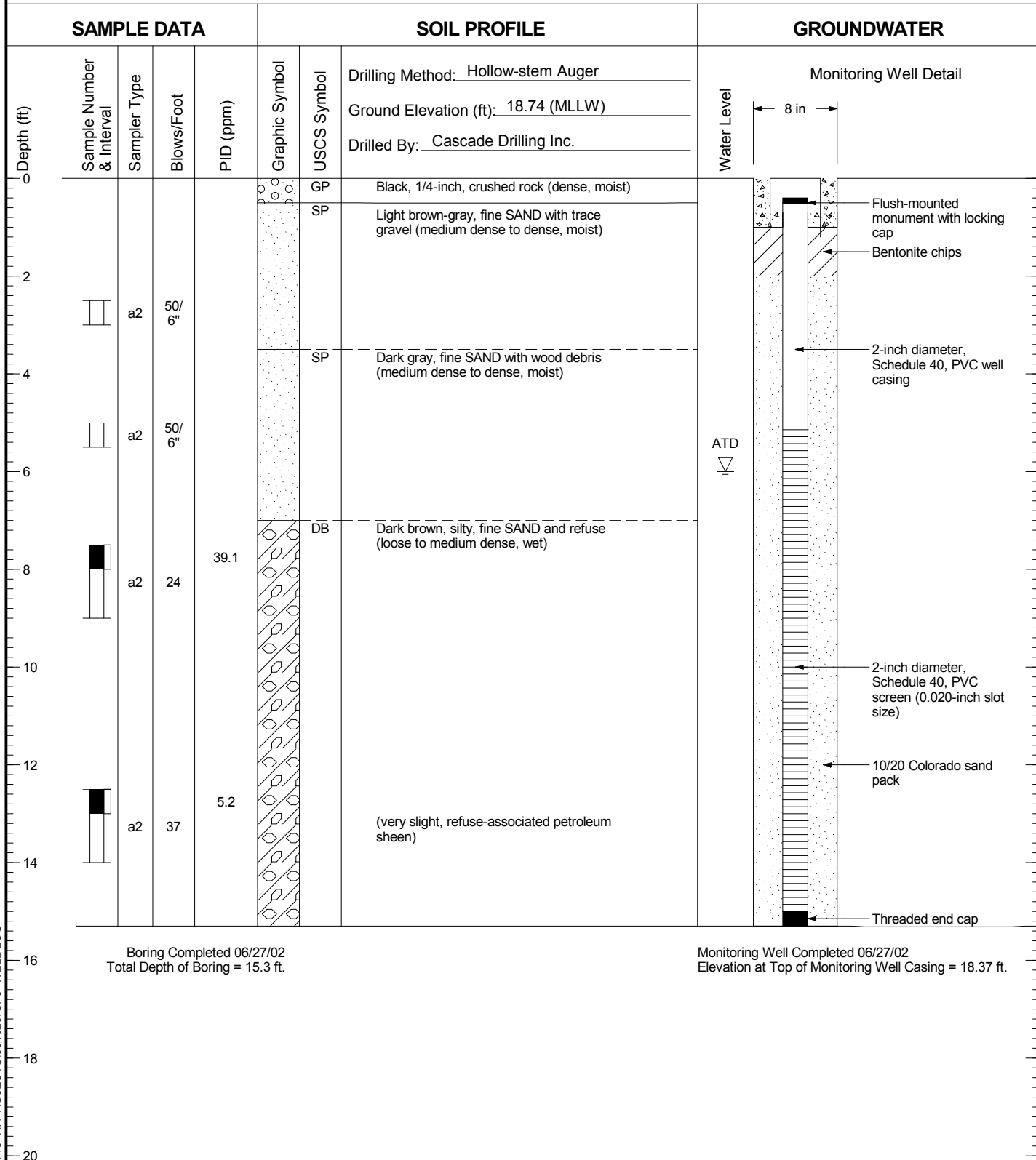


Cornwall Avenue Landfill  
Bellingham, Washington

Log of Monitoring Well MW-6

Figure  
**B-14**

# MW-7



Boring Completed 06/27/02  
Total Depth of Boring = 15.3 ft.

Monitoring Well Completed 06/27/02  
Elevation at Top of Monitoring Well Casing = 18.37 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ WELL LOG



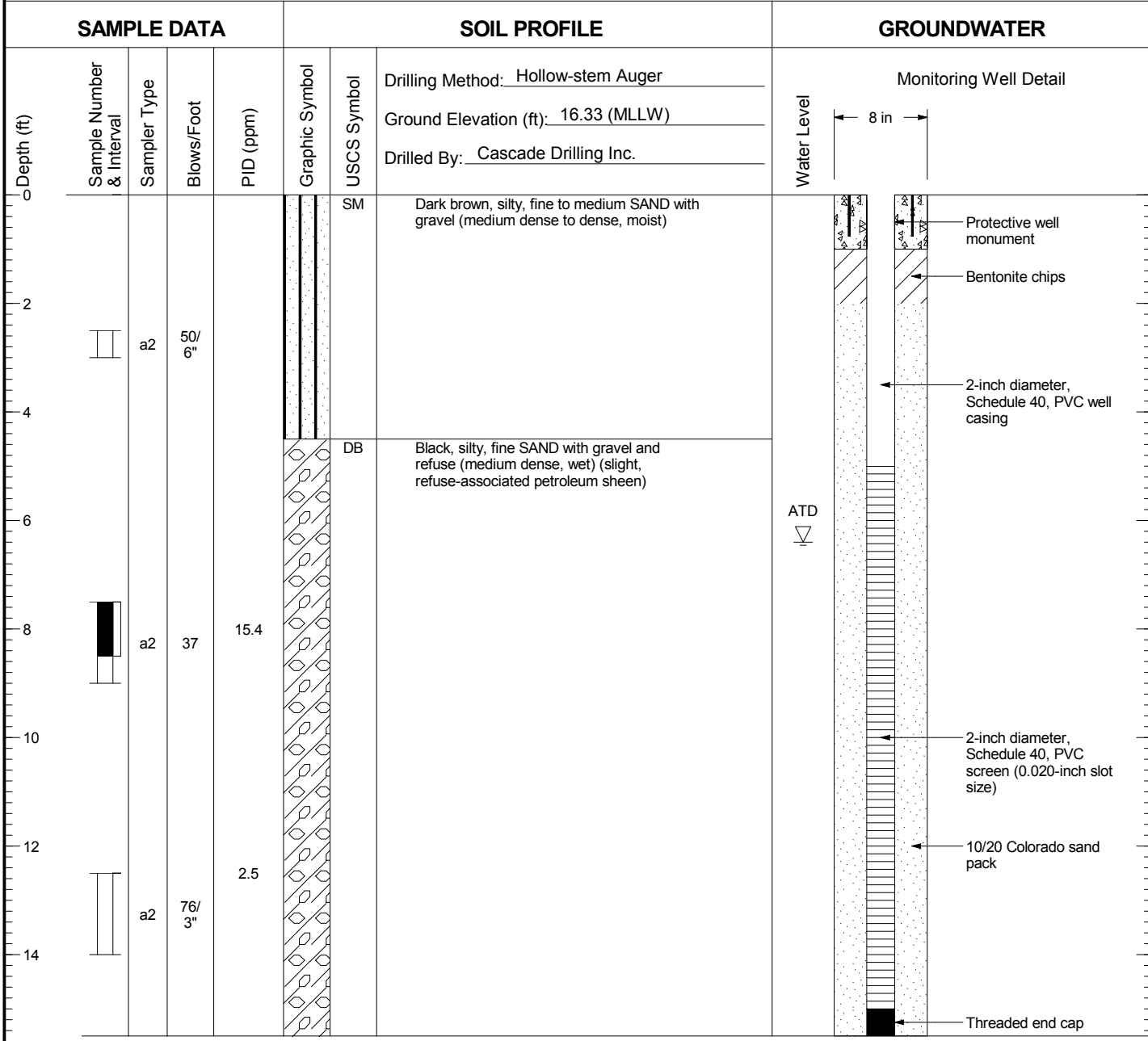
Cornwall Avenue Landfill  
Bellingham, Washington

Log of Monitoring Well MW-7

Figure  
**B-15**



# MW-8



Boring Completed 06/27/02  
Total Depth of Boring = 15.5 ft.

Monitoring Well Completed 06/27/02  
Elevation at Top of Monitoring Well Casing = 18.53 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ WELL LOG

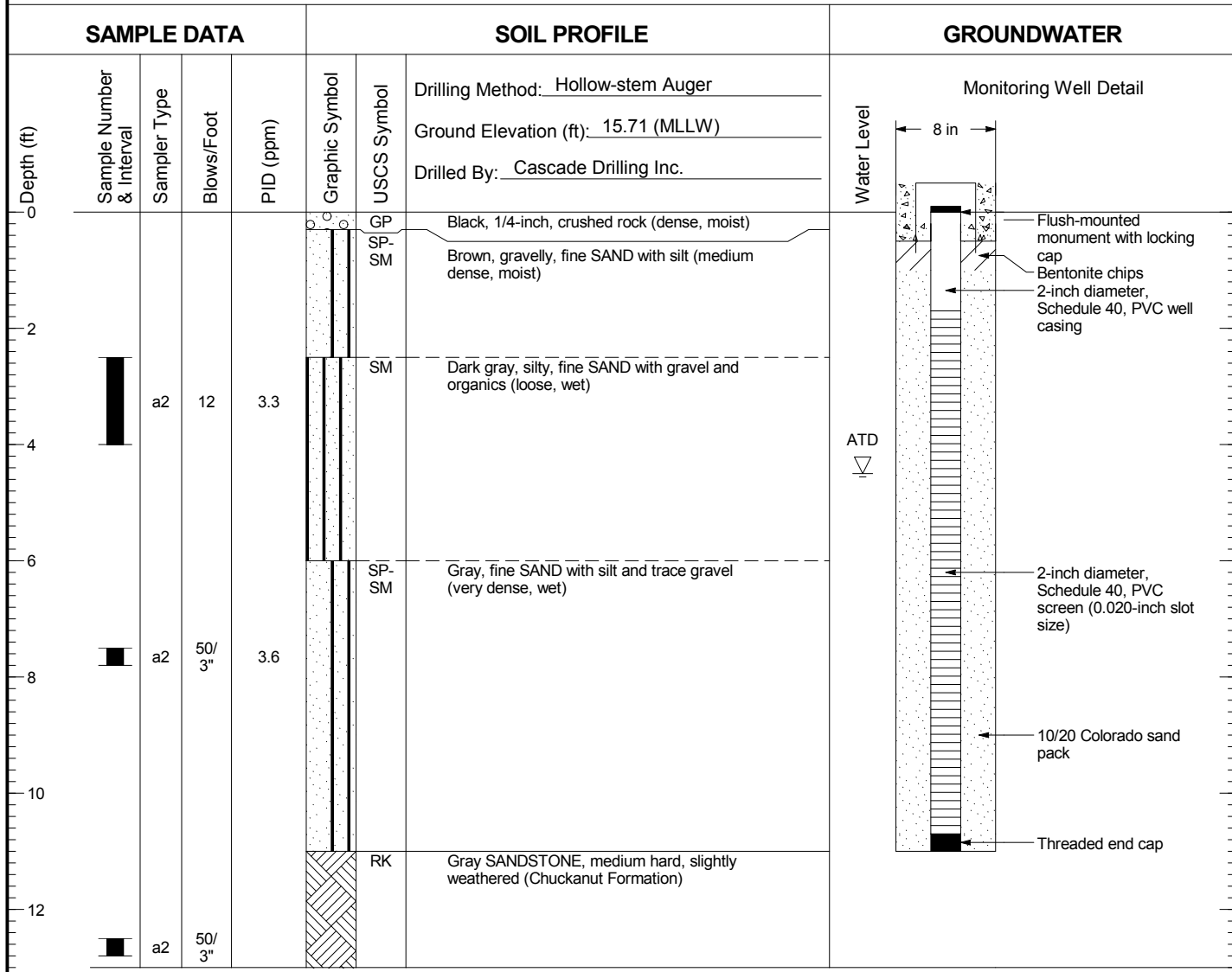


Cornwall Avenue Landfill  
Bellingham, Washington

Log of Monitoring Well MW-8

Figure  
**B-16**

# MW-9



Boring Completed 06/28/02  
 Total Depth of Boring = 13.0 ft.

Monitoring Well Completed 06/28/02  
 Elevation at Top of Monitoring Well Casing = 15.34 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ WELL LOG

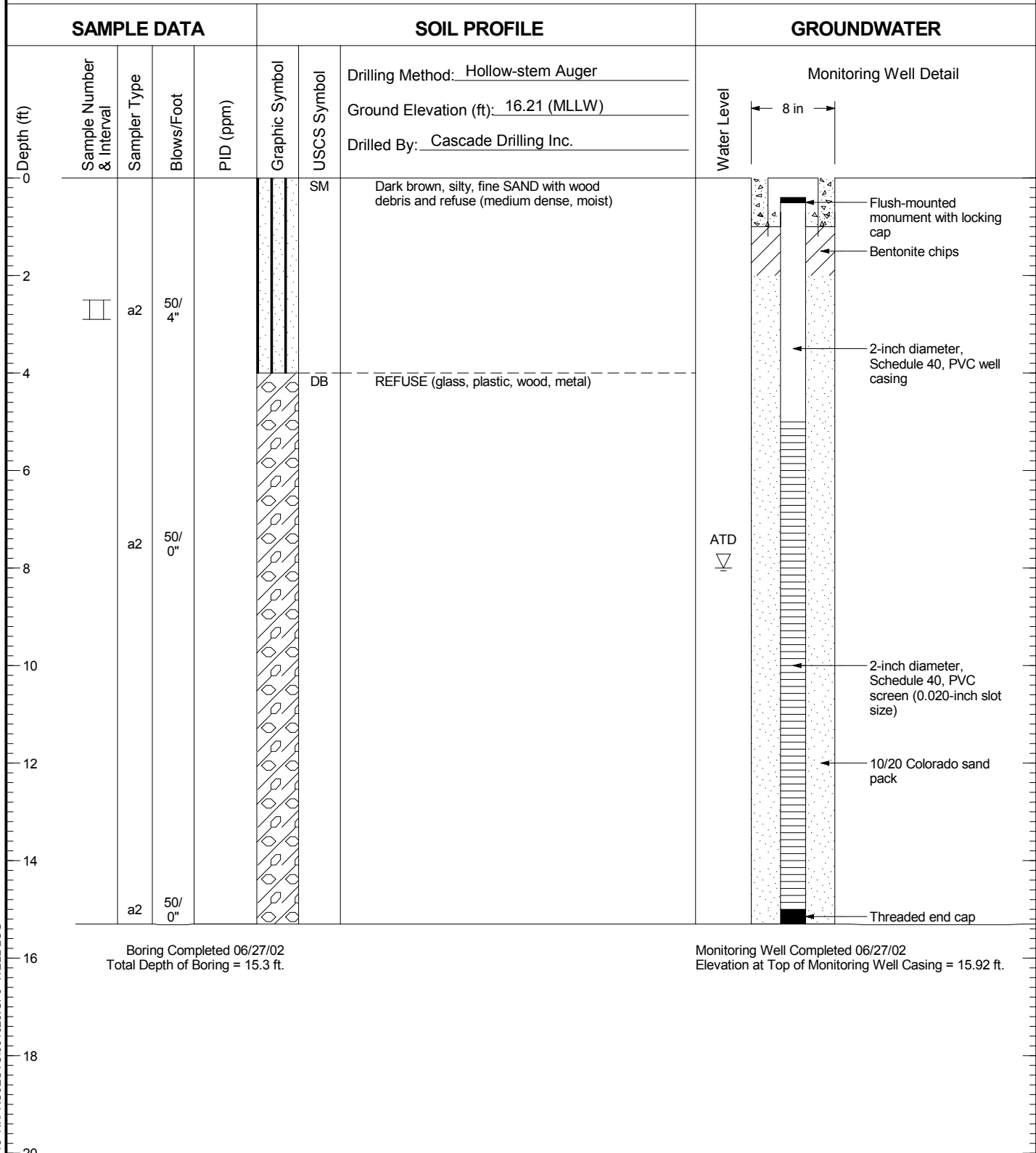


Cornwall Avenue Landfill  
 Bellingham, Washington

Log of Monitoring Well MW-9

Figure  
**B-17**

# MW-10



Boring Completed 06/27/02  
Total Depth of Boring = 15.3 ft.

Monitoring Well Completed 06/27/02  
Elevation at Top of Monitoring Well Casing = 15.92 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ WELL LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Monitoring Well MW-10

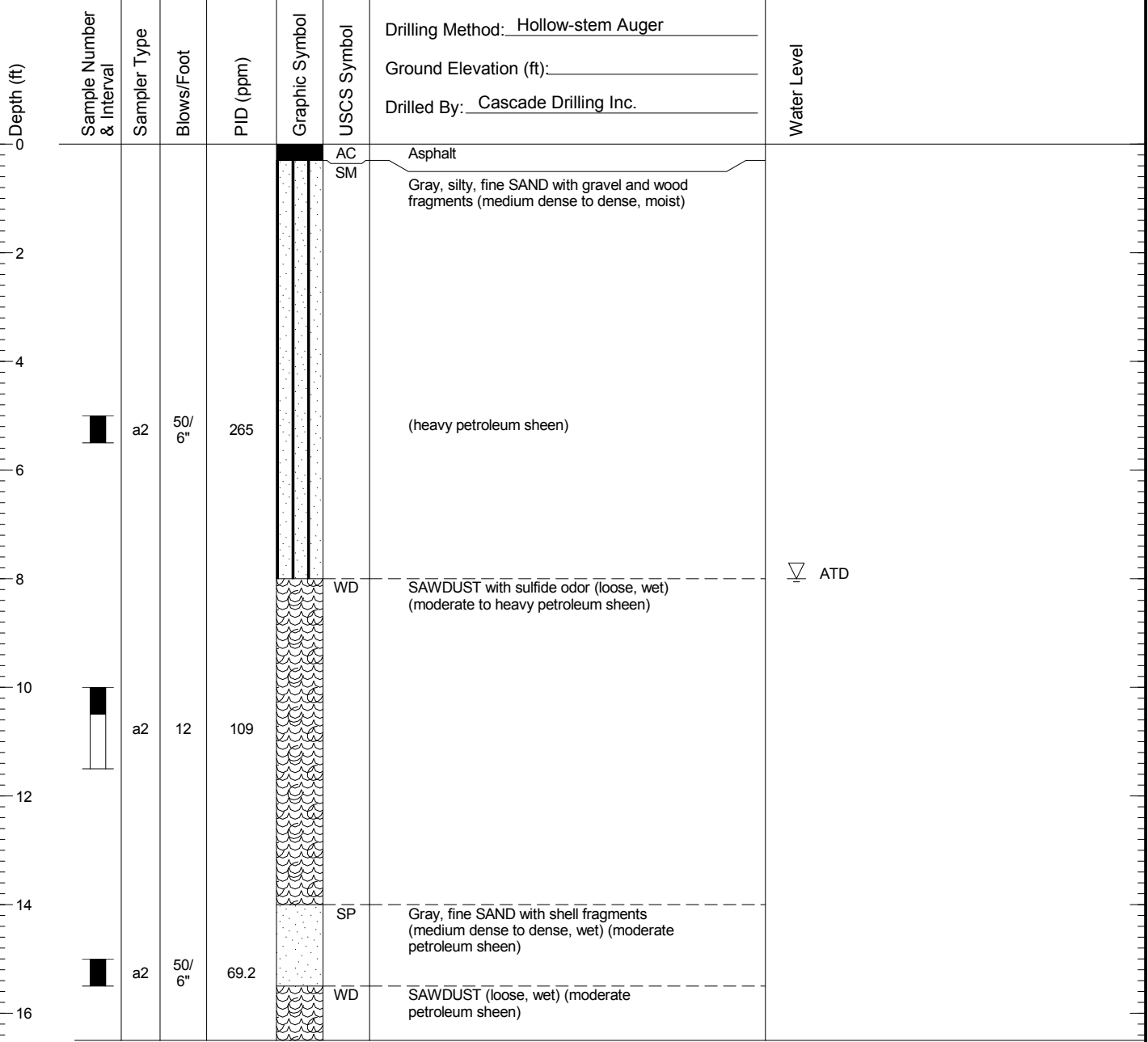
Figure  
**B-18**

# RISB-1

## SAMPLE DATA

## SOIL PROFILE

## GROUNDWATER



Boring Completed 06/27/02  
Total Depth of Boring = 16.5 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SOIL BORING LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Boring RISB-1

Figure  
**B-19**

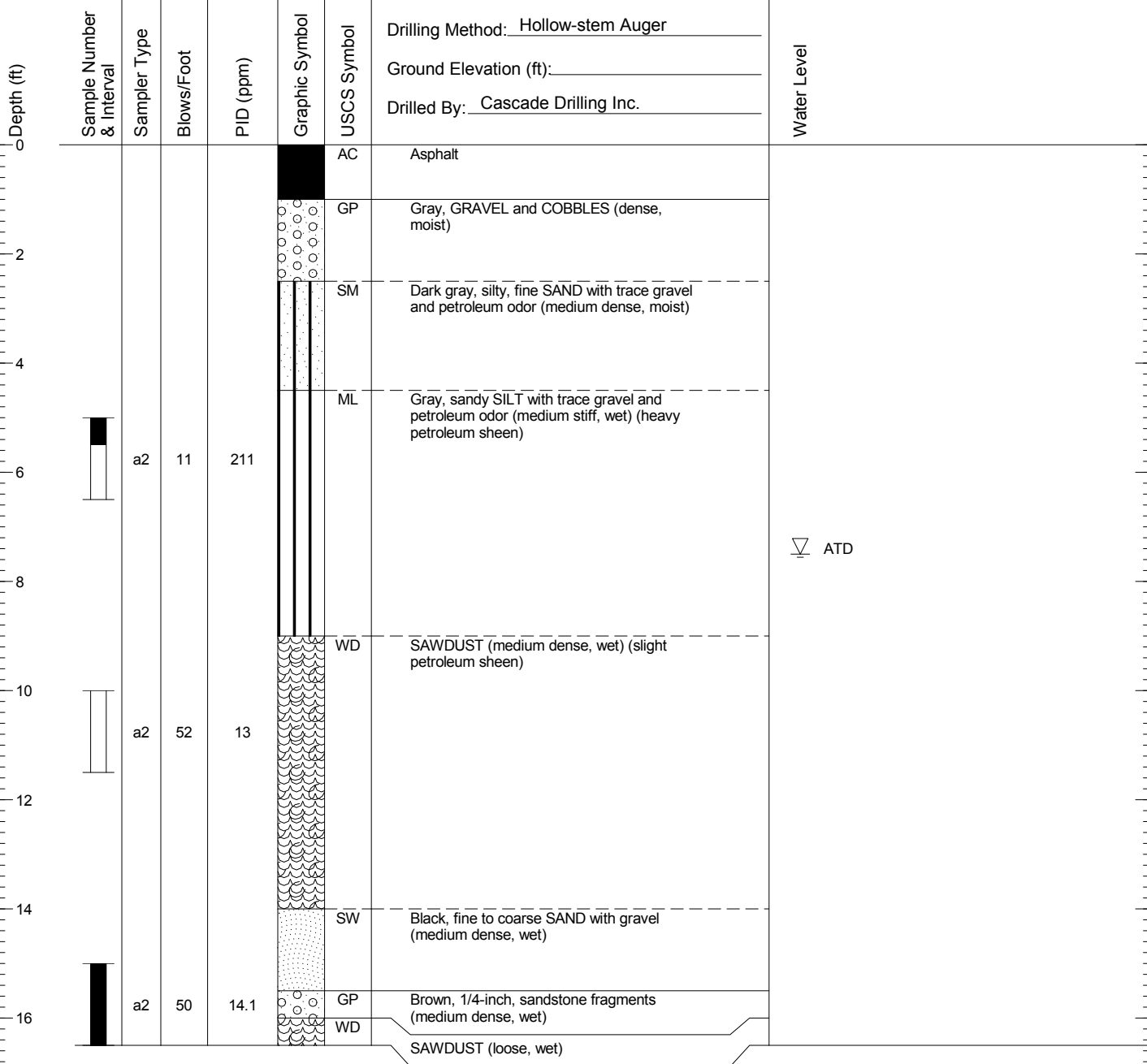


# RISB-2

## SAMPLE DATA

## SOIL PROFILE

## GROUNDWATER



Boring Completed 06/27/02  
Total Depth of Boring = 16.5 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SOIL BORING LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Boring RISB-2

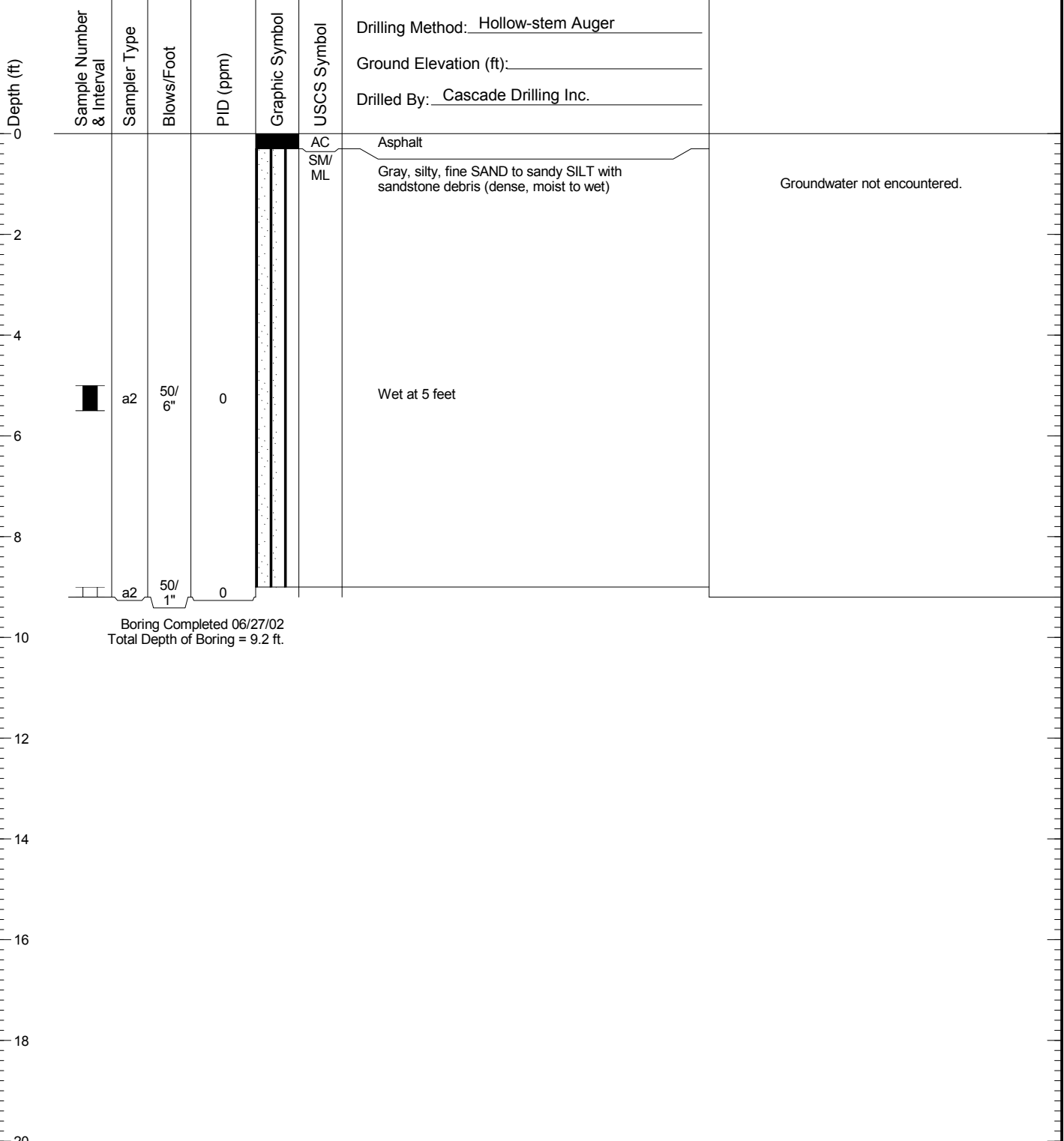
Figure  
**B-20**

# RISB-3

## SAMPLE DATA

## SOIL PROFILE

## GROUNDWATER



- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SOIL BORING.LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Boring RISB-3

Figure  
**B-21**

# RISB-4

SAMPLE DATA				SOIL PROFILE			GROUNDWATER
Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Water Level
	a2	50/5"	156	AC SM	SM	Drilling Method: <u>Hollow-stem Auger</u> Ground Elevation (ft): _____ Drilled By: <u>Cascade Drilling Inc.</u>	∇ ATD
0					Asphalt		
2					Dark gray, silty, fine SAND with gravel (medium dense, moist)		
4					Gray, silty, fine SAND with gravel (dense to very dense, wet) (heavy petroleum sheen)		
6							
8							
10							
12							
14							
16							
18							
20							

Boring Completed 06/27/02  
Total Depth of Boring = 7.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SOIL BORING.LOG



# RITP- 1

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u>
						Ground Elevation (ft): _____
						Excavated By: <u>Custom Backhoe</u>
						Logged By: <u>KJR</u>
0				SM		Gray, gravelly, silty SAND (dense, moist)
2			22.1			
4			52.4		SM	Dark gray, silty, fine SAND with gravel (dense, moist)
6				DB		Slight petroleum sheen at 4 feet REFUSE with silty sand, roots, and creosoted wood fragments (dense, moist)
8			170			Slight petroleum sheen at 8 feet
10						▽ ATD groundwater seepage encountered at 8.5 ft.

Test Pit Completed 06/25/02  
Total Depth of Test Pit = 9.5 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Test Pit RITP- 1

Figure  
**B-23**



## RITP- 2

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): _____ Excavated By: <u>Custom Backhoe</u> Logged By: <u>KJR</u>
			13.9		GP	Black, crushed rock (dense, moist)
					GP	Light gray, limestone rock spalls with crushed limestone powder (dense, moist)
					SP	Brown, fine to medium SAND with trace dark gray sand (medium dense, moist)
					SM	Dark brown to black, silty, fine SAND with trace glass, brick fragments, and sandstone boulders (medium dense to dense, moist)
				DB	REFUSE with soil and wood pulp/sawdust (medium dense, moist)	
			33.7			Slight petroleum sheen at 8.5 feet
			29.9			Heavy petroleum sheen at 9 feet
						▽ ATD groundwater seepage encountered at 9.0 ft.
	Test Pit Completed 06/25/02 Total Depth of Test Pit = 9.5 ft.					

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Test Pit RITP- 2

Figure  
**B-24**

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG

# RITP- 3

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): _____ Excavated By: <u>Custom Backhoe</u> Logged By: <u>KJR</u>
				GP		Light gray, limestone rock spalls (dense, moist)
				SM		Dark gray to black, silty, fine SAND with gravel and trace refuse (medium dense, moist)
				DB		REFUSE and dark gray, silty, fine SAND (medium dense, moist to wet)  Slight, non-petroleum sheen at 5 feet          Slight, non-petroleum sheen at 8 feet          Slight non-petroleum sheen at 9.5 feet

▽ ATD groundwater seepage encountered at 9.0 ft.

Test Pit Completed 06/25/02  
Total Depth of Test Pit = 10.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Test Pit RITP- 3

Figure  
**B-25**

# RITP- 4

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): _____ Excavated By: <u>Custom Backhoe</u> Logged By: <u>KJR</u>
	0			GP	GP	Light gray, limestone rock spalls (dense, moist)
2				DB	DB	Dark brown, silty, fine SAND with refuse and wood debris (medium dense to dense, moist)  Slight, refuse-associated petroleum sheen at 3 feet  Slight, refuse-associated petroleum sheen at 5.5 feet
4						
6						
8						ATD groundwater seepage encountered at 8.0 ft.

Test Pit Completed 06/25/02  
Total Depth of Test Pit = 9.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Test Pit RITP- 4

Figure  
**B-26**

# RITP- 5

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): _____ Excavated By: <u>Custom Backhoe</u> Logged By: <u>KJR</u>
				GP		Black, crushed rock (dense, moist)
				SM		Dark gray-brown, silty, fine SAND (medium dense, moist)  Heavy petroleum sheen, strong gasoline odor at 2.5 feet
				SM		Blue/gray, silty, fine to coarse SAND with gravel (medium dense, moist)
				SP		Brown, fine to coarse SAND with gravel and brick fragments (medium dense, moist to wet)  Heavy petroleum sheen and strong gasoline odor at 4.5 feet

▽ ATD groundwater seepage encountered at 5.5 ft.

Test Pit Completed 06/25/02  
Total Depth of Test Pit = 7.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Test Pit RITP- 5

Figure  
**B-27**

# RITP- 6

SAMPLE DATA		SOIL PROFILE			GROUNDWATER			
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): _____ Excavated By: <u>Custom Backhoe</u> Logged By: <u>KJR</u>		
				GP	Black, crushed rock (dense, moist)			Groundwater not encountered.
				SP	Brown, fine to coarse SAND (medium dense, moist)			
				SM	Dark gray, silty, fine SAND with brick fragments (dense, moist)			
				Test pit met refusal on concrete slab				

Test Pit Completed 06/25/02  
 Total Depth of Test Pit = 4.5 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
 Bellingham, Washington

Log of Test Pit RITP- 6

Figure  
**B-28**



# RITP- 7

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): _____ Excavated By: <u>Custom Backhoe</u> Logged By: <u>KJR</u>
				GP		Black, crushed rock (dense, moist)
				SP-SM		Light gray, fine SAND with silt (medium dense, moist)
				SM		Tan, silty, fine SAND with trace gravel (medium dense, moist)
			5.3	SM		Dark brown, silty, fine SAND with metal fragments, wood debris, and logs (medium dense, moist)
2						
				SM		Gray, silty, fine SAND with trace gravel (medium dense, moist to wet)
4						
			440			Heavy petroleum sheen and strong diesel/gasoline odor at 5 feet  Free product on water surface at 5.5 feet
6						▽ ATD groundwater seepage encountered at 5.5 ft.

Test Pit Completed 06/26/02  
Total Depth of Test Pit = 6.5 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Test Pit RITP- 7

Figure  
**B-29**

# RITP- 8

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): _____ Excavated By: <u>Custom Backhoe</u> Logged By: <u>KJR</u>
			41		GP	Black, crushed rock (dense, moist)
					SM	Dark gray, silty, fine SAND with trace refuse (medium dense, moist)
					DB	REFUSE and gray silty, fine SAND with brick fragments (medium dense, moist)
			4.6		SP	Gray, fine SAND (dense, moist to wet)
			17.3		SP	Moderate petroleum sheen at 8.5 feet
			133		SP	Heavy petroleum sheen and strong gasoline/diesel odor at 9.5 feet
						ATD groundwater seepage encountered at 9.5 ft.

Test Pit Completed 06/26/02  
Total Depth of Test Pit = 10.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Test Pit RITP- 8

Figure  
**B-30**

# RITP- 9

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u>
				SM		Ground Elevation (ft): _____
				DB		Excavated By: <u>Custom Backhoe</u>
			2.9	DB		Logged By: <u>KJR</u>
			3.0			
			1.3			
				ML		

Brown, silty, fine SAND with gravel and roots (loose, moist)

Brown, silty, fine SAND and REFUSE (medium dense, dry to moist)

Dark gray, silty, fine SAND with refuse, logs, and asphalt shingles (medium dense, moist)

Gray SILT (very stiff, moist to wet)

▽ ATD groundwater seepage encountered at 10.5 ft.

Test Pit Completed 06/26/02  
Total Depth of Test Pit = 12.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Test Pit RITP- 9

Figure  
**B-31**

# RITP-10

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): _____ Excavated By: <u>Custom Backhoe</u> Logged By: <u>KJR</u>
			0.0	[Dotted Pattern]	SM	Gray, gravelly, silty, fine SAND (medium dense to dense, moist)
			0.0	[Dotted Pattern]	SM	Gray, silty, fine SAND with gravel and logs (medium dense, moist to wet)
			0.0	[Dotted Pattern]		ATD groundwater seepage encountered at 7.5 ft.

Test Pit Completed 06/26/02  
 Total Depth of Test Pit = 9.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
 Bellingham, Washington

Log of Test Pit RITP-10

Figure  
**B-32**

# RITP-11

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): _____ Excavated By: <u>Custom Backhoe</u> Logged By: <u>KJR</u>
			2.6		GP	Black, crushed rock (dense, moist)
					SM	Brown, silty, fine SAND with wood fragments and gravel (medium dense, moist)
			8.4		DB	Dark gray to black, silty, fine SAND with gravel and refuse (dense, moist)
						ATD groundwater seepage encountered at 7.5 ft.

Test Pit Completed 06/26/02  
Total Depth of Test Pit = 8.5 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Test Pit RITP-11

Figure  
**B-33**



# RITP-12

SAMPLE DATA		SOIL PROFILE			GROUNDWATER			
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): _____ Excavated By: <u>Custom Backhoe</u> Logged By: <u>KJR</u>		
				GP	GP			Groundwater not encountered.
				GP	GP			
				SM	SM			
0				GP	GP			
2				GP	GP			
4				SM	SM			

Test Pit Completed 06/26/02  
 Total Depth of Test Pit = 4.0 ft.

2 to 6 inches of black, non-petroleum free product on a wood-bottomed structure at 4 feet

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
 Bellingham, Washington

Log of Test Pit RITP-12

Figure  
**B-34**

# RITP-13

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Excavation Method: <u>Rubber-tired Backhoe</u> Ground Elevation (ft): _____ Excavated By: <u>Custom Backhoe</u> Logged By: <u>KJR</u>
			0.7		SM	Brown, silty, fine SAND with gravel and trace gravel-sized, yellow sulfur pieces (medium dense, moist)
					DB	Dark gray to black, silty, fine SAND with organic matter, refuse, and wood fragments (loose, moist)
					SP	Blue-gray SAND (dense, moist)
			15.1		DB	Brown WOOD DEBRIS with refuse, silty sand, and gravel (loose to medium dense, moist)
						ATD groundwater seepage encountered at 7.5 ft.

Test Pit Completed 06/26/02  
Total Depth of Test Pit = 8.5 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.
  4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG



Cornwall Avenue Landfill  
Bellingham, Washington

Log of Test Pit RITP-13

Figure  
**B-35**

# RITP-14

SAMPLE DATA		SOIL PROFILE			GROUNDWATER	
Depth (ft)	Sample Number & Interval	Sampler Type	PID (ppm)	Graphic Symbol	USCS Symbol	Groundwater not encountered.
			0	GP	Brown GRAVEL (medium dense, moist)	
			0	SM	Gray to black, silty, fine SAND with gravel (medium dense, moist)	
			0	DB	Pink and gray, angular, 1/8 to 1/4 inch long, inorganic DEBRIS of unknown composition with silt (loose, wet)  Heavy petroleum sheen and solvent/paint odor at 3.5 feet	
			0	SM	Gray, silty, fine SAND with gravel (dense, moist)	
			0	RK	Gray SANDSTONE, medium hard, slightly weathered (Chuckanut Formation)	
Test Pit Completed 06/26/02 Total Depth of Test Pit = 5.5 ft.						
Notes: <ol style="list-style-type: none"> <li>1. Stratigraphic contacts are based on field interpretations and are approximate.</li> <li>2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.</li> <li>3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.</li> <li>4. Densities in units containing refuse are based on drilling action instead of blow counts. Refuse over represented unit density at point of sampling.</li> </ol>						

1020.22 2/1/13 N:\PROJECTS\001020.GPJ SINGLE TEST PIT LOG

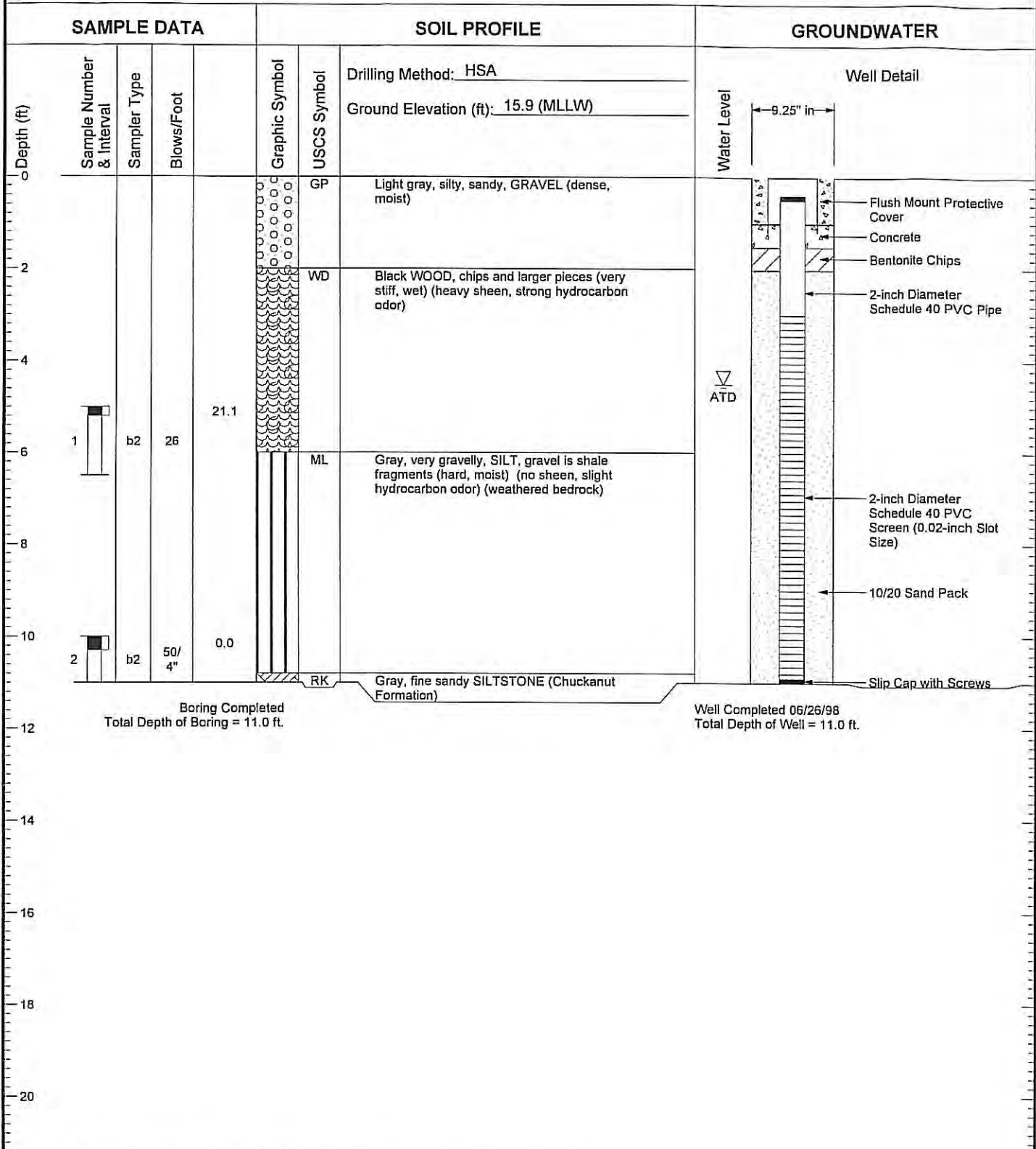


Cornwall Avenue Landfill  
Bellingham, Washington

Log of Test Pit RITP-14

Figure  
**B-36**

# MW-1



- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

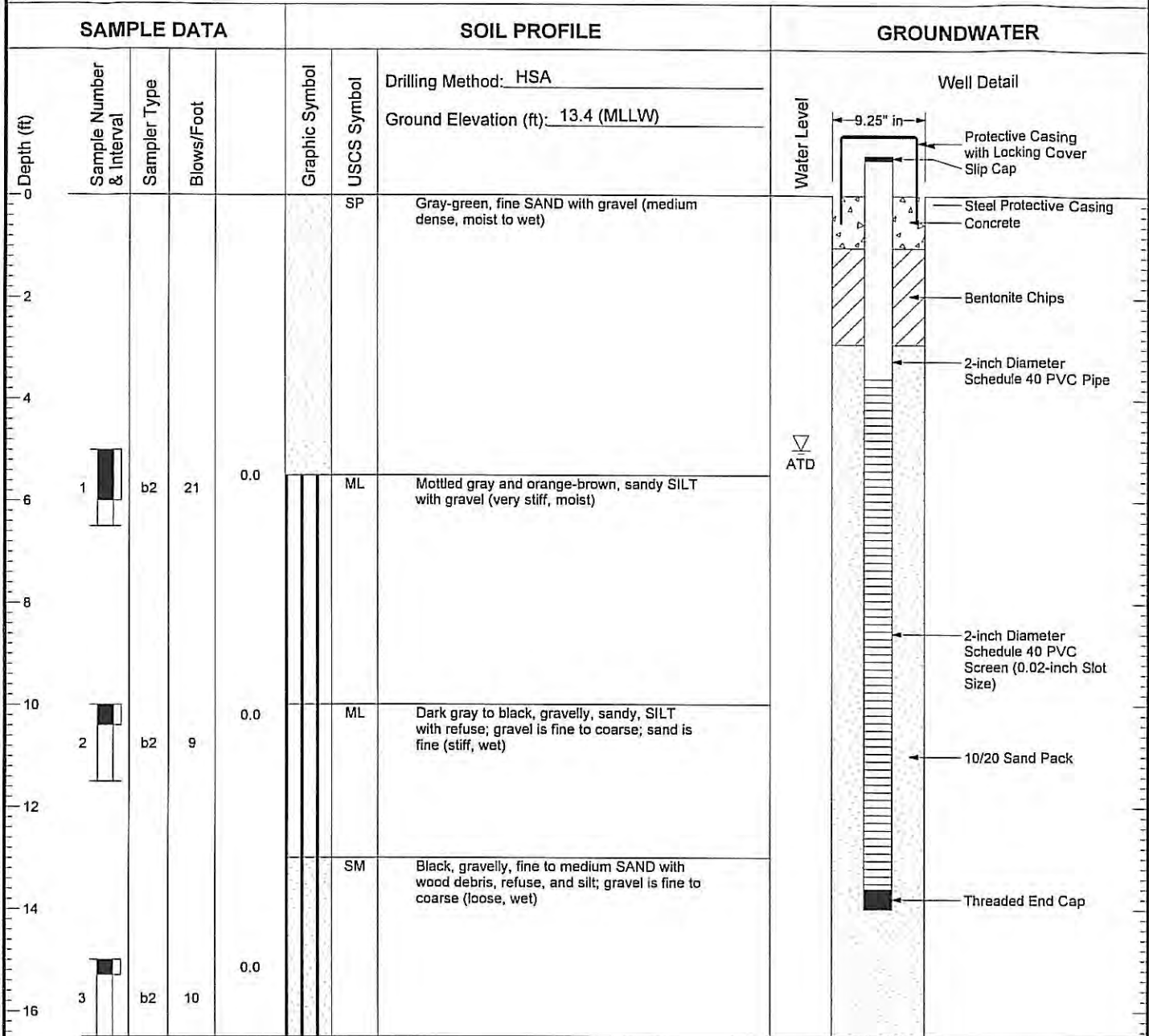
1020.60 10/9/03 \MEDMINAS\GINTG\INTWP\PROJECTS\CORNWALL.GPJ WELL LOG



Log of Well MW-1

Figure C-2

# MW-2



Boring Completed  
Total Depth of Boring = 16.5 ft.

Well Completed 06/25/98  
Total Depth of Well = 14.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1020.60 10/9/03 MEDMNASIGINTGINTWPROJECTS\CORNWALL.GPJ WELL LOG

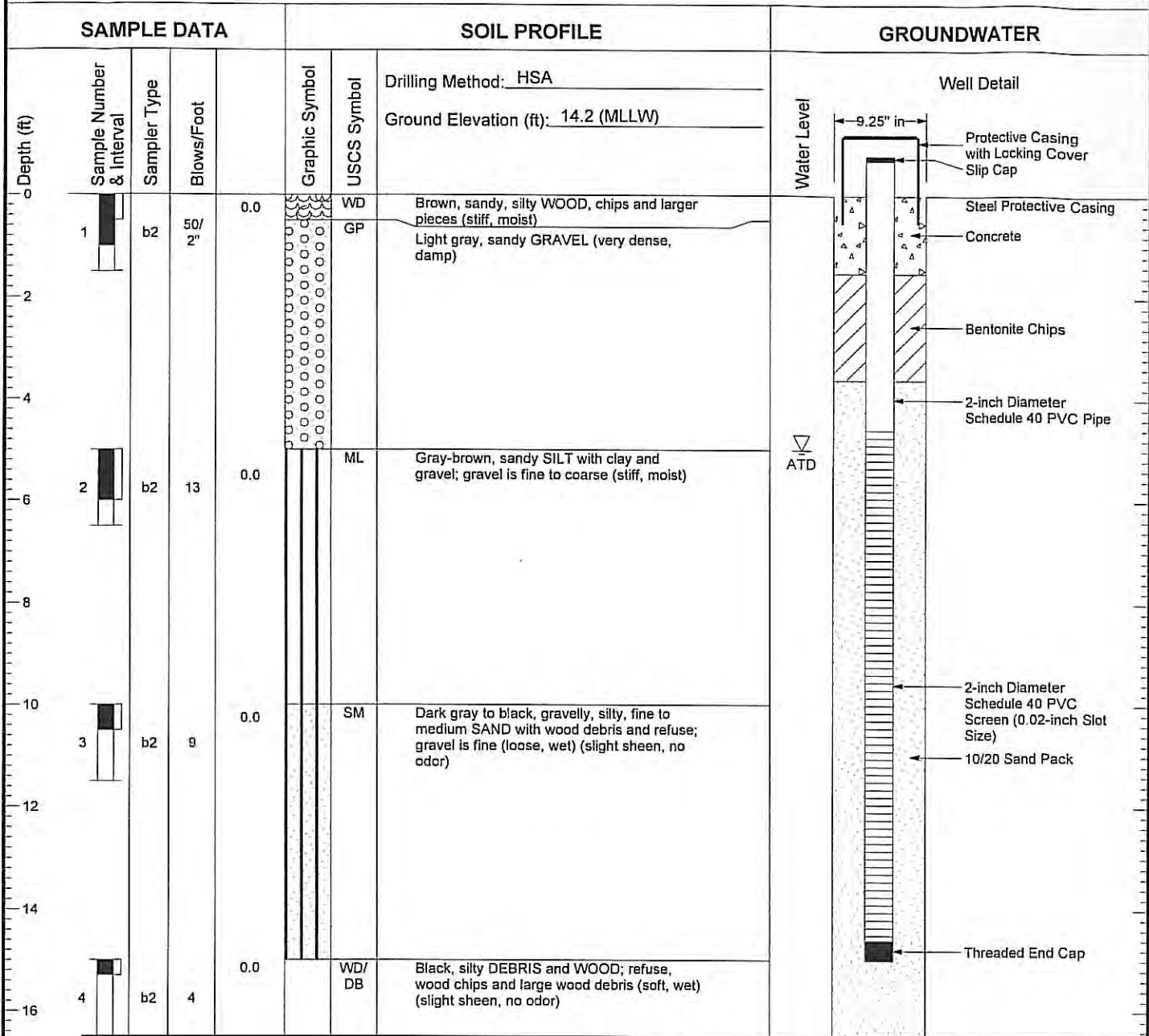


Log of Well MW-2

Figure C-3



# MW-3



Boring Completed  
Total Depth of Boring = 16.5 ft.

Well Completed 06/25/98  
Total Depth of Well = 15.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

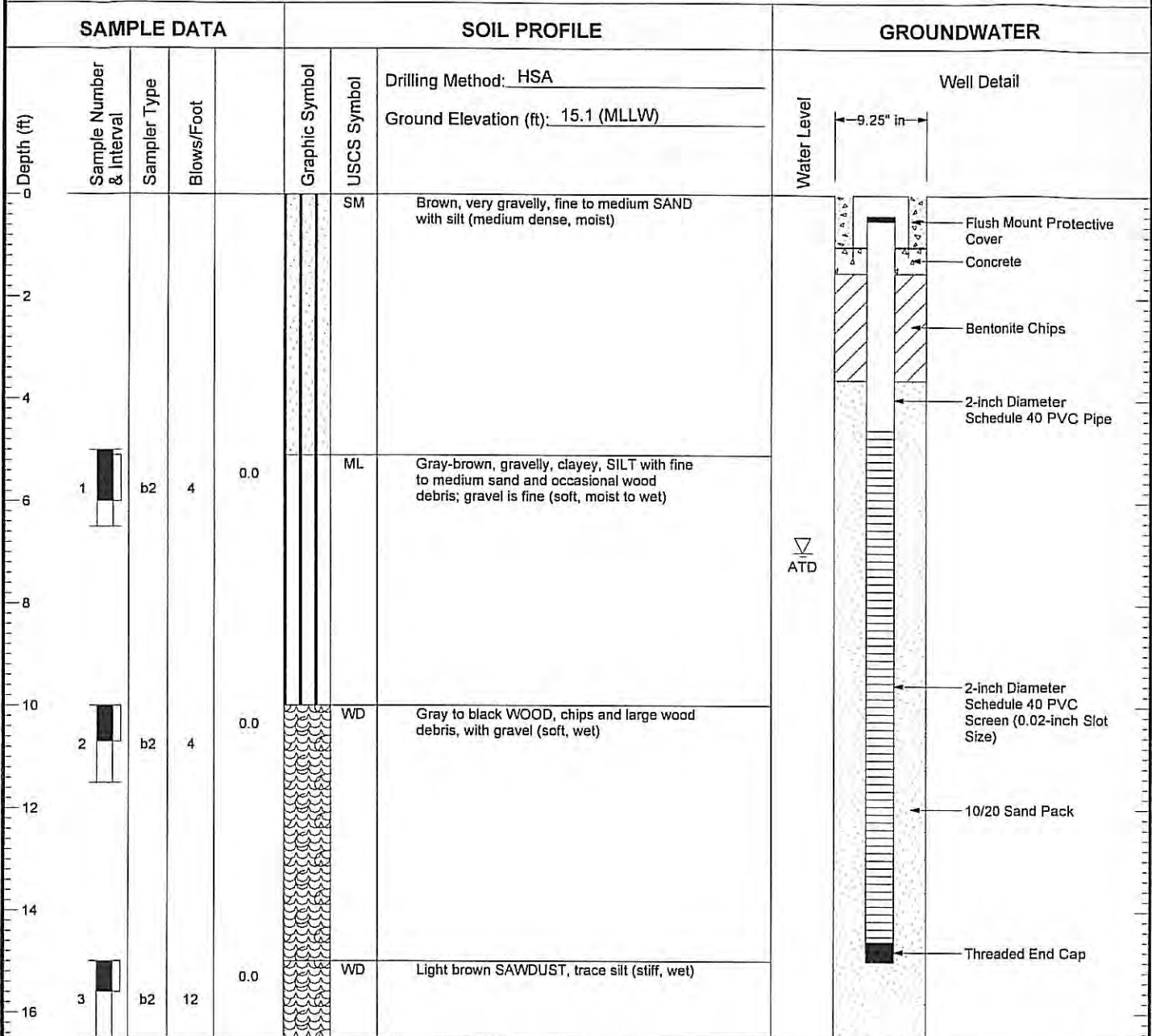
1020.60 10/9/03 \MEDINAS\GINT\PROJECTS\CORNWALL.GPJ WELL LOG



Log of Well MW-3

Figure C-4

# MW-4



Boring Completed  
Total Depth of Boring = 16.5 ft.

Well Completed 05/25/98  
Total Depth of Well = 15.0 ft.

- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

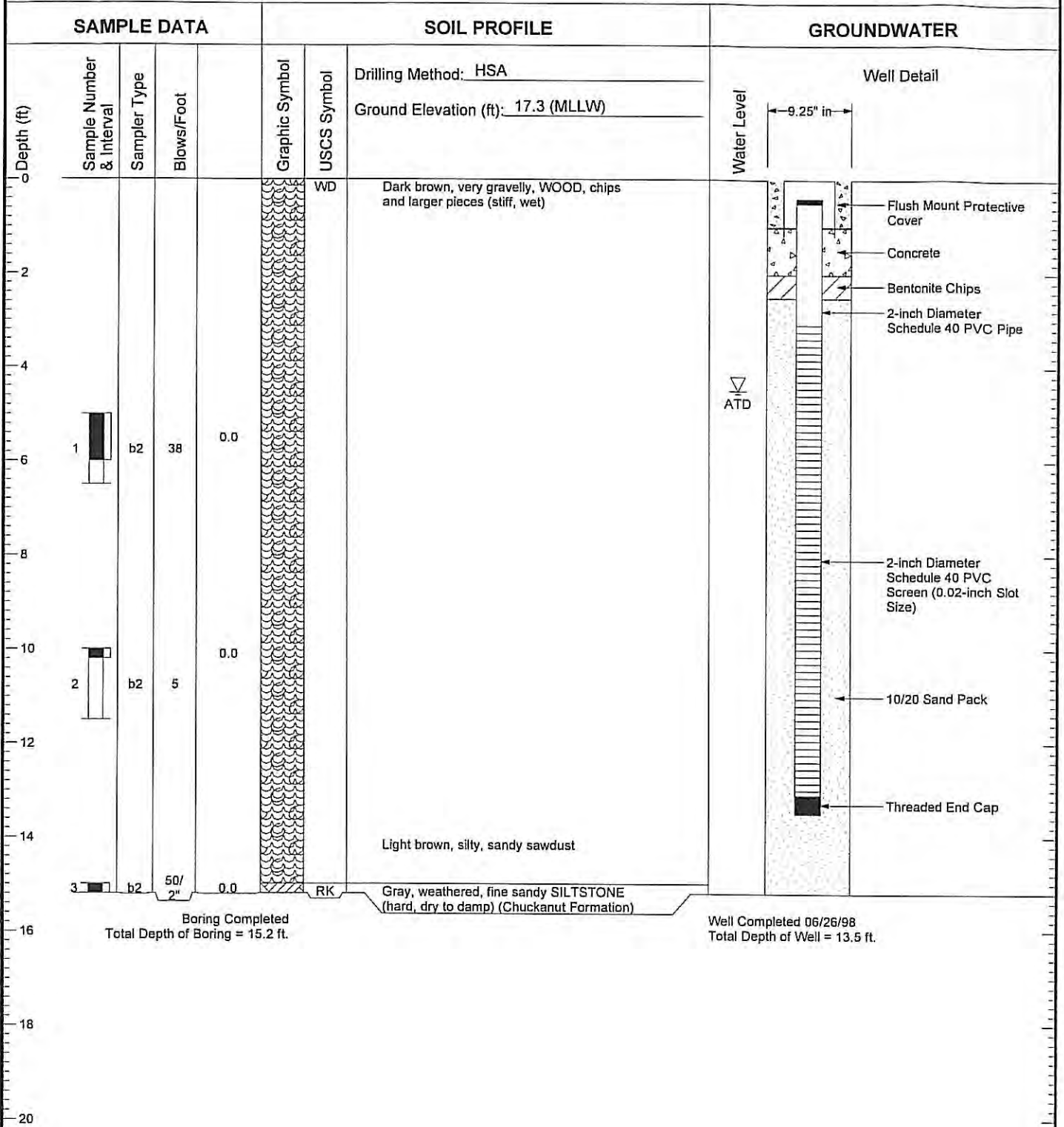
1020.60 10/9/03 NEDMNASIGINT\PROJECTS\CORNWALL.GPJ WELL LOG



Log of Well MW-4

Figure C-5

# MW-5



- Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
  2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
  3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

1020.60 10/9/03 NEDMNASGINTGINTWPROJECTSCORNWALL.GPJ WELL LOG



Log of Well MW-5

Figure C-6

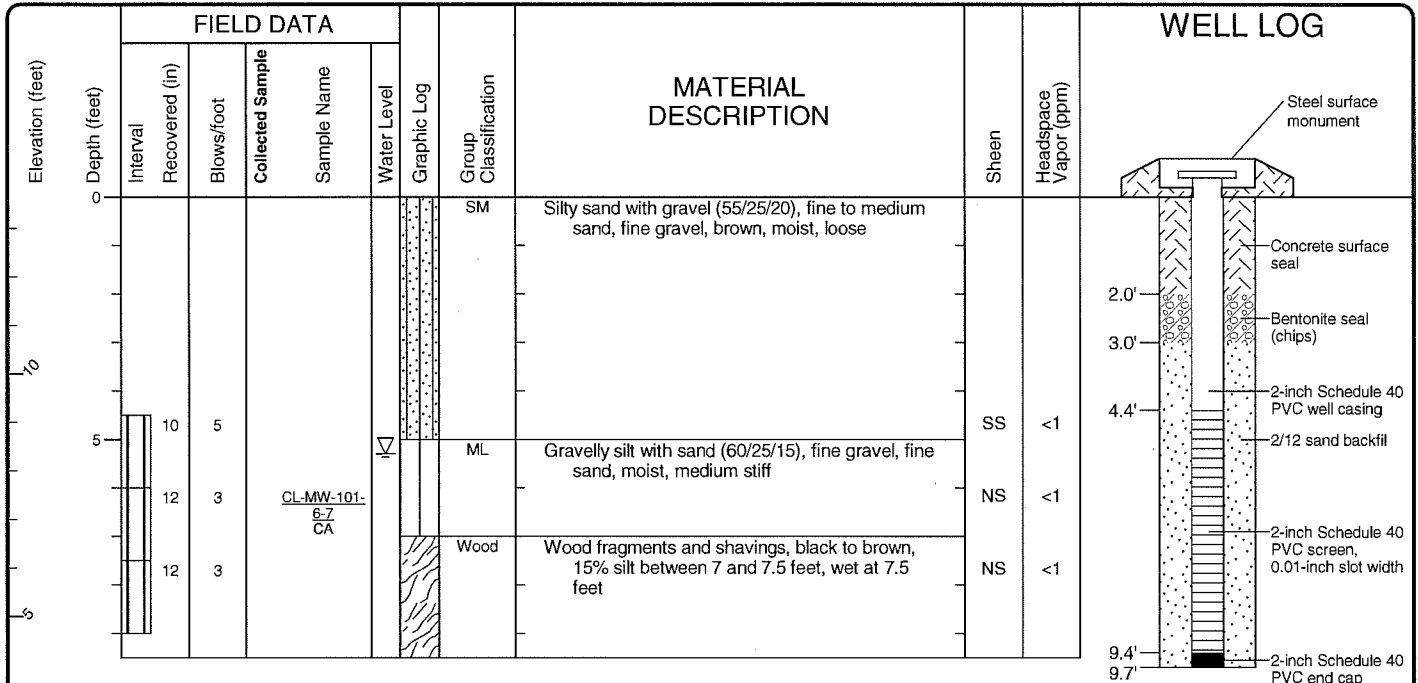
TABLE 2

INTERTIDAL TEST PIT DESCRIPTIONS

	Approximate Elevation (ft, MLLW) <sup>(a)</sup>	Depth Interval (ft)	Description
TP-1	+2	0 - 6	Refuse with granular material (silt, sand, and gravel). Plastic bags, trash, wood, bottles, bricks. Test pit did not encounter native soil/sediment. Granular material is black (possibly indicating iron sulfide presence).
TP-2	+2	0 - 4	Refuse with granular material. Less refuse than TP-1. Bricks, metal debris, porcelain, wires. Did not appear to reach native soil/sediment. Sloughing of test pit wall limited depth attained. Sheen (and petroleum odor) observed on water that collected in pit. Bottles observed. The surface 0-6 inches of material is red gravel (iron staining?). The 6-24 inch interval was black and sulfidic with similar material composition as the remainder of the excavation.
TP-3	+1	0 - 4.5	Similar to TP-2 with slightly more refuse. Petroleum odor and sheen observed. Test pit did not encounter native soil/sediment.
TP-4	+5	0 - 5	Refuse with granular material. Similar to TP-1. Test pit did not encounter native soil/sediment.

(a) Elevations were estimated based on test pit elevation relative to the tide line at a certain time.

Drilled	<u>Start</u> 6/29/2012	<u>End</u> 6/29/2012	Total Depth (ft)	9.5	Logged By Checked By	RNM CEB	Driller	Cascade Drilling, L.P.	Drilling Method	Hollow-stem Auger
Hammer Data	300 (lbs) / 30 (in) Drop			Drilling Equipment	Truck-mounted CME 75		DOE Well I.D.: BHE 982 A 2 (in) well was installed on 6/29/2012 to a depth of 9.7 (ft).			
Surface Elevation (ft) Vertical Datum	13.65 NAVD88			Top of Casing Elevation (ft)	13.06		Groundwater Date Measured			
Easting (X) Northing (Y)	638936.68 1239888.2			Horizontal Datum	NAD83/98		6/29/2012		Depth to Water (ft)	Elevation (ft)
Notes: Auger Data: 4¼-inch I.D.										



**DRAFT**

Note: Please see Figure A-1 for explanation of symbols

**Log of Monitoring Well CL-MW-101**



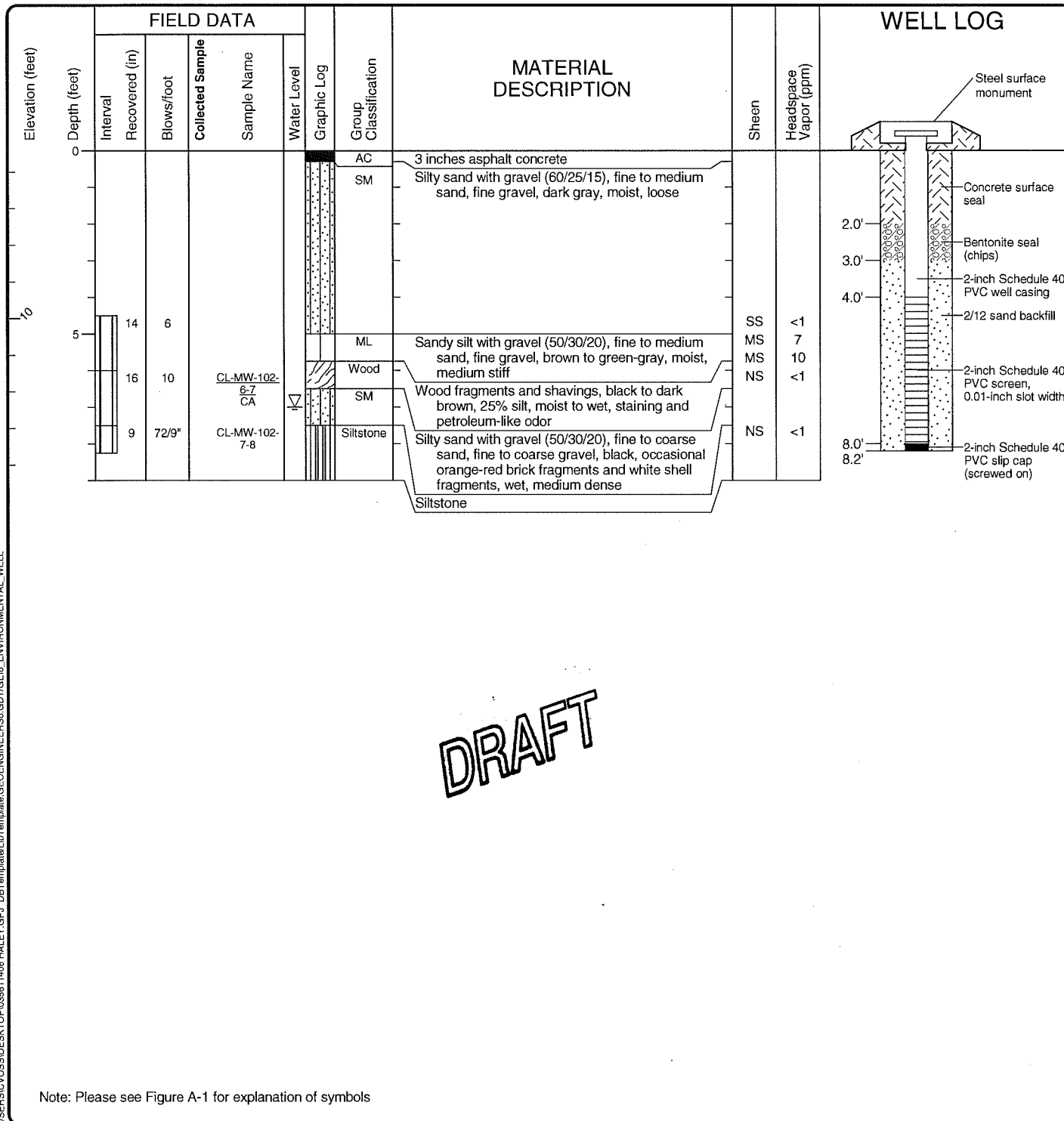
Project: R.G. Haley Site  
 Project Location: Bellingham, Washington  
 Project Number: 0356-114-06

Figure A-  
Sheet 1 of 1

Seattle: Date: 9/27/12 Path: C:\USERS\CVSS\DESKTOP\035611406\_HALEY.GPJ\_DBTemplates\lib\Templates\GEOENGINEERS\_GDT\GEBis\_ENVIRONMENTAL\_WELL



Drilled	Start 6/29/2012	End 6/29/2012	Total Depth (ft)	9	Logged By Checked By	RNM CEB	Driller	Cascade Drilling, L.P.	Drilling Method	Hollow-stem Auger
Hammer Data	300 (lbs) / 30 (in) Drop			Drilling Equipment	Truck-mounted CME 75		DOE Well I.D.: BHE 983 A 2 (in) well was installed on 6/29/2012 to a depth of 8.2 (ft).			
Surface Elevation (ft) Vertical Datum	14.58 NAVD88			Top of Casing Elevation (ft)	14.27		Groundwater Date Measured			
Easting (X) Northing (Y)	638879.53 1230037.41			Horizontal Datum	NAD83/98		Date Measured	Depth to Water (ft)	Elevation (ft)	
Notes: Auger Data: 4¼-inch I.D.										



DRAFT

Note: Please see Figure A-1 for explanation of symbols

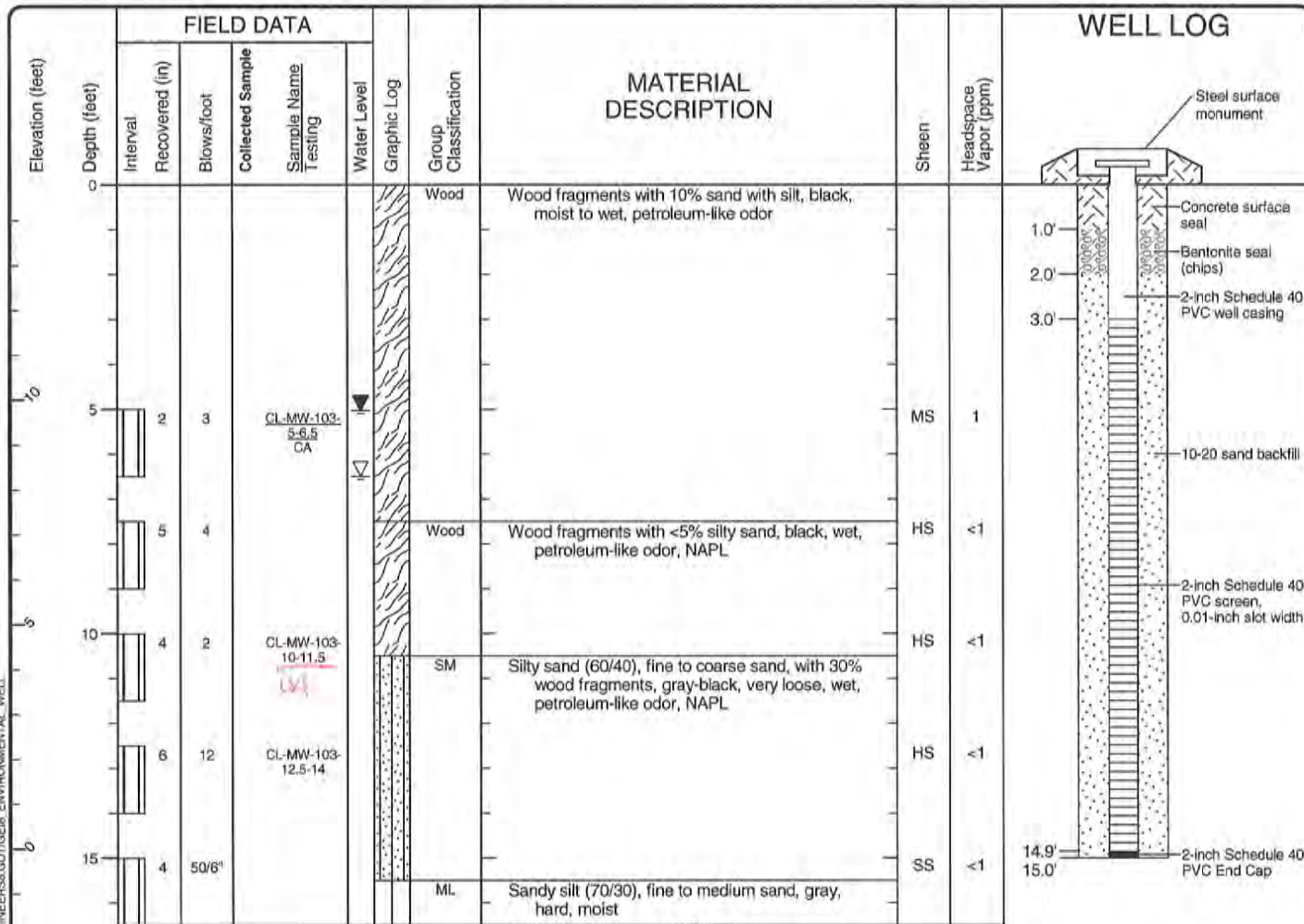
### Log of Monitoring Well CL-MW-102



Project: R.G. Haley Site  
 Project Location: Bellingham, Washington  
 Project Number: 0356-114-06

Figure A-  
Sheet 1 of 1

Drilled	<u>Start</u> 7/10/2012	<u>End</u> 7/10/2012	Total Depth (ft)	16.5	Logged By	CTB	Checked By	CEB	Driller	Boart Longyear	Drilling Method	Hollow-stem Auger
Hammer Data	300 (lbs) / 30 (in) Drop			Drilling Equipment	Truck-mounted CME 75			DOE Well I.D.: BHK 961 A 2 (in) well was installed on 7/10/2012 to a depth of 15 (ft).				
Surface Elevation (ft)	14.8			Top of Casing Elevation (ft)	14.41			<u>Groundwater</u>				
Vertical Datum	NAVD88								<u>Date Measured</u>	<u>Depth to Water (ft)</u>	<u>Elevation (ft)</u>	
Easting (X)	639109.99			Horizontal Datum	NAD83/98			7/10/2012	6.5	8.30		
Northing (Y)	1240003.47											
Notes: Auger Data: 4¼-inch I.D.; 8½-inch O.D.												



DRAFT

Note: Please see Figure A-1 for explanation of symbols

**Log of Monitoring Well CL-MW-103**



Project: R.G. Haley Site  
 Project Location: Bellingham, Washington  
 Project Number: 0356-114-06

Figure A-Sheet 1 of 1

Seattle: Date: 9/27/12 Path: C:\USERS\CV\SS\DESKTOP\GEOENGINEERS\GOT\GEB\TEMPORARY\GEOENGINEERS\GOT\GEB\ENVIRONMENTAL\WELL

Drilled	<u>Start</u> 6/25/2012	<u>End</u> 6/25/2012	Total Depth (ft)	7.5	Logged By Checked By	RNM CEB	Driller	Cascade Drilling, L.P.	Drilling Method	Direct Push
Surface Elevation (ft) Vertical Datum	15.23 NAVD88			Hammer Data	140 (lbs) / 30 (in) Drop			Drilling Equipment	GeoProbe 6600	
Easting (X) Northing (Y)	638967.38 1240106.26			System Datum	NAD83/98			<u>Groundwater</u> <u>Date Measured</u>	<u>Depth to</u> <u>Water (ft)</u>	<u>Elevation (ft)</u>
Notes: 5 foot by 1½-inch core with poly liner								6/25/2012	4.5	10.73

Elevation (feet)	FIELD DATA						MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level				
0		32					GP			
							GP			
							SM		<1	
5		29		CL-SB-101-4-5 CA			SP-SM		<1	
				CL-SB-101-6-7 CA			MS		2	
							MS		<1	
							Siltstone			
							NS		<1	

DRAFT

Note: Please see Figure A-1 for explanation of symbols

### Log of Boring CL-SB-101



Project: R.G. Haley Site  
 Project Location: Bellingham, Washington  
 Project Number: 0356-114-06

Figure A-  
Sheet 1 of 1

Seattle: Date: 6/27/12 Path: C:\USERS\CV\SS\DESKTOP\035611406-HALEY.GPJ DBTTemplate\JobTemplate\GEOENGINEERS\GDT\GEB\_ENVIRONMENTAL\_STANDARD

Start Drilled 6/25/2012	End 6/25/2012	Total Depth (ft) 15	Logged By RNM Checked By CEB	Driller Cascade Drilling, L.P.	Drilling Method Direct Push
Surface Elevation (ft) Vertical Datum 15.01 NAVD88		Hammer Data 140 (lbs) / 30 (in) Drop		Drilling Equipment GeoProbe 6600	
Easting (X) Northing (Y) 639061.86 1240059.79		System Datum NAD83/98		Groundwater Date Measured 6/25/2012	Depth to Water (ft) 10.0 Elevation (ft) 5.01
Notes: 5 foot by 1½-inch core with poly liner					

Elevation (feet)	FIELD DATA						MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS		
	Depth (feet)	Interval	Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing					Water Level	Graphic Log
0		54						GP	Poorly graded gravel with sand (50/45/5 silt), fine to coarse gravel, fine to medium sand, brown, moist	SS	<1	
								GP	Poorly graded gravel (90/10 sand), fine to medium sand, gray, moist	NS	<1	
								SP-SM	Poorly graded sand with gravel and silt (50/40/10), medium to coarse sand, fine to coarse gravel, gray to brown, occasional red-orange brick fragments and black staining, moist	NS	<1	
								SM	Silty sand (50/45/5 gravel), fine to medium sand, fine to coarse gravel, brown, occasional brown fresh wood shavings and roots, moist	NS	<1	
5		48			CL-SB-102-4-5 CA			SP-SM	Poorly graded sand with gravel and silt (50/40/10), medium to coarse sand, fine to coarse gravel, gray to brown, occasional red-orange brick fragments, moist	NS	<1	
								SM	Silty sand with gravel (50/30/20), fine to medium sand, fine to coarse gravel, gray, occasional brown fresh wood fragments and roots, moist	MS	4	
10		50			CL-SB-102-9-10 CA			Wood	Silt and wood (50% silt, 50% wood), fresh brown to decomposed black wood fragments and shavings, moist to wet, petroleum-like odor	HS	27	
								Wood	Fresh orange-brown wood fragments and shavings, wet	MS	3	
					CL-SB-102-13-14 CA			ML	Silt with sand (80/20), fine sand, gray, occasional fine gravel, wet to moist	NS	<1	
15								Siltstone	Siltstone	NS	<1	

DRAFT

Note: Please see Figure A-1 for explanation of symbols

### Log of Boring CL-SB-102



Project: R.G. Haley Site  
 Project Location: Bellingham, Washington  
 Project Number: 0356-114-06

Seattle: Date: 9/27/12 Path: C:\Users\CVOS\SS\DESKTOP\035611406\HALEY.GPJ DBT\template\LBT\template\GEOENGINEERS8.GDT\GEI8 ENVIRONMENTAL STANDARD

Drilled	<u>Start</u> 6/25/2012	<u>End</u> 6/25/2012	Total Depth (ft)	15	Logged By Checked By	RNM CEB	Driller	Cascade Drilling, L.P.	Drilling Method	Direct Push
Surface Elevation (ft) Vertical Datum	15.06 NAVD88			Hammer Data	140 (lbs) / 30 (in) Drop			Drilling Equipment	GeoProbe 6600	
Easting (X) Northing (Y)	638969.79 124002.83			System Datum	NAD83/98			<u>Groundwater</u>	<u>Depth to Water (ft)</u>	<u>Elevation (ft)</u>
Notes: 5 foot by 1½-inch core with poly liner								6/25/2012	8.5	6.56

Elevation (feet)	FIELD DATA						Group Classification	MATERIAL DESCRIPTION	Sheen	Headspace Vapor (ppm)	REMARKS
	Depth (feet)	Interval Recovered (in)	Blows/foot	Collected Sample	Sample Name Testing	Water Level Graphic Log					
0	50					AC	Asphalt concrete				
						GP	Poorly graded gravel with sand (70/25/5 silt) fine to coarse gravel, fine to medium sand, gray to brown, moist	SS	<1		
						NS			<1		
						SM	Silty sand (50/40/10 gravel), fine to medium sand, fine gravel, dark gray, occasional red-orange brick fragments and greenish-gray staining, moist	MS	7		
5	36			CL-SB-103-4.5 CA		SP-SM	Poorly graded sand with gravel and silt (70/20/10), fine to medium sand, fine gravel, dark gray to black, moist to wet, petroleum-like odor and staining	MS	12		
						HS			30		
10	48			CL-SB-103-8.9 CA		Wood	Fresh brown to decomposed black wood fragments and shavings, wet, NAPL, petroleum-like odor and staining	HS	28		
						SM	Silty sand (70/20/10 gravel), fine to medium sand, fine to coarse gravel, gray, wet				
						SP-SM	Poorly graded sand with gravel and silt (70/20/10), medium to coarse sand, fine gravel, dark gray to black, occasional red-orange brick fragments, white shells and fresh brown wood fragments, wet	SS	<1		
						NS			<1		
15				CL-SB-103-14-15 CA		Siltstone	Gray siltstone				

DRAFT

Note: Please see Figure A-1 for explanation of symbols

**Log of Boring CL-SB-103**



Project: R.G. Haley Site  
 Project Location: Bellingham, Washington  
 Project Number: 0356-114-06

Seattle: Date: 9/27/12 Path: C:\USERS\VOSS\DESKTOP\035611406 HALEY.GPJ DBT template\LT template\GEOENGINEERS\GDT template\GEOENGINEERS\ENVIRONMENTAL STANDARD



MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND SILT MIXTURES
	SAND AND SANDY SOILS	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND SILT MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

DRIVEN SAMPLES → UNIFIED SOIL CLASSIFICATION SYSTEM  
 BLOWS REQUIRED TO DRIVE SAMPLER ONE FOOT

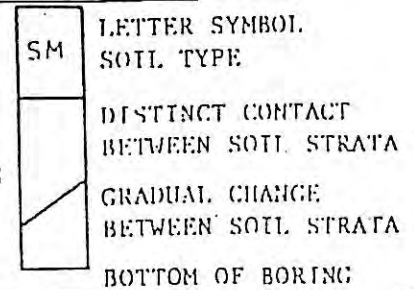
MOISTURE CONTENT  
 11.2% → 111  
 DRY DENSITY IN PCF → 28

- INDICATES LOCATION OF UNDISTURBED SAMPLE
- INDICATES LOCATION OF DISTURBED SAMPLE
- INDICATES LOCATION OF SAMPLING ATTEMPT WITH NO RECOVERY

OTHER TYPES OF SAMPLES

INDICATES LOCATION OF THIN WALL, PITCHER, OR OTHER TYPES OF SAMPLES (SEE TEXT)

GRAPHIC LOG

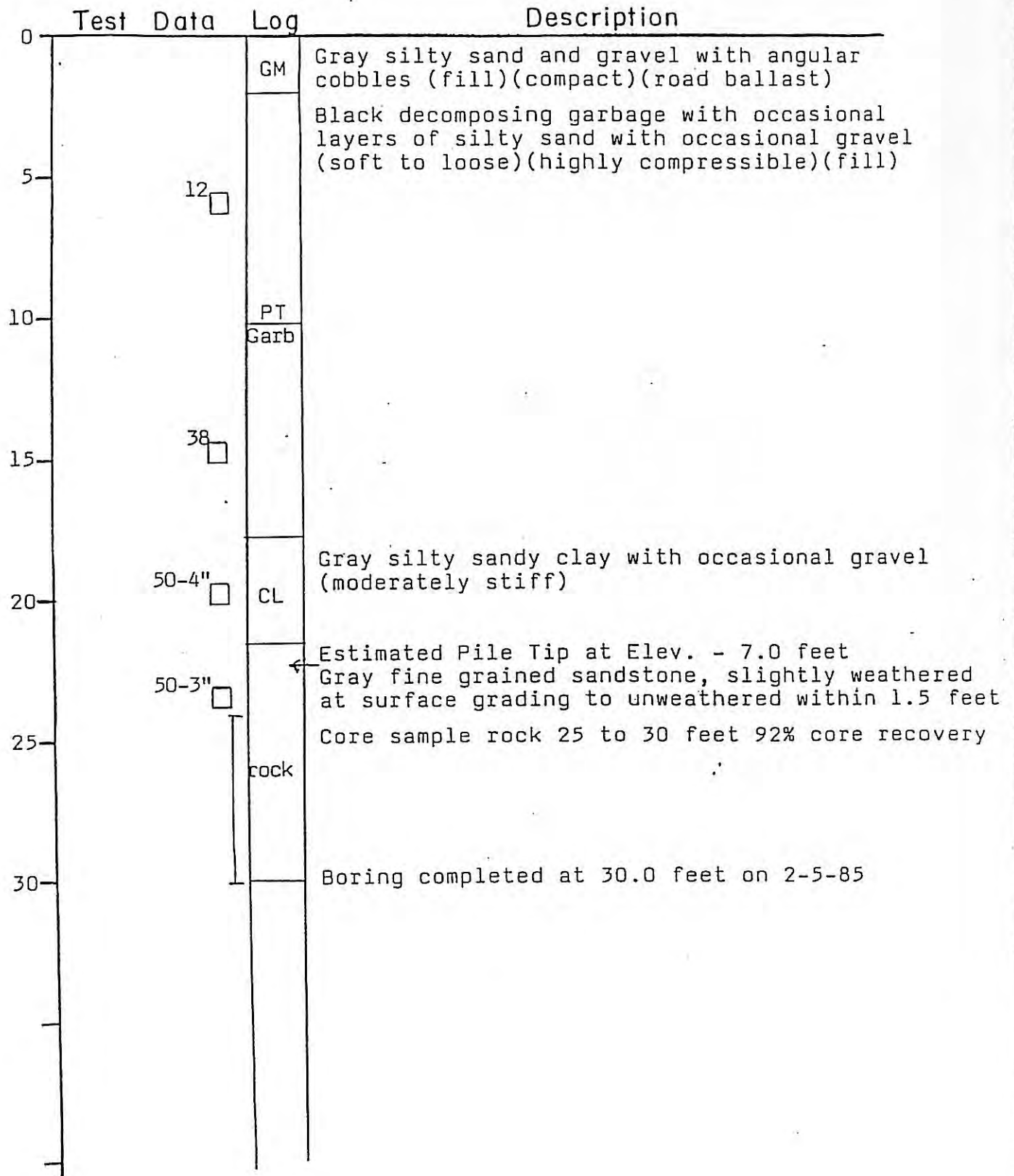


W. D. PURNELL & ASSOCIATES

SAMPLE DATA KEY

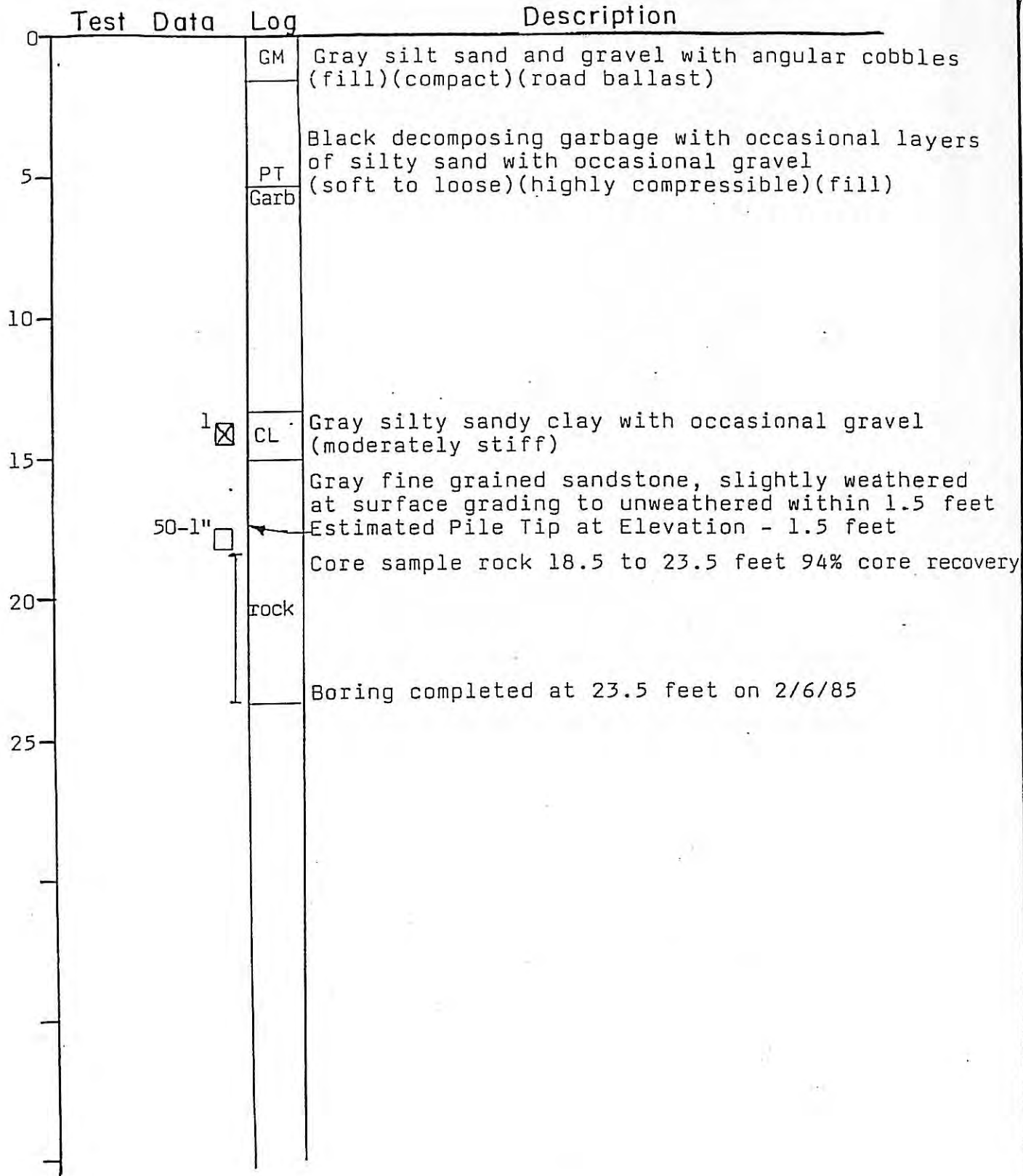
ELEVATION: 15.0 feet

BORING NO. 1



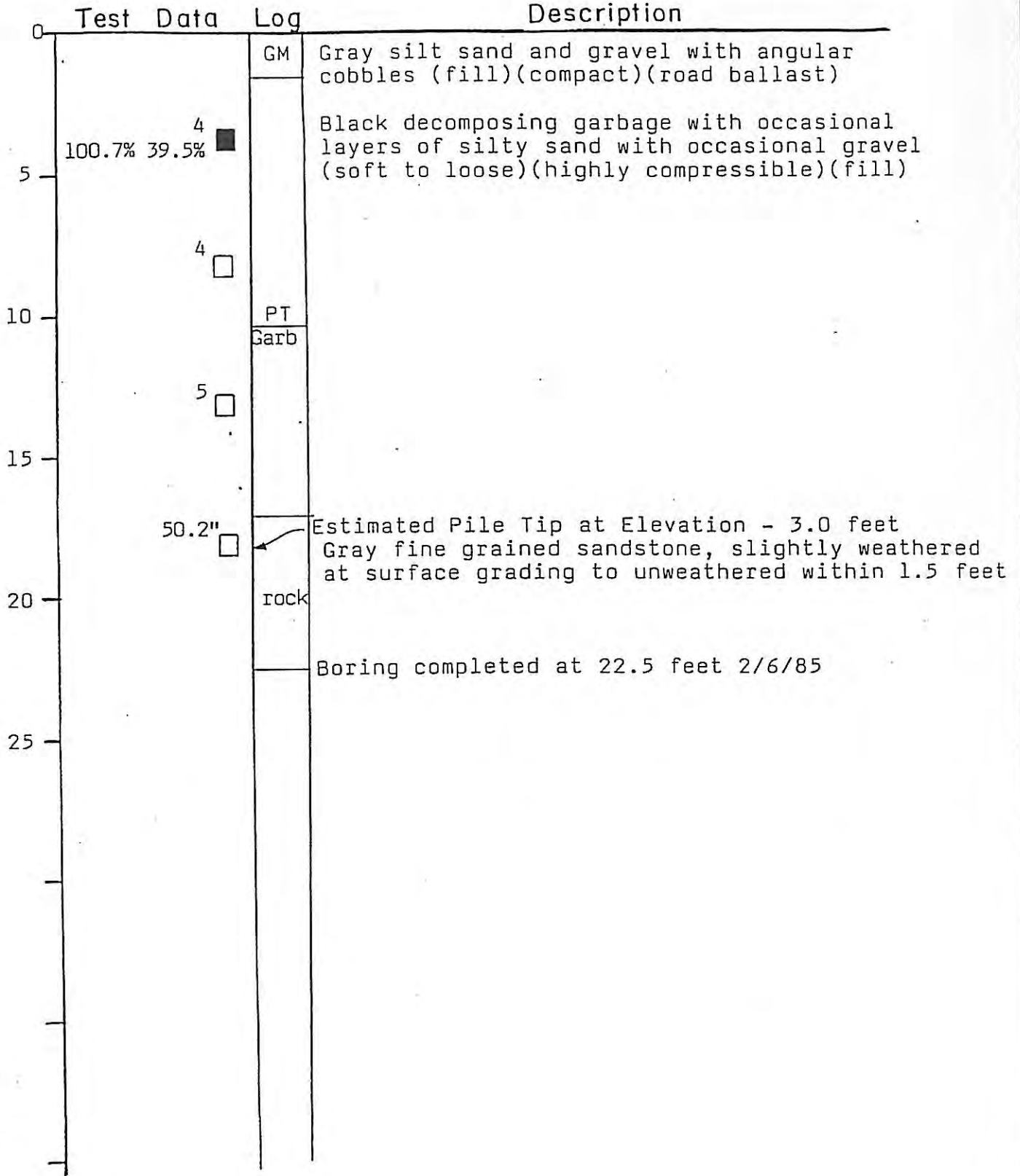
W. D. PURNELL & ASSOCIATES

EXPLORATION LOG



ELEVATION: 15.6 feet

BORING NO. 3



W. D. PURNELL & ASSOCIATES

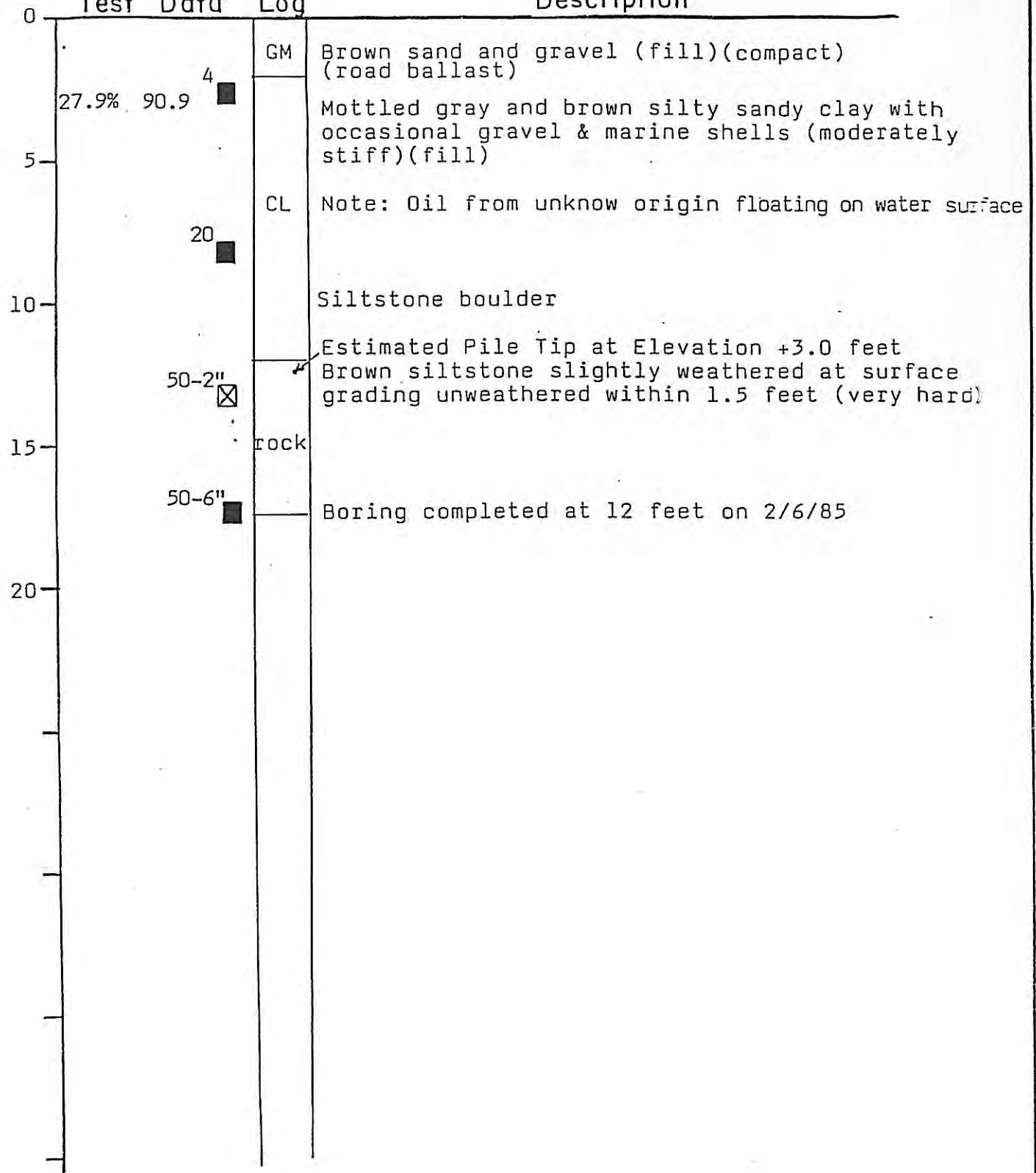
EXPLORATION LOG

ELEVATION: 15.4 feet

BORING NO. 4

Test Data Log

Description



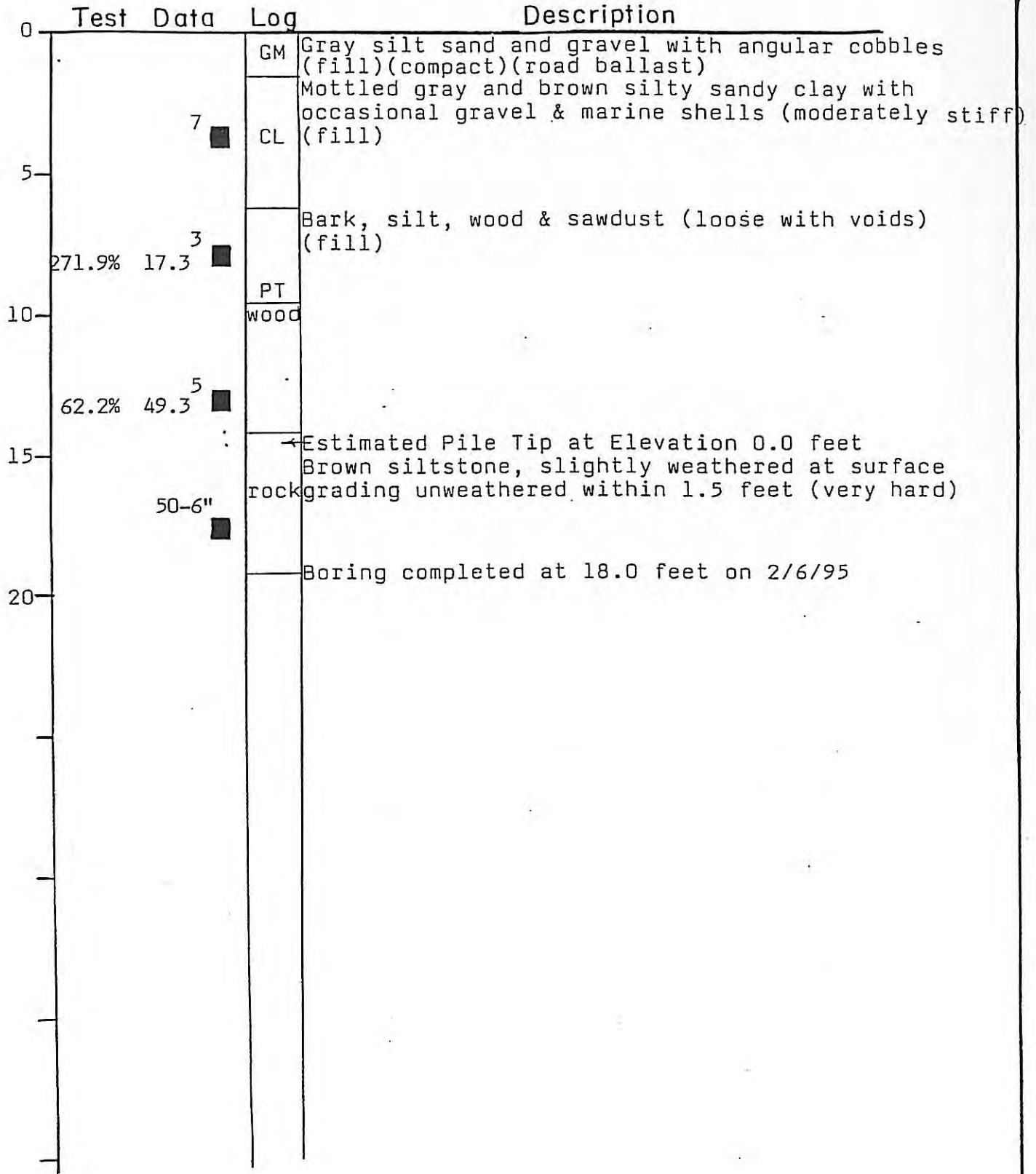
W. D. PURNELL & ASSOCIATES

EXPLORATION LOG



ELEVATION: 14.3 feet

BORING NO. 5

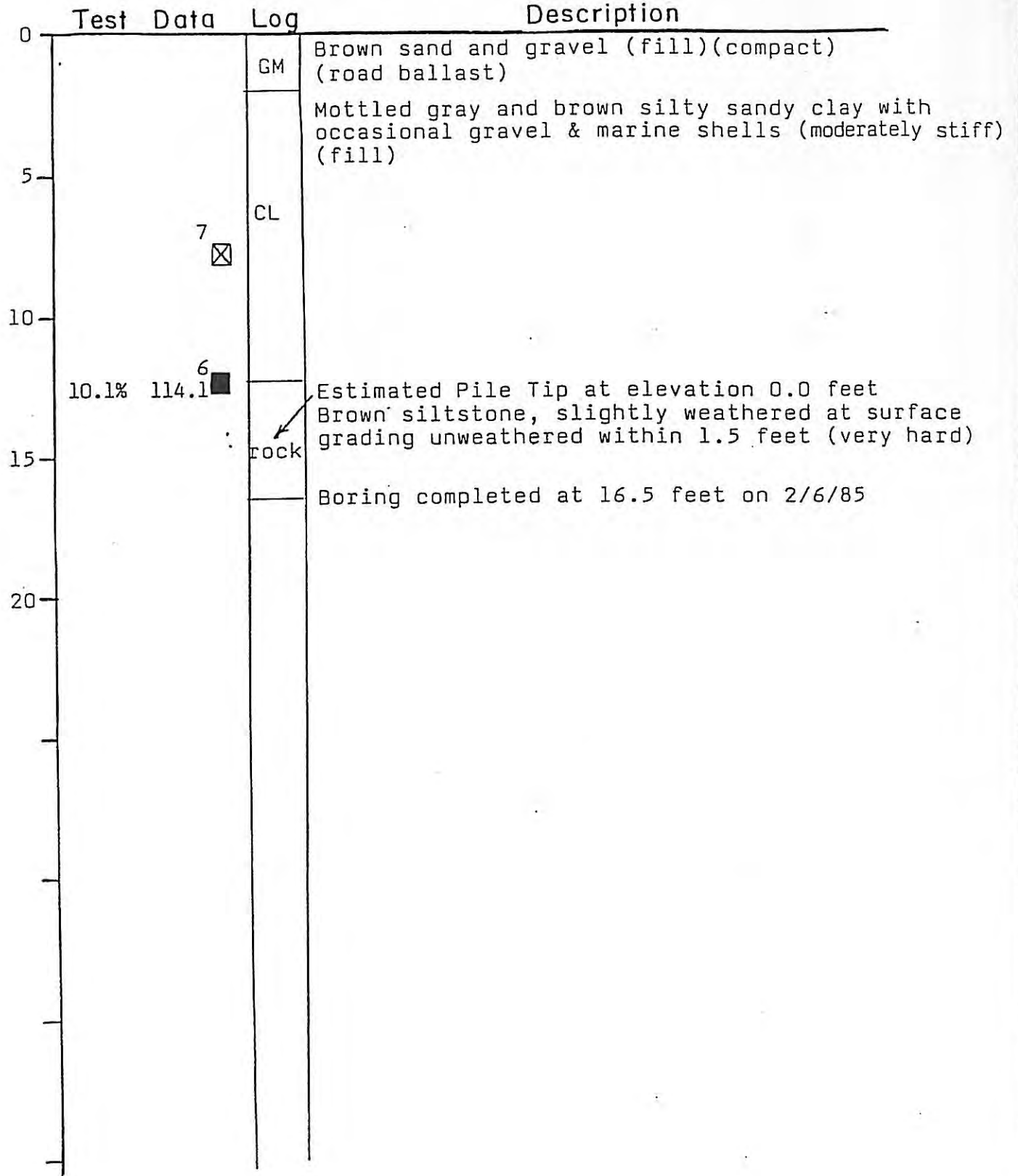


W. D. PURNELL & ASSOCIATES

EXPLORATION LOG

ELEVATION: 14.3 feet

BORING NO. 6

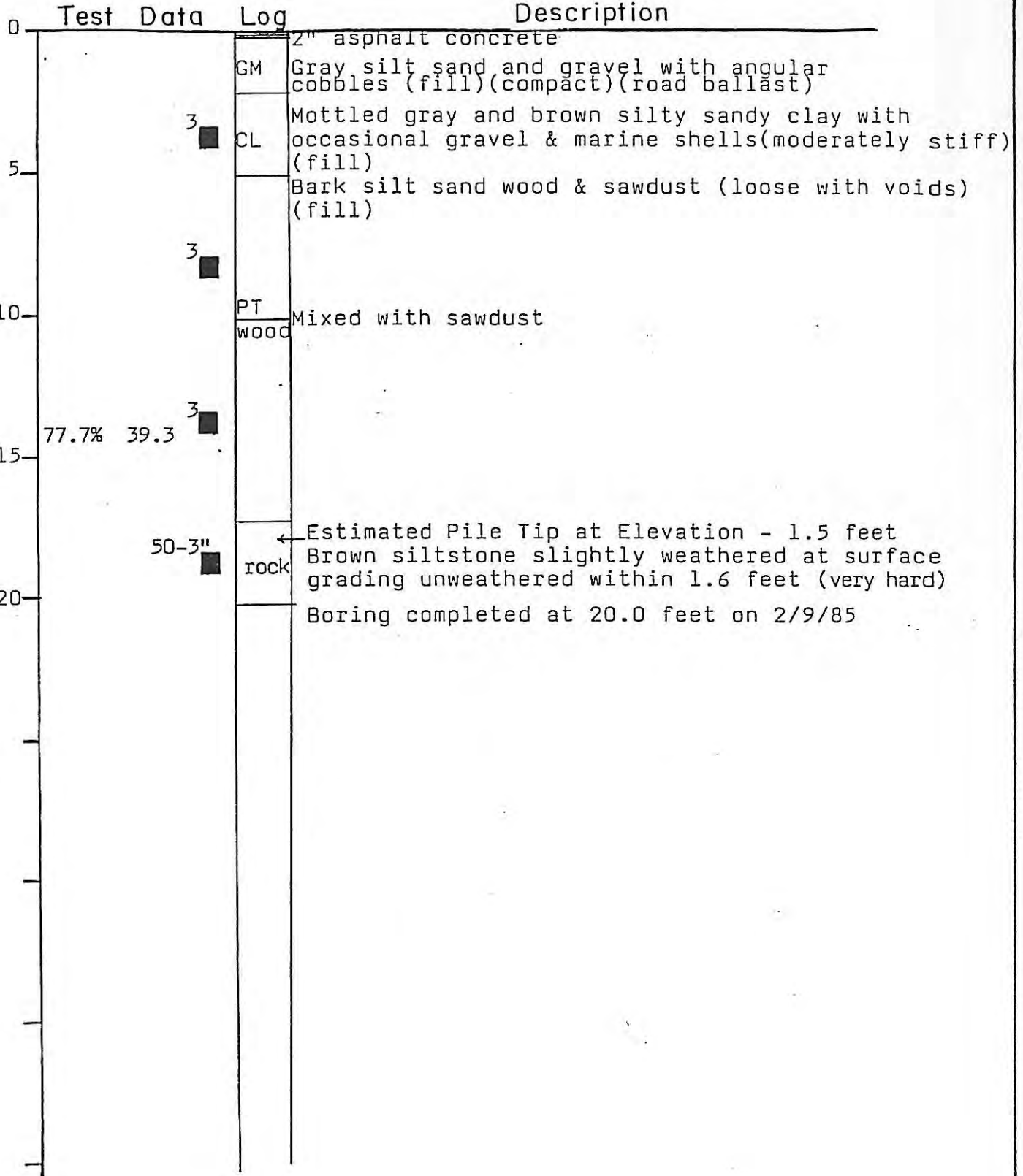


W. D. PURNELL & ASSOCIATES

EXPLORATION LOG

ELEVATION: 16.5 feet

BORING NO. 7

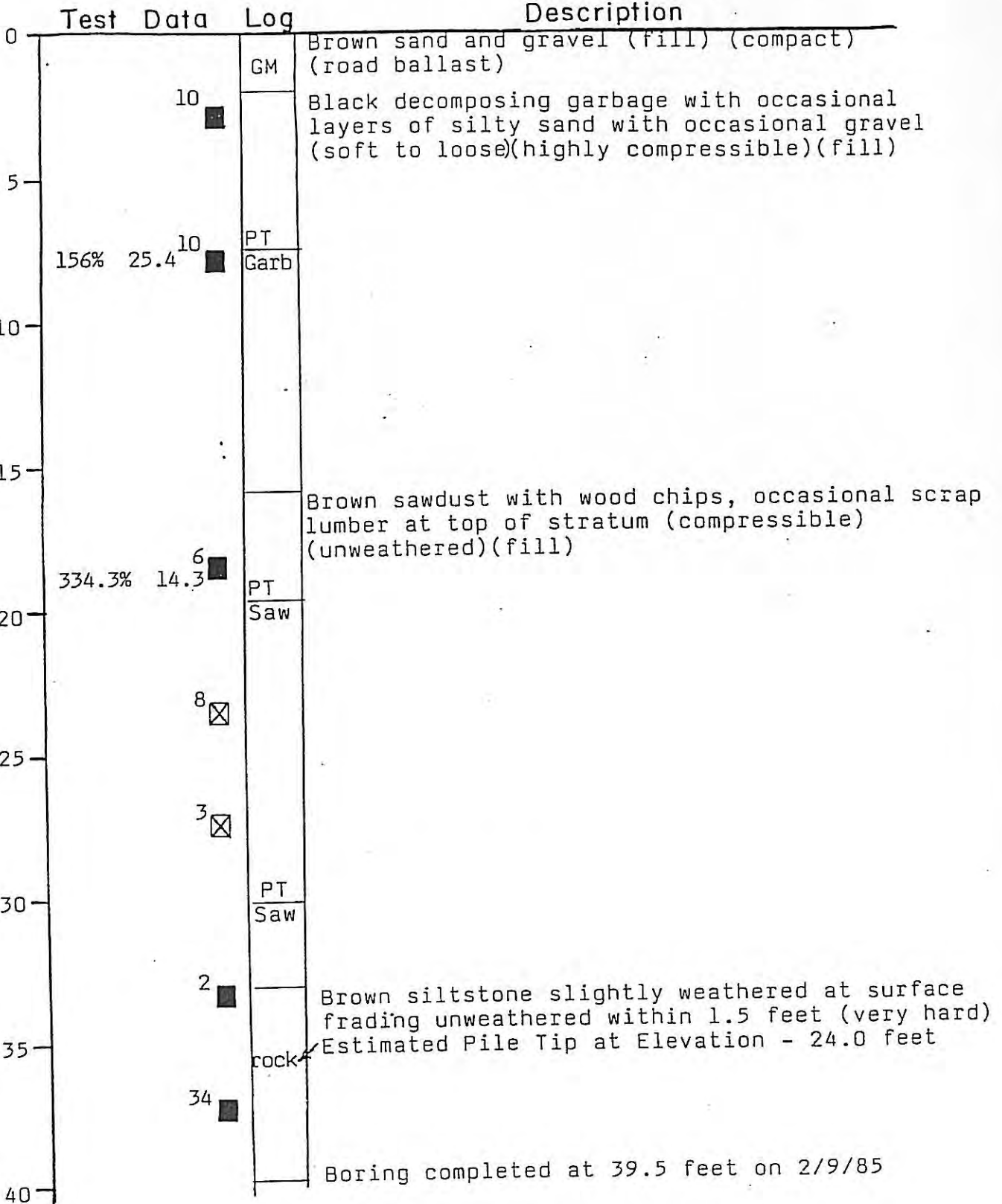


W. D. PURNELL & ASSOCIATES

EXPLORATION LOG

ELEVATION: 11.5 feet

BORING NO. 8

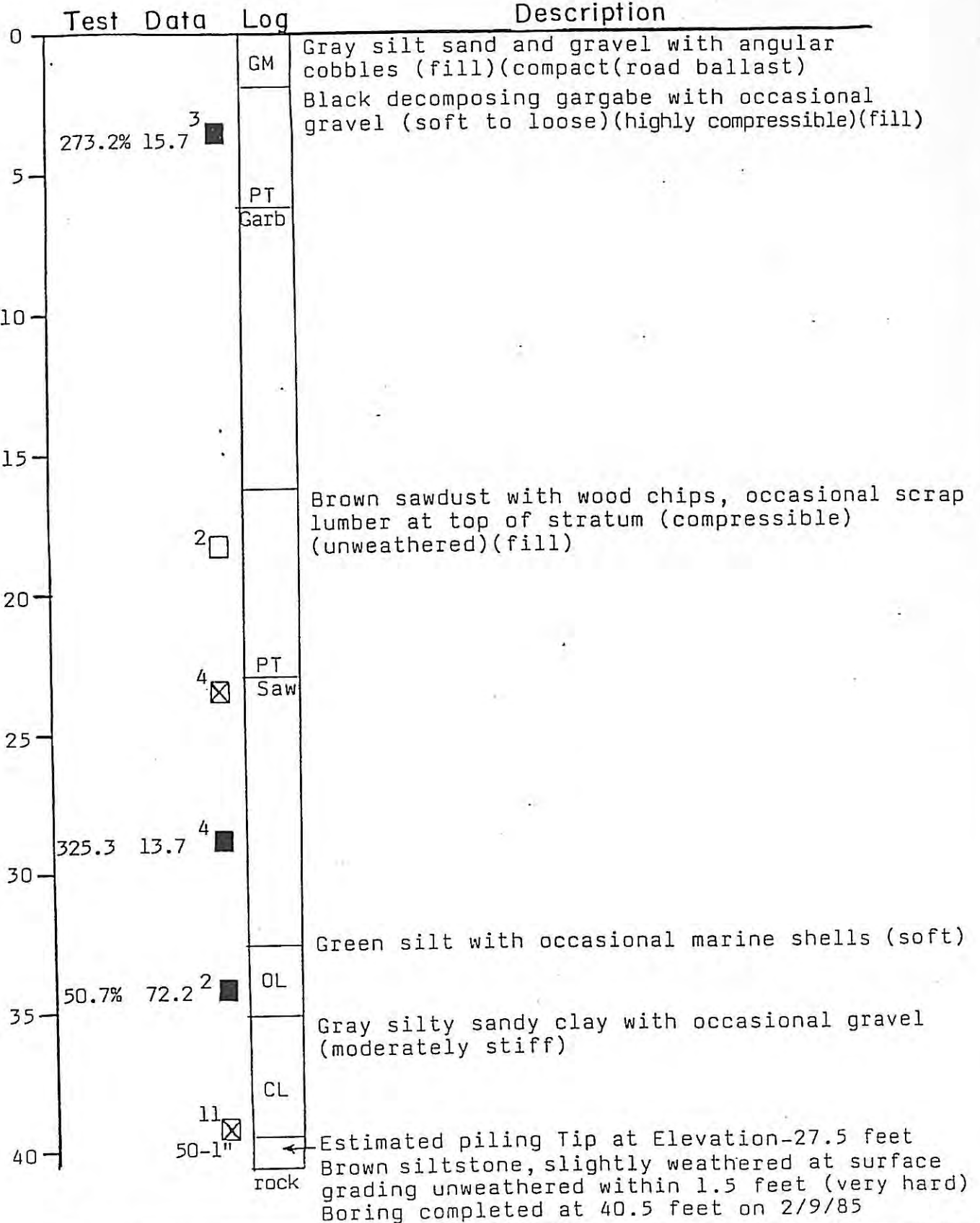


W. D. PURNELL & ASSOCIATES

EXPLORATION LOG

ELEVATION: 12.4 feet

BORING NO. 9



W. D. PURNELL & ASSOCIATES

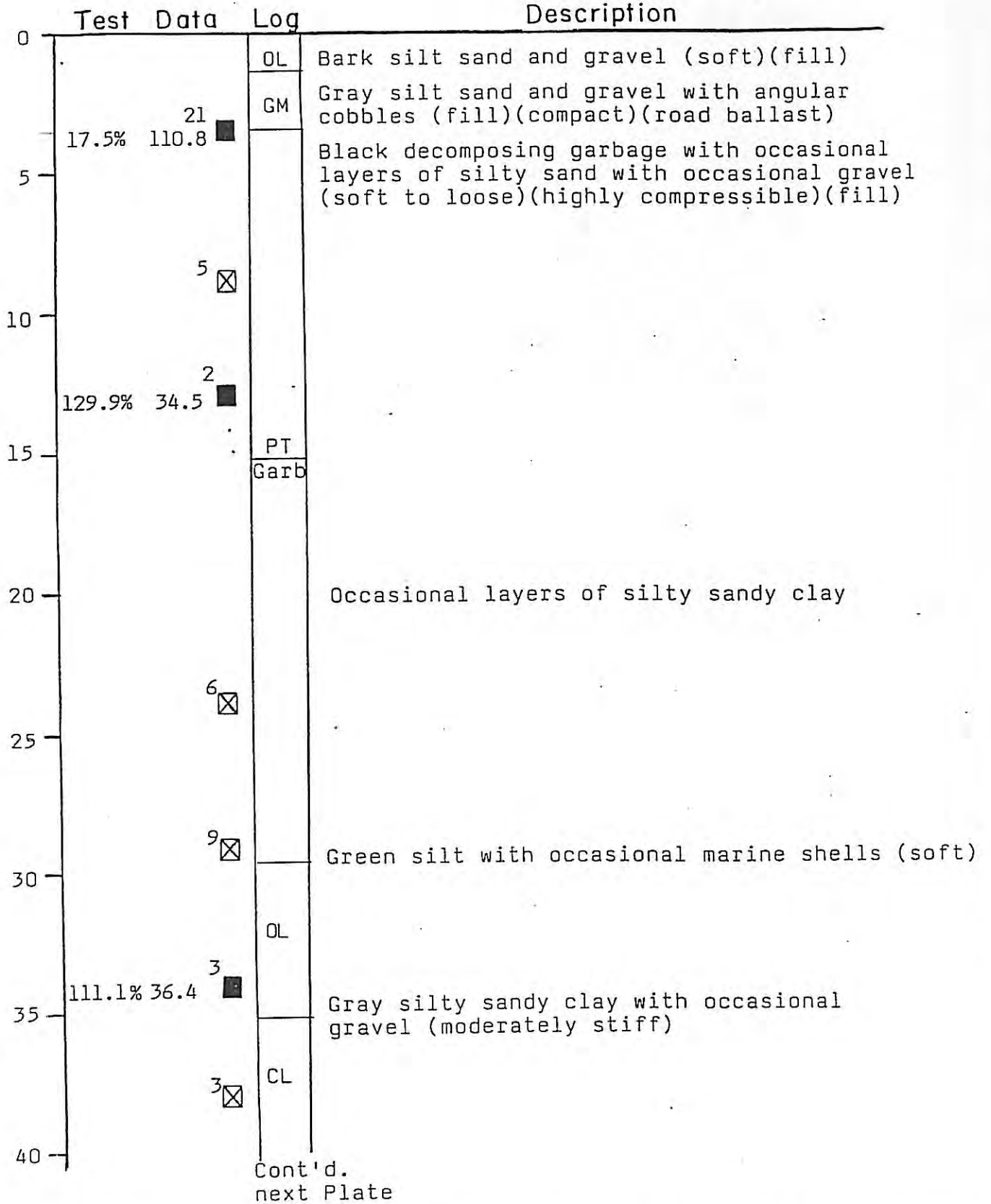
EXPLORATION LOG



ELEVATION: 13.6 feet

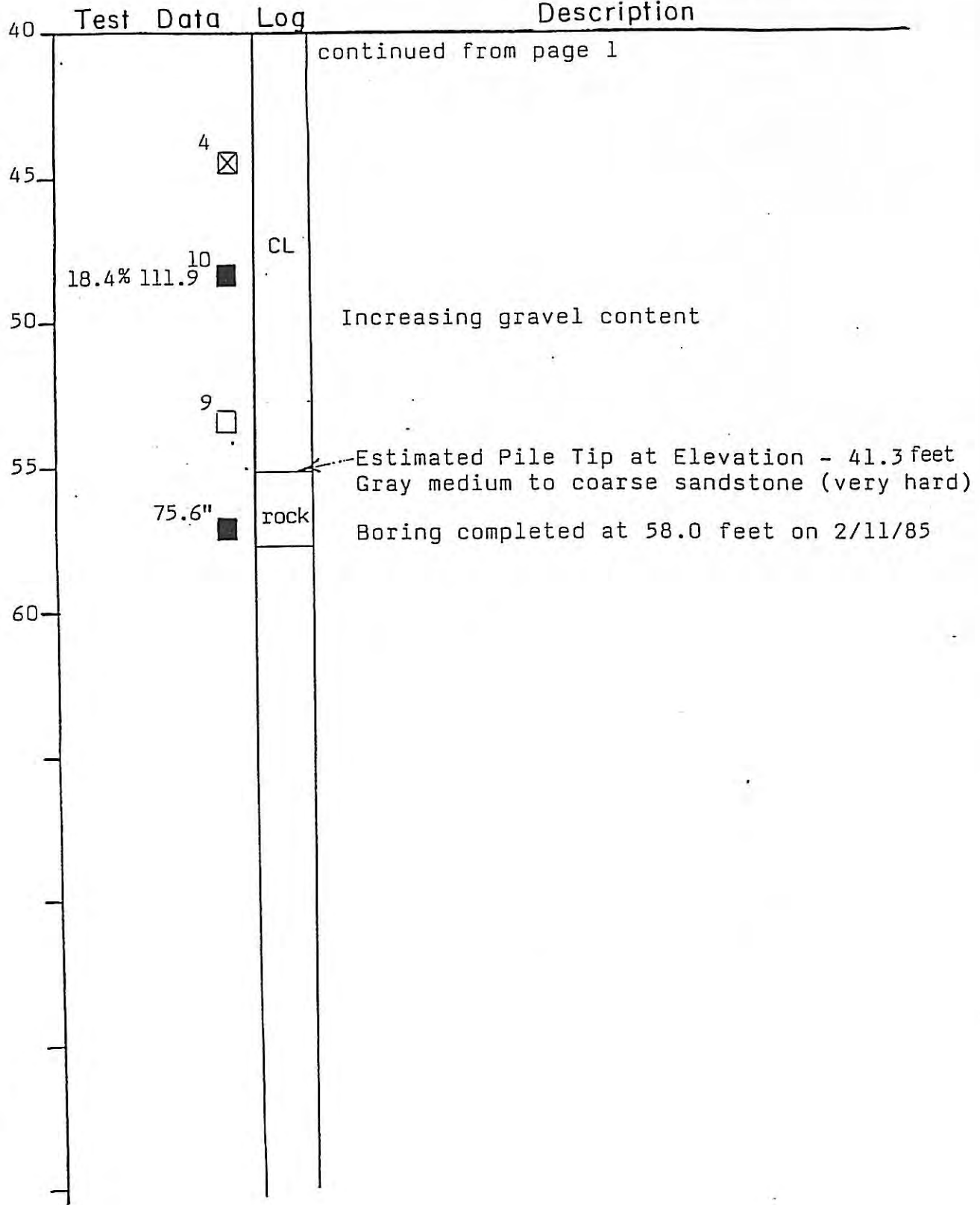
BORING NO. 10

PLATE 1 of 2



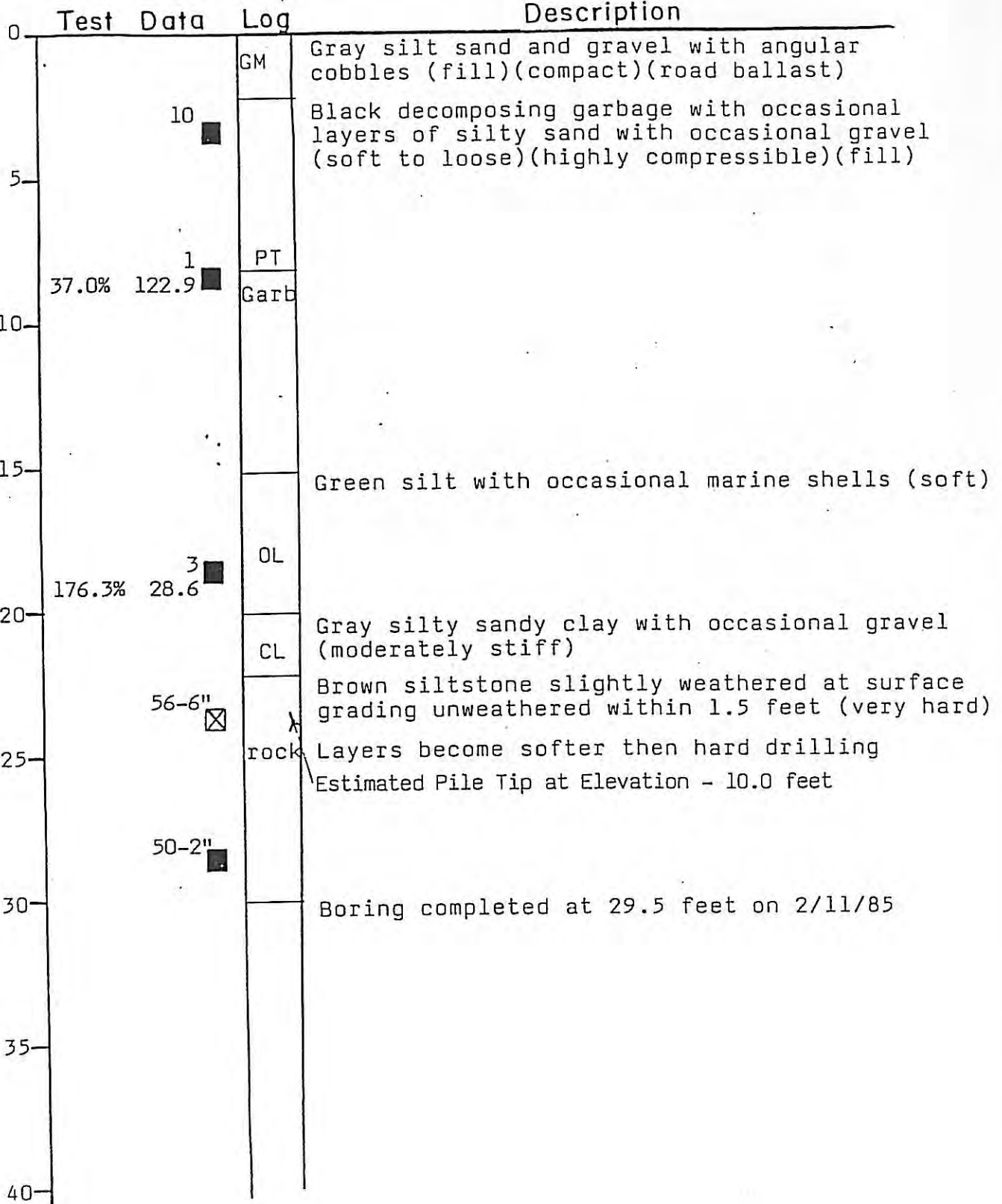
W. D. PURNELL & ASSOCIATES

EXPLORATION LOG



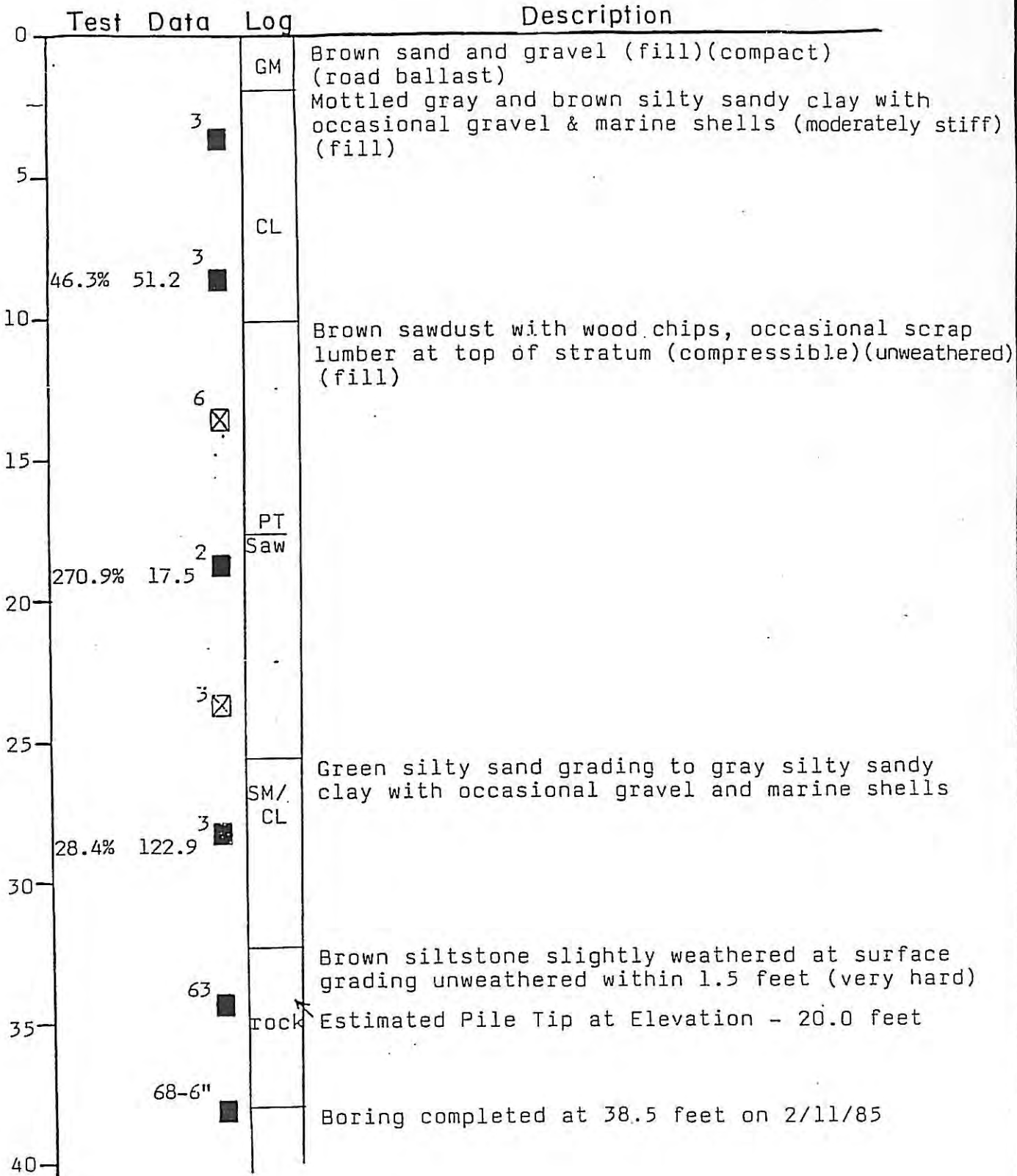
ELEVATION: 13.5 feet

BORING NO. 11



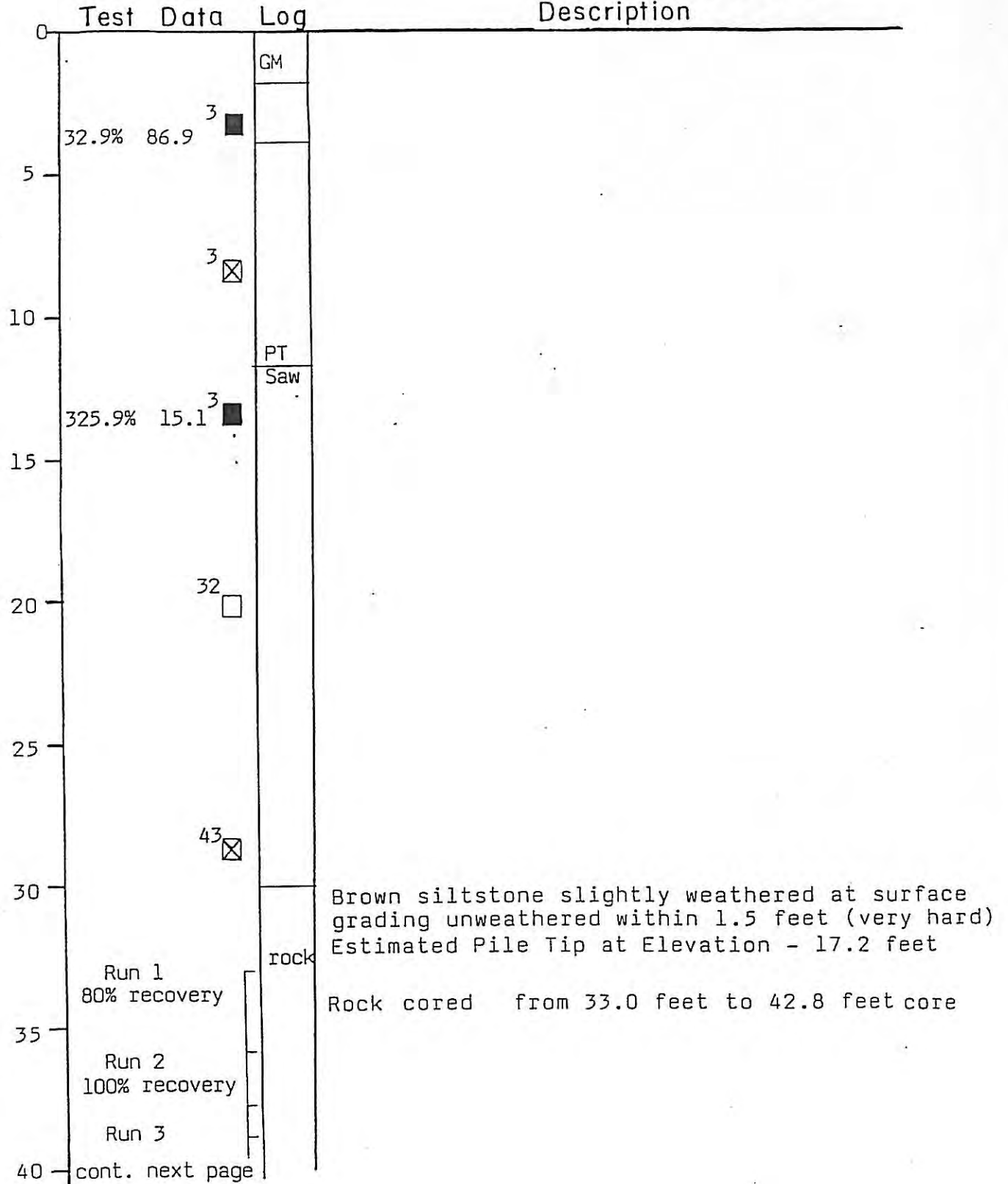
W. D. PURNELL & ASSOCIATES

EXPLORATION LOG



ELEVATION: 13.8

BORING NO. 13  
PLATE 1 of 2



W. D. PURNELL & ASSOCIATES

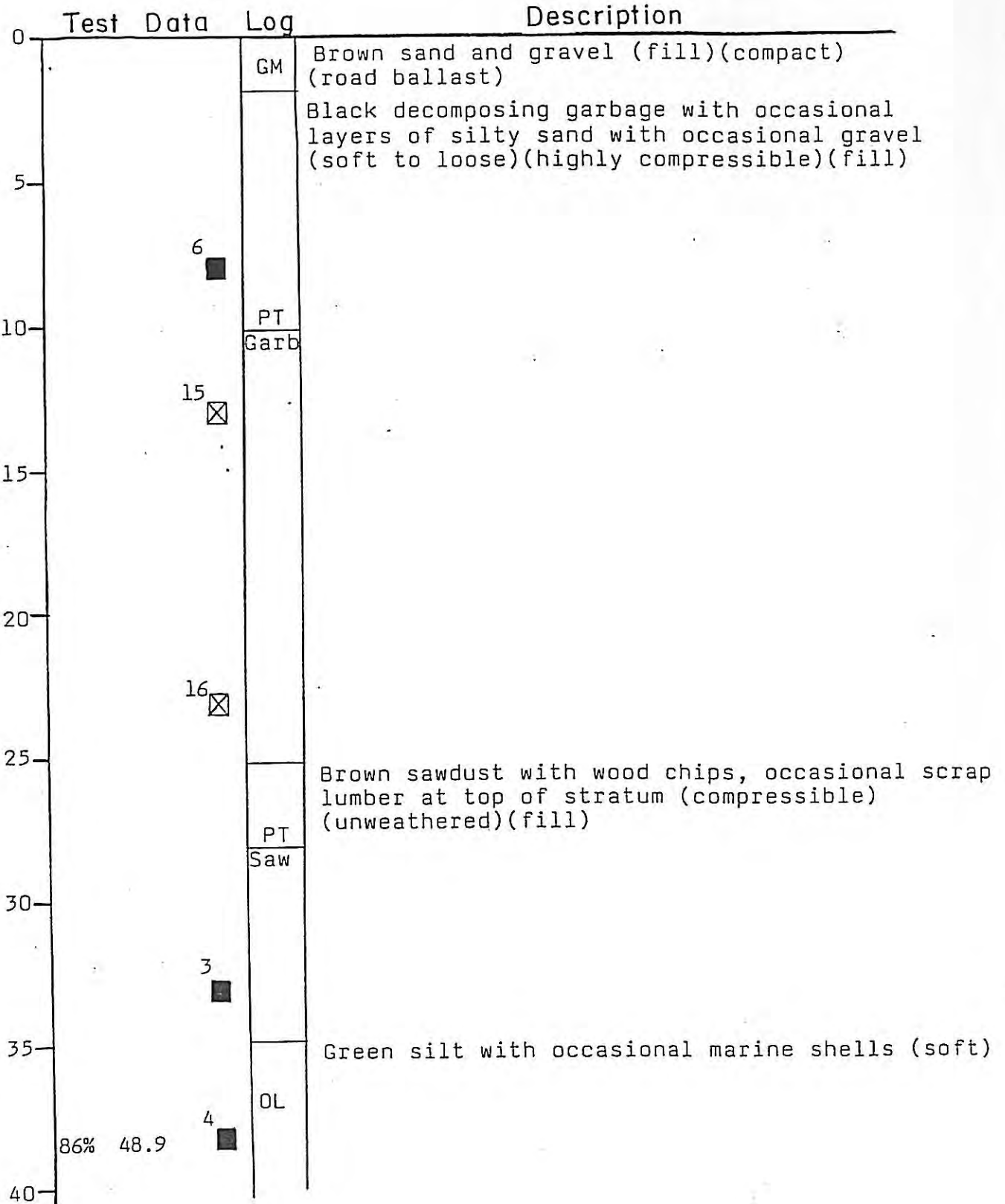
EXPLORATION LOG



40	Test Data Log	Description
45	Run 3 100% recovery	rock
		continued from page 1
		Auger refused to advance further Boring completed at 44.5 feet on 2/13/85

ELEVATION: 11.5 feet

BORING NO. 14  
PLATE 1 of 2



W. D. PURNELL & ASSOCIATES

EXPLORATION LOG

Test Data	Log	Description
40	OL	
	CL	Gray silty sandy clay with occasional gravel (moderately stiff)
2	<input checked="" type="checkbox"/>	Estimated Pile Tip at Elevation - 33.0 feet
45	rock	Brown siltstone slightly weathred at surface grading unweathered within 1.5 feet (very hard)
		Boring completed at 46.0 feet on 2/14/85

Test Pit No. 1  
 Elevation 16.0 feet

Soils Classified Visually  
 by the Unified Soils  
 Classification System  
 Pit Excavated by  
 Rubber Tired Backhoe

0	GM	Brown sand and gravel (fill)(compact) (road ballast)
1.	OL	Black silt with organic matter (soft)(fill)
2.	CL	Mottled gray and brown silty sandy clay with occasional gravel & marine shells (moderately stiff)(fill)
3.	SM	Red cinders mixed with sandy silt (loose)(fill)
4.		
5.	PT WOOD	Bark, wood, sawdust and silty sand (loose with voids)
6.		
7.		
8.		Brown siltstone, slightly weathered at surface grading unweathered within 1.5 feet (very hard)
9.		
10.		
11.		Note: Water level at 7 feet after 5 hours Oil on surface of water
12.		
13.		
14.		
15.		
16.		

Test Pit No. 2

Elevation 15.3 feet

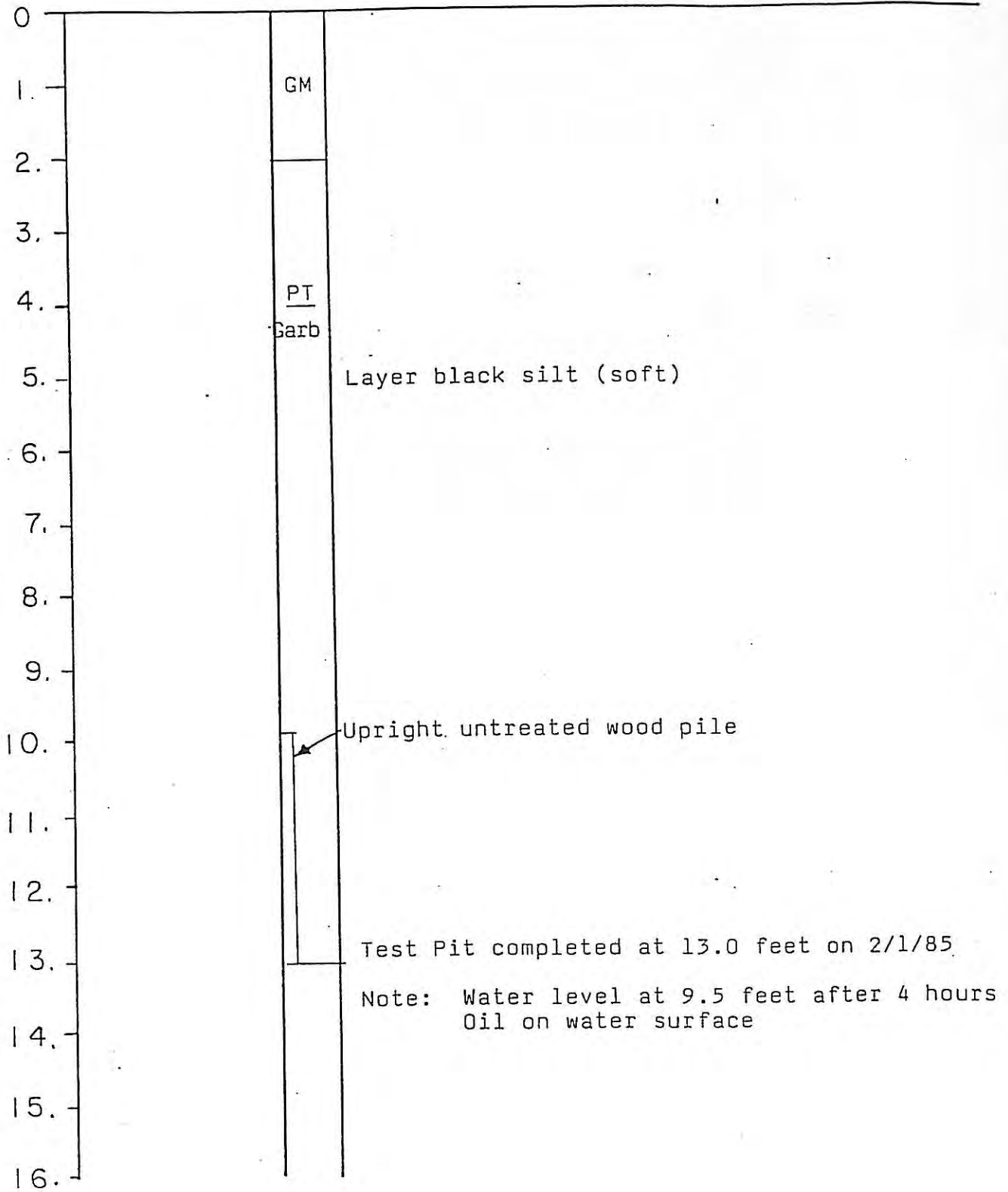
Soils Classified Visually  
by the Unified Soils  
Classification System  
Pit Excavated by  
Rubber Tired Backhoe

0		Brown sand and gravel (fill)(compact) (road ballast)
1.	GM	
2.		Mottled gray and brown silty sandy clay with occasional gravel & marine shells (moderately stiff)(fill)
3.		
4.	CL	
5.		
6.		
7.		
8.	OL	
9.	PT WOOD	Bark, wood, sawdust and silty sand (loose with voids) (fill)
10.		
11.		Gray silty sandy clay with occasional gravel (moderately stiff)
12.		
13.		
14.		Fractured siltstone - near bedrock
15.		Test pit completed at 15.0 feet on 2/1/85 Note: Water level at 1.5 feet after 4 hours Much oil on water surface
16.		



Test Pit No. 3  
Elevation 16.5 feet

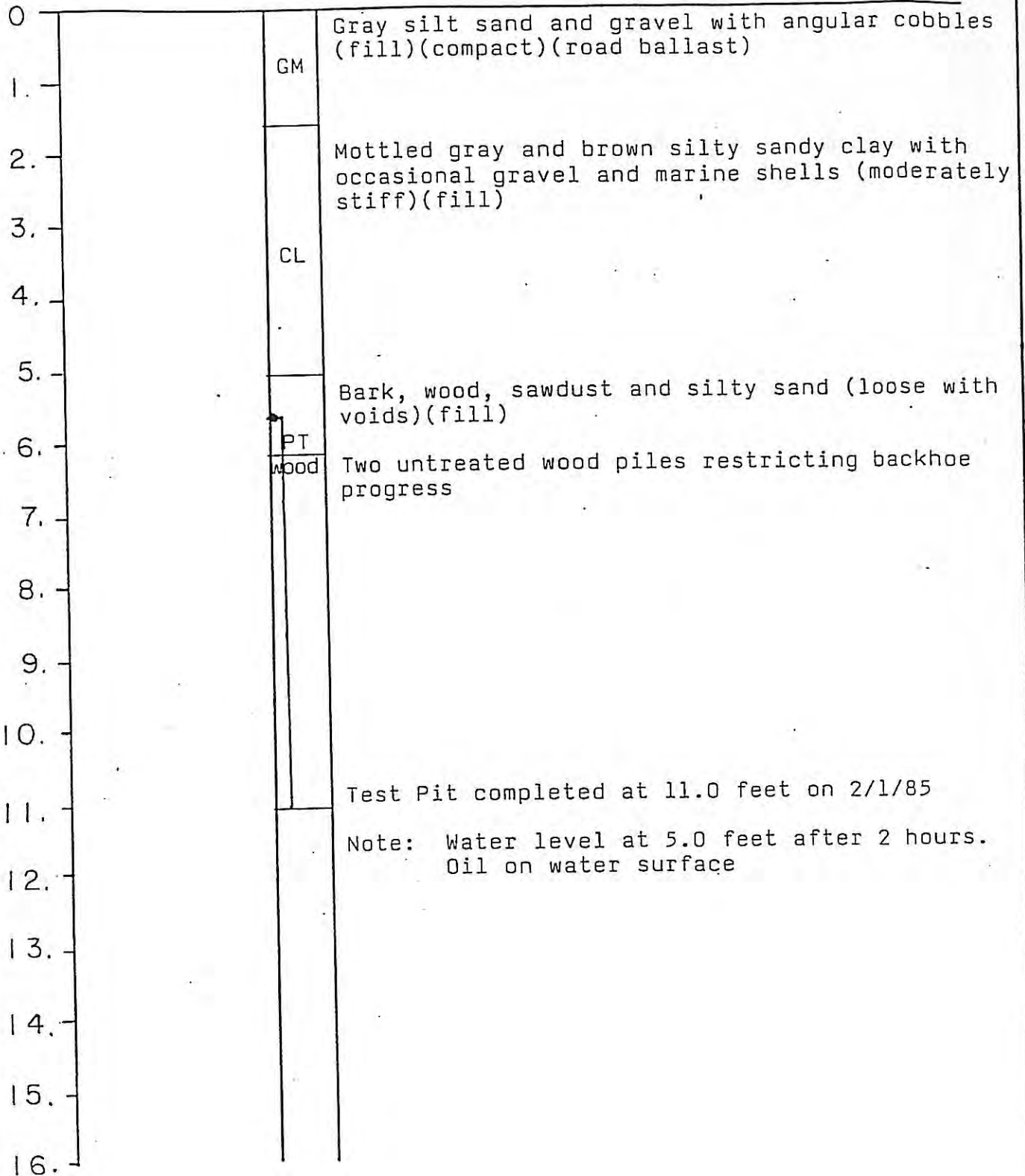
Soils Classified Visually  
by the Unified Soils  
Classification System  
Pit Excavated by  
Rubber Tired Backhoe



Test Pit No. 4

Elevation 14.1 feet

Soils Classified Visually  
by the Unified Soils  
Classification System  
Pit Excavated by  
Rubber Tired Backhoe



Test Pit No. 5

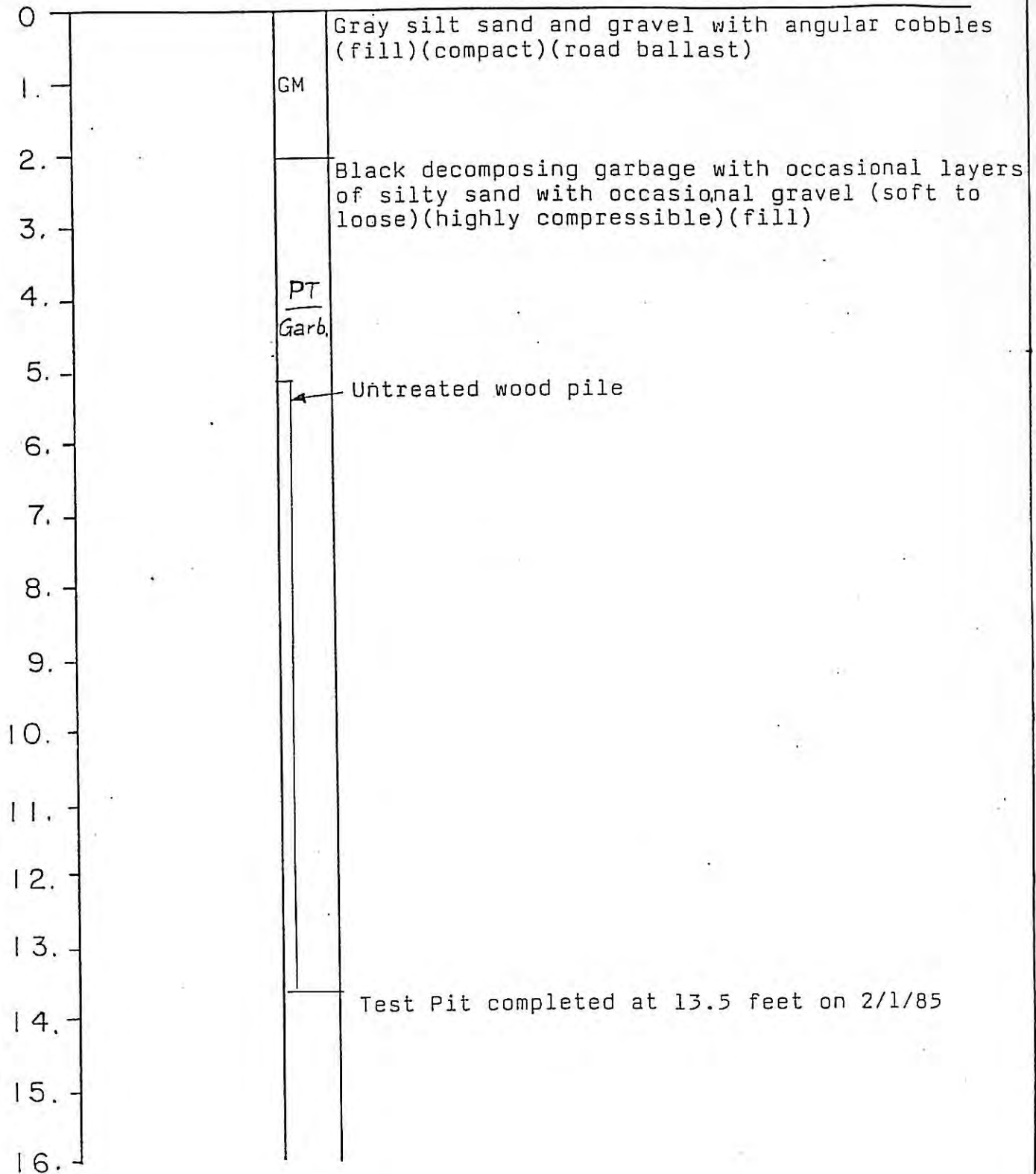
Elevation 14.7 feet

Soils Classified Visually  
by the Unified Soils  
Classification System  
Pit Excavated by  
Rubber Tired Backhoe

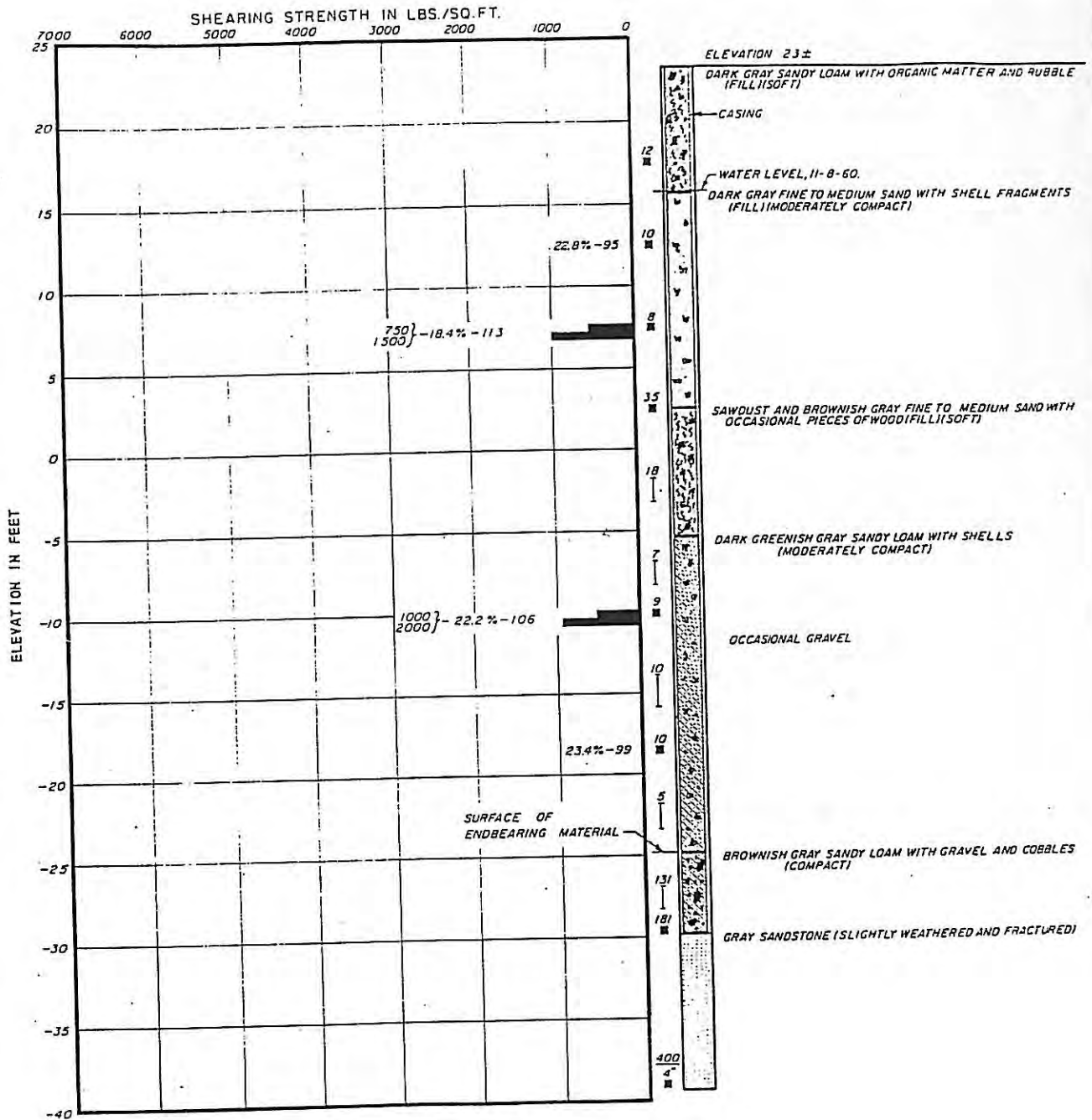
0		Brown sand and gravel (fill)(compact) (road ballast)
1.	GM	
2.		Gray fine to medium sand with shells (fill) (loose)
3.	SM	
4.		
5.		Black silt with wood (soft)(fill)
6.	OL	Log 2 foot diameter laying horizontal
7.		Gray silty sandy clay with occasional gravel (moderately stiff)
8.	CL	
9.		
10.		
11.	rock	Rock encountered at bottom of Pit Test Pit completed at 11.0 feet on 2/1/85
12.		Note: Water level at 6.0 feet after 2 hours
13.		
14.		
15.		
16.		

Test Pit No. 6  
Elevation 14.5 feet

Soils Classified Visually  
by the Unified Soils  
Classification System  
Pit Excavated by  
Rubber Tired Backhoe



BORING I



NOTE:  
ELEVATIONS REFER TO U.S.C. & G.S.  
DATUM, (M.L.L.W. = ELEVATION 00).

LOG OF BORINGS

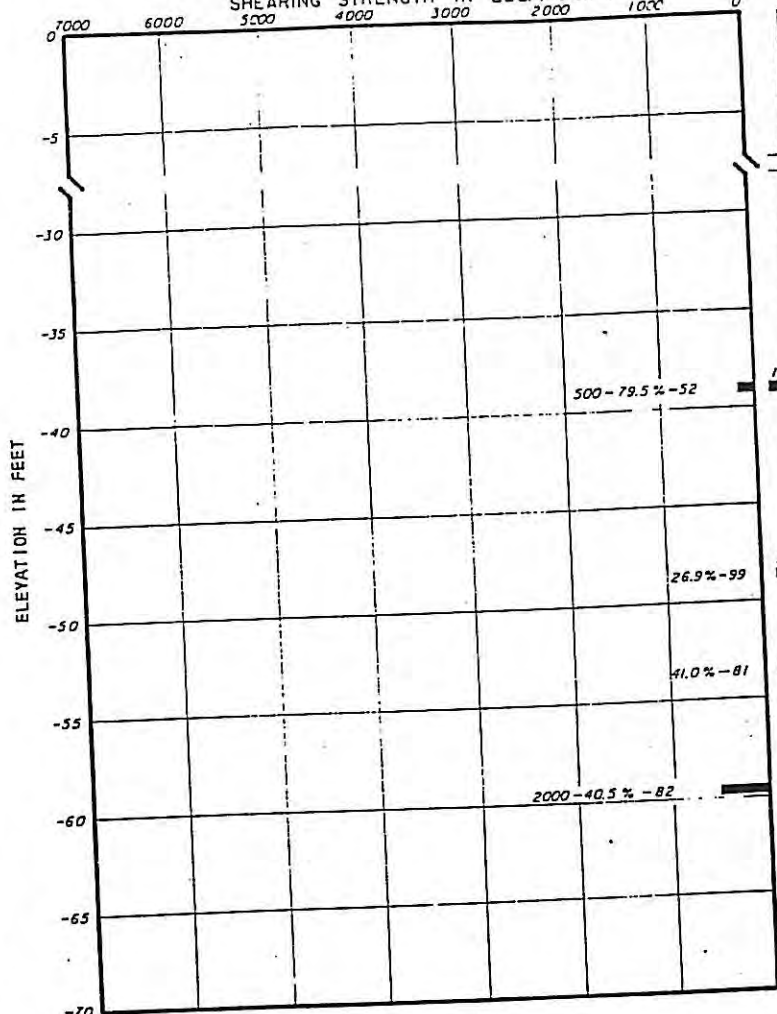
BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
PLATE: \_\_\_\_\_ OF \_\_\_\_\_

FILE NO. \_\_\_\_\_  
BY: RHP DATE: 11-21-60  
CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_



BORING 3

SHEARING STRENGTH IN LBS. / SQ.FT.  
 7000 6000 5000 4000 3000 2000 1000 0



MEAN LOWER LOW WATER, ELEVATION 0.0

GROUND SURFACE ELEVATION -30.5  
 DARK GRAY SILTY LOAM (VERY SOFT)  
 (BAY DEPOSITS)

DARK GREENISH GRAY SILTY CLAY LOAM WITH  
 OCCASIONAL SHELLS  
 (VERY SOFT)  
 (BAY DEPOSITS)

GRAY SANDY LOAM WITH SHELLS AND OCCASIONAL  
 ORGANIC MATTER AND GRAVEL  
 (MODERATELY SOFT)

GRAY CLAY WITH OCCASIONAL POCKETS AND LENSES  
 OF GRAY FINE SAND  
 (MODERATELY SOFT)

DECREASING SAND CONTENT

LENSES OF GRAY SILTY LOAM  
 OCCASIONAL SHELLS

BORING TERMINATED, BAD WEATHER PREVENTED FURTHER  
 WORK FROM BARGE.

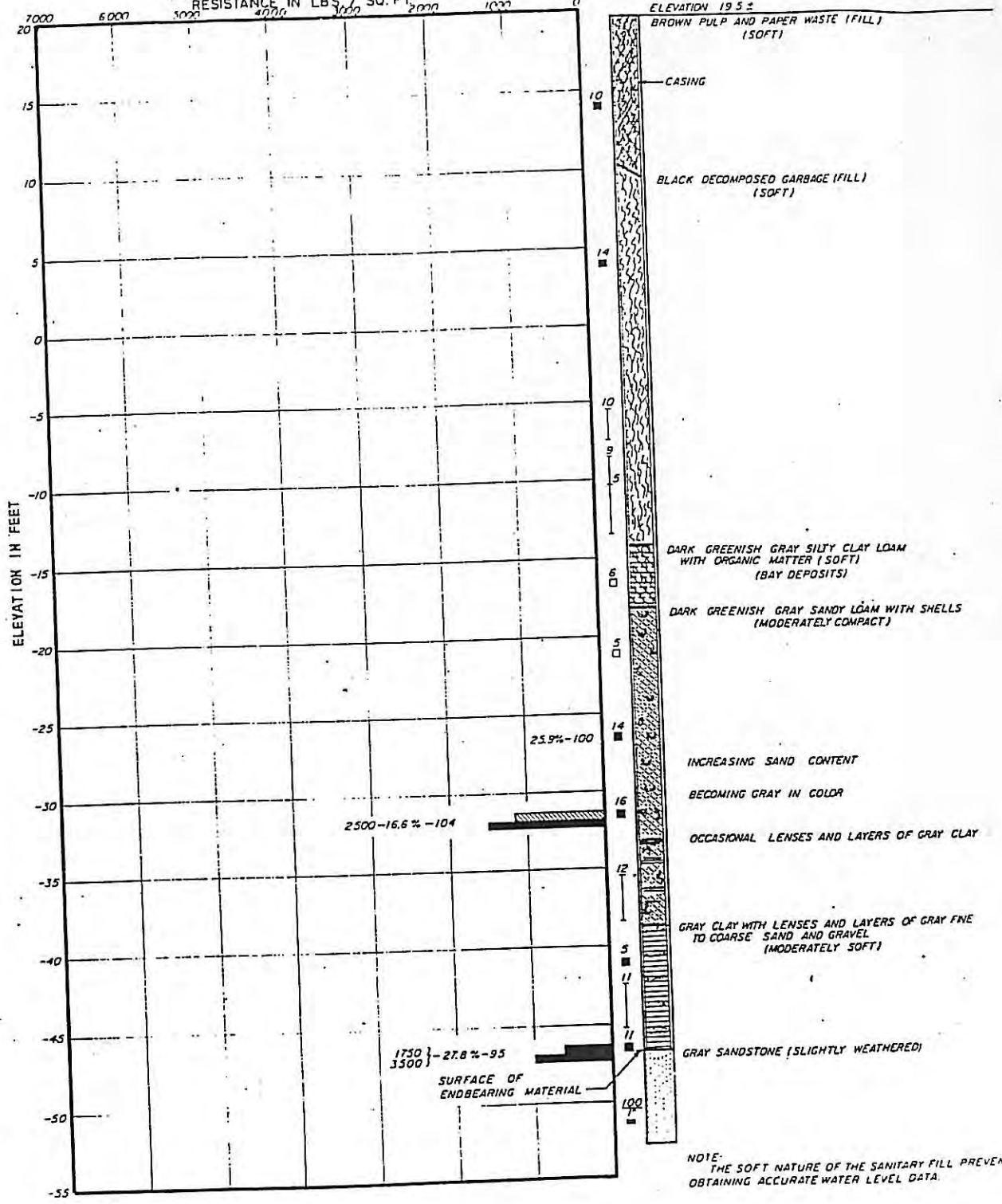
REVISIONS  
 BY \_\_\_\_\_ DATE \_\_\_\_\_  
 BY \_\_\_\_\_ DATE \_\_\_\_\_  
 PLATE \_\_\_\_\_ OF \_\_\_\_\_

FILE 339F-6  
 Part 4 Ballington  
 BY H/c DATE 12-1-60  
 CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

LOG OF BORINGS

BORING 4

SHEARING STRENGTH AND FRICTIONAL RESISTANCE IN LBS./SQ. FT.

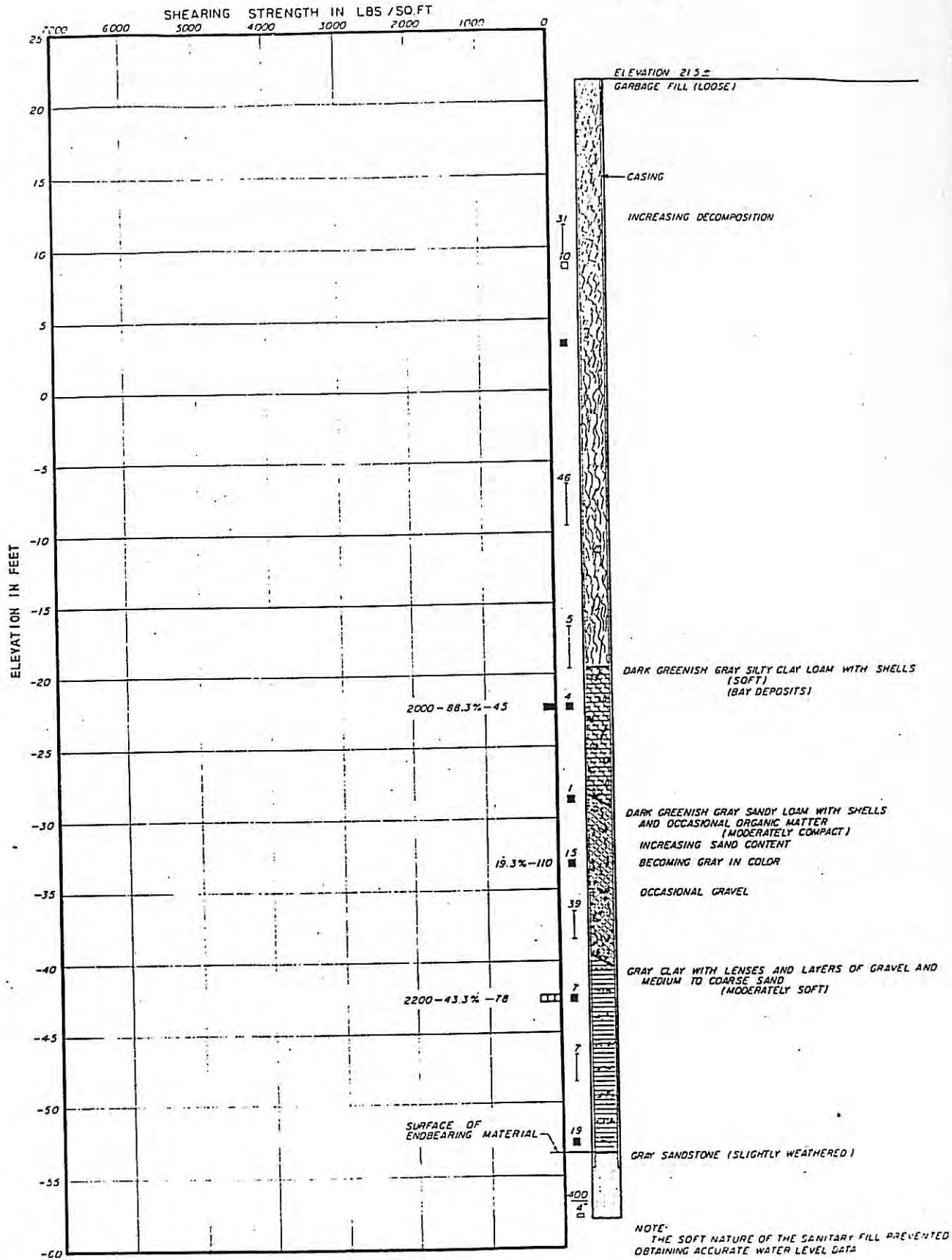


REVISIONS  
BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
PLATE: \_\_\_\_\_ OF: \_\_\_\_\_

FILE 3325-B  
BY: Fred A. Kelly  
DATE: 12-1-60  
CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

LOG OF BORINGS

BORING 5



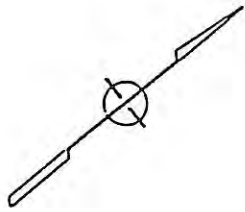
NOTE: THE SOFT NATURE OF THE SANITARY FILL PREVENTED OBTAINING ACCURATE WATER LEVEL DATA

LOG OF BORINGS

REVISIONS  
BY \_\_\_\_\_ DATE \_\_\_\_\_  
BY \_\_\_\_\_ DATE \_\_\_\_\_  
PLATE \_\_\_\_\_ OF \_\_\_\_\_

FILE 3125-B  
BY *Paul A. Sullivan*  
DATE 12-2-50  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_

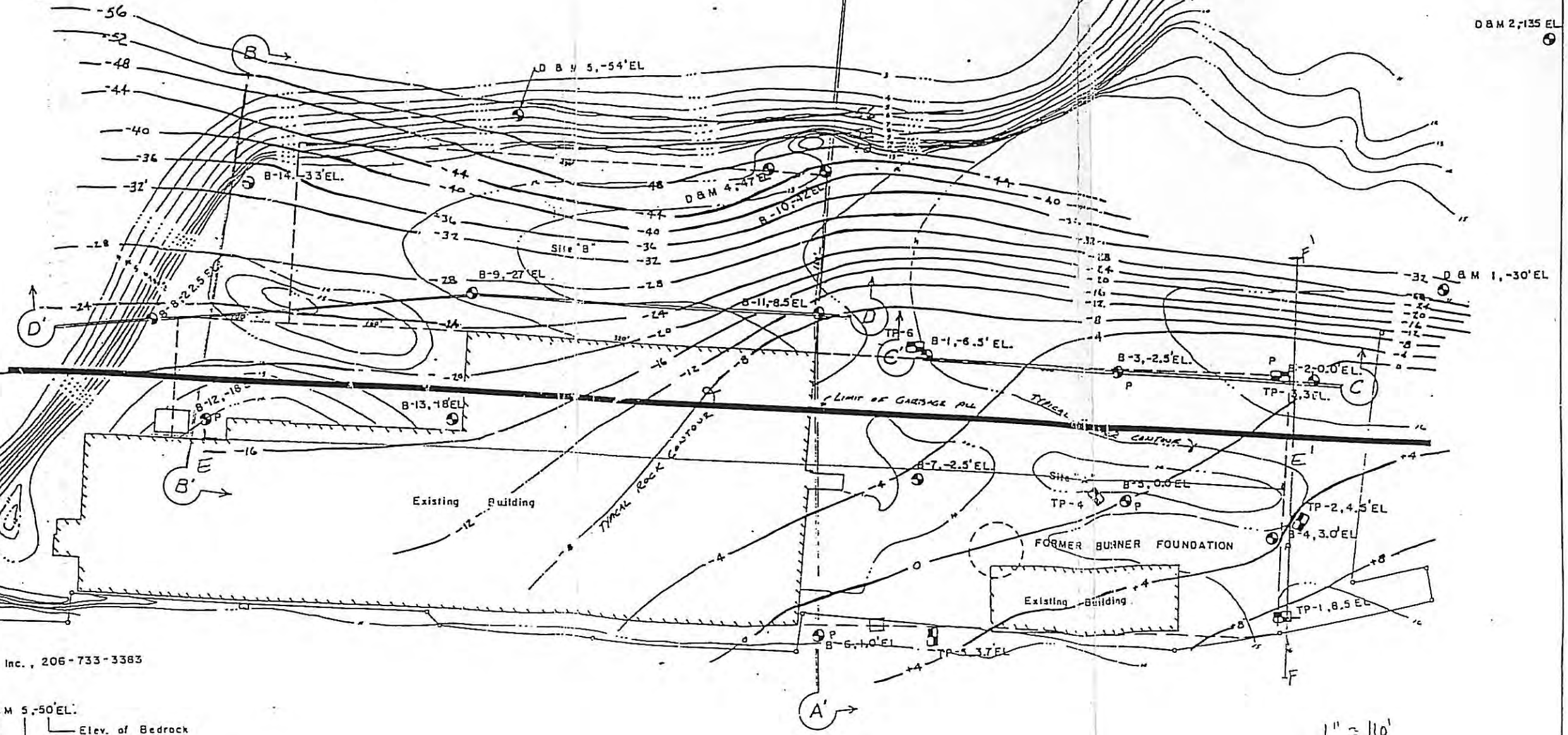
Bellingham Bay



A

D B M 3, Terminated at -65 Elev. Ground at -30'  
M.L.L. Water Elev = 0.0

D B M 2, 135 EL



NOTES:

Survey By Construction Surveyors N.W. Inc., 206-733-3383

Key to Data:

- B-5, -50' EL.
  - Elev. of Bedrock
  - Boring Number
- D B M 5, -50' EL.
  - Elev. of Bedrock
  - Boring Number
- TP-5, -10' EL.
  - Elev. of Bedrock
  - Test Pit Number
- Ref: Report of Soils Investigation  
Part of Bellingham  
February 1962

Rock Contours estimated between borings

P - Piezometer Location

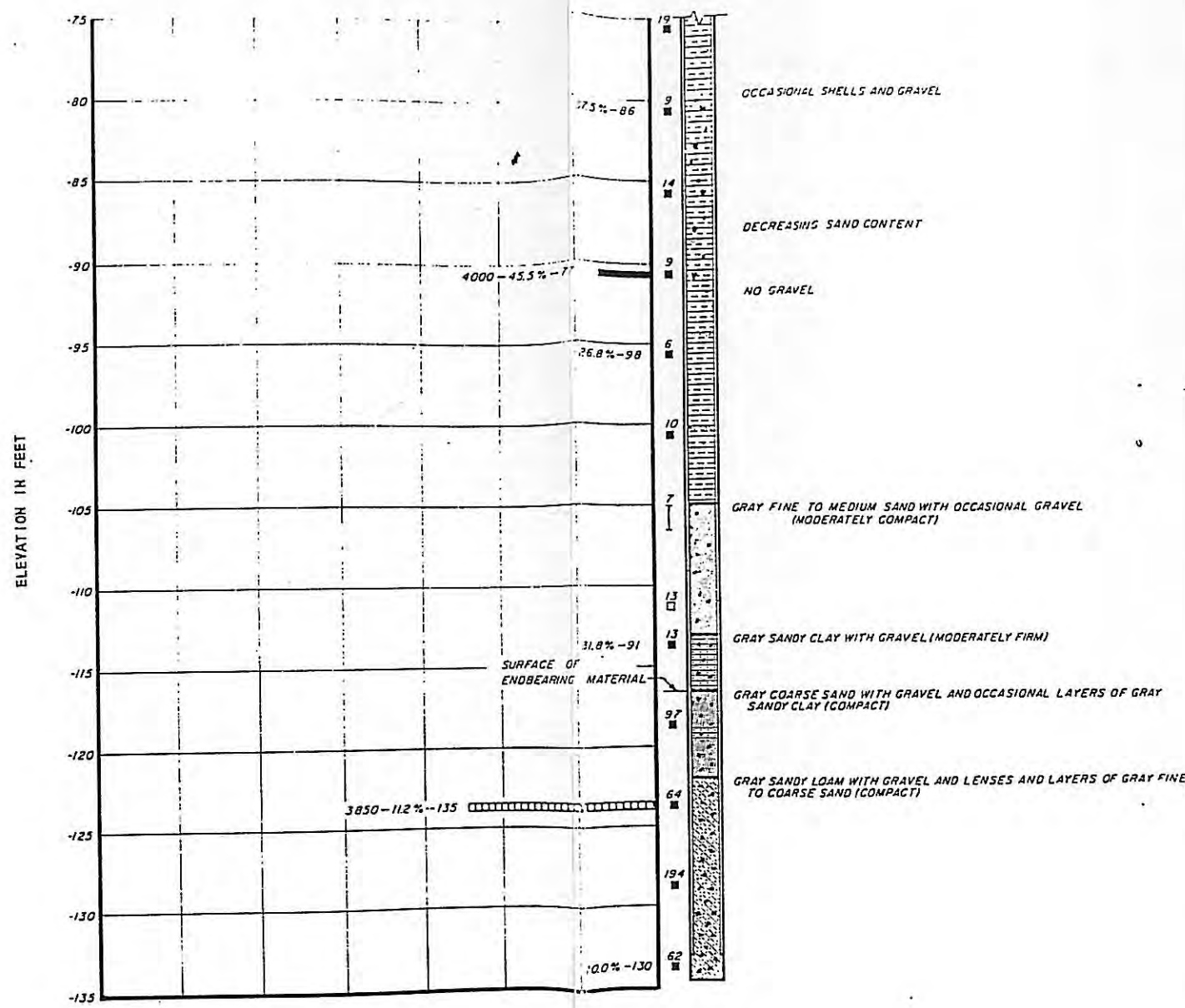
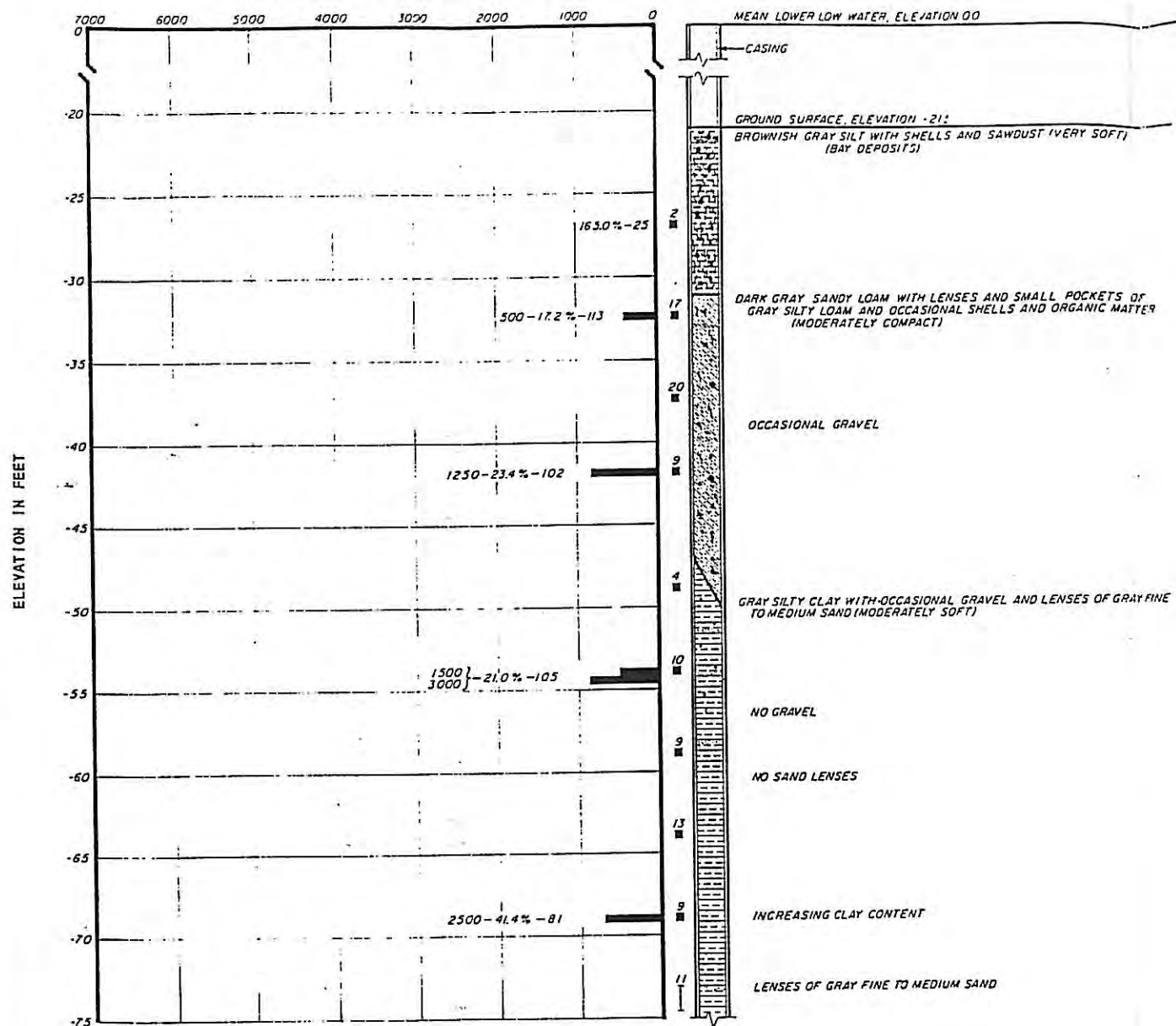
1" = 10'

ROCK CONTOURS		
PLAN OF TEST PITS & BORING LOCATIONS AND GEOLOGIC SECTIONS		
SCALE 1" = 10'	DATE 3-7-65	FIGURE 1
GEORGIA-PACIFIC CORP. WAREHOUSE		
W. O. PURNELL & ASSOCIATES 206-676-9589		FIGURE 1



BORING 2

SHEARING STRENGTH IN LBS/SQ. FT.



REVISIONS  
BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

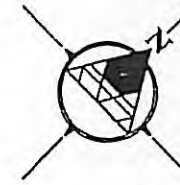
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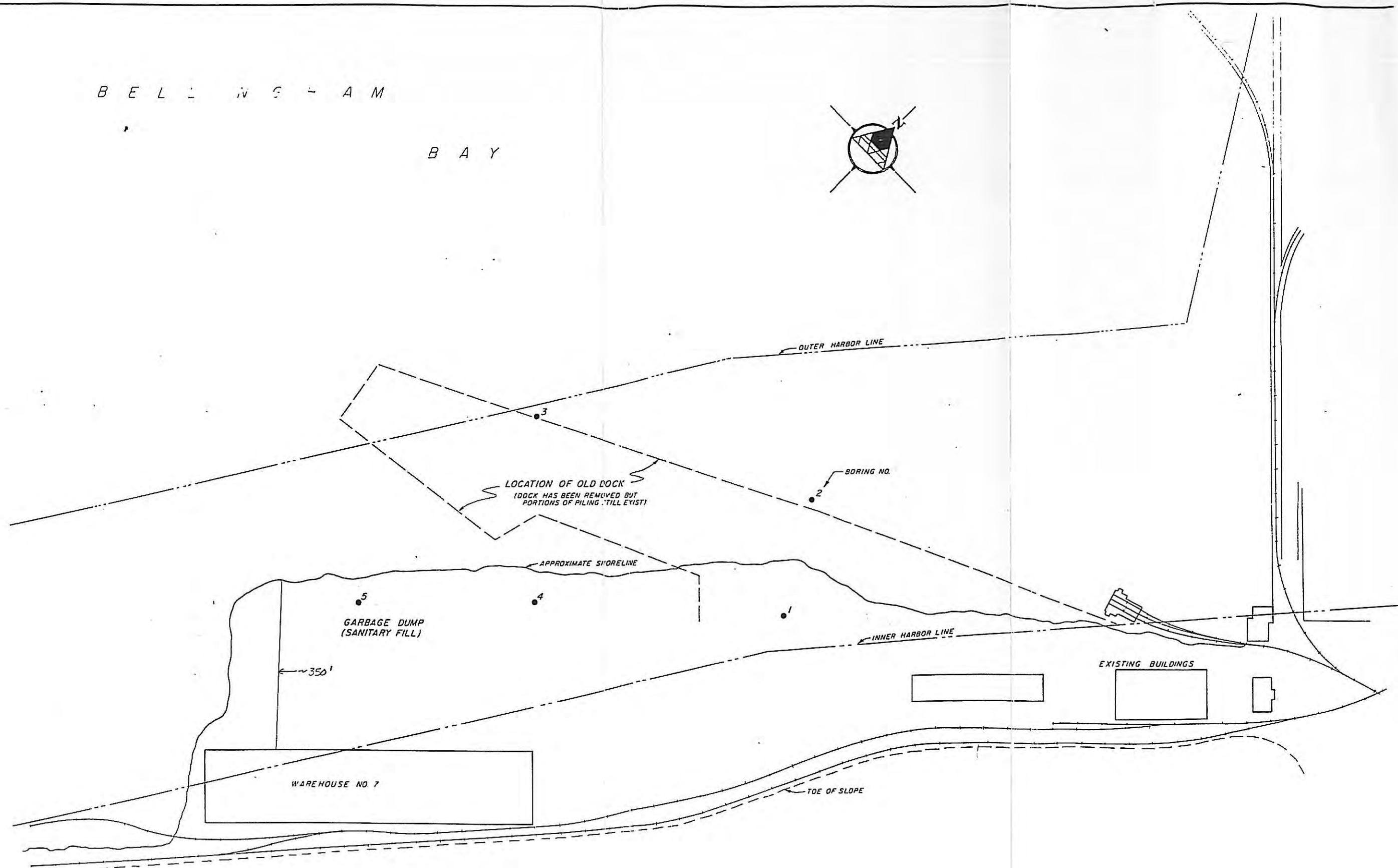
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REFERENCE.  
PORT OF BELLINGHAM DRAWING ENTITLED  
"BLOEDEL-DOONOVAN MILL SITE-1960," DATED  
7-21-60

### PLOT PLAN



1960

**American Fabricators Soil Analytical Results  
(Aspect Consulting 2004)**

Chemical Name	Method A-Soil (Unrestricted)	Method A-Soil (Restricted)	Method B-Soil (Unrestricted)	Method C-Soil (Restricted)	AF-MW01-2 07/19/04 (2.5-4 ft.)	AF-MW01-5 07/19/04 (10-11.5 ft.)	AF-MW02-3 07/19/04 (5-6.5 ft.)	AF-MW02-5 07/19/04 (10-11.5 ft.)	AF-MW02-7 07/19/04 (15-16.5 ft.)	AF-SB01-2 07/19/04 (4-8 ft.)	AF-SB02-1 07/19/04 (0-4 ft.)
<b>Conventionals</b>											
pH in std units					6.99	6.32	6.85	6.78	7.51	7.22	6.59
<b>Metals</b>											
Total Arsenic in mg/kg	20	20	8.5	87.5	5 U	10 U	6 U	7 U	20 U	8 U	7 U
Total Cadmium in mg/kg	2	2	40	1750	0.2 U	0.4 U	0.2 U	0.3 U	0.7 U	0.3 U	0.6
Total Copper in mg/kg			2960	130000	60.8	29.5	31.7	47.3	70.5	31.4	75.2
Total Lead in mg/kg	250	1000			29 J	15 J	5 J	19 J	14 J	89 J	84 J
Total Mercury in mg/kg	2	2	24	1050	0.04	0.1 U	0.04 U	0.06 U	0.07 U	0.08 U	0.07
Total Nickel in mg/kg			1600	70000	35	36	55	48	19	31	50
Total Zinc in mg/kg			24000	1050000	62.9	58	43.3	75.5	46	87	237
Total Chromium in mg/kg					37.7	23	50.2	43.1	19	39.5	38
Chromium III in mg/kg	2000	2000	120000	5250000	37.7	23	50.2	43.1	19	39.5	38
<b>Volatile Aromatics</b>											
Benzene in mg/kg	0.03	0.03	18.2	2390	0.026 U	0.092 U	0.026 U	0.031 U	0.038 U	0.032 U	0.028 U
Ethylbenzene in mg/kg	6	6	8000	350000	0.026 U	0.092 U	0.41	0.031 U	0.038 U	0.032 U	0.028 U
Toluene in mg/kg	7	7	16000	700000	0.026 U	0.092 U	0.042	0.031 U	0.038 U	0.032 U	0.028 U
m,p-Xylene in mg/kg			160000	7000000	0.052 U	0.18 U	0.16	0.062 U	0.075 U	0.065 U	0.056 U
o-Xylene in mg/kg			160000	7000000	0.026 U	0.092 U	0.23	0.031 U	0.038 U	0.032 U	0.028 U
Total Xylenes in mg/kg	9	9			0.039 U	0.136 U	0.39	0.0465 U	0.0565 U	0.0485 U	0.042 U
<b>PAHs</b>											
Acenaphthene in mg/kg			4800	210000	0.049	0.015 U		0.42	0.011		0.0094 U
Acenaphthylene in mg/kg					0.0072 U	0.015 U		0.1	0.0098 U		0.016
Anthracene in mg/kg			24000	1050000	0.051	0.015 U		0.12	0.012		0.024
Benzo(g,h,i)perylene in mg/kg					0.011	0.015 U		0.021 U	0.0098 U		0.11
Fluoranthene in mg/kg			3200	140000	0.28	0.015 U		0.065	0.013		0.24
Fluorene in mg/kg			3200	140000	0.063	0.015 U		0.49	0.02		0.014
Phenanthrene in mg/kg					0.31	0.015 U		1.1	0.042		0.13
Pyrene in mg/kg			2400	105000	0.2	0.015 U		0.12	0.017		0.34
Benzo(a)anthracene in mg/kg					0.051	0.015 U		0.021 U	0.0098 U		0.18
Benzo(a)pyrene in mg/kg	0.1	2	0.137	18	0.022	0.015 U		0.021 U	0.0098 U		0.28
Benzo(b)fluoranthene in mg/kg					0.032	0.015 U		0.021 U	0.0098 U		0.19
Benzo(k)fluoranthene in mg/kg					0.025	0.015 U		0.021 U	0.0098 U		0.22
Chrysene in mg/kg					0.052	0.015 U		0.029	0.0098 U		0.25
Dibenz(a,h)anthracene in mg/kg					0.0072 U	0.015 U		0.021 U	0.0098 U		0.036
Indeno(1,2,3-cd)pyrene in mg/kg					0.0087	0.015 U		0.021 U	0.0098 U		0.1
Total cPAHs (TEF) in mg/kg	0.1	2	0.137	18	0.0356	0.0136 U		0.0192	0.00887 U		0.366
1-Methylnaphthalene in mg/kg					0.018	0.015 U		7.1	0.16		0.12
2-Methylnaphthalene in mg/kg					0.032	0.015 U		12	0.26		0.11
Naphthalene in mg/kg			1600	70000	0.0072 U	0.015 U		0.021 U	0.017		0.063
Total Naphthalenes in mg/kg	5	5			0.0536	0.0225 U		19.1	0.437		0.293

See Table 23 Notes &amp; Definitions for information on result values and qualifiers.

Chemical Name	Method A-Soil (Unrestricted)	Method A-Soil (Restricted)	Method B-Soil (Unrestricted)	Method C-Soil (Restricted)	AF-MW01-2 07/19/04 (2.5-4 ft.)	AF-MW01-5 07/19/04 (10-11.5 ft.)	AF-MW02-3 07/19/04 (5-6.5 ft.)	AF-MW02-5 07/19/04 (10-11.5 ft.)	AF-MW02-7 07/19/04 (15-16.5 ft.)	AF-SB01-2 07/19/04 (4-8 ft.)	AF-SB02-1 07/19/04 (0-4 ft.)
<b>Semivolatiles</b>											
1,2,4-Trichlorobenzene in mg/kg			800	35000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
1,2-Dichlorobenzene in mg/kg			7200	315000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
1,3-Dichlorobenzene in mg/kg					0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
1,4-Dichlorobenzene in mg/kg			41.7	5470	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
1-Methylnaphthalene in mg/kg							81				
2,2'-Oxybis(1-Chloropropane) in mg/kg			14.3	1880	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
2,4,5-Trichlorophenol in mg/kg			8000	350000	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
2,4,6-Trichlorophenol in mg/kg			90.9	11900	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
2,4-Dichlorophenol in mg/kg			240	10500	0.22 U	0.44 U	0.84 U	0.27 U	0.29 U		0.28 U
2,4-Dimethylphenol in mg/kg			1600	70000	0.22 U	0.44 U	0.84 U	0.27 U	0.29 U		0.28 U
2,4-Dinitrophenol in mg/kg			160	7000	0.72 U	1.5 U	2.8 U	0.91 U	0.98 U		0.94 U
2,4-Dinitrotoluene in mg/kg			160	7000	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
2,6-Dinitrotoluene in mg/kg			80	3500	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
2-Chloronaphthalene in mg/kg			6400	280000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
2-Chlorophenol in mg/kg			400	17500	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
2-Methylnaphthalene in mg/kg							150				
2-Methylphenol in mg/kg			4000	175000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
2-Nitroaniline in mg/kg					0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
2-Nitrophenol in mg/kg					0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
3,3'-Dichlorobenzidine in mg/kg			2.22	292	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
3-Nitroaniline in mg/kg					0.43 U	0.88 U	1.7 U	0.54 U	0.59 U		0.56 U
4,6-Dinitro-2-Methylphenol in mg/kg					0.72 U	1.5 U	2.8 U	0.91 U	0.98 U		0.94 U
4-Bromophenyl-phenylether in mg/kg					0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
4-Chloro-3-methylphenol in mg/kg					0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U
4-Chloroaniline in mg/kg			320	14000	0.22 U	0.44 U	0.84 U	0.27 U	0.29 U		0.28 U
4-Chlorophenyl-phenylether in mg/kg					0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
4-Methylphenol in mg/kg			400	17500	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
4-Nitroaniline in mg/kg					0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
4-Nitrophenol in mg/kg					0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
Acenaphthene in mg/kg			4800	210000			4.4				
Acenaphthylene in mg/kg							0.74				
Anthracene in mg/kg			24000	1050000			0.87				
Benzo(g,h,i)perylene in mg/kg							0.19 U				
Benzoic Acid in mg/kg			320000	1.4E+07	0.72 U	1.5 U	2.8 U	0.91 U	0.98 U		0.94 U
Benzyl Alcohol in mg/kg			24000	1050000	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
bis(2-Chloroethoxy) Methane in mg/kg					0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
Bis-(2-Chloroethyl) Ether in mg/kg			0.909	119	0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U
bis(2-Ethylhexyl)phthalate in mg/kg			71.4	9380	0.1	0.15 U	0.28 U	0.11	0.098 U		0.094 U
Butylbenzylphthalate in mg/kg			16000	700000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
Carbazole in mg/kg			50	6560	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
Dibenzofuran in mg/kg					0.072 U	0.15 U	2	0.091 U	0.098 U		0.094 U
Diethylphthalate in mg/kg			64000	2800000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U

See Table 23 Notes & Definitions for information on result values and qualifiers.

Chemical Name	Method A-Soil (Unrestricted)	Method A-Soil (Restricted)	Method B-Soil (Unrestricted)	Method C-Soil (Restricted)	AF-MW01-2 07/19/04 (2.5-4 ft.)	AF-MW01-5 07/19/04 (10-11.5 ft.)	AF-MW02-3 07/19/04 (5-6.5 ft.)	AF-MW02-5 07/19/04 (10-11.5 ft.)	AF-MW02-7 07/19/04 (15-16.5 ft.)	AF-SB01-2 07/19/04 (4-8 ft.)	AF-SB02-1 07/19/04 (0-4 ft.)
Dimethylphthalate in mg/kg			80000	3500000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
Di-n-Butylphthalate in mg/kg			8000	350000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
Di-n-Octyl phthalate in mg/kg			1600	70000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
Fluoranthene in mg/kg			3200	140000			0.6				
Fluorene in mg/kg			3200	140000			4.6				
Hexachlorobenzene in mg/kg			0.625	82	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
Hexachlorobutadiene in mg/kg			12.8	1680	0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U
Hexachlorocyclopentadiene in mg/kg			480	21000	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
Hexachloroethane in mg/kg			71.4	9380	0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U
Isophorone in mg/kg			1050	138000	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
Naphthalene in mg/kg			1600	70000			0.87				
Nitrobenzene in mg/kg			40	1750	0.072 U	0.15 U	0.28 U	0.091 U	0.098 U		0.094 U
N-Nitroso-Di-N-Propylamine in mg/kg			0.143	18.8	0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U
N-Nitrosodiphenylamine in mg/kg			204	26800	0.072 U	0.15 U	0.28 U	0.41	0.098 U		0.094 U
Pentachlorophenol in mg/kg			8.33	1090	0.36 U	0.74 U	1.4 U	0.45 U	0.49 U		0.47 U
Phenanthrene in mg/kg							12				
Phenol in mg/kg			48000	2100000	0.14 U	0.29 U	0.56 U	0.18 U	0.2 U		0.19 U
Pyrene in mg/kg			2400	105000			1.2				
Benzo(a)anthracene in mg/kg							0.19 U				
Benzo(a)pyrene in mg/kg	0.1	2	0.137	18			0.19 U				
Benzo(b)fluoranthene in mg/kg							0.19 U				
Benzo(k)fluoranthene in mg/kg							0.19 U				
Chrysene in mg/kg							0.21				
Dibenz(a,h)anthracene in mg/kg							0.19 U				
Indeno(1,2,3-cd)pyrene in mg/kg							0.19 U				
Total cPAHs (TEF) in mg/kg	0.1	2	0.137	18			0.173				
TPH											
Gasoline Range Hydrocarbons in mg/kg	100	100			5.2 U	18 U	500	80	7.5 U	6.5 U	5.6 U
Bunker C in mg/kg	2000	2000				230 J					
Diesel Range Hydrocarbons in mg/kg	2000	2000			10 J		7100	270	160	19 J	200
Motor Oil in mg/kg	2000	2000			43 J		310	22	76	120 J	150
PCBs											
Aroclor 1016 in mg/kg			5.6	245	0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U
Aroclor 1221 in mg/kg					0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U
Aroclor 1232 in mg/kg					0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U
Aroclor 1242 in mg/kg					0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U
Aroclor 1248 in mg/kg					0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U
Aroclor 1254 in mg/kg			1.6	70	0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U
Aroclor 1260 in mg/kg					0.036 U	0.073 U	0.038 U	0.045 U	0.049 U		0.047 U
Total PCBs in mg/kg	1	10			0.126 U	0.256 U	0.133 U	0.157 U	0.172 U		0.164 U

See Table 23 Notes & Definitions for information on result values and qualifiers.



Chemical Name	AF-SB02-2 07/19/04 (4-8 ft.)	AF-SB03-1 07/19/04 (0-4 ft.)	AF-SB03-3 07/19/04 (8-12 ft.)	AF-SB04-1 07/22/04 (0-4 ft.)	AF-SB04-2 07/22/04 (4-8 ft.)	AF-SB04-3 07/22/04 (8-12 ft.)	AF-SB04-8 07/22/04 (8-12 ft.)
<b>Conventionals</b>							
pH in std units	6.63	8.04	6.63	7.58		8.05	8.1
<b>Metals</b>							
Total Arsenic in mg/kg	7 U	5 U	6 U	10 U		6 U	6 U
Total Cadmium in mg/kg	0.3 U	0.2	0.2 U	0.5 U		0.3	0.2 U
Total Copper in mg/kg	62.9	27.1	38.6	56.7		48	44.1
Total Lead in mg/kg	13 J	20 J	14	27		42	44
Total Mercury in mg/kg	0.06 U	0.05 U	0.05	0.18		0.09	0.08
Total Nickel in mg/kg	22	31	29	31		29	45
Total Zinc in mg/kg	38.8	76.3	60.7	64		77.5	76.8
Total Chromium in mg/kg	23.3	30.5	40	51		34.4	41.9
Chromium III in mg/kg	23.3	30.5	40	51		34.4	41.9
<b>Volatile Aromatics</b>							
Benzene in mg/kg	0.034 U	0.025 U	0.027 U		0.028 U	0.029 U	
Ethylbenzene in mg/kg	0.034 U	0.025 U	0.027 U		0.82	0.093	
Toluene in mg/kg	0.034 U	0.025 U	0.027 U		0.028 U	0.029 U	
m,p-Xylene in mg/kg	0.067 U	0.05 U	0.055 U		0.072	0.067	
o-Xylene in mg/kg	0.034 U	0.025 U	0.027 U		0.15	0.029 U	
Total Xylenes in mg/kg	0.0505 U	0.0375 U	0.041 U		0.222	0.0815	
<b>PAHs</b>							
Acenaphthene in mg/kg	0.0098 U	0.0071 U	0.0083 U		2.6	4.3	2.5
Acenaphthylene in mg/kg	0.0098 U	0.0071 U	0.0083 U		0.66	1.1	0.62
Anthracene in mg/kg	0.0098 U	0.0085	0.0083 U		0.65 J	1.2 J	0.75 J
Benzo(g,h,i)perylene in mg/kg	0.0098 U	0.0071 U	0.0083 U		0.21	0.07	0.061
Fluoranthene in mg/kg	0.012	0.041	0.011		0.87	1.5	0.85
Fluorene in mg/kg	0.0098 U	0.0071 U	0.0083 U		3.7	7.5	3.5
Phenanthrene in mg/kg	0.019	0.033	0.021		10	20	12
Pyrene in mg/kg	0.019	0.034	0.013		1.5	2.5	1.5
Benzo(a)anthracene in mg/kg	0.0098 U	0.013	0.0083 U		0.36	0.38	0.22
Benzo(a)pyrene in mg/kg	0.013	0.014	0.0083 U		0.32	0.18	0.12
Benzo(b)fluoranthene in mg/kg	0.0098 U	0.027	0.0083 U		0.36	0.16	0.1
Benzo(k)fluoranthene in mg/kg	0.0098 U	0.012	0.0083 U		0.29	0.15	0.12
Chrysene in mg/kg	0.0098 U	0.023	0.0083 U		0.49	0.58	0.35
Dibenz(a,h)anthracene in mg/kg	0.0098 U	0.0071 U	0.0083 U		0.057	0.06 U	0.038 U
Indeno(1,2,3-cd)pyrene in mg/kg	0.0098 U	0.0071 U	0.0083 U		0.18	0.06 U	0.041
Total cPAHs (TEF) in mg/kg	0.017	0.0212	0.00751 U		0.467	0.27	0.179
1-Methylnaphthalene in mg/kg	0.063	0.077	0.04		52	120	73
2-Methylnaphthalene in mg/kg	0.057	0.094	0.018		96	240	140
Naphthalene in mg/kg	0.032	0.015	0.0091		2	15	9.2
Total Naphthalenes in mg/kg	0.152	0.186	0.0671		150	375	222

See Table 23 Notes & Definitions for information on result values and qualifiers.

**Table 20 - American Fabrications Soil Analysis Results**

Chemical Name	AF-SB02-2 07/19/04 (4-8 ft.)	AF-SB03-1 07/19/04 (0-4 ft.)	AF-SB03-3 07/19/04 (8-12 ft.)	AF-SB04-1 07/22/04 (0-4 ft.)	AF-SB04-2 07/22/04 (4-8 ft.)	AF-SB04-3 07/22/04 (8-12 ft.)	AF-SB04-8 07/22/04 (8-12 ft.)
<b>Semivolatiles</b>							
1,2,4-Trichlorobenzene in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
1,2-Dichlorobenzene in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
1,3-Dichlorobenzene in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
1,4-Dichlorobenzene in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
1-Methylnaphthalene in mg/kg							
2,2'-Oxybis(1-Chloropropane) in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
2,4,5-Trichlorophenol in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.51 U	0.4 U
2,4,6-Trichlorophenol in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.51 U	0.4 U
2,4-Dichlorophenol in mg/kg	0.29 U	0.21 U	0.25 U		0.24 U	0.31 U	0.24 U
2,4-Dimethylphenol in mg/kg	0.29 U	0.21 U	0.25 U		0.24 U	0.31 U	0.24 U
2,4-Dinitrophenol in mg/kg	0.98 U	0.71 U	0.83 U		0.8 U	1 U	0.79 U
2,4-Dinitrotoluene in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.51 U	0.4 U
2,6-Dinitrotoluene in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.51 U	0.4 U
2-Chloronaphthalene in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
2-Chlorophenol in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
2-Methylnaphthalene in mg/kg							
2-Methylphenol in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
2-Nitroaniline in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.51 U	0.4 U
2-Nitrophenol in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.51 U	0.4 U
3,3'-Dichlorobenzidine in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.51 U	0.4 U
3-Nitroaniline in mg/kg	0.59 U	0.42 U	0.5 U		0.48 U	0.61 U	0.48 U
4,6-Dinitro-2-Methylphenol in mg/kg	0.98 U	0.71 U	0.83 U		0.8 U	1 U	0.79 U
4-Bromophenyl-phenylether in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
4-Chloro-3-methylphenol in mg/kg	0.2 U	0.14 U	0.17 U		0.16 U	0.2 U	0.16 U
4-Chloroaniline in mg/kg	0.29 U	0.21 U	0.25 U		0.24 U	0.31 U	0.24 U
4-Chlorophenyl-phenylether in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
4-Methylphenol in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
4-Nitroaniline in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.51 U	0.4 U
4-Nitrophenol in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.51 U	0.4 U
Acenaphthene in mg/kg							
Acenaphthylene in mg/kg							
Anthracene in mg/kg							
Benzo(g,h,i)perylene in mg/kg							
Benzoic Acid in mg/kg	0.98 U	0.71 U	0.83 U		0.8 U	1 U	0.79 U
Benzyl Alcohol in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.51 U	0.4 U
bis(2-Chloroethoxy) Methane in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
Bis-(2-Chloroethyl) Ether in mg/kg	0.2 U	0.14 U	0.17 U		0.16 U	0.2 U	0.16 U
bis(2-Ethylhexyl)phthalate in mg/kg	0.098 U	0.071 U	0.083 U		0.22	0.1 U	0.079 U
Butylbenzylphthalate in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
Carbazole in mg/kg	0.098 U	0.071 U	0.083 U		0.16	0.1 U	0.079 U
Dibenzofuran in mg/kg	0.098 U	0.071 U	0.083 U		0.084 J	0.1 U	0.85
Diethylphthalate in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U

See Table 23 Notes &amp; Definitions for information on result values and qualifiers.

Chemical Name	AF-SB02-2 07/19/04 (4-8 ft.)	AF-SB03-1 07/19/04 (0-4 ft.)	AF-SB03-3 07/19/04 (8-12 ft.)	AF-SB04-1 07/22/04 (0-4 ft.)	AF-SB04-2 07/22/04 (4-8 ft.)	AF-SB04-3 07/22/04 (8-12 ft.)	AF-SB04-B 07/22/04 (8-12 ft.)
Dimethylphthalate in mg/kg	0.098 U	0.071 U	0.083 U		0.68	0.1 U	0.079 U
Di-n-Butylphthalate in mg/kg	0.098 U	0.071 U	0.083 U		0.48	0.1 U	0.079 U
Di-n-Octyl phthalate in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
Fluoranthene in mg/kg							
Fluorene in mg/kg							
Hexachlorobenzene in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
Hexachlorobutadiene in mg/kg	0.2 U	0.14 U	0.17 U		0.16 U	0.2 U	0.16 U
Hexachlorocyclopentadiene in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.51 U	0.4 U
Hexachloroethane in mg/kg	0.2 U	0.14 U	0.17 U		0.16 U	0.2 U	0.16 U
Isophorone in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
Naphthalene in mg/kg							
Nitrobenzene in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
N-Nitroso-Di-N-Propylamine in mg/kg	0.2 U	0.14 U	0.17 U		0.16 U	0.2 U	0.16 U
N-Nitrosodiphenylamine in mg/kg	0.098 U	0.071 U	0.083 U		0.08 U	0.1 U	0.079 U
Pentachlorophenol in mg/kg	0.49 U	0.35 U	0.41 U		0.4 U	0.61 J	0.65 J
Phenanthrene in mg/kg							
Phenol in mg/kg	0.2 U	0.14 U	0.17 U		0.16 U	0.2 U	0.16 U
Pyrene in mg/kg							
Benzo(a)anthracene in mg/kg							
Benzo(a)pyrene in mg/kg							
Benzo(b)fluoranthene in mg/kg							
Benzo(k)fluoranthene in mg/kg							
Chrysene in mg/kg							
Dibenz(a,h)anthracene in mg/kg							
Indeno(1,2,3-cd)pyrene in mg/kg							
Total cPAHs (TEF) in mg/kg							
TPH							
Gasoline Range Hydrocarbons in mg/kg	6.7 U	5.0 U	7.3		490	170	
Bunker C in mg/kg							
Diesel Range Hydrocarbons in mg/kg	160	30	33	55	1700	4200	2500
Motor Oil in mg/kg	130	90	77	300	940	1700	1100
PCBs							
Aroclor 1016 in mg/kg	0.049 U	0.036 U	0.041 U	0.036 U		0.041 U	
Aroclor 1221 in mg/kg	0.049 U	0.036 U	0.041 U	0.036 U		0.041 U	
Aroclor 1232 in mg/kg	0.049 U	0.036 U	0.041 U	0.036 U		0.041 U	
Aroclor 1242 in mg/kg	0.049 U	0.036 U	0.041 U	0.036 U		0.041 U	
Aroclor 1248 in mg/kg	0.049 U	0.036 U	0.041 U	0.036 U		0.041 U	
Aroclor 1254 in mg/kg	0.049 U	0.036 U	0.041 U	0.036 U		0.041 U	
Aroclor 1260 in mg/kg	0.049 U	0.036 U	0.041 U	0.036 U		0.041 U	
Total PCBs in mg/kg	0.172 U	0.126 U	0.144 U	0.126 U		0.144 U	

See Table 23 Notes & Definitions for information on result values and qualifiers.

# **Site Laboratory Analytical Reports, Summary of Results, and Data Validation**



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

October 12, 2012

Mr. Larry Beard  
Landau Associates, Inc.  
130 2<sup>nd</sup> Avenue South  
Edmonds, WA 98020

**RE: Client Project: Cornwall, 0001020.400.510**  
**ARI Job Nos: VK65, VK75, VL48**

Dear Larry,

Please find enclosed the Chain-of-Custody records (COCs), sample receipt documentation, and the final analytical results for samples received under the project referenced above. Analytical Resources, Inc. (ARI) accepted fifteen water samples and a trip blank on September 25, 2012. The samples were received in good condition and there were no discrepancies between the COCs and container labels.

Select samples were centrifuged prior to analysis. Details regarding centrifuging can be found in the Geotechnical Case Narrative.

The samples were analyzed for SVOCs, SIM PAHs, Pesticides, Herbicides, NWTPH-HCID, VOCs, Dissolved Metals, Anions, Sulfide, Ammonia, Total and Amenable Cyanide, TOC, COD, BOD, Turbidity, and Tannins/Lignins, as requested on the COCs. NWTPH-Gx and NWTPH-Dx were additionally listed as requested on the COCs but were only analyzed if NWTPH-HCID results were above detection limits. The Tannins/Lignins analysis was subcontracted to Aquatic Research, Inc. and all results have been included in this report.

The VOC LCSD percent recovery of 2,2-Dichloropropane fell outside the control limits low for **LCS-092612A**. All other percent recoveries were within control limits. No corrective action was taken.

Both SVOC continuing calibrations fell outside the 20% control limit low for 2,4-Dinitrophenol. All detected results for this compound have been flagged with a "Q" qualifier. No further corrective action was taken.

The Pesticide LCS and LCSD percent recoveries of delta-BHC fell outside the control limits low for **LCS-092912**. All other percent recoveries were within control limits. No corrective action was taken.





## Analytical Resources, Incorporated

Analytical Chemists and Consultants

Several LCS and LCSD percent recoveries were outside control limits with wide RPDs for **LCS-092812**. The LCS, LCSD, Method Blank, and all associated samples were re-extracted and re-analyzed outside the method recommended holding time. The re-extracted LCS/LCSD percent recoveries of 2,4-D, and the LCS percent recoveries of 2,4,5-T and Dicamba fell outside the control limits low with a wide RPD for Dalapon. All samples were undetected for requested compounds. No further corrective action was taken.

Samples **MW-15D-092412**, **MW-16D-092412**, **MW-14D-092412**, **MW-15S-092412**, **MW-16S-092412**, and **MW-14S-092412** were extracted outside the seven-day recommended holding time for NWTPH-Dx. Samples **MW-13D-092412** and **MW-DUP-092412** were extracted within the recommended holding time.

The samples were analyzed outside the recommended holding time for Turbidity.

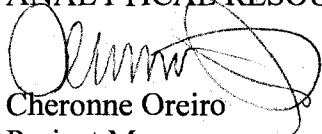
The cyanide aliquot for sample **MW-12S-092412** was not preserved upon laboratory receipt. This sample was analyzed for cyanide outside the recommended holding time for unpreserved samples.

The replicate RPD of COD was outside the 20% control limit for sample **MW-15D-092412**. All other quality control parameters were met for this analysis. No corrective action was taken.

The sulfate samples **MW-15D-092412** and **MW-Dup-092412** were originally analyzed within method recommended holding time and at the request of the client the samples were re-analyzed and reported outside of the method recommended holding time as the data was not consistent with a sample duplicate.

An electronic copy of this report and all associated raw data will remain on file at ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,  
ANALYTICAL RESOURCES, INC.



Cheronne Oreiro  
Project Manager

-For-

Kelly Bottem  
Client Services Manager  
206-695-6211

# Chain-of-Custody Record

Project Name CORNWALL Project No. 000620400.510  
 Project Location/Event BELLEVUE, WA / ADDITIONAL GROUNDWATER INVESTIGATION  
 Sampler's Name CHRISTOPHE VENOT / ROSEMARY TRIMMER  
 Project Contact " / JEREMY DAKES / LARRY BEARD  
 Send Results To ANNE HANSEN / "

Sample I.D.	Date	Time	Matrix	No. of Containers	SVC	PESTICIDES	HERBICIDES	VOCs	DISSOLVED METALS (C)	SULFIDES	NH3	TOT + FREE CHLOROC	TANNINS + LEIGNINS	Observations/Comments	Turnaround Time	
MW-15D-092412	092412	0826	AQ	19	X	X	X	X	X	X	X	X	X	X	Allow water samples to settle, collect aliquot from clear portion run samples standardized to _____ product Analyze for EPH if no specific product identified VOC/BTEX/VPH (soil): _____ non-preserved _____ preserved w/methanol _____ preserved w/sodium bisulfate _____ Freeze upon receipt Dissolved metal water samples field filtered Other (a) <u>Centrifuge prior to analysis</u> (b) <u>DO NOT Centrifuge prior to analysis</u> (c) <u>As C, Pb, Mn, Zn, Hg</u> (d) <u>NOTE STREET LIGHT HOLD TIME</u>	Standard <input checked="" type="checkbox"/> Accelerated <input type="checkbox"/>
MW-16D-092412	092412	0830	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-14D-092412	092412	1000	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-15S-092412	092412	1050	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-16S-092412	092412	1130	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-14S-092412	092412	1250	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-13S-092412	092412	1300	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-12S-092412	092412	1400	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-11S-092412	092412	1425	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-12D-092412	092412	1510	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-11D-092412	092412	1535	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-13D-092412	092412	1700	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-DUP-092412	092412	---	AQ	19	X	X	X	X	X	X	X	X	X	X		
MW-15S-092412	092412	1050	AQ	8	X	X	X	X	X	X	X	X	X	X		
MW-13D-092412	092412	1700	AQ	8	X	X	X	X	X	X	X	X	X	X		
TBS			AQ	3												

Special Shipment/Handling or Storage Requirements: ON ICE

Relinquished by	Received by	Relinquished by	Received by
Signature <u>Rosemary Trimmer</u> Printed Name <u>Rosemary Trimmer</u> Company <u>Landau Associates</u> Date <u>9/25/12</u> Time <u>12:01</u>	Signature <u>Janifer Millsap</u> Printed Name <u>AR</u> Company <u>AR</u> Date <u>9/25/12</u> Time <u>1201</u>	Signature _____ Printed Name _____ Company _____ Date _____ Time _____	Signature _____ Printed Name _____ Company _____ Date _____ Time _____

Method of Shipment: DROP-OFF

# Chain-of-Custody Record

Project Name CORNWALL Project No. 0001020.400.510  
 Project Location/Event BELLEVUE, WA ADDITIONAL CW INVESTIGATION  
 Sampler's Name CHRISTOPHER VENOT / ROSEMARY TRAMMER  
 Project Contact "/ JEREMY DAVIS / LARRY BEARD  
 Send Results To ANNE HALLIKSEN / "

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters				Observations/Comments
					TOC AND COD	NWTPH-DX (2)	NWTPH-CX (2)	TOXICITY (6)	
MW-15D-092412	092412	0826	AQ	6	X				Turnaround Time <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Accelerated  X Allow water samples to settle, collect aliquot from clear portion X NWTPH-Dx - run acid wash/silica gel cleanup  ___ run samples standardized to ___ product ___ Analyze for EPH if no specific product identified VOC/BTEX/VPH (soil): ___ non-preserved ___ preserved w/methanol ___ preserved w/sodium bisulfate ___ Freeze upon receipt ___ Dissolved metal water samples field filtered Other <u>(a) LAI TO FOLLOW-UP BASED ON HCFD RESULTS</u> <u>(b) MEASURE FROM CENTRIFUGED SAMPLES</u> <u>(c) NBTETB-HA RUN 0 TIME</u>
MW-16D-092412	092412	0836	AQ	6	X				
MW-14D-092412	092412	1000	AQ	6	X				
MW-15S-092412	092412	1050	AQ	6	X				
MW-16S-092412	092412	1130	AQ	6	X				
MW-14S-092412	092412	1250	AQ	6	X				
MW-13S-092412	092412	1300	AQ	6	X				
MW-12S-092412	092412	1400	AQ	6	X				
MW-11S-092412	092412	1425	AQ	6	X				
MW-12D-092412	092412	1510	AQ	6	X				
MW-11D-092412	092412	1535	AQ	6	X				
MW-13D-092412	092412	1700	AQ	6	X				
MW-DUP-092412	092412	---	AQ	6	X				
<del>MW-15S-092412</del>	<del>092412</del>	<del>1050</del>	<del>AQ</del>	<del>6</del>	<del>X</del>				
<del>MW-13D-092412</del>	<del>092412</del>	<del>1700</del>	<del>AQ</del>	<del>6</del>	<del>X</del>				
TBS				2					

Special Shipment/Handling or Storage Requirements: ON ICE Method of Shipment: Drop-off

Relinquished by	Received by
Signature <u>Rosemary Trimmer</u> Printed Name <u>Rosemary Trimmer</u> Company <u>Landau Associates</u> Date <u>9/25/12</u> Time <u>12:01</u>	Signature <u>Jennifer Millsap</u> Printed Name <u>Jennifer Millsap</u> Company <u>ATI</u> Date <u>9/25/12</u> Time <u>1701</u>

092412  
 092412  
 K05 : 00004



# Cooler Receipt Form

ARI Client Landau

Project Name Cornwall

COC No(s) \_\_\_\_\_ NA

Delivered by: Fed-Ex UPS Courier  Hand Delivered  Other \_\_\_\_\_

Assigned ARI Job No VE65 VK65

Tracking No \_\_\_\_\_  NA

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES  NO

Were custody papers included with the cooler? YES  NO

Were custody papers properly filled out (ink, signed, etc) YES  NO

Temperature of Cooler(s) (°C) (recommended 2-6-0 °C for chemistry)..... 4.3 5.9 1.4 5.1 3.6 3.7

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID# 90877952

Cooler Accepted by JM Date \_\_\_\_\_ Time \_\_\_\_\_

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? YES  NO

What kind of packing material was used? Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper  Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? NA YES  NO

Were all bottles sealed in individual plastic bags? YES  NO

Did all bottles arrive in good condition (unbroken)? YES  NO

Were all bottle labels complete and legible? YES  NO

Did the number of containers listed on COC match with the number of containers received? YES  NO

Did all bottle labels and tags agree with custody papers? YES  NO

Were all bottles used correct for the requested analyses? YES  NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) NA YES  NO

Were all VOC vials free of air bubbles? NA YES  NO

Was sufficient amount of sample sent in each bottle? YES  NO

Date VOC Trip Blank was made at ARI.. NA 9/13/12

Was Sample Split by ARI  YES  Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by JM Date 9/25/12 Time 1358

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions: 0.4, 5.7, 2.9, 1.3, 1.8, 4.9, 1.9, 0.9

By JM Date 9/25/12

<p>Small Air Bubbles ~2mm</p>	<p>Peabubbles 2-4 mm</p>	<p>LARGE Air Bubbles &gt; 4 mm</p>	<p>Small → "sm"</p> <p>Peabubbles → "pb"</p> <p>Large → "lg"</p> <p>Headspace → "hs"</p>
-----------------------------------	------------------------------	--	--

## VOA Bubbles

MW-15D-092412 = LG in 1, PB in 4 of 5  
MW-16D-092412 = PB in 3 of 5  
MW-14D-092412 = LG in 4, SM in 1 of 5  
MW-15S-092412 = SM in 4 of 5  
MW-16S-092412 = PB in 2, SM in 3 of 5  
MW-14S-092412 = SM in 5 of 5  
MW-13S-092412 = PB in 2, SM in 3 of 5  
MW-12S-092412 = PB in 2, SM in 3 of 5  
MW-11S-092412 = SM in 5 of 5  
MW-12D-092412 = SM in 3, PB in 2 of 5  
MW-11D-092412 = PB in 4, SM in 1 of 5  
MW-13D-092412 = PB in 5 of 5  
MW-DUP-092412 = PB in 3, SM in 2 of 5  
TBS = SM in 4 of 9



# Cooler Receipt Form

ARI Client Landau

Project Name Cornwall

COC No(s) \_\_\_\_\_

Delivered by Fed-Ex UPS Courier Hand Delivered Other \_\_\_\_\_

Assigned ARI Job No VK65 VK65  
Preliminary Examination Phase: VK75

Tracking No \_\_\_\_\_ (NA)

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES (YES) NO (NO)  
 Were custody papers included with the cooler? YES (YES) NO \_\_\_\_\_  
 Were custody papers properly filled out (ink, signed, etc.) YES (YES) NO \_\_\_\_\_  
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 4.3 5.9 1.4 5.1 3.6 3.7  
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID# 90877952  
 Cooler Accepted by: JM Date: \_\_\_\_\_ Time: \_\_\_\_\_

**Complete custody forms and attach all shipping documents**

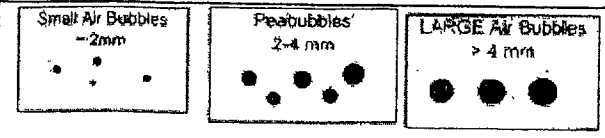
### Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)  
 What kind of packing material was used? Bubble Wrap (Wet Ice) Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_  
 Was sufficient ice used (if appropriate)? NA (YES) NO \_\_\_\_\_  
 Were all bottles sealed in individual plastic bags? YES (YES) NO (NO)  
 Did all bottles arrive in good condition (unbroken)? YES (YES) NO \_\_\_\_\_  
 Were all bottle labels complete and legible? YES (YES) NO \_\_\_\_\_  
 Did the number of containers listed on COC match with the number of containers received? YES (YES) NO \_\_\_\_\_  
 Did all bottle labels and tags agree with custody papers? YES (YES) NO \_\_\_\_\_  
 Were all bottles used correct for the requested analyses? YES (YES) NO \_\_\_\_\_  
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) NA (YES) NO \_\_\_\_\_  
 Were all VOC vials free of air bubbles? NA (YES) NO \_\_\_\_\_  
 Was sufficient amount of sample sent in each bottle? NA (YES) NO \_\_\_\_\_  
 Date VOC Trip Blank was made at ARI: \_\_\_\_\_ NA (NA) \_\_\_\_\_  
 Was Sample Split by ARI: (NA) YES Date/Time: \_\_\_\_\_ Equipment \_\_\_\_\_ Split by: \_\_\_\_\_  
 Samples Logged by: JM Date: 9/25/12 Time: 1541  
**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions: 0.4, 5.7, 2.9, 1.3, 1.3, 4.9, 1.9, 0.9

By \_\_\_\_\_ Date \_\_\_\_\_



Small → "sm"  
 Peabubbles → "pb"  
 Large → "lg"  
 Headspace → "hs"



ARI Job No: VK65

PC: Kelly  
VTSR: 09/25/12

Inquiry Number: NONE  
Analysis Requested: 09/25/12  
Contact: Davis, Jeremy  
Client: Landau Associates  
Logged by: JM  
Sample Set Used: Yes-481  
Validatable Package: No  
Deliverables:

Project #: 0001020.400-510  
Project: Cornwall  
Sample Site:  
SDG No:  
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	TPHD <2	Fe2+ <2	DMET DOC FLT FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
12-18405 VK65A	MW-15D-092412	F		P	P		DIS					P	F			Y					
12-18406 VK65B	MW-16D-092412	F		P	P		DIS					P	F			Y					
12-18407 VK65C	MW-14D-092412	F		P	P		DIS					P	F			Y					
12-18408 VK65D	MW-15S-092412	F		P	P		DIS					P	F			Y					
12-18409 VK65E	MW-16S-092412	F		P	P		DIS					P	F			Y					
12-18410 VK65F	MW-14S-092412	F		P	P		DIS					P	F			Y					
12-18411 VK65G	MW-13S-092412	F		P	P		DIS					P	F			Y					
12-18412 VK65H	MW-12S-092412	F		P	P		DIS					P	F			Y					
12-18413 VK65I	MW-11S-092412	F		P	P		DIS					P	F			Y					
12-18414 VK65J	MW-12D-092412	F		P	P		DIS					P	F			Y					
12-18415 VK65K	MW-11D-092412	F		P	P		DIS					P	F			Y					
12-18416 VK65L	MW-13D-092412	F		P	P		DIS					P	F			Y					
12-18417 VK65M	MW-DUP-092412	F		P	P		DIS					P	F			Y					

S2 only preserved with ZnOAc.

P= Pass  
F= Fail

Checked By JM Date 9/25/12



ARI Job No: VK65

PC: Kelly

VTSR: 09/25/12

Inquiry Number: NONE

Analysis Requested: 09/25/12

Contact: Davis, Jeremy

Client: Landau Associates

Logged by: JM

Sample Set Used: Yes-481

Validatable Package: No

Deliverables:

Project #: 0001020.400-510

Project: Cornwall

Sample Site:

SDG No:

Analytical Protocol: In-house

LOGNUM	CLIENT ID	CN	WAD	NH3	COD	FOG	MET	PHEN	PHOS	TKN	NO23	TOC	S2	TPHD	Fe2+	DMET	DOC	FLT	FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
12-18405	MW-15D-092412	F	>12	P	P	<2	PDS	<2	<2	<2	<2	P	F			Y				SN	7/2	2nd NACHEN	uu	9-25-12
12-18406	MW-16D-092412	F		P	P		PDS					P	F			Y								
12-18407	MW-14D-092412	F		P	P		PDS					P	F			Y								
12-18408	MW-15S-092412	F		P	P		PDS					P	F			Y								
12-18409	MW-16S-092412	F		P	P		PDS					P	F			Y								
12-18410	MW-14S-092412	F		P	P		PDS					P	F			Y								
12-18411	MW-13S-092412	F		P	P		PDS					P	F			Y								
12-18412	MW-12S-092412	F		P	P		PDS					P	F			Y								
12-18413	MW-11S-092412	F		P	P		PDS					P	F			Y								
12-18414	MW-12D-092412	F		P	P		PDS					P	F			Y								
12-18415	MW-11D-092412	F		P	P		PDS					P	F			Y								
12-18416	MW-13D-092412	F		P	P		PDS					P	F			Y								
12-18417	MW-DUP-092412	F		P	P		PDS					P	F			Y								

SD only preserved with ZnOAc.

P= Pass  
F= Fail

Checked By JM Date 9/25/12



ARI Job No: **VK75**  
PC: Kelly  
VTSR: 09/25/12

Inquiry Number: NONE  
Analysis Requested: 09/25/12  
Contact: Davis, Jeremy  
Client: Landau Associates  
Logged by: JM  
Sample Set Used: Yes-481  
Validatable Package: No  
Deliverables:

Project #: 0001020.400-510  
Project: Cornwall  
Sample Site:  
SDG No:  
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	TPHD <2	Fe2+ <2	DMET DOC FLT FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
12-18431 <b>VK75A</b>	MW-15D-092412						DTS									Y					
12-18432 <b>VK75B</b>	MW-16D-092412						DTS									Y					
12-18433 <b>VK75C</b>	MW-14D-092412						DTS									Y					
12-18434 <b>VK75D</b>	MW-15S-092412						DTS									Y					
12-18435 <b>VK75E</b>	MW-16S-092412						DTS									Y					
12-18436 <b>VK75F</b>	MW-14S-092412						DTS									Y					
12-18437 <b>VK75G</b>	MW-13S-092412						DTS									Y					
12-18438 <b>VK75H</b>	MW-12S-092412						DTS									Y					
12-18439 <b>VK75I</b>	MW-11S-092412						DTS									Y					
12-18440 <b>VK75J</b>	MW-12D-092412						DTS									Y					
12-18441 <b>VK75K</b>	MW-11D-092412						DTS									Y					
12-18442 <b>VK75L</b>	MW-13D-092412						DTS									Y					
12-18443 <b>VK75M</b>	MW-DUP-092412						DTS									Y					

*P = Paid*

Checked By JM Date 9/25/12

# Sample ID Cross Reference Report



ARI Job No: VK65  
Client: Landau Associates  
Project Event: 0001020.400-510  
Project Name: Cornwall

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-15D-092412	VK65A	12-18405	Water	09/24/12 08:26	09/25/12 12:01
2. MW-16D-092412	VK65B	12-18406	Water	09/24/12 08:30	09/25/12 12:01
3. MW-14D-092412	VK65C	12-18407	Water	09/24/12 10:00	09/25/12 12:01
4. MW-15S-092412	VK65D	12-18408	Water	09/24/12 10:50	09/25/12 12:01
5. MW-16S-092412	VK65E	12-18409	Water	09/24/12 11:30	09/25/12 12:01
6. MW-14S-092412	VK65F	12-18410	Water	09/24/12 12:50	09/25/12 12:01
7. MW-13S-092412	VK65G	12-18411	Water	09/24/12 13:00	09/25/12 12:01
8. MW-12S-092412	VK65H	12-18412	Water	09/24/12 14:00	09/25/12 12:01
9. MW-11S-092412	VK65I	12-18413	Water	09/24/12 14:25	09/25/12 12:01
10. MW-12D-092412	VK65J	12-18414	Water	09/24/12 15:10	09/25/12 12:01
11. MW-11D-092412	VK65K	12-18415	Water	09/24/12 15:35	09/25/12 12:01
12. MW-13D-092412	VK65L	12-18416	Water	09/24/12 17:00	09/25/12 12:01
13. MW-DUP-092412	VK65M	12-18417	Water	09/24/12	09/25/12 12:01
14. MW-15S-092412	VK65N	12-18418	Water	09/24/12 10:50	09/25/12 12:01
15. MW-13D-092412	VK65O	12-18419	Water	09/24/12 17:00	09/25/12 12:01
16. TBS	VK65P	12-18420	Water	09/24/12	09/25/12 12:01



# Sample ID Cross Reference Report



ARI Job No: VK75  
Client: Landau Associates  
Project Event: 0001020.400-510  
Project Name: Cornwall

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-15D-092412	VK75A	12-18431	Water	09/24/12 08:26	09/25/12 12:01
2. MW-16D-092412	VK75B	12-18432	Water	09/24/12 08:30	09/25/12 12:01
3. MW-14D-092412	VK75C	12-18433	Water	09/24/12 10:00	09/25/12 12:01
4. MW-15S-092412	VK75D	12-18434	Water	09/24/12 10:50	09/25/12 12:01
5. MW-16S-092412	VK75E	12-18435	Water	09/24/12 11:30	09/25/12 12:01
6. MW-14S-092412	VK75F	12-18436	Water	09/24/12 12:50	09/25/12 12:01
7. MW-13S-092412	VK75G	12-18437	Water	09/24/12 13:00	09/25/12 12:01
8. MW-12S-092412	VK75H	12-18438	Water	09/24/12 14:00	09/25/12 12:01
9. MW-11S-092412	VK75I	12-18439	Water	09/24/12 14:25	09/25/12 12:01
10. MW-12D-092412	VK75J	12-18440	Water	09/24/12 15:10	09/25/12 12:01
11. MW-11D-092412	VK75K	12-18441	Water	09/24/12 15:35	09/25/12 12:01
12. MW-13D-092412	VK75L	12-18442	Water	09/24/12 17:00	09/25/12 12:01
13. MW-DUP-092412	VK75M	12-18443	Water	09/24/12	09/25/12 12:01

# Sample ID Cross Reference Report



ARI Job No: VL48  
Client: Landau Associates  
Project Event: 0001020.400-510  
Project Name: Cornwall

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-15D-092412	VL48A	12-18901	Water	09/24/12 08:26	09/25/12 12:01
2. MW-16D-092412	VL48B	12-18902	Water	09/24/12 08:30	09/25/12 12:01
3. MW-14D-092412	VL48C	12-18903	Water	09/24/12 10:00	09/25/12 12:01
4. MW-15S-092412	VL48D	12-18904	Water	09/24/12 10:50	09/25/12 12:01
5. MW-16S-092412	VL48E	12-18905	Water	09/24/12 11:30	09/25/12 12:01
6. MW-14S-092412	VL48F	12-18906	Water	09/24/12 12:50	09/25/12 12:01
7. MW-13D-092412	VL48G	12-18907	Water	09/24/12 17:00	09/25/12 12:01
8. MW-DUP-092412	VL48H	12-18908	Water	09/24/12	09/25/12 12:01



<b>Client:</b> Landau Associates	<b>ARI Job No.:</b> VK65
<b>Client Project:</b> Cornwall	<b>Client Project No.:</b> 0001020.400-510

### Case Narrative

1. Thirteen samples were submitted for preparation on September 25, 2012, and were in good condition. Each sample was received in eight 500 milliliters amber glass bottles, with a total of 52 liters for the entire job.
2. The samples were submitted for removal of solid particulate by means of centrifuging according to modified Corp of Engineers draft interim guide lines.
3. The samples were centrifuged in decontaminated 500mL glass bottles, in a pre-cooled centrifuge (4°C) at 1,000 x g for 30 minutes.
4. The supernatant water was decanted back into the original sample bottles and delivered to the laboratory for analysis.
5. There were no other anomalies in the sample or methods on this project.

Released by: *Shirley Curtis*  
Geotechnical Laboratory Manager

Date: 9/28/12

Reviewed by: *Robert Schae*  
Lead Technician

Date: September 29, 2012



## Data Reporting Qualifiers

Effective 2/14/2011

### Inorganic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Duplicate RPD is not within established control limits
- B Reported value is less than the CRDL but  $\geq$  the Reporting Limit
- N Matrix Spike recovery not within established control limits
- NA Not Applicable, analyte not spiked
- H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L Analyte concentration is  $\leq 5$  times the Reporting Limit and the replicate control limit defaults to  $\pm 1$  RL instead of the normal 20% RPD

### Organic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Flagged value is not within established control limits
- B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J Estimated concentration when the value is less than ARI's established reporting limits
- D The spiked compound was not detected due to sample extract dilution
- E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ( $< 20\%$  RSD,  $< 20\%$  Drift or minimum RRF).



- S Indicates an analyte response that has saturated the detector. **The** calculated concentration is not valid; a dilution is required to obtain **valid** quantification of the analyte
- NA The flagged analyte was not analyzed for
- NR Spiked compound recovery is not reported due to chromatographic interference
- NS The flagged analyte was not spiked into the sample
- M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**
- C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P The analyte was detected on both chromatographic columns but the quantified values differ by  $\geq 40\%$  RPD with no obvious chromatographic interference
- X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**
- Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**





## Geotechnical Data

- A The total of all fines fractions. This flag is used to report total fines when **only** sieve analysis is requested and balances total grain size with sample weight.
- F Samples were frozen prior to particle size determination
- SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that **interferes with** the sieving process and/or moisture content, porosity and saturation calculations
- SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W Weight of sample in some pipette aliquots was below the level required for accurate weighting

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-15D-092412

Page 1 of 2

**SAMPLE**

Lab Sample ID: VK65A

QC Report No: VK65-Landau Associates

LIMS ID: 12-18405

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized:

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/26/12 21:41

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>0.67</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.20</b>	
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>0.32</b>	

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-15D-092412**

Page 2 of 2

**SAMPLE**

Lab Sample ID: VK65A

QC Report No: VK65-Landau Associates

LIMS ID: 12-18405

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/26/12 21:41

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
<b>98-82-8</b>	<b>Isopropylbenzene</b>	<b>0.20</b>	<b>0.42</b>	
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.74</b>	
<b>99-87-6</b>	<b>4-Isopropyltoluene</b>	<b>0.20</b>	<b>1.7</b>	
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.26</b>	
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	108%
d8-Toluene	95.9%
Bromofluorobenzene	93.5%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-16D-092412**

Page 1 of 2

**SAMPLE**

Lab Sample ID: VK65B

QC Report No: VK65-Landau Associates

LIMS ID: 12-18406

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *[Signature]*

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/26/12 22:06

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>0.69</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

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Sample ID: MW-16D-092412

SAMPLE

Lab Sample ID: VK65B

QC Report No: VK65-Landau Associates

LIMS ID: 12-18406

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/26/12 22:06

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	102%
d8-Toluene	95.2%
Bromofluorobenzene	98.7%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-14D-092412**

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**SAMPLE**

Lab Sample ID: VK65C


QC Report No: VK65-Landau Associates

LIMS ID: 12-18407

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/26/12 22:33

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>4.2</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
<b>179601-23-1</b>	<b>m,p-Xylene</b>	<b>0.40</b>	<b>0.96</b>	
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.60</b>	
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>0.41</b>	



**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-14D-092412**

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**SAMPLE**

Lab Sample ID: VK65C

QC Report No: VK65-Landau Associates

LIMS ID: 12-18407

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/26/12 22:33

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.39</b>	
<b>99-87-6</b>	<b>4-Isopropyltoluene</b>	<b>0.20</b>	<b>0.36</b>	
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
<b>91-20-3</b>	<b>Naphthalene</b>	<b>0.50</b>	<b>0.93</b>	
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	100%
d8-Toluene	94.4%
Bromofluorobenzene	97.1%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-15S-092412**

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**SAMPLE**

Lab Sample ID: VK65D

QC Report No: VK65-Landau Associates

LIMS ID: 12-18408

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized:

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/26/12 22:58

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
<b>71-43-2</b>	<b>Benzene</b>	<b>0.20</b>	<b>0.44</b>	
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
<b>108-88-3</b>	<b>Toluene</b>	<b>0.20</b>	<b>0.38</b>	
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>6.7</b>	
<b>100-41-4</b>	<b>Ethylbenzene</b>	<b>0.20</b>	<b>0.49</b>	
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.32</b>	
<b>95-50-1</b>	<b>1,2-Dichlorobenzene</b>	<b>0.20</b>	<b>0.36</b>	
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>2.1</b>	

Lab Sample ID: VK65D  
 LIMS ID: 12-18408  
 Matrix: Water  
 Date Analyzed: 09/26/12 22:58

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
<b>95-63-6</b>	<b>1,2,4-Trimethylbenzene</b>	<b>0.20</b>	<b>0.39</b>	
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
<b>98-82-8</b>	<b>Isopropylbenzene</b>	<b>0.20</b>	<b>0.70</b>	
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
<b>98-06-6</b>	<b>tert-Butylbenzene</b>	<b>0.20</b>	<b>0.23</b>	
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.99</b>	
<b>99-87-6</b>	<b>4-Isopropyltoluene</b>	<b>0.20</b>	<b>0.38</b>	
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.44</b>	
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
<b>91-20-3</b>	<b>Naphthalene</b>	<b>0.50</b>	<b>12</b>	
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	110%
d8-Toluene	96.1%
Bromofluorobenzene	96.3%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-16S-092412**

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**SAMPLE**

Lab Sample ID: VK65E


QC Report No: VK65-Landau Associates

LIMS ID: 12-18409

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/26/12 23:24

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>0.60</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>0.23</b>	

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-16S-092412**

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**SAMPLE**

Lab Sample ID: VK65E

QC Report No: VK65-Landau Associates

LIMS ID: 12-18409

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/26/12 23:24

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	105%
d8-Toluene	95.9%
Bromofluorobenzene	93.9%
d4-1,2-Dichlorobenzene	99.0%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-14S-092412

Page 1 of 2

**SAMPLE**

Lab Sample ID: VK65F

QC Report No: VK65-Landau Associates

LIMS ID: 12-18410

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized:

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/26/12 23:50

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
<b>71-43-2</b>	<b>Benzene</b>	<b>0.20</b>	<b>0.22</b>	
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>4.6</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.29</b>	
<b>95-50-1</b>	<b>1,2-Dichlorobenzene</b>	<b>0.20</b>	<b>0.28</b>	
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>2.2</b>	



**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-14S-092412**

Page 2 of 2

**SAMPLE**

Lab Sample ID: VK65F

QC Report No: VK65-Landau Associates

LIMS ID: 12-18410

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/26/12 23:50

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
<b>98-82-8</b>	<b>Isopropylbenzene</b>	<b>0.20</b>	<b>0.28</b>	
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
<b>98-06-6</b>	<b>tert-Butylbenzene</b>	<b>0.20</b>	<b>0.25</b>	
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>1.1</b>	
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.49</b>	
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	110%
d8-Toluene	93.3%
Bromofluorobenzene	92.6%
d4-1,2-Dichlorobenzene	99.0%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-13S-092412


SAMPLE

Page 1 of 2

Lab Sample ID: VK65G

LIMS ID: 12-18411

Matrix: Water

Data Release Authorized: 

Reported: 10/02/12

QC Report No: VK65-Landau Associates

Project: Cornwall

0001020.400-510

Date Sampled: 09/24/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Date Analyzed: 09/27/12 00:16

Sample Amount: 10.0 mL

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	5.0	< 5.0	U
78-93-3	2-Butanone	0.20	< 0.20	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	1.0	< 1.0	U
110-75-8	2-Chloroethylvinylether	0.20	< 0.20	U
75-25-2	Bromoform	5.0	< 5.0	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	0.20	< 0.20	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	1.3	
<b>108-90-7</b>	<b>Chlorobenzene</b>	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
<b>95-47-6</b>	<b>o-Xylene</b>	0.20	0.26	
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	0.20	0.90	

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-13S-092412**

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**SAMPLE**

Lab Sample ID: VK65G

QC Report No: VK65-Landau Associates

LIMS ID: 12-18411

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/27/12 00:16

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.40</b>	
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.21</b>	
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
<b>91-20-3</b>	<b>Naphthalene</b>	<b>0.50</b>	<b>19</b>	
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	102%
d8-Toluene	95.3%
Bromofluorobenzene	94.7%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-12S-092412**

Page 1 of 2

**SAMPLE**

Lab Sample ID: VK65H

QC Report No: VK65-Landau Associates

LIMS ID: 12-18412

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *AS*

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/27/12 00:42

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>3.4</b>	
<b>100-41-4</b>	<b>Ethylbenzene</b>	<b>0.20</b>	<b>3.1</b>	
<b>100-42-5</b>	<b>Styrene</b>	<b>0.20</b>	<b>0.26</b>	
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
<b>179601-23-1</b>	<b>m,p-Xylene</b>	<b>0.40</b>	<b>0.68</b>	
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.43</b>	
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>1.1</b>	

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-12S-092412

Page 2 of 2

SAMPLE

Lab Sample ID: VK65H

QC Report No: VK65-Landau Associates

LIMS ID: 12-18412

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/27/12 00:42

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
<b>98-82-8</b>	<b>Isopropylbenzene</b>	<b>0.20</b>	<b>0.29</b>	
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.35</b>	
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	103%
d8-Toluene	101%
Bromofluorobenzene	98.3%
d4-1,2-Dichlorobenzene	96.7%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-11S-092412

Page 1 of 2

**SAMPLE**

Lab Sample ID: VK65I


QC Report No: VK65-Landau Associates

LIMS ID: 12-18413

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/27/12 01:08

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U



## ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge &amp; Trap GC/MS-Method SW8260C

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Sample ID: MW-11S-092412

SAMPLE

Lab Sample ID: VK65I

LIMS ID: 12-18413

Matrix: Water

Date Analyzed: 09/27/12 01:08

QC Report No: VK65-Landau Associates

Project: Cornwall

0001020.400-510

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
<b>99-87-6</b>	<b>4-Isopropyltoluene</b>	<b>0.20</b>	<b>0.35</b>	
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	106%
d8-Toluene	97.7%
Bromofluorobenzene	97.8%
d4-1,2-Dichlorobenzene	97.6%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-12D-092412**

Page 1 of 2

**SAMPLE**

Lab Sample ID: VK65J

QC Report No: VK65-Landau Associates

LIMS ID: 12-18414

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *[Signature]*

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/27/12 01:34

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>1.2</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-12D-092412**

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**SAMPLE**

Lab Sample ID: VK65J

QC Report No: VK65-Landau Associates

LIMS ID: 12-18414

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/27/12 01:34

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	104%
d8-Toluene	100%
Bromofluorobenzene	96.7%
d4-1,2-Dichlorobenzene	94.9%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-11D-092412

Page 1 of 2

**SAMPLE**

Lab Sample ID: VK65K

QC Report No: VK65-Landau Associates

LIMS ID: 12-18415

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *AS*

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/27/12 02:00

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
<b>75-15-0</b>	<b>Carbon Disulfide</b>	<b>0.20</b>	<b>0.76</b>	
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-11D-092412**

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**SAMPLE**

Lab Sample ID: VK65K

QC Report No: VK65-Landau Associates

LIMS ID: 12-18415

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/27/12 02:00

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	104%
d8-Toluene	95.0%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	100%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-13D-092412**

Page 1 of 2

**SAMPLE**

Lab Sample ID: VK65L

QC Report No: VK65-Landau Associates

LIMS ID: 12-18416

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/27/12 02:26

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
<b>71-43-2</b>	<b>Benzene</b>	<b>0.20</b>	<b>0.20</b>	
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>0.73</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.37</b>	
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>0.39</b>	



## ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge &amp; Trap GC/MS-Method SW8260C

Sample ID: MW-13D-092412

Page 2 of 2

SAMPLE

Lab Sample ID: VK65L

QC Report No: VK65-Landau Associates

LIMS ID: 12-18416

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/27/12 02:26

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
<b>98-82-8</b>	<b>Isopropylbenzene</b>	<b>0.20</b>	<b>0.58</b>	
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
<b>98-06-6</b>	<b>tert-Butylbenzene</b>	<b>0.20</b>	<b>0.22</b>	
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.86</b>	
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.41</b>	
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
<b>91-20-3</b>	<b>Naphthalene</b>	<b>0.50</b>	<b>0.71</b>	
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	106%
d8-Toluene	95.8%
Bromofluorobenzene	94.5%
d4-1,2-Dichlorobenzene	97.7%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-DUP-092412**

Page 1 of 2

**SAMPLE**

Lab Sample ID: VK65M

QC Report No: VK65-Landau Associates

LIMS ID: 12-18417

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized:

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/27/12 02:52

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>1.0</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.24</b>	
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>0.49</b>	

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-DUP-092412**

Page 2 of 2

**SAMPLE**

Lab Sample ID: VK65M

QC Report No: VK65-Landau Associates

LIMS ID: 12-18417

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/27/12 02:52

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
<b>98-82-8</b>	<b>Isopropylbenzene</b>	<b>0.20</b>	<b>0.59</b>	
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>1.2</b>	
<b>99-87-6</b>	<b>4-Isopropyltoluene</b>	<b>0.20</b>	<b>2.8</b>	
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.41</b>	
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	106%
d8-Toluene	97.6%
Bromofluorobenzene	95.5%
d4-1,2-Dichlorobenzene	103%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: TBS  
SAMPLE**

Page 1 of 2

Lab Sample ID: VK65P


QC Report No: VK65-Landau Associates

LIMS ID: 12-18420

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: 09/24/12

Reported: 10/02/12

Date Received: 09/25/12

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/27/12 03:18

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

ORGANICS ANALYSIS DATA SHEET

Volatiles by Purge & Trap GC/MS-Method SW8260C

Page 2 of 2

Sample ID: TBS

SAMPLE



Lab Sample ID: VK65P

QC Report No: VK65-Landau Associates

LIMS ID: 12-18420

Project: Cornwall

Matrix: Water

0001020.400-510

Date Analyzed: 09/27/12 03:18

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	104%
d8-Toluene	95.4%
Bromofluorobenzene	96.7%
d4-1,2-Dichlorobenzene	95.6%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

VOA SURROGATE RECOVERY SUMMARY



Matrix: Water

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

ARI ID	Client ID	FV	DCE	TOL	BFB	DCB	TOT OUT
MB-092612A	Method Blank	10	104%	98.3%	97.3%	98.6%	0
LCS-092612A	Lab Control	10	103%	95.3%	94.8%	100%	0
LCSD-092612A	Lab Control Dup	10	101%	96.4%	93.3%	98.5%	0
VK65A	MW-15D-092412	10	108%	95.9%	93.5%	103%	0
VK65B	MW-16D-092412	10	102%	95.2%	98.7%	102%	0
VK65C	MW-14D-092412	10	100%	94.4%	97.1%	104%	0
VK65D	MW-15S-092412	10	110%	96.1%	96.3%	102%	0
VK65E	MW-16S-092412	10	105%	95.9%	93.9%	99.0%	0
VK65F	MW-14S-092412	10	110%	93.3%	92.6%	99.0%	0
VK65G	MW-13S-092412	10	102%	95.3%	94.7%	101%	0
VK65H	MW-12S-092412	10	103%	101%	98.3%	96.7%	0
VK65I	MW-11S-092412	10	106%	97.7%	97.8%	97.6%	0
VK65J	MW-12D-092412	10	104%	100%	96.7%	94.9%	0
VK65K	MW-11D-092412	10	104%	95.0%	101%	100%	0
VK65L	MW-13D-092412	10	106%	95.8%	94.5%	97.7%	0
VK65M	MW-DUP-092412	10	106%	97.6%	95.5%	103%	0
VK65P	TBS	10	104%	95.4%	96.7%	95.6%	0

LCS/MB LIMITS

QC LIMITS

SW8260C

(DCE) = d4-1,2-Dichloroethane	(80-120)	(80-130)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B  
 Log Number Range: 12-18405 to 12-18420



**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: LCS-092612A**

Page 1 of 2

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-092612A

QC Report No: VK65-Landau Associates

LIMS ID: 12-18405

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *[Signature]*

Date Sampled: NA

Reported: 10/02/12

Date Received: NA

Instrument/Analyst LCS: NT3/PAB

Sample Amount LCS: 10.0 mL

LCSD: NT3/PAB

LCSD: 10.0 mL

Date Analyzed LCS: 09/26/12 19:57

Purge Volume LCS: 10.0 mL

LCSD: 09/26/12 20:23

LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	8.77	10.0	87.7%	8.46	10.0	84.6%	3.6%
Bromomethane	9.01	10.0	90.1%	8.23	10.0	82.3%	9.0%
Vinyl Chloride	9.46	10.0	94.6%	8.99	10.0	89.9%	5.1%
Chloroethane	8.58	10.0	85.8%	8.36	10.0	83.6%	2.6%
Methylene Chloride	8.67	10.0	86.7%	8.02	10.0	80.2%	7.8%
Acetone	48.6	50.0	97.2%	47.9	50.0	95.8%	1.5%
Carbon Disulfide	9.00	10.0	90.0%	8.76	10.0	87.6%	2.7%
1,1-Dichloroethene	9.22	10.0	92.2%	8.49	10.0	84.9%	8.2%
1,1-Dichloroethane	9.48	10.0	94.8%	9.49	10.0	94.9%	0.1%
trans-1,2-Dichloroethene	8.76	10.0	87.6%	8.43	10.0	84.3%	3.8%
cis-1,2-Dichloroethene	8.11	10.0	81.1%	8.27	10.0	82.7%	2.0%
Chloroform	9.55	10.0	95.5%	9.27	10.0	92.7%	3.0%
1,2-Dichloroethane	9.73	10.0	97.3%	9.70	10.0	97.0%	0.3%
2-Butanone	55.2	50.0	110%	55.1	50.0	110%	0.2%
1,1,1-Trichloroethane	9.19	10.0	91.9%	8.61	10.0	86.1%	6.5%
Carbon Tetrachloride	8.27	10.0	82.7%	8.54	10.0	85.4%	3.2%
Vinyl Acetate	9.52	10.0	95.2%	9.18	10.0	91.8%	3.6%
Bromodichloromethane	9.38	10.0	93.8%	9.36	10.0	93.6%	0.2%
1,2-Dichloropropane	9.16	10.0	91.6%	9.44	10.0	94.4%	3.0%
cis-1,3-Dichloropropene	8.99	10.0	89.9%	8.72	10.0	87.2%	3.0%
Trichloroethene	9.05	10.0	90.5%	9.33	10.0	93.3%	3.0%
Dibromochloromethane	9.85	10.0	98.5%	9.77	10.0	97.7%	0.8%
1,1,2-Trichloroethane	8.88	10.0	88.8%	8.87	10.0	88.7%	0.1%
Benzene	9.66	10.0	96.6%	9.66	10.0	96.6%	0.0%
trans-1,3-Dichloropropene	8.71	10.0	87.1%	8.59	10.0	85.9%	1.4%
2-Chloroethylvinylether	8.84	10.0	88.4%	8.94	10.0	89.4%	1.1%
Bromoform	9.95	10.0	99.5%	10.3	10.0	103%	3.5%
4-Methyl-2-Pentanone (MIBK)	52.3	50.0	105%	52.7	50.0	105%	0.8%
2-Hexanone	55.3	50.0	111%	53.7	50.0	107%	2.9%
Tetrachloroethene	9.61	10.0	96.1%	9.67	10.0	96.7%	0.6%
1,1,2,2-Tetrachloroethane	11.2	10.0	112%	11.1	10.0	111%	0.9%
Toluene	9.21	10.0	92.1%	9.16	10.0	91.6%	0.5%
Chlorobenzene	10.3	10.0	103%	10.0	10.0	100%	3.0%
Ethylbenzene	10.4	10.0	104%	10.0	10.0	100%	3.9%
Styrene	10.2	10.0	102%	9.92	10.0	99.2%	2.8%
Trichlorofluoromethane	8.81	10.0	88.1%	8.43	10.0	84.3%	4.4%
1,1,1-Trichloro-1,2,2-trifluoroethane	8.81	10.0	88.1%	8.59	10.0	85.9%	2.5%
m,p-Xylene	19.8	20.0	99.0%	19.7	20.0	98.5%	0.5%
o-Xylene	10.3	10.0	103%	9.74	10.0	97.4%	5.6%
1,2-Dichlorobenzene	10.4	10.0	104%	10.0	10.0	100%	3.9%
1,3-Dichlorobenzene	10.2	10.0	102%	10.2	10.0	102%	0.0%
1,4-Dichlorobenzene	10.2	10.0	102%	10.1	10.0	101%	1.0%
Acrolein	47.2	50.0	94.4%	48.4	50.0	96.8%	2.5%
Methyl Iodide	9.05	10.0	90.5%	8.93	10.0	89.3%	1.3%
Bromoethane	8.55	10.0	85.5%	8.70	10.0	87.0%	1.7%
Acrylonitrile	8.83	10.0	88.3%	9.03	10.0	90.3%	2.2%
1,1-Dichloropropene	9.06	10.0	90.6%	9.07	10.0	90.7%	0.1%
Dibromomethane	8.82	10.0	88.2%	8.67	10.0	86.7%	1.7%

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: LCS-092612A

Page 2 of 2

LAB CONTROL SAMPLE

Lab Sample ID: LCS-092612A

QC Report No: VK65-Landau Associates

LIMS ID: 12-18405

Project: Cornwall

Matrix: Water

0001020.400-510

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1,1,2-Tetrachloroethane	9.20	10.0	92.0%	9.34	10.0	93.4%	1.5%
1,2-Dibromo-3-chloropropane	10.0	10.0	100%	9.74	10.0	97.4%	2.6%
1,2,3-Trichloropropane	11.0	10.0	110%	10.9	10.0	109%	0.9%
trans-1,4-Dichloro-2-butene	10.4	10.0	104%	9.97	10.0	99.7%	4.2%
1,3,5-Trimethylbenzene	11.2	10.0	112%	11.2	10.0	112%	0.0%
1,2,4-Trimethylbenzene	11.0	10.0	110%	10.9	10.0	109%	0.9%
Hexachlorobutadiene	8.94	10.0	89.4%	8.52	10.0	85.2%	4.8%
Ethylene Dibromide	8.67	10.0	86.7%	8.69	10.0	86.9%	0.2%
Bromochloromethane	9.57	10.0	95.7%	10.1	10.0	101%	5.4%
2,2-Dichloropropane	7.38	10.0	73.8%	7.00	10.0	70.0%	5.3%
1,3-Dichloropropane	10.4	10.0	104%	10.4	10.0	104%	0.0%
Isopropylbenzene	11.1	10.0	111%	11.4	10.0	114%	2.7%
n-Propylbenzene	10.7	10.0	107%	11.0	10.0	110%	2.8%
Bromobenzene	10.1	10.0	101%	10.4	10.0	104%	2.9%
2-Chlorotoluene	10.6	10.0	106%	10.8	10.0	108%	1.9%
4-Chlorotoluene	10.8	10.0	108%	10.8	10.0	108%	0.0%
tert-Butylbenzene	10.6	10.0	106%	10.6	10.0	106%	0.0%
sec-Butylbenzene	10.8	10.0	108%	10.8	10.0	108%	0.0%
4-Isopropyltoluene	10.3	10.0	103%	10.1	10.0	101%	2.0%
n-Butylbenzene	10.5	10.0	105%	10.1	10.0	101%	3.9%
1,2,4-Trichlorobenzene	9.99	10.0	99.9%	9.33	10.0	93.3%	6.8%
Naphthalene	11.7	10.0	117%	10.9	10.0	109%	7.1%
1,2,3-Trichlorobenzene	10.2	10.0	102%	9.43	10.0	94.3%	7.8%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**Volatile Surrogate Recovery**

	LCS	LCSD
d4-1,2-Dichloroethane	103%	101%
d8-Toluene	95.3%	96.4%
Bromofluorobenzene	94.8%	93.3%
d4-1,2-Dichlorobenzene	100%	98.5%

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MB-092612A

Page 1 of 2

METHOD BLANK

Lab Sample ID: MB-092612A

QC Report No: VK65-Landau Associates

LIMS ID: 12-18405

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *[Signature]*

Date Sampled: NA

Reported: 10/02/12

Date Received: NA

Instrument/Analyst: NT3/PAB

Sample Amount: 10.0 mL

Date Analyzed: 09/26/12 20:49

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

Page 2 of 2



Sample ID: MB-092612A

METHOD BLANK

Lab Sample ID: MB-092612A

LIMS ID: 12-18405

Matrix: Water

Date Analyzed: 09/26/12 20:49

QC Report No: VK65-Landau Associates

Project: Cornwall

0001020.400-510

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	104%
d8-Toluene	98.3%
Bromofluorobenzene	97.3%
d4-1,2-Dichlorobenzene	98.6%

ORGANICS ANALYSIS DATA SHEET  
Semivolatiles by SW8270D GC/MS  
Extraction Method: SW3520C  
Page 1 of 2Sample ID: MW-15D-092412  
SAMPLELab Sample ID: VK65A  
LIMS ID: 12-18405  
Matrix: Water  
Data Release Authorized: *RB*  
Reported: 10/02/12QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12Date Extracted: 09/27/12  
Date Analyzed: 09/28/12 19:06  
Instrument/Analyst: NT6/JZSample Amount: 500 mL  
Final Extract Volume: 0.50 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-15D-092412**  
**SAMPLE**

Lab Sample ID: VK65A  
 LIMS ID: 12-18405  
 Matrix: Water  
 Date Analyzed: 09/28/12 19:06

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo (a) anthracene	1.0	< 1.0 U
117-81-7	bis (2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo (a) pyrene	1.0	< 1.0 U
193-39-5	Indeno (1,2,3-cd) pyrene	1.0	< 1.0 U
53-70-3	Dibenz (a,h) anthracene	1.0	< 1.0 U
191-24-2	Benzo (g,h,i) perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	65.2%	2-Fluorobiphenyl	65.6%
d14-p-Terphenyl	78.8%	d4-1,2-Dichlorobenzene	57.6%
d5-Phenol	68.5%	2-Fluorophenol	68.5%
2,4,6-Tribromophenol	93.1%	d4-2-Chlorophenol	67.2%



**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-16D-092412**  
**SAMPLE**

Lab Sample ID: VK65B  
 LIMS ID: 12-18406  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/27/12  
 Date Analyzed: 09/28/12 19:40  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-16D-092412**  
**SAMPLE**

Lab Sample ID: VK65B  
 LIMS ID: 12-18406  
 Matrix: Water  
 Date Analyzed: 09/28/12 19:40


QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	70.8%	2-Fluorobiphenyl	69.2%
d14-p-Terphenyl	76.4%	d4-1,2-Dichlorobenzene	60.4%
d5-Phenol	70.7%	2-Fluorophenol	74.9%
2,4,6-Tribromophenol	86.4%	d4-2-Chlorophenol	70.4%

ORGANICS ANALYSIS DATA SHEET  
Semivolatiles by SW8270D GC/MS  
Extraction Method: SW3520C  
Page 1 of 2Sample ID: MW-14D-092412  
SAMPLELab Sample ID: VK65C  
LIMS ID: 12-18407  
Matrix: Water  
Data Release Authorized:   
Reported: 10/02/12QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12Date Extracted: 09/27/12  
Date Analyzed: 09/28/12 20:14  
Instrument/Analyst: NT6/JZSample Amount: 500 mL  
Final Extract Volume: 0.50 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-14D-092412**  
**SAMPLE**

Lab Sample ID: VK65C  
 LIMS ID: 12-18407  
 Matrix: Water  
 Date Analyzed: 09/28/12 20:14

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
<b>86-30-6</b>	<b>N-Nitrosodiphenylamine</b>	<b>1.0</b>	<b>1.0</b>
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U


Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	65.2%	2-Fluorobiphenyl	62.8%
d14-p-Terphenyl	73.6%	d4-1,2-Dichlorobenzene	56.4%
d5-Phenol	60.8%	2-Fluorophenol	67.5%
2,4,6-Tribromophenol	86.7%	d4-2-Chlorophenol	64.8%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-15S-092412**  
**SAMPLE**

Lab Sample ID: VK65D  
 LIMS ID: 12-18408  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/27/12  
 Date Analyzed: 09/28/12 20:48  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
<b>91-20-3</b>	<b>Naphthalene</b>	<b>1.0</b>	<b>4.0</b>
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
<b>91-57-6</b>	<b>2-Methylnaphthalene</b>	<b>1.0</b>	<b>1.4</b>
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-15S-092412**  
**SAMPLE**

Lab Sample ID: VK65D  
 LIMS ID: 12-18408  
 Matrix: Water  
 Date Analyzed: 09/28/12 20:48

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
<b>90-12-0</b>	<b>1-Methylnaphthalene</b>	<b>1.0</b>	<b>1.8</b>
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	63.2%	2-Fluorobiphenyl	62.4%
d14-p-Terphenyl	73.2%	d4-1,2-Dichlorobenzene	55.6%
d5-Phenol	64.0%	2-Fluorophenol	64.5%
2,4,6-Tribromophenol	84.0%	d4-2-Chlorophenol	63.2%



**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-16S-092412**  
**SAMPLE**

Lab Sample ID: VK65E  
 LIMS ID: 12-18409  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/27/12  
 Date Analyzed: 09/28/12 21:22  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-16S-092412**  
**SAMPLE**

Lab Sample ID: VK65E  
 LIMS ID: 12-18409  
 Matrix: Water  
 Date Analyzed: 09/28/12 21:22

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U


Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	68.4%	2-Fluorobiphenyl	67.2%
d14-p-Terphenyl	71.6%	d4-1,2-Dichlorobenzene	60.8%
d5-Phenol	67.2%	2-Fluorophenol	73.1%
2,4,6-Tribromophenol	84.5%	d4-2-Chlorophenol	68.0%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-14S-092412**  
**SAMPLE**

Lab Sample ID: VK65F  
 LIMS ID: 12-18410  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/27/12  
 Date Analyzed: 09/28/12 21:56  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>1.0</b>	<b>1.0</b>
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
Page 2 of 2

**Sample ID: MW-14S-092412**  
**SAMPLE**

Lab Sample ID: VK65F  
LIMS ID: 12-18410  
Matrix: Water  
Date Analyzed: 09/28/12 21:56

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	65.2%	2-Fluorobiphenyl	63.2%
d14-p-Terphenyl	64.0%	d4-1,2-Dichlorobenzene	58.0%
d5-Phenol	63.5%	2-Fluorophenol	69.3%
2,4,6-Tribromophenol	78.7%	d4-2-Chlorophenol	65.1%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-13S-092412**  
**SAMPLE**

Lab Sample ID: VK65G  
 LIMS ID: 12-18411  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/27/12  
 Date Analyzed: 09/28/12 22:30  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
<b>91-20-3</b>	<b>Naphthalene</b>	<b>1.0</b>	<b>3.0</b>
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
Page 2 of 2

**Sample ID: MW-13S-092412**  
**SAMPLE**

Lab Sample ID: VK65G  
LIMS ID: 12-18411  
Matrix: Water  
Date Analyzed: 09/28/12 22:30

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)


**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	59.6%	2-Fluorobiphenyl	59.2%
d14-p-Terphenyl	66.0%	d4-1,2-Dichlorobenzene	54.0%
d5-Phenol	59.2%	2-Fluorophenol	64.5%
2,4,6-Tribromophenol	76.3%	d4-2-Chlorophenol	60.3%



**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
Page 1 of 2

**Sample ID: MW-12S-092412**  
**SAMPLE**

Lab Sample ID: VK65H  
LIMS ID: 12-18412  
Matrix: Water  
Data Release Authorized:   
Reported: 10/02/12

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Date Extracted: 09/27/12  
Date Analyzed: 09/28/12 23:03  
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
Final Extract Volume: 0.50 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-12S-092412**  
**SAMPLE**

Lab Sample ID: VK65H  
 LIMS ID: 12-18412  
 Matrix: Water  
 Date Analyzed: 09/28/12 23:03

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	62.0%	2-Fluorobiphenyl	64.4%
d14-p-Terphenyl	71.2%	d4-1,2-Dichlorobenzene	54.8%
d5-Phenol	63.5%	2-Fluorophenol	66.4%
2,4,6-Tribromophenol	85.9%	d4-2-Chlorophenol	63.2%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-11S-092412**  
**SAMPLE**

Lab Sample ID: VK65I  
 LIMS ID: 12-18413  
 Matrix: Water  
 Data Release Authorized: *RB*  
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/27/12  
 Date Analyzed: 09/28/12 23:38  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
Page 2 of 2

**Sample ID: MW-11S-092412**  
**SAMPLE**

Lab Sample ID: VK65I  
LIMS ID: 12-18413  
Matrix: Water  
Date Analyzed: 09/28/12 23:38

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U


Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	70.8%	2-Fluorobiphenyl	68.4%
d14-p-Terphenyl	68.0%	d4-1,2-Dichlorobenzene	61.2%
d5-Phenol	69.1%	2-Fluorophenol	74.1%
2,4,6-Tribromophenol	85.9%	d4-2-Chlorophenol	70.7%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-12D-092412**  
**SAMPLE**

Lab Sample ID: VK65J  
 LIMS ID: 12-18414  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/27/12  
 Date Analyzed: 09/29/12 00:11  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
Page 2 of 2

**Sample ID: MW-12D-092412**  
**SAMPLE**

Lab Sample ID: VK65J  
LIMS ID: 12-18414  
Matrix: Water  
Date Analyzed: 09/29/12 00:11

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	64.4%	2-Fluorobiphenyl	64.0%
d14-p-Terphenyl	58.8%	d4-1,2-Dichlorobenzene	58.0%
d5-Phenol	64.0%	2-Fluorophenol	66.7%
2,4,6-Tribromophenol	80.5%	d4-2-Chlorophenol	63.7%



**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-11D-092412**  
**SAMPLE**

Lab Sample ID: VK65K  
 LIMS ID: 12-18415  
 Matrix: Water  
 Data Release Authorized: *A*  
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/27/12  
 Date Analyzed: 10/01/12 13:51  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-11D-092412**  
**SAMPLE**

Lab Sample ID: VK65K  
 LIMS ID: 12-18415  
 Matrix: Water  
 Date Analyzed: 10/01/12 13:51

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U


Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	66.0%	2-Fluorobiphenyl	64.4%
d14-p-Terphenyl	60.0%	d4-1,2-Dichlorobenzene	56.8%
d5-Phenol	67.5%	2-Fluorophenol	67.2%
2,4,6-Tribromophenol	84.5%	d4-2-Chlorophenol	65.6%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-13D-092412**  
**SAMPLE**

Lab Sample ID: VK65L  
 LIMS ID: 12-18416  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/27/12  
 Date Analyzed: 10/01/12 18:59  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-13D-092412**  
**SAMPLE**

Lab Sample ID: VK65L  
 LIMS ID: 12-18416  
 Matrix: Water  
 Date Analyzed: 10/01/12 18:59

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo (a) anthracene	1.0	< 1.0 U
117-81-7	bis (2-Ethylhexyl) phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo (a) pyrene	1.0	< 1.0 U
193-39-5	Indeno (1,2,3-cd) pyrene	1.0	< 1.0 U
53-70-3	Dibenz (a,h) anthracene	1.0	< 1.0 U
191-24-2	Benzo (g,h,i) perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	66.8%	2-Fluorobiphenyl	66.8%
d14-p-Terphenyl	79.6%	d4-1,2-Dichlorobenzene	59.2%
d5-Phenol	66.9%	2-Fluorophenol	69.1%
2,4,6-Tribromophenol	81.6%	d4-2-Chlorophenol	66.4%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
Page 1 of 2

**Sample ID: MW-DUP-092412**  
**SAMPLE**

Lab Sample ID: VK65M  
LIMS ID: 12-18417  
Matrix: Water  
Data Release Authorized: *B*  
Reported: 10/02/12

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Date Extracted: 09/27/12  
Date Analyzed: 10/01/12 19:33  
Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
Final Extract Volume: 0.50 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-DUP-092412**  
**SAMPLE**

Lab Sample ID: VK65M  
 LIMS ID: 12-18417  
 Matrix: Water  
 Date Analyzed: 10/01/12 19:33

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	59.2%	2-Fluorobiphenyl	60.8%
d14-p-Terphenyl	72.8%	d4-1,2-Dichlorobenzene	51.2%
d5-Phenol	59.7%	2-Fluorophenol	61.6%
2,4,6-Tribromophenol	74.1%	d4-2-Chlorophenol	59.2%



**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-15S-092412**  
**SAMPLE**

Lab Sample ID: VK65N  
 LIMS ID: 12-18418  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/27/12  
 Date Analyzed: 10/01/12 20:06  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>1.0</b>	<b>1.2</b>
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
<b>91-20-3</b>	<b>Naphthalene</b>	<b>1.0</b>	<b>5.2</b>
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
<b>91-57-6</b>	<b>2-Methylnaphthalene</b>	<b>1.0</b>	<b>1.8</b>
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-15S-092412**  
**SAMPLE**

Lab Sample ID: VK65N  
 LIMS ID: 12-18418  
 Matrix: Water  
 Date Analyzed: 10/01/12 20:06

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
<b>90-12-0</b>	<b>1-Methylnaphthalene</b>	<b>1.0</b>	<b>2.4</b>
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	66.4%	2-Fluorobiphenyl	65.6%
d14-p-Terphenyl	60.8%	d4-1,2-Dichlorobenzene	54.4%
d5-Phenol	65.3%	2-Fluorophenol	66.4%
2,4,6-Tribromophenol	81.9%	d4-2-Chlorophenol	64.3%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-13D-092412**  
**SAMPLE**

Lab Sample ID: VK650  
 LIMS ID: 12-18419  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/27/12  
 Date Analyzed: 10/01/12 20:41  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-13D-092412**  
**SAMPLE**

Lab Sample ID: VK650  
 LIMS ID: 12-18419  
 Matrix: Water  
 Date Analyzed: 10/01/12 20:41

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	68.0%	2-Fluorobiphenyl	62.8%
d14-p-Terphenyl	63.6%	d4-1,2-Dichlorobenzene	55.6%
d5-Phenol	68.5%	2-Fluorophenol	69.1%
2,4,6-Tribromophenol	82.1%	d4-2-Chlorophenol	66.9%

**SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510

Client ID	NBZ	FBP	TPH	DCB	PHL	2FP	TBP	2CP	TOT	OUT
MB-092712	66.8%	64.4%	78.0%	59.2%	66.9%	63.7%	75.5%	66.4%	0	
LCS-092712	68.4%	67.2%	76.4%	59.2%	69.3%	64.8%	87.5%	68.5%	0	
LCSD-092712	66.4%	63.6%	73.2%	52.8%	67.5%	66.4%	82.9%	65.9%	0	
MW-15D-092412	65.2%	65.6%	78.8%	57.6%	68.5%	68.5%	93.1%	67.2%	0	
MW-16D-092412	70.8%	69.2%	76.4%	60.4%	70.7%	74.9%	86.4%	70.4%	0	
MW-14D-092412	65.2%	62.8%	73.6%	56.4%	60.8%	67.5%	86.7%	64.8%	0	
MW-15S-092412	63.2%	62.4%	73.2%	55.6%	64.0%	64.5%	84.0%	63.2%	0	
MW-16S-092412	68.4%	67.2%	71.6%	60.8%	67.2%	73.1%	84.5%	68.0%	0	
MW-14S-092412	65.2%	63.2%	64.0%	58.0%	63.5%	69.3%	78.7%	65.1%	0	
MW-13S-092412	59.6%	59.2%	66.0%	54.0%	59.2%	64.5%	76.3%	60.3%	0	
MW-12S-092412	62.0%	64.4%	71.2%	54.8%	63.5%	66.4%	85.9%	63.2%	0	
MW-11S-092412	70.8%	68.4%	68.0%	61.2%	69.1%	74.1%	85.9%	70.7%	0	
MW-12D-092412	64.4%	64.0%	58.8%	58.0%	64.0%	66.7%	80.5%	63.7%	0	
MW-11D-092412	66.0%	64.4%	60.0%	56.8%	67.5%	67.2%	84.5%	65.6%	0	
MW-13D-092412	66.8%	66.8%	79.6%	59.2%	66.9%	69.1%	81.6%	66.4%	0	
MW-DUP-092412	59.2%	60.8%	72.8%	51.2%	59.7%	61.6%	74.1%	59.2%	0	
MW-15S-092412	66.4%	65.6%	60.8%	54.4%	65.3%	66.4%	81.9%	64.3%	0	
MW-13D-092412	68.0%	62.8%	63.6%	55.6%	68.5%	69.1%	82.1%	66.9%	0	

**LCS/MB LIMITS      QC LIMITS**

(NBZ) = d5-Nitrobenzene	(50-100)	(34-101)
(FBP) = 2-Fluorobiphenyl	(51-100)	(38-100)
(TPH) = d14-p-Terphenyl	(54-117)	(27-122)
(DCB) = d4-1,2-Dichlorobenzene	(40-100)	(27-100)
(PHL) = d5-Phenol	(15-121)	(16-106)
(2FP) = 2-Fluorophenol	(33-100)	(23-100)
(TBP) = 2,4,6-Tribromophenol	(46-125)	(31-128)
(2CP) = d4-2-Chlorophenol	(46-102)	(33-100)

Prep Method: SW3520C  
Log Number Range: 12-18405 to 12-18419

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
 Page 1 of 2

**Sample ID: LCS-092712**  
**LCS/LCSD**

Lab Sample ID: LCS-092712  
 LIMS ID: 12-18405  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted LCS/LCSD: 09/27/12

Sample Amount LCS: 500 mL  
 LCSD: 500 mL

Date Analyzed LCS: 09/28/12 17:24  
 LCSD: 09/28/12 17:58

Final Extract Volume LCS: 0.50 mL  
 LCSD: 0.50 mL

Instrument/Analyst LCS: NT6/JZ  
 LCSD: NT6/JZ

Dilution Factor LCS: 1.00  
 LCSD: 1.00

GPC Cleanup: NO

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Phenol	19.3	25.0	77.2%	19.4	25.0	77.6%	0.5%
Bis-(2-Chloroethyl) Ether	18.8	25.0	75.2%	17.6	25.0	70.4%	6.6%
2-Chlorophenol	18.2	25.0	72.8%	17.8	25.0	71.2%	2.2%
1,3-Dichlorobenzene	12.4	25.0	49.6%	11.9	25.0	47.6%	4.1%
1,4-Dichlorobenzene	12.8	25.0	51.2%	12.5	25.0	50.0%	2.4%
Benzyl Alcohol	6.1	25.0	24.4%	6.5	25.0	26.0%	6.3%
1,2-Dichlorobenzene	13.6	25.0	54.4%	13.4	25.0	53.6%	1.5%
2-Methylphenol	17.4	25.0	69.6%	17.4	25.0	69.6%	0.0%
2,2'-Oxybis(1-Chloropropane)	17.2	25.0	68.8%	17.1	25.0	68.4%	0.6%
4-Methylphenol	36.4	50.0	72.8%	36.1	50.0	72.2%	0.8%
N-Nitroso-Di-N-Propylamine	18.2	25.0	72.8%	18.0	25.0	72.0%	1.1%
Hexachloroethane	11.1	25.0	44.4%	10.6	25.0	42.4%	4.6%
Nitrobenzene	16.9	25.0	67.6%	16.8	25.0	67.2%	0.6%
Isophorone	19.1	25.0	76.4%	18.7	25.0	74.8%	2.1%
2-Nitrophenol	18.6	25.0	74.4%	18.6	25.0	74.4%	0.0%
2,4-Dimethylphenol	54.4	75.0	72.5%	54.4	75.0	72.5%	0.0%
Benzoic Acid	125	138	90.6%	127	138	92.0%	1.6%
bis(2-Chloroethoxy) Methane	17.2	25.0	68.8%	17.2	25.0	68.8%	0.0%
2,4-Dichlorophenol	56.9	75.0	75.9%	57.2	75.0	76.3%	0.5%
1,2,4-Trichlorobenzene	13.6	25.0	54.4%	13.4	25.0	53.6%	1.5%
Naphthalene	15.4	25.0	61.6%	15.5	25.0	62.0%	0.6%
4-Chloroaniline	43.9	75.0	58.5%	43.8	75.0	58.4%	0.2%
Hexachlorobutadiene	10.1	25.0	40.4%	9.8	25.0	39.2%	3.0%
4-Chloro-3-methylphenol	61.9	75.0	82.5%	61.6	75.0	82.1%	0.5%
2-Methylnaphthalene	13.1	25.0	52.4%	13.2	25.0	52.8%	0.8%
Hexachlorocyclopentadiene	28.7	75.0	38.3%	27.4	75.0	36.5%	4.6%
2,4,6-Trichlorophenol	58.2	75.0	77.6%	57.4	75.0	76.5%	1.4%
2,4,5-Trichlorophenol	64.0	75.0	85.3%	63.0	75.0	84.0%	1.6%
2-Chloronaphthalene	16.6	25.0	66.4%	16.6	25.0	66.4%	0.0%
2-Nitroaniline	50.0	75.0	66.7%	48.7	75.0	64.9%	2.6%
Dimethylphthalate	19.0	25.0	76.0%	18.3	25.0	73.2%	3.8%
Acenaphthylene	16.6	25.0	66.4%	16.3	25.0	65.2%	1.8%
3-Nitroaniline	51.7	75.0	68.9%	50.9	75.0	67.9%	1.6%
Acenaphthene	15.9	25.0	63.6%	15.6	25.0	62.4%	1.9%
2,4-Dinitrophenol	108 Q	138	78.3%	109 Q	138	79.0%	0.9%
4-Nitrophenol	58.3	75.0	77.7%	59.0	75.0	78.7%	1.2%
Dibenzofuran	14.5	25.0	58.0%	14.3	25.0	57.2%	1.4%
2,6-Dinitrotoluene	58.0	75.0	77.3%	56.4	75.0	75.2%	2.8%
2,4-Dinitrotoluene	58.1	75.0	77.5%	56.5	75.0	75.3%	2.8%
Diethylphthalate	19.0	25.0	76.0%	18.4	25.0	73.6%	3.2%
4-Chlorophenyl-phenylether	17.1	25.0	68.4%	16.8	25.0	67.2%	1.8%
Fluorene	16.4	25.0	65.6%	16.1	25.0	64.4%	1.8%
4-Nitroaniline	51.3	75.0	68.4%	50.0	75.0	66.7%	2.6%
4,6-Dinitro-2-Methylphenol	112	138	81.2%	111	138	80.4%	0.9%
N-Nitrosodiphenylamine	17.8	25.0	71.2%	17.0	25.0	68.0%	4.6%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
 Page 2 of 2

Sample ID: LCS-092712  
 LCS/LCSD

Lab Sample ID: LCS-092712  
 LIMS ID: 12-18405  
 Matrix: Water  
 Date Analyzed LCS: 09/28/12 17:24  
 LCSD: 09/28/12 17:58

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

Analyte	LCS			LCSD			RPD
	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	
4-Bromophenyl-phenylether	18.5	25.0	74.0%	18.0	25.0	72.0%	2.7%
Hexachlorobenzene	17.8	25.0	71.2%	17.2	25.0	68.8%	3.4%
Pentachlorophenol	69.5	75.0	92.7%	69.1	75.0	92.1%	0.6%
Phenanthrene	17.2	25.0	68.8%	16.8	25.0	67.2%	2.4%
Carbazole	20.2	25.0	80.8%	19.8	25.0	79.2%	2.0%
Anthracene	17.3	25.0	69.2%	16.7	25.0	66.8%	3.5%
Di-n-Butylphthalate	19.9	25.0	79.6%	19.1	25.0	76.4%	4.1%
Fluoranthene	17.6	25.0	70.4%	17.2	25.0	68.8%	2.3%
Pyrene	18.0	25.0	72.0%	17.8	25.0	71.2%	1.1%
Butylbenzylphthalate	18.6	25.0	74.4%	18.4	25.0	73.6%	1.1%
3,3'-Dichlorobenzidine	51.0	75.0	68.0%	51.0	75.0	68.0%	0.0%
Benzo(a)anthracene	17.1	25.0	68.4%	16.5	25.0	66.0%	3.6%
bis(2-Ethylhexyl)phthalate	20.4	25.0	81.6%	20.0	25.0	80.0%	2.0%
Chrysene	15.8	25.0	63.2%	15.5	25.0	62.0%	1.9%
Di-n-Octyl phthalate	19.4	25.0	77.6%	19.0	25.0	76.0%	2.1%
Benzo(a)pyrene	16.6	25.0	66.4%	16.3	25.0	65.2%	1.8%
Indeno(1,2,3-cd)pyrene	16.8	25.0	67.2%	16.2	25.0	64.8%	3.6%
Dibenz(a,h)anthracene	15.8	25.0	63.2%	15.0	25.0	60.0%	5.2%
Benzo(g,h,i)perylene	15.6	25.0	62.4%	15.0	25.0	60.0%	3.9%
1-Methylnaphthalene	19.4	25.0	77.6%	19.4	25.0	77.6%	0.0%
Total Benzofluoranthenes	33.9	50.0	67.8%	33.2	50.0	66.4%	2.1%

**Semivolatile Surrogate Recovery**


	LCS	LCSD
d5-Nitrobenzene	68.4%	66.4%
2-Fluorobiphenyl	67.2%	63.6%
d14-p-Terphenyl	76.4%	73.2%
d4-1,2-Dichlorobenzene	59.2%	52.8%
d5-Phenol	69.3%	67.5%
2-Fluorophenol	64.8%	66.4%
2,4,6-Tribromophenol	87.5%	82.9%
d4-2-Chlorophenol	68.5%	65.9%

Results reported in µg/L  
 RPD calculated using sample concentrations per SW846.



**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MB-092712**  
**METHOD BLANK**

Lab Sample ID: MB-092712  
 LIMS ID: 12-18405  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/02/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 09/27/12  
 Date Analyzed: 09/28/12 16:49  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	2.0	< 2.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	2.0	< 2.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	2.0	< 2.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	3.0	< 3.0 U
105-67-9	2,4-Dimethylphenol	3.0	< 3.0 U
65-85-0	Benzoic Acid	20	< 20 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	3.0	< 3.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	3.0	< 3.0 U
59-50-7	4-Chloro-3-methylphenol	3.0	< 3.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	3.0	< 3.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	3.0	< 3.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	3.0	< 3.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	20	< 20 U
100-02-7	4-Nitrophenol	10	< 10 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	3.0	< 3.0 U
121-14-2	2,4-Dinitrotoluene	3.0	< 3.0 U

Lab Sample ID: MB-092712  
 LIMS ID: 12-18405  
 Matrix: Water  
 Date Analyzed: 09/28/12 16:49

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	3.0	< 3.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	10	< 10 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	3.0	< 3.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	5.0	< 5.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	66.8%	2-Fluorobiphenyl	64.4%
d14-p-Terphenyl	78.0%	d4-1,2-Dichlorobenzene	59.2%
d5-Phenol	66.9%	2-Fluorophenol	63.7%
2,4,6-Tribromophenol	75.5%	d4-2-Chlorophenol	66.4%

**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 1

**Sample ID: MW-15D-092412**  
**SAMPLE**

Lab Sample ID: VK65A  
 LIMS ID: 12-18405  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/02/12 18:50  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	0.11
91-57-6	2-Methylnaphthalene	0.10	0.17
90-12-0	1-Methylnaphthalene	0.10	0.32
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	0.11
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	0.10
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 47.7%  
 d14-Dibenzo(a,h)anthracene 14.0%

**ORGANICS ANALYSIS DATA SHEET**

**PNAs by SW8270D-SIM GC/MS**

**Extraction Method: SW3520C**

Page 1 of 1


**Sample ID: MW-16D-092412**

**SAMPLE**

Lab Sample ID: VK65B

LIMS ID: 12-18406

Matrix: Water

Data Release Authorized: 

Reported: 10/04/12

QC Report No: VK65-Landau Associates

Project: Cornwall

Event: 0001020.400-510

Date Sampled: 09/24/12

Date Received: 09/25/12

Date Extracted: 09/28/12

Date Analyzed: 10/02/12 19:18

Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL

Final Extract Volume: 0.5 mL

Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
<b>90-12-0</b>	<b>1-Methylnaphthalene</b>	<b>0.10</b>	<b>0.16</b>
208-96-8	Acenaphthylene	0.10	< 0.10 U
<b>83-32-9</b>	<b>Acenaphthene</b>	<b>0.10</b>	<b>0.52</b>
<b>86-73-7</b>	<b>Fluorene</b>	<b>0.10</b>	<b>0.13</b>
<b>85-01-8</b>	<b>Phenanthrene</b>	<b>0.10</b>	<b>0.11</b>
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U


Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 54.3%  
d14-Dibenzo(a,h)anthracene 36.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 1

**Sample ID: MW-14D-092412**  
**SAMPLE**

Lab Sample ID: VK65C  
 LIMS ID: 12-18407  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/02/12 19:47  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	0.28
91-57-6	2-Methylnaphthalene	0.10	0.12
90-12-0	1-Methylnaphthalene	0.10	0.23
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	0.17
86-73-7	Fluorene	0.10	0.12
85-01-8	Phenanthrene	0.10	0.13
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene	60.7%
d14-Dibenzo(a,h)anthracene	20.3%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 1

**Sample ID: MW-15S-092412**  
**SAMPLE**

Lab Sample ID: VK65D  
 LIMS ID: 12-18408  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/02/12 20:15  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	3.7
91-57-6	2-Methylnaphthalene	0.10	1.5
90-12-0	1-Methylnaphthalene	0.10	1.6
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	0.76
86-73-7	Fluorene	0.10	0.58
85-01-8	Phenanthrene	0.10	0.63
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	0.23
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 55.3%  
 d14-Dibenzo(a,h)anthracene 19.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 1

**Sample ID: MW-16S-092412**  
**SAMPLE**

Lab Sample ID: VK65E  
 LIMS ID: 12-18409  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/02/12 20:43  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
<b>83-32-9</b>	<b>Acenaphthene</b>	<b>0.10</b>	<b>0.29</b>
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 55.7%  
 d14-Dibenzo(a,h)anthracene 40.3%



**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
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**Sample ID: MW-14S-092412**  
**SAMPLE**

Lab Sample ID: VK65F  
 LIMS ID: 12-18410  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/02/12 21:12  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
<b>91-57-6</b>	<b>2-Methylnaphthalene</b>	<b>0.10</b>	<b>0.25</b>
<b>90-12-0</b>	<b>1-Methylnaphthalene</b>	<b>0.10</b>	<b>0.64</b>
208-96-8	Acenaphthylene	0.10	< 0.10 U
<b>83-32-9</b>	<b>Acenaphthene</b>	<b>0.10</b>	<b>0.30</b>
<b>86-73-7</b>	<b>Fluorene</b>	<b>0.10</b>	<b>0.15</b>
<b>85-01-8</b>	<b>Phenanthrene</b>	<b>0.10</b>	<b>0.17</b>
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 53.0%  
 d14-Dibenzo(a,h)anthracene 19.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
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**Sample ID: MW-13S-092412**  
**SAMPLE**

Lab Sample ID: VK65G  
 LIMS ID: 12-18411  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/02/12 21:40  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	3.0
91-57-6	2-Methylnaphthalene	0.10	0.25
90-12-0	1-Methylnaphthalene	0.10	0.32
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	0.17
86-73-7	Fluorene	0.10	0.11
85-01-8	Phenanthrene	0.10	0.12
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 55.3%  
 d14-Dibenzo(a,h)anthracene 22.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
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**Sample ID: MW-12S-092412**  
**SAMPLE**

Lab Sample ID: VK65H  
 LIMS ID: 12-18412  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/02/12 22:08  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
<b>90-12-0</b>	<b>1-Methylnaphthalene</b>	<b>0.10</b>	<b>0.14</b>
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 55.7%  
 d14-Dibenzo(a,h)anthracene 24.7%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
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**Sample ID: MW-11S-092412**  
**SAMPLE**

Lab Sample ID: VK65I  
 LIMS ID: 12-18413  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/02/12 22:37  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 53.3%  
 d14-Dibenzo(a,h)anthracene 43.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
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**Sample ID: MW-12D-092412**  
**SAMPLE**

Lab Sample ID: VK65J  
 LIMS ID: 12-18414  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/03/12 15:30  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
<b>90-12-0</b>	<b>1-Methylnaphthalene</b>	<b>0.10</b>	<b>0.16</b>
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 53.0%  
 d14-Dibenzo(a,h)anthracene 30.3%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
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**Sample ID: MW-11D-092412**  
**SAMPLE**

Lab Sample ID: VK65K  
 LIMS ID: 12-18415  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/03/12 15:58  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenzo(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 54.3%  
 d14-Dibenzo(a,h)anthracene 41.7%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 1

**Sample ID: MW-13D-092412**  
**SAMPLE**

Lab Sample ID: VK65L  
 LIMS ID: 12-18416  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/03/12 16:27  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	0.24
91-57-6	2-Methylnaphthalene	0.10	0.32
90-12-0	1-Methylnaphthalene	0.10	0.54
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	0.14
86-73-7	Fluorene	0.10	0.12
85-01-8	Phenanthrene	0.10	0.16
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenzo(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 48.0%  
 d14-Dibenzo(a,h)anthracene 29.3%



**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
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**Sample ID: MW-DUP-092412**  
**SAMPLE**

Lab Sample ID: VK65M  
 LIMS ID: 12-18417  
 Matrix: Water  
 Data Release Authorized: *B*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/03/12 16:55  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	0.12
91-57-6	2-Methylnaphthalene	0.10	0.14
90-12-0	1-Methylnaphthalene	0.10	0.32
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	0.13
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U


Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 53.0%  
 d14-Dibenzo(a,h)anthracene 37.7%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
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**Sample ID: MW-15S-092412**  
**SAMPLE**

Lab Sample ID: VK65N  
 LIMS ID: 12-18418  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/03/12 17:23  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	3.4
91-57-6	2-Methylnaphthalene	0.10	1.4
90-12-0	1-Methylnaphthalene	0.10	1.4
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	0.64
86-73-7	Fluorene	0.10	0.53
85-01-8	Phenanthrene	0.10	0.58
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	0.20
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 45.7%  
 d14-Dibenzo(a,h)anthracene 26.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
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**Sample ID: MW-13D-092412**  
**SAMPLE**

Lab Sample ID: VK650  
 LIMS ID: 12-18419  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/03/12 17:52  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	0.27
91-57-6	2-Methylnaphthalene	0.10	0.33
90-12-0	1-Methylnaphthalene	0.10	0.56
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	0.11
86-73-7	Fluorene	0.10	0.13
85-01-8	Phenanthrene	0.10	0.18
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 48.3%  
 d14-Dibenzo(a,h)anthracene 20.0%

**SIM SW8270 SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510

<u>Client ID</u>	<u>MNP</u>	<u>DBA</u>	<u>TOT OUT</u>
MB-092812	57.7%	49.0%	0
LCS-092812	44.0%	49.0%	0
LCSD-092812	47.3%	65.3%	0
MW-15D-092412	47.7%	14.0%	0
MW-16D-092412	54.3%	36.0%	0
MW-14D-092412	60.7%	20.3%	0
MW-15S-092412	55.3%	19.0%	0
MW-16S-092412	55.7%	40.3%	0
MW-14S-092412	53.0%	19.0%	0
MW-13S-092412	55.3%	22.0%	0
MW-12S-092412	55.7%	24.7%	0
MW-11S-092412	53.3%	43.0%	0
MW-12D-092412	53.0%	30.3%	0
MW-11D-092412	54.3%	41.7%	0
MW-13D-092412	48.0%	29.3%	0
MW-DUP-092412	53.0%	37.7%	0
MW-15S-092412	45.7%	26.0%	0
MW-13D-092412	48.3%	20.0%	0

**LCS/MB LIMITS      QC LIMITS**

(MNP) = d10-2-Methylnaphthalene      (40-110)      (33-107)  
(DBA) = d14-Dibenzo(a,h)anthracene      (33-140)      (10-142)

Prep Method: SW3520C  
Log Number Range: 12-18405 to 12-18419

**ORGANICS ANALYSIS DATA SHEET**

**PNAs by SW8270D-SIM GC/MS**

Page 1 of 1

**Sample ID: LCS-092812**

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-092812

LIMS ID: 12-18405

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 10/04/12

QC Report No: VK65-Landau Associates

Project: Cornwall

Event: 0001020.400-510

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 09/28/12

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 10/02/12 17:53

Final Extract Volume LCS: 0.50 mL

LCSD: 10/02/12 18:22

LCSD: 0.50 mL

Instrument/Analyst LCS: NT4/JZ

Dilution Factor LCS: 1.00

LCSD: NT4/JZ

LCSD: 1.00

Analyte	Spike		LCS		Spike		LCSD	
	LCS	Added-LCS	Recovery	LCSD	Added-LCSD	Recovery	RPD	
Naphthalene	1.29	3.00	43.0%	1.36	3.00	45.3%	5.3%	
2-Methylnaphthalene	1.24	3.00	41.3%	1.29	3.00	43.0%	4.0%	
1-Methylnaphthalene	1.47	3.00	49.0%	1.54	3.00	51.3%	4.7%	
Acenaphthylene	1.22	3.00	40.7%	1.34	3.00	44.7%	9.4%	
Acenaphthene	1.50	3.00	50.0%	1.62	3.00	54.0%	7.7%	
Fluorene	1.54	3.00	51.3%	1.64	3.00	54.7%	6.3%	
Phenanthrene	2.13	3.00	71.0%	2.18	3.00	72.7%	2.3%	
Anthracene	1.70	3.00	56.7%	1.54	3.00	51.3%	9.9%	
Fluoranthene	2.27	3.00	75.7%	2.36	3.00	78.7%	3.9%	
Pyrene	2.23	3.00	74.3%	2.19	3.00	73.0%	1.8%	
Benzo (a) anthracene	1.88	3.00	62.7%	1.82	3.00	60.7%	3.2%	
Chrysene	2.34	3.00	78.0%	2.38	3.00	79.3%	1.7%	
Benzo (a) pyrene	1.82	3.00	60.7%	1.70	3.00	56.7%	6.8%	
Indeno (1,2,3-cd) pyrene	1.87	3.00	62.3%	2.02	3.00	67.3%	7.7%	
Dibenz (a,h) anthracene	1.66	3.00	55.3%	1.89	3.00	63.0%	13.0%	
Benzo (g,h,i) perylene	1.99	3.00	66.3%	1.98	3.00	66.0%	0.5%	
Dibenzofuran	1.52	3.00	50.7%	1.58	3.00	52.7%	3.9%	
Total Benzofluoranthenes	7.88	9.00	87.6%	7.56	9.00	84.0%	4.1%	

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**SIM Semivolatile Surrogate Recovery**

	LCS	LCSD
d10-2-Methylnaphthalene	44.0%	47.3%
d14-Dibenzo (a,h) anthracene	49.0%	65.3%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by SW8270D-SIM GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 1

**Sample ID: MB-092812**  
**METHOD BLANK**

Lab Sample ID: MB-092812  
 LIMS ID: 12-18405  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/04/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 09/28/12  
 Date Analyzed: 10/02/12 17:25  
 Instrument/Analyst: NT4/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	< 0.10 U
91-57-6	2-Methylnaphthalene	0.10	< 0.10 U
90-12-0	1-Methylnaphthalene	0.10	< 0.10 U
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	< 0.10 U
86-73-7	Fluorene	0.10	< 0.10 U
85-01-8	Phenanthrene	0.10	< 0.10 U
120-12-7	Anthracene	0.10	< 0.10 U
206-44-0	Fluoranthene	0.10	< 0.10 U
129-00-0	Pyrene	0.10	< 0.10 U
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenzo(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	< 0.10 U
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 57.7%  
 d14-Dibenzo(a,h)anthracene 49.0%

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

Page 1 of 1

**Sample ID: MW-15D-092412**

**SAMPLE**

Lab Sample ID: VK65A

QC Report No: VK65-Landau Associates

LIMS ID: 12-18405

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *MMW*

Date Sampled: 09/24/12

Reported: 10/05/12

Date Received: 09/25/12

Date Extracted: 09/29/12

Sample Amount: 445 mL

Date Analyzed: 10/04/12 19:21

Final Extract Volume: 5.0 mL

Instrument/Analyst: ECD6/AAR

Dilution Factor: 1.00

GPC Cleanup: No

pH: NA

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.056	< 0.056 U
319-85-7	beta-BHC	0.056	< 0.056 U
319-86-8	delta-BHC	0.056	< 0.056 U
58-89-9	gamma-BHC (Lindane)	0.056	< 0.056 U
76-44-8	Heptachlor	0.056	< 0.056 U
309-00-2	Aldrin	0.056	< 0.056 U
1024-57-3	Heptachlor Epoxide	0.056	< 0.056 U
959-98-8	Endosulfan I	0.056	< 0.056 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.56	< 0.56 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.056	< 0.056 U
5103-71-9	cis-Chlordane \$	0.056	< 0.056 U
8001-35-2	Toxaphene	5.6	< 5.6 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	63.2%
Tetrachlorometaxylene	46.0%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.



**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

Page 1 of 1

**Sample ID: MW-16D-092412**

**SAMPLE**

Lab Sample ID: VK65B

QC Report No: VK65-Landau Associates

LIMS ID: 12-18406

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *TWW*

Date Sampled: 09/24/12

Reported: 10/05/12

Date Received: 09/25/12

Date Extracted: 09/29/12

Sample Amount: 440 mL

Date Analyzed: 10/04/12 19:39

Final Extract Volume: 5.0 mL

Instrument/Analyst: ECD6/AAR

Dilution Factor: 1.00

GPC Cleanup: No

pH: NA

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.057	< 0.057 U
319-85-7	beta-BHC	0.057	< 0.057 U
319-86-8	delta-BHC	0.057	< 0.057 U
58-89-9	gamma-BHC (Lindane)	0.057	< 0.057 U
76-44-8	Heptachlor	0.057	< 0.057 U
309-00-2	Aldrin	0.057	< 0.057 U
1024-57-3	Heptachlor Epoxide	0.057	< 0.057 U
959-98-8	Endosulfan I	0.057	< 0.057 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.57	< 0.57 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.057	< 0.057 U
5103-71-9	cis-Chlordane \$	0.057	< 0.057 U
8001-35-2	Toxaphene	5.7	< 5.7 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	75.5%
Tetrachlorometaxylene	52.5%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-14D-092412**  
**SAMPLE**

Lab Sample ID: VK65C  
 LIMS ID: 12-18407  
 Matrix: Water  
 Data Release Authorized: *MMW*  
 Reported: 10/05/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/29/12  
 Date Analyzed: 10/04/12 19:57  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 470 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.053	< 0.053 U
319-85-7	beta-BHC	0.053	< 0.053 U
319-86-8	delta-BHC	0.053	< 0.053 U
58-89-9	gamma-BHC (Lindane)	0.053	< 0.053 U
76-44-8	Heptachlor	0.053	< 0.053 U
309-00-2	Aldrin	0.053	< 0.053 U
1024-57-3	Heptachlor Epoxide	0.053	< 0.053 U
959-98-8	Endosulfan I	0.053	< 0.053 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.53	< 0.53 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.053	< 0.053 U
5103-71-9	cis-Chlordane \$	0.053	< 0.053 U
8001-35-2	Toxaphene	5.3	< 5.3 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	58.8%
Tetrachlorometaxylene	39.5%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

Page 1 of 1

**Sample ID: MW-15S-092412**

**SAMPLE**

Lab Sample ID: VK65D

QC Report No: VK65-Landau Associates

LIMS ID: 12-18408

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *MMW*

Date Sampled: 09/24/12

Reported: 10/05/12

Date Received: 09/25/12

Date Extracted: 09/29/12

Sample Amount: 470 mL

Date Analyzed: 10/04/12 20:14

Final Extract Volume: 5.0 mL

Instrument/Analyst: ECD6/AAR

Dilution Factor: 1.00

GPC Cleanup: No

pH: NA

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.053	< 0.053 U
319-85-7	beta-BHC	0.053	< 0.053 U
319-86-8	delta-BHC	0.053	< 0.053 U
58-89-9	gamma-BHC (Lindane)	0.053	< 0.053 U
76-44-8	Heptachlor	0.053	< 0.053 U
309-00-2	Aldrin	0.053	< 0.053 U
1024-57-3	Heptachlor Epoxide	0.053	< 0.053 U
959-98-8	Endosulfan I	0.053	< 0.053 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.53	< 0.53 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.053	< 0.053 U
5103-71-9	cis-Chlordane \$	0.053	< 0.053 U
8001-35-2	Toxaphene	5.3	< 5.3 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	57.5%
Tetrachlorometaxylene	49.5%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-16S-092412**  
**SAMPLE**

Lab Sample ID: VK65E  
 LIMS ID: 12-18409  
 Matrix: Water  
 Data Release Authorized: *W*  
 Reported: 10/05/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/29/12  
 Date Analyzed: 10/04/12 20:32  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 470 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.053	< 0.053 U
319-85-7	beta-BHC	0.053	< 0.053 U
319-86-8	delta-BHC	0.053	< 0.053 U
58-89-9	gamma-BHC (Lindane)	0.053	< 0.053 U
76-44-8	Heptachlor	0.053	< 0.053 U
309-00-2	Aldrin	0.053	< 0.053 U
1024-57-3	Heptachlor Epoxide	0.053	< 0.053 U
959-98-8	Endosulfan I	0.053	< 0.053 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.53	< 0.53 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.053	< 0.053 U
5103-71-9	cis-Chlordane §	0.053	< 0.053 U
8001-35-2	Toxaphene	5.3	< 5.3 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	65.2%
Tetrachlorometaxylene	42.2%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

§ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

Page 1 of 1

**Sample ID: MW-14S-092412**

**SAMPLE**

Lab Sample ID: VK65F

QC Report No: VK65-Landau Associates

LIMS ID: 12-18410

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *MW*

Date Sampled: 09/24/12

Reported: 10/05/12

Date Received: 09/25/12

Date Extracted: 09/29/12

Sample Amount: 445 mL

Date Analyzed: 10/04/12 20:50

Final Extract Volume: 5.0 mL

Instrument/Analyst: ECD6/AAR

Dilution Factor: 1.00

GPC Cleanup: No

pH: NA

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.056	< 0.056 U
319-85-7	beta-BHC	0.056	< 0.056 U
319-86-8	delta-BHC	0.056	< 0.056 U
58-89-9	gamma-BHC (Lindane)	0.056	< 0.056 U
76-44-8	Heptachlor	0.056	< 0.056 U
309-00-2	Aldrin	0.056	< 0.056 U
1024-57-3	Heptachlor Epoxide	0.056	< 0.056 U
959-98-8	Endosulfan I	0.056	< 0.056 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.56	< 0.56 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.056	< 0.056 U
5103-71-9	cis-Chlordane §	0.056	< 0.056 U
8001-35-2	Toxaphene	5.6	< 5.6 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	61.8%
Tetrachlorometaxylene	47.2%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

§ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13S-092412**  
**SAMPLE**

Lab Sample ID: VK65G  
 LIMS ID: 12-18411  
 Matrix: Water  
 Data Release Authorized: *MMW*  
 Reported: 10/05/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/29/12  
 Date Analyzed: 10/04/12 21:08  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 455 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.055	< 0.055 U
319-85-7	beta-BHC	0.055	< 0.055 U
319-86-8	delta-BHC	0.055	< 0.055 U
58-89-9	gamma-BHC (Lindane)	0.055	< 0.055 U
76-44-8	Heptachlor	0.055	< 0.055 U
309-00-2	Aldrin	0.055	< 0.055 U
1024-57-3	Heptachlor Epoxide	0.055	< 0.055 U
959-98-8	Endosulfan I	0.055	< 0.055 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.55	< 0.55 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.055	< 0.055 U
5103-71-9	cis-Chlordane \$	0.055	< 0.055 U
8001-35-2	Toxaphene	5.5	< 5.5 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	58.0%
Tetrachlorometaxylene	45.5%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

Page 1 of 1

**Sample ID: MW-12S-092412**

**SAMPLE**

Lab Sample ID: VK65H

QC Report No: VK65-Landau Associates

LIMS ID: 12-18412

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *WW*

Date Sampled: 09/24/12

Reported: 10/05/12

Date Received: 09/25/12

Date Extracted: 09/29/12

Sample Amount: 445 mL

Date Analyzed: 10/04/12 22:55

Final Extract Volume: 5.0 mL

Instrument/Analyst: ECD6/AAR

Dilution Factor: 1.00

GPC Cleanup: No

pH: NA

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.056	< 0.056 U
319-85-7	beta-BHC	0.056	< 0.056 U
319-86-8	delta-BHC	0.056	< 0.056 U
58-89-9	gamma-BHC (Lindane)	0.056	< 0.056 U
76-44-8	Heptachlor	0.056	< 0.056 U
309-00-2	Aldrin	0.056	< 0.056 U
1024-57-3	Heptachlor Epoxide	0.056	< 0.056 U
959-98-8	Endosulfan I	0.056	< 0.056 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.56	< 0.56 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.056	< 0.056 U
5103-71-9	cis-Chlordane \$	0.056	< 0.056 U
8001-35-2	Toxaphene	5.6	< 5.6 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	55.0%
Tetrachlorometaxylene	46.8%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.



**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

Page 1 of 1

**Sample ID: MW-11S-092412**

**SAMPLE**

Lab Sample ID: VK65I

QC Report No: VK65-Landau Associates

LIMS ID: 12-18413

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *MW*

Date Sampled: 09/24/12

Reported: 10/05/12

Date Received: 09/25/12

Date Extracted: 09/29/12

Sample Amount: 470 mL

Date Analyzed: 10/04/12 23:12

Final Extract Volume: 5.0 mL

Instrument/Analyst: ECD6/AAR

Dilution Factor: 1.00

GPC Cleanup: No

pH: NA

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.053	< 0.053 U
319-85-7	beta-BHC	0.053	< 0.053 U
319-86-8	delta-BHC	0.053	< 0.053 U
58-89-9	gamma-BHC (Lindane)	0.053	< 0.053 U
76-44-8	Heptachlor	0.053	< 0.053 U
309-00-2	Aldrin	0.053	< 0.053 U
1024-57-3	Heptachlor Epoxide	0.053	< 0.053 U
959-98-8	Endosulfan I	0.053	< 0.053 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.53	< 0.53 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.053	< 0.053 U
5103-71-9	cis-Chlordane §	0.053	< 0.053 U
8001-35-2	Toxaphene	5.3	< 5.3 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	68.8%
Tetrachlorometaxylene	48.2%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

§ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

Page 1 of 1

**Sample ID: MW-12D-092412**

**SAMPLE**

Lab Sample ID: VK65J

QC Report No: VK65-Landau Associates

LIMS ID: 12-18414

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *MMW*

Date Sampled: 09/24/12

Reported: 10/05/12

Date Received: 09/25/12

Date Extracted: 09/29/12

Sample Amount: 470 mL

Date Analyzed: 10/04/12 23:30

Final Extract Volume: 5.0 mL

Instrument/Analyst: ECD6/AAR

Dilution Factor: 1.00

GPC Cleanup: No

pH: NA

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.053	< 0.053 U
319-85-7	beta-BHC	0.053	< 0.053 U
319-86-8	delta-BHC	0.053	< 0.053 U
58-89-9	gamma-BHC (Lindane)	0.053	< 0.053 U
76-44-8	Heptachlor	0.053	< 0.053 U
309-00-2	Aldrin	0.053	< 0.053 U
1024-57-3	Heptachlor Epoxide	0.053	< 0.053 U
959-98-8	Endosulfan I	0.053	< 0.053 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.53	< 0.53 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.053	< 0.053 U
5103-71-9	cis-Chlordane \$	0.053	< 0.053 U
8001-35-2	Toxaphene	5.3	< 5.3 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	43.0%
Tetrachlorometaxylene	37.8%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11D-092412**  
**SAMPLE**

Lab Sample ID: VK65K  
 LIMS ID: 12-18415  
 Matrix: Water  
 Data Release Authorized: *W*  
 Reported: 10/05/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/29/12  
 Date Analyzed: 10/04/12 23:48  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 450 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.056	< 0.056 U
319-85-7	beta-BHC	0.056	< 0.056 U
319-86-8	delta-BHC	0.056	< 0.056 U
58-89-9	gamma-BHC (Lindane)	0.056	< 0.056 U
76-44-8	Heptachlor	0.056	< 0.056 U
309-00-2	Aldrin	0.056	< 0.056 U
1024-57-3	Heptachlor Epoxide	0.056	< 0.056 U
959-98-8	Endosulfan I	0.056	< 0.056 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.56	< 0.56 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.056	< 0.056 U
5103-71-9	cis-Chlordane \$	0.056	< 0.056 U
8001-35-2	Toxaphene	5.6	< 5.6 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	64.0%
Tetrachlorometaxylene	44.8%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

Page 1 of 1

**Sample ID: MW-13D-092412**

**SAMPLE**

Lab Sample ID: VK65L

QC Report No: VK65-Landau Associates

LIMS ID: 12-18416

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *MW*

Date Sampled: 09/24/12

Reported: 10/05/12

Date Received: 09/25/12

Date Extracted: 09/29/12

Sample Amount: 470 mL

Date Analyzed: 10/05/12 00:06

Final Extract Volume: 5.0 mL

Instrument/Analyst: ECD6/AAR

Dilution Factor: 1.00

GPC Cleanup: No

pH: NA

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.053	< 0.053 U
319-85-7	beta-BHC	0.053	< 0.053 U
319-86-8	delta-BHC	0.053	< 0.053 U
58-89-9	gamma-BHC (Lindane)	0.053	< 0.053 U
76-44-8	Heptachlor	0.053	< 0.053 U
309-00-2	Aldrin	0.053	< 0.053 U
1024-57-3	Heptachlor Epoxide	0.053	< 0.053 U
959-98-8	Endosulfan I	0.053	< 0.053 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.53	< 0.53 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.053	< 0.053 U
5103-71-9	cis-Chlordane \$	0.053	< 0.053 U
8001-35-2	Toxaphene	5.3	< 5.3 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	61.0%
Tetrachlorometaxylene	48.8%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-DUP-092412**  
**SAMPLE**

Lab Sample ID: VK65M  
 LIMS ID: 12-18417  
 Matrix: Water  
 Data Release Authorized: *MMW*  
 Reported: 10/05/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/29/12  
 Date Analyzed: 10/05/12 00:24  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 440 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.057	< 0.057 U
319-85-7	beta-BHC	0.057	< 0.057 U
319-86-8	delta-BHC	0.057	< 0.057 U
58-89-9	gamma-BHC (Lindane)	0.057	< 0.057 U
76-44-8	Heptachlor	0.057	< 0.057 U
309-00-2	Aldrin	0.057	< 0.057 U
1024-57-3	Heptachlor Epoxide	0.057	< 0.057 U
959-98-8	Endosulfan I	0.057	< 0.057 U
60-57-1	Dieldrin	0.11	< 0.11 U
72-55-9	4,4'-DDE	0.11	< 0.11 U
72-20-8	Endrin	0.11	< 0.11 U
33213-65-9	Endosulfan II	0.11	< 0.11 U
72-54-8	4,4'-DDD	0.11	< 0.11 U
1031-07-8	Endosulfan Sulfate	0.11	< 0.11 U
50-29-3	4,4'-DDT	0.11	< 0.11 U
72-43-5	Methoxychlor	0.57	< 0.57 U
53494-70-5	Endrin Ketone	0.11	< 0.11 U
7421-93-4	Endrin Aldehyde	0.11	< 0.11 U
5103-74-2	trans-Chlordane #	0.057	< 0.057 U
5103-71-9	cis-Chlordane \$	0.057	< 0.057 U
8001-35-2	Toxaphene	5.7	< 5.7 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	68.0%
Tetrachlorometaxylene	51.5%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

Page 1 of 1

**Sample ID: MW-15S-092412**

**SAMPLE**

Lab Sample ID: VK65N

QC Report No: VK65-Landau Associates

LIMS ID: 12-18418

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *WVW*

Date Sampled: 09/24/12

Reported: 10/05/12

Date Received: 09/25/12

Date Extracted: 09/29/12

Sample Amount: 500 mL

Date Analyzed: 10/05/12 00:41

Final Extract Volume: 5.0 mL

Instrument/Analyst: ECD6/AAR

Dilution Factor: 1.00

GPC Cleanup: No

pH: NA

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	64.2%
Tetrachlorometaxylene	48.0%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

Page 1 of 1

**Sample ID: MW-13D-092412**

**SAMPLE**

Lab Sample ID: VK650

QC Report No: VK65-Landau Associates

LIMS ID: 12-18419

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *WVW*

Date Sampled: 09/24/12

Reported: 10/05/12

Date Received: 09/25/12

Date Extracted: 09/29/12

Sample Amount: 500 mL

Date Analyzed: 10/05/12 00:59

Final Extract Volume: 5.0 mL

Instrument/Analyst: ECD6/AAR

Dilution Factor: 1.00

GPC Cleanup: No

pH: NA

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	64.2%
Tetrachlorometaxylene	49.8%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.



**SW8081/PESTICIDE WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510

<u>Client ID</u>	<u>DCBP</u>	<u>TCMX</u>	<u>TOT OUT</u>
MB-092912	71.0%	43.0%	0
LCS-092912	68.5%	44.8%	0
LCSD-092912	62.2%	45.8%	0
MW-15D-092412	63.2%	46.0%	0
MW-16D-092412	75.5%	52.5%	0
MW-14D-092412	58.8%	39.5%	0
MW-15S-092412	57.5%	49.5%	0
MW-16S-092412	65.2%	42.2%	0
MW-14S-092412	61.8%	47.2%	0
MW-13S-092412	58.0%	45.5%	0
MW-12S-092412	55.0%	46.8%	0
MW-11S-092412	68.8%	48.2%	0
MW-12D-092412	43.0%	37.8%	0
MW-11D-092412	64.0%	44.8%	0
MW-13D-092412	61.0%	48.8%	0
MW-DUP-092412	68.0%	51.5%	0
MW-15S-092412	64.2%	48.0%	0
MW-13D-092412	64.2%	49.8%	0

**LCS/MB LIMITS      QC LIMITS**

(DCBP) = Decachlorobiphenyl      (37-125)      (11-144)  
(TCMX) = Tetrachlorometaxylene      (38-103)      (30-105)

Prep Method: SW3510C  
Log Number Range: 12-18405 to 12-18419

**ORGANICS ANALYSIS DATA SHEET**

Pesticides/PCB by GC/ECD Method SW8081B

Sample ID: LCS-092912

Page 1 of 1

LCS/LCSD

Lab Sample ID: LCS-092912

QC Report No: VK65-Landau Associates

LIMS ID: 12-18405

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *mmw*

Date Sampled: 09/24/12

Reported: 10/05/12

Date Received: 09/25/12

Date Extracted LCS/LCSD: 09/29/12

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 10/04/12 18:45

Final Extract Volume LCS: 5.0 mL

LCSD: 10/04/12 19:03

LCSD: 5.0 mL

Instrument/Analyst LCS: ECD6/AAR

Dilution Factor LCS: 1.00

LCSD: ECD6/AAR

LCSD: 1.00

GPC Cleanup: No

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

Analyte	Spike			LCSD			RPD
	LCS	Added-LCS	Recovery	LCS	Added-LCSD	Recovery	
alpha-BHC	0.128	0.200	64.0%	0.137	0.200	68.5%	6.8%
beta-BHC	0.138	0.200	69.0%	0.148	0.200	74.0%	7.0%
delta-BHC	0.0789	0.200	39.4%	0.0829	0.200	41.4%	4.9%
gamma-BHC (Lindane)	0.142	0.200	71.0%	0.152	0.200	76.0%	6.8%
Heptachlor	0.130	0.200	65.0%	0.140	0.200	70.0%	7.4%
Aldrin	0.125	0.200	62.5%	0.134	0.200	67.0%	6.9%
Heptachlor Epoxide	0.156	0.200	78.0%	0.164	0.200	82.0%	5.0%
Endosulfan I	0.158	0.200	79.0%	0.165	0.200	82.5%	4.3%
Dieldrin	0.316	0.400	79.0%	0.331	0.400	82.8%	4.6%
4,4'-DDE	0.315	0.400	78.8%	0.333	0.400	83.2%	5.6%
Endrin	0.332	0.400	83.0%	0.351	0.400	87.8%	5.6%
Endosulfan II	0.342	0.400	85.5%	0.352	0.400	88.0%	2.9%
4,4'-DDD	0.346	0.400	86.5%	0.356	0.400	89.0%	2.8%
Endosulfan Sulfate	0.298	0.400	74.5%	0.303	0.400	75.8%	1.7%
4,4'-DDT	0.343	0.400	85.8%	0.353	0.400	88.2%	2.9%
Methoxychlor	1.60	2.00	80.0%	1.62	2.00	81.0%	1.2%
Endrin Ketone	0.372	0.400	93.0%	0.373	0.400	93.2%	0.3%
Endrin Aldehyde	0.251	0.400	62.8%	0.244	0.400	61.0%	2.8%
trans-Chlordane	0.152	0.200	76.0%	0.160	0.200	80.0%	5.1%
cis-Chlordane	0.151	0.200	75.5%	0.159	0.200	79.5%	5.2%

**Pest/PCB Surrogate Recovery**

	LCS	LCSD
Decachlorobiphenyl	68.5%	62.2%
Tetrachlorometaxylene	44.8%	45.8%

Results reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

Page 1 of 1

**Sample ID: MB-092912**

**METHOD BLANK**

Lab Sample ID: MB-092912

LIMS ID: 12-18405

Matrix: Water

Data Release Authorized: *mw*

Reported: 10/05/12

QC Report No: VK65-Landau Associates

Project: Cornwall

0001020.400-510

Date Sampled: NA

Date Received: NA

Date Extracted: 09/29/12

Date Analyzed: 10/04/12 18:28

Instrument/Analyst: ECD6/AAR

GPC Cleanup: No

Sulfur Cleanup: Yes

Sample Amount: 500 mL

Final Extract Volume: 5.0 mL

Dilution Factor: 1.00

pH: NA

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane	0.050	< 0.050 U
5103-71-9	cis-Chlordane	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	71.0%
Tetrachlorometaxylene	43.0%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-15D-092412**  
**SAMPLE**

Lab Sample ID: VK65A  
 LIMS ID: 12-18405  
 Matrix: Water  
 Data Release Authorized: *B*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 11:12  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 450 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.28	< 0.28 U
93-76-5	2,4,5-T	0.28	< 0.28 U
88-85-7	Dinoseb	0.56	< 0.56 U
1918-00-9	Dicamba	0.56	< 0.56 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.6	< 5.6 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	280	< 280 U
120-36-5	Dichloroprop	1.1	< 1.1 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 95.0%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-15D-092412**  
**REEXTRACT**

Lab Sample ID: VK65A  
 LIMS ID: 12-18405  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/10/12 21:52  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 450 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.28	< 0.28 U
93-76-5	2,4,5-T	0.28	< 0.28 U
88-85-7	Dinoseb	0.56	< 0.56 U
1918-00-9	Dicamba	0.56	< 0.56 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.6	< 5.6 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	280	< 280 U
120-36-5	Dichloroprop	1.1	< 1.1 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 83.6%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-16D-092412**  
**SAMPLE**

Lab Sample ID: VK65B  
 LIMS ID: 12-18406  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 11:48  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 460 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.54	< 0.54 U
1918-00-9	Dicamba	0.54	< 0.54 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.4	< 5.4 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	270	< 270 U
120-36-5	Dichloroprop	1.1	< 1.1 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 94.4%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-16D-092412**  
**REEXTRACT**

Lab Sample ID: VK65B  
 LIMS ID: 12-18406  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/10/12 22:29  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)


**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 79.8%



**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-14D-092412**  
**SAMPLE**

Lab Sample ID: VK65C  
 LIMS ID: 12-18407  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 12:24  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 460 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.54	< 0.54 U
1918-00-9	Dicamba	0.54	< 0.54 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.4	< 5.4 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	270	< 270 U
120-36-5	Dichloroprop	1.1	< 1.1 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 84.2%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-14D-092412**  
**REEXTRACT**

Lab Sample ID: VK65C  
 LIMS ID: 12-18407  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/10/12 23:05  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 440 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.28	< 0.28 U
93-76-5	2,4,5-T	0.28	< 0.28 U
88-85-7	Dinoseb	0.57	< 0.57 U
1918-00-9	Dicamba	0.57	< 0.57 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.7	< 5.7 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	280	< 280 U
120-36-5	Dichloroprop	1.1	< 1.1 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 87.1%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-15S-092412**  
**SAMPLE**

Lab Sample ID: VK65D  
 LIMS ID: 12-18408  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 13:00  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 445 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.28	< 0.28 U
93-76-5	2,4,5-T	0.28	< 0.28 U
88-85-7	Dinoseb	0.56	< 0.56 U
1918-00-9	Dicamba	0.56	< 0.56 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.6	< 5.6 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	280	< 280 U
120-36-5	Dichloroprop	1.1	< 1.1 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 93.6%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-15S-092412**  
**REEXTRACT**

Lab Sample ID: VK65D  
 LIMS ID: 12-18408  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/10/12 23:41  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 82.4%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-16S-092412**  
**SAMPLE**

Lab Sample ID: VK65E  
 LIMS ID: 12-18409  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 13:37  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 420 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.30	< 0.30 U
93-76-5	2,4,5-T	0.30	< 0.30 U
88-85-7	Dinoseb	0.60	< 0.60 U
1918-00-9	Dicamba	0.60	< 0.60 U
94-75-7	2,4-D	1.2	< 1.2 U
94-82-6	2,4-DB	6.0	< 6.0 U
75-99-0	Dalapon	1.2	< 1.2 U
94-74-6	MCPA	300	< 300 U
120-36-5	Dichloroprop	1.2	< 1.2 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 88.0%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-16S-092412**  
**REEXTRACT**

Lab Sample ID: VK65E  
 LIMS ID: 12-18409  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/11/12 00:17  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 475 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.26	< 0.26 U
93-76-5	2,4,5-T	0.26	< 0.26 U
88-85-7	Dinoseb	0.53	< 0.53 U
1918-00-9	Dicamba	0.53	< 0.53 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.3	< 5.3 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	260	< 260 U
120-36-5	Dichloroprop	1.0	< 1.0 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 83.9%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-14S-092412**  
**SAMPLE**

Lab Sample ID: VK65F  
 LIMS ID: 12-18410  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 14:13  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 84.8%



**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-14S-092412**  
**REEXTRACT**

Lab Sample ID: VK65F  
 LIMS ID: 12-18410  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/11/12 02:06  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 83.2%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13S-092412**  
**SAMPLE**

Lab Sample ID: VK65G  
 LIMS ID: 12-18411  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 16:02  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 455 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.55	< 0.55 U
1918-00-9	Dicamba	0.55	< 0.55 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.5	< 5.5 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	280	< 280 U
120-36-5	Dichloroprop	1.1	< 1.1 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 83.9%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13S-092412**  
**REEXTRACT**

Lab Sample ID: VK65G  
 LIMS ID: 12-18411  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/11/12 02:42  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 460 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.54	< 0.54 U
1918-00-9	Dicamba	0.54	< 0.54 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.4	< 5.4 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	270	< 270 U
120-36-5	Dichloroprop	1.1	< 1.1 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 82.3%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-12S-092412**  
**SAMPLE**

Lab Sample ID: VK65H  
 LIMS ID: 12-18412  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 16:38  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 465 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.54	< 0.54 U
1918-00-9	Dicamba	0.54	< 0.54 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.4	< 5.4 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	270	< 270 U
120-36-5	Dichloroprop	1.1	< 1.1 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 87.5%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-12S-092412**  
**REEXTRACT**

Lab Sample ID: VK65H  
 LIMS ID: 12-18412  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/11/12 03:19  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 460 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.54	< 0.54 U
1918-00-9	Dicamba	0.54	< 0.54 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.4	< 5.4 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	270	< 270 U
120-36-5	Dichloroprop	1.1	< 1.1 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 86.0%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11S-092412**  
**SAMPLE**

Lab Sample ID: VK65I  
 LIMS ID: 12-18413  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 17:14  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 440 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.28	< 0.28 U
93-76-5	2,4,5-T	0.28	< 0.28 U
88-85-7	Dinoseb	0.57	< 0.57 U
1918-00-9	Dicamba	0.57	< 0.57 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.7	< 5.7 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	280	< 280 U
120-36-5	Dichloroprop	1.1	< 1.1 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 112%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11S-092412**  
**REEXTRACT**

Lab Sample ID: VK65I  
 LIMS ID: 12-18413  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/11/12 03:55  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 74.4%



**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-12D-092412**  
**SAMPLE**

Lab Sample ID: VK65J  
 LIMS ID: 12-18414  
 Matrix: Water  
 Data Release Authorized: *B*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 17:51  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 440 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.28	< 0.28 U
93-76-5	2,4,5-T	0.28	< 0.28 U
88-85-7	Dinoseb	0.57	< 0.57 U
1918-00-9	Dicamba	0.57	< 0.57 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.7	< 5.7 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	280	< 280 U
120-36-5	Dichloroprop	1.1	< 1.1 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 87.8%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-12D-092412**  
**REEXTRACT**

Lab Sample ID: VK65J  
 LIMS ID: 12-18414  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/11/12 04:31  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 114%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11D-092412**  
**SAMPLE**

Lab Sample ID: VK65K  
 LIMS ID: 12-18415  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 18:27  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 450 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.28	< 0.28 U
93-76-5	2,4,5-T	0.28	< 0.28 U
88-85-7	Dinoseb	0.56	< 0.56 U
1918-00-9	Dicamba	0.56	< 0.56 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.6	< 5.6 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	280	< 280 U
120-36-5	Dichloroprop	1.1	< 1.1 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 62.2%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11D-092412**  
**REEXTRACT**

Lab Sample ID: VK65K  
 LIMS ID: 12-18415  
 Matrix: Water  
 Data Release Authorized: *B*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/11/12 05:07  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 470 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.53	< 0.53 U
1918-00-9	Dicamba	0.53	< 0.53 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.3	< 5.3 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	270	< 270 U
120-36-5	Dichloroprop	1.1	< 1.1 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 56.4%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13D-092412**  
**SAMPLE**

Lab Sample ID: VK65L  
 LIMS ID: 12-18416  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 19:03  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 455 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.55	< 0.55 U
1918-00-9	Dicamba	0.55	< 0.55 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.5	< 5.5 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	280	< 280 U
120-36-5	Dichloroprop	1.1	< 1.1 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 87.9%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13D-092412**  
**REEXTRACT**

Lab Sample ID: VK65L  
 LIMS ID: 12-18416  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/11/12 05:44  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 81.2%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-DUP-092412**  
**SAMPLE**

Lab Sample ID: VK65M  
 LIMS ID: 12-18417  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 19:39  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 460 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.54	< 0.54 U
1918-00-9	Dicamba	0.54	< 0.54 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.4	< 5.4 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	270	< 270 U
120-36-5	Dichloroprop	1.1	< 1.1 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 93.2%

ORGANICS ANALYSIS DATA SHEET  
Herbicides by SW8151A GC/ECD  
Extraction Method: SW3510C  
Page 1 of 1

Sample ID: MW-DUP-092412  
REEXTRACT

Lab Sample ID: VK65M  
LIMS ID: 12-18417  
Matrix: Water  
Data Release Authorized:   
Reported: 10/11/12

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Date Extracted: 10/10/12  
Date Analyzed: 10/11/12 06:20  
Instrument/Analyst: ECD1/YZ

Sample Amount: 460 mL  
Final Extract Volume: 50 mL  
Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.54	< 0.54 U
1918-00-9	Dicamba	0.54	< 0.54 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.4	< 5.4 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	270	< 270 U
120-36-5	Dichloroprop	1.1	< 1.1 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 85.0%



**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-15S-092412**  
**SAMPLE**

Lab Sample ID: VK65N  
 LIMS ID: 12-18418  
 Matrix: Water  
 Data Release Authorized: *RB*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 20:16  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in ug/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 83.1%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-15S-092412**  
**REEXTRACT**

Lab Sample ID: VK65N  
 LIMS ID: 12-18418  
 Matrix: Water  
 Data Release Authorized: *RB*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/11/12 06:56  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 460 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.54	< 0.54 U
1918-00-9	Dicamba	0.54	< 0.54 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.4	< 5.4 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	270	< 270 U
120-36-5	Dichloroprop	1.1	< 1.1 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 89.2%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13D-092412**  
**SAMPLE**

Lab Sample ID: VK650  
 LIMS ID: 12-18419  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 20:52  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 455 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.27	< 0.27 U
93-76-5	2,4,5-T	0.27	< 0.27 U
88-85-7	Dinoseb	0.55	< 0.55 U
1918-00-9	Dicamba	0.55	< 0.55 U
94-75-7	2,4-D	1.1	< 1.1 U
94-82-6	2,4-DB	5.5	< 5.5 U
75-99-0	Dalapon	1.1	< 1.1 U
94-74-6	MCPA	280	< 280 U
120-36-5	Dichloroprop	1.1	< 1.1 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 95.6%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13D-092412**  
**REEXTRACT**

Lab Sample ID: VK650  
 LIMS ID: 12-18419  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted: 10/10/12  
 Date Analyzed: 10/11/12 07:33  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 111%

**SW8151A/HERBICIDE WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510

<u>Client ID</u>	<u>DCPA</u>	<u>TOT OUT</u>
MB-092812	81.6%	0
LCS-092812	88.5%	0
LCSD-092812	80.7%	0
MW-15D-092412	95.0%	0
MW-15D-092412 RE	83.6%	0
MB-101012	74.6%	0
LCS-101012	87.0%	0
LCSD-101012	94.8%	0
MW-16D-092412	94.4%	0
MW-16D-092412 RE	79.8%	0
MW-14D-092412	84.2%	0
MW-14D-092412 RE	87.1%	0
MW-15S-092412	93.6%	0
MW-15S-092412 RE	82.4%	0
MW-16S-092412	88.0%	0
MW-16S-092412 RE	83.9%	0
MW-14S-092412	84.8%	0
MW-14S-092412 RE	83.2%	0
MW-13S-092412	83.9%	0
MW-13S-092412 RE	82.3%	0
MW-12S-092412	87.5%	0
MW-12S-092412 RE	86.0%	0
MW-11S-092412	112%	0
MW-11S-092412 RE	74.4%	0
MW-12D-092412	87.8%	0
MW-12D-092412 RE	114%	0
MW-11D-092412	62.2%	0
MW-11D-092412 RE	56.4%	0
MW-13D-092412	87.9%	0
MW-13D-092412 RE	81.2%	0
MW-DUP-092412	93.2%	0
MW-DUP-092412 RE	85.0%	0
MW-15S-092412	83.1%	0
MW-15S-092412 RE	89.2%	0
MW-13D-092412	95.6%	0
MW-13D-092412 RE	111%	0

**LCS/MB LIMITS      QC LIMITS**

(DCPA) = 2,4-Dichlorophenylacetic Acid      (66-112)      (28-140)

Log Number Range: 12-18405 to 12-18419

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
 Page 1 of 1

**Sample ID: LCS-092812**  
**LCS/LCSD**

Lab Sample ID: LCS-092812  
 LIMS ID: 12-18405  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted LCS/LCSD: 09/28/12

Sample Amount LCS: 500 mL  
 LCSD: 500 mL

Date Analyzed LCS: 10/05/12 09:23  
 LCSD: 10/05/12 09:59

Final Extract Volume LCS: 50 mL  
 LCSD: 50 mL

Instrument/Analyst LCS: ECD1/YZ  
 LCSD: ECD1/YZ

Dilution Factor LCS: 1.00  
 LCSD: 1.00

Analyte	Spike		LCS		Spike		LCSD	
	LCS	Added-LCS	Recovery	LCS	Added-LCSD	Recovery	RPD	
2,4,5-TP (Silvex)	6.02	2.50	241%	6.17	2.50	247%	2.5%	
2,4,5-T	< 0.25	0.625	NR%	0.330	0.625	52.8%	NR%	
Dinoseb	1.58	1.25	126%	1.53	1.25	122%	3.2%	
Dicamba	3.13	1.25	250%	3.27	1.25	262%	4.4%	
2,4-D	< 1.00	2.50	NR%	1.42	2.50	56.8%	NR%	
2,4-DB	44.5	12.5	356%	42.9	12.5	343%	3.7%	
Dalapon	1.79	2.50	71.6%	2.86	2.50	114%	46.0%	
Dichloroprop	6.36	2.50	254%	6.56	2.50	262%	3.1%	


**Herbicide Surrogate Recovery**

	LCS	LCSD
2,4-Dichlorophenylacetic	88.5%	80.7%

Results reported in µg/L  
 RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
 Page 1 of 1

**Sample ID: LCS-101012**  
**LCS/LCSD**

Lab Sample ID: LCS-101012  
 LIMS ID: 12-18406  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

Date Extracted LCS/LCSD: 10/10/12

Sample Amount LCS: 500 mL  
 LCSD: 500 mL

Date Analyzed LCS: 10/11/12 09:21  
 LCSD: 10/11/12 12:59

Final Extract Volume LCS: 50 mL  
 LCSD: 50 mL

Instrument/Analyst LCS: ECD1/YZ  
 LCSD: ECD1/YZ

Dilution Factor LCS: 1.00  
 LCSD: 1.00

Analyte	LCS		LCS Recovery		LCSD		RPD
	LCS	Spike Added-LCS	LCS Recovery	LCS	LCS	LCSD	
2,4,5-TP (Silvex)	6.11	10.0	61.1%	7.22	10.0	72.2%	16.7%
2,4,5-T	0.540	2.50	21.6%	1.81	2.50	72.4%	108%
Dinoseb	2.04	5.00	40.8%	2.04	5.00	40.8%	0.0%
Dicamba	3.26	5.00	65.2%	4.20	5.00	84.0%	25.2%
2,4-D	1.88	10.0	18.8%	3.09	10.0	30.9%	48.7%
2,4-DB	43.0	50.0	86.0%	50.1	50.0	100%	15.3%
Dalapon	2.92	10.0	29.2%	4.99	10.0	49.9%	52.3%
Dichloroprop	5.85	10.0	58.5%	7.23	10.0	72.3%	21.1%


**Herbicide Surrogate Recovery**

	LCS	LCSD
2,4-Dichlorophenylacetic	87.0%	94.8%

Results reported in µg/L  
 RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MB-092812**  
**METHOD BLANK**

Lab Sample ID: MB-092812  
 LIMS ID: 12-18405  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 09/28/12  
 Date Analyzed: 10/05/12 08:47  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 81.6%



**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MB-101012**  
**METHOD BLANK**

Lab Sample ID: MB-101012  
 LIMS ID: 12-18406  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 10/11/12

QC Report No: VK65-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 10/10/12  
 Date Analyzed: 10/10/12 19:27  
 Instrument/Analyst: ECD1/YZ

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 74.6%

**ORGANICS ANALYSIS DATA SHEET**

NWTPH-HCID Method by GC/FID  
Extraction Method: SW3510C  
Page 1 of 2

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510

Matrix: Water

Data Release Authorized: *MW*  
Reported: 10/01/12

ARI ID	Sample ID	Extraction Date	Analysis Date	DL	Range	Result
MB-092712 12-18405	Method Blank	09/27/12	09/28/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 90.7%
VK65A 12-18405	MW-15D-092412 HC ID: <b>DRO</b>	09/27/12	09/28/12	1.0	Gas <b>Diesel</b> Oil o-Terphenyl	< 0.25 U <b>&gt; 0.50</b> < 0.50 U 76.9%
VK65B 12-18406	MW-16D-092412 HC ID: <b>DRO</b>	09/27/12	09/28/12	1.0	Gas <b>Diesel</b> Oil o-Terphenyl	< 0.25 U <b>&gt; 0.50</b> < 0.50 U 82.8%
VK65C 12-18407	MW-14D-092412 HC ID: <b>DRO/MOTOR OIL</b>	09/27/12	09/28/12	1.0	Gas <b>Diesel</b> <b>Oil</b> o-Terphenyl	< 0.25 U <b>&gt; 0.50</b> <b>&gt; 0.50</b> 81.8%
VK65D 12-18408	MW-15S-092412 HC ID: <b>DRO</b>	09/27/12	09/28/12	1.0	Gas <b>Diesel</b> Oil o-Terphenyl	< 0.25 U <b>&gt; 0.50</b> < 0.50 U 82.8%
VK65E 12-18409	MW-16S-092412 HC ID: <b>DRO</b>	09/27/12	09/28/12	1.0	Gas <b>Diesel</b> Oil o-Terphenyl	< 0.25 U <b>&gt; 0.50</b> < 0.50 U 81.0%
VK65F 12-18410	MW-14S-092412 HC ID: <b>DRO</b>	09/27/12	09/28/12	1.0	Gas <b>Diesel</b> Oil o-Terphenyl	< 0.25 U <b>&gt; 0.50</b> < 0.50 U 78.5%
VK65G 12-18411	MW-13S-092412 HC ID: ---	09/27/12	09/28/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 84.4%
VK65H 12-18412	MW-12S-092412 HC ID: ---	09/27/12	09/28/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 77.9%

**ORGANICS ANALYSIS DATA SHEET**

NWTPH-HCID Method by GC/FID  
Extraction Method: SW3510C  
Page 2 of 2

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510

Matrix: Water

Data Release Authorized:  
Reported: 10/01/12

ARI ID	Sample ID	Extraction Date	Analysis Date	DL	Range	Result
VK65I 12-18413	MW-11S-092412 HC ID: ---	09/27/12	09/28/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 90.4%
VK65J 12-18414	MW-12D-092412 HC ID: ---	09/27/12	09/28/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 87.7%
VK65K 12-18415	MW-11D-092412 HC ID: ---	09/27/12	09/28/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 74.4%
VK65L 12-18416	MW-13D-092412 HC ID: <b>GRO/DRO/MOTOR OIL</b>	09/27/12	09/28/12	1.0	<b>Gas</b> <b>Diesel</b> <b>Oil</b> o-Terphenyl	<b>&gt; 0.25</b> <b>&gt; 0.50</b> <b>&gt; 0.50</b> 82.1%
VK65M 12-18417	MW-DUP-092412 HC ID: <b>DRO</b>	09/27/12	09/28/12	1.0	Gas <b>Diesel</b> Oil o-Terphenyl	< 0.25 U <b>&gt; 0.50</b> < 0.50 U 76.1%

Reported in mg/L (ppm)

Gas value based on total peaks in the range from Toluene to C12.  
Diesel value based on the total peaks in the range from C12 to C24.  
Oil value based on the total peaks in the range from C24 to C38.

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a012.d  
Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/01/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VK65MBW1  
Client ID: VK65MBW1  
Injection: 28-SEP-2012 11:14  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.290	-0.003	11583	21573	WATPHG	(Tol-C12)	336350	18.16
C8	1.544	-0.007	2955	12465	WATPHD	(C12-C24)	37480	<del>2.34</del>
C10	3.160	-0.006	624	475	WATPHM	(C24-C38)	66461	<del>5.02</del>
C12	4.075	0.001	266	551	AK102	(C10-C25)	65225	3.45
C14	4.757	0.000	183	185	AK103	(C25-C36)	47834	5.20
C16	5.346	0.004	202	158				
C18	5.880	-0.025	1138	1208				
C20	6.475	0.004	154	112	JET-A	(C10-C18)	50728	9.37
C22	7.018	-0.004	80	23	MIN.OIL	(C24-C38)	66461	4.94
C24	7.554	0.011	76	104				
C25	7.815	0.019	2678	2733				
C26	8.039	0.002	92	121				
C28	8.491	-0.001	1971	1877				
C32	9.293	-0.007	456	220				
C34	9.659	-0.014	542	308				
Filter Peak	11.328	0.005	1978	3434	BUNKERC	(C10-C38)	131490	14.36
C36	10.061	0.028	852	1525				
C38	10.375	-0.009	1151	2508				
C40	10.757	0.034	1166	873				
o-terph	6.045	0.001	961138	884853				
Triacon Surr	8.925	0.008	855560	868698	NAS DIES	(C10-C24)	65029	3.55

Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.80) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.38) AK103(7.80 - 10.03) OR Diesel(3.17 - 8.49)

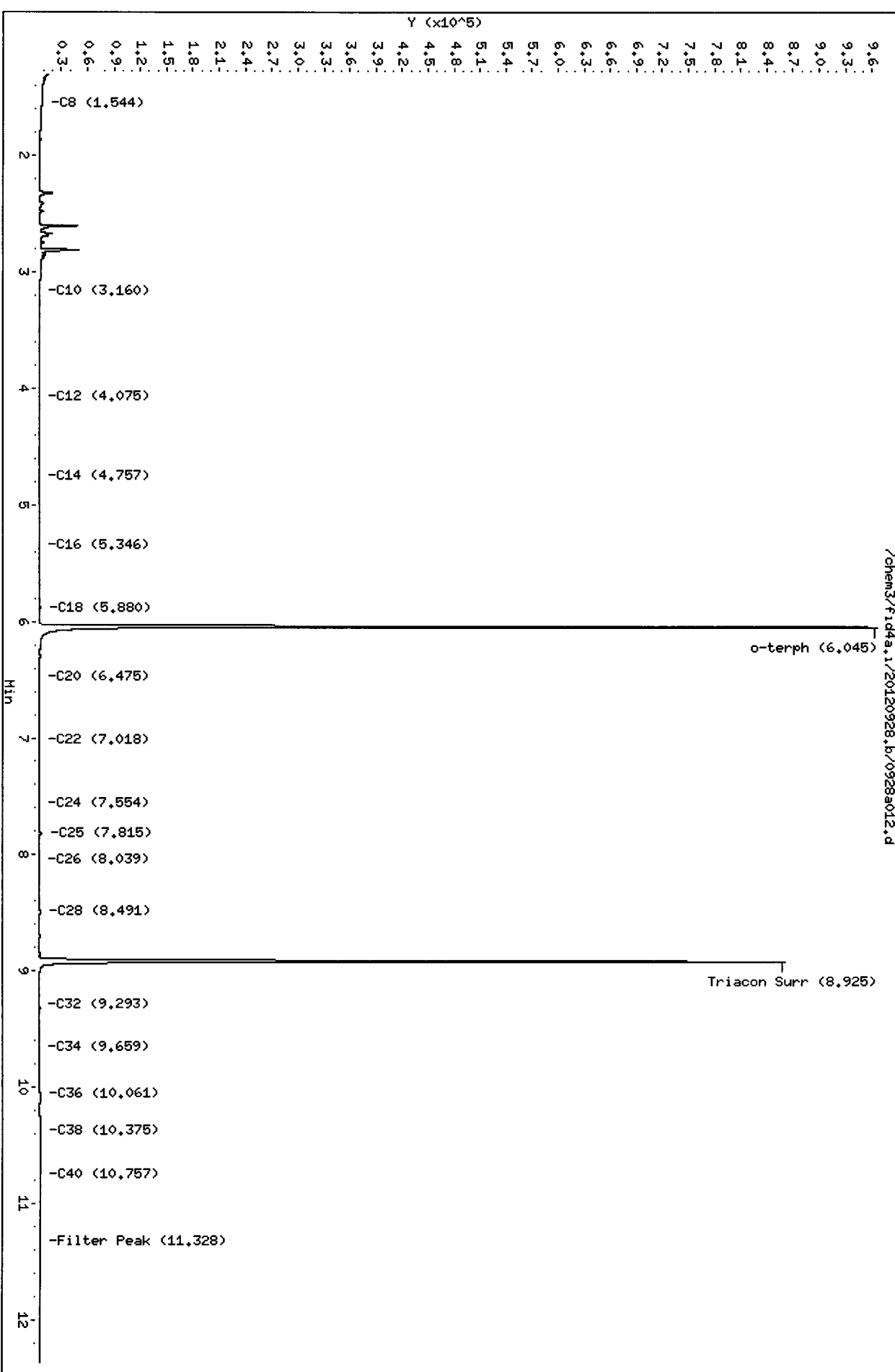
Surrogate	Area	Amount	%Rec
o-Terphenyl	884853	40.8	90.7
Triacontane	868698	46.7	103.8

*JR* 10/01/12

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

/chem3/fid4a.1/20120928.b/0928a012.d



Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a015.d      ARI ID: VK65A  
 Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m      Client ID: MW-15D-092412  
 Instrument: fid4a.i      Injection: 28-SEP-2012 12:18  
 Operator: JR  
 Report Date: 10/01/2012      Dilution Factor: 1  
 Macro: 24-AUG-2012  
 Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.281	-0.012	13369	17372	WATPHG	(Tol-C12)	1276195	68.92
C8	1.539	-0.012	2115	6317	WATPHD	(C12-C24)	6592129	411.64
C10	3.181	0.015	14076	40203	WATPHM	(C24-C38)	1166288	88.13
C12	4.082	0.008	26282	43702	AK102	(C10-C25)	7608108	401.92
C14	4.746	-0.011	69734	127719	AK103	(C25-C36)	941054	102.27
C16	5.365	0.023	36434	68534				
C18	5.919	0.015	32655	103622				
C20	6.474	0.003	21418	9273	JET-A	(C10-C18)	5398505	996.68
C22	7.018	-0.003	18132	21715	MIN.OIL	(C24-C38)	1166288	86.77
C24	7.567	0.024	18041	37537				
C25	7.806	0.010	18453	35889				
C26	8.028	-0.009	13610	34008				
C28	8.504	0.012	19948	50630				
C32	9.300	-0.001	6130	14319				
C34	9.677	0.004	4873	14974				
Filter Peak	11.311	-0.012	1981	9326	BUNKERC	(C10-C38)	8608735	940.22
C36	10.042	0.009	3653	12402				
C38	10.402	0.017	2868	7805				
C40	10.725	0.002	2059	1301				
o-terph	6.046	0.001	908702	749522				
Triacon Surr	8.918	0.001	714380	782439	NAS DIES	(C10-C24)	7442447	406.16

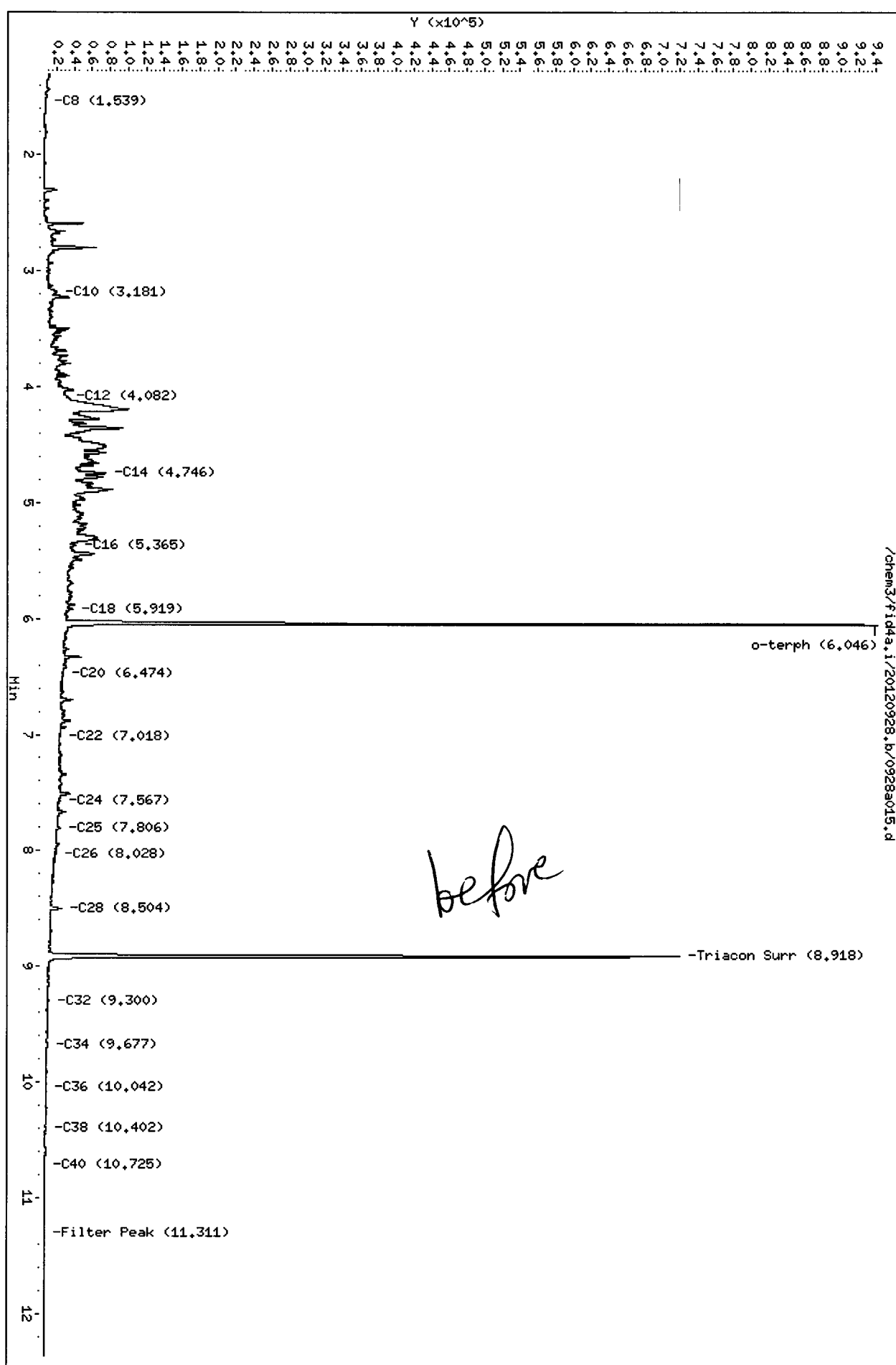
Range Times: NW Diesel(4.074 - 7.543)      AK102(3.17 - 7.80)      Jet A(3.17 - 5.90)  
 NW M.Oil(7.54 - 10.38)      AK103(7.80 - 10.03)      OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	749522	34.6	76.9 M
Triacontane	782439	42.1	93.5

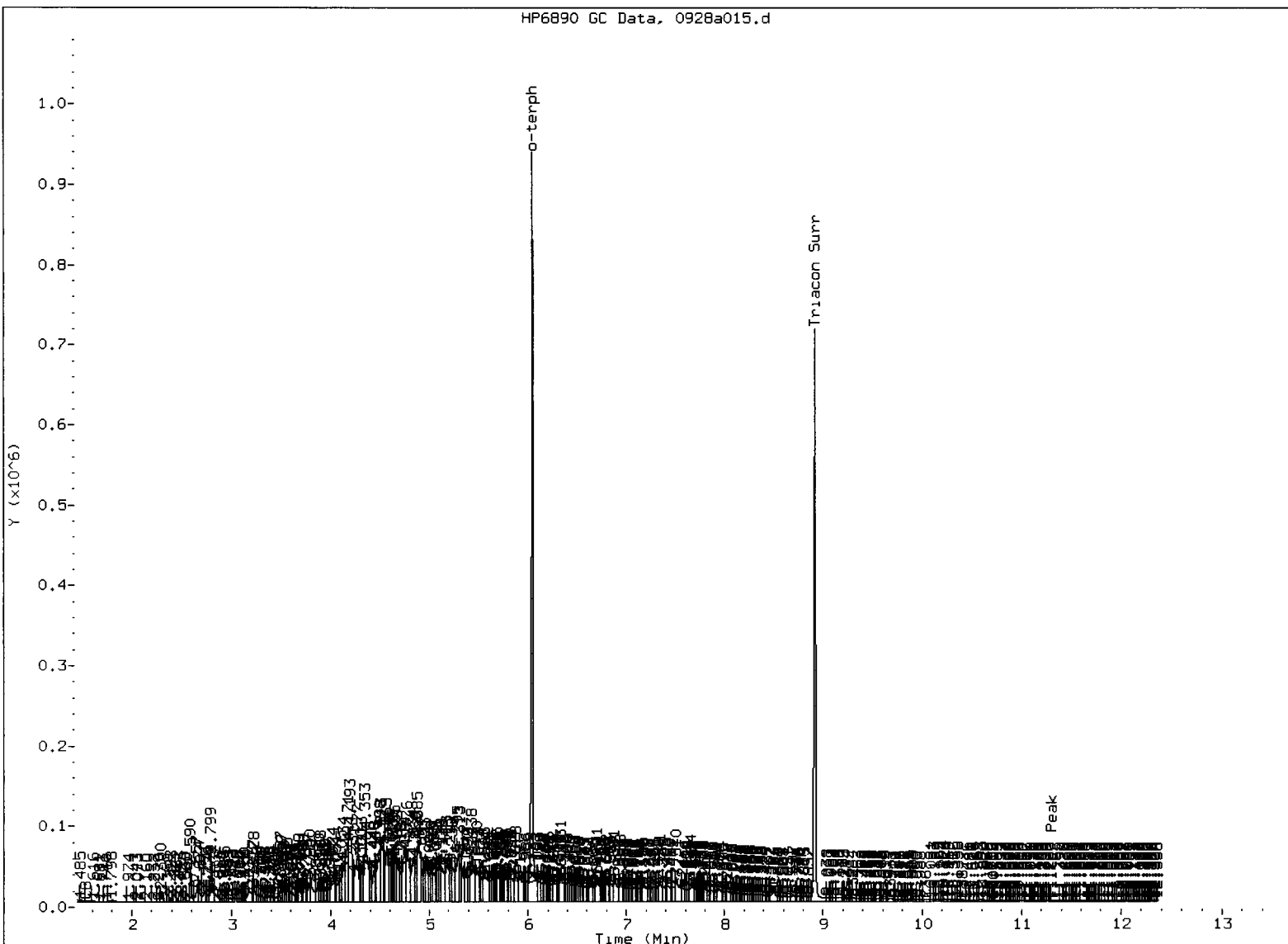
*JK 10/01/12*

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



*before*



MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst:       *JK*      

Date:       *10/01/12*



Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a016.d      ARI ID: VK65B  
 Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m      Client ID: MW-16D-092412  
 Instrument: fid4a.i      Injection: 28-SEP-2012 12:39  
 Operator: JR  
 Report Date: 10/01/2012      Dilution Factor: 1  
 Macro: 24-AUG-2012  
 Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.272	-0.021	10597	15323	WATPHG	(Tol-C12)	689004	37.21
C8	1.540	-0.011	7476	34031	WATPHD	(C12-C24)	4666532	291.40
C10	3.157	-0.009	1588	1478	WATPHM	(C24-C38)	973450	73.56
C12	4.086	0.012	12608	23001	AK102	(C10-C25)	5093356	269.07
C14	4.771	0.014	19008	13722	AK103	(C25-C36)	804354	87.41
C16	5.361	0.019	33056	53919				
C18	5.909	0.004	27154	30214				
C20	6.467	-0.004	22942	8599	JET-A	(C10-C18)	2963642	547.15
C22	7.026	0.005	18608	24617	MIN.OIL	(C24-C38)	973450	72.43
C24	7.555	0.011	15861	4080				
C25	7.796	0.000	14304	7298				
C26	8.025	-0.012	11762	25779				
C28	8.490	-0.002	9541	9503				
C32	9.314	0.014	5271	16443				
C34	9.679	0.006	3007	1412				
Filter Peak	11.322	-0.001	1772	457	BUNKERC	(C10-C38)	5937018	648.42
C36	10.042	0.008	2108	1042				
C38	10.380	-0.005	1883	674				
C40	10.726	0.003	1680	1386				
o-terph	6.045	0.001	991052	807970				
Triacon Surr	8.927	0.010	775336	826436	NAS DIES	(C10-C24)	4963569	270.88

Range Times: NW Diesel(4.074 - 7.543)      AK102(3.17 - 7.80)      Jet A(3.17 - 5.90)  
 NW M.Oil(7.54 - 10.38)      AK103(7.80 - 10.03)      OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	807970	37.3	82.9 M
Triacontane	826436	44.5	98.8

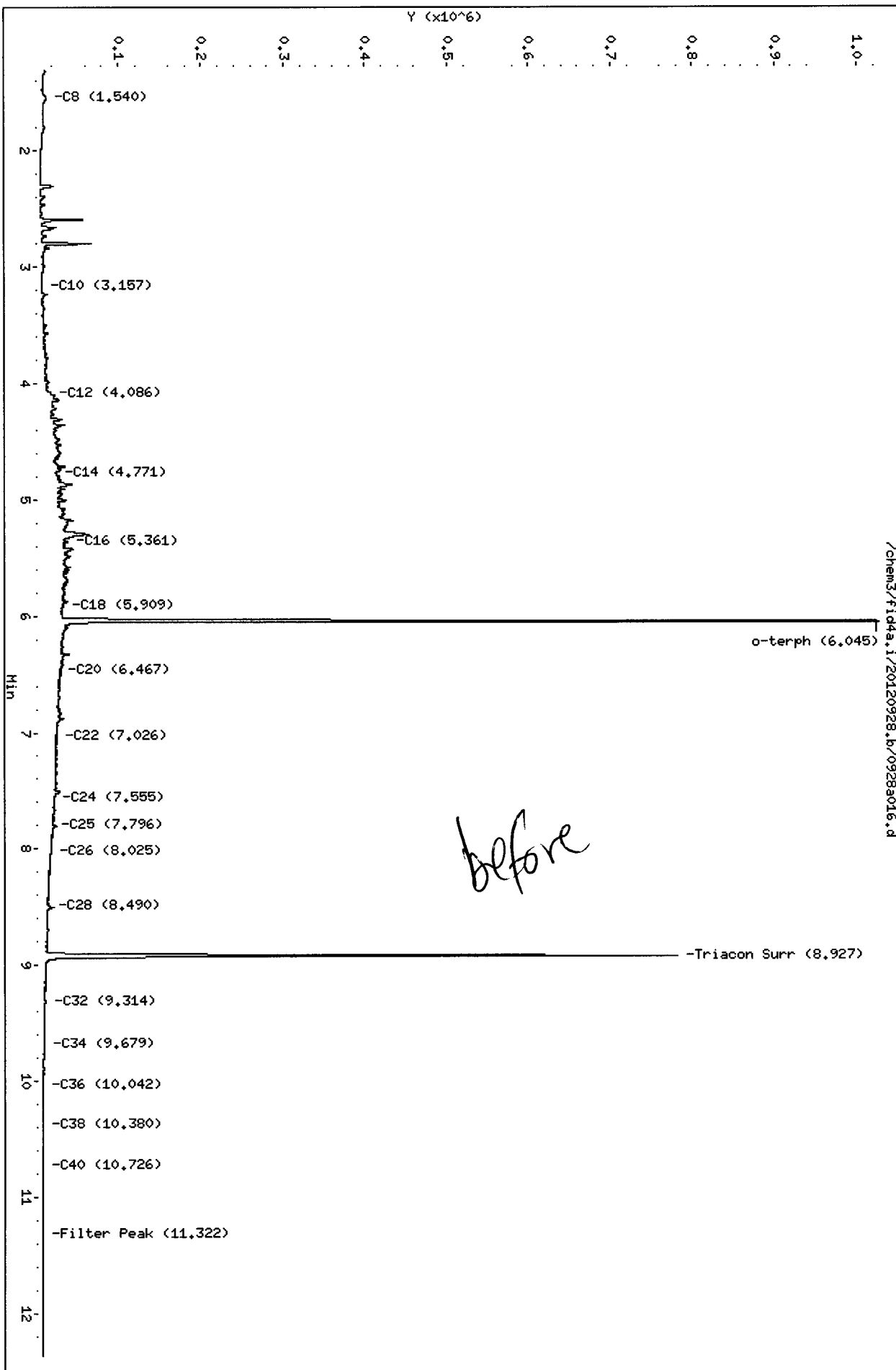
*jr 10/01/12*

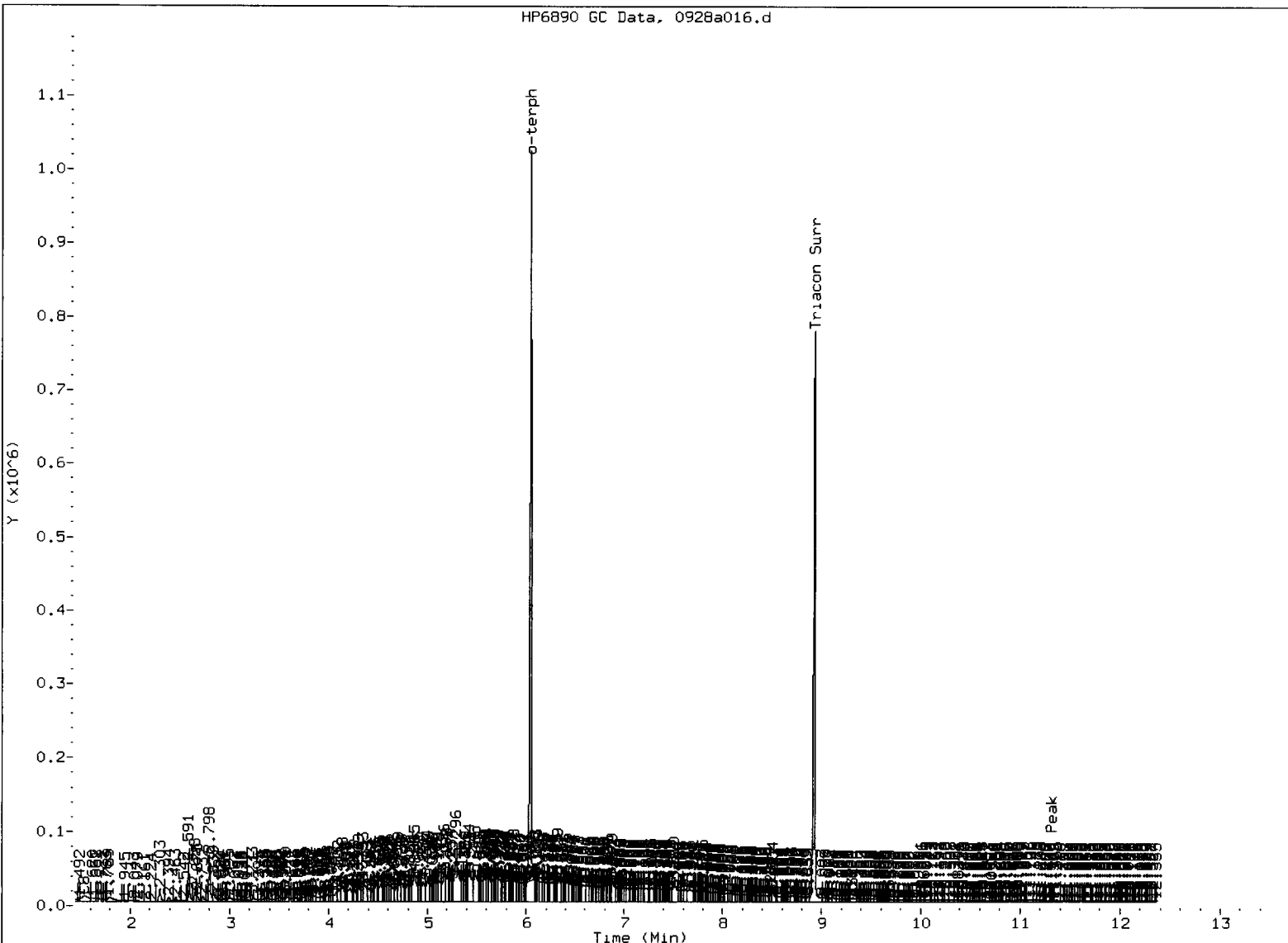
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

Data File: /chem3/fid4a.1/20120928.b/0928a016.d  
Date : 28-SEP-2012 12:39  
Client ID: MW-16D-092412  
Sample Info: VK65B  
Column phase: RTX-1

Instrument: fid4a.1  
Operator: JR  
Column diameter: 0.25





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skimmed surrogate

Analyst:   P  

Date:   10/01/02

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a017.d  
Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/01/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VK65C  
Client ID: MW-14D-092412  
Injection: 28-SEP-2012 13:01  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.272	-0.021	15513	21072	WATPHG	(Tol-C12)	899779	48.59
C8	1.543	-0.008	2402	6689	WATPHD	(C12-C24)	4956861	309.53
C10	3.156	-0.010	2967	2923	WATPHM	(C24-C38)	4427072	334.52
C12	4.075	0.001	14000	17936	AK102	(C10-C25)	5756202	304.09
C14	4.742	-0.015	28011	74320	AK103	(C25-C36)	3811756	414.23
C16	5.342	-0.001	22831	23605				
C18	5.908	0.003	22335	7029				
C20	6.481	0.010	22066	31186	JET-A	(C10-C18)	2982277	550.59
C22	7.018	-0.004	28919	51000	MIN.OIL	(C24-C38)	4427072	329.38
C24	7.539	-0.004	49829	73071				
C25	7.791	-0.005	50212	130557				
C26	8.035	-0.002	50441	112429				
C28	8.492	0.000	56416	120076				
C32	9.289	-0.011	26696	21924				
C34	9.655	-0.019	25016	33497				
Filter Peak	11.324	0.001	3975	1572	BUNKERC	(C10-C38)	9900936	1081.35
C36	10.030	-0.003	19005	18974				
C38	10.382	-0.002	14868	25368				
C40	10.733	0.010	8953	5607				
o-terph	6.048	0.003	939638	797546				
Triacon Surr	8.930	0.013	767923	806348	NAS DIES	(C10-C24)	5473863	298.73

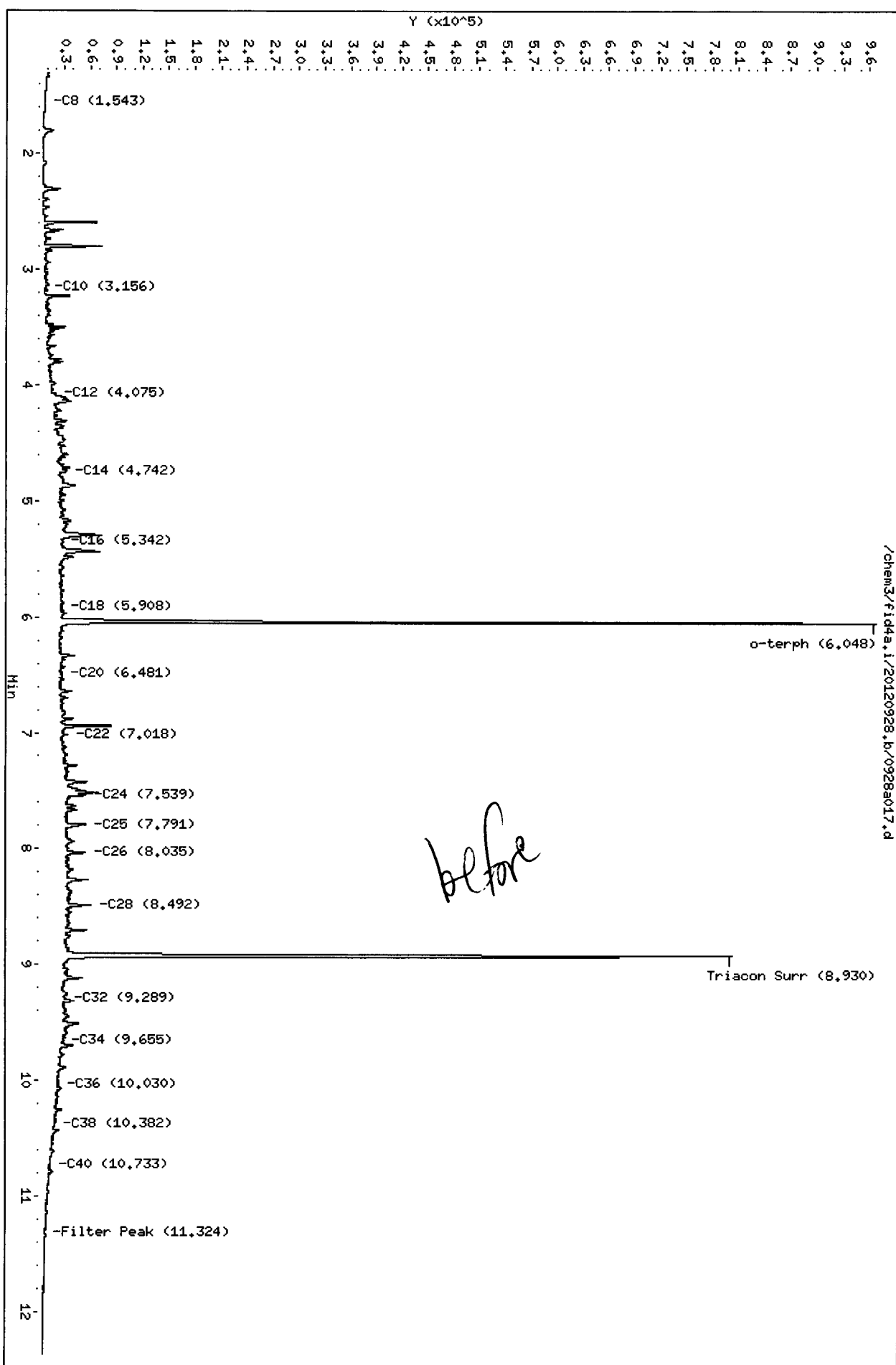
Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.80) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.38) AK103(7.80 - 10.03) OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	797546	36.8	81.8 M
Triacontane	806348	43.4	96.4 M

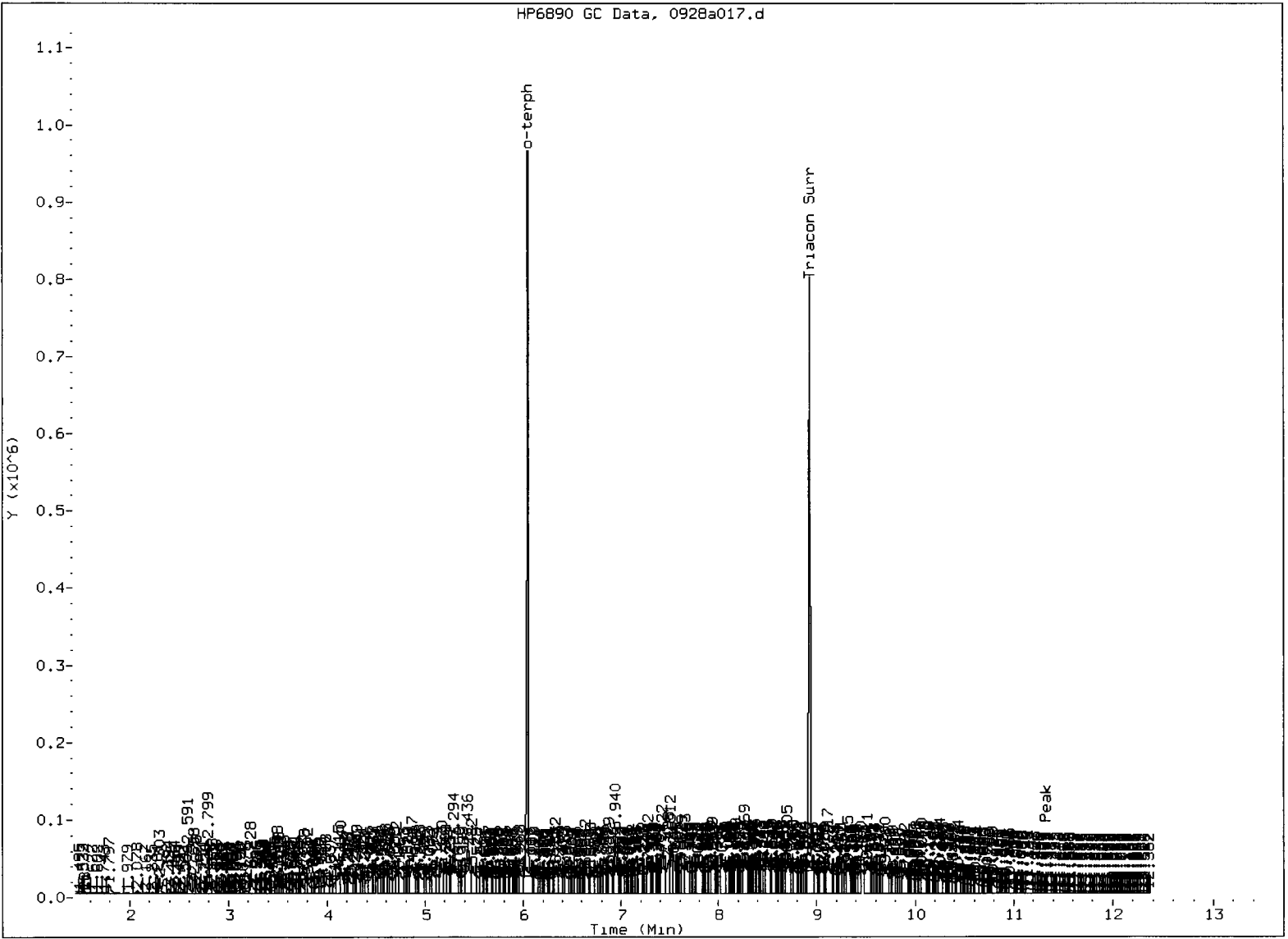
*10/01/12*

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



HP6890 GC Data, 0928a017.d



MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skimmed surrogate

Analyst:       JR      

Date:       10/01/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a018.d      ARI ID: VK65D  
 Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m      Client ID: MW-15S-092412  
 Instrument: fid4a.i      Injection: 28-SEP-2012 13:22  
 Operator: JR  
 Report Date: 10/01/2012      Dilution Factor: 1  
 Macro: 24-AUG-2012  
 Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.272	-0.021	13926	18834	WATPHG	(Tol-C12)	1299428	70.17
C8	1.541	-0.010	3321	7976	WATPHD	(C12-C24)	6900155	<u>430.87</u>
C10	3.179	0.013	6362	7689	WATPHM	(C24-C38)	3051066	<u>230.54</u>
C12	4.068	-0.006	20993	26058	AK102	(C10-C25)	7986073	421.89
C14	4.757	0.000	47711	119003	AK103	(C25-C36)	2588482	281.29
C16	5.349	0.006	34498	12216				
C18	5.905	0.000	31900	43249				
C20	6.466	-0.005	27379	29661	JET-A	(C10-C18)	4882872	901.48
C22	7.018	-0.004	27467	55570	MIN.OIL	(C24-C38)	3051066	227.00
C24	7.562	0.019	27985	38322				
C25	7.791	-0.005	33569	32967				
C26	8.032	-0.005	32156	86236				
C28	8.489	-0.003	32421	67008				
C32	9.292	-0.009	15596	12435				
C34	9.679	0.005	14269	6630				
Filter Peak	11.326	0.003	3116	1795	BUNKERC	(C10-C38)	10756217	1174.76
C36	10.032	-0.001	10908	16305				
C38	10.392	0.008	8215	13611				
C40	10.718	-0.004	5752	3067				
o-terph	6.047	0.002	955089	807433				
Triacon Surr	8.926	0.009	770797	807500	NAS DIES	(C10-C24)	7705151	420.50

Range Times: NW Diesel(4.074 - 7.543)      AK102(3.17 - 7.80)      Jet A(3.17 - 5.90)  
 NW M.Oil(7.54 - 10.38)      AK103(7.80 - 10.03)      OR Diesel(3.17 - 8.49)

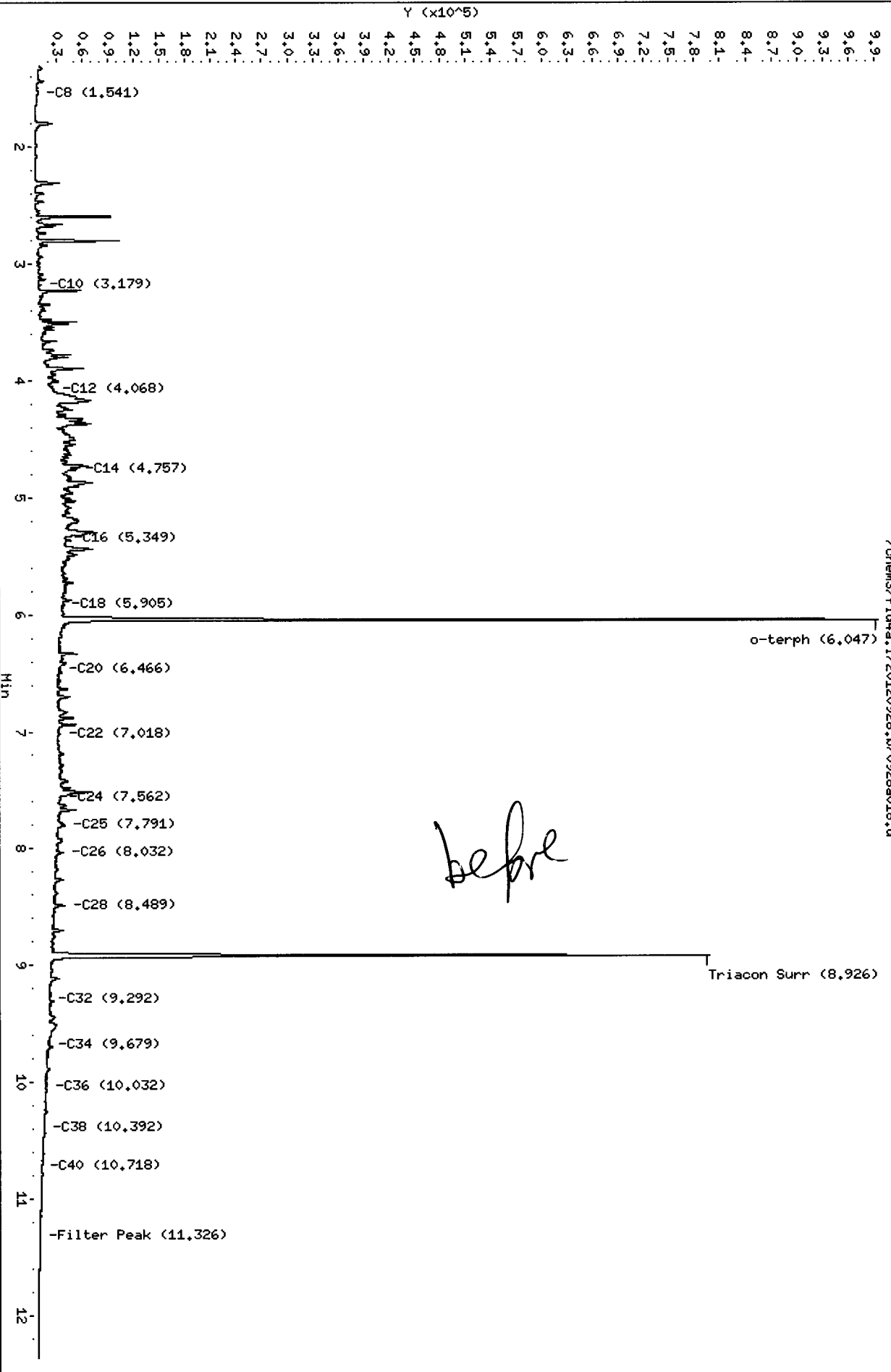
Surrogate	Area	Amount	%Rec
o-Terphenyl	807433	37.3	82.8 M
Triacontane	807500	43.4	96.5 M

*J. 10/01/12*

M Indicates the peak was manually integrated

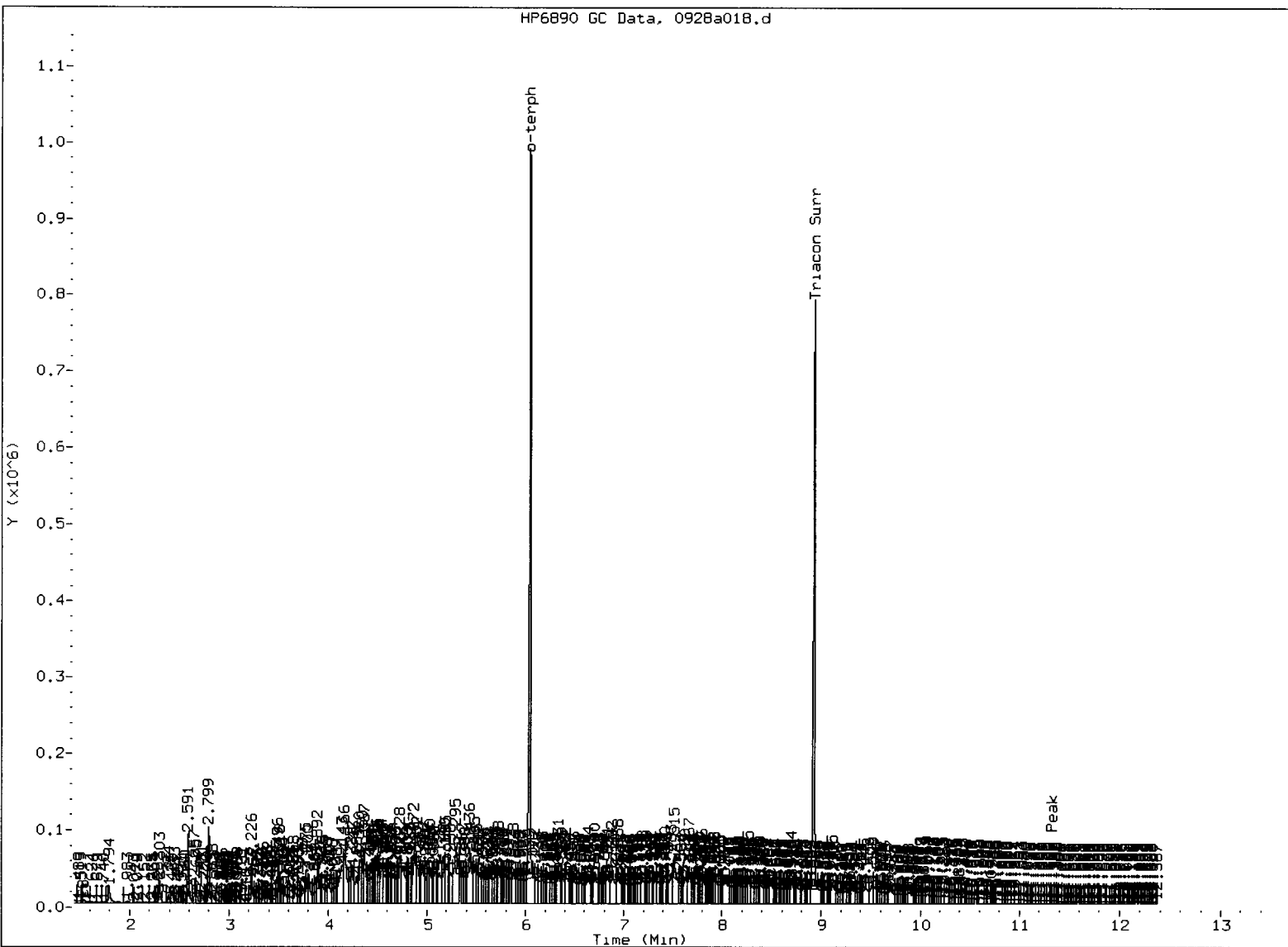
Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

/chem3/fid4a.i/20120928.b/0928a018.d





HP6890 GC Data, 0928a018.d



MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst:     JK    

Date:     10/01/72

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a019.d      ARI ID: VK65E  
 Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m      Client ID: MW-16S-092412  
 Instrument: fid4a.i      Injection: 28-SEP-2012 13:44  
 Operator: JR  
 Report Date: 10/01/2012      Dilution Factor: 1  
 Macro: 24-AUG-2012  
 Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.282	-0.011	9652	15259	WATPHG	(Tol-C12)	667764	36.06
C8	1.546	-0.005	2345	8864	WATPHD	(C12-C24)	4633375	289.33
C10	3.192	0.026	2280	4384	WATPHM	(C24-C38)	1231844	93.08
C12	4.090	0.016	13296	24034	AK102	(C10-C25)	5074408	268.07
C14	4.739	-0.018	23981	62946	AK103	(C25-C36)	1033913	112.36
C16	5.350	0.008	27630	20840				
C18	5.897	-0.008	25626	14463				
C20	6.469	-0.002	21799	9386	JET-A	(C10-C18)	2950572	544.74
C22	7.018	-0.004	20022	32226	MIN.OIL	(C24-C38)	1231844	91.65
C24	7.540	-0.004	22358	31122				
C25	7.791	-0.005	20218	28864				
C26	8.034	-0.003	18602	44790				
C28	8.490	-0.001	15113	18510				
C32	9.296	-0.004	5254	4261				
C34	9.686	0.012	4086	2923				
Filter Peak	11.318	-0.005	2199	1698	BUNKERC	(C10-C38)	6161134	672.90
C36	10.027	-0.006	3540	8781				
C38	10.389	0.005	2645	1306				
C40	10.726	0.004	2427	1436				
o-terph	6.046	0.002	966565	790203				
Triacon Surr	8.930	0.013	745525	829622	NAS DIES	(C10-C24)	4929290	269.01

Range Times: NW Diesel (4.074 - 7.543)      AK102 (3.17 - 7.80)      Jet A (3.17 - 5.90)  
 NW M.Oil (7.54 - 10.38)      AK103 (7.80 - 10.03)      OR Diesel (3.17 - 8.49)

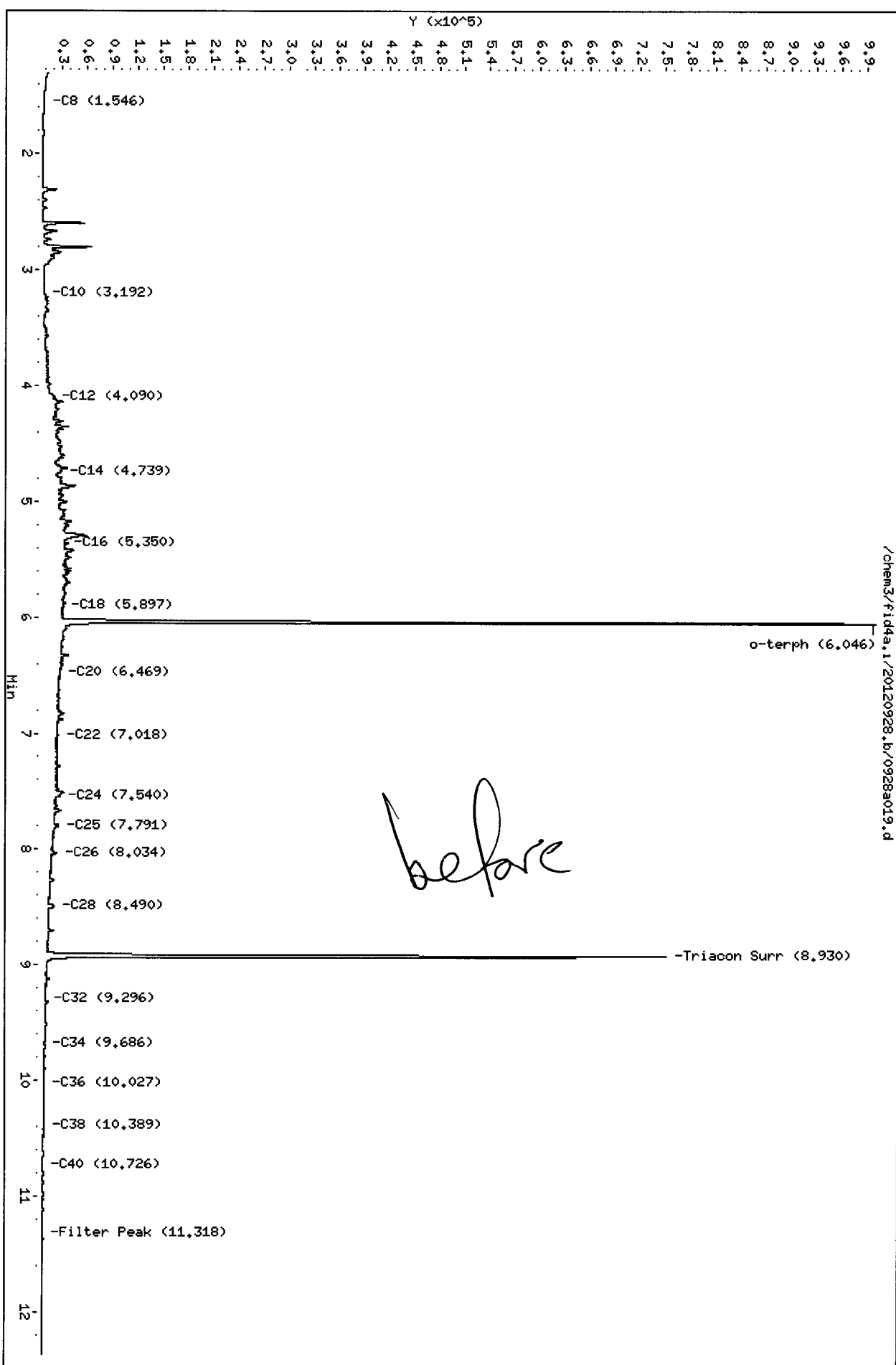
Surrogate	Area	Amount	%Rec
o-Terphenyl	790203	36.5	81.0
Triacontane	829622	44.6	99.2

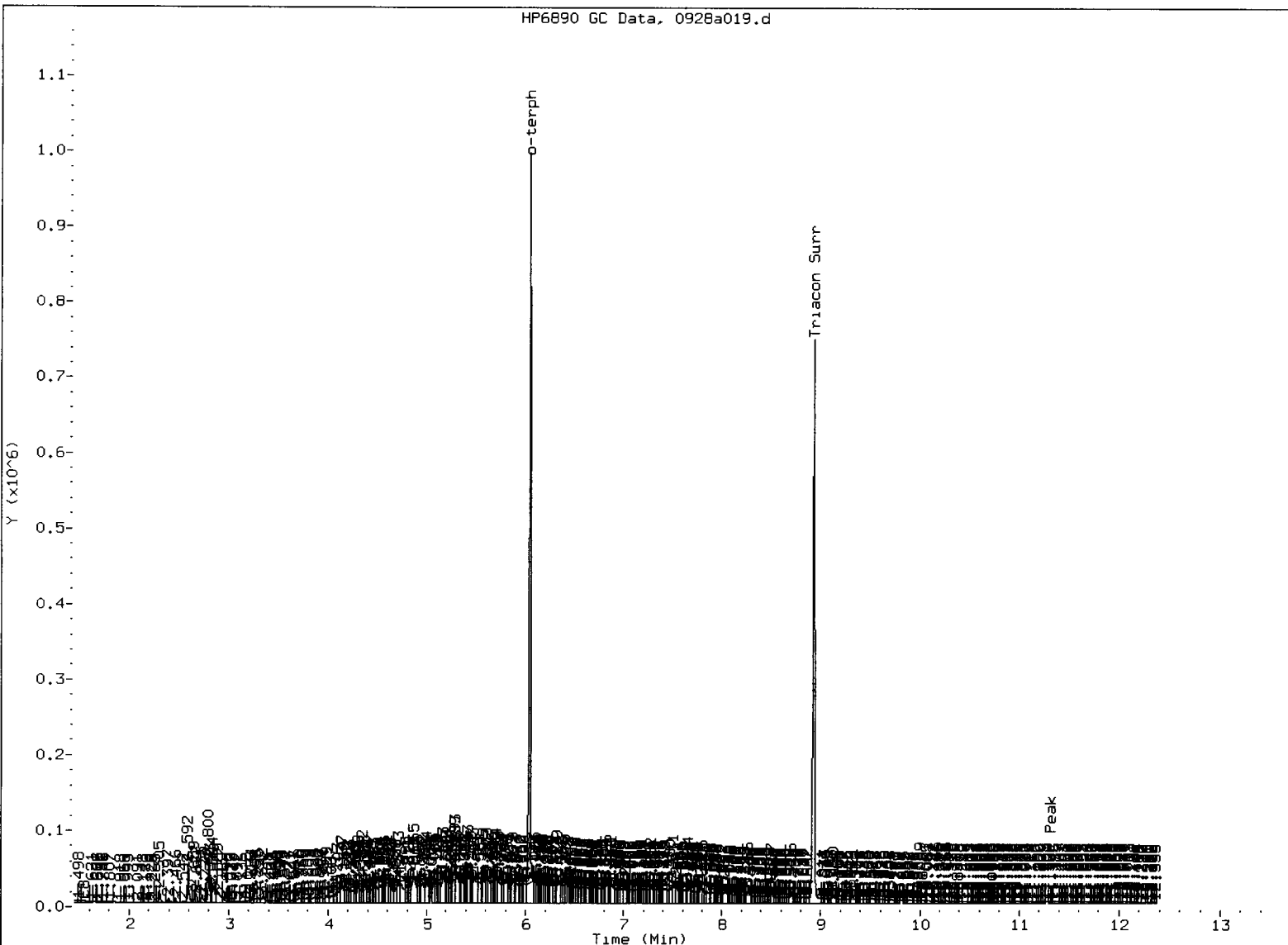
*JR 10/01/12*

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

/chem3/fid4a.1/20120928.b/0928a019.d





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst:   *A*  

Date:   10/01/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a022.d      ARI ID: VK65F  
 Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m      Client ID: MW-14S-092412  
 Instrument: fid4a.i      Injection: 28-SEP-2012 14:48  
 Operator: JR  
 Report Date: 10/01/2012      Dilution Factor: 1  
 Macro: 24-AUG-2012  
 Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.274	-0.018	12567	17727	WATPHG	(Tol-C12)	1144687	61.82
C8	1.551	0.000	2038	5577	WATPHD	(C12-C24)	5446831	340.12
C10	3.179	0.013	4214	5808	WATPHM	(C24-C38)	1101952	83.27
C12	4.082	0.008	19929	33541	AK102	(C10-C25)	6312417	333.47
C14	4.758	0.001	45733	113748	AK103	(C25-C36)	907718	98.64
C16	5.353	0.010	28536	14585				
C18	5.913	0.008	24368	40579				
C20	6.469	-0.002	18772	18848	JET-A	(C10-C18)	4346651	802.48
C22	7.020	-0.002	16839	25788	MIN.OIL	(C24-C38)	1101952	81.99
C24	7.542	-0.002	16516	17258				
C25	7.789	-0.007	14426	10146				
C26	8.041	0.004	11951	14002				
C28	8.488	-0.004	10879	13713				
C32	9.289	-0.011	5982	14595				
C34	9.680	0.007	3477	1936				
Filter Peak	11.315	-0.008	1925	1790	BUNKERC	(C10-C38)	7265537	793.52
C36	10.021	-0.012	2807	6895				
C38	10.374	-0.011	2299	6947				
C40	10.711	-0.011	2146	5708				
o-terph	6.045	0.001	946622	765505				
Triacon Surr	8.915	-0.002	748349	803080	NAS DIES	(C10-C24)	6163585	336.37

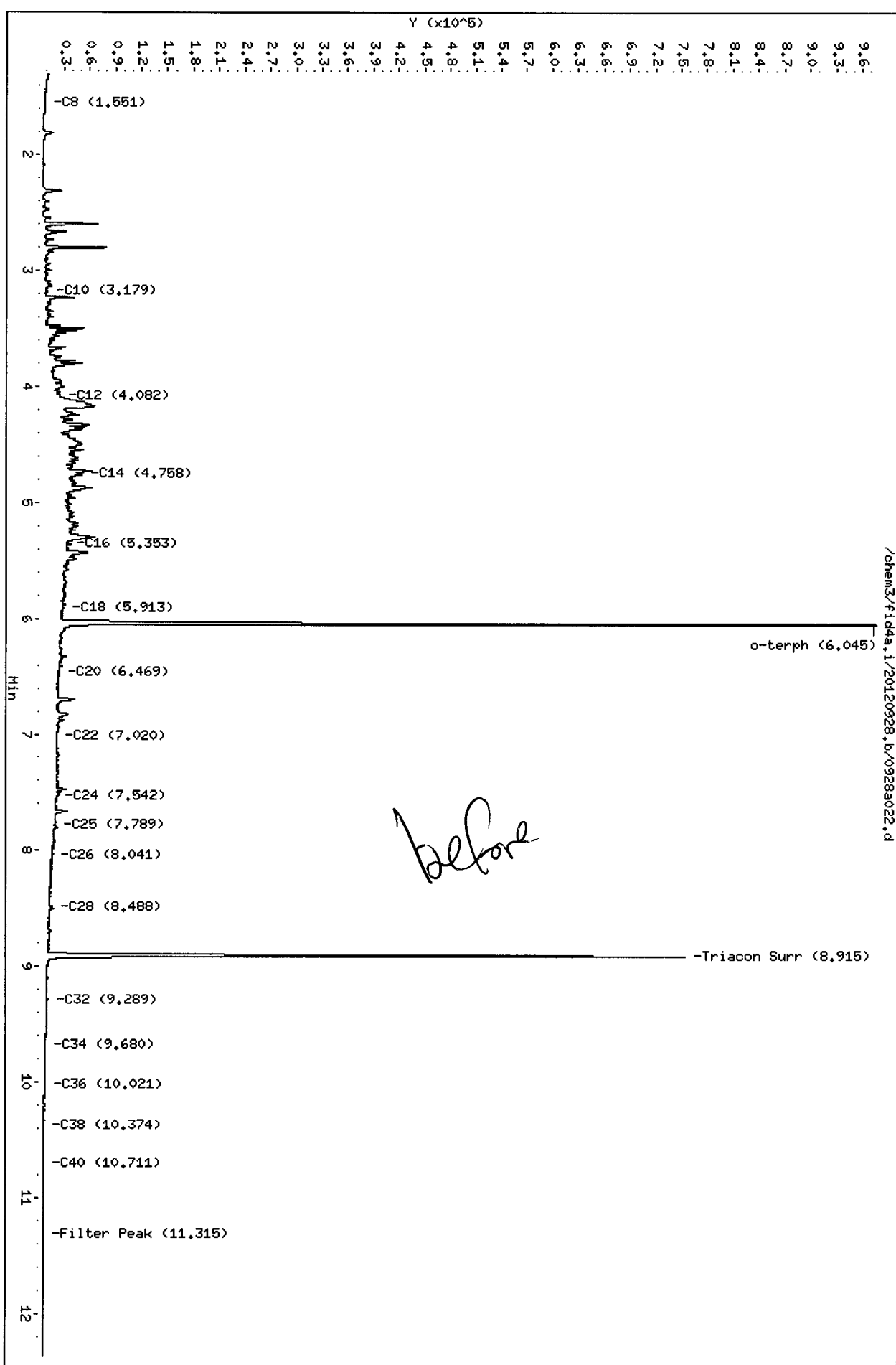
Range Times: NW Diesel(4.074 - 7.543)      AK102(3.17 - 7.80)      Jet A(3.17 - 5.90)  
 NW M.Oil(7.54 - 10.38)      AK103(7.80 - 10.03)      OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	765505	35.3	78.5 M
Triacotane	803080	43.2	96.0

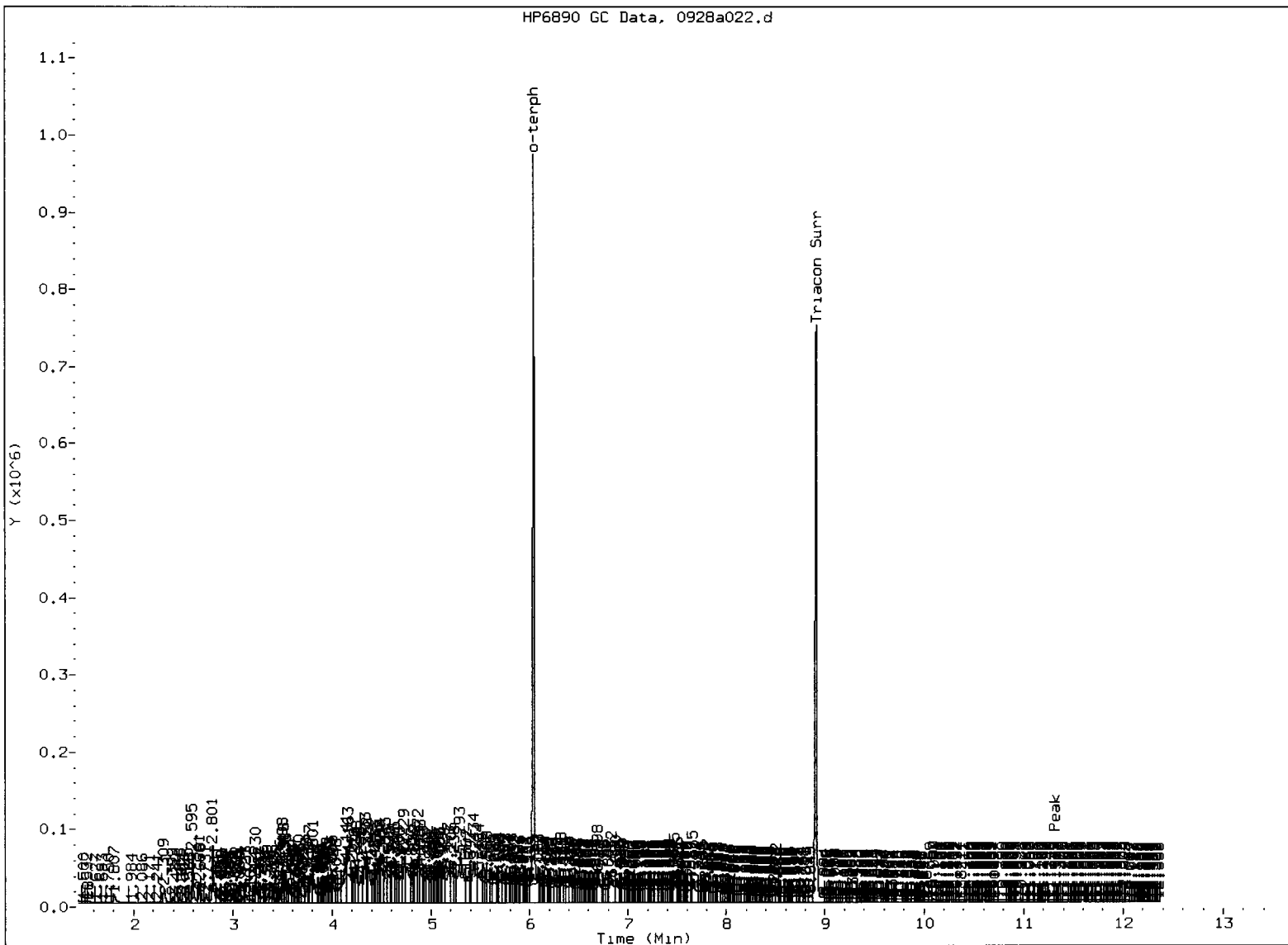
*JR 10/01/12*

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



HP6890 GC Data, 0928a022.d



MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skimmed surrogate

Analyst:           

Date: 10/21/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a023.d  
Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/01/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VK65G  
Client ID: MW-13S-092412  
Injection: 28-SEP-2012 15:10  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.282	-0.011	11373	15051	WATPHG	(Tol-C12)	919293	49.64
C8	1.541	-0.010	1875	5118	WATPHD	(C12-C24)	3559171	222.25
C10	3.156	-0.010	2732	2552	WATPHM	(C24-C38)	745745	56.35
C12	4.082	0.008	15629	17074	AK102	(C10-C25)	4241311	224.06
C14	4.750	-0.007	33805	78484	AK103	(C25-C36)	611296	66.43
C16	5.360	0.018	21667	40797				
C18	5.913	0.008	15223	25321				
C20	6.470	-0.001	11135	9638	JET-A	(C10-C18)	3036772	560.65
C22	7.017	-0.004	10668	19204	MIN.OIL	(C24-C38)	745745	55.48
C24	7.548	0.005	10368	7428				
C25	7.792	-0.004	9352	8314				
C26	8.032	-0.005	8344	19100				
C28	8.488	-0.003	6301	9145				
C32	9.306	0.006	4814	11525				
C34	9.671	-0.003	2999	2067				
Filter Peak	11.325	0.002	1847	1136	BUNKERC	(C10-C38)	4896190	534.75
C36	10.025	-0.008	2271	1754				
C38	10.382	-0.002	2045	3077				
C40	10.722	-0.001	1753	971				
o-terph	6.046	0.002	967719	823374				
Triacon Surr	8.923	0.006	779658	832927	NAS DIES	(C10-C24)	4150445	226.50

Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.80) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.38) AK103(7.80 - 10.03) OR Diesel(3.17 - 8.49)

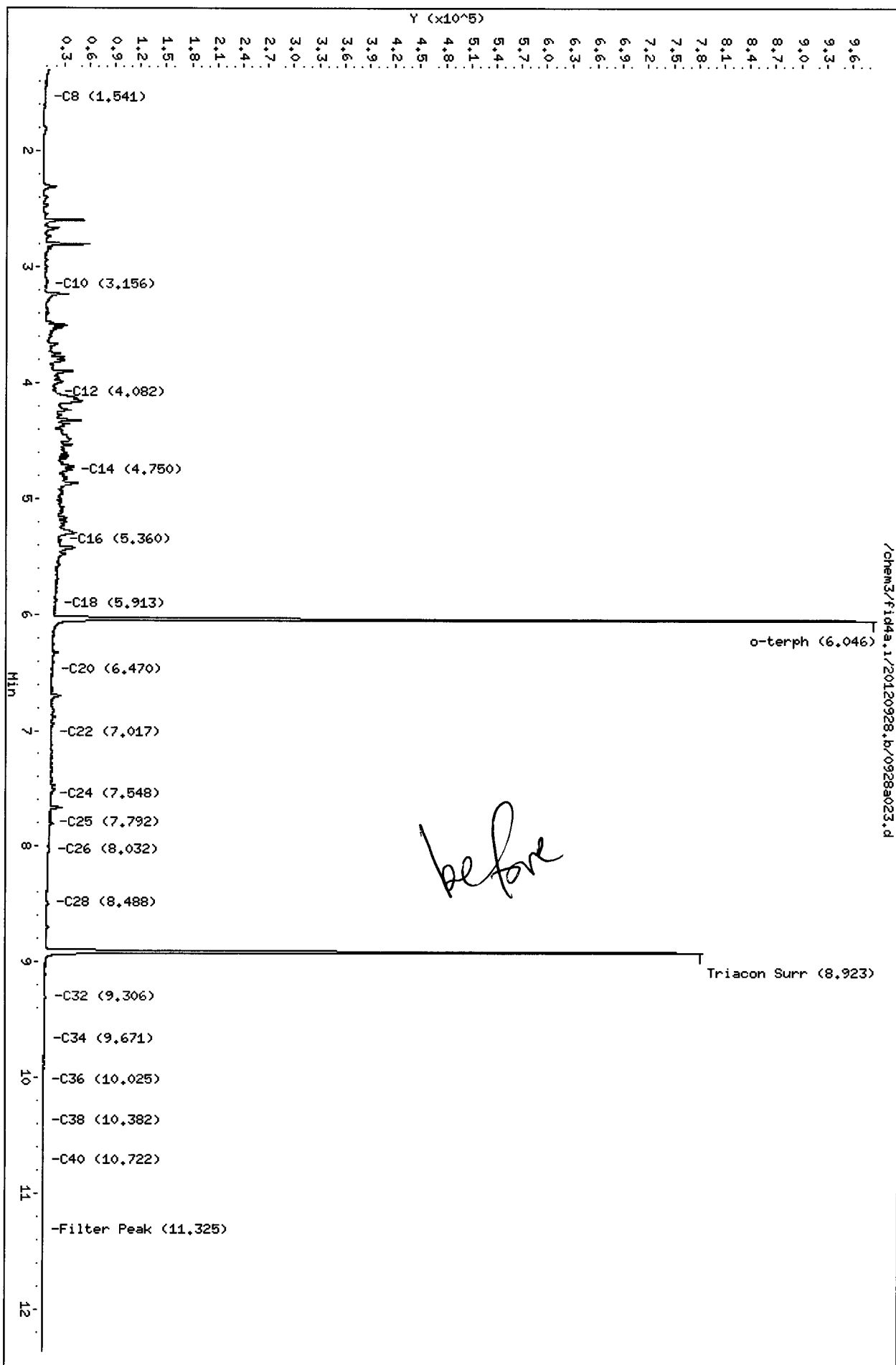
Surrogate	Area	Amount	%Rec
o-Terphenyl	823374	38.0	84.4
Triacontane	832927	44.8	99.6

*JR 10/01/12*

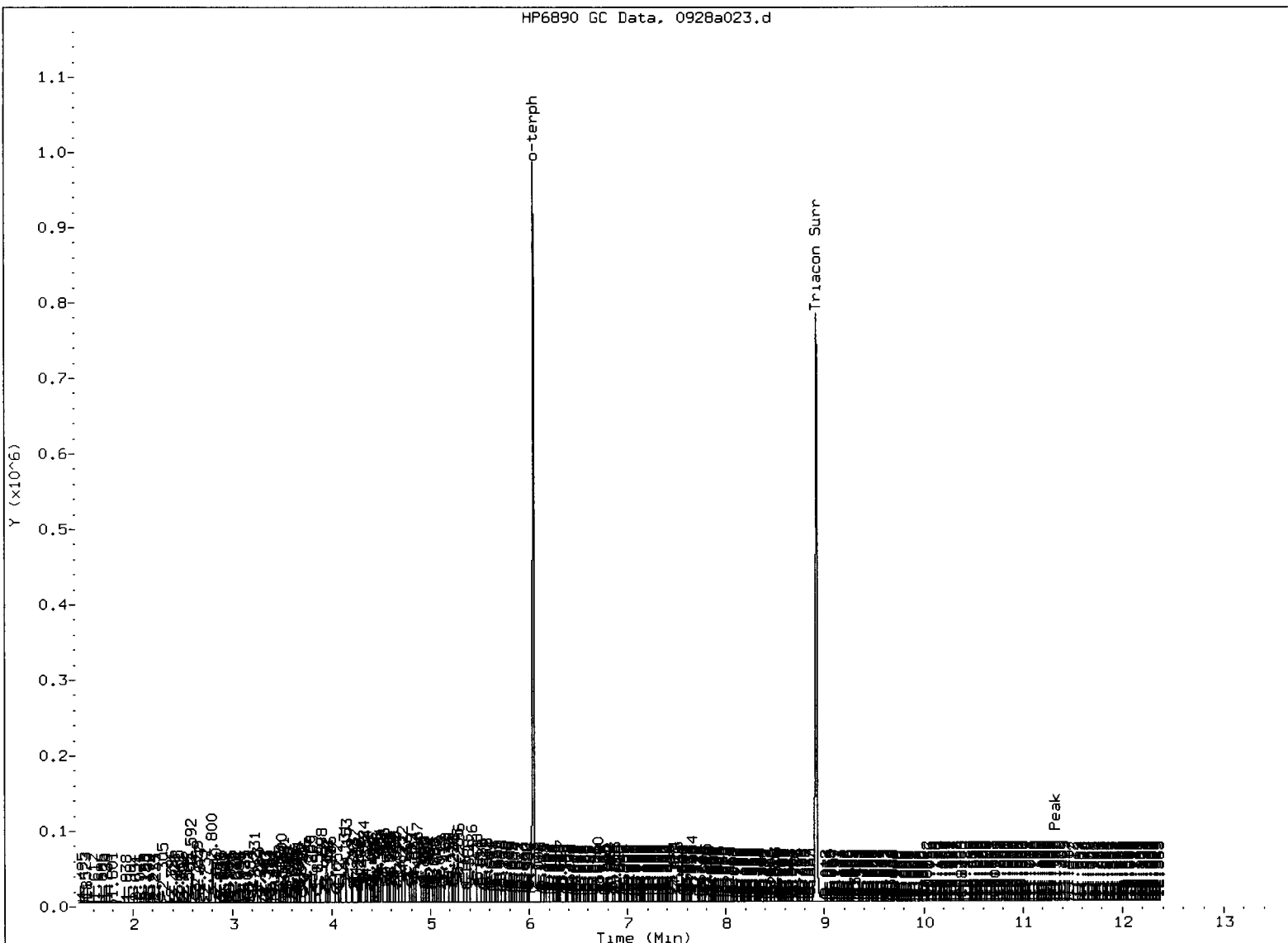
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012





HP6890 GC Data, 0928a023.d



MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skimmed surrogate

Analyst:           *A*          

Date:           10/01/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a024.d  
Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/01/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VK65H  
Client ID: MW-12S-092412  
Injection: 28-SEP-2012 15:31  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.271	-0.021	11377	20976	WATPHG	(Tol-C12)	700597	37.83
C8	1.587	0.036	1049	567	WATPHD	(C12-C24)	3652529	228.08
C10	3.183	0.017	2012	3617	WATPHM	(C24-C38)	837655	63.29
C12	4.052	-0.022	10255	14157	AK102	(C10-C25)	4063519	214.67
C14	4.752	-0.005	34032	78157	AK103	(C25-C36)	707770	76.91
C16	5.345	0.002	17291	5792				
C18	5.897	-0.007	14203	9872				
C20	6.467	-0.004	12074	14964	JET-A	(C10-C18)	2738775	505.64
C22	7.019	-0.003	12555	13088	MIN.OIL	(C24-C38)	837655	62.32
C24	7.537	-0.006	12802	17333				
C25	7.794	-0.002	11134	13458				
C26	8.027	-0.010	9355	12434				
C28	8.490	-0.001	7282	8509				
C32	9.310	0.010	4801	10518				
C34	9.671	-0.002	2775	988				
Filter Peak	11.320	-0.003	1661	759	BUNKERC	(C10-C38)	4806904	524.99
C36	10.039	0.005	2021	1939				
C38	10.388	0.003	1805	3177				
C40	10.734	0.011	1540	794				
o-terph	6.045	0.001	946896	759870				
Triacon Surr	8.927	0.009	739020	786215	NAS DIES	(C10-C24)	3969248	216.61

Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.80) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.38) AK103(7.80 - 10.03) OR Diesel(3.17 - 8.49)

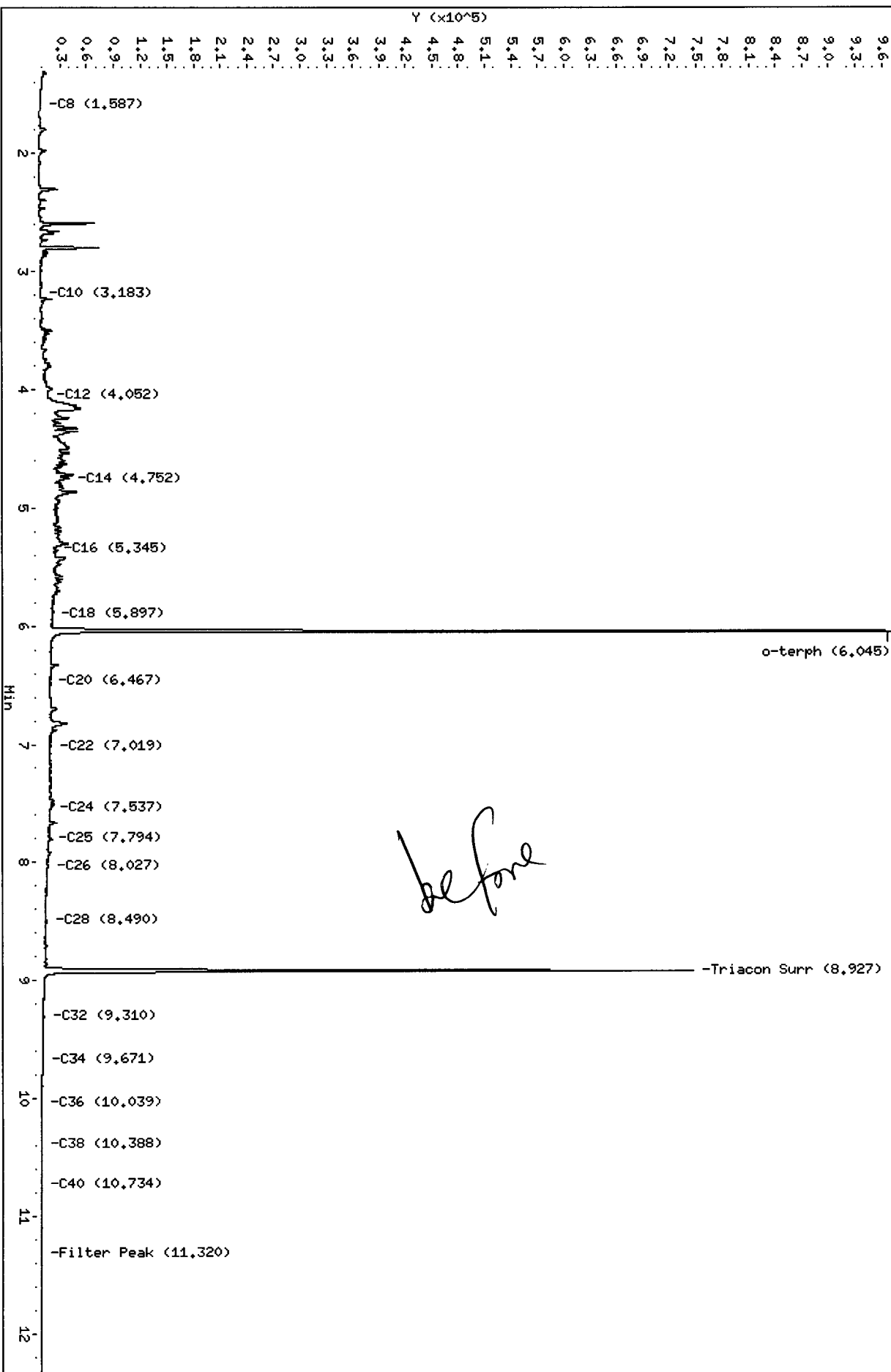
Surrogate	Area	Amount	%Rec
o-Terphenyl	759870	35.1	77.9
Triacontane	786215	42.3	94.0

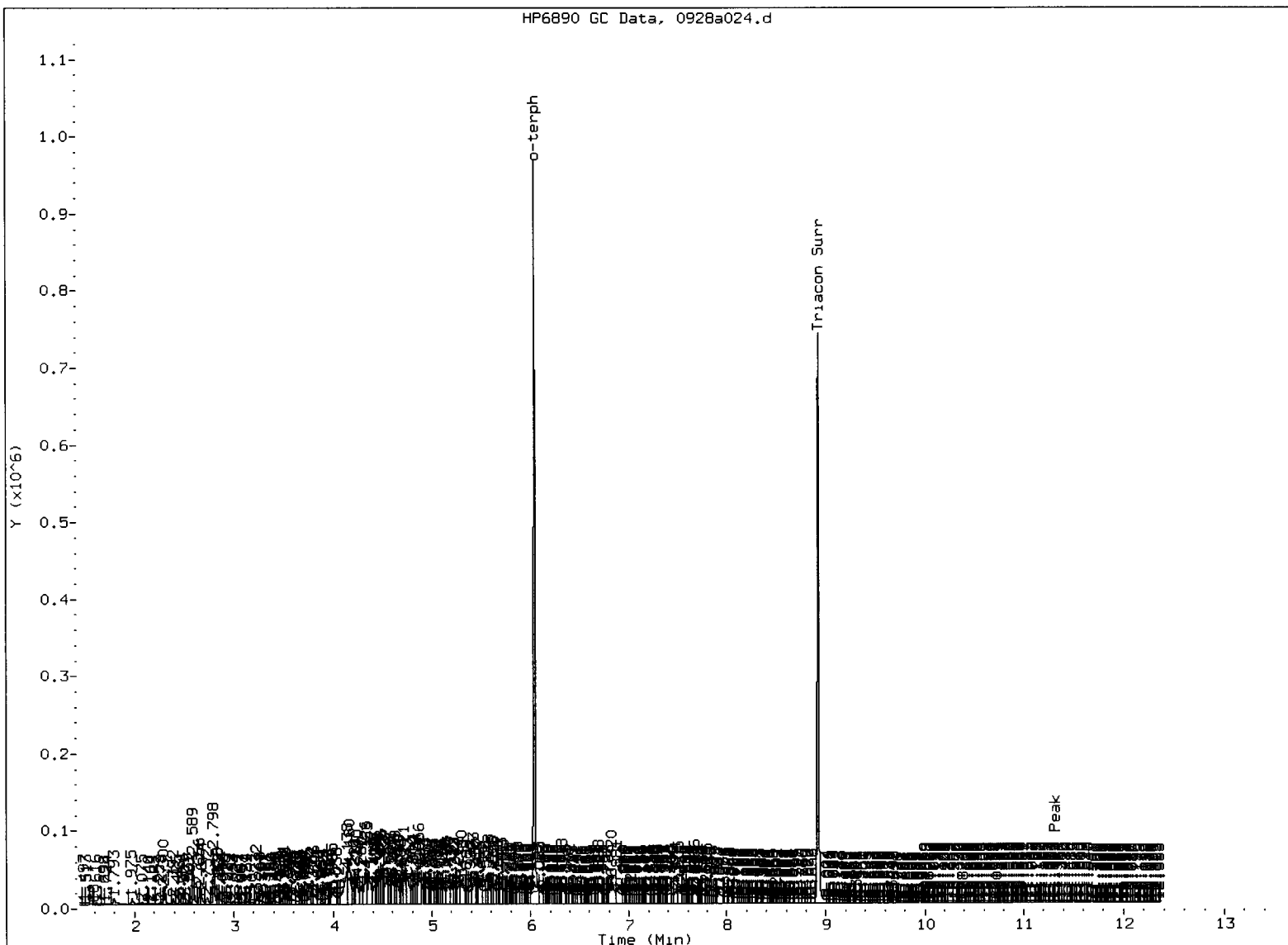
*JR* 10/01/12

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

/chem3/fid4a.1/20120928.b/0928a024.d





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst:           jm          

Date:           10/01/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a025.d  
Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/01/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VK65I  
Client ID: MW-11S-092412  
Injection: 28-SEP-2012 15:53  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.293	0.000	12883	12272	WATPHG	(Tol-C12)	547807	29.58
C8	1.538	-0.013	2479	6940	WATPHD	(C12-C24)	1894326	<del>118.29</del>
C10	3.159	-0.007	1137	1146	WATPHM	(C24-C38)	722686	<u>54.61</u>
C12	4.092	0.018	7783	17659	AK102	(C10-C25)	2127734	112.40
C14	4.769	0.012	7350	1754	AK103	(C25-C36)	599505	65.15
C16	5.341	-0.001	8889	7751				
C18	5.919	0.014	9376	6270				
C20	6.469	-0.002	13689	30741	JET-A	(C10-C18)	1036875	191.43
C22	7.016	-0.006	10600	14955	MIN.OIL	(C24-C38)	722686	53.77
C24	7.558	0.015	9395	3721				
C25	7.790	-0.006	8539	3944				
C26	8.033	-0.004	6869	9941				
C28	8.489	-0.002	6437	11253				
C32	9.305	0.005	4793	12261				
C34	9.671	-0.003	2989	1522				
Filter Peak	11.321	-0.002	2030	2821	BUNKERC	(C10-C38)	2771823	302.73
C36	10.021	-0.012	2356	2377				
C38	10.371	-0.014	2292	4467				
C40	10.726	0.003	1960	2280				
o-terph	6.047	0.002	973773	881238				
Triacon Surr	8.923	0.006	761635	832880	NAS DIES	(C10-C24)	2049137	111.83

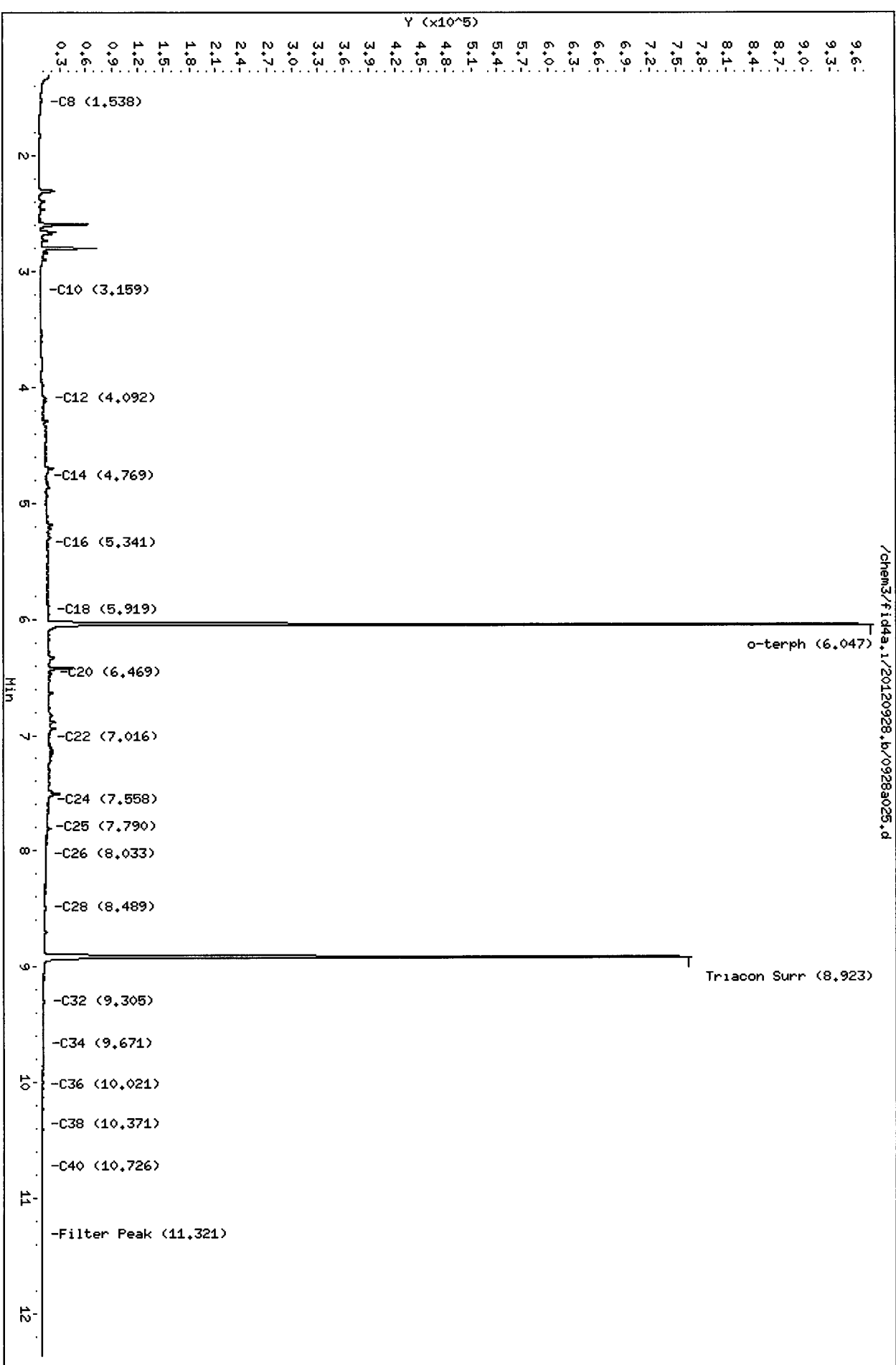
Range Times: NW Diesel (4.074 - 7.543) AK102 (3.17 - 7.80) Jet A (3.17 - 5.90)  
NW M.Oil (7.54 - 10.38) AK103 (7.80 - 10.03) OR Diesel (3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	881238	40.7	90.4
Triacontane	832880	44.8	99.6

M Indicates the peak was manually integrated

*JR 10/01/12*

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a026.d ARI ID: VK65J  
 Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m Client ID: MW-12D-092412  
 Instrument: fid4a.i Injection: 28-SEP-2012 16:14  
 Operator: JR  
 Report Date: 10/01/2012 Dilution Factor: 1  
 Macro: 24-AUG-2012  
 Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.281	-0.012	13897	18441	WATPHG	(Tol-C12)	598110	32.30
C8	1.521	-0.030	1759	3976	WATPHD	(C12-C24)	1731454	108.12
C10	3.159	-0.007	3256	4540	WATPHM	(C24-C38)	1071695	80.98
C12	4.065	-0.009	4732	6128	AK102	(C10-C25)	2069554	109.33
C14	4.743	-0.014	7749	4097	AK103	(C25-C36)	896851	97.46
C16	5.347	0.005	12339	17501				
C18	5.896	-0.009	9160	11177				
C20	6.491	0.020	10750	17179	JET-A	(C10-C18)	1014994	187.39
C22	7.019	-0.003	12113	18288	MIN.OIL	(C24-C38)	1071695	79.74
C24	7.539	-0.004	17131	34921				
C25	7.792	-0.004	17899	19524				
C26	8.032	-0.005	16389	38247				
C28	8.489	-0.002	15676	35878				
C32	9.296	-0.004	8227	14560				
C34	9.669	-0.004	6995	20033				
Filter Peak	11.301	-0.022	1885	9231	BUNKERC	(C10-C38)	3026542	330.55
C36	10.034	0.001	4123	12240				
C38	10.390	0.006	3393	9488				
C40	10.736	0.013	2761	9591				
o-terph	6.048	0.004	986764	855128				
Triacon Surr	8.920	0.003	773123	830429	NAS DIES	(C10-C24)	1954847	106.68

Range Times: NW Diesel (4.074 - 7.543) AK102 (3.17 - 7.80) Jet A (3.17 - 5.90)  
 NW M.Oil (7.54 - 10.38) AK103 (7.80 - 10.03) OR Diesel (3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	855128	39.5	87.7
Triacotane	830429	44.7	99.3

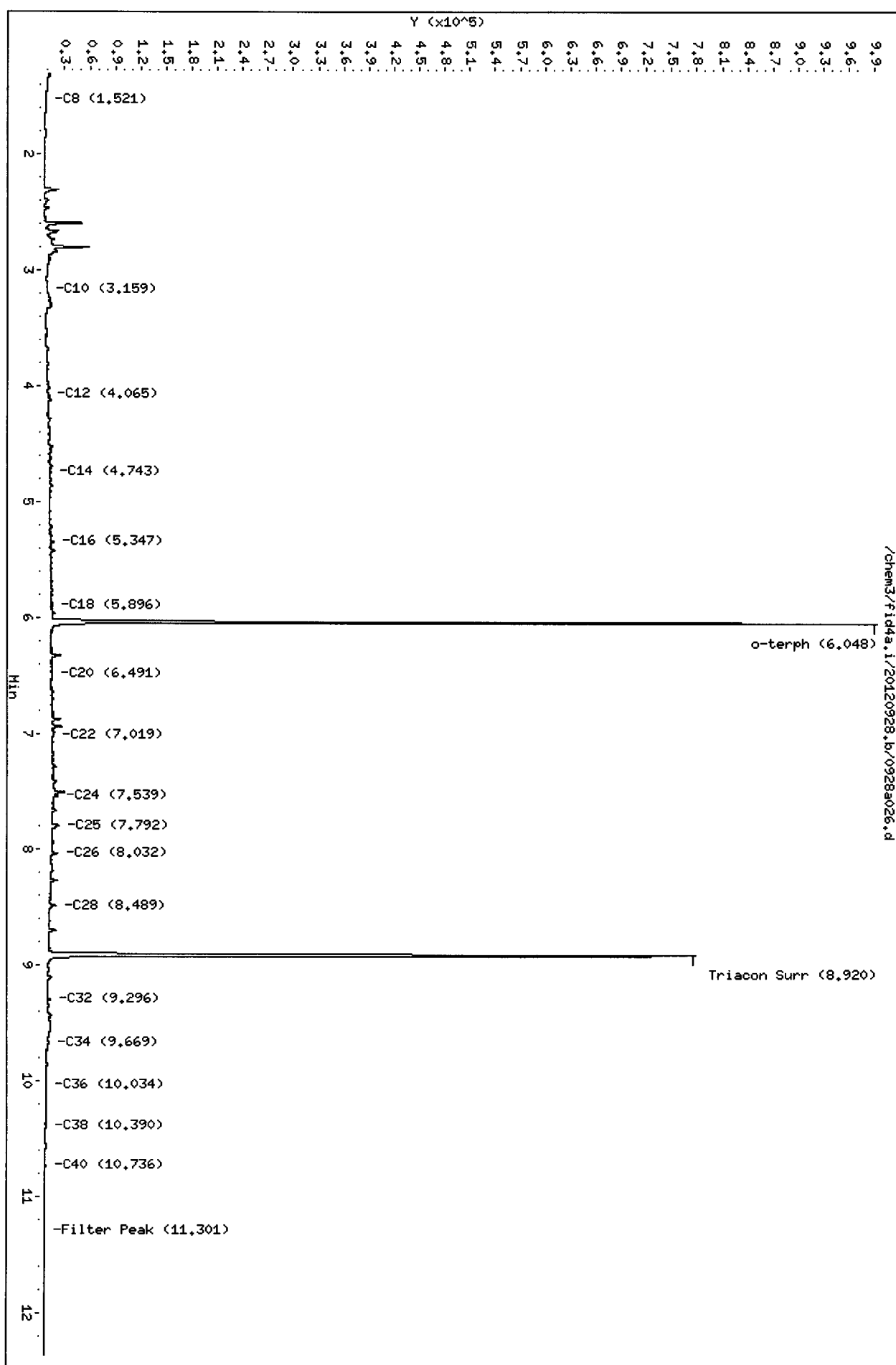
*10/01/12*

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



/chem3/fid4a.i/20120928.b/0928a026.d



Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a027.d  
Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/01/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VK65K  
Client ID: MW-11D-092412  
Injection: 28-SEP-2012 16:36  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.282	-0.011	15642	19540	WATPHG	(Tol-C12)	540365	<u>29.18</u>
C8	1.573	0.022	5170	8199	WATPHD	(C12-C24)	525934	<u>32.84</u>
C10	3.159	-0.007	1773	3104	WATPHM	(C24-C38)	399958	<u>30.22</u>
C12	4.075	0.001	1119	1320	AK102	(C10-C25)	714733	<u>37.76</u>
C14	4.751	-0.006	1479	933	AK103	(C25-C36)	342371	37.21
C16	5.332	-0.010	2629	4601				
C18	5.901	-0.003	3104	4652				
C20	6.475	0.004	2974	1951	JET-A	(C10-C18)	361276	66.70
C22	7.014	-0.008	3541	4351	MIN.OIL	(C24-C38)	399958	29.76
C24	7.562	0.019	4088	7891				
C25	7.807	0.011	7935	15357				
C26	8.046	0.009	3064	957				
C28	8.488	-0.004	4625	14320				
C32	9.301	0.000	2584	5744				
C34	9.678	0.005	3674	7854				
Filter Peak	11.313	-0.010	1811	4490	BUNKERC	(C10-C38)	1087117	118.73
C36	10.036	0.003	1698	2146				
C38	10.394	0.009	1414	1553				
C40	10.715	-0.008	1557	1712				
o-terph	6.046	0.002	872112	725560				
Triacon Surr	8.920	0.002	671398	678120	NAS DIES	(C10-C24)	687159	37.50

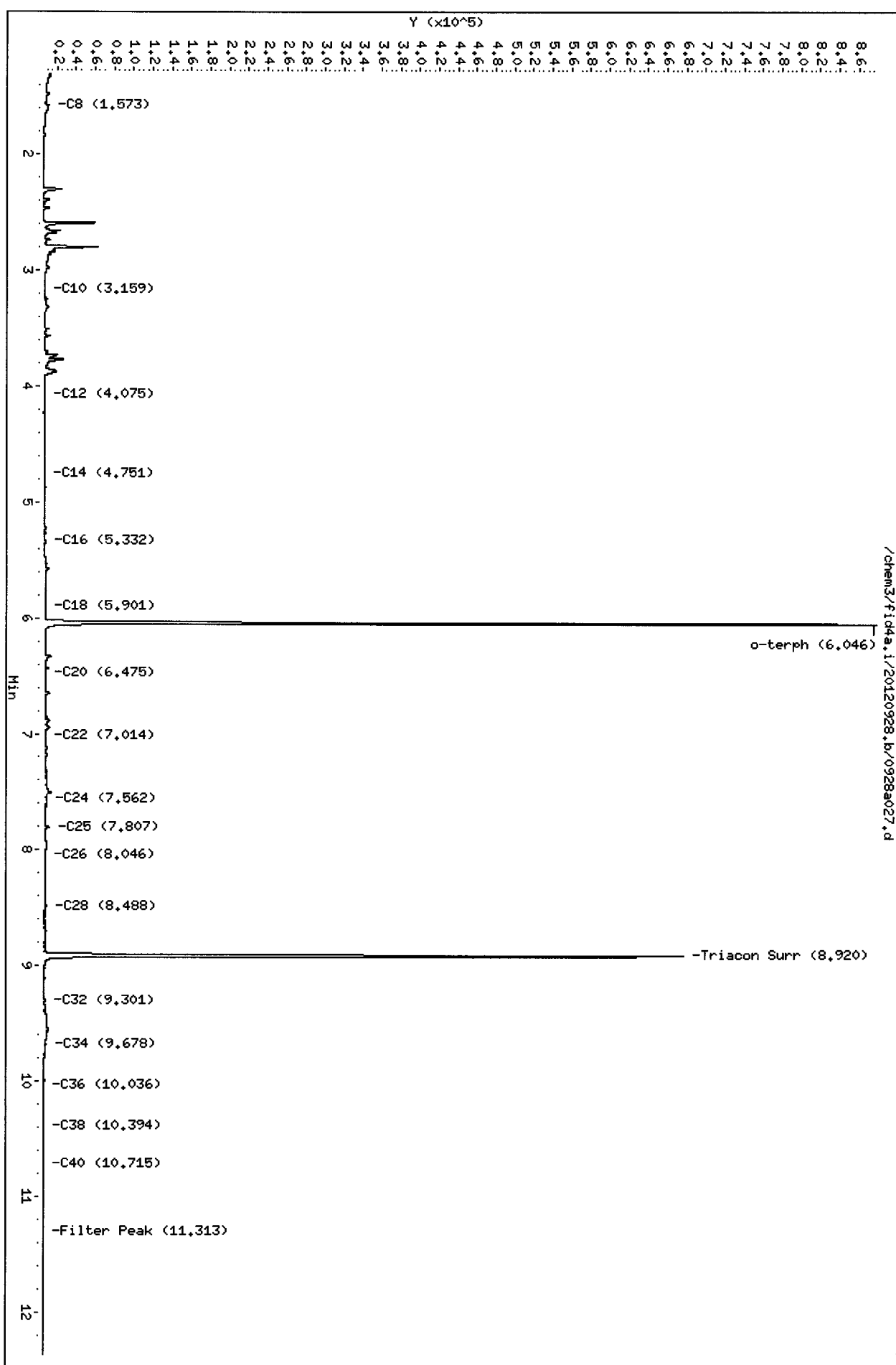
Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.80) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.38) AK103(7.80 - 10.03) OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	725560	33.5	74.4
Triacontane	678120	36.5	81.1

*JR 10/01/12*

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



VK65 00190

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a028.d  
Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/01/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VK65L  
Client ID: MW-13D-092412  
Injection: 28-SEP-2012 16:57  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.272	-0.021	15393	21564	WATPHG	(Tol-C12)	3626452	195.83
C8	1.537	-0.014	4500	10461	WATPHD	(C12-C24)	6850604	427.78
C10	3.176	0.010	13611	12954	WATPHM	(C24-C38)	4783874	361.48
C12	4.070	-0.004	29029	55090	AK102	(C10-C25)	10137295	535.53
C14	4.767	0.010	52259	89003	AK103	(C25-C36)	4154781	451.50
C16	5.360	0.017	34148	41450				
C18	5.898	-0.006	28121	18197				
C20	6.469	-0.002	26796	39439	JET-A	(C10-C18)	7143359	1318.82
C22	7.020	-0.001	27504	34046	MIN.OIL	(C24-C38)	4783874	355.92
C24	7.540	-0.004	44971	58150				
C25	7.794	-0.002	43716	20341				
C26	8.032	-0.005	44730	95901				
C28	8.486	-0.005	44953	91954				
C32	9.296	-0.005	35629	49685				
C34	9.671	-0.002	34570	101632				
Filter Peak	11.314	-0.009	3805	4971	BUNKERC	(C10-C38)	14638654	1598.79
C36	10.026	-0.007	22579	34693				
C38	10.376	-0.008	18026	26979				
C40	10.715	-0.008	12265	28906				
o-terph	6.047	0.002	971016	800255				
Triacon Surr	8.920	0.002	785780	792167	NAS DIES	(C10-C24)	9854780	537.81

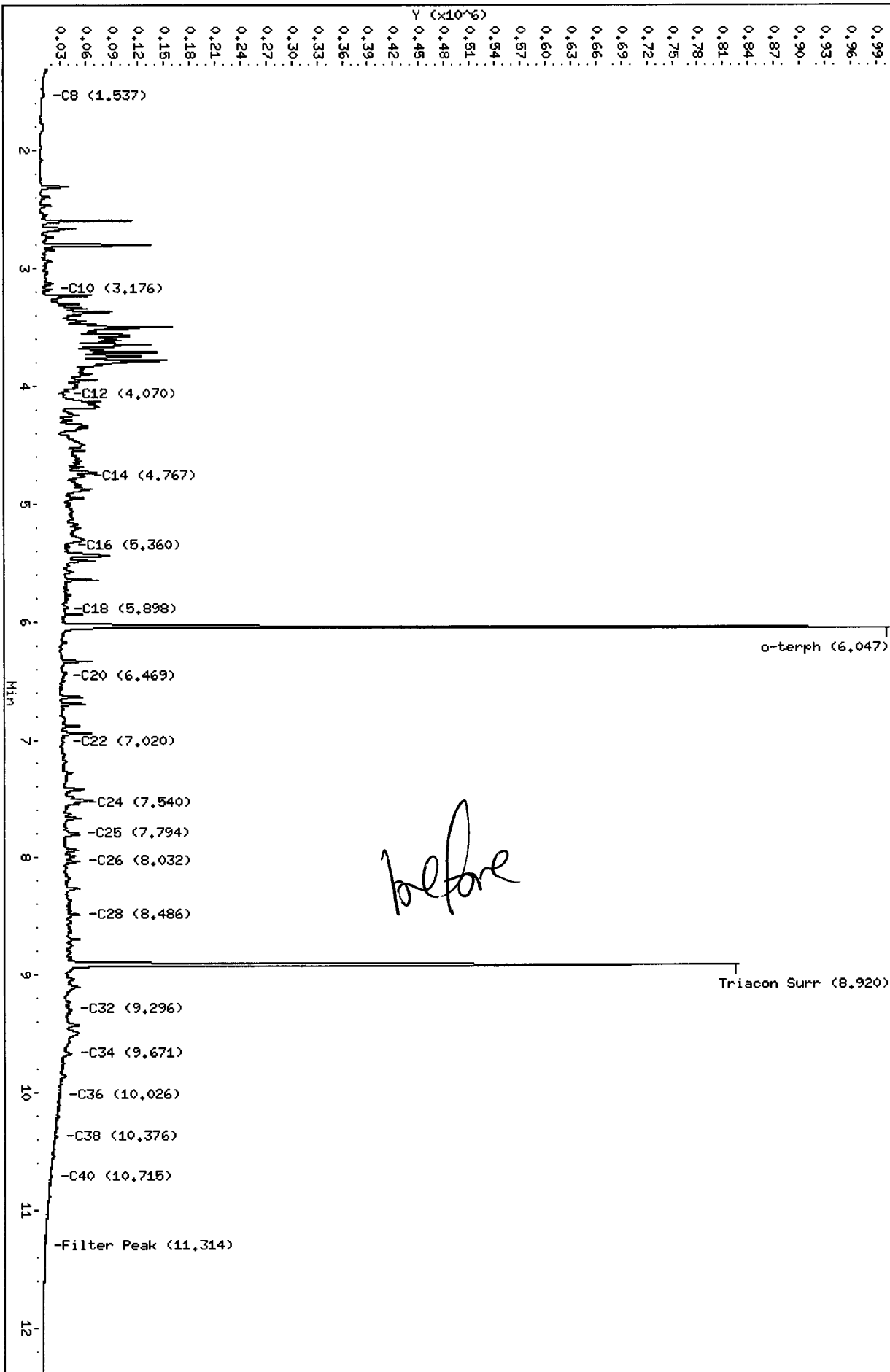
Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.80) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.38) AK103(7.80 - 10.03) OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	800255	36.9	82.1 M
Triacontane	792167	42.6	94.7 M

*JR 10/01/12*

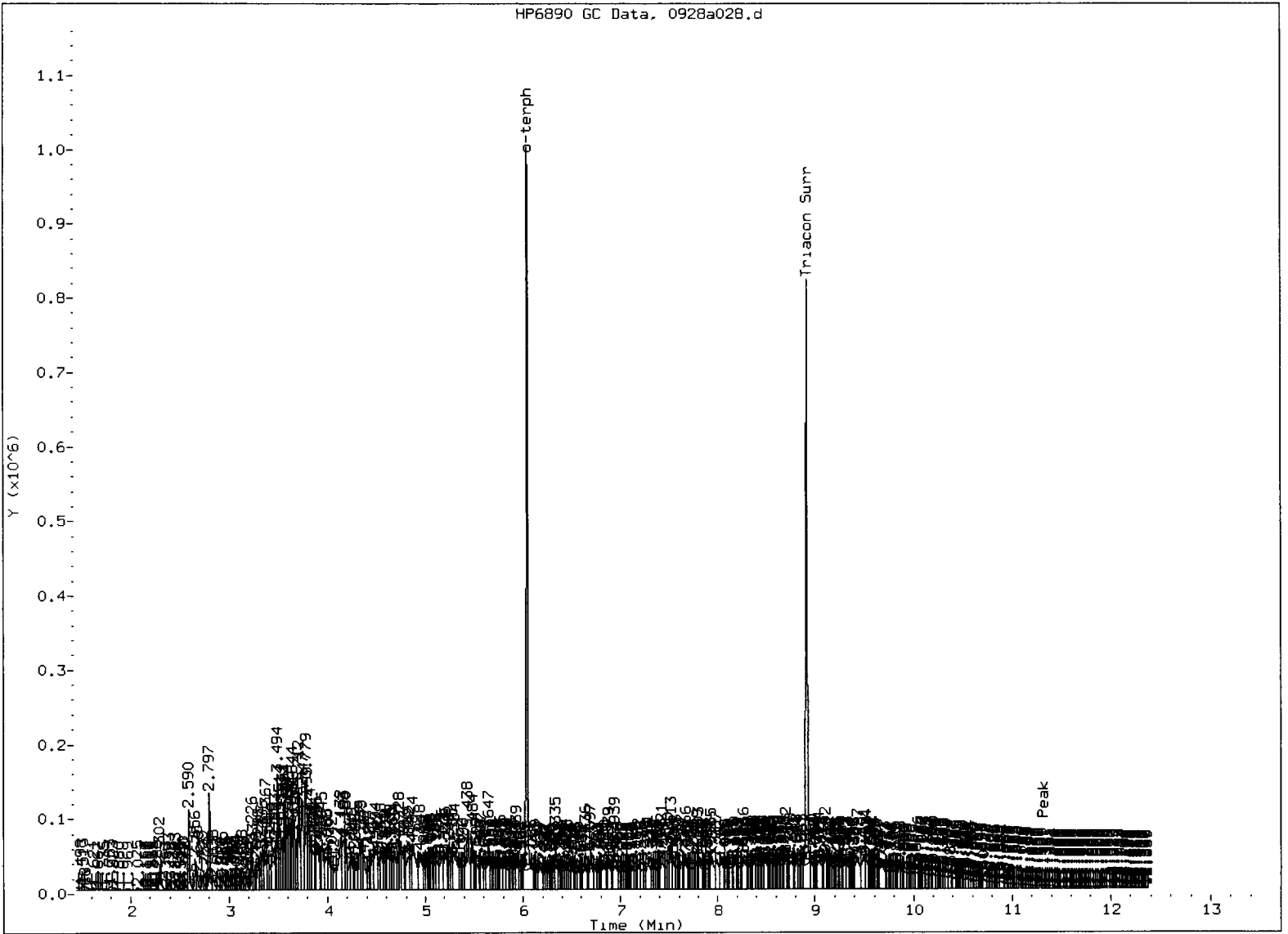
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



before

HP6890 GC Data. 0928a028.d



MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5) Skimmed surrogate

Analyst: JK

Date: 10/01/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a029.d      ARI ID: VK65M  
 Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m      Client ID: MW-DUP-092412  
 Instrument: fid4a.i      Injection: 28-SEP-2012 17:18  
 Operator: JR  
 Report Date: 10/01/2012      Dilution Factor: 1  
 Macro: 24-AUG-2012  
 Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.281	-0.011	15623	22804	WATPHG	(Tol-C12)	1269693	68.57
C8	1.540	-0.011	2927	4231	WATPHD	(C12-C24)	7309937	<del>456.46</del>
C10	3.181	0.015	4654	8262	WATPHM	(C24-C38)	1331197	<u>100.59</u>
C12	4.078	0.004	26029	31525	AK102	(C10-C25)	8289004	437.89
C14	4.750	-0.007	77835	178381	AK103	(C25-C36)	1095021	119.00
C16	5.364	0.022	40512	85085				
C18	5.917	0.012	36397	96308				
C20	6.468	-0.003	22155	10493	JET-A	(C10-C18)	5985357	1105.02
C22	7.025	0.003	19666	31569	MIN.OIL	(C24-C38)	1331197	99.04
C24	7.567	0.024	20911	38991				
C25	7.804	0.008	20975	31579				
C26	8.029	-0.008	16043	21074				
C28	8.486	-0.006	11419	16684				
C32	9.289	-0.011	7104	16421				
C34	9.679	0.006	4910	6856				
Filter Peak	11.320	-0.003	2222	1322	BUNKERC	(C10-C38)	9442830	1031.32
C36	10.043	0.010	3413	3446				
C38	10.377	-0.008	2891	5519				
C40	10.737	0.014	2522	802				
o-terph	6.045	0.001	890012	742419				
Triacon Surr	8.915	-0.002	746919	784879	NAS DIES	(C10-C24)	8111632	442.68

Range Times: NW Diesel(4.074 - 7.543)      AK102(3.17 - 7.80)      Jet A(3.17 - 5.90)  
 NW M.Oil(7.54 - 10.38)      AK103(7.80 - 10.03)      OR Diesel(3.17 - 8.49)

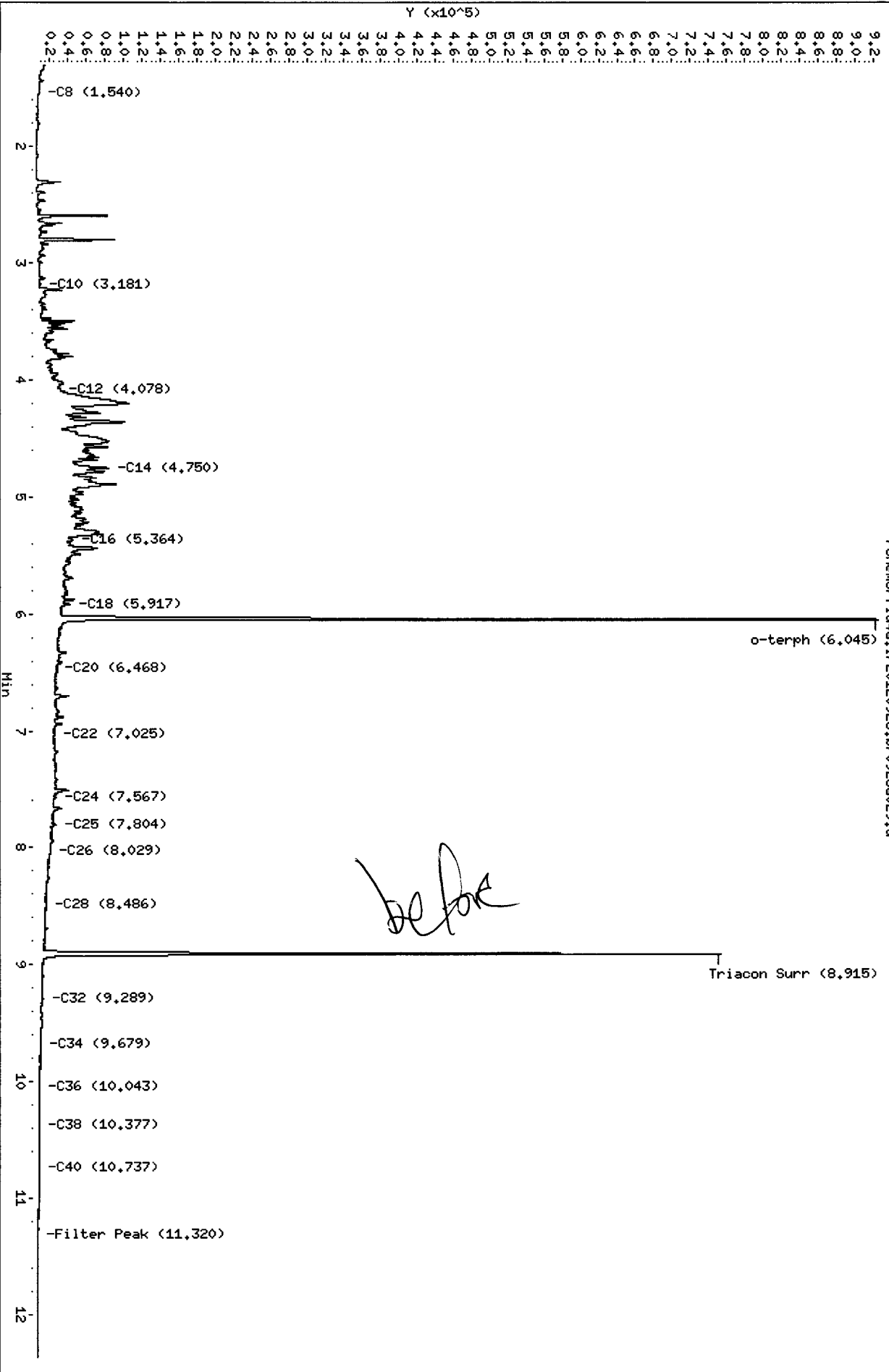
Surrogate	Area	Amount	%Rec
o-Terphenyl	742419	34.3	76.1 M
Triacotane	784879	42.2	93.8

*Handwritten:* JR 10/01/12

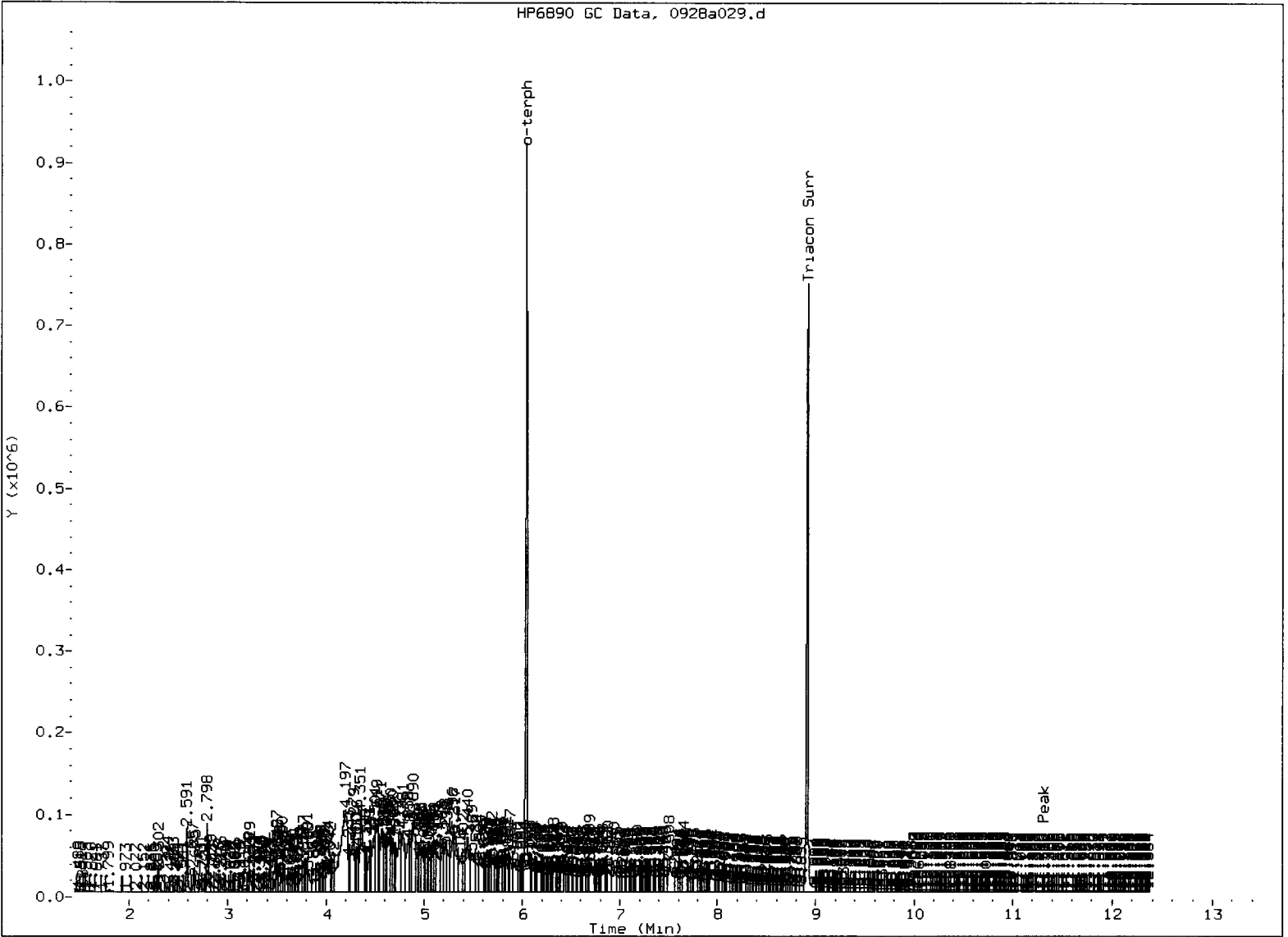
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

/chem3/fid4a.i/20120928.b/0928a029.d







MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skimmed surrogate

Analyst:       *JK*      

Date:       *10/6/12*

**HCID SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510

<u>Client ID</u>	<u>O-TER</u>	<u>TOT OUT</u>
MB-092712	90.7%	0
LCS-092712	81.8%	0
LCSD-092712	81.3%	0
MW-15D-092412	76.9%	0
MW-16D-092412	82.8%	0
MW-14D-092412	81.8%	0
MW-15S-092412	82.8%	0
MW-16S-092412	81.0%	0
MW-14S-092412	78.5%	0
MW-13S-092412	84.4%	0
MW-12S-092412	77.9%	0
MW-11S-092412	90.4%	0
MW-12D-092412	87.7%	0
MW-11D-092412	74.4%	0
MW-13D-092412	82.1%	0
MW-DUP-092412	76.1%	0

**LCS/MB LIMITS      QC LIMITS**

(O-TER) = o-Terphenyl

(55-110)

(50-150)

Prep Method: SW3510C  
Log Number Range: 12-18405 to 12-18417

**ORGANICS ANALYSIS DATA SHEET**

NWTPH-HCID Method by GC/FID

Page 1 of 1

Sample ID: LCS-092712

LCS/LCSD

Lab Sample ID: LCS-092712

QC Report No: VK65-Landau Associates

LIMS ID: 12-18405

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *mmw*

Date Sampled: 09/24/12

Reported: 10/01/12

Date Received: 09/25/12

Date Extracted LCS/LCSD: 09/27/12

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 09/28/12 11:35

Final Extract Volume LCS: 1.0 mL

LCSD: 09/28/12 11:57

LCSD: 1.0 mL

Instrument/Analyst LCS: FID/JGR

Dilution Factor LCS: 1.00

LCSD: FID/JGR

LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.51	3.00	83.7%	2.47	3.00	82.3%	1.6%

**HCID Surrogate Recovery**

	LCS	LCSD
o-Terphenyl	81.8%	81.3%

Results reported in mg/L

RPD calculated using sample concentrations per SW846.

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a013.d  
Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/01/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VK65LCSW1  
Client ID: VK65LCSW1  
Injection: 28-SEP-2012 11:35  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.273	-0.020	11187	15853	WATPHG	(Tol-C12)	4420504	238.72
C8	1.577	0.026	7142	16426	WATPHD	(C12-C24)	20104764	1255.42
C10	3.172	0.006	81651	77382	WATPHM	(C24-C38)	233961	17.68
C12	4.073	-0.001	198129	186941	AK102	(C10-C25)	22919768	1210.80
C14	4.754	-0.003	341854	456347	AK103	(C25-C36)	156118	16.97
C16	5.345	0.003	560695	712642				
C18	5.911	0.006	449890	667073				
C20	6.473	0.002	311569	500025	JET-A	(C10-C18)	16841902	3109.37
C22	7.021	-0.001	163956	255929	MIN.OIL	(C24-C38)	233961	17.41
C24	7.543	-0.001	41422	76047				
C25	7.794	-0.002	16561	21463				
C26	8.037	0.000	6782	12544				
C28	8.492	0.000	2734	2062				
C32	9.288	-0.012	141	66				
C34	9.696	0.022	278	721				
Filter Peak	11.328	0.005	1695	4771	BUNKERC	(C10-C38)	23086975	2521.48
C36	10.063	0.029	443	1576				
C38	10.369	-0.016	1450	2315				
C40	10.733	0.011	724	639				
o-terph	6.050	0.006	920081	797909				
Triacon Surr	8.924	0.007	778653	816421	NAS DIES	(C10-C24)	22853014	1247.16

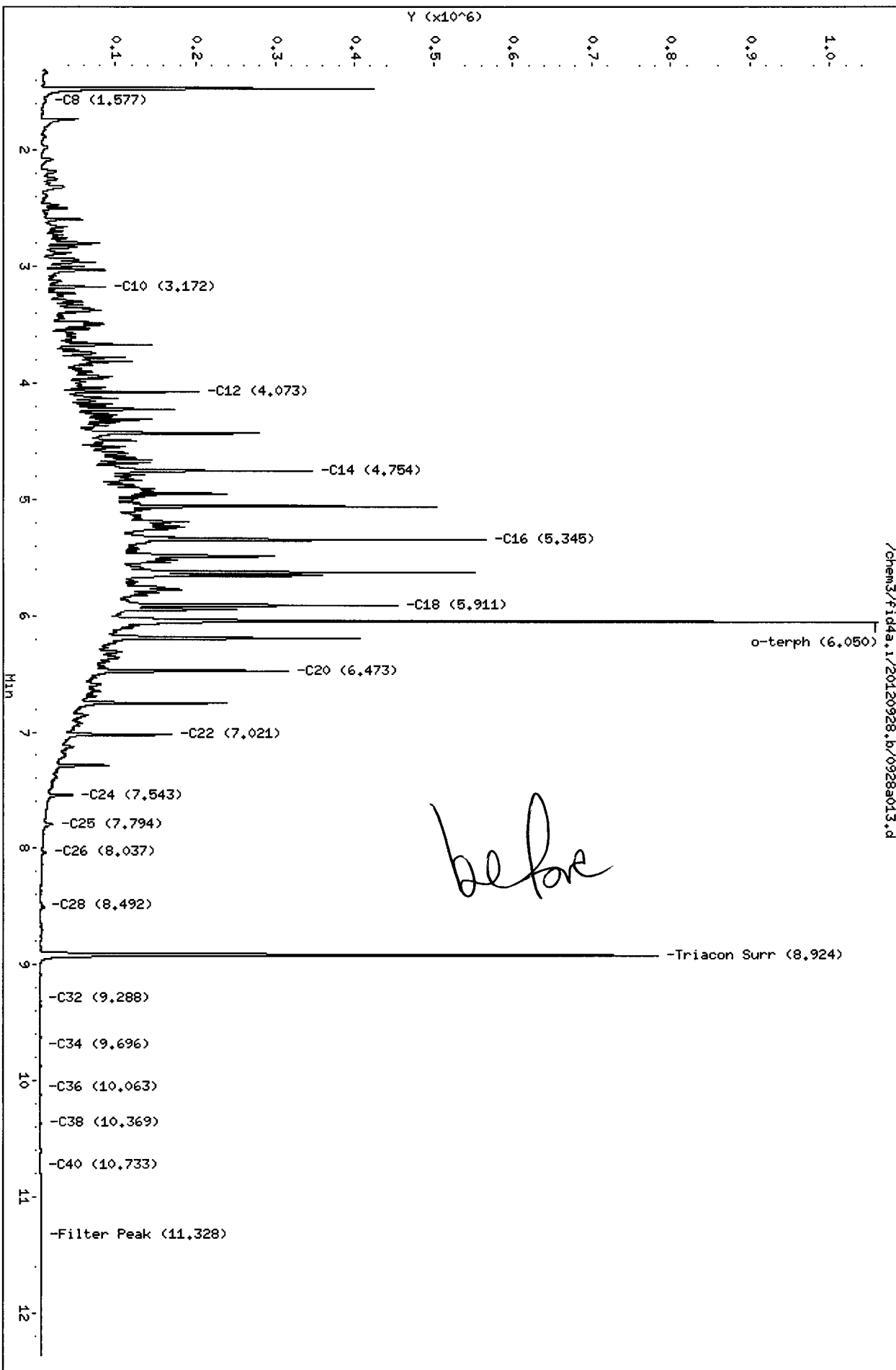
Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.80) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.38) AK103(7.80 - 10.03) OR Diesel(3.17 - 8.49)

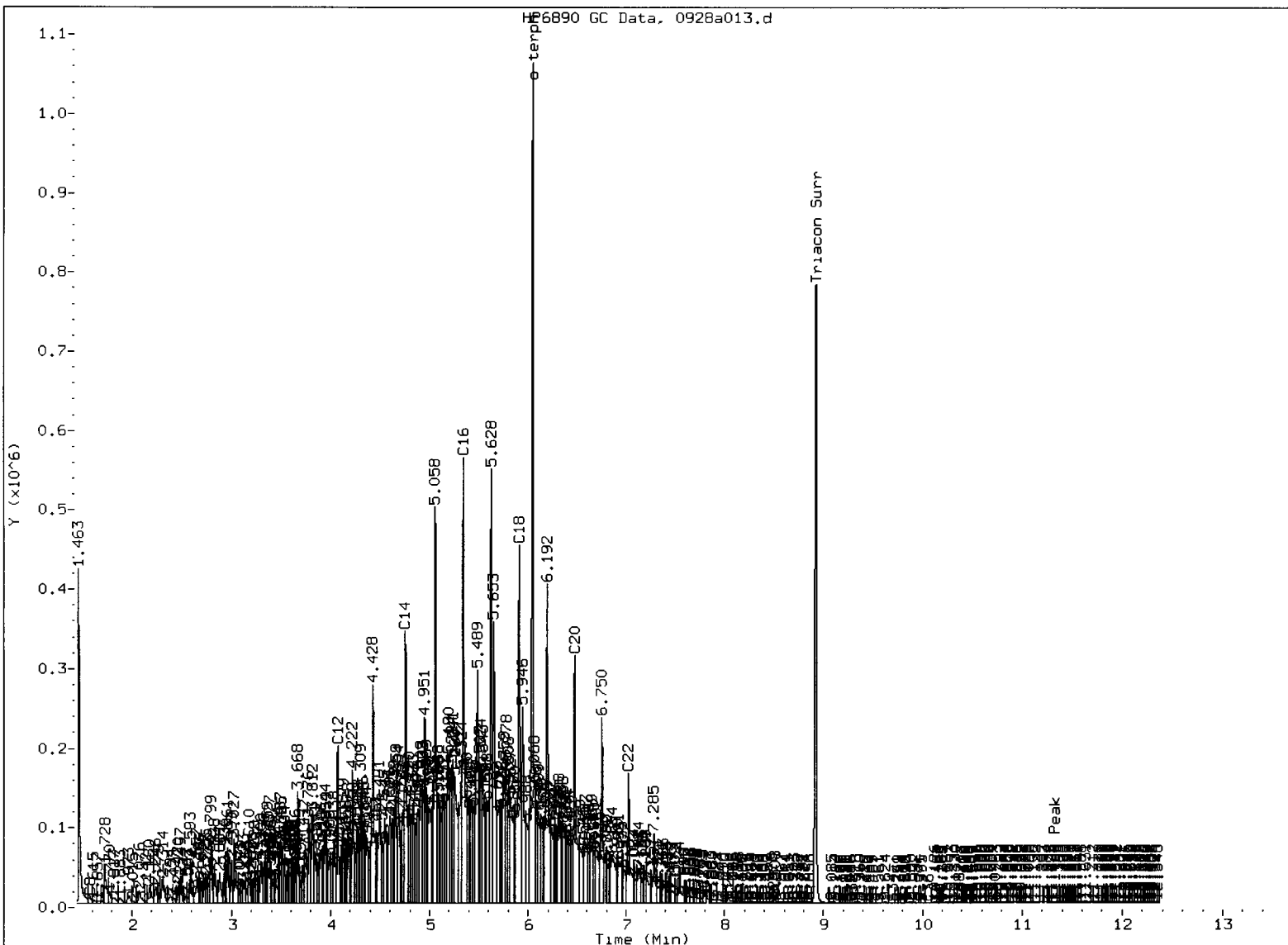
Surrogate	Area	Amount	%Rec
o-Terphenyl	797909	36.8	81.8 M
Triacontane	816421	43.9	97.6

*JR 10/01/12*

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst:     *A*    

Date:     10/01/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20120928.b/0928a014.d  
Method: /chem3/fid4a.i/20120928.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/01/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VK65LCSDW1  
Client ID: VK65LCSDW1  
Injection: 28-SEP-2012 11:57  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.280	-0.013	8734	11590	WATPHG	(Tol-C12)	4581612	247.42
C8	1.569	0.018	6813	15574	WATPHD	(C12-C24)	19740148	1232.65
C10	3.171	0.005	86150	79551	WATPHM	(C24-C38)	234908	17.75
C12	4.072	-0.002	202407	187564	AK102	(C10-C25)	22638662	1195.95
C14	4.753	-0.004	367019	354215	AK103	(C25-C36)	156114	16.97
C16	5.344	0.002	571989	571428				
C18	5.908	0.004	440300	561720				
C20	6.472	0.001	318809	523384	JET-A	(C10-C18)	16697090	3082.64
C22	7.019	-0.002	154706	234946	MIN.OIL	(C24-C38)	234908	17.48
C24	7.542	-0.001	40500	55462				
C25	7.792	-0.004	15903	20592				
C26	8.035	-0.002	6944	13608				
C28	8.490	-0.002	3012	1833				
C32	9.292	-0.008	160	78				
C34	9.700	0.027	307	725				
Filter Peak	11.318	-0.005	1293	1117	BUNKERC	(C10-C38)	22804871	2490.67
C36	10.037	0.004	302	156				
C38	10.384	-0.001	1561	2383				
C40	10.731	0.008	722	513				
o-terph	6.049	0.005	974464	792520				
Triacon Surr	8.923	0.005	779171	804823	NAS DIES	(C10-C24)	22569962	1231.72

Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.80) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.38) AK103(7.80 - 10.03) OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	792520	36.6	81.3 M
Triacotane	804823	43.3	96.2

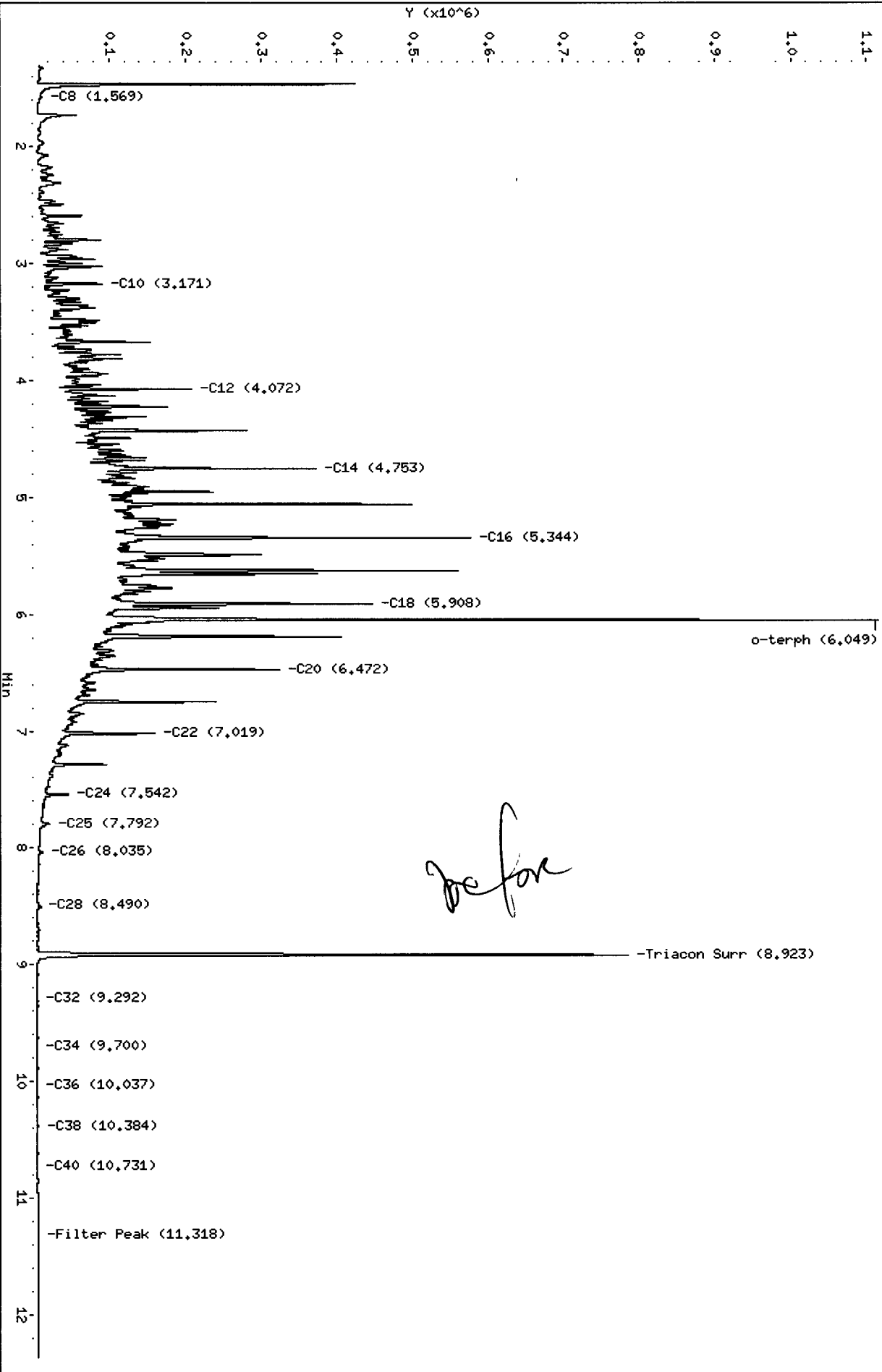
*JR 10/01/12*

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

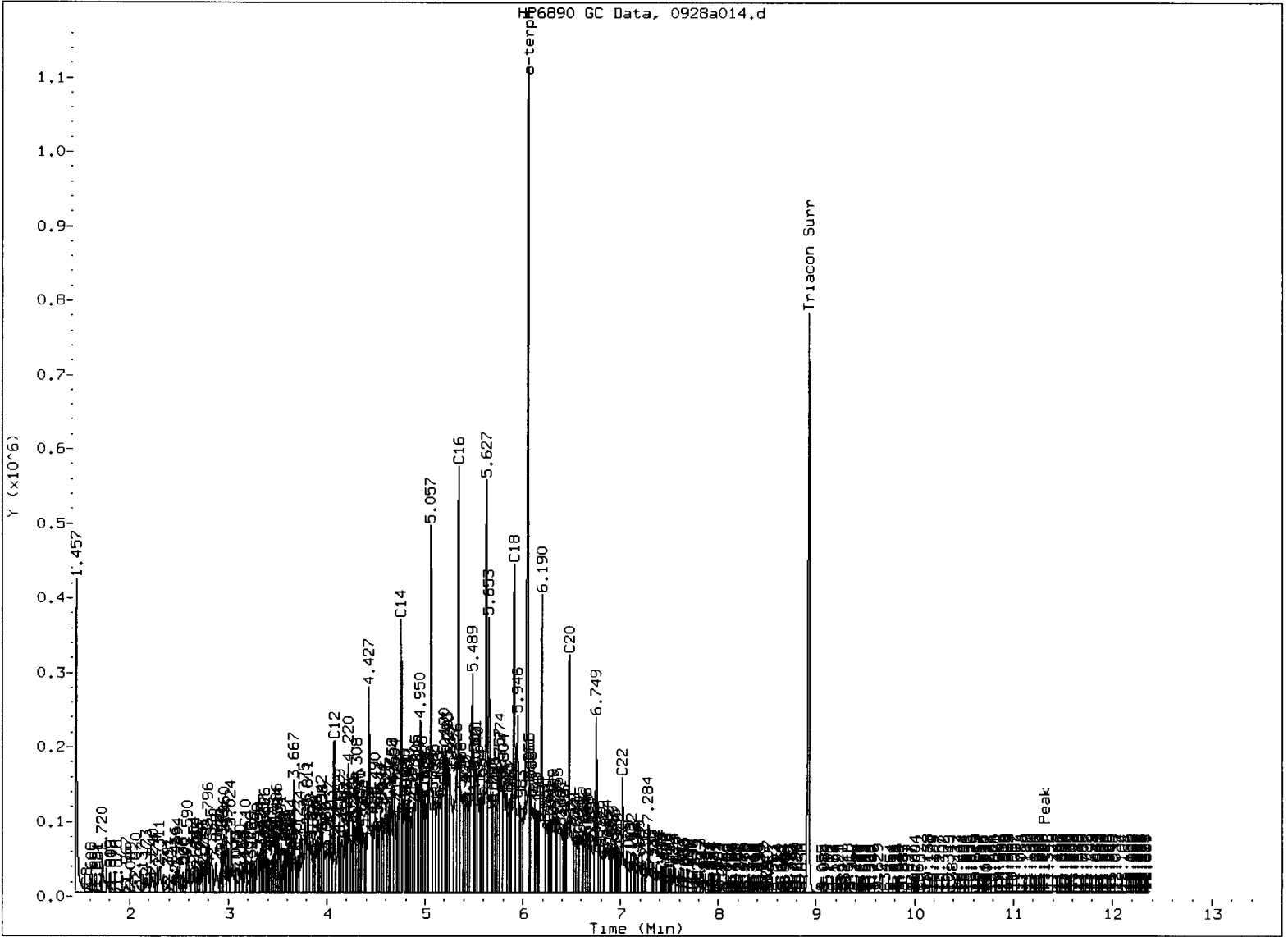
*JR*

/chem3/fid4a.i/20120928.b/0928a014.d



*before*





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst:           

Date: 10/6/12

**TOTAL HCID RANGE HYDROCARBONS-EXTRACTION REPORT**

Matrix: Water  
Date Received: 09/25/12

ARI Job: VK65  
Project: Cornwall  
0001020.400-510

ARI ID	Client ID	Sample Amt	Final Vol	Prep Date
12-18405-092712MB	Method Blank	500 mL	1.00 mL	09/27/12
12-18405-092712LCS	Lab Control	500 mL	1.00 mL	09/27/12
12-18405-092712LCSD	Lab Control Dup	500 mL	1.00 mL	09/27/12
12-18405-VK65A	MW-15D-092412	500 mL	1.00 mL	09/27/12
12-18406-VK65B	MW-16D-092412	500 mL	1.00 mL	09/27/12
12-18407-VK65C	MW-14D-092412	500 mL	1.00 mL	09/27/12
12-18408-VK65D	MW-15S-092412	500 mL	1.00 mL	09/27/12
12-18409-VK65E	MW-16S-092412	500 mL	1.00 mL	09/27/12
12-18410-VK65F	MW-14S-092412	500 mL	1.00 mL	09/27/12
12-18411-VK65G	MW-13S-092412	500 mL	1.00 mL	09/27/12
12-18412-VK65H	MW-12S-092412	500 mL	1.00 mL	09/27/12
12-18413-VK65I	MW-11S-092412	500 mL	1.00 mL	09/27/12
12-18414-VK65J	MW-12D-092412	500 mL	1.00 mL	09/27/12
12-18415-VK65K	MW-11D-092412	500 mL	1.00 mL	09/27/12
12-18416-VK65L	MW-13D-092412	500 mL	1.00 mL	09/27/12
12-18417-VK65M	MW-DUP-092412	500 mL	1.00 mL	09/27/12

**ORGANICS ANALYSIS DATA SHEET  
TOTAL DIESEL RANGE HYDROCARBONS**

NWTPHD by GC/FID-Silica and Acid Cleaned  
Extraction Method:  
Page 1 of 1

QC Report No: VL48-Landau Associates  
Project: Cornwall  
0001020.400-510

Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 10/03/12

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
MB-100112 12-18901	Method Blank HC ID: ---	10/01/12	10/02/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 84.9%
VL48A 12-18901	MW-15D-092412 HC ID: ---	10/01/12	10/02/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 82.1%
VL48B 12-18902	MW-16D-092412 HC ID: ---	10/01/12	10/02/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 72.1%
VL48C 12-18903	MW-14D-092412 HC ID: ---	10/01/12	10/02/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 79.8%
VL48D 12-18904	MW-15S-092412 HC ID: ---	10/01/12	10/02/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 75.8%
VL48E 12-18905	MW-16S-092412 HC ID: ---	10/01/12	10/02/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 73.5%
VL48F 12-18906	MW-14S-092412 HC ID: ---	10/01/12	10/02/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 76.8%
VL48G 12-18907	MW-13D-092412 HC ID: ---	10/01/12	10/02/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 81.2%
VL48H 12-18908	MW-DUP-092412 HC ID: ---	10/01/12	10/02/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 74.3%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.  
DL-Dilution of extract prior to analysis.  
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.  
Motor Oil range quantitation on total peaks in the range from C24 to C38.  
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

VC  
10/3/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20121002.b/1002a022.d      ARI ID: VL48MBW1  
Method: /chem3/fid4a.i/20121002.b/ftphfid4a.m      Client ID:  
Instrument: fid4a.i      Injection: 02-OCT-2012 13:52  
Operator: JR  
Report Date: 10/03/2012      Dilution Factor: 1  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

FID:4A RESULTS

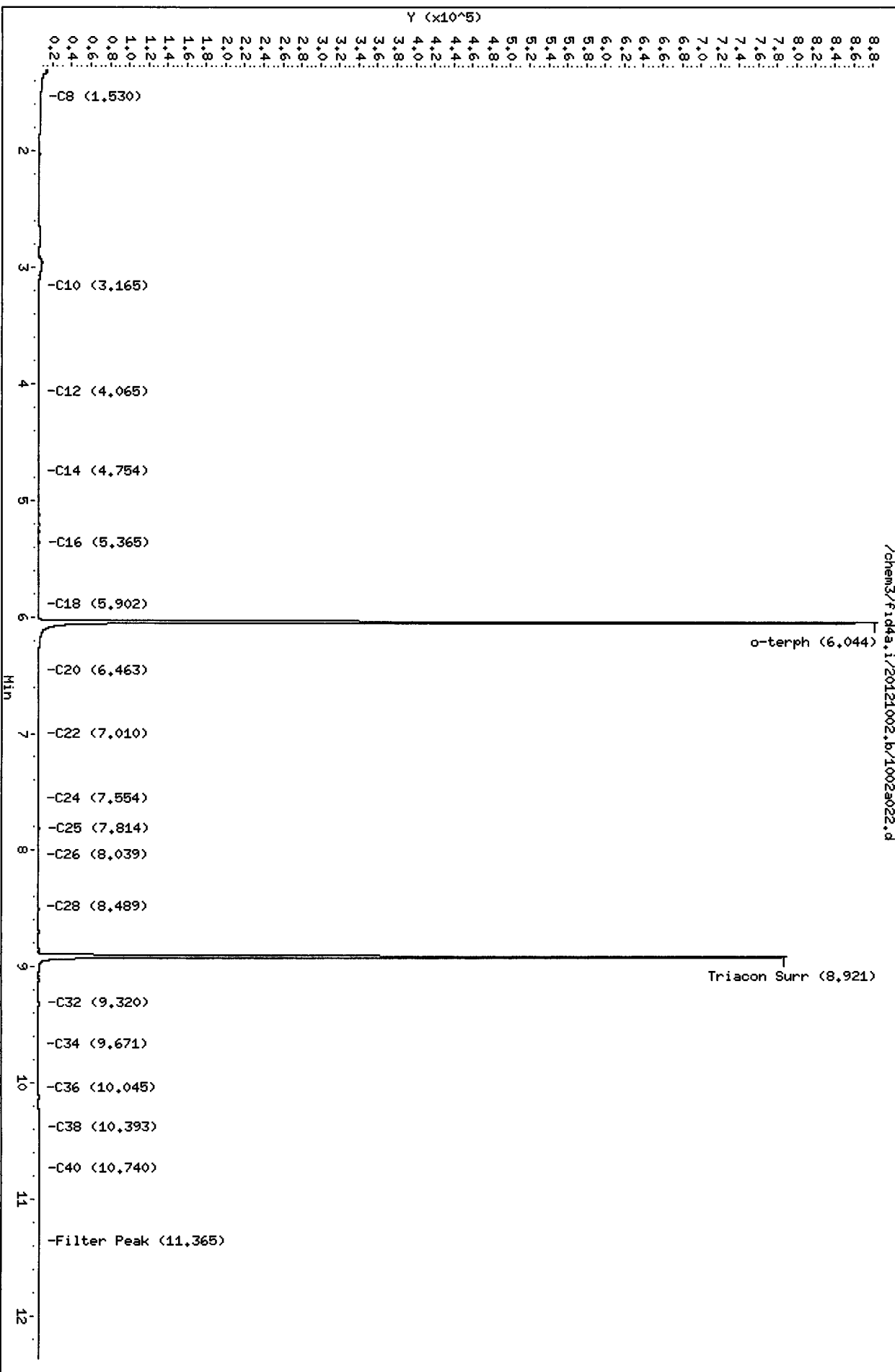
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.282	-0.010	15774	21638	WATPHG	(Tol-C12)	164297	8.87
C8	1.530	-0.020	2075	8525	WATPHD	(C12-C24)	40420	2.52
C10	3.165	0.000	301	490	WATPHM	(C24-C38)	70133	5.30
C12	4.065	-0.009	94	98	AK102	(C10-C25)	52273	2.76
C14	4.754	-0.001	225	292	AK103	(C25-C36)	51904	5.64
C16	5.365	0.023	776	2222				
C18	5.902	-0.001	342	589				
C20	6.463	-0.006	216	276	JET-A	(C10-C18)	38203	7.05
C22	7.010	-0.009	167	130	MIN.OIL	(C24-C38)	70133	5.22
C24	7.554	0.011	183	278				
C25	7.814	0.021	1745	2311				
C26	8.039	0.003	187	374				
C28	8.489	-0.001	668	544				
C32	9.320	0.019	1035	2875				
C34	9.671	-0.006	517	520				
Filter Peak	11.365	-0.004	1793	3022	BUNKERC	(C10-C38)	121307	13.25
C36	10.045	0.007	712	345				
C38	10.393	0.000	882	856				
C40	10.740	0.003	1250	1242				
o-terph	6.044	0.001	878628	827789				
Triacon Surr	8.921	0.005	783931	819191	NAS DIES	(C10-C24)	51174	2.79

Range Times: NW Diesel (4.074 - 7.543)      AK102 (3.17 - 7.79)      Jet A (3.17 - 5.90)  
                  NW M.Oil (7.54 - 10.39)      AK103 (7.79 - 10.04)      OR Diesel (3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	827789	38.2	84.9
Triacontane	819191	44.1	97.9

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



Analytical Resources Inc.  
TPH Quantitation Report

VC  
10/3/12

Data file: /chem3/fid4a.i/20121002.b/1002a025.d  
Method: /chem3/fid4a.i/20121002.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/03/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VL48A  
Client ID:  
Injection: 02-OCT-2012 14:56  
Dilution Factor: 1

FID:4A RESULTS

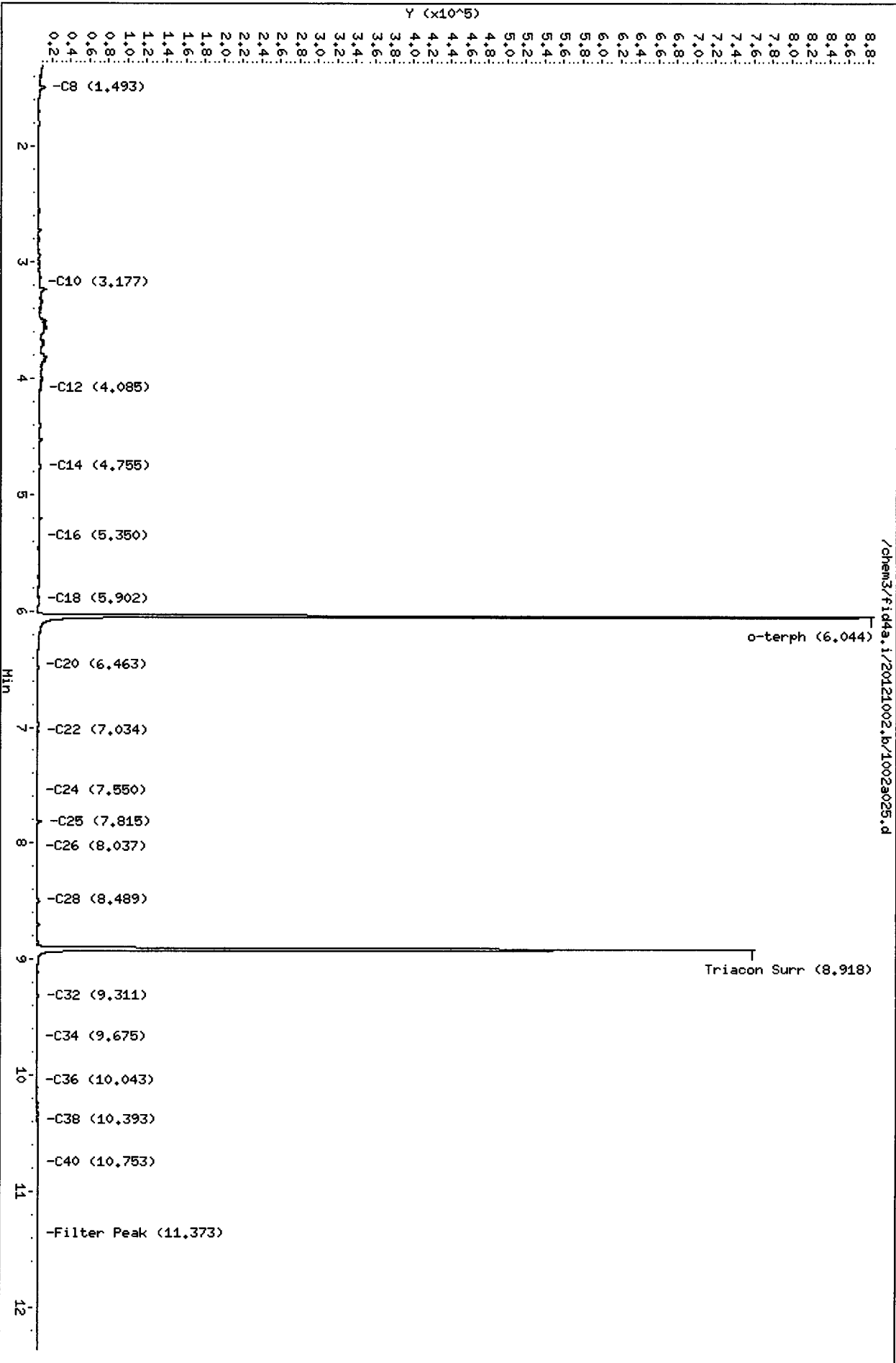
Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.280	-0.012	10835	13360	WATPHG	(Tol-C12)	307327	16.60
C8	1.493	-0.058	5657	11394	WATPHD	(C12-C24)	194094	12.12
C10	3.177	0.011	1138	1201	WATPHM	(C24-C38)	76727	5.80
C12	4.085	0.011	2848	4679	AK102	(C10-C25)	412527	21.79
C14	4.755	-0.001	2782	5227	AK103	(C25-C36)	59588	6.48
C16	5.350	0.008	1887	2008				
C18	5.902	-0.001	1312	2129				
C20	6.463	-0.007	722	591	JET-A	(C10-C18)	362768	66.97
C22	7.034	0.015	792	2038	MIN.OIL	(C24-C38)	76727	5.71
C24	7.550	0.006	444	1098				
C25	7.815	0.021	3950	5414				
C26	8.037	0.001	404	639				
C28	8.489	-0.001	966	1015				
C32	9.311	0.010	1088	3343				
C34	9.675	-0.002	469	272				
Filter Peak	11.373	0.004	1469	1902	BUNKERC	(C10-C38)	486653	53.15
C36	10.043	0.004	607	247				
C38	10.393	0.000	754	428				
C40	10.753	0.016	1120	2815				
o-terph	6.044	0.001	880757	800880				
Triacon Surr	8.918	0.002	757300	792796	NAS DIES	(C10-C24)	409926	22.37

Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.79) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.39) AK103(7.79 - 10.04) OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	800880	37.0	82.1
Triacontane	792796	42.6	94.8

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



PL  
10/3/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20121002.b/1002a026.d  
Method: /chem3/fid4a.i/20121002.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/03/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VL48B  
Client ID:  
Injection: 02-OCT-2012 15:17  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.284	-0.008	10699	14580	WATPHG	(Tol-C12)	157171	8.49
C8	1.615	0.065	921	2636	WATPHD	(C12-C24)	65724	4.10
C10	3.178	0.013	320	448	WATPHM	(C24-C38)	42288	3.20
C12	4.069	-0.005	783	1550	AK102	(C10-C25)	116114	6.13
C14	4.765	0.009	492	805	AK103	(C25-C36)	31669	3.44
C16	5.353	0.011	831	996				
C18	5.903	0.000	514	790				
C20	6.465	-0.004	275	239	JET-A	(C10-C18)	97115	17.93
C22	7.014	-0.005	202	115	MIN.OIL	(C24-C38)	42288	3.15
C24	7.552	0.009	157	231				
C25	7.776	-0.018	100	83				
C26	8.041	0.005	131	136				
C28	8.489	-0.001	719	649				
C32	9.315	0.014	767	2192				
C34	9.660	-0.017	237	82				
Filter Peak	11.371	0.002	1339	1565	BUNKERC	(C10-C38)	158165	17.27
C36	10.031	-0.008	380	272				
C38	10.400	0.007	585	494				
C40	10.733	-0.004	943	999				
o-terph	6.043	0.000	776593	703113				
Triacon Surr	8.916	0.001	727433	716687	NAS DIES	(C10-C24)	115876	6.32

Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.79) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.39) AK103(7.79 - 10.04) OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	703113	32.4	72.1
Triacotane	716687	38.6	85.7

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



Data File: /chem3/fid4a.i/20121002.b/1002a026.d  
Date: 02-OCT-2012 15:17

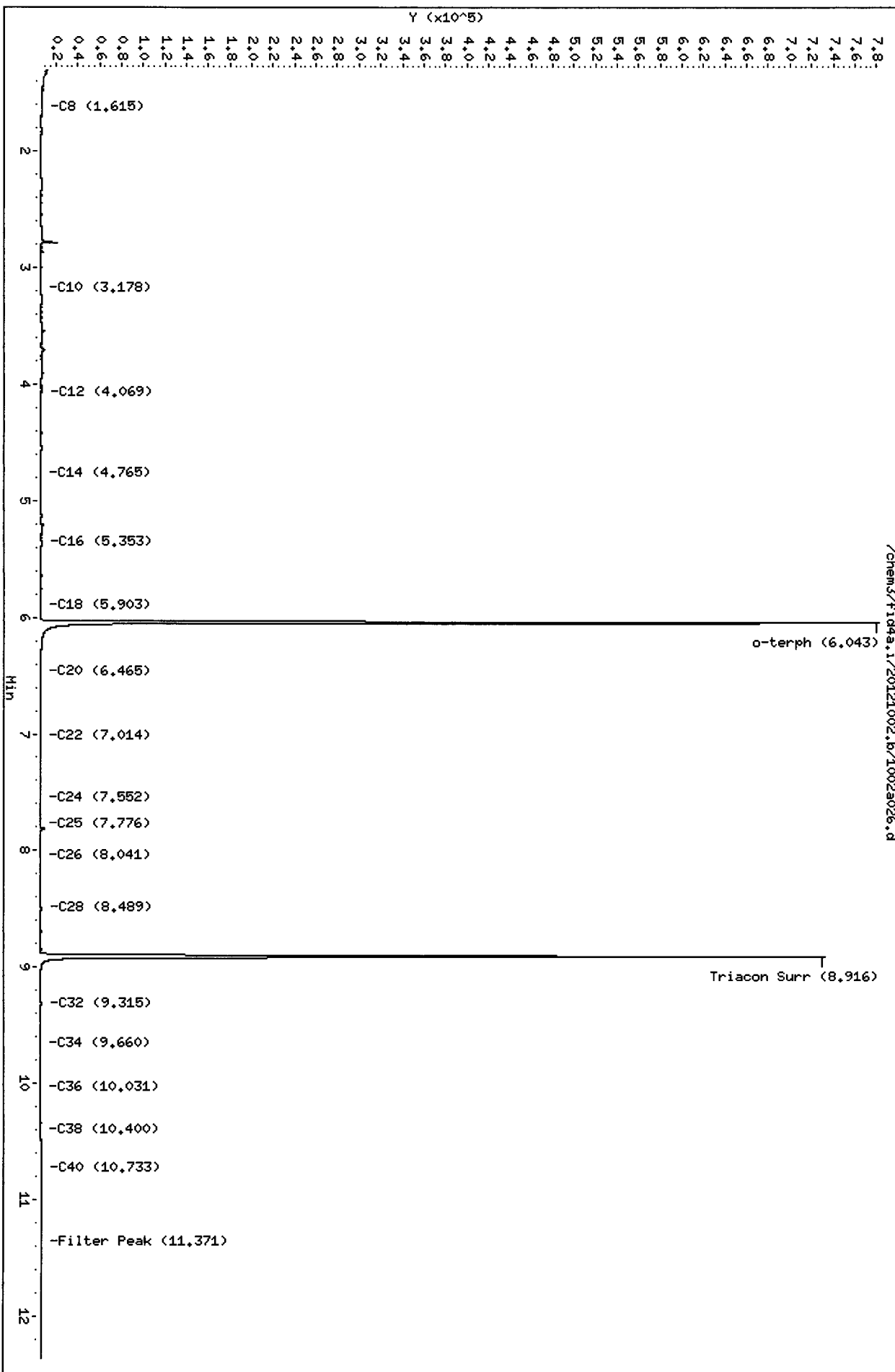
Client ID:  
Sample Info: VL488

Column phase: RTX-1

Instrument: fid4a.i

Operator: JR

Column diameter: 0.25



Analytical Resources Inc.  
TPH Quantitation Report

*MC*  
*10/3/12*

Data file: /chem3/fid4a.i/20121002.b/1002a027.d      ARI ID: VL48C  
 Method: /chem3/fid4a.i/20121002.b/ftphfid4a.m      Client ID:  
 Instrument: fid4a.i      Injection: 02-OCT-2012 15:38  
 Operator: JR  
 Report Date: 10/03/2012      Dilution Factor: 1  
 Macro: 24-AUG-2012  
 Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.284	-0.009	9345	12133	WATPHG	(Tol-C12)	208655	11.27
C8	1.531	-0.019	1352	4518	WATPHD	(C12-C24)	147860	9.23
C10	3.191	0.025	961	1327	WATPHM	(C24-C38)	153819	11.62
C12	4.077	0.003	1464	859	AK102	(C10-C25)	277464	14.66
C14	4.756	0.001	1468	1820	AK103	(C25-C36)	129331	14.05
C16	5.351	0.008	1197	950				
C18	5.904	0.001	719	1245				
C20	6.464	-0.005	523	355	JET-A	(C10-C18)	219770	40.57
C22	7.030	0.011	750	2125	MIN.OIL	(C24-C38)	153819	11.44
C24	7.546	0.003	921	2068				
C25	7.812	0.018	16548	20912				
C26	8.037	0.001	1347	2960				
C28	8.489	-0.002	1926	3149				
C32	9.310	0.009	1798	4199				
C34	9.688	0.011	1080	2884				
Filter Peak	11.367	-0.002	1424	1612	BUNKERC	(C10-C38)	426235	46.55
C36	10.043	0.005	934	1984				
C38	10.398	0.005	963	2209				
C40	10.736	-0.002	1138	1473				
o-terph	6.043	0.000	864962	777684				
Triacon Surr	8.919	0.004	747663	770524	NAS DIES	(C10-C24)	272416	14.87

Range Times: NW Diesel(4.074 - 7.543)      AK102(3.17 - 7.79)      Jet A(3.17 - 5.90)  
 NW M.Oil(7.54 - 10.39)      AK103(7.79 - 10.04)      OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	777684	35.9	79.7
Triacontane	770524	41.4	92.1

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

Data File: /chem3/fid4a,i/20121002.b/1002a027.d  
Date : 02-OCT-2012 15:38

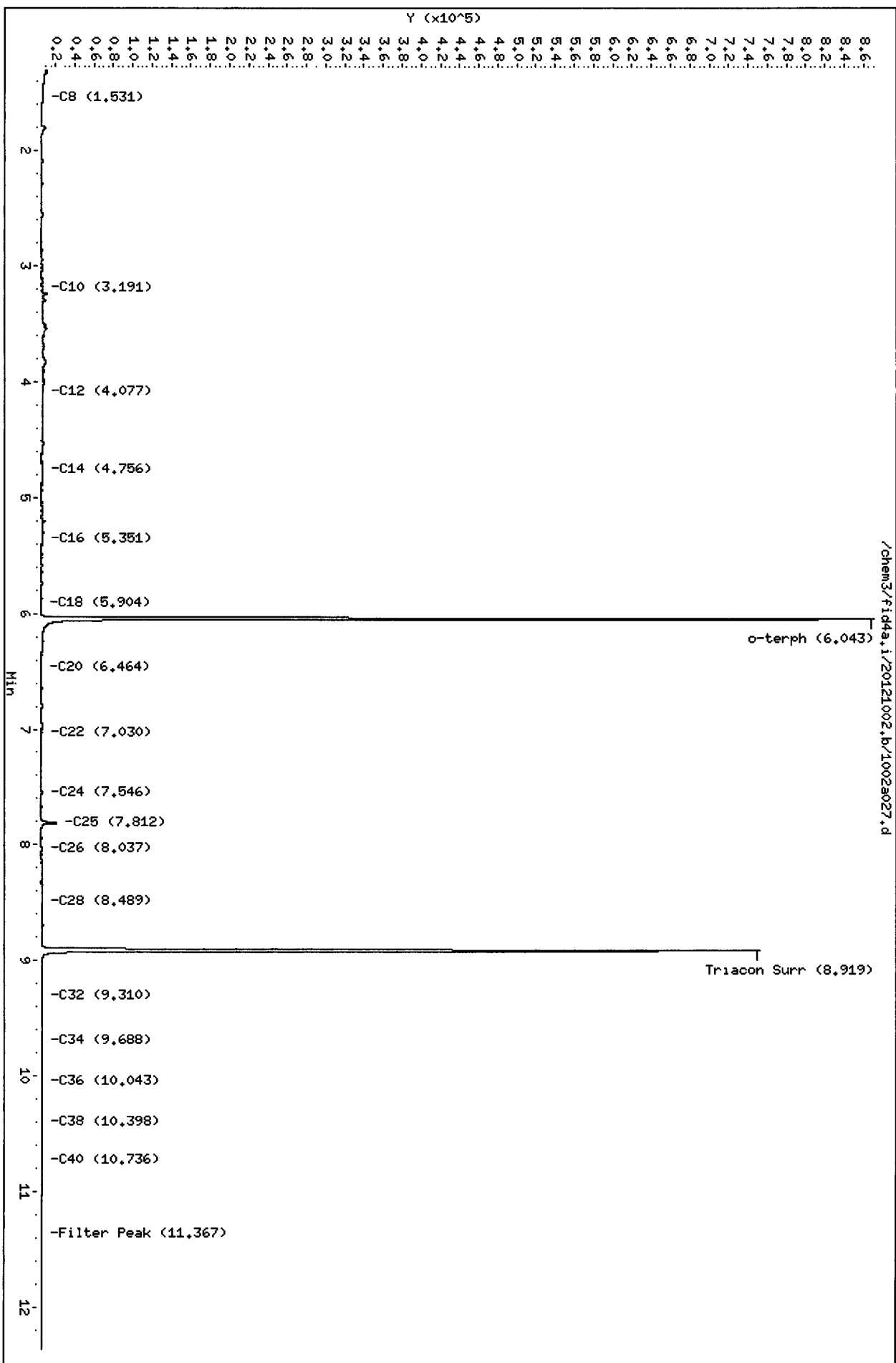
Client ID:  
Sample Info: VL48C

Column phase: RTX-1

Instrument: fid4a.i

Operator: JR

Column diameter: 0.25



10/3/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20121002.b/1002a028.d      ARI ID: VL48D  
Method: /chem3/fid4a.i/20121002.b/ftphfid4a.m      Client ID:  
Instrument: fid4a.i      Injection: 02-OCT-2012 16:00  
Operator: JR  
Report Date: 10/03/2012      Dilution Factor: 1  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.280	-0.012	8462	10763	WATPHG	(Tol-C12)	371132	20.04
C8	1.553	0.003	934	1547	WATPHD	(C12-C24)	233146	14.56
C10	3.187	0.021	1713	3093	WATPHM	(C24-C38)	81188	6.13
C12	4.099	0.025	2844	3647	AK102	(C10-C25)	497687	26.29
C14	4.753	-0.003	3897	9938	AK103	(C25-C36)	62524	6.79
C16	5.352	0.010	1637	1621				
C18	5.903	0.000	955	1816				
C20	6.462	-0.007	548	511	JET-A	(C10-C18)	451528	83.36
C22	7.034	0.015	685	2162	MIN.OIL	(C24-C38)	81188	6.04
C24	7.553	0.010	454	864				
C25	7.775	-0.019	305	271				
C26	8.039	0.003	779	1340				
C28	8.489	-0.001	1615	1585				
C32	9.310	0.009	1072	2859				
C34	9.684	0.007	535	1179				
Filter Peak	11.374	0.005	1409	1395	BUNKERC	(C10-C38)	576217	62.93
C36	10.042	0.004	612	1500				
C38	10.395	0.002	746	600				
C40	10.734	-0.003	1050	702				
o-terph	6.042	-0.001	781557	739440				
Triacon Surr	8.915	-0.001	700480	729127	NAS DIES	(C10-C24)	495029	27.02

Range Times: NW Diesel(4.074 - 7.543)      AK102(3.17 - 7.79)      Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.39)      AK103(7.79 - 10.04)      OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	739440	34.1	75.8
Triacontane	729127	39.2	87.2

M Indicates the peak was manually integrated

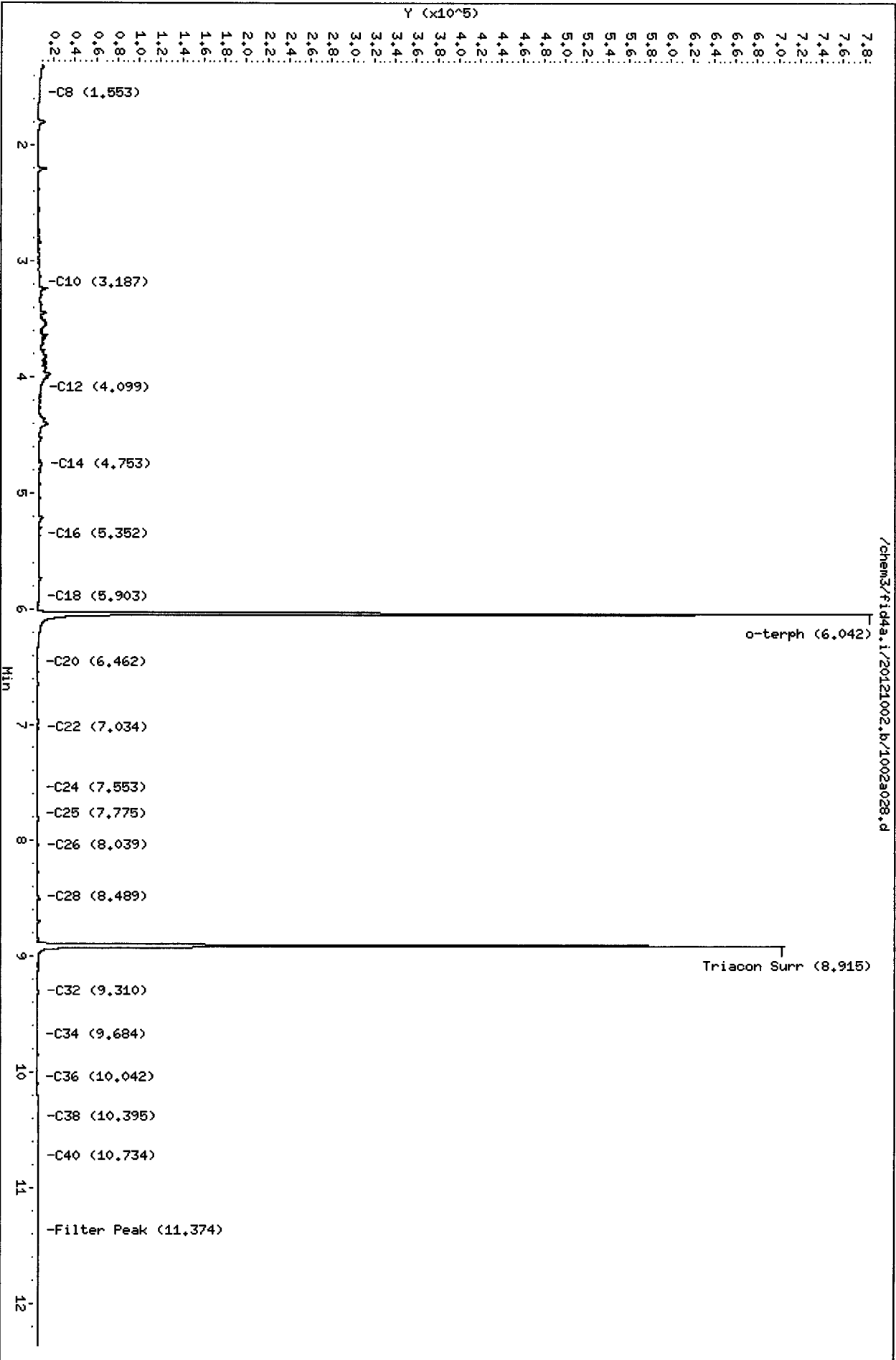
Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

Data File: /chem3/fid4a.i/20121002.b/1002a028.d  
Date: 02-OCT-2012 16:00

Client ID:  
Sample Info: VL48D

Column phase: RTX-1

Instrument: fid4a.i  
Operator: JR  
Column diameter: 0.25



PG  
2/3/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20121002.b/1002a029.d  
Method: /chem3/fid4a.i/20121002.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/03/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VL48E  
Client ID:  
Injection: 02-OCT-2012 16:21  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.282	-0.010	10809	14860	WATPHG	(Tol-C12)	143296	7.74
C8	1.544	-0.006	1370	1934	WATPHD	(C12-C24)	142172	8.88
C10	3.182	0.017	442	922	WATPHM	(C24-C38)	83335	6.30
C12	4.099	0.025	710	764	AK102	(C10-C25)	195942	10.35
C14	4.752	-0.003	939	1654	AK103	(C25-C36)	63797	6.93
C16	5.350	0.008	1389	852				
C18	5.903	0.000	895	1718				
C20	6.464	-0.005	640	198	JET-A	(C10-C18)	147541	27.24
C22	7.007	-0.012	557	686	MIN.OIL	(C24-C38)	83335	6.20
C24	7.550	0.007	637	1357				
C25	7.778	-0.016	385	217				
C26	8.039	0.003	707	1498				
C28	8.488	-0.002	1050	1269				
C32	9.313	0.012	1037	2911				
C34	9.663	-0.014	477	311				
Filter Peak	11.363	-0.006	1513	1676	BUNKERC	(C10-C38)	275708	30.11
C36	10.032	-0.006	615	431				
C38	10.388	-0.005	779	786				
C40	10.736	-0.002	1115	572				
o-terph	6.043	0.000	777941	716899				
Triacon Surr	8.915	0.000	662504	703531	NAS DIES	(C10-C24)	192373	10.50

Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.79) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.39) AK103(7.79 - 10.04) OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	716899	33.1	73.5
Triacontane	703531	37.8	84.1

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

Date: 02-OCT-2012 16:21

Client ID:

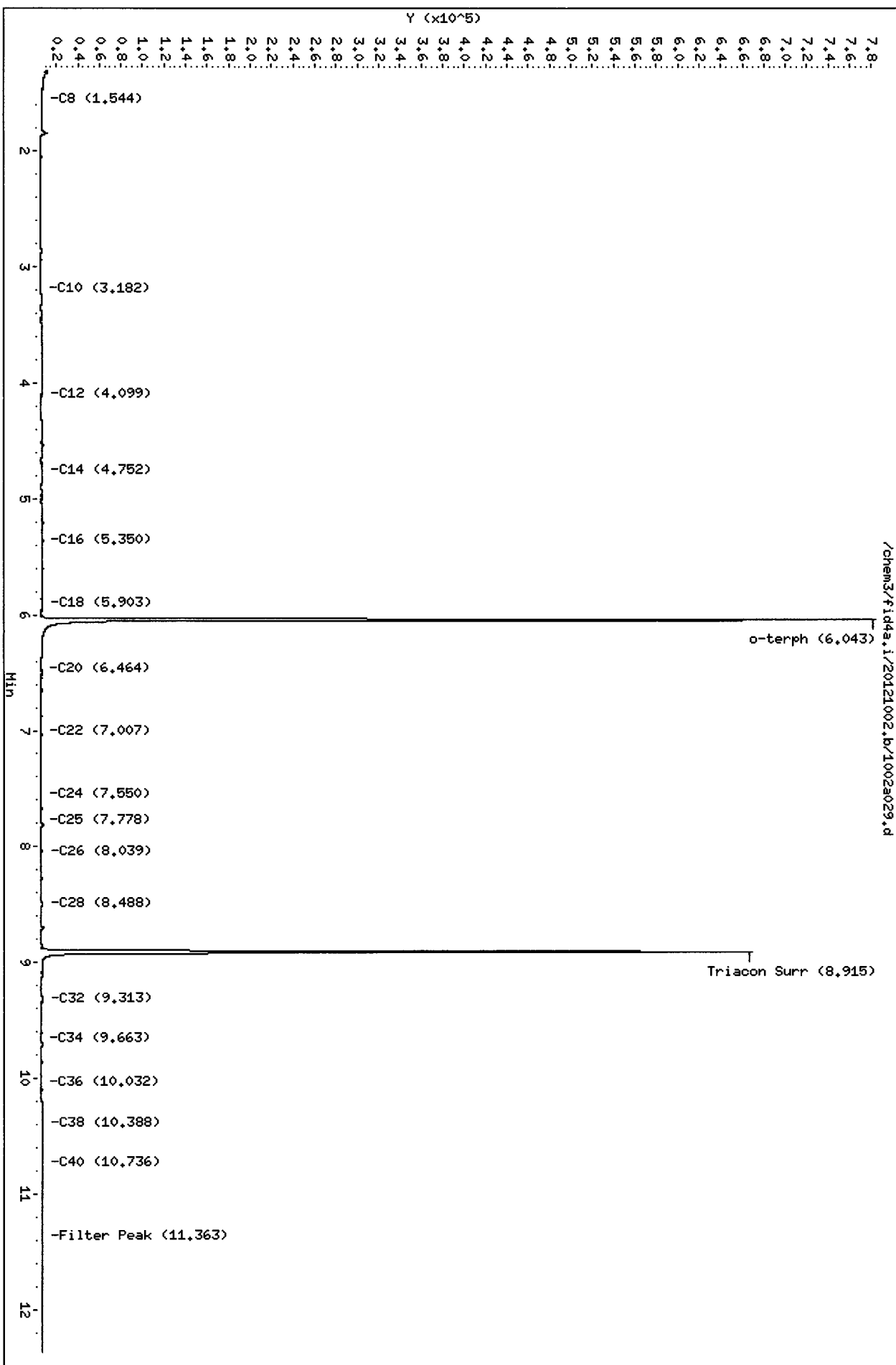
Instrument: fid4a.i

Sample Info: VL48E

Column phase: RTX-1

Operator: JR

Column diameter: 0.25



PK  
2013/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20121002.b/1002a030.d  
Method: /chem3/fid4a.i/20121002.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/03/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VL48F  
Client ID:  
Injection: 02-OCT-2012 16:42  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.270	-0.022	12419	21110	WATPHG	(Tol-C12)	409878	22.13
C8	1.546	-0.004	1231	840	WATPHD	(C12-C24)	224801	14.04
C10	3.184	0.019	1732	3068	WATPHM	(C24-C38)	47775	3.61
C12	4.080	0.006	3876	8439	AK102	(C10-C25)	512652	27.08
C14	4.749	-0.007	4455	7090	AK103	(C25-C36)	36132	3.93
C16	5.349	0.007	1687	1290				
C18	5.903	0.000	854	1604				
C20	6.467	-0.002	537	734	JET-A	(C10-C18)	468293	86.46
C22	7.034	0.015	565	978	MIN.OIL	(C24-C38)	47775	3.55
C24	7.530	-0.013	272	578				
C25	7.814	0.020	1535	2086				
C26	8.038	0.002	142	151				
C28	8.506	0.016	5849	5911				
C32	9.315	0.014	866	2376				
C34	9.688	0.011	343	957				
Filter Peak	11.361	-0.008	1225	436	BUNKERC	(C10-C38)	558401	60.99
C36	10.050	0.011	471	1266				
C38	10.392	-0.001	536	251				
C40	10.740	0.002	811	1221				
o-terph	6.043	0.000	834489	748446				
Triacon Surr	8.918	0.002	751953	742684	NAS DIES	(C10-C24)	510626	27.87

Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.79) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.39) AK103(7.79 - 10.04) OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	748446	34.5	76.7
Triacontane	742684	39.9	88.8

M Indicates the peak was manually integrated

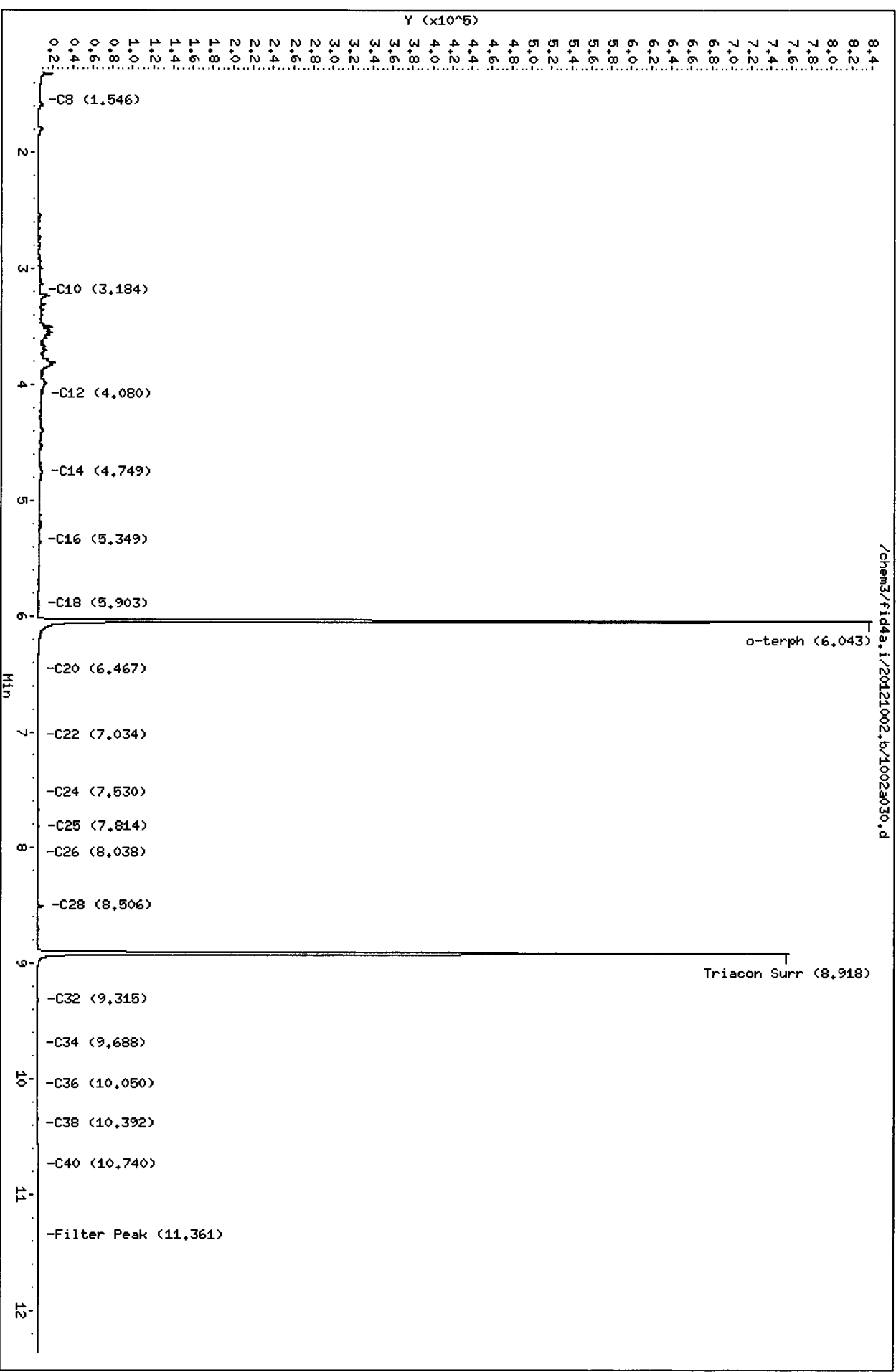
Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



Data File: /chem3/fid4a,i/20121002,b/1002a030.d  
Date : 02-OCT-2012 16:42

Client ID:  
Sample Info: VL48F  
Column phase: RTX-1

Instrument: fid4a,i  
Operator: JR  
Column diameter: 0.25



VK65:00220

VL  
10/3/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20121002.b/1002a031.d      ARI ID: VL48G  
Method: /chem3/fid4a.i/20121002.b/ftphfid4a.m      Client ID:  
Instrument: fid4a.i      Injection: 02-OCT-2012 17:03  
Operator: JR  
Report Date: 10/03/2012      Dilution Factor: 1  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.271	-0.021	13690	18241	WATPHG	(Tol-C12)	649170	35.06
C8	1.560	0.010	1060	2794	WATPHD	(C12-C24)	311185	19.43
C10	3.180	0.014	3295	3375	WATPHM	(C24-C38)	199006	15.04
C12	4.081	0.007	5394	6861	AK102	(C10-C25)	860545	45.46
C14	4.757	0.002	4858	12888	AK103	(C25-C36)	169712	18.44
C16	5.350	0.008	2114	2424				
C18	5.902	-0.001	1358	1781				
C20	6.475	0.006	945	1120	JET-A	(C10-C18)	776110	143.29
C22	7.031	0.012	1003	2844	MIN.OIL	(C24-C38)	199006	14.81
C24	7.546	0.003	1523	3425				
C25	7.794	0.001	2005	2068				
C26	8.035	-0.001	2261	4195				
C28	8.489	-0.001	2866	6509				
C32	9.299	-0.002	2299	5404				
C34	9.676	-0.001	1403	3030				
Filter Peak	11.362	-0.007	1428	710	BUNKERC	(C10-C38)	1052454	114.95
C36	10.034	-0.004	1159	1710				
C38	10.391	-0.001	1105	434				
C40	10.745	0.008	1240	1351				
o-terph	6.044	0.001	910251	791731				
Triacon Surr	8.916	0.000	785369	790195	NAS DIES	(C10-C24)	853448	46.58

Range Times: NW Diesel(4.074 - 7.543)      AK102(3.17 - 7.79)      Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.39)      AK103(7.79 - 10.04)      OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	791731	36.5	81.2
Triacontane	790195	42.5	94.5

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

Date : 02-OCT-2012 17:03

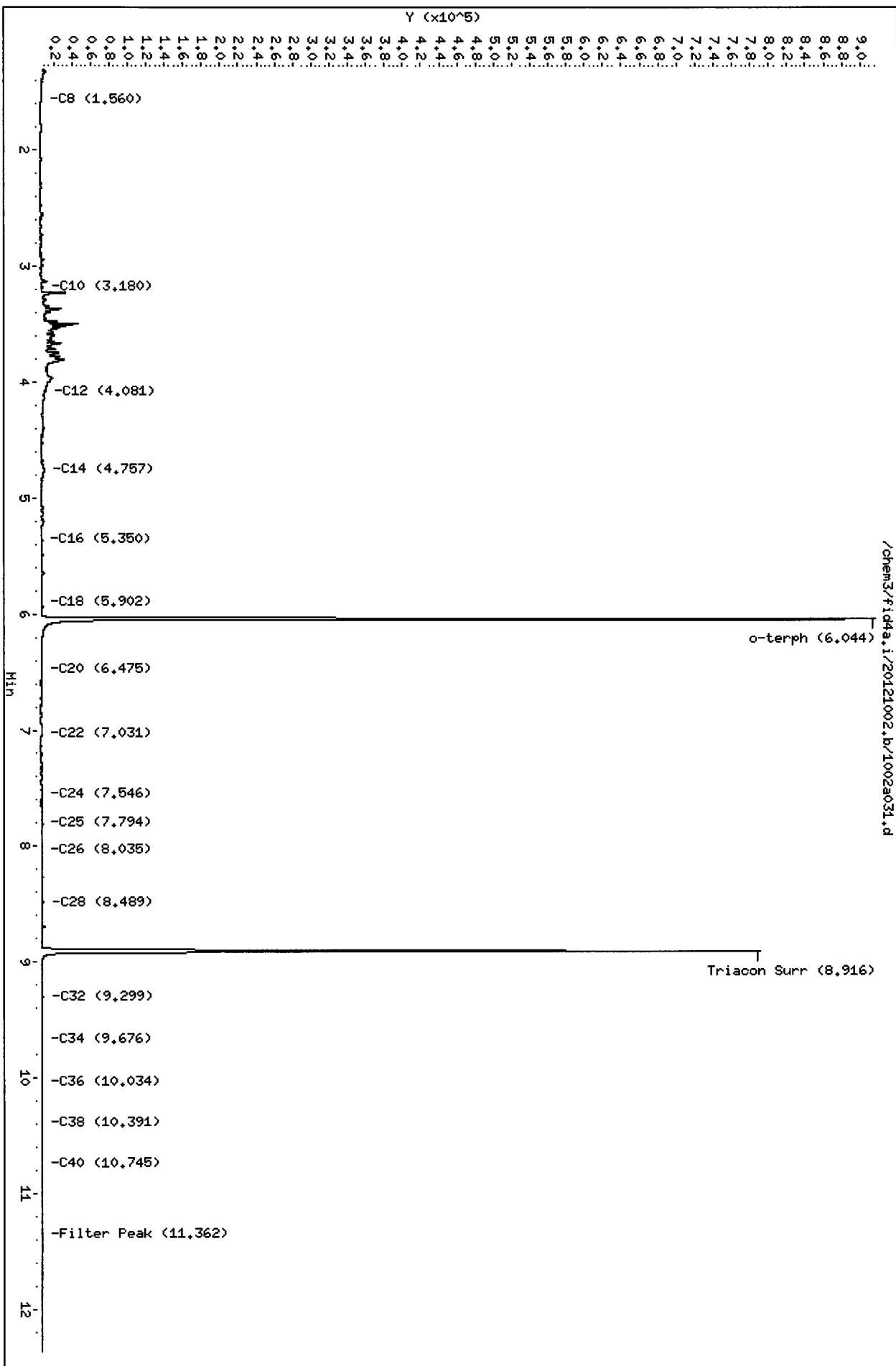
Client ID:

Instrument: fid4a.i

Sample Info: VL48C

Column phase: RTX-1

Operator: JR  
Column diameter: 0.25



PL  
10/3/12

Analytical Resources Inc.  
TPH Quantitation Report

Data file: /chem3/fid4a.i/20121002.b/1002a032.d  
Method: /chem3/fid4a.i/20121002.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/03/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI\_ID: VL48H  
Client ID:  
Injection: 02-OCT-2012 17:24  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.272	-0.020	12785	17820	WATPHG	(Tol-C12)	432632	23.36
C8	1.560	0.010	1087	2788	WATPHD	(C12-C24)	250828	15.66
C10	3.181	0.016	2250	3003	WATPHM	(C24-C38)	172638	13.04
C12	4.082	0.008	3458	8946	AK102	(C10-C25)	566058	29.90
C14	4.753	-0.003	3260	8551	AK103	(C25-C36)	145883	15.85
C16	5.353	0.011	1491	1981				
C18	5.903	0.000	1066	1845				
C20	6.469	0.000	1067	792	JET-A	(C10-C18)	471732	87.09
C22	7.030	0.011	1292	4047	MIN.OIL	(C24-C38)	172638	12.84
C24	7.548	0.005	1302	3137				
C25	7.798	0.005	1424	1202				
C26	8.039	0.003	1499	2426				
C28	8.489	-0.001	2914	3592				
C32	9.311	0.010	1895	4922				
C34	9.674	-0.003	1066	522				
Filter Peak	11.370	0.001	1392	605	BUNKERC	(C10-C38)	731914	79.94
C36	10.044	0.005	1034	1885				
C38	10.389	-0.004	970	532				
C40	10.751	0.014	1159	1956				
o-terph	6.044	0.001	809291	724760				
Triacon Surr	8.917	0.002	705773	718573	NAS DIES	(C10-C24)	559276	30.52

Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.79) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.39) AK103(7.79 - 10.04) OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	724760	33.4	74.3
Triacontane	718573	38.7	85.9

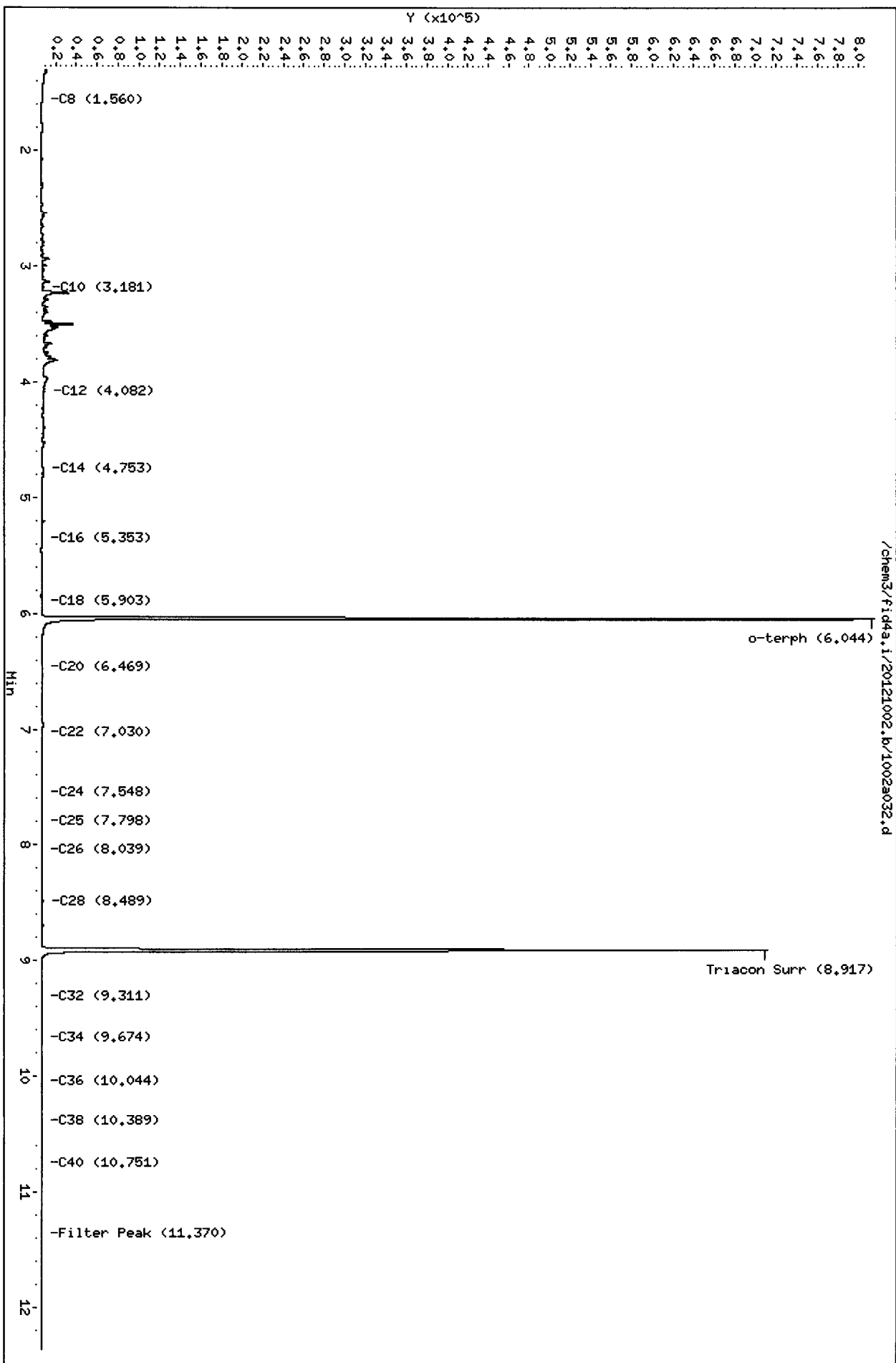
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

Data File: /chem3/fid4a.i/20121002.b/1002a032.d  
Date : 02-OCT-2012 17:24

Client ID:  
Sample Info: VL48H  
Column phase: RTX-1

Instrument: fid4a.i  
Operator: JR  
Column diameter: 0.25



**CLEANED TPHD SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VL48-Landau Associates  
Project: Cornwall  
0001020.400-510

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
MB-100112	84.9%	0
LCS-100112	81.5%	0
LCSD-100112	79.9%	0
MW-15D-092412	82.1%	0
MW-16D-092412	72.1%	0
MW-14D-092412	79.8%	0
MW-15S-092412	75.8%	0
MW-16S-092412	73.5%	0
MW-14S-092412	76.8%	0
MW-13D-092412	81.2%	0
MW-DUP-092412	74.3%	0

**LCS/MB LIMITS      QC LIMITS**

(OTER) = o-Terphenyl

(50-150)

(50-150)

Prep Method: SW3510C  
Log Number Range: 12-18901 to 12-18908

**ORGANICS ANALYSIS DATA SHEET**

NWTPHD by GC/FID-Silica and Acid Cleaned

Sample ID: LCS-100112

Page 1 of 1

LCS/LCSD

Lab Sample ID: LCS-100112

QC Report No: VL48-Landau Associates

LIMS ID: 12-18901

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: *[Signature]*

Date Sampled: 09/24/12

Reported: 10/03/12

Date Received: 09/25/12

Date Extracted LCS/LCSD: 10/01/12

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 10/02/12 14:13

Final Extract Volume LCS: 1.0 mL

LCSD: 10/02/12 14:34

LCSD: 1.0 mL

Instrument/Analyst LCS: FID/PKC

Dilution Factor LCS: 1.00

LCSD: FID/PKC

LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.22	3.00	74.0%	2.18	3.00	72.7%	1.8%

**TPHD Surrogate Recovery**

	LCS	LCSD
o-Terphenyl	81.5%	79.9%

Results reported in mg/L

RPD calculated using sample concentrations per SW846.

Analytical Resources Inc.  
TPH Quantitation Report

*KG  
10/3/12*

Data file: /chem3/fid4a.i/20121002.b/1002a023.d  
Method: /chem3/fid4a.i/20121002.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/03/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VL48LCSW1  
Client ID:  
Injection: 02-OCT-2012 14:13  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.279	-0.013	12527	15487	WATPHG	(Tol-C12)	3862290	208.57
C8	1.573	0.023	3941	9436	WATPHD	(C12-C24)	17763058	1109.20
C10	3.171	0.006	73249	81970	WATPHM	(C24-C38)	173918	13.14
C12	4.071	-0.003	200404	185704	AK102	(C10-C25)	20582162	1087.31
C14	4.751	-0.004	328140	497932	AK103	(C25-C36)	117426	12.76
C16	5.342	0.000	522718	617003				
C18	5.908	0.005	426984	531269				
C20	6.470	0.001	298653	423335	JET-A	(C10-C18)	15432739	2849.21
C22	7.018	-0.001	145323	211315	MIN.OIL	(C24-C38)	173918	12.94
C24	7.542	-0.001	37079	77392				
C25	7.793	-0.001	14557	34120				
C26	8.037	0.001	5911	12141				
C28	8.490	0.000	1523	2111				
C32	9.316	0.015	627	1336				
C34	9.675	-0.002	109	43				
Filter Peak	11.370	0.001	1139	1339	BUNKERC	(C10-C38)	20705034	2261.34
C36	10.038	-0.001	162	175				
C38	10.397	0.004	344	213				
C40	10.744	0.007	660	377				
o-terph	6.048	0.005	938190	794996				
Triacon Surr	8.920	0.004	759176	750831	NAS DIES	(C10-C24)	20531116	1120.45

Range Times: NW Diesel (4.074 - 7.543) AK102 (3.17 - 7.79) Jet A (3.17 - 5.90)  
NW M.Oil (7.54 - 10.39) AK103 (7.79 - 10.04) OR Diesel (3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	794996	36.7	81.5 M
Triacantane	750831	40.4	89.8

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012



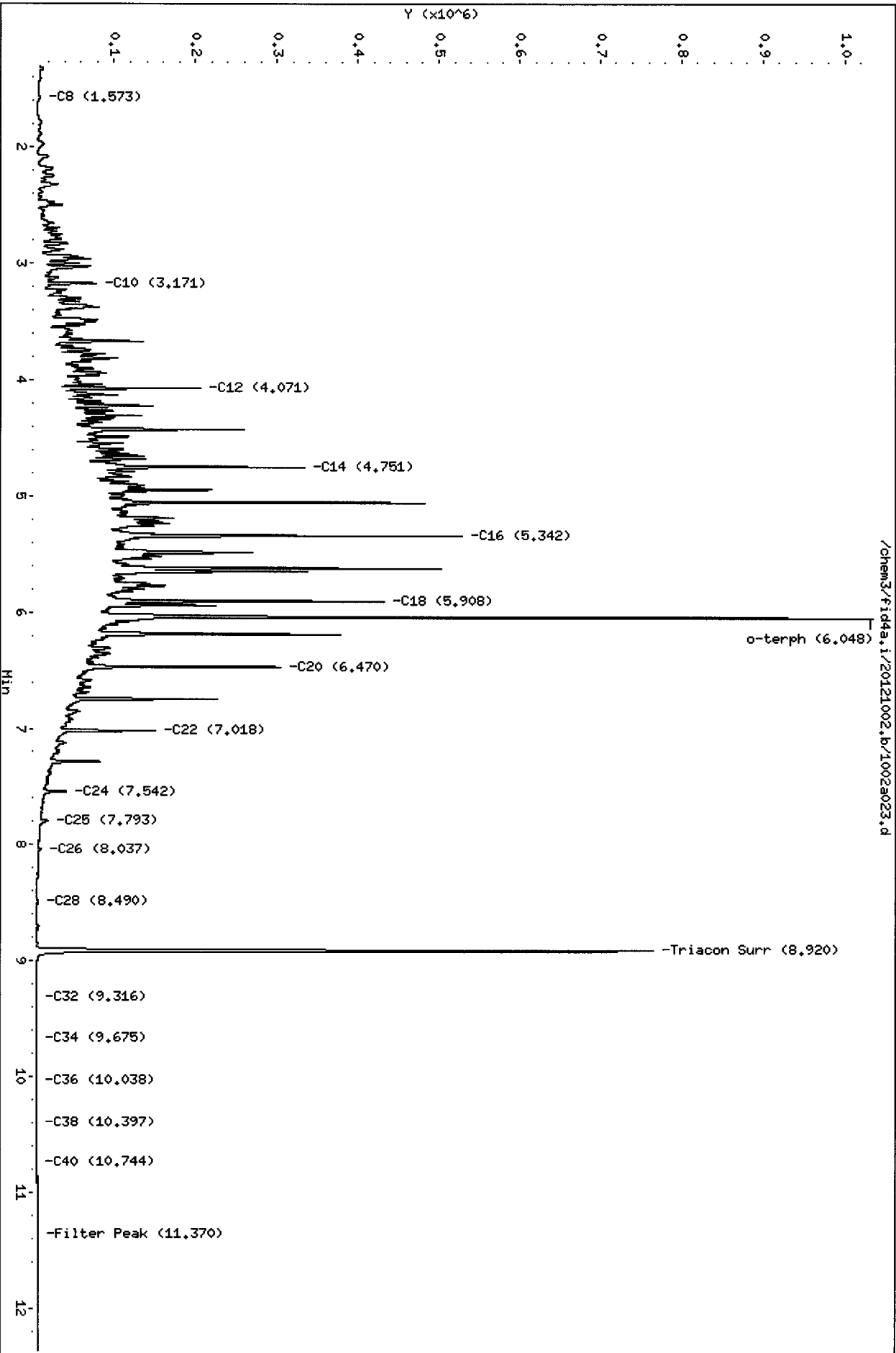
Data File: /chem3/fid4a.i/20121002.b/1002a023.d  
Date: 02-OCT-2012 14:13

Client ID:  
Sample Info: VL48LCSM1

Column phase: RTX-1

Instrument: fid4a.i

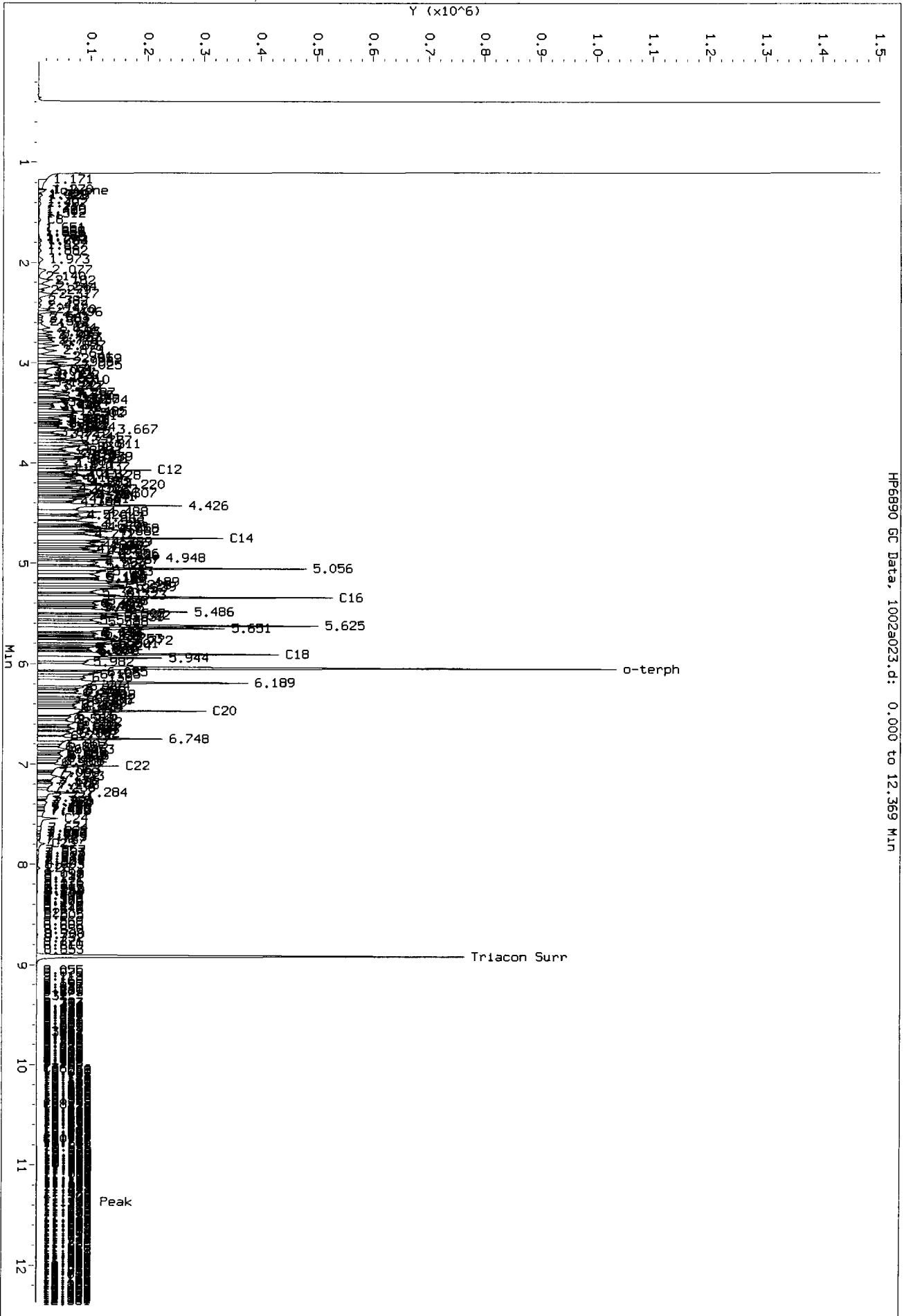
Operator: JR  
Column diameter: 0.25



/chem3/fid4a.i/20121002.b/1002a023.d

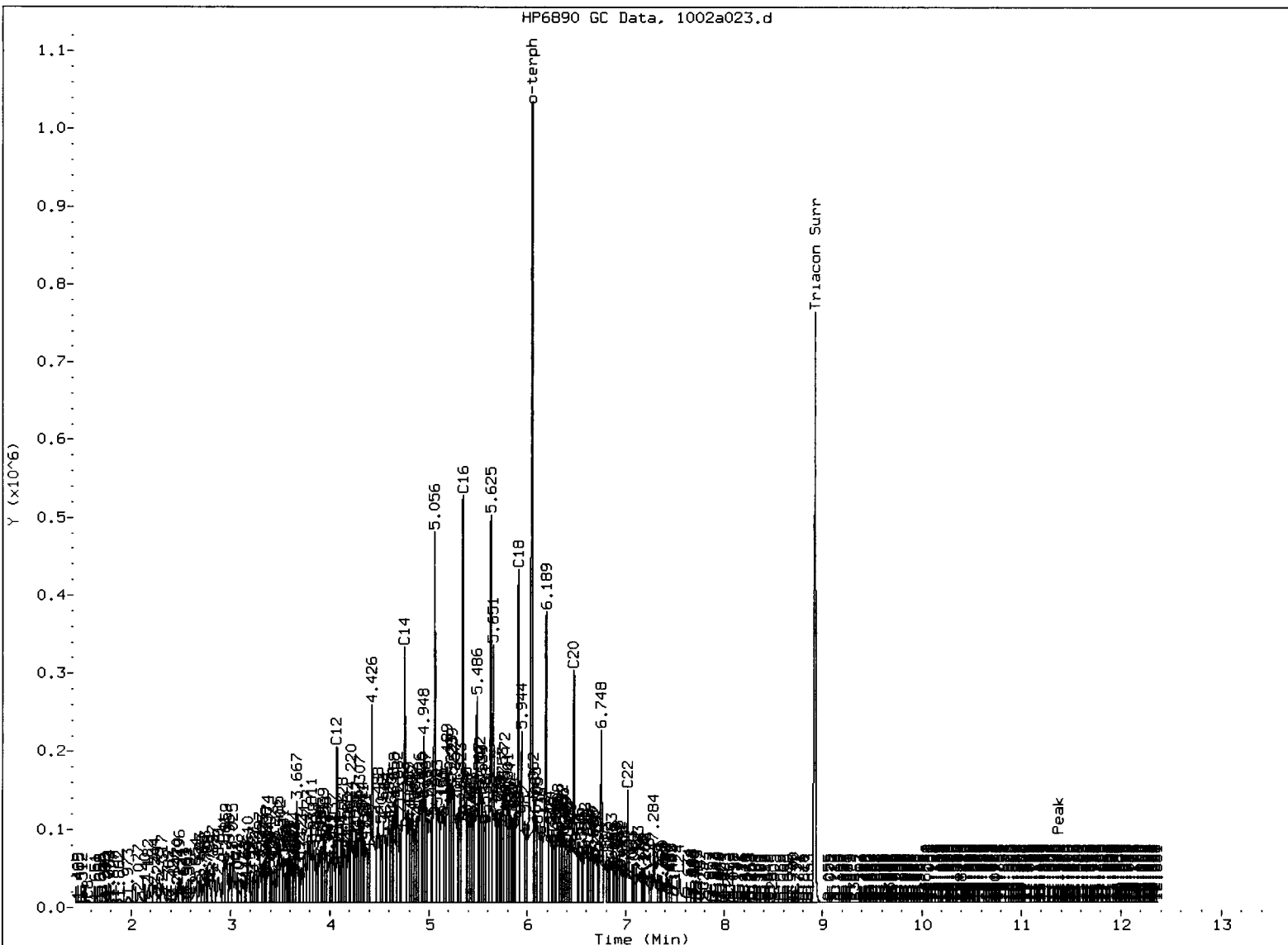
VK65:00228

PC  
10/31/12  
Data File: /chem3/fid4a.1/20121002\_b/1002a023.d  
Injection Date: 02-OCT-2012 14:13  
Instrument: fid4a.1  
Client Sample ID:



HP6890 GC Data, 1002a023.d: 0.000 to 12.369 Min

HP6890 GC Data, 1002a023.d



MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skimmed surrogate

Analyst: PL

Date: 11/3/12

Analytical Resources Inc.  
TPH Quantitation Report

*PC  
ids/hr*

Data file: /chem3/fid4a.i/20121002.b/1002a024.d  
Method: /chem3/fid4a.i/20121002.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 10/03/2012  
Macro: 24-AUG-2012  
Calibration Dates: Gas:28-SEP-2012 Diesel:25-SEP-2012 M.Oil:25-SEP-2012

ARI ID: VL48LCSDW1  
Client ID:  
Injection: 02-OCT-2012 14:34  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Method	Range	Total Area	Conc
Toluene	1.313	0.021	5159	3412	WATPHG	(Tol-C12)	3781550	204.21
C8	1.567	0.017	3730	8460	WATPHD	(C12-C24)	17431816	1088.51
C10	3.169	0.003	72837	79564	WATPHM	(C24-C38)	191418	14.46
C12	4.071	-0.003	196606	187826	AK102	(C10-C25)	20208433	1067.56
C14	4.751	-0.004	308974	483203	AK103	(C25-C36)	119070	12.94
C16	5.342	0.000	511785	753844				
C18	5.906	0.003	410991	501488				
C20	6.471	0.002	292770	456658	JET-A	(C10-C18)	14966556	2763.15
C22	7.019	0.000	140286	204657	MIN.OIL	(C24-C38)	191418	14.24
C24	7.542	-0.001	34009	67561				
C25	7.795	0.001	14515	26743				
C26	8.035	-0.001	6065	11307				
C28	8.506	0.016	5382	7993				
C32	9.312	0.011	940	1432				
C34	9.674	-0.003	170	187				
Filter Peak	11.381	0.012	988	919	BUNKERC	(C10-C38)	20336372	2221.07
C36	10.045	0.007	338	349				
C38	10.394	0.002	419	180				
C40	10.739	0.002	682	489				
o-terph	6.047	0.004	898613	779286				
Triacon Surr	8.919	0.003	710880	741292	NAS DIES	(C10-C24)	20144954	1099.38

Range Times: NW Diesel(4.074 - 7.543) AK102(3.17 - 7.79) Jet A(3.17 - 5.90)  
NW M.Oil(7.54 - 10.39) AK103(7.79 - 10.04) OR Diesel(3.17 - 8.49)

Surrogate	Area	Amount	%Rec
o-Terphenyl	779286	36.0	79.9 M
Triacontane	741292	39.9	88.6

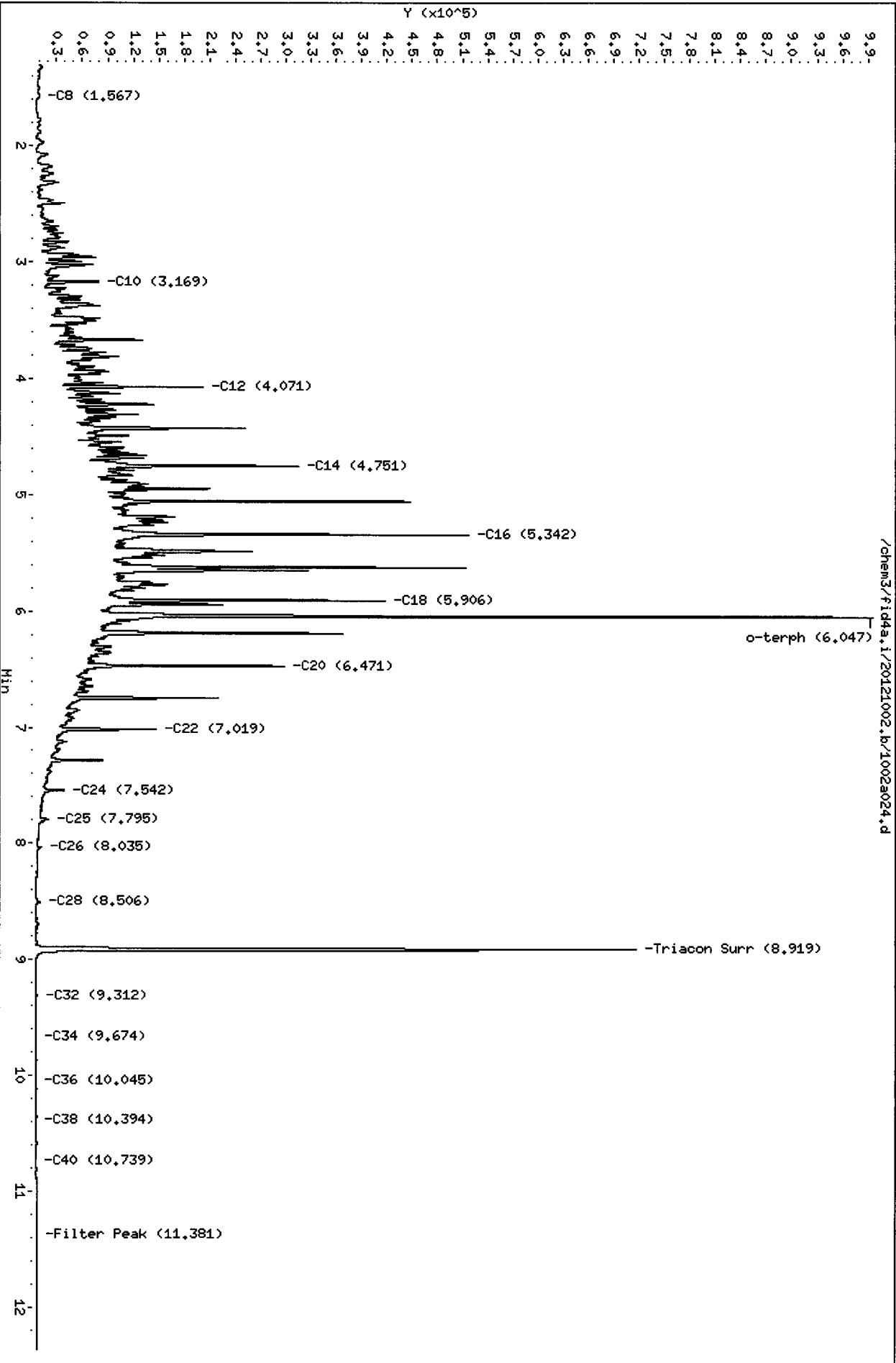
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	21670.6	25-SEP-2012
Triacon Surr	18590.6	25-SEP-2012
Gas	18517.9	28-SEP-2012
Diesel	16014.3	25-SEP-2012
Motor Oil	13234.2	25-SEP-2012
AK102	18929.5	25-SEP-2012
AK103	9202.1	25-SEP-2012
JetA	5416.5	11-AUG-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	18324.0	24-AUG-2012
Bunker C	9156.1	24-AUG-2012

Client ID:  
Sample Info: VL48LCSM4

Column phase: RTX-1

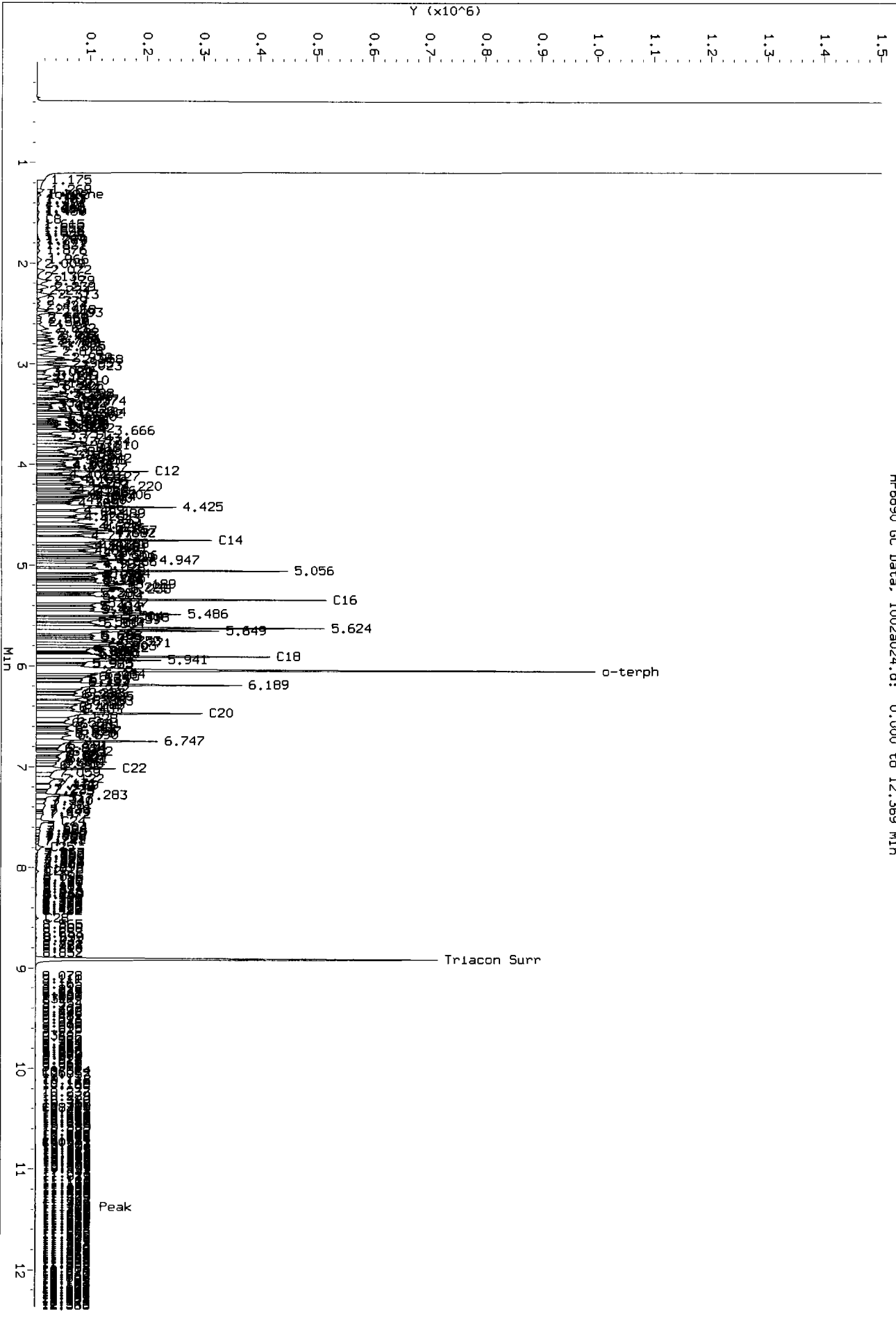
Instrument: fid4a.i  
Operator: JR  
Column diameter: 0.25

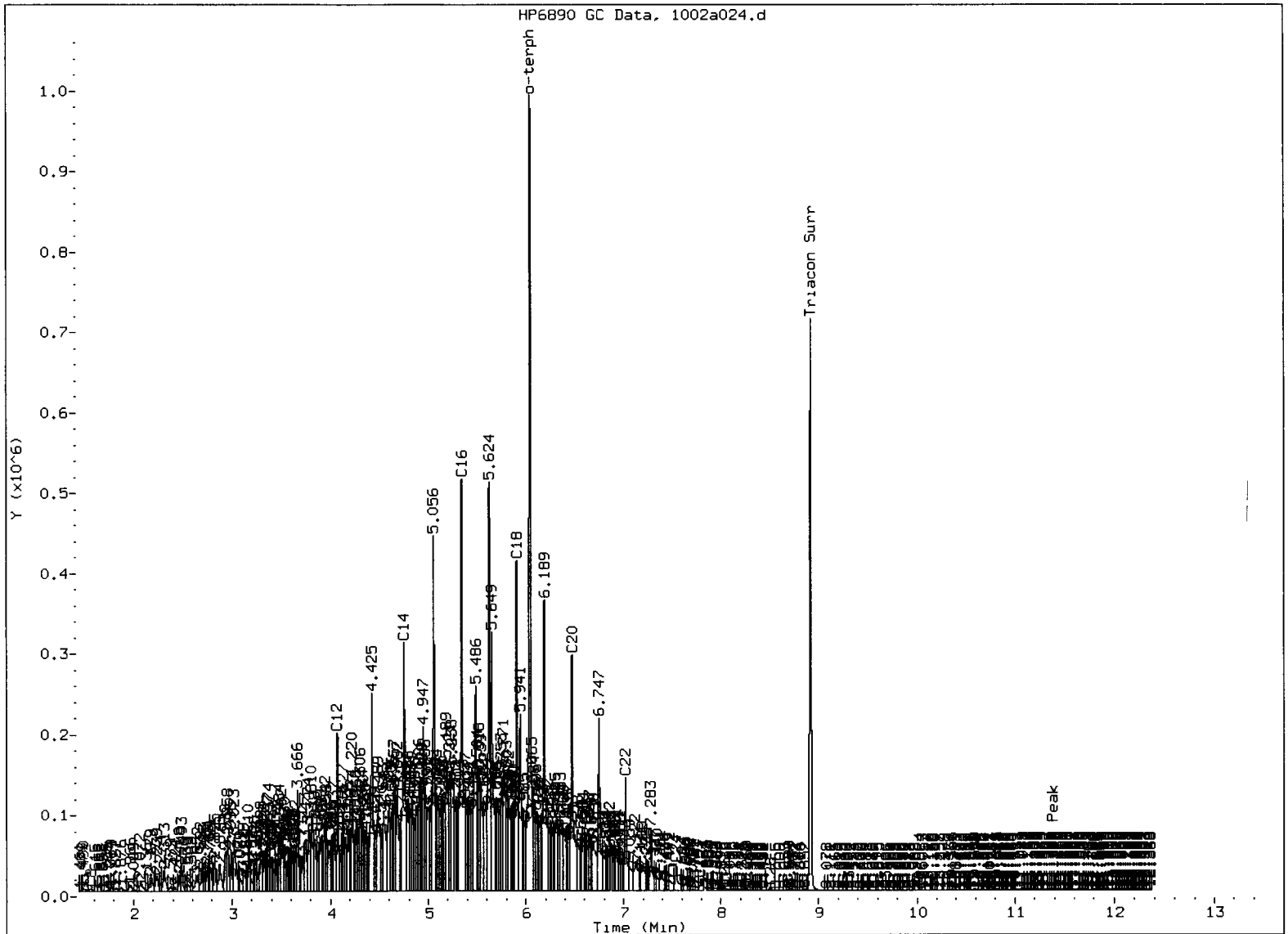


VK65: 00232

PC  
10/3/12  
Data File: /chem3/f1d4a.1/20121002.b/1002a024.d  
Injection Date: 02-OCT-2012 14:34  
Instrument: f1d4a.1  
Client Sample ID:

HP6890 GC Data, 1002a024.d: 0.000 to 12.369 Min





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst: PL

Date: 10/3/12

**TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT**

Matrix: Water  
Date Received: 09/25/12

ARI Job: VL48  
Project: Cornwall  
0001020.400-510

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
12-18901-100112MB1	Method Blank	500 mL	1.00 mL	10/01/12
12-18901-100112LCS1	Lab Control	500 mL	1.00 mL	10/01/12
12-18901-100112LCSD1	Lab Control Dup	500 mL	1.00 mL	10/01/12
12-18901-VL48A	MW-15D-092412	500 mL	1.00 mL	10/01/12
12-18902-VL48B	MW-16D-092412	500 mL	1.00 mL	10/01/12
12-18903-VL48C	MW-14D-092412	500 mL	1.00 mL	10/01/12
12-18904-VL48D	MW-15S-092412	500 mL	1.00 mL	10/01/12
12-18905-VL48E	MW-16S-092412	500 mL	1.00 mL	10/01/12
12-18906-VL48F	MW-14S-092412	500 mL	1.00 mL	10/01/12
12-18907-VL48G	MW-13D-092412	500 mL	1.00 mL	10/01/12
12-18908-VL48H	MW-DUP-092412	500 mL	1.00 mL	10/01/12



**ORGANICS ANALYSIS DATA SHEET**

**TPHG by Method NWTPHG**

Matrix: Water


QC Report No: VL48-Landau Associates

Project: Cornwall

Event: 0001020.400-510

Date Sampled: 09/24/12

Date Received: 09/25/12

Data Release Authorized: 

Reported: 10/02/12

ARI ID	Client ID	Analysis Date	DL	Range	Result
MB-100112 12-18907	Method Blank	10/01/12 PID2	1.0	Gasoline HC ID Trifluorotoluene Bromobenzene	< 0.25 U --- 101% 98.4%
VL48G 12-18907	MW-13D-092412	10/01/12 PID2	1.0	<b>Gasoline</b> HC ID Trifluorotoluene Bromobenzene	<b>0.33</b> GRO 107% 101%

Gasoline values reported in mg/L (ppm)

Quantitation on total peaks in the gasoline range from Toluene to Naphthalene.

GAS: Indicates the presence of gasoline or weathered gasoline.

GRO: Positive result that does not match an identifiable gasoline pattern.

Analytical Resources Inc.  
 BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/100112-1.b/1001a009.d  
 Data file 2: /chem3/pid2.i/100112-2.b/1001a009.d  
 Method: /chem3/pid2.i/100112-2.b/PIDB.m  
 Instrument: pid2.i  
 Gas Ical Date: 24-SEP-2012  
 BETX Ical Date: 24-SEP-2012

ARI ID: MB1001  
 Client ID:  
 Injection Date: 01-OCT-2012 13:47  
 Matrix: WATER  
 Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.171	-0.010	3485	45074	101.1	TFT(Surr)
14.780	-0.011	1920	19562	98.4	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Method	Range	RF	Total Area*	Amount
WATPHG	Tol-C12 ( 9.05 to 17.57)	356871	1	0.000
8015C	2MP-TMB ( 3.70 to 15.72)	745375	1	0.000
AK101	nC6-nC10 ( 4.16 to 14.45)	595259	0	0.000
NWTPHG	Tol-Nap ( 9.05 to 18.58)	373460	1	0.000

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.196	-0.010	14236	105.2	TFT(Surr)
14.798	-0.012	20548	108.6	BB(Surr)

SW8021B (PID)

RT	Shift	Response	Amount	Compound
ND	---	---	---	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

*NTR*  
*JW*  
*10/2/12*

A Indicates Peak Area was used for quantitation instead of Height  
 V Indicates peak was manually integrated

Data File: /chem3/pid2.i/100112-1.b/1001a009.d

Page 1

Date : 01-OCT-2012 13:47

Client ID:

Instrument: pid2.i

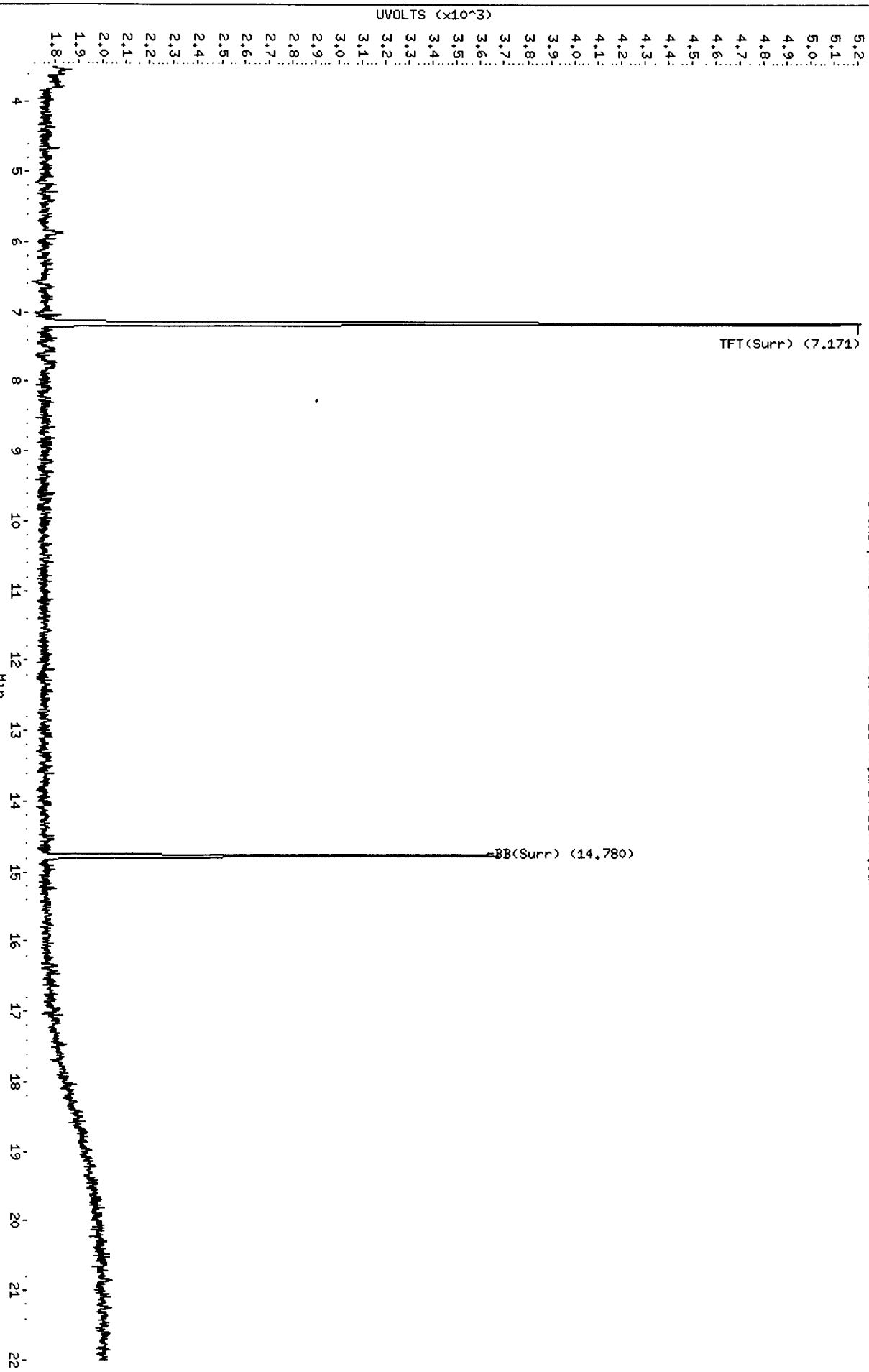
Sample Info: MB1001

Operator: JM

Column phase: RTX 502-2 FID

Column diameter: 0.18

/chem3/pid2.i/100112-1.b/1001a009.d/1001a009.cdf



00200 0000

Data File: /chem3/pid2.i/100112-2.b/1001a009.d

Date : 01-OCT-2012 13:47

Client ID:

Sample Info: HB1001

Column phase: RTX 502-2 PID

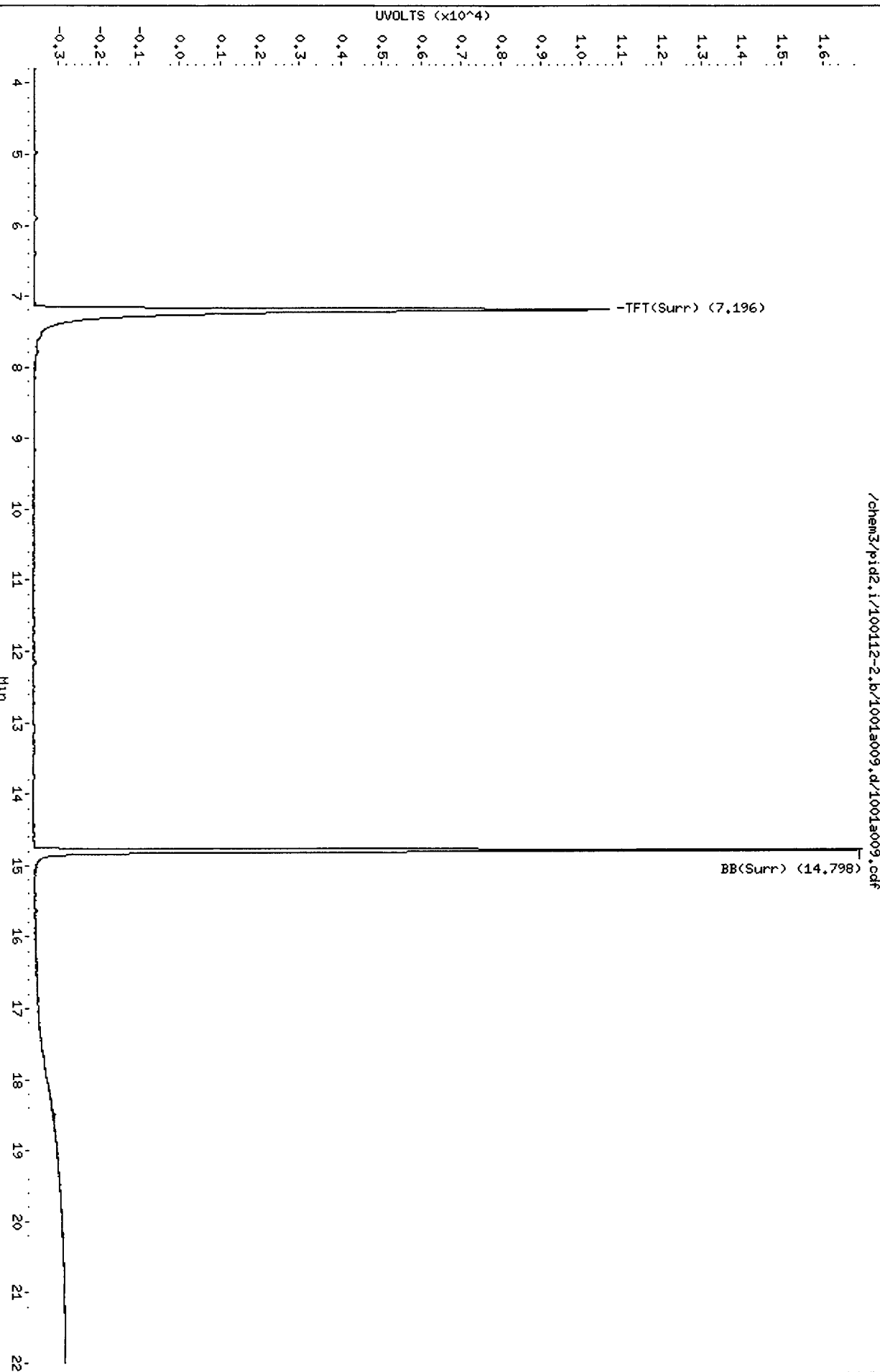
Instrument: pid2.i

Operator: JM

Column diameter: 0.18

Page 1

/chem3/pid2.i/100112-2.b/1001a009.d/1001a009.cdf



4465 00230

Analytical Resources Inc.  
 BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/100112-1.b/1001a013.d  
 Data file 2: /chem3/pid2.i/100112-2.b/1001a013.d  
 Method: /chem3/pid2.i/100112-2.b/PIDB.m  
 Instrument: pid2.i  
 Gas Ical Date: 24-SEP-2012  
 BETX Ical Date: 24-SEP-2012

ARI ID: VL48G  
 Client ID: MW-13D-092412  
 Injection Date: 01-OCT-2012 15:58  
 Matrix: WATER  
 Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.177	-0.004	3679	45996	106.7	TFT(Surr)
14.783	-0.008	1971	20071	101.0	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Method	Range	RF	Total Area*	Amount
WATPHG	Tol-C12 ( 9.05 to 17.57)	356871	94508	0.265 M
8015C	2MP-TMB ( 3.70 to 15.72)	745375	12210	0.016 M
AK101	nC6-nC10 ( 4.16 to 14.45)	595259	6028	0.010 M
NWTPHG	Tol-Nap ( 9.05 to 18.58)	373460	121792	0.326 M

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

JW  
10/2/12

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.201	-0.004	14981	110.7	TFT(Surr)
14.802	-0.007	20509	108.4	BB(Surr)

SW8021B (PID)

RT	Shift	Response	Amount	Compound
6.402	-0.005	152	0.15	Benzene
ND	---	---	---	Toluene
ND	---	---	---	Ethylbenzene
ND	---	---	---	M/P-Xylene
ND	---	---	---	O-Xylene
ND	---	---	---	MTBE

NR

A Indicates Peak Area was used for quantitation instead of Height  
 N Indicates peak was manually integrated

Data File: /chem3/pid2.i/100112-1.b/1001a013.d

Date: 01-OCT-2012 15:58

Client ID: MW-13D-092412

Sample Info: VL48G

Page 1

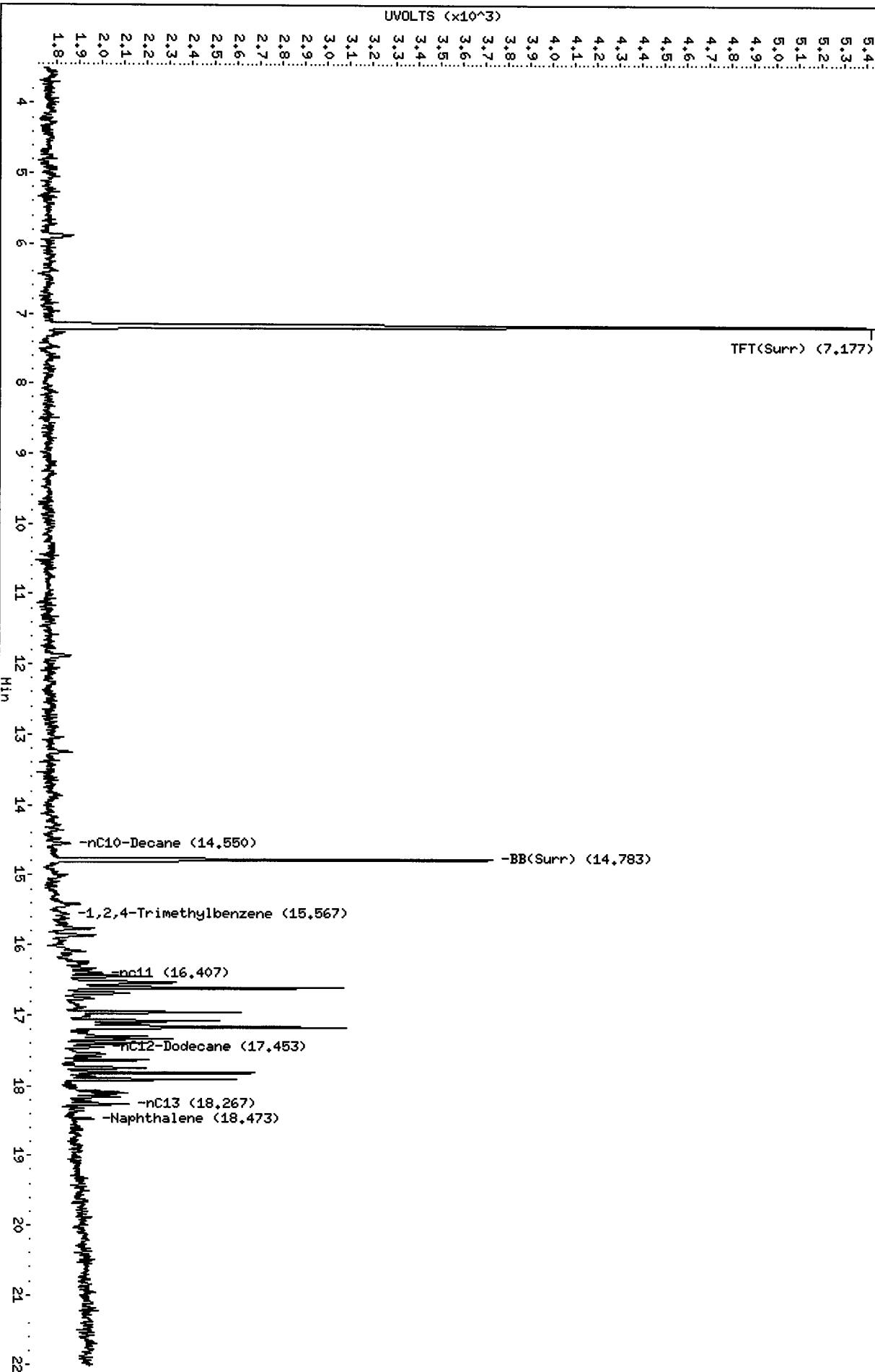
Column phase: RTX 502-2 FID

Instrument: pid2.i

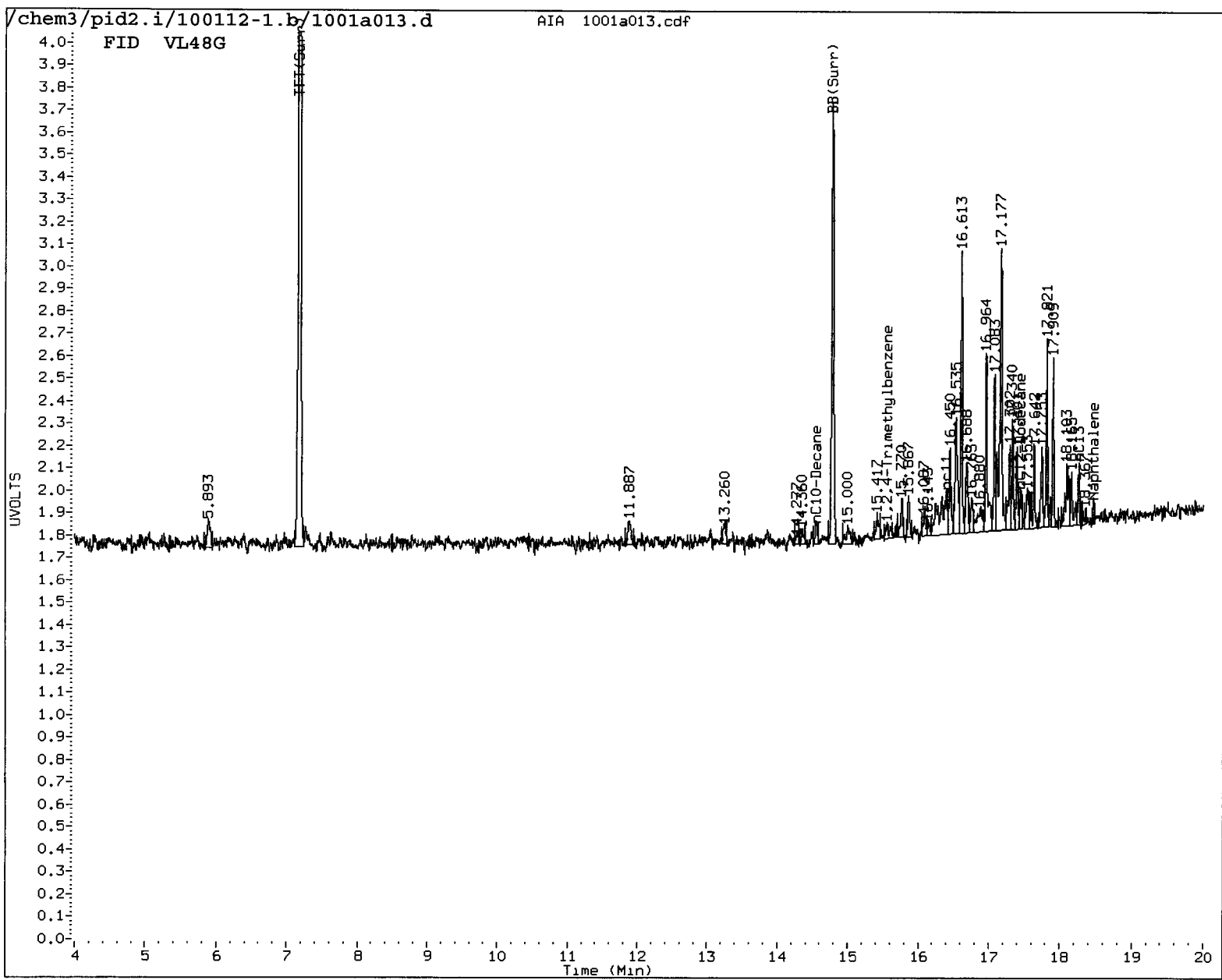
Operator: JM

Column diameter: 0.18

/chem3/pid2.i/100112-1.b/1001a013.d/1001a013.cdf



VK65 : 00241



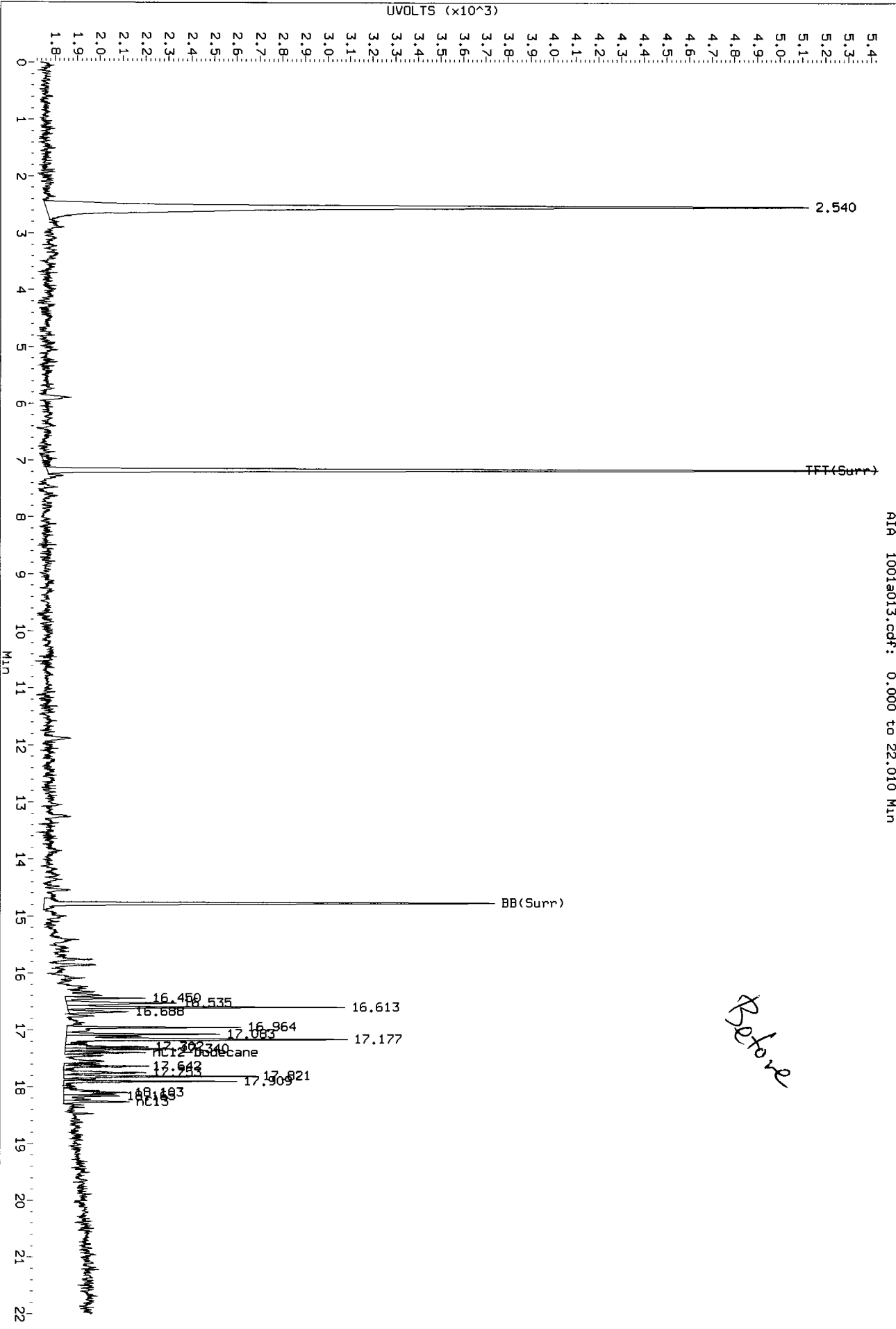
MANUAL INTEGRATION

- 1. Baseline correction
- 2. Poor chromatography
- 3. Peak not found
- 4. Totals calculation
- 5. Other \_\_\_\_\_

Analyst: ju Date: 10/12/12

Data File: /chem3/pid2.1/100112-1.b/1001a013.d/1001a013.cdf  
Injection Date: 01-OCT-2012 15:58  
Instrument: pid2.1  
Client Sample ID: MW-13D-092412

AIA 1001a013.cdf: 0.000 to 22.010 Min





**TPHG WATER SURROGATE RECOVERY SUMMARY**

ARI Job: VL48  
Matrix: Water

QC Report No: VL48-Landau Associates  
Project: Cornwall  
Event: 0001020.400-510


<u>Client ID</u>	<u>TFT</u>	<u>BBZ</u>	<u>TOT OUT</u>
MB-100112	101%	98.4%	0
LCS-100112	104%	98.8%	0
LCSD-100112	103%	98.5%	0
MW-13D-092412	107%	101%	0

	<b>LCS/MB LIMITS</b>	<b>QC LIMITS</b>
(TFT) = Trifluorotoluene	(80-120)	(80-120)
(BBZ) = Bromobenzene	(80-120)	(80-120)

Log Number Range: 12-18907 to 12-18907

**ORGANICS ANALYSIS DATA SHEET**  
**TPHG by Method NWTPHG**  
 Page 1 of 1

**Sample ID: LCS-100112**  
**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-100112  
 LIMS ID: 12-18907  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 10/02/12

QC Report No: VL48-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: NA  
 Date Received: NA

Date Analyzed LCS: 10/01/12 12:50  
 LCSD: 10/01/12 13:19  
 Instrument/Analyst LCS: PID2/JLW  
 LCSD: PID2/JLW

Purge Volume: 5.0 mL  
 Dilution Factor LCS: 1.0  
 LCSD: 1.0

Analyte	LCS		LCSD		RPD	
	LCS	Spike Added-LCS Recovery	LCSD	Spike Added-LCSD Recovery	RPD	RPD
Gasoline Range Hydrocarbons	1.14	1.00 114%	1.11	1.00 111%	2.7%	

Reported in mg/L (ppm)

RPD calculated using sample concentrations per SW846.

**TPHG Surrogate Recovery**

	LCS	LCSD
Trifluorotoluene	104%	103%
Bromobenzene	98.8%	98.5%

Analytical Resources Inc.  
 BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/100112-1.b/1001a007.d  
 Data file 2: /chem3/pid2.i/100112-2.b/1001a007.d  
 Method: /chem3/pid2.i/100112-2.b/PIDB.m  
 Instrument: pid2.i  
 Gas Ical Date: 24-SEP-2012  
 BETX Ical Date: 24-SEP-2012

ARI ID: LCS1001  
 Client ID:  
 Injection Date: 01-OCT-2012 12:50  
 Matrix: WATER  
 Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.175	-0.006	3600	52196	104.4	TFT(Surr) ✓
14.784	-0.007	1928	20344	98.8	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Method	Range	RF	Total Area*	Amount
WATPHG	Tol-C12 ( 9.05 to 17.57)	356871	405365	1.136 M
8015C	2MP-TMB ( 3.70 to 15.72)	745375	882966	1.185 M
AK101	nC6-nC10 ( 4.16 to 14.45)	595259	713286	1.198 M
NWTPHG	Tol-Nap ( 9.05 to 18.58)	373460	426392	1.142 M ✓

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.200	-0.005	15350	113.5	TFT(Surr) ✓
14.802	-0.007	21076	111.3	BB(Surr)

SW8021B (PID)

RT	Shift	Response	Amount	Compound
6.400	-0.007	4162	4.19N	Benzene
9.161	-0.006	29060	46.84	Toluene
12.001	-0.009	6719	12.54	Ethylbenzene
12.161	-0.006	25525	47.44	M/P-Xylene
13.064	-0.009	9743	21.98	O-Xylene
4.055	-0.012	1112	2.86	MTBE

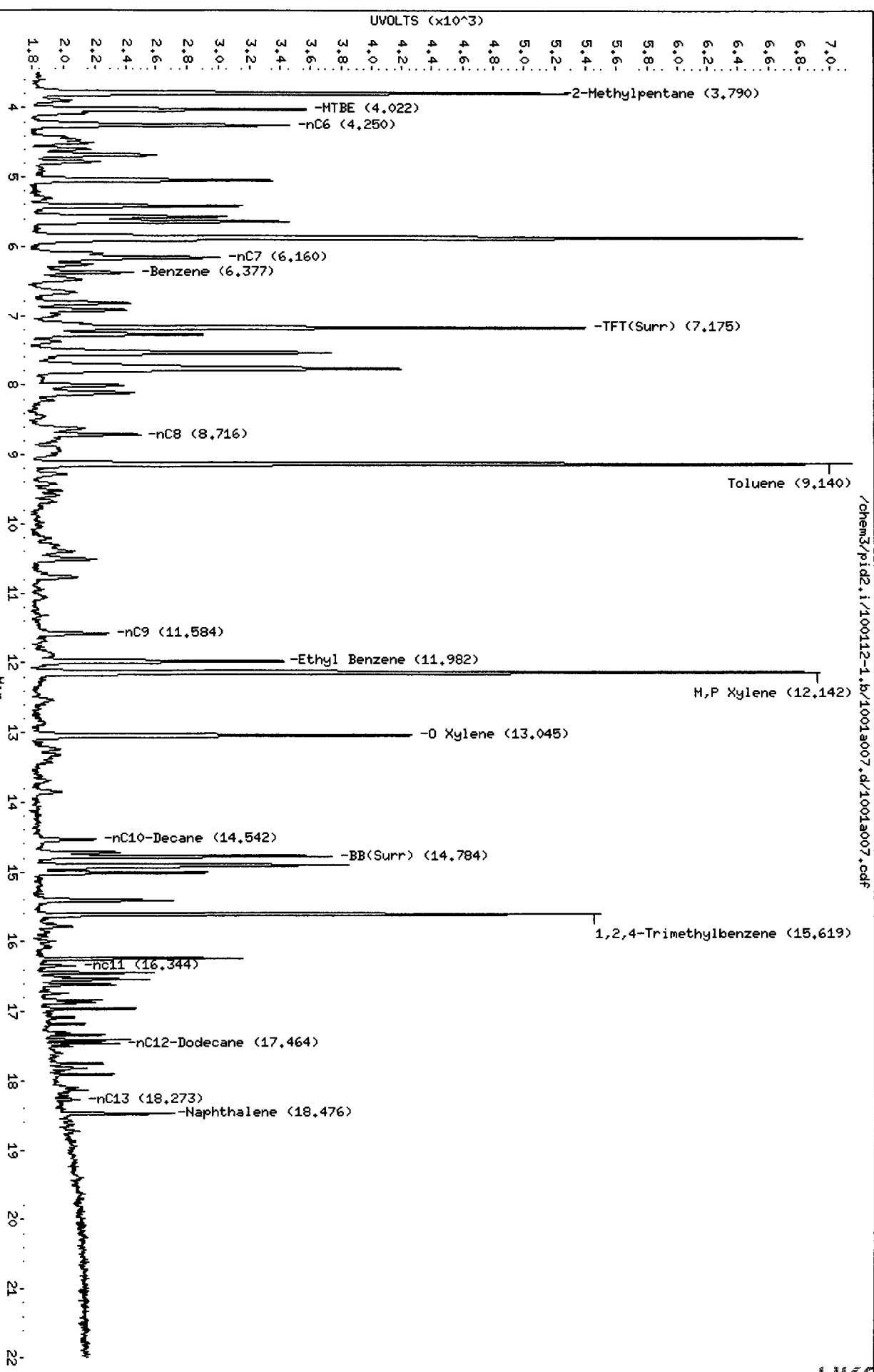
*NR*  
*JW*  
*10/2/12*

A Indicates Peak Area was used for quantitation instead of Height  
 N Indicates peak was manually integrated

Data File: /chem3/pid2.i/100112-1.b/1001a007.d  
Date : 01-OCT-2012 12:50  
Client ID:  
Sample Info: LCS1001

Column phase: RTX 502-2 FID

Instrument: pid2.i  
Operator: JM  
Column diameter: 0.18



/chem3/pid2.i/100112-1.b/1001a007.d/1001a007.cdf

Data File: /chem3/pid2.i/100112-2.b/1001a007.d

Date : 01-OCT-2012 12:50

Client ID:

Sample Info: LCS1001

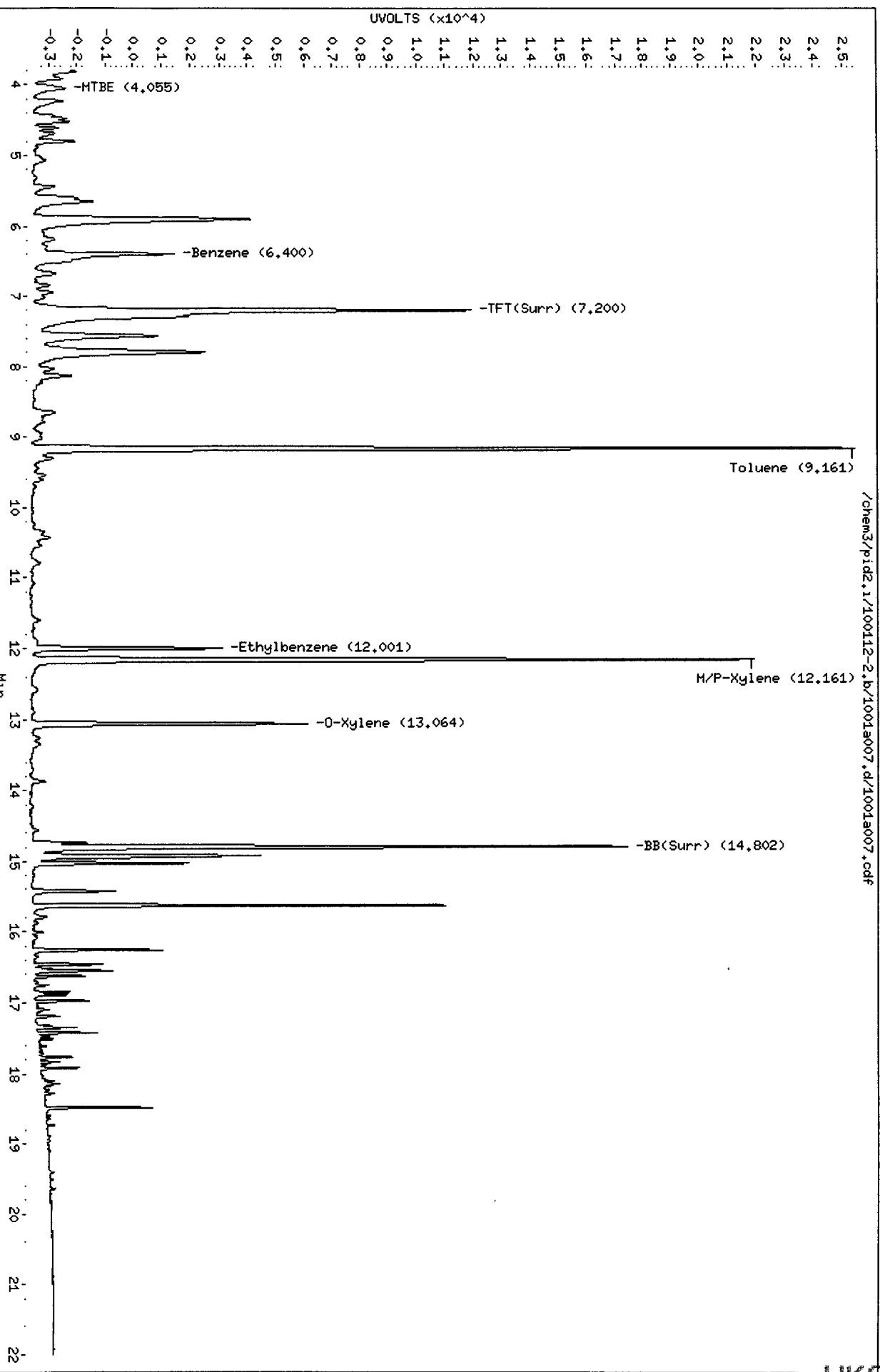
Instrument: pid2.i

Page 1

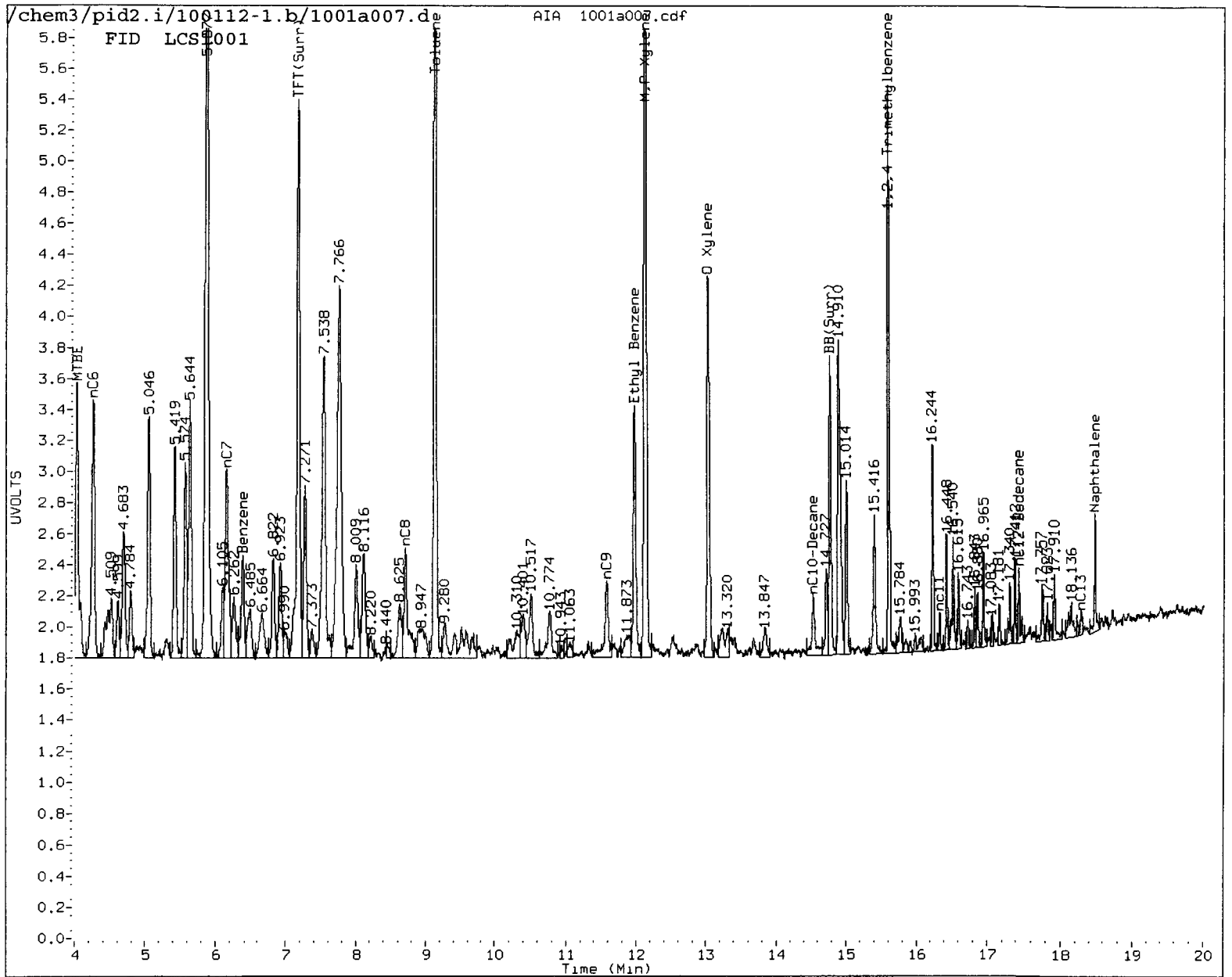
Column phase: RTX 502-2 PID

Operator: JM  
Column diameter: 0.18

/chem3/pid2.i/100112-2.b/1001a007.d/1001a007.cdf



01/00148



MANUAL INTEGRATION

- ①. Baseline correction
- ②. Poor chromatography
- ③. Peak not found
4. Totals calculation

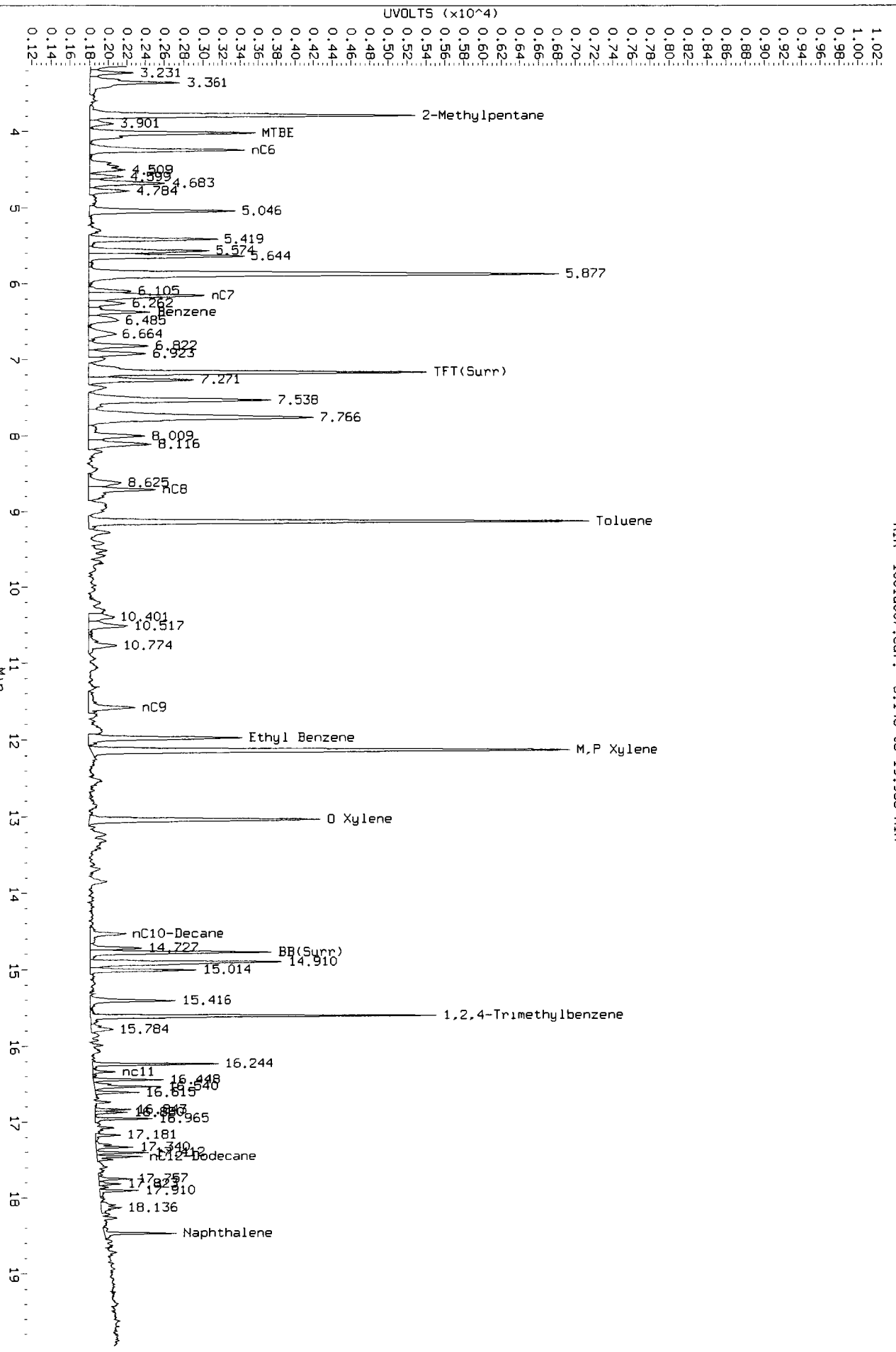
5. Other \_\_\_\_\_

Analyst: JW Date: 10/2/12

Data File: /chem3/pid2.1/100112-1.b/1001a007.d/1001a007.cdf  
Injection Date: 01-OCT-2012 12:50  
Instrument: pid2.1  
Client Sample ID:

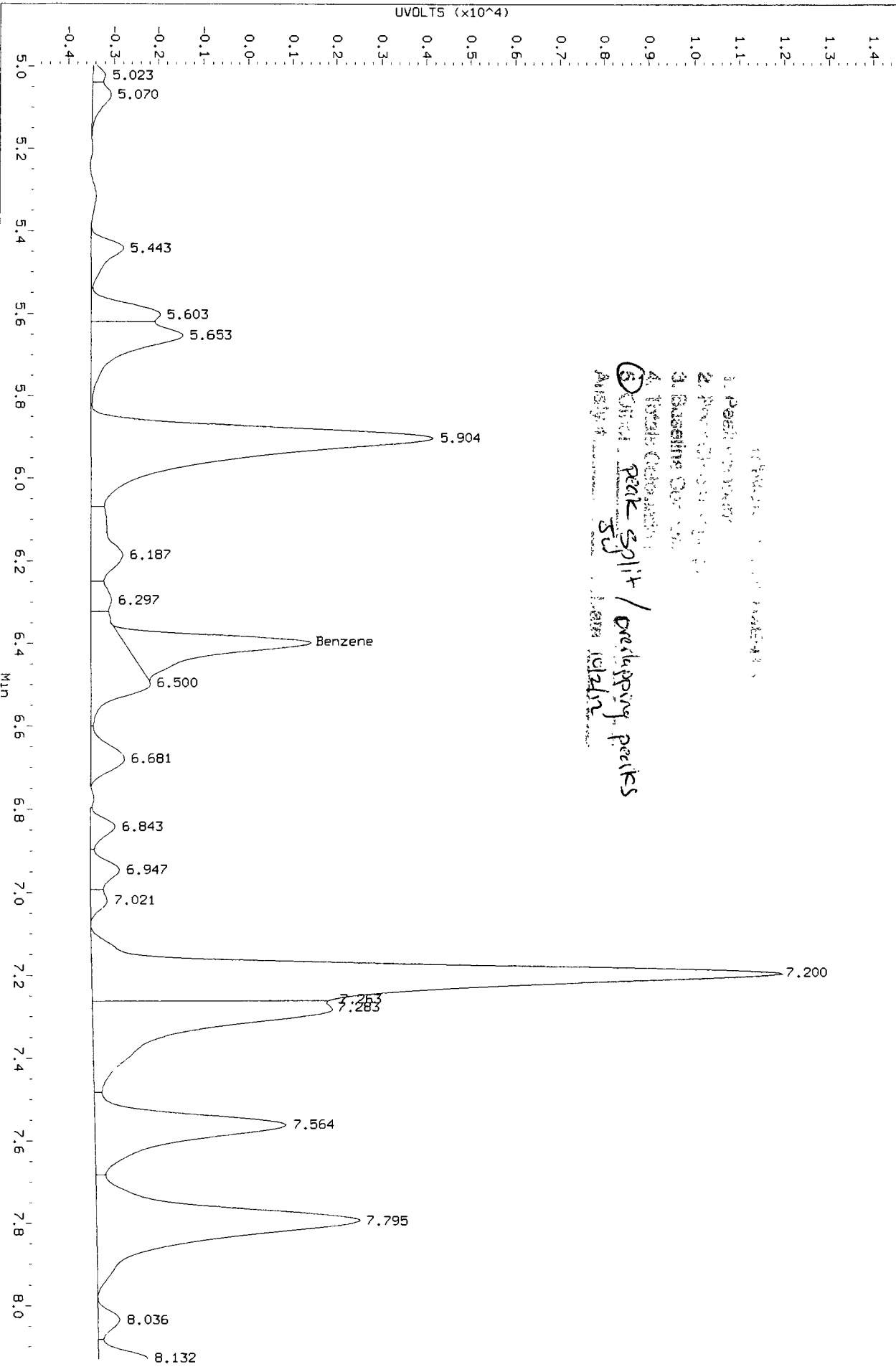
RI# 1001a007.cdf: 3.148 to 19.958 Min

*Raker*



Data File: /chem3/pig2.1/100112-2.b/1001a007.d/1001a007.cdf  
Injection Date: 01-OCT-2012 12:50  
Instrument: pig2.1  
Client Sample ID:

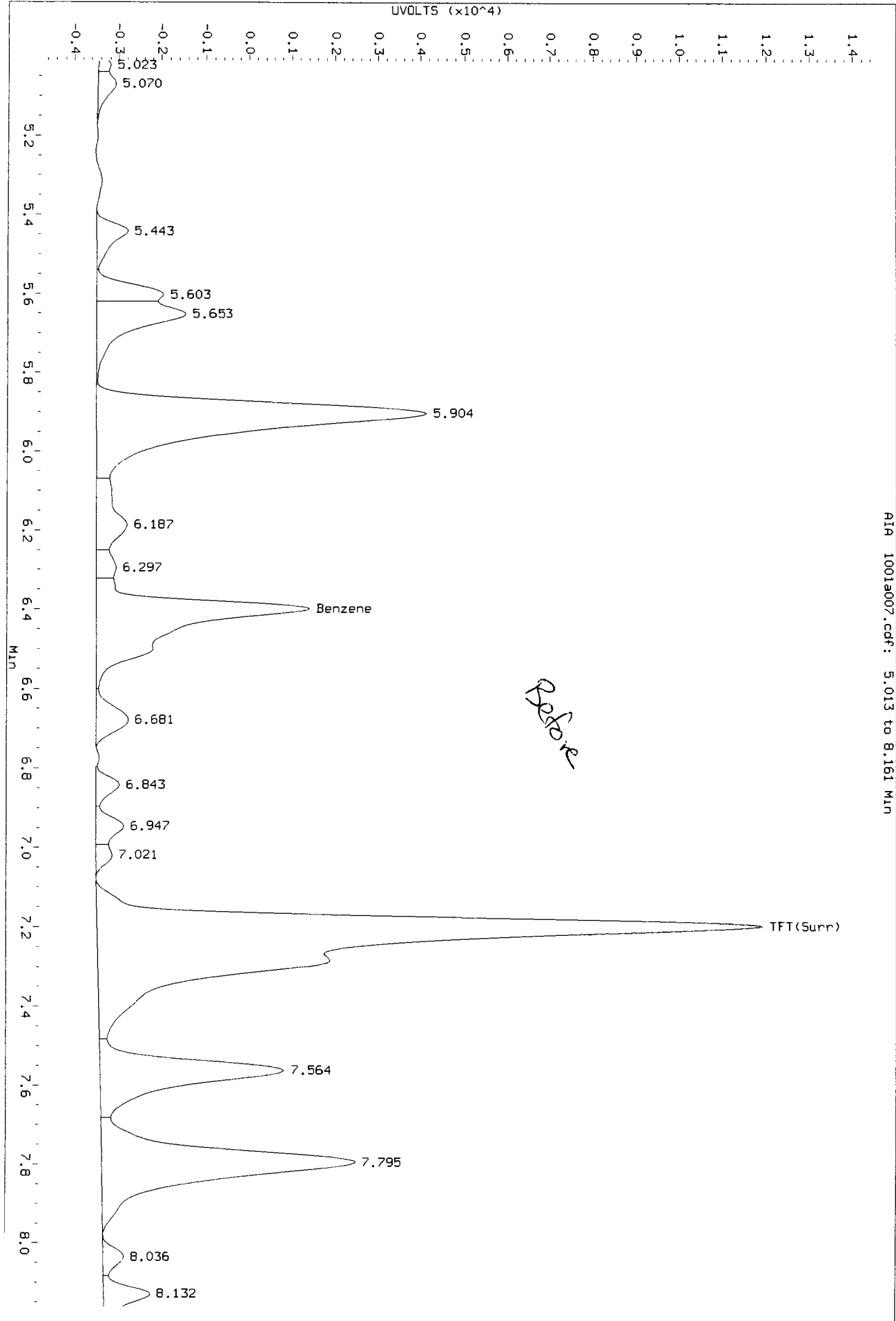
AIA 1001a007.cdf: 4.999 to 8.131 Min





Data File: /chem3/pid2.1/100112-2.b/1001a007.d/1001a007.cdf  
Injection Date: 01-OCT-2012 12:30  
Instrument: pid2.1  
Client Sample ID:

AIA 1001a007.cdf: 5.013 to 8.161 Min



Analytical Resources Inc.  
 BETX/Gas Quantitation Report

Data file 1: /chem3/pid2.i/100112-1.b/1001a008.d  
 Data file 2: /chem3/pid2.i/100112-2.b/1001a008.d  
 Method: /chem3/pid2.i/100112-2.b/PIDB.m  
 Instrument: pid2.i  
 Gas Ical Date: 24-SEP-2012  
 BETX Ical Date: 24-SEP-2012

ARI ID: LCSD1001  
 Client ID:  
 Injection Date: 01-OCT-2012 13:19  
 Matrix: WATER  
 Dilution Factor: 1.000

FID Surrogates

RT	Shift	Height	Area	%Rec	Compound
7.174	-0.007	3548	51128	102.9	TFT(Surr) ✓
14.782	-0.009	1922	20421	98.5	BB(Surr)

PETROLEUM HYDROCARBONS (FID)

Method	Range	RF	Total Area*	Amount
WATPHG	Tol-C12 ( 9.05 to 17.57)	356871	395082	1.107 M
8015C	2MP-TMB ( 3.70 to 15.72)	745375	846832	1.136 M
AK101	nC6-nC10 ( 4.16 to 14.45)	595259	686581	1.153 M
NWTPHG	Tol-Nap ( 9.05 to 18.58)	373460	413474	1.107 M ✓

M Indicates manual integration within range

\* Surrogate areas are subtracted from Total Area  
 Range marker RT's are set by daily RT standard

PID Surrogates

RT	Shift	Response	%Rec	Compound
7.197	-0.009	14714	108.8	TFT(Surr) ✓
14.800	-0.009	20764	109.7	BB(Surr)

SW8021B (PID)

RT	Shift	Response	Amount	Compound
6.400	-0.007	3194	3.22N	Benzene
9.160	-0.007	28130	45.34	Toluene
11.999	-0.011	5934	11.07	Ethylbenzene
12.160	-0.008	23778	44.19	M/P-Xylene
13.062	-0.011	8960	20.22	O-Xylene
ND	---	---	---	MTBE

*NR*  
*JW*  
*10/2/12*

A Indicates Peak Area was used for quantitation instead of Height  
 N Indicates peak was manually integrated

Data File: /chem3/pid2.i/100112-1.b/1001a008.d

Date: 01-OCT-2012 13:19

Client ID:

Sample Info: LCSJ1001

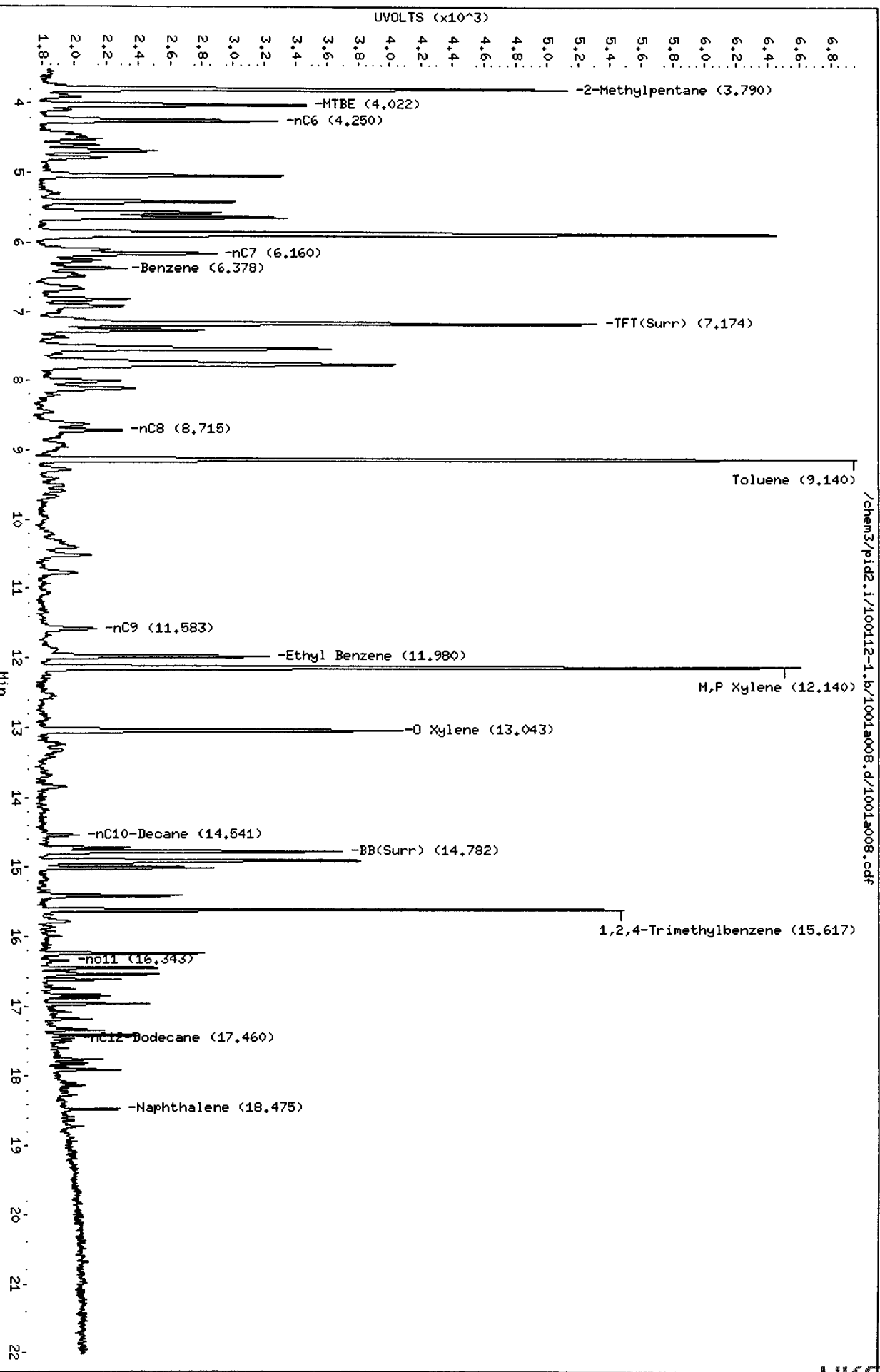
Column phase: RTX 502-2 FID

Instrument: pid2.i

Operator: JM

Column diameter: 0.18

Page 1



/chem3/pid2.i/100112-1.b/1001a008.d/1001a008.cdf

4X05 : 00254

Data File: /chem3/pid2.i/100112-2.b/1001a008.d  
Date : 01-OCT-2012 13:19  
Client ID:

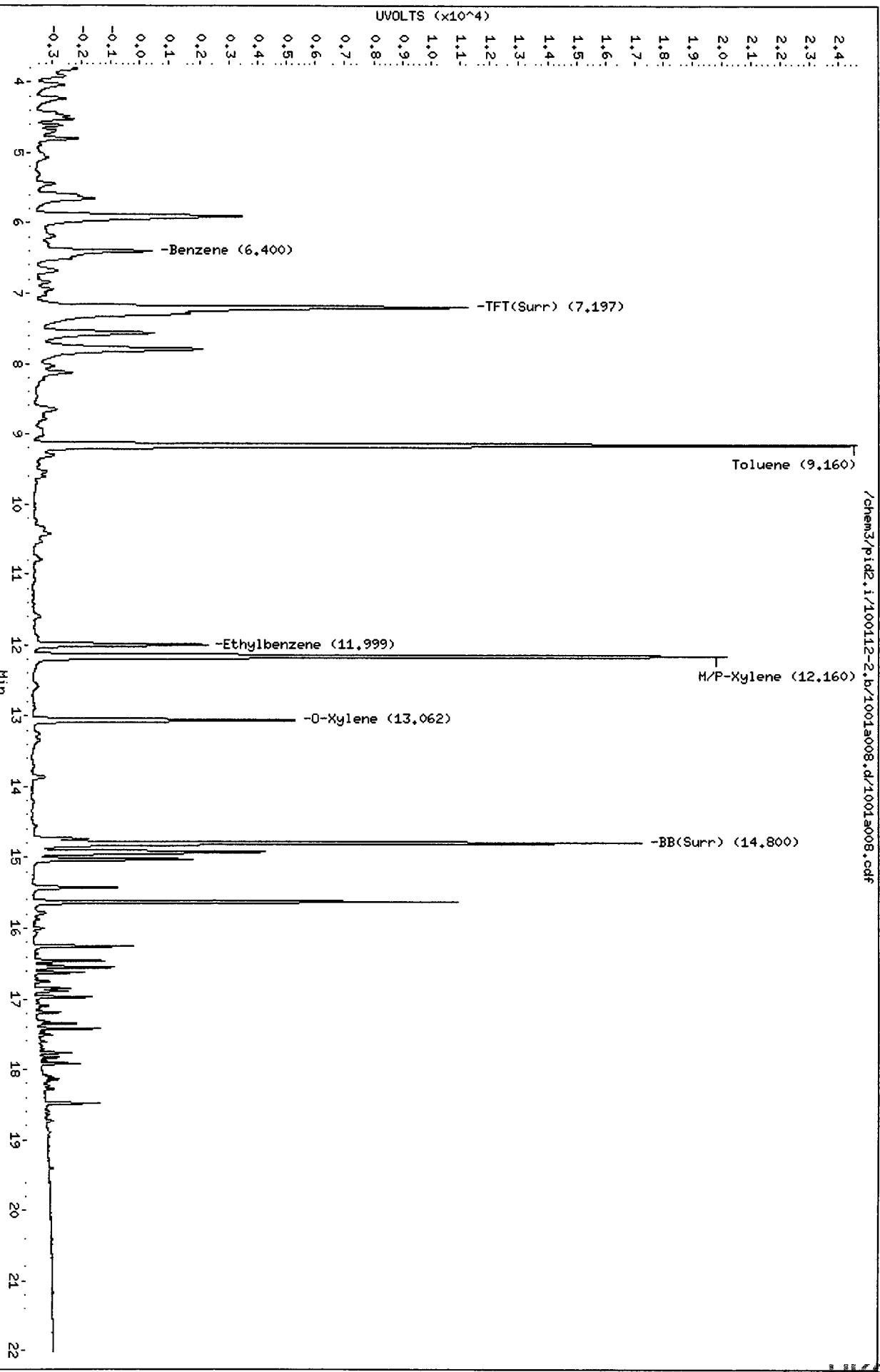
Sample Info: LCSID1001

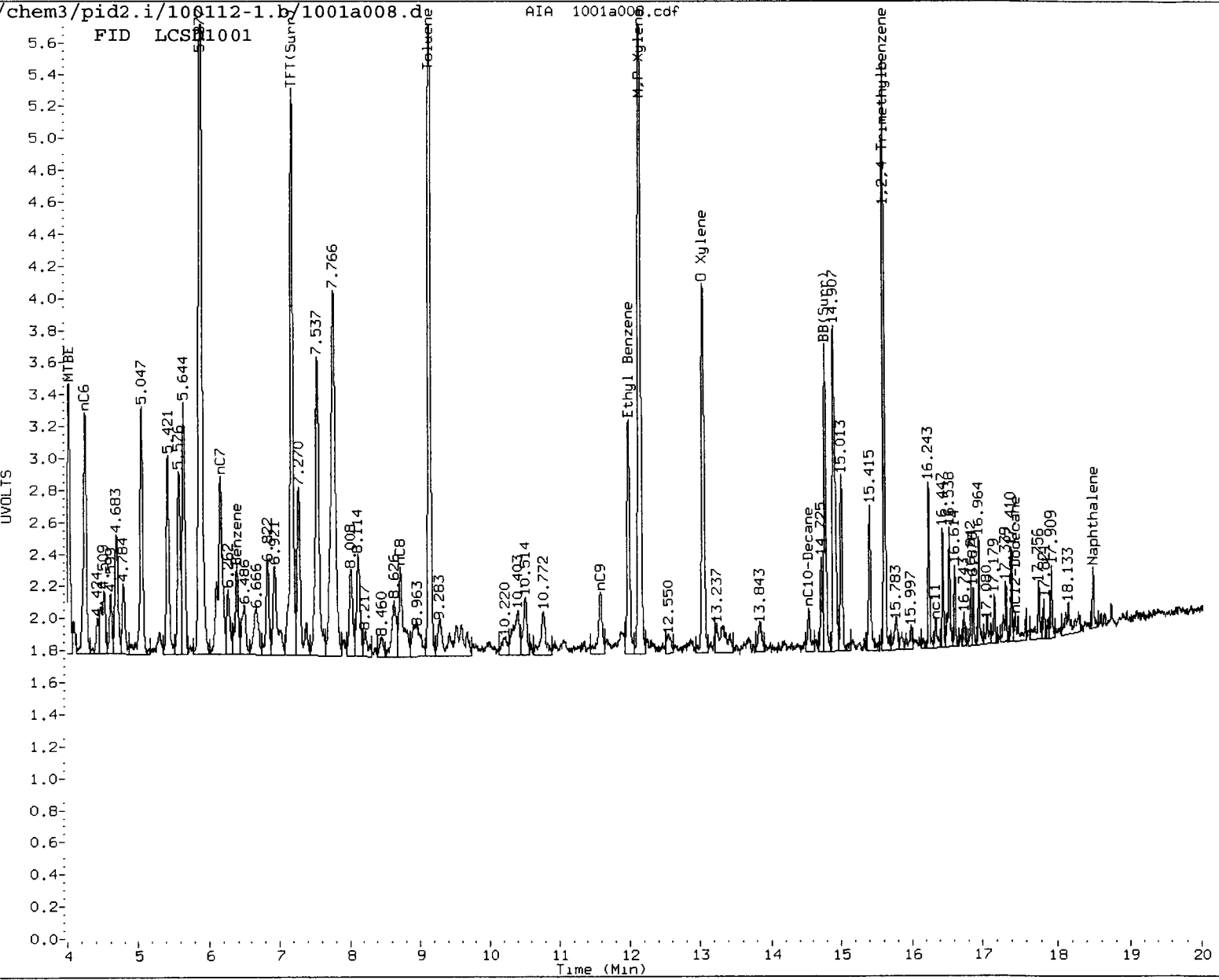
Column phase: RTX 502-2 PID

Instrument: pid2.i

Operator: JM

Column diameter: 0.18





MANUAL INTEGRATION

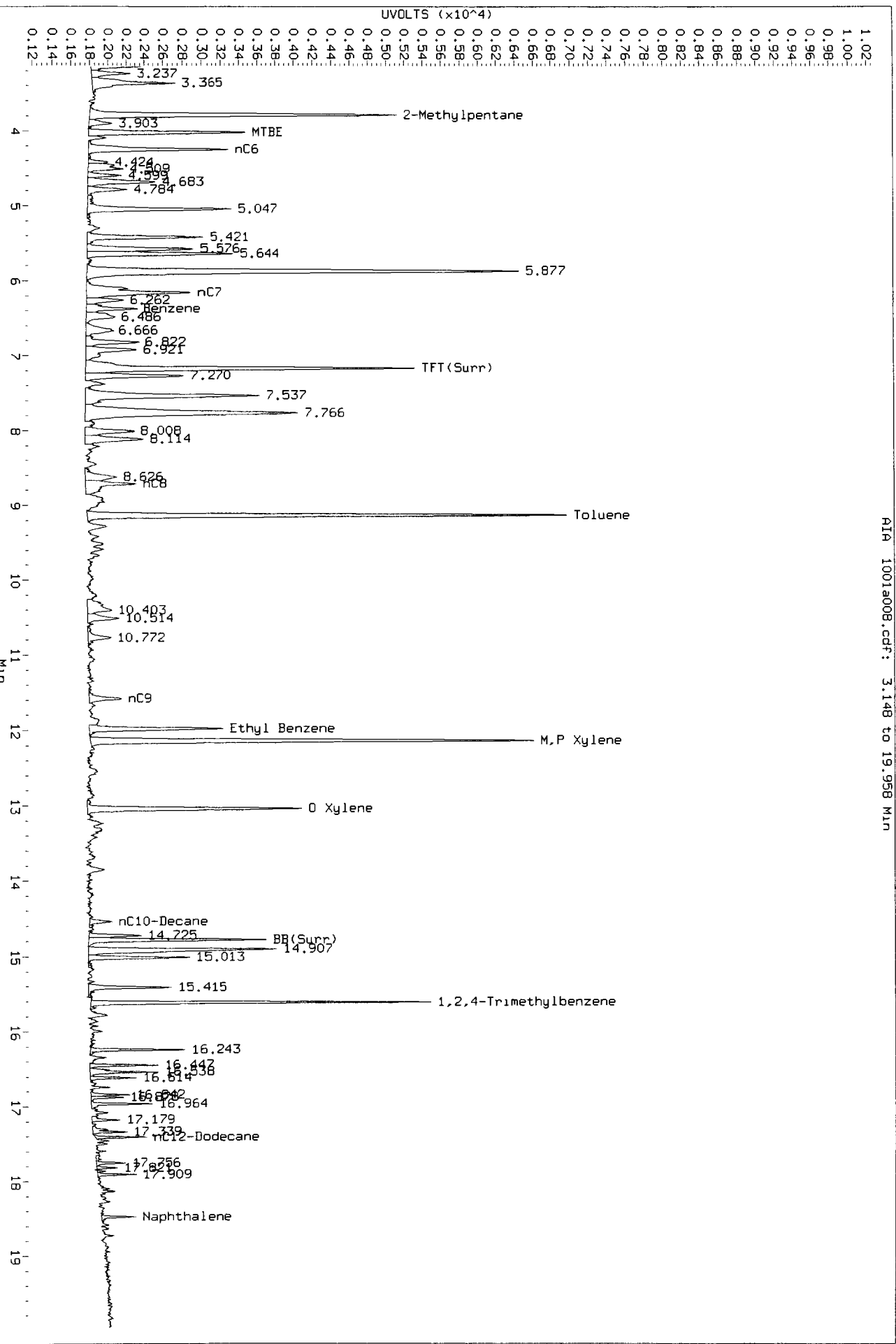
1. Baseline correction
2. Poor chromatography
3. Peak not found
4. Totals calculation
5. Other \_\_\_\_\_

Analyst: JW Date: 10/2/12

Data File: /chem3/pid2.1/100112-1.b/1001a008.d/1001a008.cdf  
 Injection Date: 01-OCT-2012 13:19  
 Instrument: pid2.1  
 Client Sample ID:

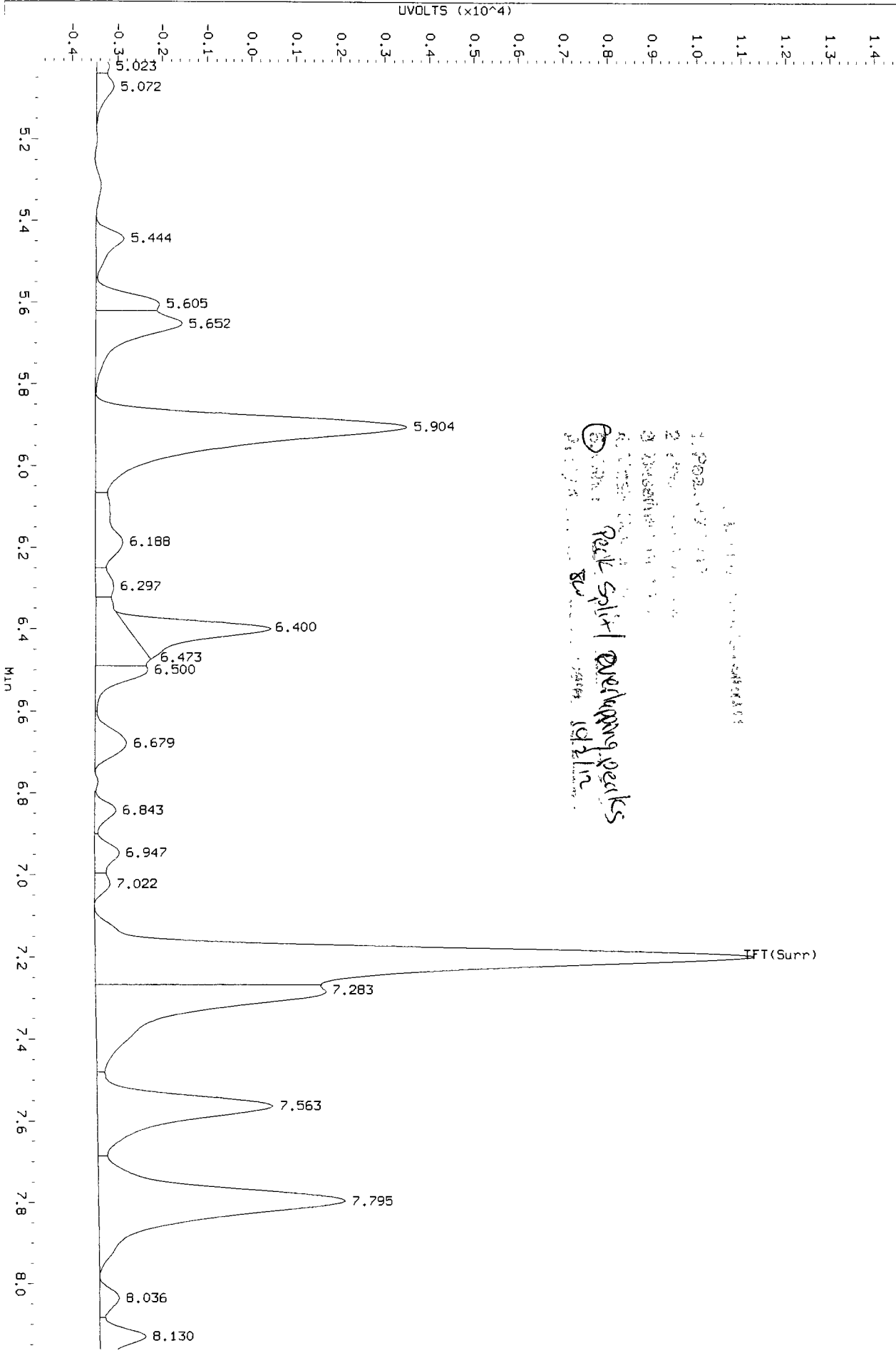
AIA 1001a008.cdf: 3.148 to 19.958 Min

*Reference*



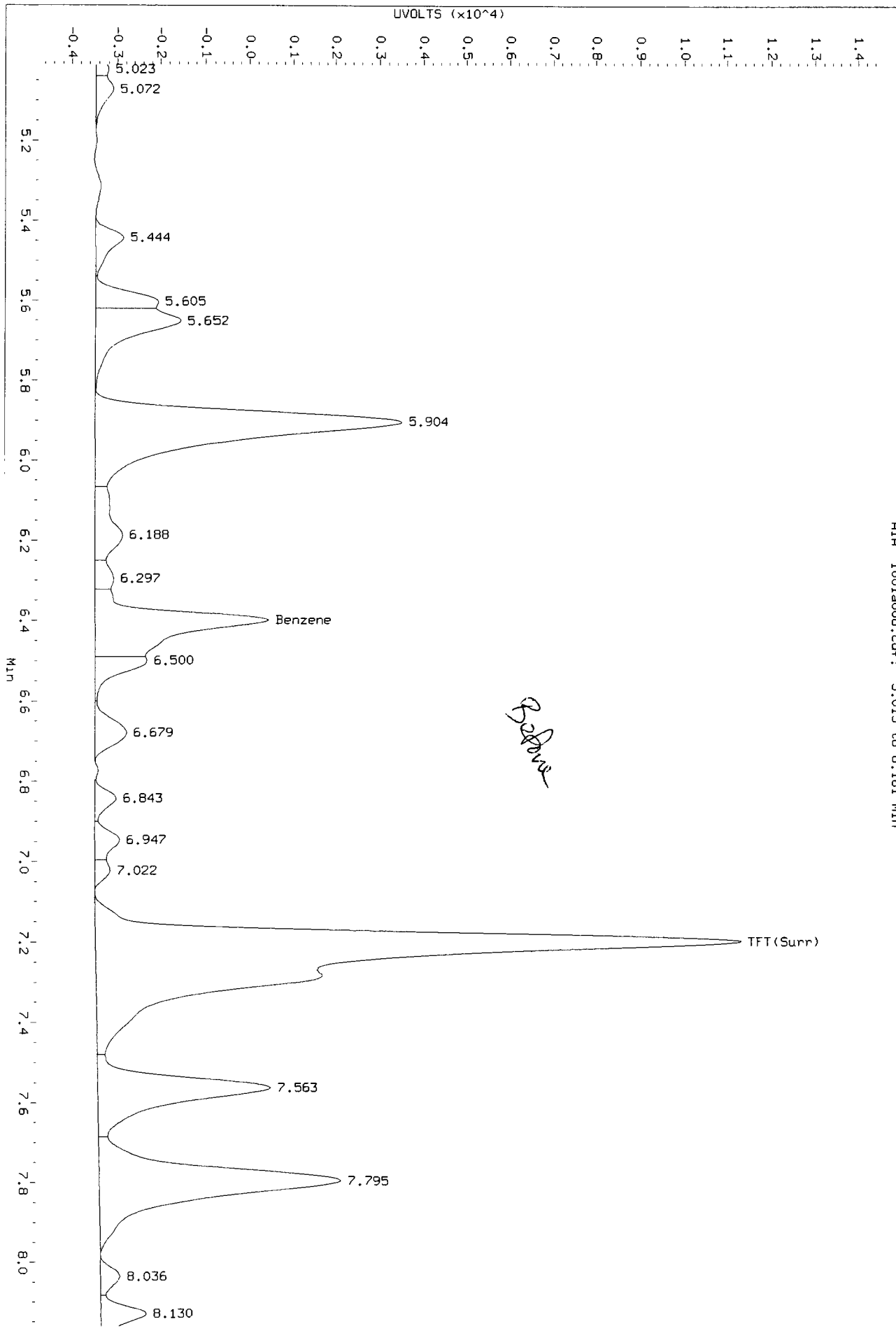
Data File: /chem3/pid2.1/100112-2.b/1001a008.d/1001a008.cdf  
Injection Date: 01-OCT-2012 13:19  
Instrument: pid2.1  
Client Sample ID:

AIR 1001a008.cdf: 5.013 to 8.161 MIN



Data File: /chem3/pid2.1/100112-2.b/1001a008.d/1001a008.cdf  
Injection Date: 01-OCT-2012 13:19  
Instrument: pid2.1  
Client Sample ID:

AIA 1001a008.cdf: 5.013 to 8.161 Min





**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

Sample ID: MW-15D-092412  
SAMPLE

Lab Sample ID: VK65A


QC Report No: VK65-Landau Associates

LIMS ID: 12-18405

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: 09/24/12

Reported: 10/08/12

Date Received: 09/25/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/02/12	7440-38-2	Arsenic	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/05/12	<b>7439-96-5</b>	<b>Manganese</b>	5	<b>189</b>	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

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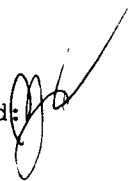
Sample ID: MW-16D-092412

SAMPLE

Lab Sample ID: VK65B

LIMS ID: 12-18406

Matrix: Water

Data Release Authorized: 

Reported: 10/08/12

QC Report No: VK65-Landau Associates

Project: Cornwall

0001020.400-510

Date Sampled: 09/24/12

Date Received: 09/25/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/02/12	7440-38-2	Arsenic	0.5	0.7	
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/05/12	7439-96-5	Manganese	5	391	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	50	

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET  
DISSOLVED METALS**

**Sample ID: MW-14D-092412  
SAMPLE**

Lab Sample ID: VK65C  
LIMS ID: 12-18407  
Matrix: Water  
Data Release Authorized:  
Reported: 10/08/12

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12



Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/02/12	<b>7440-38-2</b>	<b>Arsenic</b>	1	<b>2</b>	
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/02/12	<b>7439-96-5</b>	<b>Manganese</b>	2	<b>1,340</b>	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

Sample ID: MW-15S-092412  
SAMPLE

Lab Sample ID: VK65D

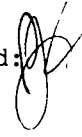
QC Report No: VK65-Landau Associates

LIMS ID: 12-18408

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: 09/24/12

Reported: 10/08/12

Date Received: 09/25/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/02/12	7440-38-2	Arsenic	0.5	0.9	
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/02/12	7439-96-5	Manganese	1	375	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

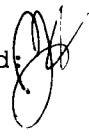
U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET  
DISSOLVED METALS**

**Sample ID: MW-16S-092412  
SAMPLE**

Lab Sample ID: VK65E  
LIMS ID: 12-18409  
Matrix: Water  
Data Release Authorized:  
Reported: 10/08/12

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12




Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/02/12	7440-38-2	Arsenic	0.5	0.5	
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/02/12	7439-96-5	Manganese	1	328	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	27	

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

**Sample ID: MW-14S-092412**  
**SAMPLE**

Lab Sample ID: VK65F  
LIMS ID: 12-18410  
Matrix: Water  
Data Release Authorized:   
Reported: 10/08/12

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/02/12	<b>7440-38-2</b>	<b>Arsenic</b>	0.5	<b>0.8</b>	
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/02/12	<b>7439-96-5</b>	<b>Manganese</b>	1	<b>498</b>	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

Sample ID: MW-13S-092412

SAMPLE

Lab Sample ID: VK65G


QC Report No: VK65-Landau Associates

LIMS ID: 12-18411

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized 

Date Sampled: 09/24/12

Reported: 10/08/12

Date Received: 09/25/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/01/12	7440-38-2	Arsenic	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/02/12	<b>7439-96-5</b>	<b>Manganese</b>	2	<b>724</b>	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

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**Sample ID: MW-12S-092412  
SAMPLE**

Lab Sample ID: VK65H


QC Report No: VK65-Landau Associates

LIMS ID: 12-18412

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: 09/24/12

Reported: 10/08/12

Date Received: 09/25/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/01/12	7440-38-2	Arsenic	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/02/12	<b>7439-96-5</b>	<b>Manganese</b>	2	<b>600</b>	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit



**INORGANICS ANALYSIS DATA SHEET  
DISSOLVED METALS**

**Sample ID: MW-11S-092412  
SAMPLE**

Page 1 of 1

Lab Sample ID: VK65I

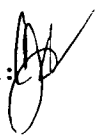
QC Report No: VK65-Landau Associates

LIMS ID: 12-18413

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: 09/24/12

Reported: 10/08/12

Date Received: 09/25/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/01/12	7440-38-2	Arsenic	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	<b>7440-50-8</b>	<b>Copper</b>	0.5	<b>0.9</b>	
200.8	09/27/12	200.8	10/01/12	<b>7439-92-1</b>	<b>Lead</b>	0.1	<b>0.2</b>	
200.8	09/27/12	200.8	10/02/12	<b>7439-96-5</b>	<b>Manganese</b>	2	<b>858</b>	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

Sample ID: MW-12D-092412  
SAMPLE

Lab Sample ID: VK65J

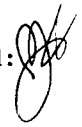
QC Report No: VK65-Landau Associates

LIMS ID: 12-18414

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: 09/24/12

Reported: 10/08/12

Date Received: 09/25/12


Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/01/12	7440-38-2	Arsenic	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/02/12	<b>7439-96-5</b>	<b>Manganese</b>	2	<b>205</b>	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
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**Sample ID: MW-11D-092412**  
**SAMPLE**

Lab Sample ID: VK65K  
LIMS ID: 12-18415  
Matrix: Water  
Data Release Authorized:   
Reported: 10/08/12


QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/01/12	7440-38-2	Arsenic	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	<b>7440-50-8</b>	<b>Copper</b>	0.5	<b>0.5</b>	
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/02/12	<b>7439-96-5</b>	<b>Manganese</b>	1	<b>72</b>	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET  
DISSOLVED METALS**  
Page 1 of 1

**Sample ID: MW-13D-092412  
SAMPLE**

Lab Sample ID: VK65L  
LIMS ID: 12-18416  
Matrix: Water  
Data Release Authorized   
Reported: 10/08/12

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/01/12	7440-38-2	Arsenic	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/02/12	<b>7439-96-5</b>	<b>Manganese</b>	1	<b>244</b>	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

Sample ID: MW-DUP-092412  
SAMPLE

Lab Sample ID: VK65M


QC Report No: VK65-Landau Associates

LIMS ID: 12-18417

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: 09/24/12

Reported: 10/08/12

Date Received: 09/25/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/01/12	7440-38-2	Arsenic	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/02/12	<b>7439-96-5</b>	<b>Manganese</b>	1	<b>172</b>	
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

**Sample ID: MW-15D-092412**  
**MATRIX SPIKE**

Lab Sample ID: VK65A  
LIMS ID: 12-18405  
Matrix: Water  
Data Release Authorized:  
Reported: 10/08/12

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

**MATRIX SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	200.8	0.5 U	24.0	25.0	96.0%	
Copper	200.8	0.5 U	24.3	25.0	97.2%	
Lead	200.8	0.1 U	23.6	25.0	94.4%	
Manganese	200.8	189	209	25	80.0%	H
Zinc	200.8	4 U	71	80	88.8%	

Reported in µg/L

N-Control Limit Not Met

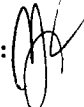
H-% Recovery Not Applicable, Sample Concentration Too High

NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
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**Sample ID: MW-15D-092412**  
**DUPLICATE**

Lab Sample ID: VK65A  
LIMS ID: 12-18405  
Matrix: Water  
Data Release Authorized:   
Reported: 10/08/12

QC Report No: VK65-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

**MATRIX DUPLICATE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	200.8	0.5 U	0.5 U	0.0%	+/- 0.5	L
Copper	200.8	0.5 U	0.5 U	0.0%	+/- 0.5	L
Lead	200.8	0.1 U	0.1 U	0.0%	+/- 0.1	L
Manganese	200.8	189	188	0.5%	+/- 20%	
Zinc	200.8	4 U	4 U	0.0%	+/- 4	L

Reported in µg/L

\*-Control Limit Not Met  
L-RPD Invalid, Limit = Detection Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

**Sample ID: LAB CONTROL**

Lab Sample ID: VK65LCS


QC Report No: VK65-Landau Associates

LIMS ID: 12-18406

Project: Cornwall

Matrix: Water

0001020.400-510

Data Release Authorized: 

Date Sampled: NA

Reported: 10/08/12

Date Received: NA

**BLANK SPIKE QUALITY CONTROL REPORT**

<b>Analyte</b>	<b>Analysis Method</b>	<b>Spike Found</b>	<b>Spike Added</b>	<b>% Recovery</b>	<b>Q</b>
Arsenic	200.8	26.0	25.0	104%	
Copper	200.8	25.8	25.0	103%	
Lead	200.8	25.5	25.0	102%	
Manganese	200.8	25.7	25.0	103%	
Zinc	200.8	79	80	98.8%	

Reported in µg/L

N-Control limit not met

Control Limits: 80-120%



**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**


Page 1 of 1

**Sample ID: METHOD BLANK**

Lab Sample ID: VK65MB

LIMS ID: 12-18406

Matrix: Water

Data Release Authorized: 

Reported: 10/08/12

QC Report No: VK65-Landau Associates

Project: Cornwall

0001020.400-510

Date Sampled: NA

Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	09/27/12	200.8	10/01/12	7440-38-2	Arsenic	0.2	0.2	U
200.8	09/27/12	200.8	10/01/12	7440-50-8	Copper	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7439-92-1	Lead	0.1	0.1	U
200.8	09/27/12	200.8	10/01/12	7439-96-5	Manganese	0.5	0.5	U
200.8	09/27/12	200.8	10/01/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**  
**Dissolved Mercury by Method SW7470A**



Data Release Authorized: *BR*  
 Reported: 10/01/12  
 Date Received: 09/25/12  
 Page 1 of 1

QC Report No238: VK75-Landau Associates  
 Project: Cornwall  
 0001020.400-510

Client/ ARI ID	Date Sampled	Matrix	Prep Date Anal Date	RL	Result
MW-15D-092412 VK75A 12-18431	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-16D-092412 VK75B 12-18432	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-14D-092412 VK75C 12-18433	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-15S-092412 VK75D 12-18434	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-16S-092412 VK75E 12-18435	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-14S-092412 VK75F 12-18436	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-13S-092412 VK75G 12-18437	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-12S-092412 VK75H 12-18438	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-11S-092412 VK75I 12-18439	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-12D-092412 VK75J 12-18440	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-11D-092412 VK75K 12-18441	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-13D-092412 VK75L 12-18442	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MW-DUP-092412 VK75M 12-18443	09/24/12	Water	09/26/12 09/28/12	20.0	20.0 U
MB-092612 Method Blank	NA	Water	09/26/12 09/28/12	20.0	20.0 U

**Reported in ng/L**

RL-Analytical reporting limit  
 U-Undetected at reported detection limit

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
 Page 1 of 1

**Sample ID: MW-15D-092412**  
**MATRIX SPIKE**

Lab Sample ID: VK75A  
 LIMS ID: 12-18431  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 10/01/12



QC Report No: VK75-Landau Associates  
 Project: Cornwall  
 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

**MATRIX SPIKE QUALITY CONTROL REPORT**

<b>Analyte</b>	<b>Analysis Method</b>	<b>Sample</b>	<b>Spike</b>	<b>Spike Added</b>	<b>% Recovery</b>	<b>Q</b>
Mercury	7470A	20.0 U	116	100	116%	

Reported in ng/L

N-Control Limit Not Met  
 H-% Recovery Not Applicable, Sample Concentration Too High  
 NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

**Sample ID: MW-15D-092412**  
**DUPLICATE**

Lab Sample ID: VK75A  
LIMS ID: 12-18431  
Matrix: Water  
Data Release Authorized:  
Reported: 10/01/12

QC Report No: VK75-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

**MATRIX DUPLICATE QUALITY CONTROL REPORT**

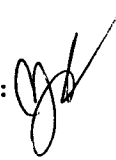
Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Mercury	7470A	20.0 U	20.0 U	0.0%	+/- 20.0	L

Reported in ng/L

\*-Control Limit Not Met  
L-RPD Invalid, Limit = Detection Limit

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

**Sample ID: LAB CONTROL**

Lab Sample ID: VK75LCS  
LIMS ID: 12-18432  
Matrix: Water  
Data Release Authorized:   
Reported: 10/01/12

QC Report No: VK75-Landau Associates  
Project: Cornwall  
0001020.400-510  
Date Sampled: NA  
Date Received: NA

**BLANK SPIKE QUALITY CONTROL REPORT**

<b>Analyte</b>	<b>Analysis Method</b>	<b>Spike Found</b>	<b>Spike Added</b>	<b>% Recovery</b>	<b>Q</b>
Mercury	7470A	234	200	117%	

Reported in ng/L

N-Control limit not met  
Control Limits: 80-120%

**SAMPLE RESULTS-CONVENTIONALS**  
**VK65-Landau Associates**



Matrix: Water  
 Data Release Authorized:  
 Reported: 10/31/12

Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

**Client ID: MW-15D-092412**  
**ARI ID: 12-18405 VK65A**


Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/27/12 092712#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.500	29.2
Sulfate	10/24/12 102412#1	EPA 300.0	mg/L	0.1	1.8
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.050	< 0.050 U
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	44.5
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	12.0	15.0
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	14.9

RL Analytical reporting limit  
 U Undetected at reported detection limit

VK65:281 B 11/2/12 Kelly

SAMPLE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized:   
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Client ID: MW-16D-092412  
ARI ID: 12-18406 VK65B

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/27/12 092712#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.500	19.2
Sulfate	09/25/12 092512#1	EPA 300.0	mg/L	0.1	1.4
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.050	< 0.050 U
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	60.8
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	20.0	< 20.0 U
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	19.3

RL Analytical reporting limit  
U Undetected at reported detection limit

VK65: 282R B2 9/26/12

SAMPLE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Client ID: MW-14D-092412  
ARI ID: 12-18407 VK65C

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/27/12 092712#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.500	14.1
Sulfate	09/25/12 092512#1	EPA 300.0	mg/L	0.1	1.5
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.050	0.447
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	63.6
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	12.0	24.0
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	15.8

RL Analytical reporting limit  
U Undetected at reported detection limit

VK65: 283R 10/26/12



SAMPLE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Client ID: MW-15S-092412  
ARI ID: 12-18408 VK65D

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/27/12 092712#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.500	28.7
Sulfate	09/25/12 092512#1	EPA 300.0	mg/L	0.1	0.9
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.050	0.054
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	53.7
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	20.0	< 20.0 U
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	17.0

RL Analytical reporting limit  
U Undetected at reported detection limit

VK65: 284R 10/26/12

SAMPLE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized  
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Client ID: MW-16S-092412  
ARI ID: 12-18409 VK65E

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/27/12 092712#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.500	18.8
Sulfate	09/25/12 092512#1	EPA 300.0	mg/L	0.1	3.2
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.050	< 0.050 U
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	53.1
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	12.0	< 12.0 U
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	18.2

RL Analytical reporting limit  
U Undetected at reported detection limit

VK65: 285R 10/24/12

SAMPLE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized  
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Client ID: MW-14S-092412  
ARI ID: 12-18410 VK65F

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/27/12 092712#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/27/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.500	21.9
Sulfate	09/25/12 092512#1	EPA 300.0	mg/L	0.1	3.0
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.050	< 0.050 U
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	46.7
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	12.0	17.0
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	14.7

RL Analytical reporting limit  
U Undetected at reported detection limit

VK65: 286R 09/26/12

SAMPLE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized  
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Client ID: MW-13S-092412  
ARI ID: 12-18411 VK65G


Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/28/12 092812#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.500	15.8
Sulfate	09/25/12 092512#1	EPA 300.0	mg/L	0.1	2.5
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.050	< 0.050 U
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	37.8
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	12.0	< 12.0 U
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	11.7

RL Analytical reporting limit  
U Undetected at reported detection limit

VK65: 287R 10/26/12

SAMPLE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized:   
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Client ID: MW-12S-092412  
ARI ID: 12-18412 VK65H

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/28/12 092812#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.500	17.7
Sulfate	09/25/12 092512#1	EPA 300.0	mg/L	0.1	0.1
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.050	< 0.050 U
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	46.4
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	12.0	< 12.0 U
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	14.7

RL Analytical reporting limit  
U Undetected at reported detection limit

VK65: 289R 10/26/12

SAMPLE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Client ID: MW-11S-092412  
ARI ID: 12-18413 VK65I

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/28/12 092812#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.200	4.79
Sulfate	09/25/12 092512#1	EPA 300.0	mg/L	0.1	2.8
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.050	0.059
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	57.9
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	12.0	16.0
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	20.3

RL Analytical reporting limit  
U Undetected at reported detection limit

VK65: 2892 10/26/12

SAMPLE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized  
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Client ID: MW-12D-092412  
ARI ID: 12-18414 VK65J

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/28/12 092812#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.500	12.4
Sulfate	10/04/12 100412#1	EPA 300.0	mg/L	1.0	37.6
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.500	5.97
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	101
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	12.0	27.0
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	25.1

RL Analytical reporting limit  
U Undetected at reported detection limit

VK65: 2902 BE 10/26/12

SAMPLE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Client ID: MW-11D-092412  
ARI ID: 12-18415 VK65K

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/28/12 092812#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.200	4.19
Sulfate	10/04/12 100412#1	EPA 300.0	mg/L	0.2	9.6
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	10.0	105
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	25.0	277
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	12.0	25.0
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	6.00	33.8

RL Analytical reporting limit  
U Undetected at reported detection limit

VK65: 291R 02 10/26/12



SAMPLE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized  
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Client ID: MW-13D-092412  
ARI ID: 12-18416 VK65L

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	0.5
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/28/12 092812#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.500	22.5
Sulfate	10/04/12 100412#1	EPA 300.0	mg/L	1.0	34.8
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.050	0.902
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	50.9
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	12.0	24.0
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	13.7

RL Analytical reporting limit  
U Undetected at reported detection limit

VK65: 292R RL 09/24/12

**SAMPLE RESULTS-CONVENTIONALS**  
**VK65-Landau Associates**



Matrix: Water  
 Data Release Authorized:  
 Reported: 10/31/12

Project: Cornwall  
 Event: 0001020.400-510  
 Date Sampled: 09/24/12  
 Date Received: 09/25/12

**Client ID: MW-DUP-092412**  
**ARI ID: 12-18417 VK65M**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	09/25/12 092512#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	09/28/12 092812#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	09/28/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	09/28/12 092812#1	EPA 350.1M	mg-N/L	0.500	29.2
Sulfate	10/24/12 102412#1	EPA 300.0	mg/L	0.1	1.9
Sulfide	09/27/12 092712#1	EPA 376.2	mg/L	0.050	< 0.050 U
Chemical Oxygen Demand	10/02/12 100212#1	EPA 410.4	mg/L	5.00	49.3
Biological Oxygen Demand	09/26/12 092612#1	EPA 405.1	mg/L	12.0	21.0
Total Organic Carbon	10/03/12 100312#1	EPA 9060	mg/L	1.50	14.9

RL Analytical reporting limit  
 U Undetected at reported detection limit

UK69:293r 11/2/12 Kelly

MS/MSD RESULTS-CONVENTIONALS  
VK65-Landau Associates



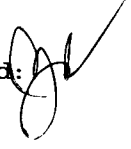
Matrix: Water  
Data Release Authorized:  
Reported: 10/05/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
<b>ARI ID: VK65A</b>		<b>Client ID: MW-15D-092412</b>					
N-Nitrate	EPA 300.0	09/25/12	mg-N/L	< 0.1	1.9	2.0	95.0%
N-Nitrite	EPA 300.0	09/25/12	mg-N/L	< 0.1	2.0	2.0	100.0%
Total Cyanide	EPA 335.4	09/27/12	mg/L	< 0.005	0.161	0.200	80.5%
N-Ammonia	EPA 350.1M	09/28/12	mg-N/L	29.2	81.8	50.0	105.2%
Sulfate	EPA 300.0	09/25/12	mg/L	< 0.1	1.8	2.0	90.0%
Sulfide	EPA 376.2	09/27/12	mg/L	< 0.050	0.554	0.500	110.8%
Chemical Oxygen Demand	EPA 410.4	10/02/12	mg/L	44.5	133	100	88.5%
Total Organic Carbon	EPA 9060	10/03/12	mg/L	14.9	36.5	20.0	108.0%

REPLICATE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized:   
Reported: 10/24/12


Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: 09/24/12  
Date Received: 09/25/12

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
<b>ARI ID: VK65A Client ID: MW-15D-092412</b>						
N-Nitrate	EPA 300.0	09/25/12	mg-N/L	< 0.1	< 0.1	NA
N-Nitrite	EPA 300.0	09/25/12	mg-N/L	< 0.1	< 0.1	NA
Total Cyanide	EPA 335.4	09/27/12	mg/L	< 0.005	< 0.005	NA
N-Ammonia	EPA 350.1M	09/28/12	mg-N/L	29.2	29.1	0.3%
Sulfate	EPA 300.0	09/25/12	mg/L	< 0.1	< 0.1	NA
Sulfide	EPA 376.2	09/27/12	mg/L	< 0.050	< 0.050	NA
Chemical Oxygen Demand	EPA 410.4	10/02/12	mg/L	44.5	32.7	30.6%
Total Organic Carbon	EPA 9060	10/03/12	mg/L	14.9	16.3	9.0%

VK65: 295R BC 10/26/12

LAB CONTROL RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized:   
Reported: 10/24/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: NA  
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Sulfide EPA 376.2	ICVL	09/27/12	mg/L	0.460	0.504	91.3%
Biological Oxygen Demand EPA 405.1	ICVL	09/26/12	mg/L	155	198	78.3%
	ICVL	09/26/12		158	198	79.8%

VK65: 2962 BC 10/26/12

STANDARD REFERENCE RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 10/31/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: NA  
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
N-Nitrate ERA #230511	EPA 300.0	09/25/12	mg-N/L	3.0	3.0	100.0%
N-Nitrite ERA #401010	EPA 300.0	09/25/12	mg-N/L	3.0	3.0	100.0%
Total Cyanide ERA 220811	EPA 335.4	09/27/12 09/28/12	mg/L	0.394 0.377	0.400 0.400	98.5% 94.2%
N-Ammonia ERA #15125	EPA 350.1M	09/28/12	mg-N/L	0.506	0.500	101.2%
Sulfate ERA #070811	EPA 300.0	09/25/12 10/04/12 10/24/12	mg/L	3.0 2.9 3.0	3.0 3.0 3.0	100.0% 96.7% 100.0%
Chemical Oxygen Demand Thermo Orion #I01	EPA 410.4	10/02/12	mg/L	84.6	90.0	94.0%
Total Organic Carbon ERA 0409-12-01	EPA 9060	10/03/12	mg/L	18.9	20.0	94.5%

*Kelly*  
*11/2/12*  
*VK65: 297 x*

METHOD BLANK RESULTS-CONVENTIONALS  
VK65-Landau Associates



Matrix: Water  
Data Release Authorized: *[Signature]*  
Reported: 10/31/12

Project: Cornwall  
Event: 0001020.400-510  
Date Sampled: NA  
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
N-Nitrate	EPA 300.0	09/25/12	mg-N/L	< 0.1 U	
N-Nitrite	EPA 300.0	09/25/12	mg-N/L	< 0.1 U	
Total Cyanide	EPA 335.4	09/27/12 09/28/12	mg/L	< 0.005 U < 0.005 U	
N-Ammonia	EPA 350.1M	09/28/12	mg-N/L	< 0.010 U	FB
Sulfate	EPA 300.0	09/25/12 10/04/12 10/24/12	mg/L	< 0.1 U < 0.1 U < 0.1 U	
Sulfide	EPA 376.2	09/27/12	mg/L	< 0.050 U	
Chemical Oxygen Demand	EPA 410.4	10/02/12	mg/L	< 5.00 U	
Biological Oxygen Demand	EPA 405.1	09/26/12 09/26/12	mg/L	< 1.0 U < 1.0 U	
Total Organic Carbon	EPA 9060	10/03/12	mg/L	< 1.50 U	

FB Filtration Blank

*VK65: 298<sup>r</sup> Kelly 11/2/12*



# AQUATIC RESEARCH INCORPORATED

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

<b>CASE FILE NUMBER:</b>	<b>ARI098-49</b>	<b>PAGE 1</b>
<b>REPORT DATE:</b>	<b>10/05/12</b>	
<b>DATE SAMPLED:</b>	<b>09/24/12</b>	<b>DATE RECEIVED: 09/26/12</b>
<b>FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER</b>		
<b>SAMPLES FROM ANALYTICAL RESOURCES INC. / VK65</b>		

## CASE NARRATIVE

Thirteen water samples were received by the laboratory in good condition. Analysis was performed according to the chain of custody received with the samples. No difficulties were encountered in the preparation or analysis of these samples. Sample data follows while QA/QC data is contained on the following page.

## SAMPLE DATA

SAMPLE ID	LAB ID	TANNIN/LIGNIN (mg/L)
12-18405-VK65A	MW-15D-092412	1.35
12-18406-VK65B	MW-16D-092412	1.31
12-18407-VK65C	MW-14D-092412	3.83
12-18408-VK65D	MW-15S-092412	1.54
12-18409-VK65E	MW-16S-092412	1.31
12-18105-VK65F	MW-14S-092412	3.14
12-18411-VK65G	MW-13S-092412	0.953
12-18412-VK65H	MW-12S-092412	1.01
12-18413-VK65I	MW-11S-092412	1.58
12-18414-VK65J	MW-12D-092412	12.2
12-18415-VK65K	MW-11D-092412	37.9
12-18416-VK65L	MW-13D-092412	6.45
12-18417-VK65M	MW-DUP-092412	1.38

VK65 : 00299





**AQUATIC RESEARCH INCORPORATED**  
**LABORATORY & CONSULTING SERVICES**  
3927 AURORA AVENUE NORTH, SEATTLE, WA 98103  
PHONE: (206) 632-2715 FAX: (206) 632-2417

**CASE FILE NUMBER:** ARI098-49 **PAGE 2**  
**REPORT DATE:** 10/05/12  
**DATE SAMPLED:** 09/24/12 **DATE RECEIVED:** 09/26/12  
**FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER**  
**SAMPLES FROM ANALYTICAL RESOURCES INC. / VK65**

**QA/QC DATA**

QC PARAMETER	TANNIN/LIGNIN (mg/L)
METHOD	SM5550
DATE ANALYZED	10/05/12
DETECTION LIMIT	0.010
DUPLICATE	
SAMPLE ID	MW-15D-092412
ORIGINAL	1.35
DUPLICATE	1.34
RPD	0.91%
SPIKE SAMPLE	
SAMPLE ID	MW-15D-092412
ORIGINAL	1.35
SPIKED SAMPLE	2.29
SPIKE ADDED	1.00
% RECOVERY	94.55%
QC CHECK	
FOUND	1.07
TRUE	1.00
% RECOVERY	106.95%
BLANK	<0.010

RPD = RELATIVE PERCENT DIFFERENCE  
NA = NOT APPLICABLE OR NOT AVAILABLE  
NC = NOT CALCULABLE DUE TO ONE OR MORE VALUES BEING BELOW THE DETECTION LIMIT  
OR = RECOVERY NOT CALCULABLE DUE TO SPIKE SAMPLE OUT OF RANGE OR SPIKE TO LOW RELATIVE TO SAMPLE CONCENTRATION

SUBMITTED BY:

Damien Gadowski  
Project Manager

VK65 : 00300

**SUBCONTRACTOR ANALYSIS REQUEST**  
**CUSTODY TRANSFER 09/25/12**



ARI Project: VK65

*VAR1098.49*

Laboratory: Aquatic Research, Inc  
 Lab Contact: Steve Lazoff  
 Lab Address: 3927 Aurora Ave N.  
 Seattle, WA 98103  
 Phone: 206-632-2715  
 Fax: 206-632-2417

ARI Client: Landau Associates  
 Project ID: Cornwall  
 ARI PM: Kelly Bottem  
 Phone: 206-695-6211  
 Fax: 206-695-6201  
 Email: subdata@arilabs.com

Analytical Protocol: In-house  
 Special Instructions:

Requested Turn Around:  
 Email Results (Y/N): **email**

**Limits of Liability.** Subcontractor is expected to perform all requested services in accordance with appropriate methodology following Standard Operating Procedures that meet standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the negotiated amount for said services. The agreement by the Subcontractor to perform services requested by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Subcontractor.

ARI ID	Client ID/ Add'l ID	Sampled	Matrix	Bottles	Analyses
12-18405-VK65A	MW-15D-092412	09/24/12 08:26	Water	1	Tannins & Lignins
Special Instructions: None					
12-18406-VK65B	MW-16D-092412	09/24/12 08:30	Water	1	Tannins & Lignins
Special Instructions: None					
12-18407-VK65C	MW-14D-092412	09/24/12 10:00	Water	1	Tannins & Lignins
Special Instructions: None					
12-18408-VK65D	MW-15S-092412	09/24/12 10:50	Water	1	Tannins & Lignins
Special Instructions: None					
12-18409-VK65E	MW-16S-092412	09/24/12 11:30	Water	1	Tannins & Lignins
Special Instructions: None					
12-18410-VK65F	MW-14S-092412	09/24/12 12:50	Water	1	Tannins & Lignins
Special Instructions: None					
12-18411-VK65G	MW-13S-092412	09/24/12 13:00	Water	1	Tannins & Lignins
Special Instructions: None					

Carrier	Airbill		Date	
Relinquished by <i>[Signature]</i>	Company <i>ARI</i>	Date <i>9/26/12</i>	Time <i>0850</i>	
Received by <i>[Signature]</i>	Company <i>ARI</i>	Date <i>9/26/12</i>	Time <i>0950</i>	

**SUBCONTRACTOR ANALYSIS REQUEST**  
**CUSTODY TRANSFER 09/25/12**



**ARI Project: VK65**

Laboratory: Aquatic Research, Inc  
 Lab Contact: Steve Lazoff

ARI Client: Landau Associates  
 Project ID: 0001020.400-510

ARI Sample ID	Client Sample ID/ Add'l Sample ID	Sampled	Matrix	Bottles	Analyses
12-18412-VK65H	MW-12S-092412	09/24/12 14:00	Water	1	Tannins & Lignins
Special Instructions: None					
12-18413-VK65I	MW-11S-092412	09/24/12 14:25	Water	1	Tannins & Lignins
Special Instructions: None					
12-18414-VK65J	MW-12D-092412	09/24/12 15:10	Water	1	Tannins & Lignins
Special Instructions: None					
12-18415-VK65K	MW-11D-092412	09/24/12 15:35	Water	1	Tannins & Lignins
Special Instructions: None					
12-18416-VK65L	MW-13D-092412	09/24/12 17:00	Water	1	Tannins & Lignins
Special Instructions: None					
12-18417-VK65M	MW-DUP-092412	09/24/12	Water	1	Tannins & Lignins
Special Instructions: None					

Carrier		Airbill		Date	
Relinquished by	Company	Date	Time		
	ARI	9/26/12	0850		
Received by	Company	Date	Time		
	ARI	9/26/12	0850		



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

August 16, 2012

Mr. Larry Beard  
Landau Associates, Inc.  
130 2<sup>nd</sup> Avenue South  
Edmonds, WA 98020

**RE: Client Project: Cornwall 001020.400.500**  
**ARI Job No: VE38, VE43, VE90**

Dear Larry,

Please find enclosed analytical results for the conventional analyses of samples received for the project referenced above. Analytical Resources, Inc. (ARI) accepted five water samples and a trip blank on August 1, 2012. The samples were received in good condition and there were no discrepancies between the COC and containers' labels.

The samples were analyzed for SVOCs, SIM PAHs, HCID, VOCs, Pesticides, Herbicides, Dissolved Metals, Anions, Sulfide, COD, BOD, Ammonia, TOC, Cyanide and NWTPh-Dx follow ups as requested on the COC. The Tannins and Lignins were subcontracted to Aquatic Research, Inc.

The VOCs 8/7/12 CCAL is out of control low for acrolein. All associated samples that contain analyte have been flagged with a "Q" qualifier.

The SVOCs 8/8/12 CCAL is out of control high for 2,4,6-Tribromophenol and Pentachlorophenol. All associated samples that contain analyte have been flagged with a "Q" qualifier.

The dissolved metals matrix spike in association with sample MW-16D-073112 is out of control low for zinc with a sample duplicate RPD for zinc outside of control limits. All other QC is in control.

The dissolved mercury LCS is out of control high. All associated samples were non-detect and no further corrective action was taken.

The sulfate matrix spike is out of control, low in association with sample MW-16D-073112. All other QC is in control and no further corrective action was taken.

The herbicide LCS and LCSD are out of control low for 2,4,5-T with a RPD for Dalapon outside of the +/-40% control limits. All other spike recoveries are in control and no further corrective action was taken.



## Analytical Resources, Incorporated

Analytical Chemists and Consultants

The herbicide sample MW-11D-073112 was analyzed twice due to matrix effects. Both sets of data have been reported.

The pesticides LCS and/or LCSD are out of control high for several analytes. The associated samples are non-detect and no further corrective action was taken.

Quality control analyses are included for your review. No other analytical complications were noted.

A copy of these reports and all associated data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

  
Kelly Bottem

Client Services Manager

206-695-6211

kellyb@arilabs.com

KFB/kfb

Enclosure

cc: File VE38, VE43, VE90

- Seattle/Edmonds (425) 778-0907  
 Tacoma (253) 926-2493  
 Spokane (509) 327-9737  
 Portland (503) 542-1080

VE38

Date 073112  
 Page 1 of 2



# Chain-of-Custody Record

Project Name Corwall Project No. 0001020400500  
 Project Location/Event Bellingham, WA (Additional Gw Fringestation)  
 Sampler's Name Christopher Venot  
 Project Contact Jeremy Davis / Leroy Beard  
 Send Results To Anne Halvorsen / " "

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters										Observations/Comments			
					SVOCs	STMP PAHs	HLTA *	VOCs	Pesticides	Herbicides	Dissoned Metals #	Amens (S, N, Zn, Ni)	SLR: R	NH3		TOT + Trc (gamma)	Tannins + Lyngans	
MW-16D-073112	073112	0830	AQ	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-12D-073112	073112	1040	AQ	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-11D-073112	073112	1230	AQ	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-12S-073112	073112	1300	AQ	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MW-11S-073112	073112	1415	AQ	18	X	X	X	X	X	X	X	X	X	X	X	X	X	X
TBS	072512	---	AQ	2	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Special Shipment/Handling or Storage Requirements ON ICE  
 Method of Shipment PICK-UP  
 Other \*LAI TO FOLLOW UP WITH GX/DX BASED ON RESULTS \*NOTE 48hr hold time \*\*\* AS, Cu, Pb, Mn, Zn, Hg \*\*\* METALS NOT PRESERVED BUT WERE FILTERED

**Relinquished by**  
 Signature Christopher Venot  
 Printed Name Christopher Venot  
 Company LAI  
 Date 080112 Time 0800

**Received by**  
 Signature A. Volgardsen  
 Printed Name A. Volgardsen  
 Company API  
 Date 8/1/12 Time 1245

**Relinquished by**  
 Signature \_\_\_\_\_  
 Printed Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_

**Received by**  
 Signature \_\_\_\_\_  
 Printed Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_

- Seattle/Edmonds (425) 778-0907
- Tacoma (253) 926-2493
- Spokane (509) 327-9737
- Portland (503) 542-1080



# Chain-of-Custody Record

Date 073112  
 Page 2 of 2

Project Name	Project No.	Testing Parameters				Turnaround Time	
<u>Cornwall</u>						<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Accelerated <input type="checkbox"/>	
Project Location/Event	Project No. <u>Bellingham, WA / Additional GW Investigation</u>						
Sampler's Name	<u>Christopher Venet</u> <u>"</u> <u>Jeremy Davis</u> <u>Anne Halvorsen</u> / <u>Larry Beard</u>						
Project Contact	Send Results To						
Sample I.D.	Date	Time	Matrix	No. of Containers	Observations/Comments		
MW-16D-073112	073112	0830	AQ	6	X Allow water samples to settle, collect aliquot from clear portion X NMTPH-Dx - run acid wash/silica gel cleanup run samples standardized to _____ product Analyze for EPH if no specific product identified VOC/BTEX/VPH (sol): non-preserved _____ preserved w/methanol _____ preserved w/sodium bisulfate _____ Freeze upon receipt _____ X Dissolved metal water samples field filtered Other * Note 48-hr hold time ** LAI to follow up with Dx/Gx based on HSP result		
MW-129-073112	073112	0940	AQ	6			
MW-119-073112	073112	1230	AQ	6			
MW-125-073112	073112	1700	AQ	6			
MW-115-073112	073112	1415	AQ	6			
T95	072512	---	AQ	2			
Special Shipment/Handling or Storage Requirements	Method of Shipment						
	DN ICE						Pick-up
Relinquished by	Received by		Relinquished by		Received by		
Signature <u>Christopher Venet</u>	Signature <u>A. Volgardsen</u>		Signature _____		Signature _____		
Printed Name <u>Christopher Venet</u>	Printed Name <u>A. Volgardsen</u>		Printed Name _____		Printed Name _____		
Company <u>LA+</u>	Company _____		Company _____		Company _____		
Date <u>080112</u> Time <u>0900</u>	Date <u>8/1/12</u> Time <u>1245</u>		Date _____ Time _____		Date _____ Time _____		



# Cooler Receipt Form

ARI Client: Landau  
COC No(s): \_\_\_\_\_ (NA)  
Assigned ARI Job No: VE38

Project Name: Cornwall  
Delivered by: Fed-Ex UPS  Courier Hand Delivered  Other: \_\_\_\_\_  
Tracking No: \_\_\_\_\_ NA

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler?  YES  NO  
Were custody papers included with the cooler?  YES  NO  
Were custody papers properly filled out (ink, signed, etc.)  YES  NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 4.8 1.9 5.4 4.9 2.1

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90077952

Cooler Accepted by: AV Date: 8/1/12 Time: 1245

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler?  YES  NO  
What kind of packing material was used? ... Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper Other: BOX  
Was sufficient ice used (if appropriate)? NA  YES  NO  
Were all bottles sealed in individual plastic bags?  YES  NO  
Did all bottles arrive in good condition (unbroken)?  YES  NO  
Were all bottle labels complete and legible?  YES  NO  
Did the number of containers listed on COC match with the number of containers received?  YES  NO  
Did all bottle labels and tags agree with custody papers?  YES  NO  
Were all bottles used correct for the requested analyses?  YES  NO  
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA  YES  NO  
Were all VOC vials free of air bubbles? NA  YES  NO  
Was sufficient amount of sample sent in each bottle?  YES  NO  
Date VOC Trip Blank was made at ARI: NA 7/25/12  
Was Sample Split by ARI:  NA  YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: AV Date: 8/1/12 Time: 1537

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

16D = 2pb 12D = 5pb 11D = 5pb 12S = 3pb, 11S = 5pb  
TB = 1HS, 3pb

By: AV Date: 8/1/12

			Small → "sm"
			Peabubbles → "pb"
			Large → "lg"
			Headspace → "hs"





ARI Job No: VE38

PC: Kelly

VTSR: 08/01/12

Inquiry Number: NONE  
 Analysis Requested: 08/01/12

Contact: Davis, Jeremy

Client: Landau Associates

Logged by: AV

Sample Set Used: Yes-481

Validatable Package: No

Deliverables:

Project #: 0001020.400.500

Project: Cornwall

Sample Site:

SDG No:

Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102Fe2+ <2	DMET DOC FLT FLT	PARAMETER	ADJUSTED LOT TO NUMBER	AMOUNT ADDED	DATE/BY	
12-14610 VE38A	MW-16D-073112	F		P	P		DIS					P	F		Y					
12-14611 VE38B	MW-12D-073112	F		P	P		DIS					P	F		Y					
12-14612 VE38C	MW-11D-073112	F		P	P		DIS					P	F		Y					
12-14613 VE38D	MW-12S-073112	F		P	P		DIS					P	F		Y					
12-14614 VE38E	MW-11S-073112	F		P	P		DIS					P	F		Y		L2	142276	2.41	8/2/12 CB

E = Filtered/unpreserved P = Pass F = Fail  
 Sulfide preserved with ZNOAC lab to adjust pH  
 Cyanide = unpreserved

preserved Sample E in  
 lab CB 8/2/12

Checked By AV Date 8/1/12

ARI Client: Landau

Project Name: Cornwall

COC No(s): \_\_\_\_\_ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered  Other: \_\_\_\_\_

Assigned ARI Job No: VE43

Tracking No: \_\_\_\_\_ (NA)

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler?  YES  NO  
 Were custody papers included with the cooler?  YES  NO  
 Were custody papers properly filled out (ink, signed, etc.)  YES  NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)..... 4.8 1.9 5.4 4.9 2.1  
 If cooler temperature is out of compliance fill out form 00070F  
 Temp Gun ID#: 90077952

Cooler Accepted by: AV Date: 8/1/12 Time: 1345

*Complete custody forms and attach all shipping documents*

**Log-In Phase:**



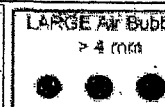
Was a temperature blank included in the cooler?  YES  NO  
 What kind of packing material was used? ... Bubble Wrap  Wet Ice Gel Packs Baggies Foam Block Paper Other: Box  
 Was sufficient ice used (if appropriate)? ..... NA  YES  NO  
 Were all bottles sealed in individual plastic bags? .....  YES  NO  
 Did all bottles arrive in good condition (unbroken)? .....  YES  NO  
 Were all bottle labels complete and legible? .....  YES  NO  
 Did the number of containers listed on COC match with the number of containers received? .....  YES  NO  
 Did all bottle labels and tags agree with custody papers? .....  YES  NO  
 Were all bottles used correct for the requested analyses? .....  YES  NO  
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA  YES  NO  
 Were all VOC vials free of air bubbles? .....  NA  YES  NO  
 Was sufficient amount of sample sent in each bottle? .....  YES  NO  
 Date VOC Trip Blank was made at ARI.....  NA  
 Was Sample Split by ARI:  NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: AV Date: 8/2/12 Time: 1300  
**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

*Additional Notes, Discrepancies, & Resolutions:*

By: \_\_\_\_\_ Date: \_\_\_\_\_

 <p>Small Air Bubbles -2mm</p>	 <p>Peabubbles 2-4 mm</p>	 <p>LARGE Air Bubbles &gt; 4 mm</p>	Small → "sm" Peabubbles → "pb" Large → "lg" Headspace → "hs"
---	--	--	---



ARI Job No: VE43

PC: Kelly  
VTSR: 08/01/12

Inquiry Number: NONE  
Analysis Requested: 08/01/12  
Contact: Davis, Jeremy  
Client: Landau Associates  
Logged by: AV  
Sample Set Used: Yes-481  
Validatable Package: No  
Deliverables:

Project #: 0001020.400.500  
Project: Cornwall  
Sample Site:  
SDG No:  
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102Fe2+ <2	DMET DOC FLT FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
12-14616 VE43A	MW-16D-073112						DIS								Y					
12-14617 VE43B	MW-12D-073112						DIS								Y					
12-14618 VE43C	MW-11D-073112						DIS								Y					
12-14619 VE43D	MW-12S-073112						DIS								Y					
12-14620 VE43E	MW-11S-073112						DIS								Y		LR	452226	401	8/2/12 CB

\*E = Filtered/unpreserved

P = Pass F = Fail

preserved - CB 8/2/12  
Sample samples CB 8/2/12 E in lab

# Sample ID Cross Reference Report



ARI Job No: VE38  
Client: Landau Associates  
Project Event: 0001020.400.500  
Project Name: Cornwall

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-16D-073112	VE38A	12-14610	Water	07/31/12 08:30	08/01/12 12:45
2. MW-12D-073112	VE38B	12-14611	Water	07/31/12 10:40	08/01/12 12:45
3. MW-11D-073112	VE38C	12-14612	Water	07/31/12 12:30	08/01/12 12:45
4. MW-12S-073112	VE38D	12-14613	Water	07/31/12 13:00	08/01/12 12:45
5. MW-11S-073112	VE38E	12-14614	Water	07/31/12 14:15	08/01/12 12:45
6. Trip Blanks	VE38F	12-14615	Water	07/31/12	08/01/12 12:45

# Sample ID Cross Reference Report



ARI Job No: VE43  
Client: Landau Associates  
Project Event: 0001020.400.500  
Project Name: Cornwall

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-16D-073112	VE43A	12-14616	Water	07/31/12 08:30	08/01/12 12:45
2. MW-12D-073112	VE43B	12-14617	Water	07/31/12 10:40	08/01/12 12:45
3. MW-11D-073112	VE43C	12-14618	Water	07/31/12 12:30	08/01/12 12:45
4. MW-12S-073112	VE43D	12-14619	Water	07/31/12 13:00	08/01/12 12:45
5. MW-11S-073112	VE43E	12-14620	Water	07/31/12 14:15	08/01/12 12:45

# Sample ID Cross Reference Report



ARI Job No: VE90  
Client: Landau Associates  
Project Event: 0001020.400.500  
Project Name: Cornwall

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-16D-073112	VE90A	12-14876	Water	07/31/12 08:30	08/01/12 12:45



## Data Reporting Qualifiers

Effective 2/14/2011

### Inorganic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Duplicate RPD is not within established control limits
- B Reported value is less than the CRDL but  $\geq$  the Reporting Limit
- N Matrix Spike recovery not within established control limits
- NA Not Applicable, analyte not spiked
- H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L Analyte concentration is  $\leq 5$  times the Reporting Limit and the replicate control limit defaults to  $\pm 1$  RL instead of the normal 20% RPD

### Organic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Flagged value is not within established control limits
- B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J Estimated concentration when the value is less than ARI's established reporting limits
- D The spiked compound was not detected due to sample extract dilution
- E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ( $< 20\%$  RSD,  $< 20\%$  Drift or minimum RRF).



- S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA The flagged analyte was not analyzed for
- NR Spiked compound recovery is not reported due to chromatographic interference
- NS The flagged analyte was not spiked into the sample
- M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria" **(Dioxin/Furan analysis only)**
- C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P The analyte was detected on both chromatographic columns but the quantified values differ by  $\geq 40\%$  RPD with no obvious chromatographic interference
- X Analyte signal includes interference from polychlorinated diphenyl ethers. **(Dioxin/Furan analysis only)**
- Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**





## **Geotechnical Data**

- A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F Samples were frozen prior to particle size determination
- SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W Weight of sample in some pipette aliquots was below the level required for accurate weighting



**Client:** Landau Associates

**ARI Job No.:** VE38

**Client Project:** Cornwall

**Client Project No.:** 0001020.400.500

### Case Narrative

1. Five samples were submitted for preparation on August 1, 2012, and were in good condition. Each sample was received in eight 500 milliliters amber glass bottles, with a total of 20 liters for the entire job.
2. The samples were submitted for removal of solid particulate by means of centrifuging according to modified Corp of Engineers draft interim guide lines.
3. The samples were centrifuged in decontaminated 500mL glass bottles, in a pre-cooled centrifuge (4°C) at 1,000 x g for 30 minutes.
4. The supernatant water was decanted back into the original sample bottles and delivered to sample receiving for distribution.
5. There were no other anomalies in the sample or methods on this project.

Released by: *Suzanna Curtiz*  
Geotechnical Laboratory Manager

Date: 8/3/12

Reviewed by: *[Signature]*  
Lead Technician

Date: 8.3.2012



# AQUATIC RESEARCH INCORPORATED

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

<b>CASE FILE NUMBER:</b>	<b>ARI098-44</b>	<b>PAGE 1</b>
<b>REPORT DATE:</b>	<b>08/16/12</b>	
<b>DATE SAMPLED:</b>	<b>07/31/12</b>	<b>DATE RECEIVED: 08/02/12</b>
<b>FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER</b>		
<b>SAMPLES FROM ANALYTICAL RESOURCES INC. / VE38</b>		

## CASE NARRATIVE

Five water samples were received by the laboratory in good condition. Analysis was performed according to the chain of custody received with the samples. No difficulties were encountered in the preparation or analysis of these samples. Sample data follows while QA/QC data is contained on the following page.

## SAMPLE DATA

SAMPLE ID	LAB ID	TANNIN/LIGNIN (mg/L)
12-14610-VE38A	MW-16D-073112	1.22
12-14611-VE38B	MW-12D-073112	9.54
12-14612-VE38C	MW-11D-073112	29.9
12-14613-VE38D	MW-12S-073112	7.83
12-14614-VE38E	MW-11S-073112	1.90



# AQUATIC RESEARCH INCORPORATED

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

<b>CASE FILE NUMBER:</b>	<b>ARI098-44</b>	<b>PAGE 2</b>
<b>REPORT DATE:</b>	<b>08/16/12</b>	
<b>DATE SAMPLED:</b>	<b>07/31/12</b>	<b>DATE RECEIVED: 08/02/12</b>
<b>FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER</b>		
<b>SAMPLES FROM ANALYTICAL RESOURCES INC. / VE38</b>		

## QA/QC DATA

QC PARAMETER	TANNIN/LIGNIN (mg/L)
METHOD	SM5550
DATE ANALYZED	08/16/12
DETECTION LIMIT	0.010
DUPLICATE	
SAMPLE ID	BATCH
ORIGINAL	1.22
DUPLICATE	1.22
RPD	0.00%
SPIKE SAMPLE	
SAMPLE ID	BATCH
ORIGINAL	1.22
SPIKED SAMPLE	2.16
SPIKE ADDED	1.00
% RECOVERY	94.85%
QC CHECK	
FOUND	1.04
TRUE	1.00
% RECOVERY	103.58%
BLANK	<0.010

RPD = RELATIVE PERCENT DIFFERENCE

NA = NOT APPLICABLE OR NOT AVAILABLE

NC = NOT CALCULABLE DUE TO ONE OR MORE VALUES BEING BELOW THE DETECTION LIMIT

OR = RECOVERY NOT CALCULABLE DUE TO SPIKE SAMPLE OUT OF RANGE OR SPIKE TO LOW RELATIVE TO SAMPLE CONCENTRATION

SUBMITTED BY:

*Damien Gadowski*

Damien Gadowski  
Project Manager

**SUBCONTRACTOR ANALYSIS REQUEST**  
**CUSTODY TRANSFER 08/01/12**



ARI Project: VE38

AR1098-44

Laboratory: Aquatic Research, Inc  
 Lab Contact: Steve Lazoff  
 Lab Address: 3927 Aurora Ave N.  
 Seattle, WA 98103  
 Phone: 206-632-2715  
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ARI Client: Landau Associates  
 Project ID: Cornwall  
 ARI PM: Kelly Bottem  
 Phone: 206-695-6211  
 Fax: 206-695-6201  
 Email: subdata@arilabs.com

Analytical Protocol: In-house  
 Special Instructions:

Requested Turn Around:  
 Email Results (Y/N): **email**

**Limits of Liability.** Subcontractor is expected to perform all requested services in accordance with appropriate methodology following Standard Operating Procedures that meet standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the negotiated amount for said services. The agreement by the Subcontractor to perform services requested by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Subcontractor.

ARI ID	Client ID/ Add'l ID	Sampled	Matrix	Bottles	Analyses
12-14610-VE38A	MW-16D-073112	07/31/12 08:30	Water	1	Tannins & Lignins
Special Instructions: None					
12-14611-VE38B	MW-12D-073112	07/31/12 10:40	Water	1	Tannins & Lignins
Special Instructions: None					
12-14612-VE38C	MW-11D-073112	07/31/12 12:30	Water	1	Tannins & Lignins
Special Instructions: None					
12-14613-VE38D	MW-12S-073112	07/31/12 13:00	Water	1	Tannins & Lignins
Special Instructions: None					
12-14614-VE38E	MW-11S-073112	07/31/12 14:15	Water	1	Tannins & Lignins
Special Instructions: None					

Carrier		Airbill		Date	
Relinquished by	Company	Date	Time		
	ARI	8/2/12	1051		
Received by	Company	Date	Time		
	ARI	8/2/12	1051		

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-16D-073112**  
**SAMPLE**

Lab Sample ID: VE38A  
 LIMS ID: 12-14610  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/15/12 22:32  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	82.0%
Tetrachlorometaxylene	57.8%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

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**Sample ID: MW-12D-073112**

**SAMPLE**

Lab Sample ID: VE38B

LIMS ID: 12-14611

Matrix: Water

Data Release Authorized: *AB*

Reported: 08/16/12

QC Report No: VE38-Landau Associates

Project: Cornwall

0001020.400.500

Date Sampled: 07/31/12

Date Received: 08/01/12

Date Extracted: 08/06/12

Date Analyzed: 08/15/12 22:50

Instrument/Analyst: ECD6/AAR

GPC Cleanup: No

Sulfur Cleanup: Yes

Sample Amount: 500 mL

Final Extract Volume: 5.0 mL

Dilution Factor: 1.00

pH: NA

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**


Decachlorobiphenyl	52.5%
Tetrachlorometaxylene	55.0%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11D-073112**  
**SAMPLE**

Lab Sample ID: VE38C  
 LIMS ID: 12-14612  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/15/12 23:08  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	74.0%
Tetrachlorometaxylene	63.2%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.



**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-12S-073112**  
**SAMPLE**

Lab Sample ID: VE38D  
 LIMS ID: 12-14613  
 Matrix: Water  
 Data Release Authorized: *AS*  
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/15/12 23:26  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**


Decachlorobiphenyl	64.2%
Tetrachlorometaxylene	63.2%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11S-073112**  
**SAMPLE**

Lab Sample ID: VE38E  
 LIMS ID: 12-14614  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/15/12 23:43  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	78.0%
Tetrachlorometaxylene	60.2%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides by GC/ECD Method SW8081B**

**Extraction Method: SW3510C**

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**Sample ID: MB-080612**

**METHOD BLANK**

Lab Sample ID: MB-080612

LIMS ID: 12-14610

Matrix: Water

Data Release Authorized: *AB*

Reported: 08/16/12

QC Report No: VE38-Landau Associates

Project: Cornwall

0001020.400.500

Date Sampled: NA

Date Received: NA

Date Extracted: 08/06/12

Date Analyzed: 08/15/12 21:21

Instrument/Analyst: ECD6/AAR

GPC Cleanup: No

Sulfur Cleanup: Yes

Sample Amount: 500 mL

Final Extract Volume: 5.0 mL

Dilution Factor: 1.00

pH: NA

Florisil Cleanup: No

Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane	0.050	< 0.050 U
5103-71-9	cis-Chlordane	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	67.0%
Tetrachlorometaxylene	62.2%

**SW8081/PESTICIDE WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE38-Landau Associates  
Project: Cornwall  
0001020.400.500

<u>Client ID</u>	<u>DCBP</u>	<u>TCMX</u>	<u>TOT OUT</u>
MB-080612	67.0%	62.2%	0
LCS-080612	70.5%	60.5%	0
LCSD-080612	73.8%	59.5%	0
MW-16D-073112	82.0%	57.8%	0
MW-12D-073112	52.5%	55.0%	0
MW-11D-073112	74.0%	63.2%	0
MW-12S-073112	64.2%	63.2%	0
MW-11S-073112	78.0%	60.2%	0

**LCS/MB LIMITS      QC LIMITS**

(DCBP) = Decachlorobiphenyl      (54-100)      (32-116)  
(TCMX) = Tetrachlorometaxylene      (52-100)      (43-106)

Prep Method: SW3510C  
Log Number Range: 12-14610 to 12-14614

**ORGANICS ANALYSIS DATA SHEET**

Pesticides/PCB by GC/ECD Method SW8081B

Page 1 of 1

Sample ID: LCS-080612

LCS/LCSD

Lab Sample ID: LCS-080612

LIMS ID: 12-14610

Matrix: Water

Data Release Authorized: *[Signature]*

Reported: 08/16/12

QC Report No: VE38-Landau Associates

Project: Cornwall

0001020.400.500

Date Sampled: 07/31/12

Date Received: 08/01/12

Date Extracted LCS/LCSD: 08/06/12

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 08/15/12 21:39

Final Extract Volume LCS: 5.0 mL

LCSD: 08/15/12 21:57

LCSD: 5.0 mL

Instrument/Analyst LCS: ECD6/AAR

Dilution Factor LCS: 1.00

LCSD: ECD6/AAR

LCSD: 1.00

GPC Cleanup: No

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
alpha-BHC	0.196	0.200	98.0%	0.199	0.200	99.5%	1.5%
beta-BHC	0.175	0.200	87.5%	0.179	0.200	89.5%	2.3%
delta-BHC	0.183	0.200	91.5%	0.182	0.200	91.0%	0.5%
gamma-BHC (Lindane)	0.232	0.200	116%	0.236	0.200	118%	1.7%
Heptachlor	0.176	0.200	88.0%	0.182	0.200	91.0%	3.4%
Aldrin	0.175	0.200	87.5%	0.170	0.200	85.0%	2.9%
Heptachlor Epoxide	0.223	0.200	112%	0.235	0.200	118%	5.2%
Endosulfan I	0.210	0.200	105%	0.215	0.200	108%	2.4%
Dieldrin	0.423	0.400	106%	0.435	0.400	109%	2.8%
4,4'-DDE	0.412	0.400	103%	0.418	0.400	104%	1.4%
Endrin	0.478	0.400	120%	0.473	0.400	118%	1.1%
Endosulfan II	0.407	0.400	102%	0.417	0.400	104%	2.4%
4,4'-DDD	0.383	0.400	95.8%	0.393	0.400	98.2%	2.6%
Endosulfan Sulfate	0.372	0.400	93.0%	0.378	0.400	94.5%	1.6%
4,4'-DDT	0.405	0.400	101%	0.413	0.400	103%	2.0%
Methoxychlor	1.91	2.00	95.5%	1.96	2.00	98.0%	2.6%
Endrin Ketone	0.390	0.400	97.5%	0.408	0.400	102%	4.5%
Endrin Aldehyde	0.304	0.400	76.0%	0.317	0.400	79.2%	4.2%
trans-Chlordane	0.217	0.200	108%	0.219	0.200	110%	0.9%
cis-Chlordane	0.220	0.200	110%	0.224	0.200	112%	1.8%

**Pest/PCB Surrogate Recovery**

	LCS	LCSD
Decachlorobiphenyl	70.5%	73.8%
Tetrachlorometaxylene	60.5%	59.5%

Results reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-16D-073112

Page 1 of 2

**SAMPLE**

Lab Sample ID: VE38A

QC Report No: VE38-Landau Associates

LIMS ID: 12-14610

Project: Cornwall

Matrix: Water

0001020.400.500

Data Release Authorized: *[Signature]*

Date Sampled: 07/31/12

Reported: 08/08/12

Date Received: 08/01/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/07/12 16:29

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-16D-073112

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**SAMPLE**

Lab Sample ID: VE38A

QC Report No: VE38-Landau Associates

LIMS ID: 12-14610

Project: Cornwall

Matrix: Water

0001020.400.500

Date Analyzed: 08/07/12 16:29

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	99.6%
d8-Toluene	97.8%
Bromofluorobenzene	95.9%
d4-1,2-Dichlorobenzene	100%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-12D-073112

Page 1 of 2

**SAMPLE**

Lab Sample ID: VE38B

QC Report No: VE38-Landau Associates

LIMS ID: 12-14611

Project: Cornwall

Matrix: Water

0001020.400.500

Data Release Authorized:

Date Sampled: 07/31/12

Reported: 08/08/12

Date Received: 08/01/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/07/12 16:56

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>0.44</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U



**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-12D-073112

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**SAMPLE**

Lab Sample ID: VE38B

QC Report No: VE38-Landau Associates

LIMS ID: 12-14611

Project: Cornwall

Matrix: Water

0001020.400.500

Date Analyzed: 08/07/12 16:56

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	102%
d8-Toluene	97.7%
Bromofluorobenzene	99.2%
d4-1,2-Dichlorobenzene	105%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-11D-073112**

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**SAMPLE**

Lab Sample ID: VE38C

QC Report No: VE38-Landau Associates

LIMS ID: 12-14612

Project: Cornwall

Matrix: Water

0001020.400.500

Data Release Authorized: *[Signature]*

Date Sampled: 07/31/12

Reported: 08/08/12

Date Received: 08/01/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/07/12 17:22

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-11D-073112**

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**SAMPLE**

Lab Sample ID: VE38C

QC Report No: VE38-Landau Associates

LIMS ID: 12-14612

Project: Cornwall

Matrix: Water

0001020.400.500

Date Analyzed: 08/07/12 17:22

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	103%
d8-Toluene	97.6%
Bromofluorobenzene	97.1%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-12S-073112**

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**SAMPLE**

Lab Sample ID: VE38D

QC Report No: VE38-Landau Associates

LIMS ID: 12-14613

Project: Cornwall

Matrix: Water

0001020.400.500

Data Release Authorized:

Date Sampled: 07/31/12

Reported: 08/08/12

Date Received: 08/01/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/07/12 17:49

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
<b>67-64-1</b>	<b>Acetone</b>	<b>5.0</b>	<b>5.0</b>	
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>2.6</b>	
<b>100-41-4</b>	<b>Ethylbenzene</b>	<b>0.20</b>	<b>0.46</b>	
<b>100-42-5</b>	<b>Styrene</b>	<b>0.20</b>	<b>0.82</b>	
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
<b>179601-23-1</b>	<b>m,p-Xylene</b>	<b>0.40</b>	<b>0.42</b>	
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.31</b>	
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>0.86</b>	

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-12S-073112**

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**SAMPLE**

Lab Sample ID: VE38D

QC Report No: VE38-Landau Associates

LIMS ID: 12-14613

Project: Cornwall

Matrix: Water

0001020.400.500

Date Analyzed: 08/07/12 17:49

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.25</b>	
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	99.0%
d8-Toluene	97.8%
Bromofluorobenzene	97.4%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-11S-073112**

Page 1 of 2

**SAMPLE**

Lab Sample ID: VE38E

QC Report No: VE38-Landau Associates

LIMS ID: 12-14614

Project: Cornwall

Matrix: Water

0001020.400.500

Data Release Authorized: 

Date Sampled: 07/31/12

Reported: 08/08/12

Date Received: 08/01/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/07/12 18:15

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-11S-073112**

Page 2 of 2

**SAMPLE**

Lab Sample ID: VE38E

QC Report No: VE38-Landau Associates

LIMS ID: 12-14614

Project: Cornwall

Matrix: Water

0001020.400.500

Date Analyzed: 08/07/12 18:15

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
<b>99-87-6</b>	<b>4-Isopropyltoluene</b>	<b>0.20</b>	<b>0.86</b>	
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	100%
d8-Toluene	97.8%
Bromofluorobenzene	99.0%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: Trip Blanks  
SAMPLE

Page 1 of 2

Lab Sample ID: VE38F

QC Report No: VE38-Landau Associates

LIMS ID: 12-14615

Project: Cornwall

Matrix: Water

0001020.400.500

Data Release Authorized: *AB*

Date Sampled: 07/31/12

Reported: 08/08/12

Date Received: 08/01/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/07/12 12:24

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U



**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: Trip Blanks  
SAMPLE**

Page 2 of 2

Lab Sample ID: VE38F

QC Report No: VE38-Landau Associates

LIMS ID: 12-14615

Project: Cornwall

Matrix: Water

0001020.400.500

Date Analyzed: 08/07/12 12:24

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	99.3%
d8-Toluene	96.5%
Bromofluorobenzene	96.7%
d4-1,2-Dichlorobenzene	100%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MB-080712A**

Page 1 of 2

**METHOD BLANK**

Lab Sample ID: MB-080712A

QC Report No: VE38-Landau Associates

LIMS ID: 12-14610

Project: Cornwall

Matrix: Water

0001020.400.500

Data Release Authorized: *AB*

Date Sampled: NA

Reported: 08/08/12

Date Received: NA

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/07/12 11:56

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

Page 2 of 2

**Sample ID: MB-080712A**

**METHOD BLANK**

Lab Sample ID: MB-080712A

QC Report No: VE38-Landau Associates

LIMS ID: 12-14610

Project: Cornwall

Matrix: Water

0001020.400.500

Date Analyzed: 08/07/12 11:56

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	98.7%
d8-Toluene	96.7%
Bromofluorobenzene	97.7%
d4-1,2-Dichlorobenzene	100%

**VOA SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE38-Landau Associates  
Project: Cornwall  
0001020.400.500

<u>ARI ID</u>	<u>Client ID</u>	<u>PV</u>	<u>DCE</u>	<u>TOL</u>	<u>BFB</u>	<u>DCB</u>	<u>TOT OUT</u>
MB-080712A	Method Blank	10	98.7%	96.7%	97.7%	100%	0
LCS-080712A	Lab Control	10	99.9%	99.2%	98.6%	99.9%	0
LCSD-080712A	Lab Control Dup	10	101%	99.8%	99.0%	102%	0
VE38A	MW-16D-073112	10	99.6%	97.8%	95.9%	100%	0
VE38B	MW-12D-073112	10	102%	97.7%	99.2%	105%	0
VE38C	MW-11D-073112	10	103%	97.6%	97.1%	102%	0
VE38D	MW-12S-073112	10	99.0%	97.8%	97.4%	102%	0
VE38E	MW-11S-073112	10	100%	97.8%	99.0%	104%	0
VE38F	Trip Blanks	10	99.3%	96.5%	96.7%	100%	0

**LCS/MB LIMITS**

**QC LIMITS**

**SW8260C**

(DCE) = d4-1,2-Dichloroethane	(80-120)	(80-130)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B  
Log Number Range: 12-14610 to 12-14615

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: LCS-080712A**

Page 1 of 2

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-080712A

QC Report No: VE38-Landau Associates

LIMS ID: 12-14610

Project: Cornwall

Matrix: Water

0001020.400.500

Data Release Authorized: *[Signature]*

Date Sampled: NA

Reported: 08/08/12

Date Received: NA

Instrument/Analyst LCS: NT2/PKC

Sample Amount LCS: 10.0 mL

LCSD: NT2/PKC

LCSD: 10.0 mL

Date Analyzed LCS: 08/07/12 10:25

Purge Volume LCS: 10.0 mL

LCSD: 08/07/12 10:52

LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	8.72	10.0	87.2%	8.42	10.0	84.2%	3.5%
Bromomethane	8.94	10.0	89.4%	8.87	10.0	88.7%	0.8%
Vinyl Chloride	8.94	10.0	89.4%	8.67	10.0	86.7%	3.1%
Chloroethane	9.00	10.0	90.0%	8.75	10.0	87.5%	2.8%
Methylene Chloride	8.84	10.0	88.4%	8.50	10.0	85.0%	3.9%
Acetone	45.5	50.0	91.0%	45.6	50.0	91.2%	0.2%
Carbon Disulfide	9.30	10.0	93.0%	8.96	10.0	89.6%	3.7%
1,1-Dichloroethene	9.33	10.0	93.3%	9.12	10.0	91.2%	2.3%
1,1-Dichloroethane	9.29	10.0	92.9%	8.95	10.0	89.5%	3.7%
trans-1,2-Dichloroethene	8.73	10.0	87.3%	8.56	10.0	85.6%	2.0%
cis-1,2-Dichloroethene	8.99	10.0	89.9%	8.73	10.0	87.3%	2.9%
Chloroform	9.43	10.0	94.3%	9.11	10.0	91.1%	3.5%
1,2-Dichloroethane	9.63	10.0	96.3%	9.54	10.0	95.4%	0.9%
2-Butanone	45.3	50.0	90.6%	44.7	50.0	89.4%	1.3%
1,1,1-Trichloroethane	9.65	10.0	96.5%	9.25	10.0	92.5%	4.2%
Carbon Tetrachloride	9.88	10.0	98.8%	9.75	10.0	97.5%	1.3%
Vinyl Acetate	8.80	10.0	88.0%	8.56	10.0	85.6%	2.8%
Bromodichloromethane	9.79	10.0	97.9%	9.54	10.0	95.4%	2.6%
1,2-Dichloropropane	9.24	10.0	92.4%	9.14	10.0	91.4%	1.1%
cis-1,3-Dichloropropene	9.61	10.0	96.1%	9.35	10.0	93.5%	2.7%
Trichloroethene	9.58	10.0	95.8%	9.43	10.0	94.3%	1.6%
Dibromochloromethane	10.3	10.0	103%	9.84	10.0	98.4%	4.6%
1,1,2-Trichloroethane	9.59	10.0	95.9%	9.35	10.0	93.5%	2.5%
Benzene	9.31	10.0	93.1%	9.20	10.0	92.0%	1.2%
trans-1,3-Dichloropropene	9.74	10.0	97.4%	9.52	10.0	95.2%	2.3%
2-Chloroethylvinylether	9.04	10.0	90.4%	8.77	10.0	87.7%	3.0%
Bromoform	10.4	10.0	104%	9.85	10.0	98.5%	5.4%
4-Methyl-2-Pentanone (MIBK)	46.5	50.0	93.0%	45.8	50.0	91.6%	1.5%
2-Hexanone	47.9	50.0	95.8%	46.1	50.0	92.2%	3.8%
Tetrachloroethene	10.0	10.0	100%	9.56	10.0	95.6%	4.5%
1,1,2,2-Tetrachloroethane	9.47	10.0	94.7%	9.28	10.0	92.8%	2.0%
Toluene	9.57	10.0	95.7%	9.36	10.0	93.6%	2.2%
Chlorobenzene	10.1	10.0	101%	9.72	10.0	97.2%	3.8%
Ethylbenzene	9.91	10.0	99.1%	9.56	10.0	95.6%	3.6%
Styrene	10.0	10.0	100%	9.42	10.0	94.2%	6.0%
Trichlorofluoromethane	9.90	10.0	99.0%	9.50	10.0	95.0%	4.1%
1,1,2-Trichloro-1,2,2-trifluoroethane	9.56	10.0	95.6%	9.14	10.0	91.4%	4.5%
m,p-Xylene	20.3	20.0	102%	19.6	20.0	98.0%	3.5%
o-Xylene	10.1	10.0	101%	9.86	10.0	98.6%	2.4%
1,2-Dichlorobenzene	9.91	10.0	99.1%	9.90	10.0	99.0%	0.1%
1,3-Dichlorobenzene	9.91	10.0	99.1%	9.74	10.0	97.4%	1.7%
1,4-Dichlorobenzene	9.96	10.0	99.6%	9.71	10.0	97.1%	2.5%
Acrolein	42.0 Q	50.0	84.0%	41.4 Q	50.0	82.8%	1.4%
Methyl Iodide	9.58	10.0	95.8%	9.23	10.0	92.3%	3.7%
Bromoethane	9.56	10.0	95.6%	9.20	10.0	92.0%	3.8%
Acrylonitrile	8.43	10.0	84.3%	8.34	10.0	83.4%	1.1%
1,1-Dichloropropene	9.48	10.0	94.8%	9.31	10.0	93.1%	1.8%
Dibromomethane	9.72	10.0	97.2%	9.65	10.0	96.5%	0.7%

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: LCS-080712A**

Page 2 of 2

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-080712A

QC Report No: VE38-Landau Associates

LIMS ID: 12-14610

Project: Cornwall

Matrix: Water

0001020.400.500

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCS	LCS	Spike Added-LCS	LCS	RPD
1,1,1,2-Tetrachloroethane	10.3	10.0	103%	10.1	10.0	101%	2.0%	
1,2-Dibromo-3-chloropropane	8.63	10.0	86.3%	8.75	10.0	87.5%	1.4%	
1,2,3-Trichloropropane	9.89	10.0	98.9%	9.54	10.0	95.4%	3.6%	
trans-1,4-Dichloro-2-butene	9.35	10.0	93.5%	8.77	10.0	87.7%	6.4%	
1,3,5-Trimethylbenzene	9.97	10.0	99.7%	9.81	10.0	98.1%	1.6%	
1,2,4-Trimethylbenzene	10.0	10.0	100%	9.84	10.0	98.4%	1.6%	
Hexachlorobutadiene	8.87	10.0	88.7%	9.25	10.0	92.5%	4.2%	
Ethylene Dibromide	9.76	10.0	97.6%	9.46	10.0	94.6%	3.1%	
Bromochloromethane	9.39	10.0	93.9%	8.96	10.0	89.6%	4.7%	
2,2-Dichloropropane	9.42	10.0	94.2%	9.03	10.0	90.3%	4.2%	
1,3-Dichloropropane	9.78	10.0	97.8%	9.32	10.0	93.2%	4.8%	
Isopropylbenzene	9.85	10.0	98.5%	9.53	10.0	95.3%	3.3%	
n-Propylbenzene	9.91	10.0	99.1%	9.61	10.0	96.1%	3.1%	
Bromobenzene	9.79	10.0	97.9%	9.39	10.0	93.9%	4.2%	
2-Chlorotoluene	9.88	10.0	98.8%	9.57	10.0	95.7%	3.2%	
4-Chlorotoluene	9.82	10.0	98.2%	9.58	10.0	95.8%	2.5%	
tert-Butylbenzene	10.2	10.0	102%	10.0	10.0	100%	2.0%	
sec-Butylbenzene	9.96	10.0	99.6%	9.87	10.0	98.7%	0.9%	
4-Isopropyltoluene	9.95	10.0	99.5%	9.92	10.0	99.2%	0.3%	
n-Butylbenzene	9.49	10.0	94.9%	9.41	10.0	94.1%	0.8%	
1,2,4-Trichlorobenzene	8.82	10.0	88.2%	9.25	10.0	92.5%	4.8%	
Naphthalene	8.53	10.0	85.3%	8.95	10.0	89.5%	4.8%	
1,2,3-Trichlorobenzene	8.28	10.0	82.8%	8.90	10.0	89.0%	7.2%	

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**Volatile Surrogate Recovery**

	LCS	LCS
d4-1,2-Dichloroethane	99.9%	101%
d8-Toluene	99.2%	99.8%
Bromofluorobenzene	98.6%	99.0%
d4-1,2-Dichlorobenzene	99.9%	102%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-16D-073112**  
**SAMPLE**

Lab Sample ID: VE38A  
 LIMS ID: 12-14610  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/08/12 17:53  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-16D-073112**  
**SAMPLE**

Lab Sample ID: VE38A  
 LIMS ID: 12-14610  
 Matrix: Water  
 Date Analyzed: 08/08/12 17:53

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>1.3</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	57.6%	2-Fluorobiphenyl	59.6%
d14-p-Terphenyl	76.0%	d4-1,2-Dichlorobenzene	46.0%
d5-Phenol	63.5%	2-Fluorophenol	56.0%
2,4,6-Tribromophenol	94.9%	d4-2-Chlorophenol	62.7%



**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-12D-073112**  
**SAMPLE**

Lab Sample ID: VE38B  
 LIMS ID: 12-14611  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/08/12 18:27  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-12D-073112**  
**SAMPLE**

Lab Sample ID: VE38B  
 LIMS ID: 12-14611  
 Matrix: Water  
 Date Analyzed: 08/08/12 18:27

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>1.4</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	58.0%	2-Fluorobiphenyl	54.4%
d14-p-Terphenyl	53.2%	d4-1,2-Dichlorobenzene	47.2%
d5-Phenol	60.5%	2-Fluorophenol	56.3%
2,4,6-Tribromophenol	90.1%	d4-2-Chlorophenol	61.3%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-11D-073112**  
**SAMPLE**

Lab Sample ID: VE38C  
 LIMS ID: 12-14612  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/08/12 19:01  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-11D-073112**  
**SAMPLE**

Lab Sample ID: VE38C  
 LIMS ID: 12-14612  
 Matrix: Water  
 Date Analyzed: 08/08/12 19:01

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>1.7</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	56.8%	2-Fluorobiphenyl	53.6%
d14-p-Terphenyl	42.0%	d4-1,2-Dichlorobenzene	46.4%
d5-Phenol	57.6%	2-Fluorophenol	55.7%
2,4,6-Tribromophenol	82.7%	d4-2-Chlorophenol	59.5%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-12S-073112**  
**SAMPLE**

Lab Sample ID: VE38D  
 LIMS ID: 12-14613  
 Matrix: Water  
 Data Release Authorized: *mmw*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/08/12 19:35  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-12S-073112**  
**SAMPLE**

Lab Sample ID: VE38D  
 LIMS ID: 12-14613  
 Matrix: Water  
 Date Analyzed: 08/08/12 19:35

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>1.8</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	61.6%	2-Fluorobiphenyl	57.2%
d14-p-Terphenyl	73.6%	d4-1,2-Dichlorobenzene	47.6%
d5-Phenol	64.3%	2-Fluorophenol	60.5%
2,4,6-Tribromophenol	88.3%	d4-2-Chlorophenol	65.6%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-11S-073112**  
**SAMPLE**

Lab Sample ID: VE38E  
 LIMS ID: 12-14614  
 Matrix: Water  
 Data Release Authorized: *mmw*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/08/12 20:09  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-11S-073112**  
**SAMPLE**

Lab Sample ID: VE38E  
 LIMS ID: 12-14614  
 Matrix: Water  
 Date Analyzed: 08/08/12 20:09

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>1.2</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	59.6%	2-Fluorobiphenyl	57.6%
d14-p-Terphenyl	67.2%	d4-1,2-Dichlorobenzene	49.2%
d5-Phenol	62.1%	2-Fluorophenol	58.9%
2,4,6-Tribromophenol	84.0%	d4-2-Chlorophenol	62.9%



**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MB-080612**  
**METHOD BLANK**

Lab Sample ID: MB-080612  
 LIMS ID: 12-14610  
 Matrix: Water  
 Data Release Authorized: *mmw*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 08/06/12  
 Date Analyzed: 08/08/12 14:28  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MB-080612**  
**METHOD BLANK**

Lab Sample ID: MB-080612  
 LIMS ID: 12-14610  
 Matrix: Water  
 Date Analyzed: 08/08/12 14:28

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	64.4%	2-Fluorobiphenyl	64.0%
d14-p-Terphenyl	82.4%	d4-1,2-Dichlorobenzene	52.8%
d5-Phenol	66.9%	2-Fluorophenol	64.0%
2,4,6-Tribromophenol	87.5%	d4-2-Chlorophenol	68.5%

**SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE38-Landau Associates

Project: Cornwall

0001020.400.500

Client ID	NBZ	FBP	TPH	DCB	PHL	2FP	TBP	2CP	TOT	OUT
MB-080612	64.4%	64.0%	82.4%	52.8%	66.9%	64.0%	87.5%	68.5%	0	
LCS-080612	62.4%	68.0%	79.2%	52.4%	65.6%	61.3%	98.9%	66.4%	0	
LCSD-080612	64.0%	65.2%	78.8%	48.0%	66.4%	64.0%	97.9%	67.7%	0	
MW-16D-073112	57.6%	59.6%	76.0%	46.0%	63.5%	56.0%	94.9%	62.7%	0	
MW-12D-073112	58.0%	54.4%	53.2%	47.2%	60.5%	56.3%	90.1%	61.3%	0	
MW-11D-073112	56.8%	53.6%	42.0%	46.4%	57.6%	55.7%	82.7%	59.5%	0	
MW-12S-073112	61.6%	57.2%	73.6%	47.6%	64.3%	60.5%	88.3%	65.6%	0	
MW-11S-073112	59.6%	57.6%	67.2%	49.2%	62.1%	58.9%	84.0%	62.9%	0	

	LCS/MB LIMITS	QC LIMITS
(NBZ) = d5-Nitrobenzene	(50-100)	(34-101)
(FBP) = 2-Fluorobiphenyl	(51-100)	(38-100)
(TPH) = d14-p-Terphenyl	(54-117)	(27-122)
(DCB) = d4-1,2-Dichlorobenzene	(40-100)	(27-100)
(PHL) = d5-Phenol	(15-121)	(16-106)
(2FP) = 2-Fluorophenol	(33-100)	(23-100)
(TBP) = 2,4,6-Tribromophenol	(46-125)	(31-128)
(2CP) = d4-2-Chlorophenol	(46-102)	(33-100)

Prep Method: SW3520C  
Log Number Range: 12-14610 to 12-14614

**ORGANICS ANALYSIS DATA SHEET**  
Semivolatiles by SW8270D GC/MS  
Page 1 of 2

Sample ID: LCS-080612  
LCS/LCSD

Lab Sample ID: LCS-080612  
LIMS ID: 12-14610  
Matrix: Water  
Data Release Authorized: *MW*  
Reported: 08/09/12

QC Report No: VE38-Landau Associates  
Project: Cornwall  
0001020.400.500  
Date Sampled: 07/31/12  
Date Received: 08/01/12

Date Extracted LCS/LCSD: 08/06/12

Sample Amount LCS: 500 mL  
LCSD: 500 mL

Date Analyzed LCS: 08/08/12 15:02  
LCSD: 08/08/12 15:36

Final Extract Volume LCS: 0.50 mL  
LCSD: 0.50 mL

Instrument/Analyst LCS: NT6/JZ  
LCSD: NT6/JZ

Dilution Factor LCS: 1.00  
LCSD: 1.00

GPC Cleanup: NO

Analyte	LCS			LCSD			RPD
	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	
Phenol	17.0	25.0	68.0%	17.7	25.0	70.8%	4.0%
Bis-(2-Chloroethyl) Ether	15.9	25.0	63.6%	17.1	25.0	68.4%	7.3%
2-Chlorophenol	17.2	25.0	68.8%	18.3	25.0	73.2%	6.2%
1,3-Dichlorobenzene	11.2	25.0	44.8%	11.9	25.0	47.6%	6.1%
1,4-Dichlorobenzene	11.7	25.0	46.8%	12.4	25.0	49.6%	5.8%
Benzyl Alcohol	14.1	25.0	56.4%	14.5	25.0	58.0%	2.8%
1,2-Dichlorobenzene	12.2	25.0	48.8%	13.0	25.0	52.0%	6.3%
2-Methylphenol	16.9	25.0	67.6%	17.5	25.0	70.0%	3.5%
2,2'-Oxybis(1-Chloropropane)	15.2	25.0	60.8%	15.7	25.0	62.8%	3.2%
4-Methylphenol	34.2	50.0	68.4%	34.8	50.0	69.6%	1.7%
N-Nitroso-Di-N-Propylamine	16.1	25.0	64.4%	16.2	25.0	64.8%	0.6%
Hexachloroethane	9.9	25.0	39.6%	10.6	25.0	42.4%	6.8%
Nitrobenzene	16.1	25.0	64.4%	17.1	25.0	68.4%	6.0%
Isophorone	18.3	25.0	73.2%	18.8	25.0	75.2%	2.7%
2-Nitrophenol	18.6	25.0	74.4%	20.1	25.0	80.4%	7.8%
2,4-Dimethylphenol	48.7	75.0	64.9%	49.8	75.0	66.4%	2.2%
Benzoic Acid	107	138	77.5%	110	138	79.7%	2.8%
bis(2-Chloroethoxy) Methane	16.1	25.0	64.4%	16.9	25.0	67.6%	4.8%
2,4-Dichlorophenol	53.5	75.0	71.3%	55.6	75.0	74.1%	3.8%
1,2,4-Trichlorobenzene	13.0	25.0	52.0%	13.9	25.0	55.6%	6.7%
Naphthalene	13.8	25.0	55.2%	14.4	25.0	57.6%	4.3%
4-Chloroaniline	40.2	75.0	53.6%	40.6	75.0	54.1%	1.0%
Hexachlorobutadiene	11.2	25.0	44.8%	12.2	25.0	48.8%	8.5%
4-Chloro-3-methylphenol	54.7	75.0	72.9%	54.8	75.0	73.1%	0.2%
2-Methylnaphthalene	13.3	25.0	53.2%	13.8	25.0	55.2%	3.7%
Hexachlorocyclopentadiene	28.3	75.0	37.7%	28.6	75.0	38.1%	1.1%
2,4,6-Trichlorophenol	59.8	75.0	79.7%	61.9	75.0	82.5%	3.5%
2,4,5-Trichlorophenol	59.9	75.0	79.9%	61.6	75.0	82.1%	2.8%
2-Chloronaphthalene	17.0	25.0	68.0%	17.9	25.0	71.6%	5.2%
2-Nitroaniline	41.8	75.0	55.7%	42.7	75.0	56.9%	2.1%
Dimethylphthalate	19.4	25.0	77.6%	19.8	25.0	79.2%	2.0%
Acenaphthylene	16.3	25.0	65.2%	16.8	25.0	67.2%	3.0%
3-Nitroaniline	47.0	75.0	62.7%	47.5	75.0	63.3%	1.1%
Acenaphthene	15.9	25.0	63.6%	16.6	25.0	66.4%	4.3%
2,4-Dinitrophenol	135 Q	138	97.8%	143 Q	138	104%	5.8%
4-Nitrophenol	68.9	75.0	91.9%	68.2	75.0	90.9%	1.0%
Dibenzofuran	14.8	25.0	59.2%	15.4	25.0	61.6%	4.0%
2,6-Dinitrotoluene	59.4	75.0	79.2%	60.6	75.0	80.8%	2.0%
2,4-Dinitrotoluene	59.3	75.0	79.1%	61.0	75.0	81.3%	2.8%
Diethylphthalate	19.1	25.0	76.4%	19.5	25.0	78.0%	2.1%
4-Chlorophenyl-phenylether	18.2	25.0	72.8%	19.0	25.0	76.0%	4.3%
Fluorene	16.9	25.0	67.6%	17.5	25.0	70.0%	3.5%
4-Nitroaniline	49.1	75.0	65.5%	49.6	75.0	66.1%	1.0%
4,6-Dinitro-2-Methylphenol	120	138	87.0%	124	138	89.9%	3.3%
N-Nitrosodiphenylamine	16.0	25.0	64.0%	16.8	25.0	67.2%	4.9%

**ORGANICS ANALYSIS DATA SHEET**  
Semivolatiles by SW8270D GC/MS  
Page 2 of 2

Sample ID: LCS-080612  
LCS/LCSD

Lab Sample ID: LCS-080612

QC Report No: VE38-Landau Associates

LIMS ID: 12-14610

Project: Cornwall

Matrix: Water

0001020.400.500

Date Analyzed LCS: 08/08/12 15:02

LCSD: 08/08/12 15:36

Analyte	Spike		LCS		Spike		LCSD	
	LCS	Added-LCS	Recovery	LCSD	Added-LCSD	Recovery	RPD	
4-Bromophenyl-phenylether	19.0	25.0	76.0%	19.7	25.0	78.8%	3.6%	
Hexachlorobenzene	19.0	25.0	76.0%	19.8	25.0	79.2%	4.1%	
Pentachlorophenol	73.7 Q	75.0	98.3%	75.3 Q	75.0	100%	2.1%	
Phenanthrene	17.4	25.0	69.6%	17.6	25.0	70.4%	1.1%	
Carbazole	19.1	25.0	76.4%	19.0	25.0	76.0%	0.5%	
Anthracene	15.8	25.0	63.2%	15.9	25.0	63.6%	0.6%	
Di-n-Butylphthalate	19.9	25.0	79.6%	19.7	25.0	78.8%	1.0%	
Fluoranthene	18.0	25.0	72.0%	18.0	25.0	72.0%	0.0%	
Pyrene	17.4	25.0	69.6%	17.6	25.0	70.4%	1.1%	
Butylbenzylphthalate	18.6	25.0	74.4%	19.0	25.0	76.0%	2.1%	
3,3'-Dichlorobenzidine	50.7	75.0	67.6%	50.2	75.0	66.9%	1.0%	
Benzo(a)anthracene	17.7	25.0	70.8%	17.8	25.0	71.2%	0.6%	
bis(2-Ethylhexyl)phthalate	19.6	25.0	78.4%	20.3	25.0	81.2%	3.5%	
Chrysene	16.0	25.0	64.0%	16.3	25.0	65.2%	1.9%	
Di-n-Octyl phthalate	19.1	25.0	76.4%	19.2	25.0	76.8%	0.5%	
Benzo(a)pyrene	16.3	25.0	65.2%	16.4	25.0	65.6%	0.6%	
Indeno(1,2,3-cd)pyrene	16.3	25.0	65.2%	16.4	25.0	65.6%	0.6%	
Dibenz(a,h)anthracene	15.4	25.0	61.6%	15.3	25.0	61.2%	0.7%	
Benzo(g,h,i)perylene	15.5	25.0	62.0%	15.7	25.0	62.8%	1.3%	
1-Methylnaphthalene	19.1	25.0	76.4%	19.9	25.0	79.6%	4.1%	
Total Benzofluoranthenes	34.2	50.0	68.4%	34.5	50.0	69.0%	0.9%	

**Semivolatile Surrogate Recovery**

	LCS	LCSD
d5-Nitrobenzene	62.4%	64.0%
2-Fluorobiphenyl	68.0%	65.2%
d14-p-Terphenyl	79.2%	78.8%
d4-1,2-Dichlorobenzene	52.4%	48.0%
d5-Phenol	65.6%	66.4%
2-Fluorophenol	61.3%	64.0%
2,4,6-Tribromophenol	98.9%	97.9%
d4-2-Chlorophenol	66.4%	67.7%

Results reported in µg/L

RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-16D-073112**  
**SAMPLE**

Lab Sample ID: VE38A  
 LIMS ID: 12-14610  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/08/12 19:22  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	0.032
91-57-6	2-Methylnaphthalene	0.010	0.026
90-12-0	1-Methylnaphthalene	0.010	0.36
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	0.29
86-73-7	Fluorene	0.010	0.082
85-01-8	Phenanthrene	0.010	0.11
120-12-7	Anthracene	0.010	0.013
206-44-0	Fluoranthene	0.010	0.053
129-00-0	Pyrene	0.010	0.039
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	0.012
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 63.0%  
 d14-Dibenzo(a,h)anthracene 65.7%

**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-12D-073112**  
**SAMPLE**

Lab Sample ID: VE38B  
 LIMS ID: 12-14611  
 Matrix: Water  
 Data Release Authorized: *WVW*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/09/12 13:38  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	0.046
91-57-6	2-Methylnaphthalene	0.010	0.034
90-12-0	1-Methylnaphthalene	0.010	0.053
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	0.025
86-73-7	Fluorene	0.010	0.023
85-01-8	Phenanthrene	0.010	0.040
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 35.3%  
 d14-Dibenzo(a,h)anthracene 33.3%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11D-073112**  
**SAMPLE**

Lab Sample ID: VE38C  
 LIMS ID: 12-14612  
 Matrix: Water  
 Data Release Authorized: *mmw*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/08/12 20:20  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	< 0.010 U
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 49.0%  
 d14-Dibenzo(a,h)anthracene 54.7%



**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-12S-073112**  
**SAMPLE**

Lab Sample ID: VE38D  
 LIMS ID: 12-14613  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/08/12 20:49  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	0.062
91-57-6	2-Methylnaphthalene	0.010	0.025
90-12-0	1-Methylnaphthalene	0.010	0.082
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	0.078
86-73-7	Fluorene	0.010	0.069
85-01-8	Phenanthrene	0.010	0.062
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	0.029
129-00-0	Pyrene	0.010	0.019
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 67.0%  
 d14-Dibenzo(a,h)anthracene 64.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11S-073112**  
**SAMPLE**

Lab Sample ID: VE38E  
 LIMS ID: 12-14614  
 Matrix: Water  
 Data Release Authorized: *mw*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/08/12 21:18  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	0.027
91-57-6	2-Methylnaphthalene	0.010	0.052
90-12-0	1-Methylnaphthalene	0.010	0.082
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	0.042
86-73-7	Fluorene	0.010	0.036
85-01-8	Phenanthrene	0.010	0.065
120-12-7	Anthracene	0.010	0.010
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 60.7%  
 d14-Dibenzo(a,h)anthracene 58.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MB-080612**  
**METHOD BLANK**

Lab Sample ID: MB-080612  
 LIMS ID: 12-14610  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.500  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 08/06/12  
 Date Analyzed: 08/08/12 17:26  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	< 0.010 U
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 61.7%  
 d14-Dibenzo(a,h)anthracene 64.3%

**SIM SW8270 SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE38-Landau Associates  
Project: Cornwall  
0001020.400.500

<u>Client ID</u>	<u>MNP</u>	<u>DBA</u>	<u>TOT OUT</u>
MB-080612	61.7%	64.3%	0
LCS-080612	63.0%	66.7%	0
LCSD-080612	59.7%	65.7%	0
MW-16D-073112	63.0%	65.7%	0
MW-12D-073112	35.3%	33.3%	0
MW-11D-073112	49.0%	54.7%	0
MW-12S-073112	67.0%	64.0%	0
MW-11S-073112	60.7%	58.0%	0

**LCS/MB LIMITS      QC LIMITS**

(MNP) = d10-2-Methylnaphthalene      (40-93)      (35-94)  
(DBA) = d14-Dibenzo(a,h)anthracene      (31-115)      (26-115)

Prep Method: SW3510C  
Log Number Range: 12-14610 to 12-14614

**ORGANICS ANALYSIS DATA SHEET**

**PNAs by Low Level SW8270D-SIM GC/MS**

Page 1 of 1

**Sample ID: LCS-080612**

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-080612

LIMS ID: 12-14610

Matrix: Water

Data Release Authorized: *MMW*

Reported: 08/09/12

QC Report No: VE38-Landau Associates

Project: Cornwall

Event: 0001020.400.500

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 08/06/12

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 08/08/12 17:55

Final Extract Volume LCS: 0.50 mL

LCSD: 08/08/12 18:24

LCSD: 0.50 mL

Instrument/Analyst LCS: NT11/VTS

Dilution Factor LCS: 1.00

LCSD: NT11/VTS

LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	0.172	0.300	57.3%	0.173	0.300	57.7%	0.6%
2-Methylnaphthalene	0.173	0.300	57.7%	0.171	0.300	57.0%	1.2%
1-Methylnaphthalene	0.173	0.300	57.7%	0.170	0.300	56.7%	1.7%
Acenaphthylene	0.203	0.300	67.7%	0.193	0.300	64.3%	5.1%
Acenaphthene	0.186	0.300	62.0%	0.183	0.300	61.0%	1.6%
Fluorene	0.195	0.300	65.0%	0.187	0.300	62.3%	4.2%
Phenanthrene	0.187	0.300	62.3%	0.184	0.300	61.3%	1.6%
Anthracene	0.170	0.300	56.7%	0.152	0.300	50.7%	11.2%
Fluoranthene	0.211	0.300	70.3%	0.200	0.300	66.7%	5.4%
Pyrene	0.209	0.300	69.7%	0.204	0.300	68.0%	2.4%
Benzo(a)anthracene	0.209	0.300	69.7%	0.203	0.300	67.7%	2.9%
Chrysene	0.194	0.300	64.7%	0.192	0.300	64.0%	1.0%
Benzo(a)pyrene	0.173	0.300	57.7%	0.148	0.300	49.3%	15.6%
Indeno(1,2,3-cd)pyrene	0.188	0.300	62.7%	0.179	0.300	59.7%	4.9%
Dibenz(a,h)anthracene	0.185	0.300	61.7%	0.182	0.300	60.7%	1.6%
Benzo(g,h,i)perylene	0.193	0.300	64.3%	0.190	0.300	63.3%	1.6%
Dibenzofuran	0.172	0.300	57.3%	0.166	0.300	55.3%	3.6%
Total Benzofluoranthenes	0.573	0.600	95.5%	0.567	0.600	94.5%	1.1%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**SIM Semivolatile Surrogate Recovery**

	LCS	LCSD
d10-2-Methylnaphthalene	63.0%	59.7%
d14-Dibenzo(a,h)anthracene	66.7%	65.7%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-16D-073112**  
**SAMPLE**

Lab Sample ID: VE38A  
 LIMS ID: 12-14610  
 Matrix: Water  
 Data Release Authorized: *MM*  
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/15/12 19:50  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 91.6%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-12D-073112**  
**SAMPLE**

Lab Sample ID: VE38B  
 LIMS ID: 12-14611  
 Matrix: Water  
 Data Release Authorized: *mmw*  
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/15/12 20:26  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 81.7%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11D-073112**  
**SAMPLE**

Lab Sample ID: VE38C  
 LIMS ID: 12-14612  
 Matrix: Water  
 Data Release Authorized: *W*  
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/09/12 10:51  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	47	< 47 Y
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	2,000	< 2,000 Y
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid NR



**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11D-073112**  
**DILUTION**

Lab Sample ID: VE38C  
 LIMS ID: 12-14612  
 Matrix: Water  
 Data Release Authorized: *mmw*  
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/15/12 17:25  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 10.0

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	2.5	< 2.5 U
93-76-5	2,4,5-T	2.5	< 2.5 U
88-85-7	Dinoseb	5.0	< 5.0 U
1918-00-9	Dicamba	5.0	< 5.0 U
94-75-7	2,4-D	10	< 10 U
94-82-6	2,4-DB	50	< 50 U
75-99-0	Dalapon	10	< 10 U
94-74-6	MCPA	2,500	< 2,500 U
120-36-5	Dichloroprop	10	< 10 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid NR

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-12S-073112**  
**SAMPLE**

Lab Sample ID: VE38D  
 LIMS ID: 12-14613  
 Matrix: Water  
 Data Release Authorized: *mw*  
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/15/12 21:03  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 83.6%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-11S-073112**  
**SAMPLE**

Lab Sample ID: VE38E  
 LIMS ID: 12-14614  
 Matrix: Water  
 Data Release Authorized: *WV*  
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted: 08/06/12  
 Date Analyzed: 08/15/12 21:39  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 87.2%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MB-080612**  
**METHOD BLANK**

Lab Sample ID: MB-080612  
 LIMS ID: 12-14610  
 Matrix: Water  
 Data Release Authorized: *TWW*  
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 08/06/12  
 Date Analyzed: 08/09/12 07:15  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 84.2%

**SW8151A/HERBICIDE WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE38-Landau Associates  
Project: Cornwall  
0001020.400.500

<u>Client ID</u>	<u>DCPA</u>	<u>TOT OUT</u>
MB-080612	84.2%	0
LCS-080612	87.8%	0
LCSD-080612	87.7%	0
MW-16D-073112	91.6%	0
MW-12D-073112	81.7%	0
MW-11D-073112	NR	0
MW-11D-073112 DL	NR	0
MW-12S-073112	83.6%	0
MW-11S-073112	87.2%	0

**LCS/MB LIMITS      QC LIMITS**

(DCPA) = 2,4-Dichlorophenylacetic Acid      (66-112)      (28-140)

Log Number Range: 12-14610 to 12-14614

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
 Page 1 of 1

**Sample ID: LCS-080612**  
**LCS/LCSD**

Lab Sample ID: LCS-080612  
 LIMS ID: 12-14610  
 Matrix: Water  
 Data Release Authorized *mmw*  
 Reported: 08/16/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted LCS/LCSD: 08/06/12

Sample Amount LCS: 500 mL  
 LCSD: 500 mL

Date Analyzed LCS: 08/09/12 07:51  
 LCSD: 08/09/12 08:27

Final Extract Volume LCS: 50 mL  
 LCSD: 50 mL

Instrument/Analyst LCS: ECD1/AAR  
 LCSD: ECD1/AAR

Dilution Factor LCS: 1.00  
 LCSD: 1.00

Analyte	Spike		LCS		LCSD		RPD
	LCS	Added-LCS	Recovery	LCS	Added-LCSD	Recovery	
2,4,5-TP (Silvex)	6.67	10.0	66.7%	6.79	10.0	67.9%	1.8%
2,4,5-T	1.13	2.50	45.2%	1.61	2.50	64.4%	35.0%
Dinoseb	2.15	5.00	43.0%	1.94	5.00	38.8%	10.3%
Dicamba	3.33	5.00	66.6%	3.70	5.00	74.0%	10.5%
2,4-D	5.41	10.0	54.1%	7.29	10.0	72.9%	29.6%
2,4-DB	47.5	50.0	95.0%	47.3	50.0	94.6%	0.4%
Dalapon	2.96	10.0	29.6%	4.45	10.0	44.5%	40.2%
Dichloroprop	6.88	10.0	68.8%	6.94	10.0	69.4%	0.9%

**Herbicide Surrogate Recovery**

	LCS	LCSD
2,4-Dichlorophenylacetic	87.8%	87.7%


Results reported in µg/L  
 RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**

NWTPH-HCID Method by GC/FID  
Extraction Method: SW3510C  
Page 1 of 1

QC Report No: VE38-Landau Associates  
Project: Cornwall  
0001020.400.500

Matrix: Water

Data Release Authorized:   
Reported: 08/06/12

ARI ID	Sample ID	Extraction Date	Analysis Date	DL	Range	Result
MB-080312 12-14610	Method Blank	08/03/12	08/03/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 84.9%
VE38A 12-14610	MW-16D-073112 HC ID: DRO	08/03/12	08/03/12	1.0	Gas <b>Diesel</b> Oil o-Terphenyl	< 0.25 U <b>&gt; 0.50</b> < 0.50 U 108%
VE38B 12-14611	MW-12D-073112 HC ID: ---	08/03/12	08/03/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 84.8%
VE38C 12-14612	MW-11D-073112 HC ID: ---	08/03/12	08/04/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 84.0%
VE38D 12-14613	MW-12S-073112 HC ID: ---	08/03/12	08/04/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 89.1%
VE38E 12-14614	MW-11S-073112 HC ID: ---	08/03/12	08/04/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 85.8%

Reported in mg/L (ppm)

Gas value based on total peaks in the range from Toluene to C12.  
Diesel value based on the total peaks in the range from C12 to C24.  
Oil value based on the total peaks in the range from C24 to C38.

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120803.b/0803a028.d  
Method: /chem3/fid4a.i/20120803.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/06/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE38MBW1  
Client ID: VE38MBW1  
Injection: 03-AUG-2012 22:17  
Dilution Factor: 1

*Y2 8/6/12*

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.398	-0.005	3913	8779	GAS (Tol-C12)	54959	3.65
C8	1.718	0.038	779	2283	DIESEL (C12-C24)	42269	2.89
C10	3.238	0.005	353	689	M.OIL (C24-C38)	104348	8.30
C12	4.121	-0.002	324	428	AK-102 (C10-C25)	63317	3.66
C14	4.801	-0.004	126	112	AK-103 (C25-C36)	65499	7.67
C16	5.392	0.005	122	182			
C18	5.946	-0.002	95	138			
C20	6.521	0.001	335	447	JET-A (C10-C18)	33214	2.69
C22	7.074	0.002	70	76	MIN.OIL (C24-C38)	104348	7.76
C24	7.590	-0.003	68	42			
C25	7.844	0.000	124	123			
C26	8.092	0.003	164	295			
C28	8.540	-0.005	887	819			
C32	9.379	-0.007	596	350			
C34	9.778	-0.005	780	1359			
Filter Peak	9.967	0.013	942	708	BUNKERC (C10-C38)	167146	21.89
C36	10.169	0.001	1318	3411			
C38	10.527	-0.015	1874	2084			
C40	10.923	0.011	2912	6148			
o-terph	6.090	-0.001	568983	777921			
Triacon Surr	8.967	-0.018	700998	777928	NAS DIES (C10-C24)	62798	3.67

Range Times: NW Diesel (4.124 - 7.593) AK102 (3.23 - 7.84) Jet A (3.23 - 5.95)  
NW M.Oil (7.59 - 10.54) AK103 (7.84 - 10.17) OR Diesel (3.23 - 8.55)

Surrogate	Area	Amount	%Rec
o-Terphenyl	777921	38.2	84.9
Triacontane	777928	40.8	90.6

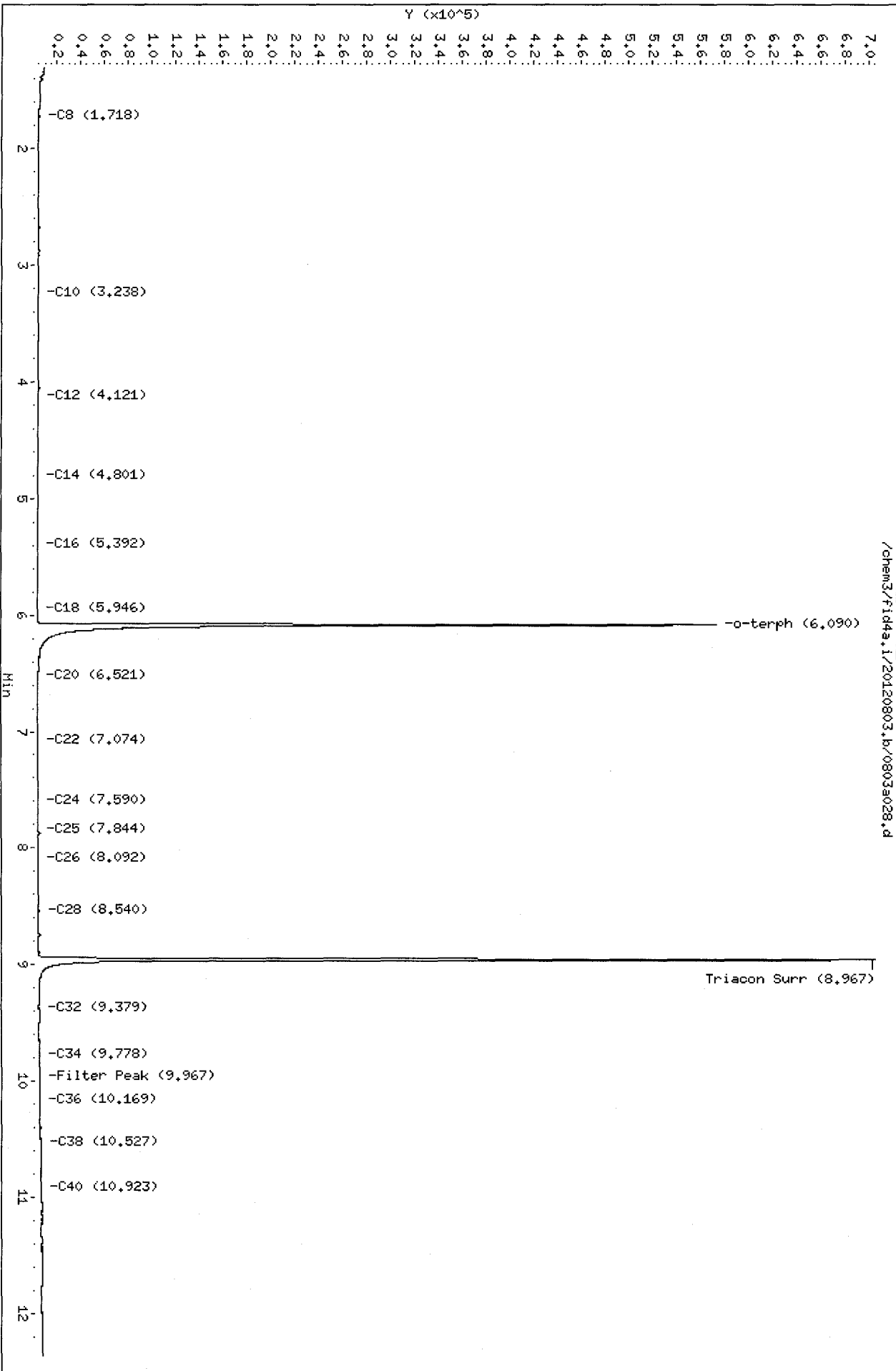
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012



Data File: /chem3/fid4a.i/20120803.b/08033028.d  
Date: 03-AUG-2012 22:17  
Client ID: WE38HBM1  
Sample Info: WE38HBM1  
Column phase: RTX-1

Instrument: fid4a.i  
Operator: AR  
Column diameter: 0.25



Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120803.b/0803a031.d  
Method: /chem3/fid4a.i/20120803.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/06/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE38A  
Client ID: MW-16D-073112  
Injection: 03-AUG-2012 23:21

*YZ 8/6/12*

Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.408	0.005	5274	10385	GAS (Tol-C12)	329946	21.93
C8	1.729	0.048	937	2424	DIESEL (C12-C24)	4211008	287.44
C10	3.242	0.009	1989	4312	M.OIL (C24-C38)	1255760	99.91
C12	4.141	0.017	10692	32462	AK-102 (C10-C25)	4593072	265.51
C14	4.806	0.001	17227	8802	AK-103 (C25-C36)	1053028	123.33
C16	5.405	0.018	30197	11964			
C18	5.940	-0.008	27552	34413			
C20	6.526	0.005	24654	12684	JET-A (C10-C18)	2591060	209.60
C22	7.081	0.008	19874	32142	MIN.OIL (C24-C38)	1255760	93.43
C24	7.602	0.009	17208	5133			
C25	7.832	-0.012	15127	16927			
C26	8.078	-0.011	12753	18667			
C28	8.550	0.004	10019	14364			
C32	9.389	0.003	5483	7710			
C34	9.793	0.010	3960	2500			
Filter Peak	9.947	-0.007	3725	5910	BUNKERC (C10-C38)	5714807	748.60
C36	10.174	0.005	3349	3445			
C38	10.532	-0.010	3500	5060			
C40	10.910	-0.002	3858	5896			
o-terph	6.091	0.000	962389	987052			
Triacon Surr	8.963	-0.022	794942	788277	NAS DIES (C10-C24)	4459047	260.25

Range Times: NW Diesel(4.124 - 7.593) AK102(3.23 - 7.84) Jet A(3.23 - 5.95)  
NW M.Oil(7.59 - 10.54) AK103(7.84 - 10.17) OR Diesel(3.23 - 8.55)

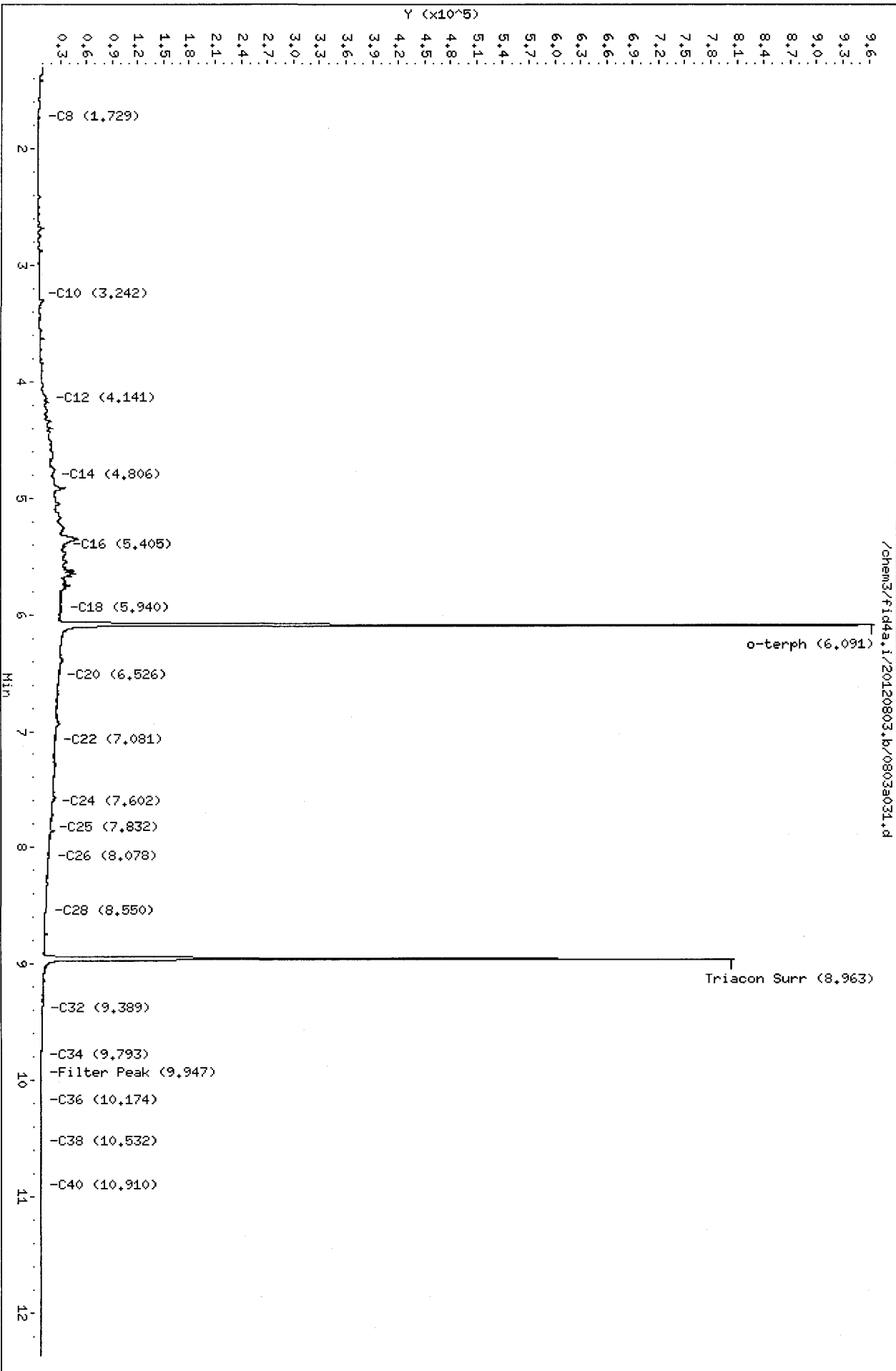
Surrogate	Area	Amount	%Rec
o-Terphenyl	987052	48.5	107.7
Triacontane	788277	41.3	91.8

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

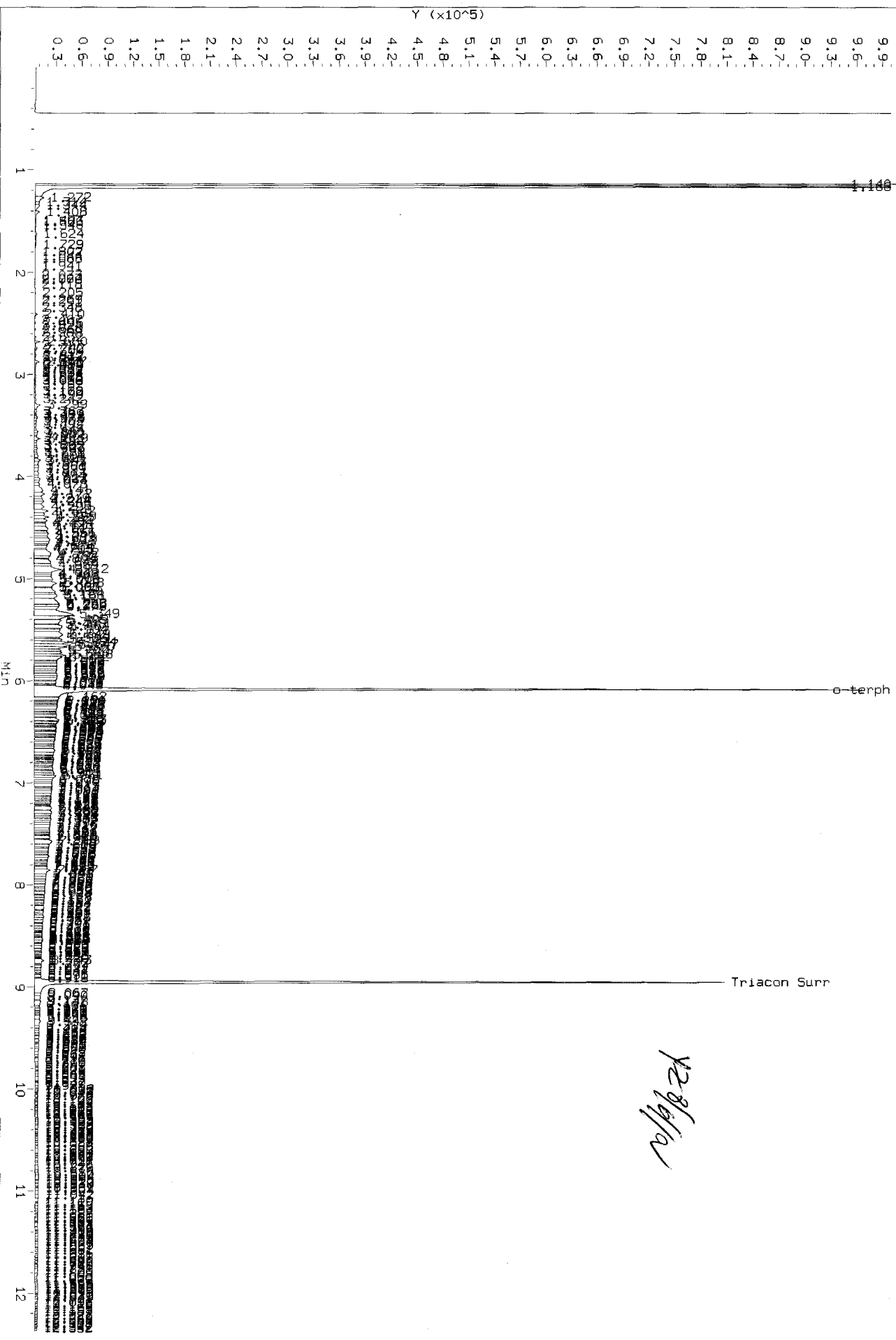
Data File: /chem3/fid4a.i/20120803.b/0803a031.d  
Date: 03-AUG-2012 23:24  
Client ID: MW-16D-073112  
Sample Info: VE38A  
Column phase: RTX-1

Instrument: fid4a.i  
Operator: AR  
Column diameter: 0.25

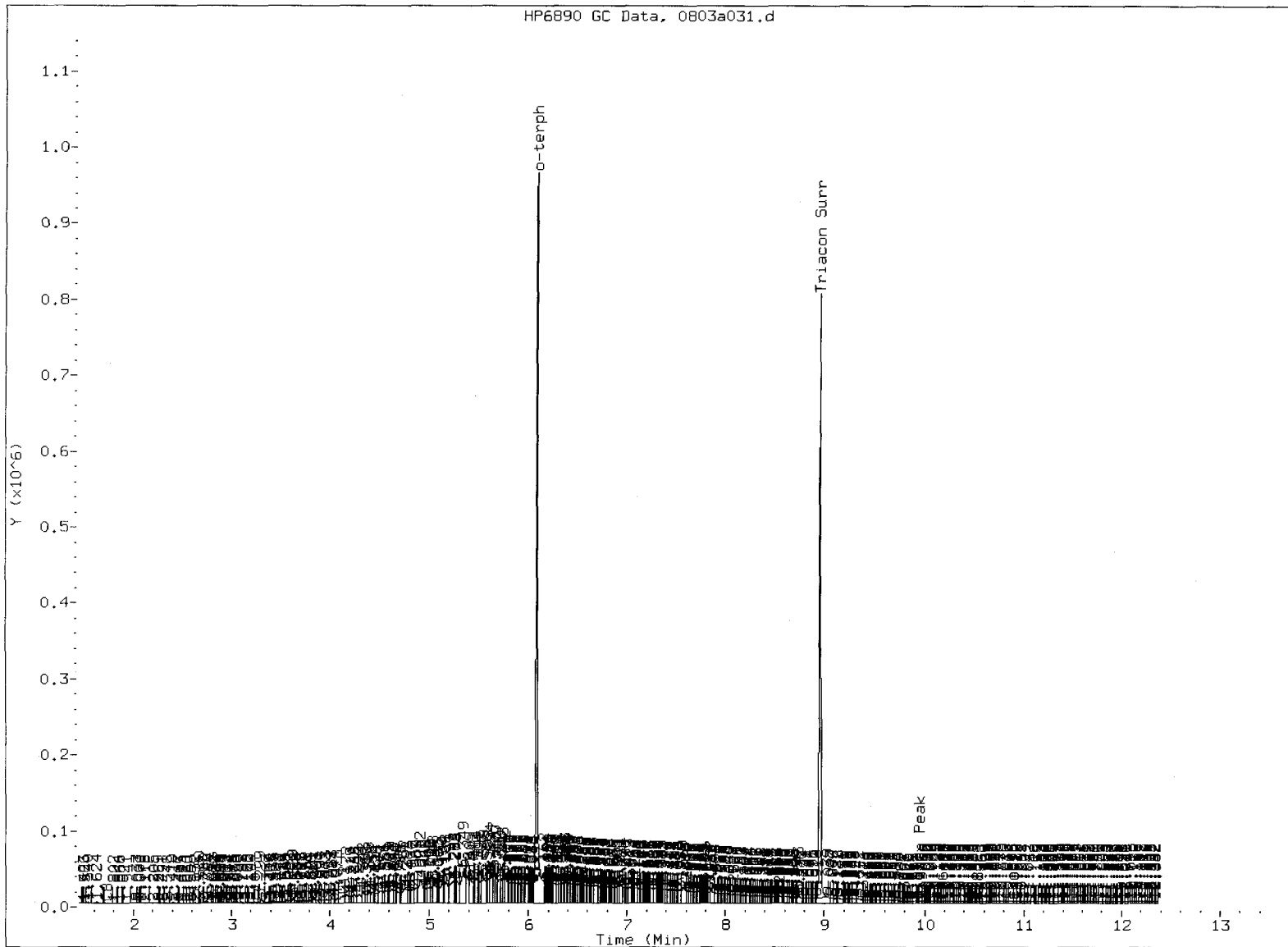


Data File: /chem3/fid4a.i/20120803.b/0803a031.d  
Injection Date: 03-AUG-2012 23:21  
Instrument: fid4a.i  
Client Sample ID: MW-16D-073112

HP6890 GC Data, 0803a031.d: 0.000 to 12.369 Min



HP6890 GC Data, 0803a031.d



MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate ✓

Analyst: YE Date: 8/6/92

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120803.b/0803a032.d  
Method: /chem3/fid4a.i/20120803.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/06/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE38B  
Client ID: MW-12D-073112  
Injection: 03-AUG-2012 23:43  
Dilution Factor: 1

*Y2 8/6/12*

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.393	-0.010	4491	9955	GAS (Tol-C12)	190971	12.69
C8	1.714	0.033	786	2605	DIESEL (C12-C24)	1503893	102.65
C10	3.240	0.006	919	1147	M.OIL (C24-C38)	993244	79.02
C12	4.110	-0.014	3544	2994	AK-102 (C10-C25)	1712340	98.98
C14	4.806	0.001	5932	8363	AK-103 (C25-C36)	840738	98.47
C16	5.392	0.005	10270	16077			
C18	5.943	-0.005	8392	11242			
C20	6.529	0.008	8745	2405	JET-A (C10-C18)	752240	60.85
C22	7.062	-0.010	11533	24951	MIN.OIL (C24-C38)	993244	73.90
C24	7.586	-0.007	13808	24649			
C25	7.836	-0.008	12092	22410			
C26	8.079	-0.010	11171	26034			
C28	8.532	-0.014	9635	22058			
C32	9.384	-0.002	5782	13330			
C34	9.791	0.008	4105	6702			
Filter Peak	9.949	-0.005	3766	5482	BUNKERC (C10-C38)	2620512	343.27
C36	10.169	0.001	3344	4122			
C38	10.542	0.000	3469	1931			
C40	10.906	-0.006	3913	5546			
o-terph	6.095	0.003	883908	777243			
Triacon Surr	8.960	-0.026	807498	756241	NAS DIES (C10-C24)	1627268	94.97

Range Times: NW Diesel (4.124 - 7.593) AK102 (3.23 - 7.84) Jet A (3.23 - 5.95)  
NW M.Oil (7.59 - 10.54) AK103 (7.84 - 10.17) OR Diesel (3.23 - 8.55)

Surrogate	Area	Amount	%Rec
o-Terphenyl	777243	38.2	84.8
Triacontane	756241	39.6	88.1

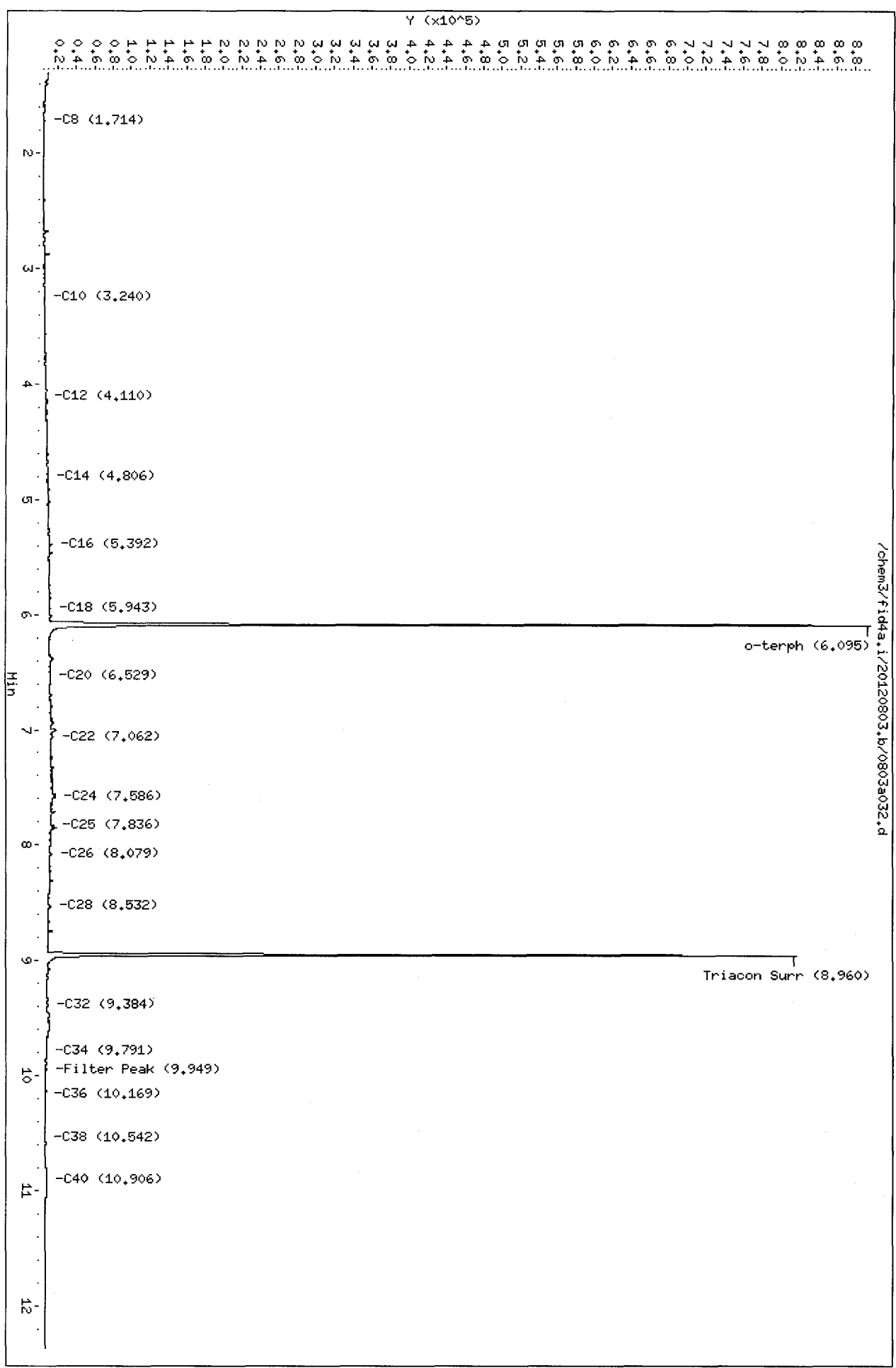
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120803.b/0803a032.d  
Date: 03-AUG-2012 23:43  
Client ID: MM-12D-073112  
Sample Info: WE38B

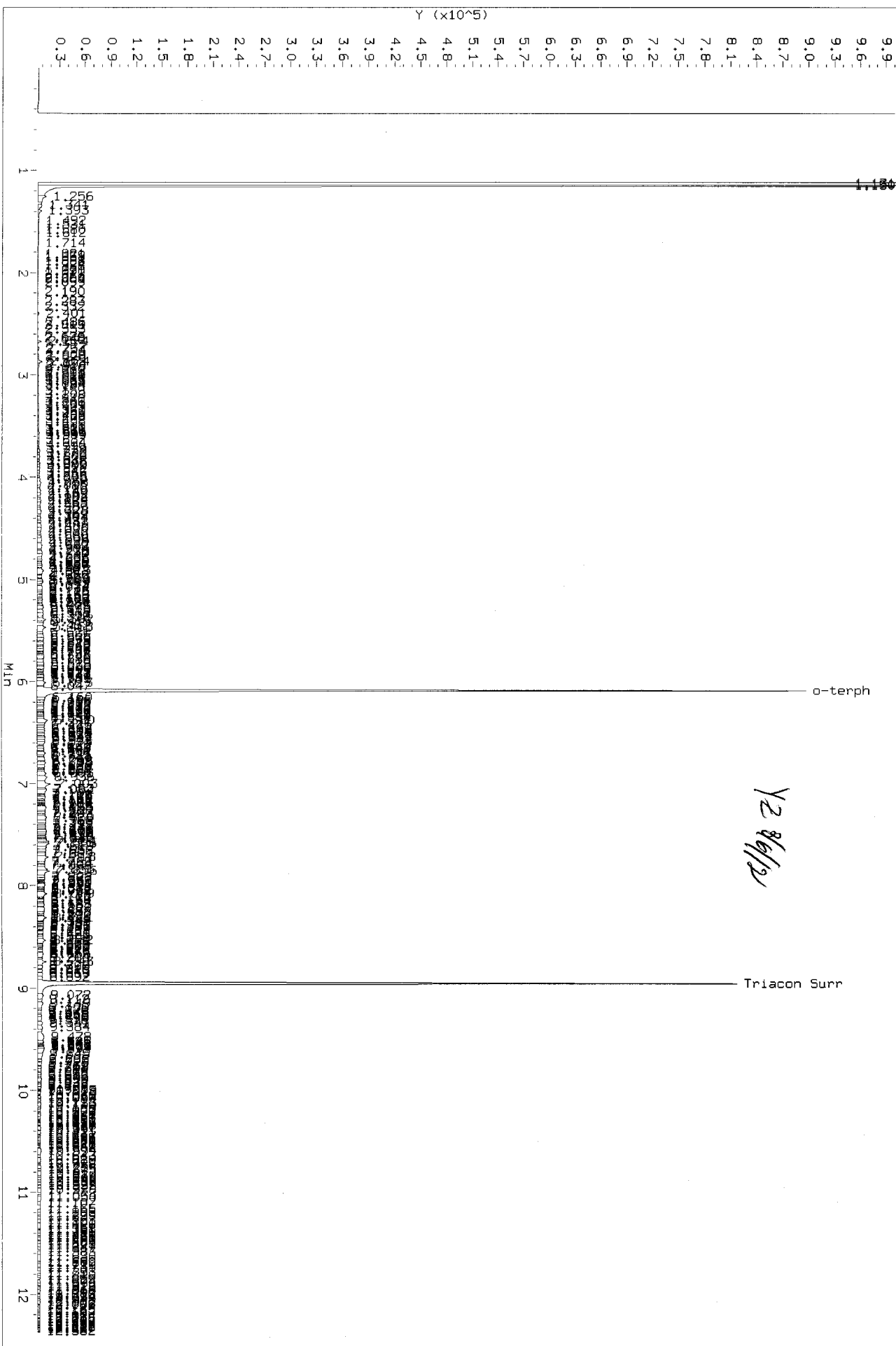
Instrument: fid4a.i  
Operator: AR  
Column diameter: 0.25

Column phase: RTX-1

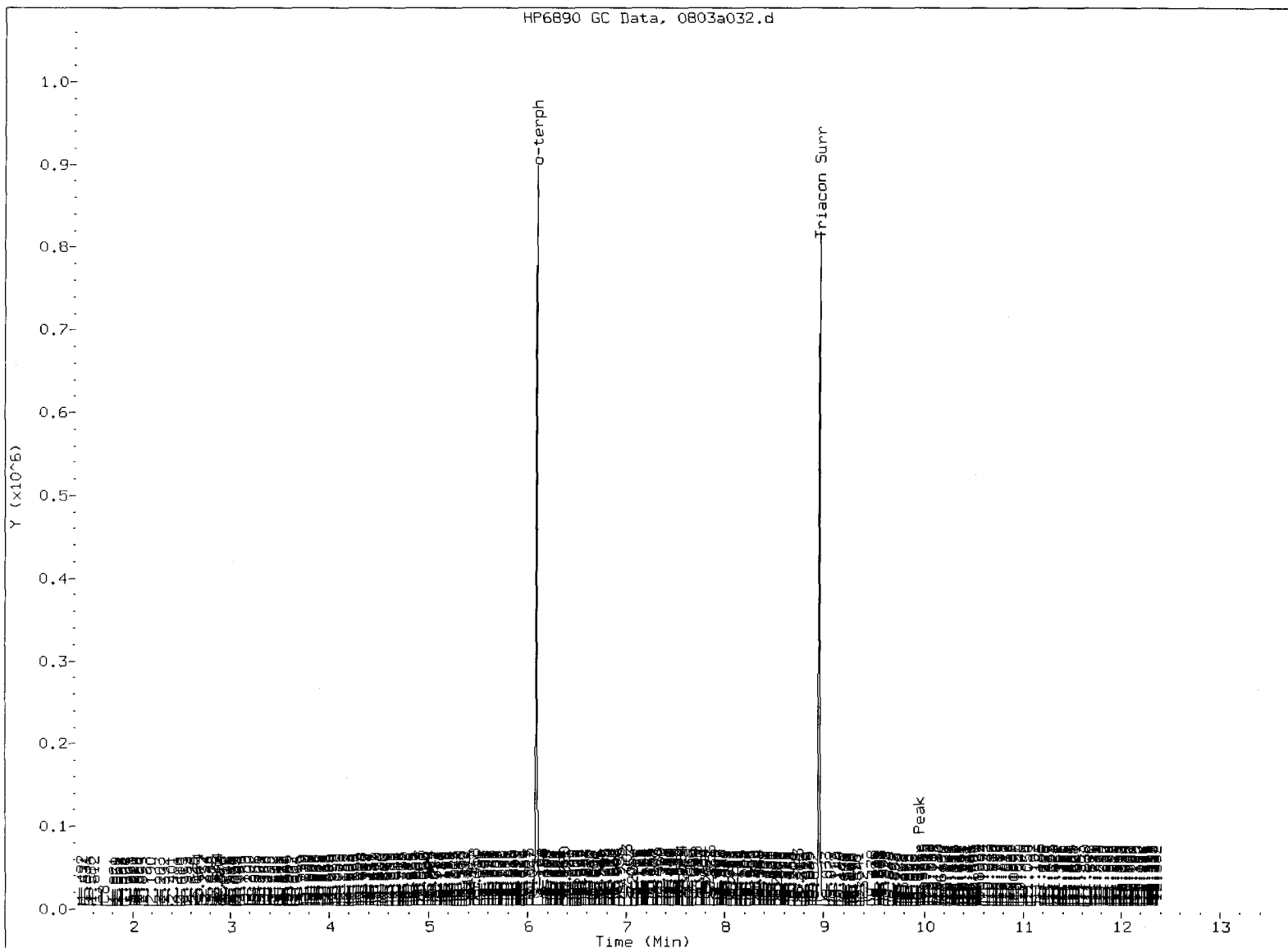


Data File: /chem3/fid4a\_1/20120803.b/0803a032.d  
Injection Date: 03-AUG-2012 23:43  
Instrument: fid4a.1  
Client Sample ID: MW-12D-073112

HP6890 GC Data, 0803a032.d: 0.000 to 12.369 Min







MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate ✓

Analyst: YB

Date: 8/12

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120803.b/0803a033.d

ARI ID: VE38C

Method: /chem3/fid4a.i/20120803.b/ftphfid4a.m

Client ID: MW-11D-073112

Instrument: fid4a.i

Injection: 04-AUG-2012 00:04

Operator: AR

Report Date: 08/06/2012

Dilution Factor: 1

Macro: 13-JUL-2012

Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

*YZ 8/6/12*

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.405	0.002	5822	8144	GAS (Tol-C12)	201490	13.39
C8	1.682	0.001	567	1039	DIESEL (C12-C24)	828885	56.58
C10	3.224	-0.009	541	106	M.OIL (C24-C38)	599916	47.73
C12	4.151	0.027	2306	3512	AK-102 (C10-C25)	1012998	58.56
C14	4.811	0.006	3432	9141	AK-103 (C25-C36)	495084	57.99
C16	5.379	-0.008	4179	5347			
C18	5.942	-0.005	4273	7811			
C20	6.537	0.017	4790	2555	JET-A (C10-C18)	484086	39.16
C22	7.062	-0.011	5034	6198	MIN.OIL (C24-C38)	599916	44.63
C24	7.609	0.016	5883	3560			
C25	7.840	-0.005	4987	2826			
C26	8.081	-0.008	4825	6638			
C28	8.534	-0.011	5533	12950			
C32	9.382	-0.004	3445	6275			
C34	9.780	-0.003	3148	5414			
Filter Peak	9.941	-0.013	2661	3735	BUNKERC (C10-C38)	1568481	205.46
C36	10.186	0.018	2477	1378			
C38	10.535	-0.007	2875	2007			
C40	10.913	0.001	3321	2249			
o-terph	6.095	0.004	891251	769814			
Triacon Surr	8.959	-0.026	781072	727111	NAS DIES (C10-C24)	968564	56.53

Range Times: NW Diesel (4.124 - 7.593) AK102 (3.23 - 7.84) Jet A (3.23 - 5.95)  
 NW M.Oil (7.59 - 10.54) AK103 (7.84 - 10.17) OR Diesel (3.23 - 8.55)

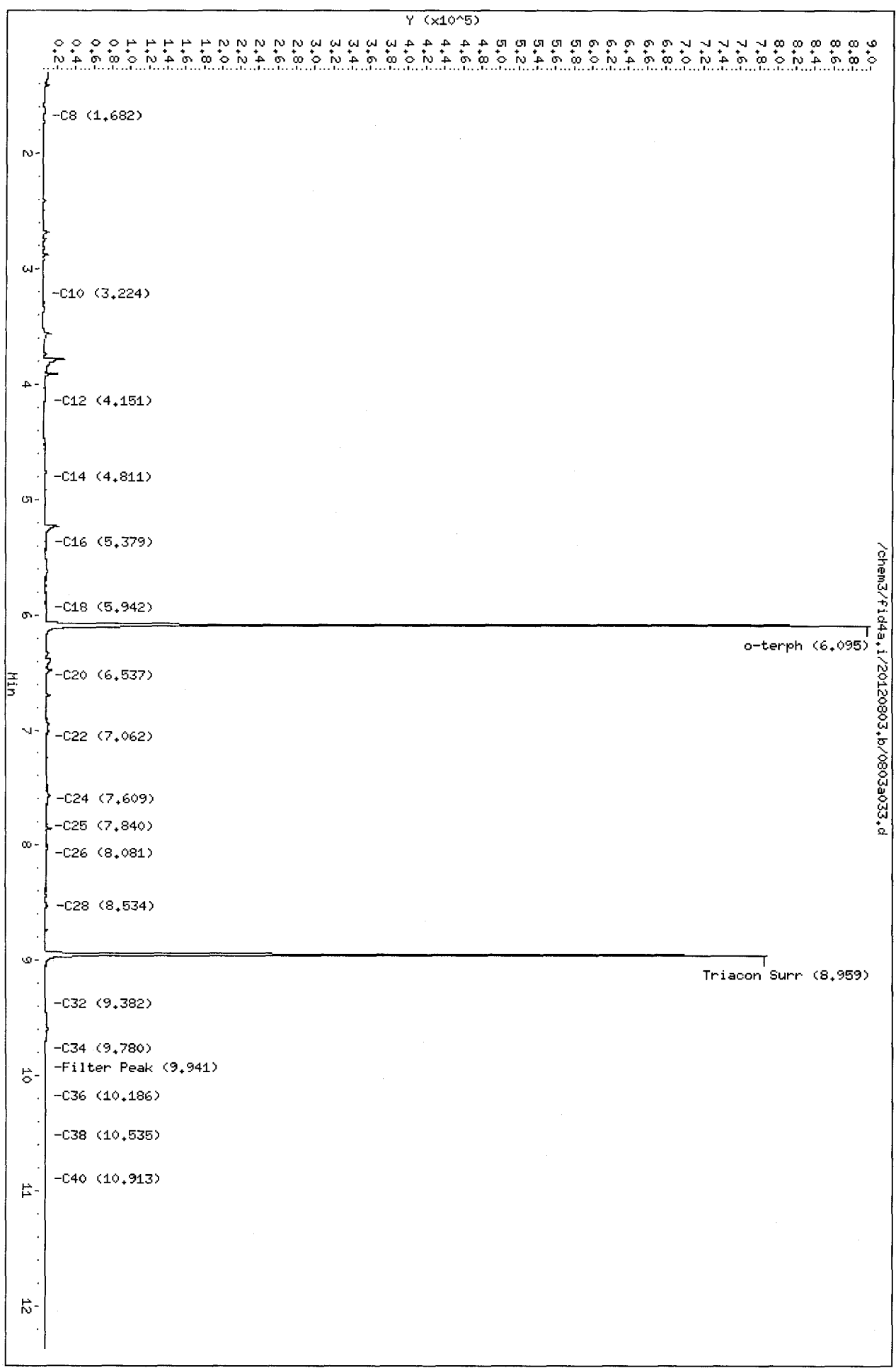
Surrogate	Area	Amount	%Rec
o-Terphenyl	769814	37.8	84.0
Triacontane	727111	38.1	84.7

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

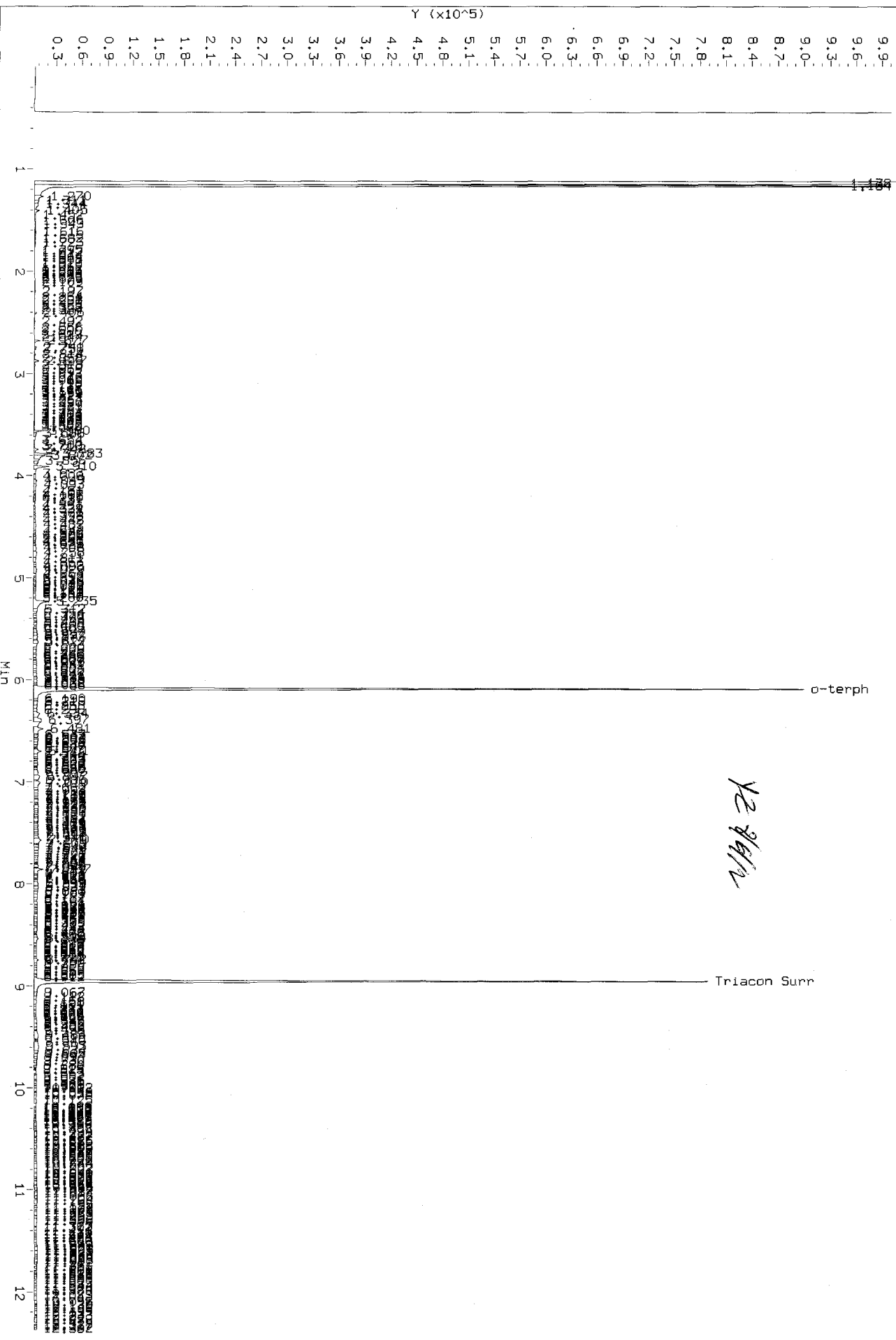
Data File: /chem3/fid4a.i/20120803.b/0803a033.d  
Date: 04-AUG-2012 00:04  
Client ID: MW-11D-073112  
Sample Info: WE38C  
Column phase: RTX-1

Instrument: fid4a.i  
Operator: AR  
Column diameter: 0.25



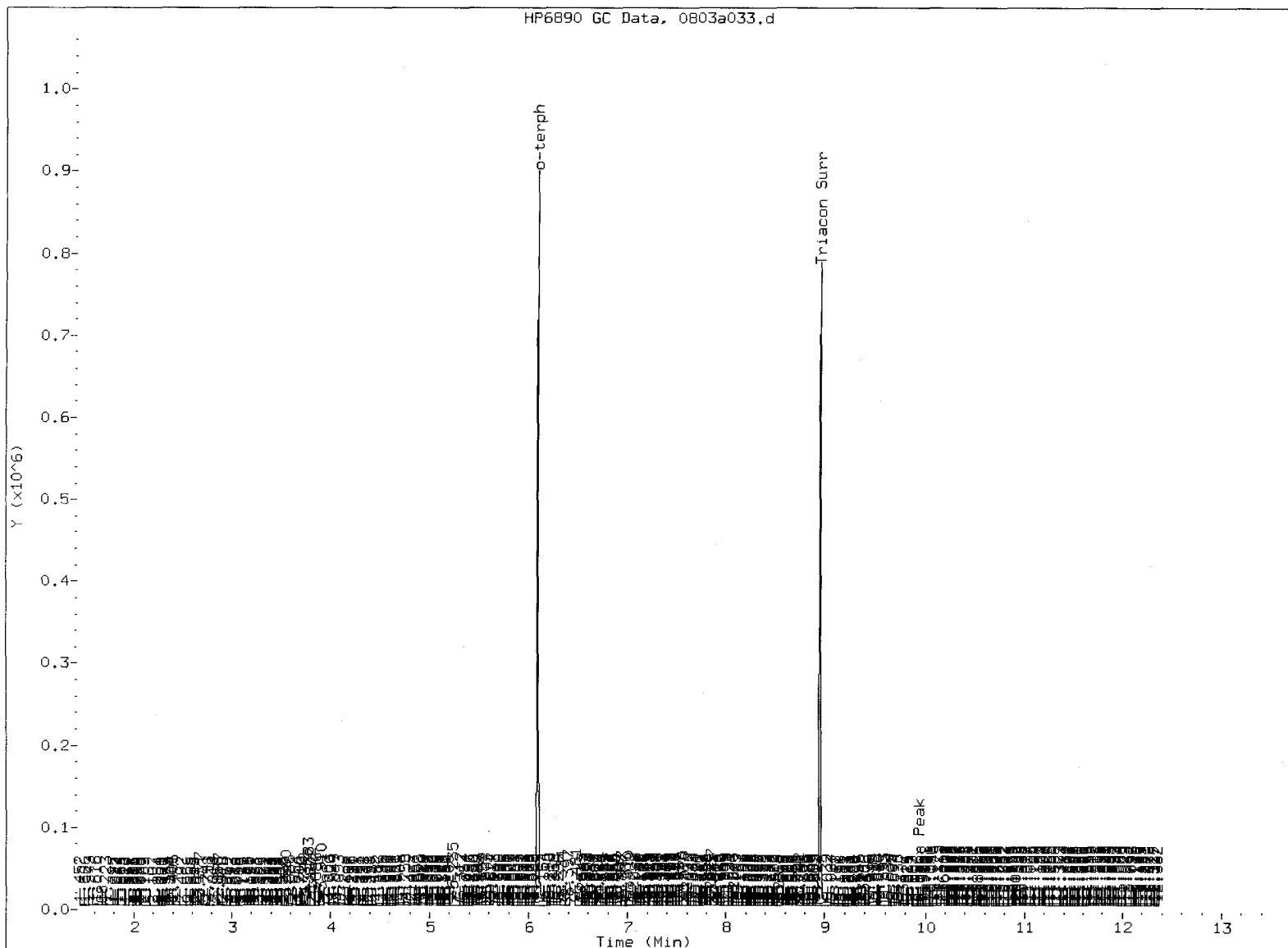
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Injection Date: 04-AUG-2012 00:04  
Instrument: fid4a.1  
Client Sample ID: MW-11B-073112

HP6890 GC Data, 0803a033.d: 0.000 to 12.369 Min



*YE 2/6/12*

Triacon Surr



MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate ✓

Analyst:    y2   

Date:    8/1/92

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120803.b/0803a034.d  
Method: /chem3/fid4a.i/20120803.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/06/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE38D  
Client ID: MW-12S-073112  
Injection: 04-AUG-2012 00:25

*Y2 8/6/12*

Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.395	-0.009	4139	10948	GAS (Tol-C12)	362290	24.08
C8	1.714	0.033	669	1744	DIESEL (C12-C24)	3606354	246.17
C10	3.249	0.016	1655	3428	M.OIL (C24-C38)	1033244	82.21
C12	4.102	-0.021	9346	4985	AK-102 (C10-C25)	3987276	230.49
C14	4.795	-0.010	29991	71953	AK-103 (C25-C36)	863407	101.13
C16	5.400	0.012	18061	24738			
C18	5.936	-0.012	15206	26223			
C20	6.525	0.004	12952	7640	JET-A (C10-C18)	2624160	212.28
C22	7.075	0.003	12900	5110	MIN.OIL (C24-C38)	1033244	76.87
C24	7.603	0.010	12746	8270			
C25	7.837	-0.007	11798	9600			
C26	8.082	-0.006	10200	15226			
C28	8.551	0.005	7611	8394			
C32	9.389	0.002	4924	4972			
C34	9.785	0.002	3749	2119			
Filter Peak	9.961	0.008	3397	3221	BUNKERC (C10-C38)	4914941	643.82
C36	10.163	-0.005	3123	2908			
C38	10.545	0.002	3230	4109			
C40	10.902	-0.011	3643	5329			
o-terph	6.093	0.002	928954	816652			
Triacon Surr	8.961	-0.024	801764	792225	NAS DIES (C10-C24)	3881697	226.55

Range Times: NW Diesel(4.124 - 7.593) AK102(3.23 - 7.84) Jet A(3.23 - 5.95)  
NW M.Oil(7.59 - 10.54) AK103(7.84 - 10.17) OR Diesel(3.23 - 8.55)

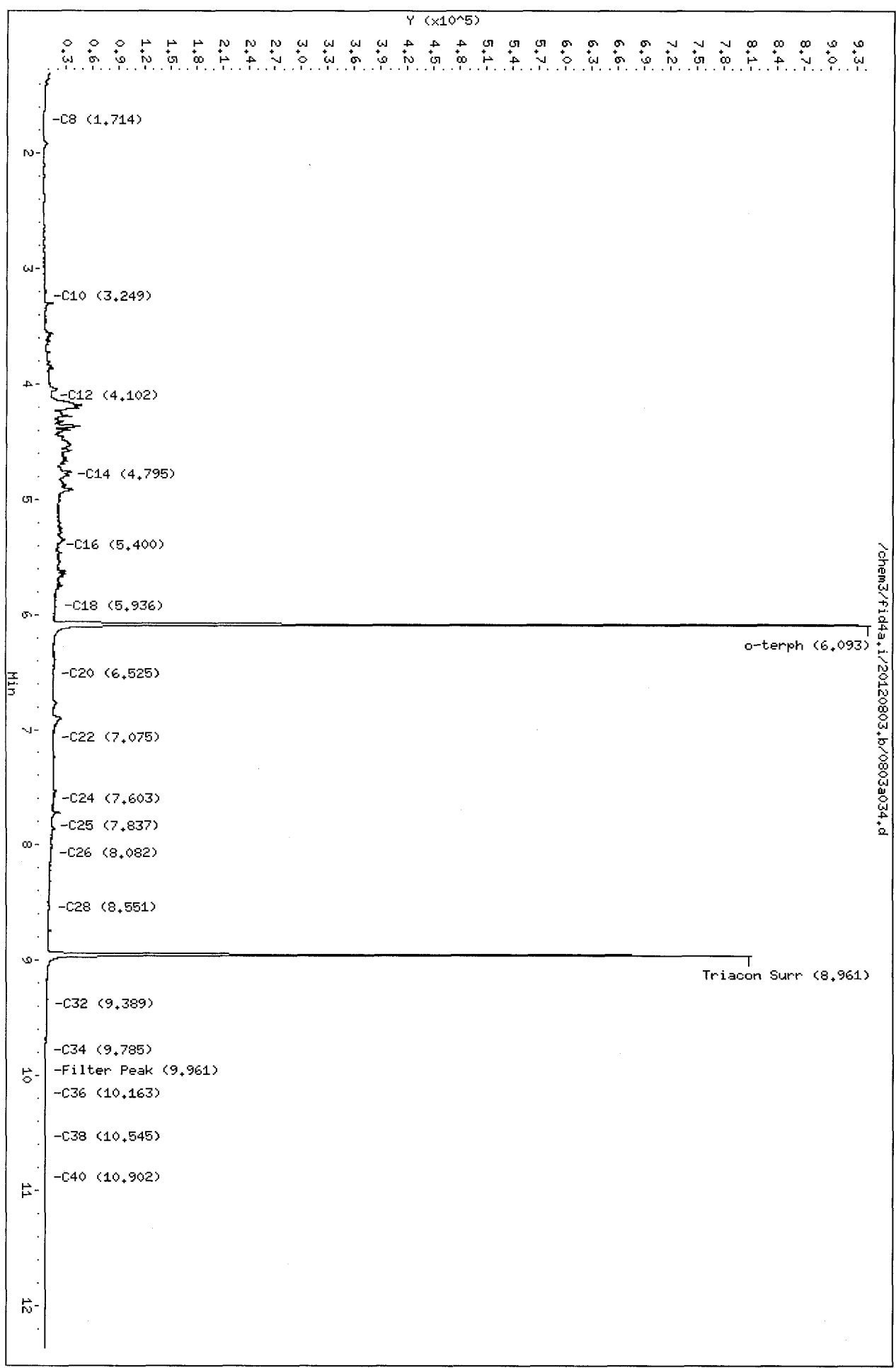
Surrogate	Area	Amount	%Rec
o-Terphenyl	816652	40.1	89.1
Triacontane	792225	41.5	92.2

M Indicates the peak was manually integrated

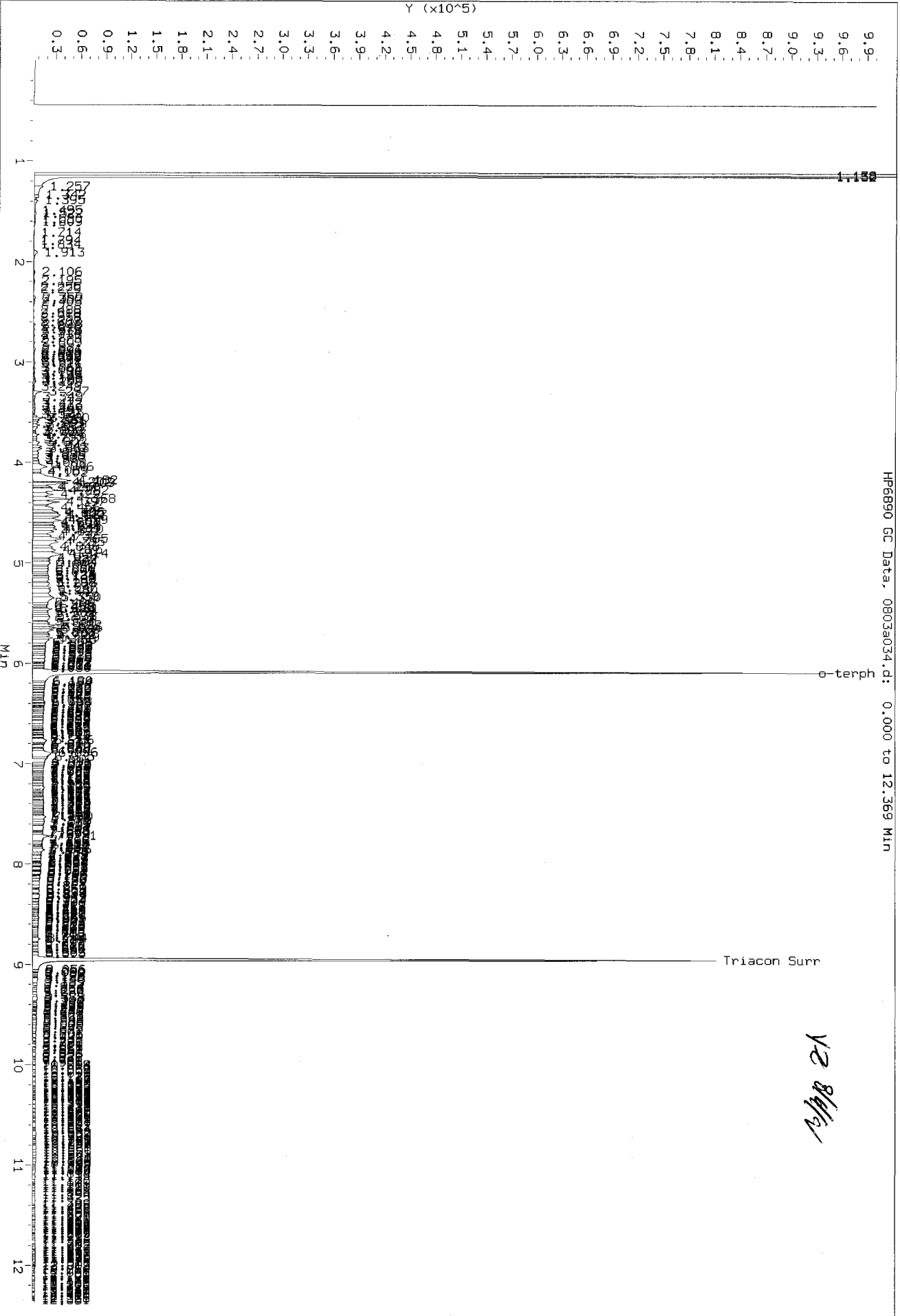
Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120803.b/0803a034.d  
Date : 04-AUG-2012 00:25  
Client ID: HM-125-073112  
Sample Info: WE38D  
Column phase: RTX-1

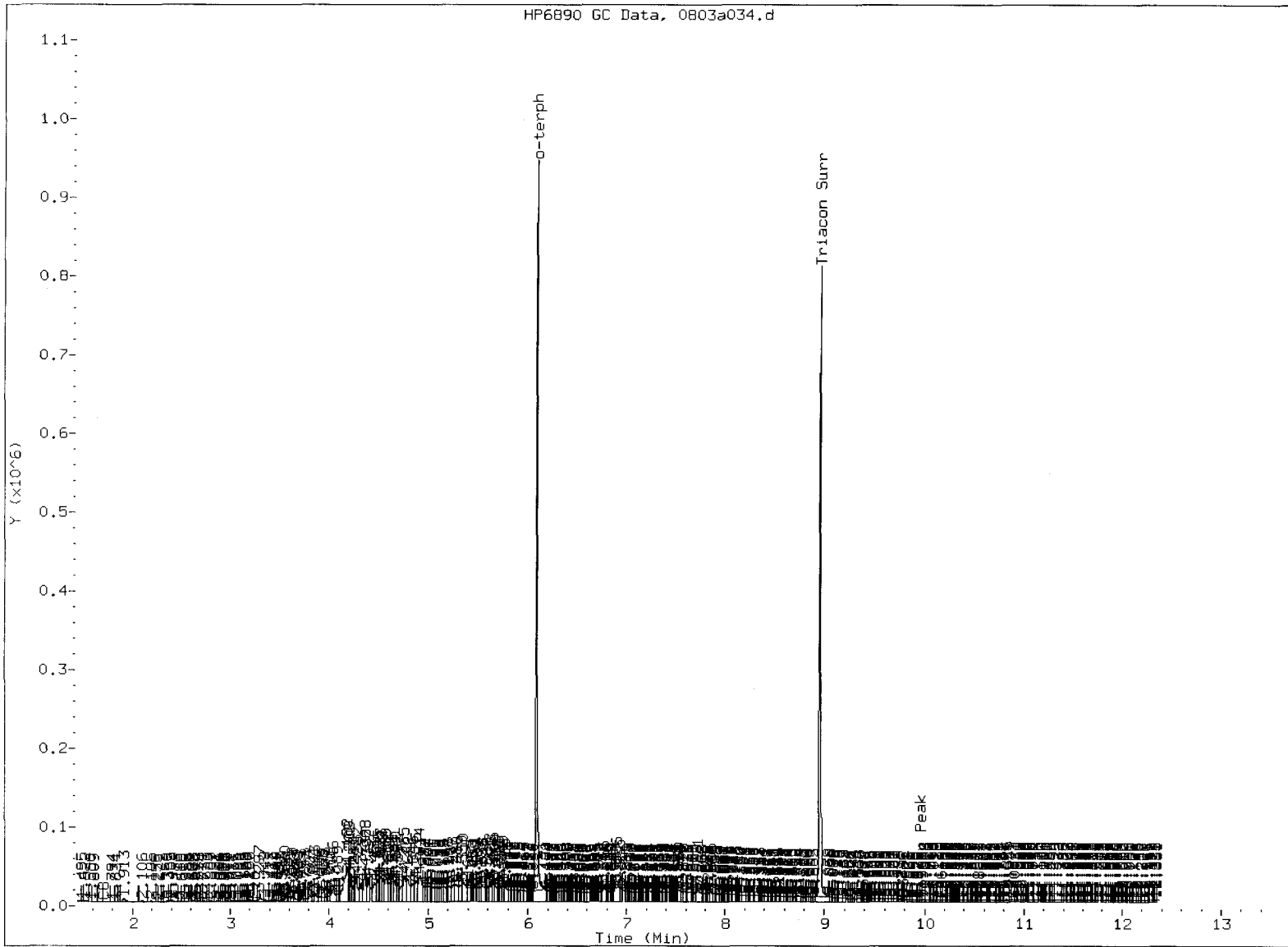
Instrument: fid4a.i  
Operator: AR  
Column diameter: 0.25



Data File: /chem3/fid4a.1/20120803.b/0803a034.d  
Injection Date: 04-AUG-2012 00:25  
Instrument: fid4a.1  
Client Sample ID: MW-125-073112







MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate ✓

Analyst: Y2

Date: 8/6/12

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120803.b/0803a035.d  
Method: /chem3/fid4a.i/20120803.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/06/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE38E  
Client ID: MW-11S-073112  
Injection: 04-AUG-2012 00:47

*YZ 8/6/12*

Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.401	-0.003	5835	8813	GAS (Tol-C12)	194699	12.94
C8	1.718	0.037	1134	2255	DIESEL (C12-C24)	2542149	173.53
C10	3.242	0.008	991	773	M.OIL (C24-C38)	852127	67.80
C12	4.118	-0.006	3629	4056	AK-102 (C10-C25)	2770317	160.14
C14	4.802	-0.004	10312	23707	AK-103 (C25-C36)	696205	81.54
C16	5.367	-0.021	13770	31669			
C18	5.938	-0.010	12408	26071			
C20	6.536	0.015	17603	45614	JET-A (C10-C18)	1203167	97.33
C22	7.084	0.012	14328	25818	MIN.OIL (C24-C38)	852127	63.40
C24	7.567	-0.026	21724	18423			
C25	7.836	-0.009	10389	7560			
C26	8.081	-0.008	8210	13070			
C28	8.551	0.005	6863	13135			
C32	9.387	0.001	3891	8665			
C34	9.766	-0.017	2865	3587			
Filter Peak	9.960	0.006	2601	2670	BUNKERC (C10-C38)	3521043	461.23
C36	10.165	-0.003	2438	2911			
C38	10.544	0.001	2828	5346			
C40	10.896	-0.016	3305	2696			
o-terph	6.091	0.000	834033	786420			
Triacon Surr	8.961	-0.024	799140	761309	NAS DIES (C10-C24)	2668915	155.77

Range Times: NW Diesel (4.124 - 7.593) AK102 (3.23 - 7.84) Jet A (3.23 - 5.95)  
NW M.Oil (7.59 - 10.54) AK103 (7.84 - 10.17) OR Diesel (3.23 - 8.55)

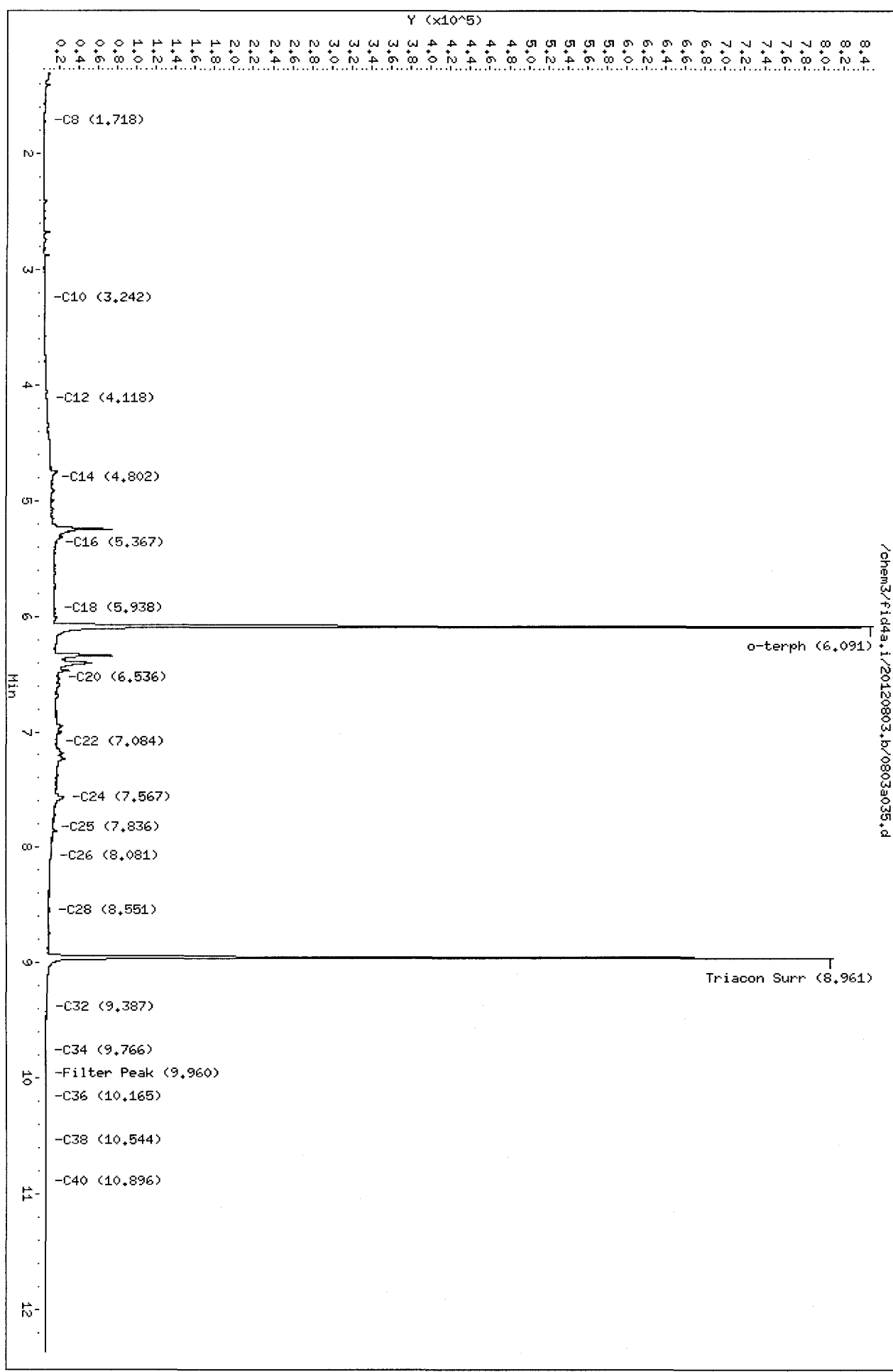
Surrogate	Area	Amount	%Rec
o-Terphenyl	786420	38.6	85.8
Triacontane	761309	39.9	88.6

M Indicates the peak was manually integrated

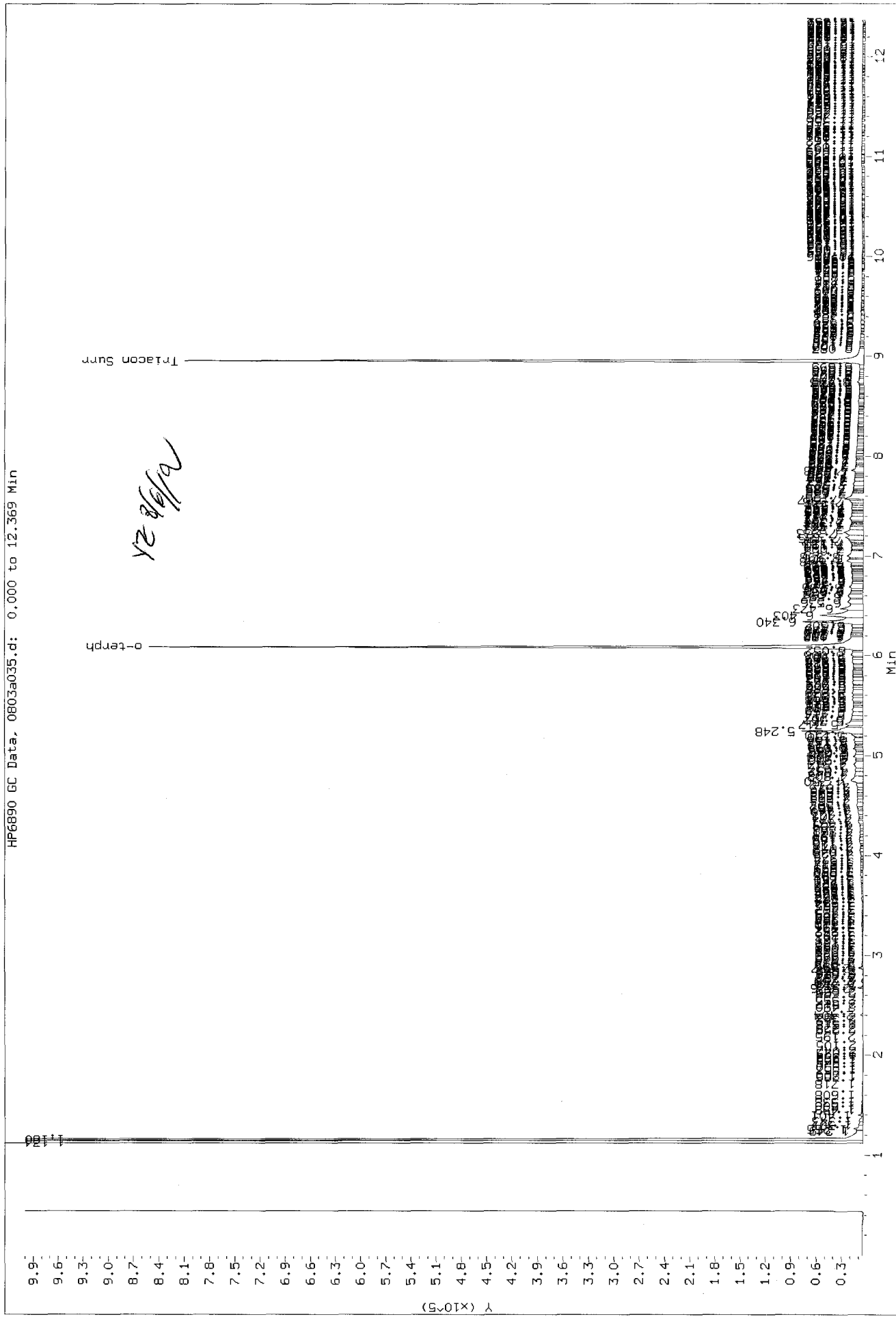
Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

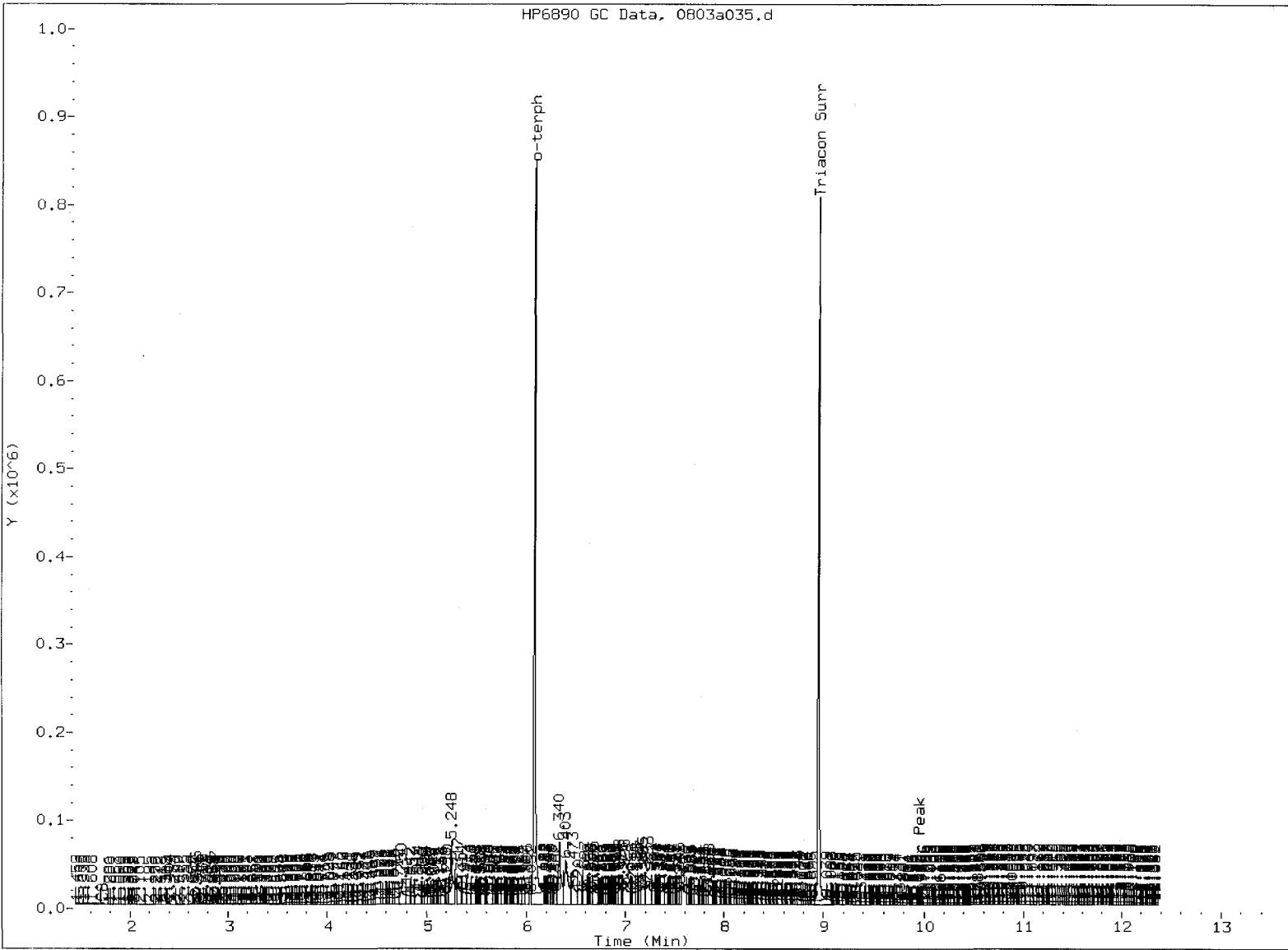
Data File: /chem3/fid4a.i/20120803.b/0803a035.d  
Date: 04-AUG-2012 00:47  
Client ID: HM-11S-073112  
Sample Info: VE38E  
Column phase: RTX-1

Instrument: fid4a.i  
Operator: AR  
Column diameter: 0.25



Data File: /chem3/fid4a.i/20120803.b/0803a035.d  
Injection Date: 04-AUG-2012 00:47  
Instrument: fid4a.i  
Client Sample ID: MW-115-073112





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate ✓

Analyst: VE

Date: 2/9/2

**HCID SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE38-Landau Associates  
Project: Cornwall  
0001020.400.500

<u>Client ID</u>	<u>O-TER</u>	<u>TOT OUT</u>
MB-080312	84.9%	0
LCS-080312	85.1%	0
LCSD-080312	85.7%	0
MW-16D-073112	108%	0
MW-12D-073112	84.8%	0
MW-11D-073112	84.0%	0
MW-12S-073112	89.1%	0
MW-11S-073112	85.8%	0

**LCS/MB LIMITS      QC LIMITS**

(O-TER) = o-Terphenyl

(55-110)

(50-150)

Prep Method: SW3510C  
Log Number Range: 12-14610 to 12-14614

**ORGANICS ANALYSIS DATA SHEET**  
**NWTPH-HCID Method by GC/FID**  
 Page 1 of 1

**Sample ID: LCS-080312**  
**LCS/LCSD**

Lab Sample ID: LCS-080312  
 LIMS ID: 12-14610  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 08/06/12

QC Report No: VE38-Landau Associates  
 Project: Cornwall  
 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

Date Extracted LCS/LCSD: 08/03/12

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 08/03/12 22:39

Final Extract Volume LCS: 1.0 mL

LCSD: 08/03/12 23:00

LCSD: 1.0 mL

Instrument/Analyst LCS: FID/YZ

Dilution Factor LCS: 1.00

LCSD: FID/YZ

LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	2.51	3.00	83.7%	2.60	3.00	86.7%	3.5%

**HCID Surrogate Recovery**

	LCS	LCSD
o-Terphenyl	85.1%	85.7%

Results reported in mg/L  
 RPD calculated using sample concentrations per SW846.

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120803.b/0803a029.d  
Method: /chem3/fid4a.i/20120803.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/06/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE38LCSW1  
Client ID: VE38LCSW1  
Injection: 03-AUG-2012 22:39

Dilution Factor: 1

*Y2 8/6/12*

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.414	0.010	5201	11168	GAS (Tol-C12)	3624700	240.94
C8	1.674	-0.006	4643	10647	DIESEL (C12-C24)	18379191	1254.55
C10	3.235	0.002	63921	85950	M.OIL (C24-C38)	190206	15.13
C12	4.119	-0.005	189870	174921	AK-102 (C10-C25)	21000866	1213.99
C14	4.794	-0.011	324003	383461	AK-103 (C25-C36)	117280	13.74
C16	5.384	-0.003	518429	737232			
C18	5.952	0.004	450212	612549			
C20	6.517	-0.004	309566	412383	JET-A (C10-C18)	15387044	1244.71
C22	7.066	-0.006	149675	198343	MIN.OIL (C24-C38)	190206	14.15
C24	7.596	0.003	30888	82790			
C25	7.849	0.005	13746	10287			
C26	8.091	0.002	6454	11363			
C28	8.538	-0.008	1529	1256			
C32	9.389	0.002	1703	2171			
C34	9.790	0.007	201	394			
Filter Peak	9.951	-0.003	318	356	BUNKERC (C10-C38)	21134846	2768.52
C36	10.175	0.007	577	270			
C38	10.508	-0.034	1184	1882			
C40	10.879	-0.033	2212	8711			
o-terph	6.097	0.006	905513	780206			
Triacon Surr	8.962	-0.023	724084	797569	NAS DIES (C10-C24)	20944640	1222.40

Range Times: NW Diesel(4.124 - 7.593) AK102(3.23 - 7.84) Jet A(3.23 - 5.95)  
NW M.Oil(7.59 - 10.54) AK103(7.84 - 10.17) OR Diesel(3.23 - 8.55)

Surrogate	Area	Amount	%Rec
o-Terphenyl	780206	38.3	85.1
Triacontane	797569	41.8	92.9

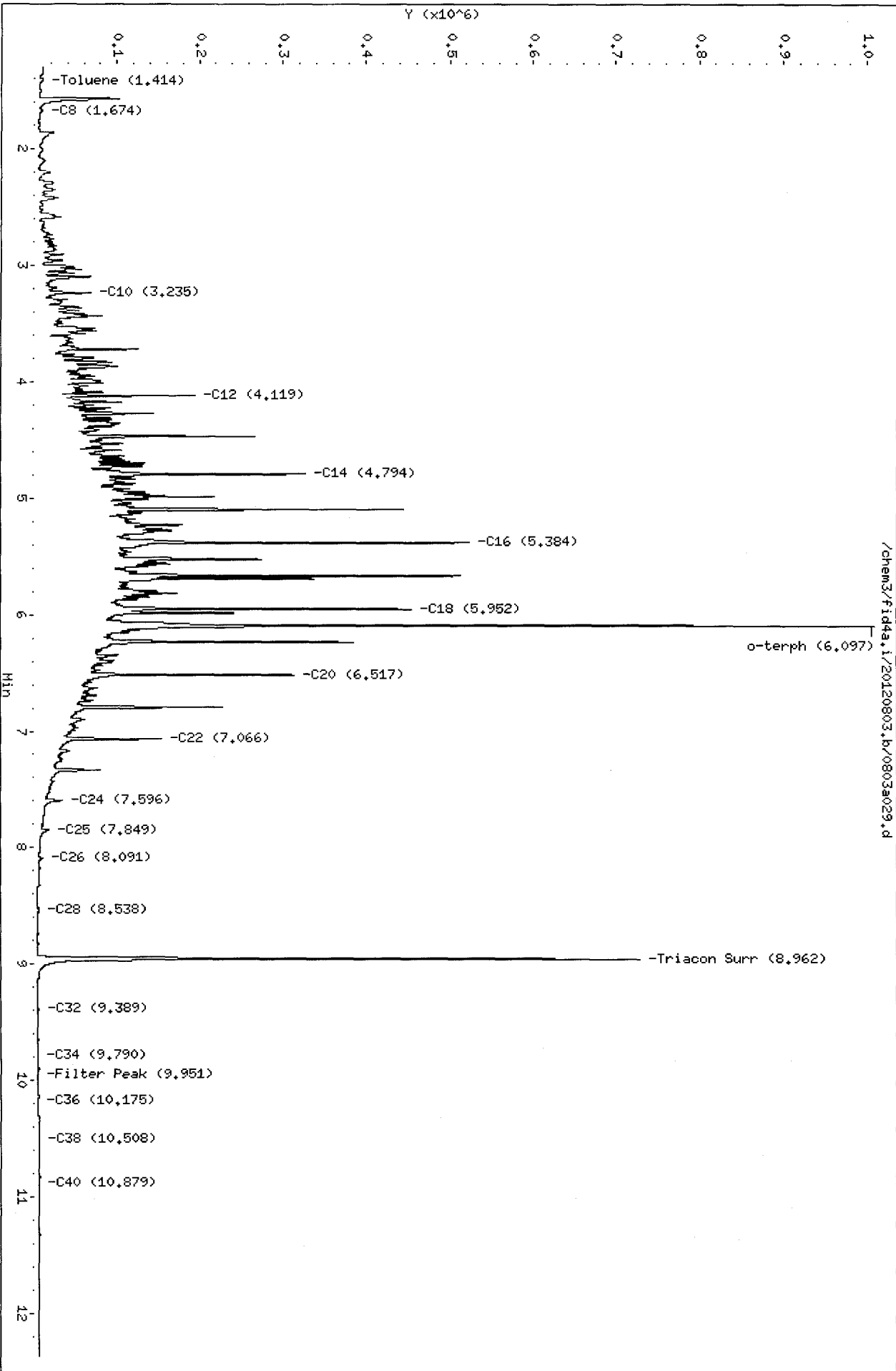
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012



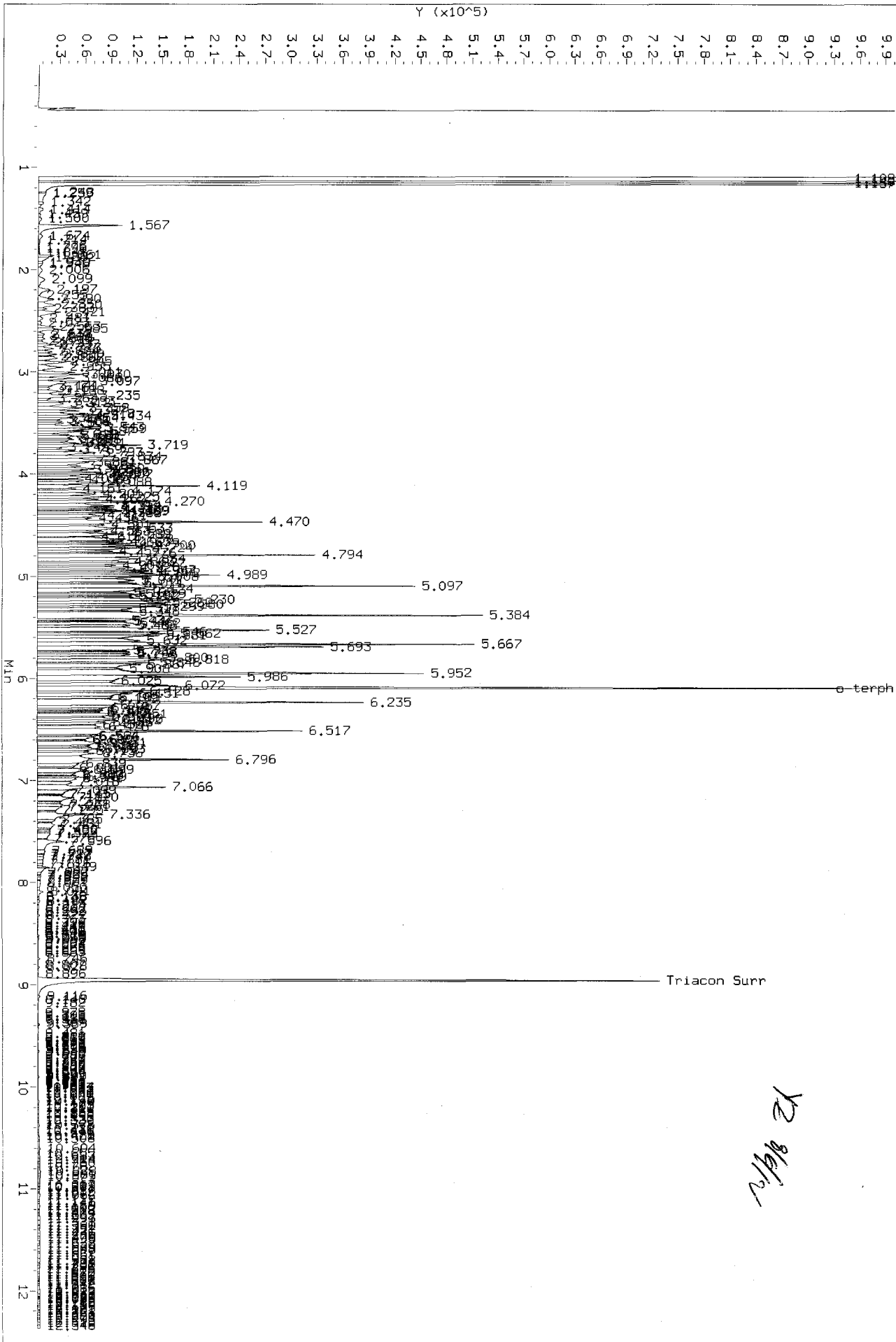
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Date: 03-AUG-2012 22:39  
Client ID: VE38LCSM1  
Sample Info: VE38LCSM1  
Column phase: RTX-1

Instrument: fid4a.i  
Operator: AR  
Column diameter: 0.25

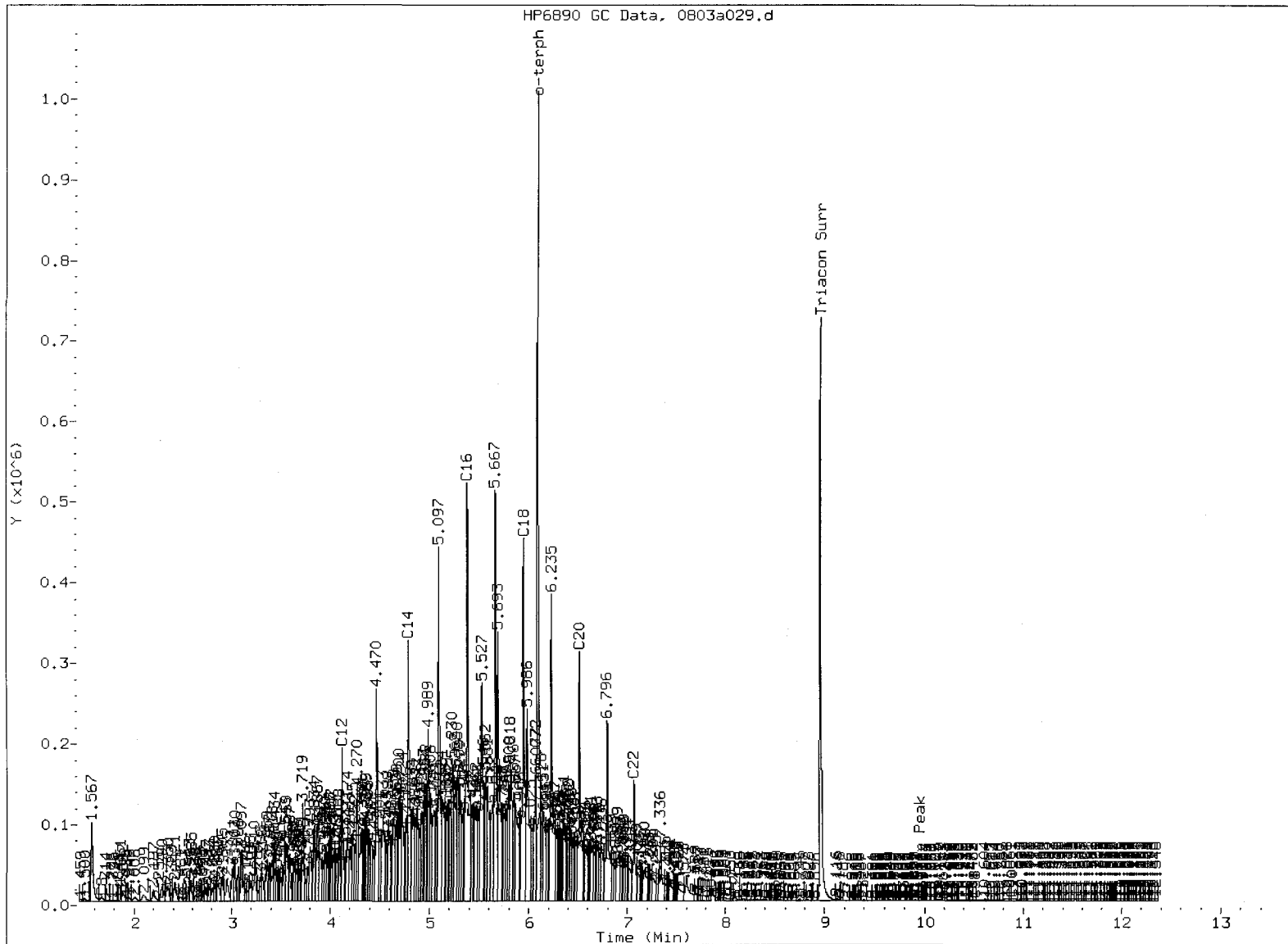


Data File: /chem3/fid4a.1/20120803.b/0803a029.d  
Injection Date: 03-AUG-2012 22:39  
Instrument: fid4a.1  
Client Sample ID: VE3BLCSW1

HP6890 GC Data, 0803a029.d: 0.000 to 12.369 Min



*Handwritten signature*



MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate ✓

Analyst:       vz      

Date:       8/6/12

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120803.b/0803a030.d  
Method: /chem3/fid4a.i/20120803.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/06/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE38LCSDW1  
Client ID: VE38LCSDW1  
Injection: 03-AUG-2012 23:00

*YZ 8/6/12*

Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.406	0.003	6205	11080	GAS (Tol-C12)	3564587	236.95
C8	1.677	-0.004	4770	10168	DIESEL (C12-C24)	19024001	1298.57
C10	3.234	0.000	63870	83057	M.OIL (C24-C38)	200293	15.94
C12	4.119	-0.005	196721	174084	AK-102 (C10-C25)	21601734	1248.73
C14	4.794	-0.012	339514	387091	AK-103 (C25-C36)	129532	15.17
C16	5.384	-0.004	532614	649219			
C18	5.952	0.004	470597	625751			
C20	6.518	-0.003	322850	479604	JET-A (C10-C18)	15753691	1274.36
C22	7.067	-0.005	152779	173051	MIN.OIL (C24-C38)	200293	14.90
C24	7.598	0.005	31345	72417			
C25	7.851	0.006	14885	28339			
C26	8.093	0.004	6524	10770			
C28	8.538	-0.008	1459	1165			
C32	9.386	-0.001	1892	2930			
C34	9.786	0.002	124	146			
Filter Peak	9.950	-0.004	261	228	BUNKERC (C10-C38)	21756050	2849.89
C36	10.181	0.013	499	725			
C38	10.550	0.007	1251	639			
C40	10.909	-0.003	1880	3660			
o-terph	6.097	0.006	905167	785789			
Triacon Surr	8.962	-0.023	729263	801862	NAS DIES (C10-C24)	21555757	1258.07

Range Times: NW Diesel (4.124 - 7.593) AK102 (3.23 - 7.84) Jet A (3.23 - 5.95)  
NW M.Oil (7.59 - 10.54) AK103 (7.84 - 10.17) OR Diesel (3.23 - 8.55)

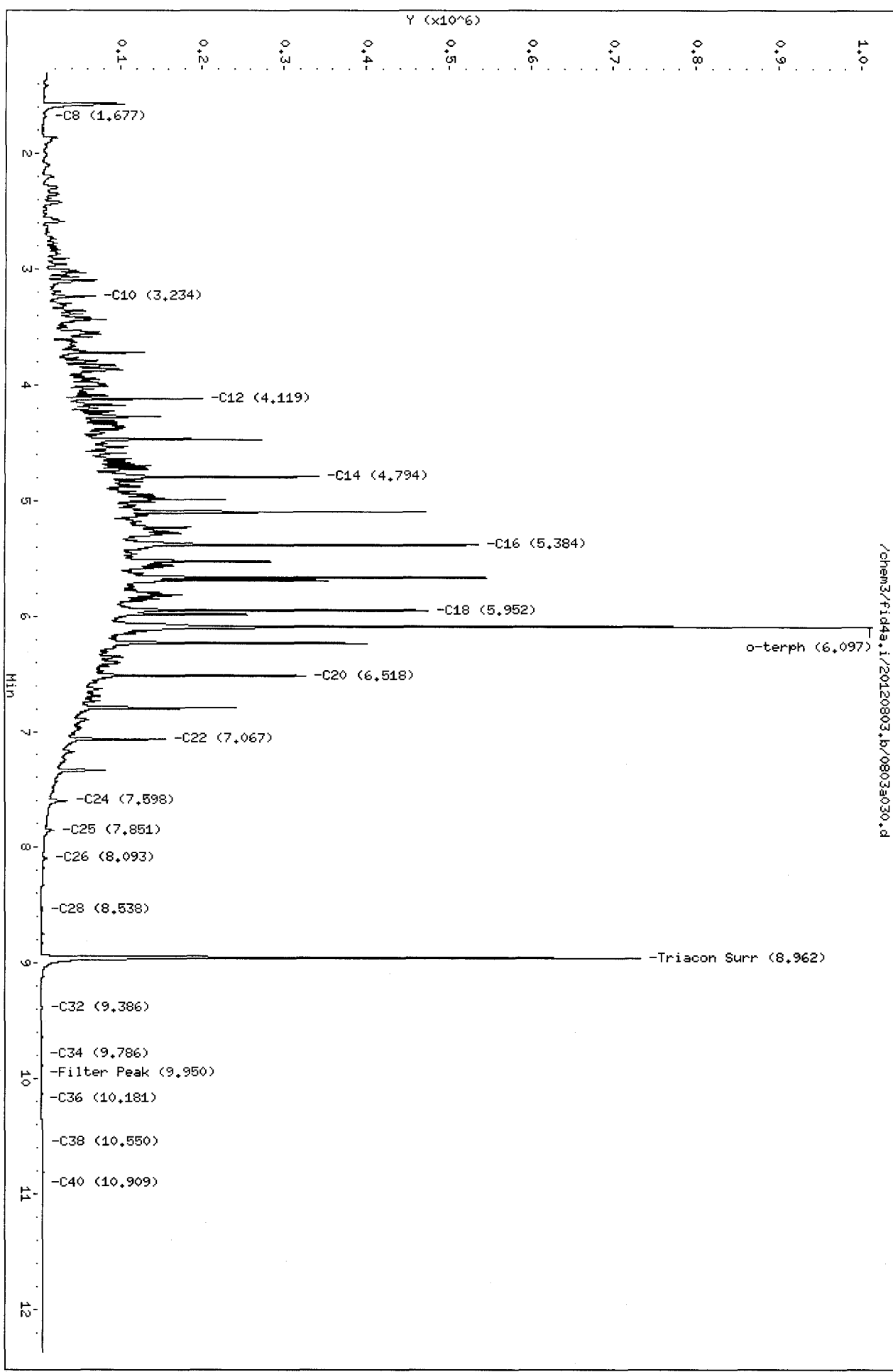
Surrogate	Area	Amount	%Rec
o-Terphenyl	785789	38.6	85.7
Triacontane	801862	42.0	93.4

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

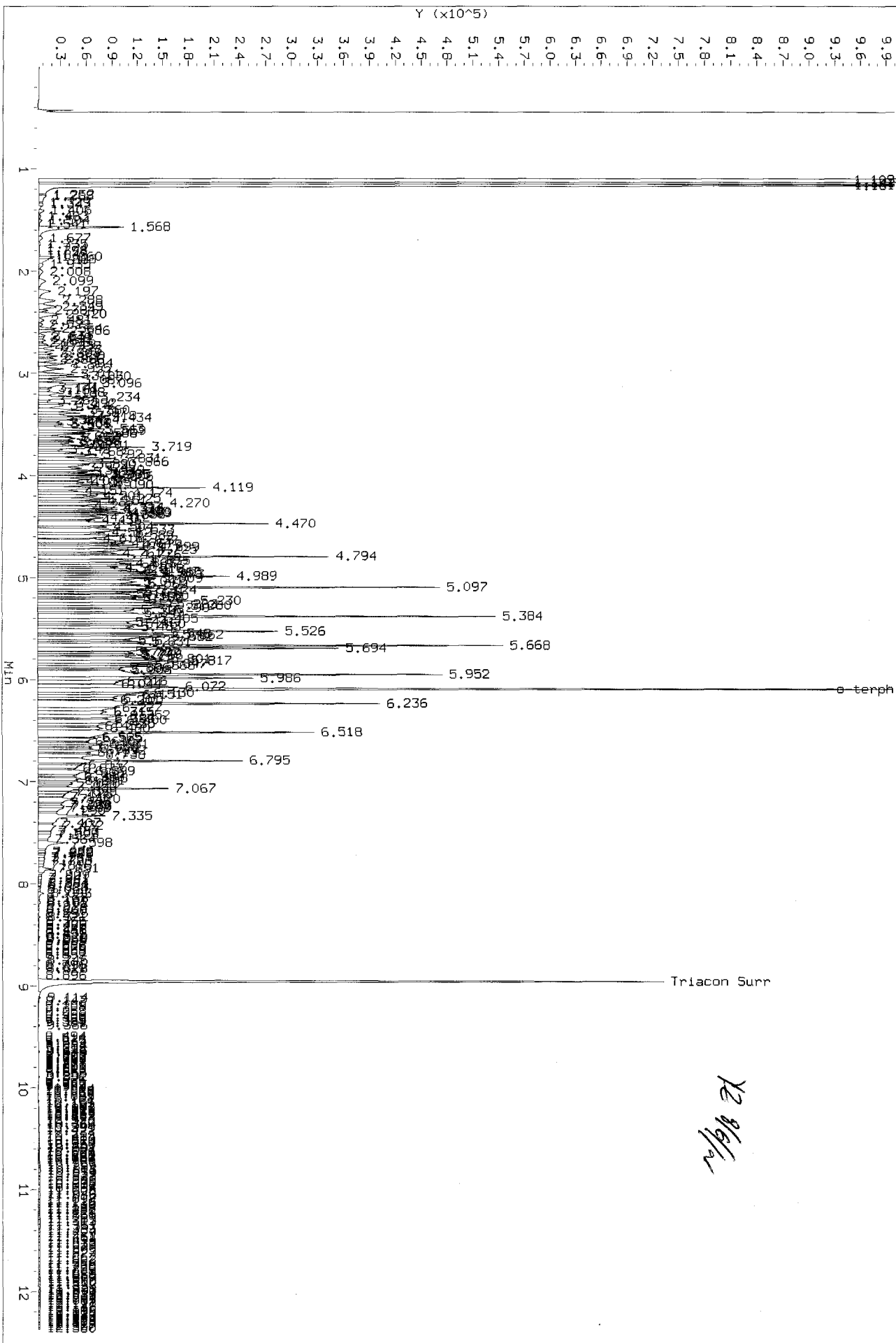
Data File: /chem3/fid4a.i/20120803.b/0803a030.d  
Date: 03-AUG-2012 23:00  
Client ID: WE38LCS0M4  
Sample Info: WE38LCS0M4  
Column phase: RTX-1

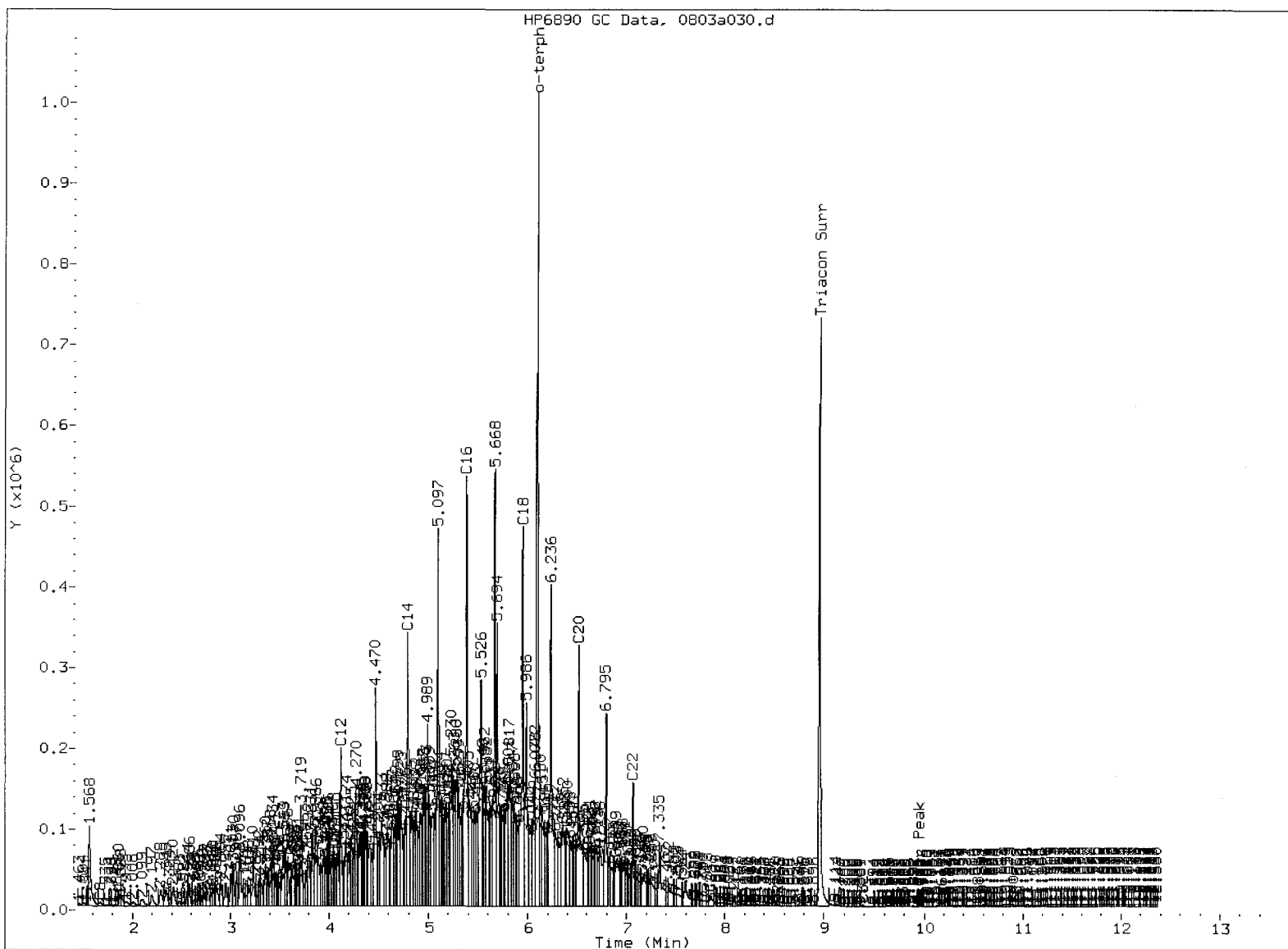
Instrument: fid4a.i  
Operator: AR  
Column diameter: 0.25



Data File: /chem3/fid4a.1/20120803.b/0803a030.d  
Injection Date: 03-AUG-2012 23:00  
Instrument: fid4a.1  
Client Sample ID: VE38LCSDW1

HP6890 GC Data, 0803a030.d: 0.000 to 12.369 Min





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate ✓

Analyst: Y2

Date: 8/6/12

**TOTAL HCID RANGE HYDROCARBONS-EXTRACTION REPORT**

Matrix: Water  
Date Received: 08/01/12

ARI Job: VE38  
Project: Cornwall  
0001020.400.500

ARI ID	Client ID	Sample Amt	Final Vol	Prep Date
12-14610-080312MB	Method Blank	500 mL	1.00 mL	08/03/12
12-14610-080312LCS	Lab Control	500 mL	1.00 mL	08/03/12
12-14610-080312LCSD	Lab Control Dup	500 mL	1.00 mL	08/03/12
12-14610-VE38A	MW-16D-073112	500 mL	1.00 mL	08/03/12
12-14611-VE38B	MW-12D-073112	500 mL	1.00 mL	08/03/12
12-14612-VE38C	MW-11D-073112	500 mL	1.00 mL	08/03/12
12-14613-VE38D	MW-12S-073112	500 mL	1.00 mL	08/03/12
12-14614-VE38E	MW-11S-073112	500 mL	1.00 mL	08/03/12



**ORGANICS ANALYSIS DATA SHEET  
TOTAL DIESEL RANGE HYDROCARBONS**

NWTPHD by GC/FID-Silica and Acid Cleaned  
Extraction Method:  
Page 1 of 1

QC Report No: VE90-Landau Associates  
Project: Cornwall  
0001020.400.500

Matrix: Water  
Data Release Authorized: *MW*  
Reported: 08/07/12

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
MB-080612	Method Blank	08/06/12	08/07/12	1.00	Diesel Range	0.10	< 0.10 U
12-14876	HC ID: ---		FID4A	1.0	Motor Oil Range o-Terphenyl	0.20	< 0.20 U 83.4%
VE90A	MW-16D-073112	08/06/12	08/07/12	1.00	Diesel Range	0.10	< 0.10 U
12-14876	HC ID: ---		FID4A	1.0	Motor Oil Range o-Terphenyl	0.20	< 0.20 U 81.3%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.  
DL-Dilution of extract prior to analysis.  
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.  
Motor Oil range quantitation on total peaks in the range from C24 to C38.  
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

**CLEANED TPHD SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE90-Landau Associates  
Project: Cornwall  
0001020.400.500

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
MB-080612	83.4%	0
LCS-080612	79.0%	0
LCSD-080612	67.1%	0
MW-16D-073112	81.3%	0

**LCS/MB LIMITS      QC LIMITS**

(OTER) = o-Terphenyl

(50-150)

(50-150)

Prep Method: SW3510C  
Log Number Range: 12-14876 to 12-14876

**ORGANICS ANALYSIS DATA SHEET**

NWTPHD by GC/FID-Silica and Acid Cleaned

Sample ID: LCS-080612

Page 1 of 1

LCS/LCSD

Lab Sample ID: LCS-080612

QC Report No: VE90-Landau Associates

LIMS ID: 12-14876

Project: Cornwall

Matrix: Water

0001020.400.500

Data Release Authorized: *MW*

Date Sampled: 07/31/12

Reported: 08/07/12

Date Received: 08/01/12

Date Extracted LCS/LCSD: 08/06/12

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 08/07/12 09:13

Final Extract Volume LCS: 1.0 mL

LCSD: 08/07/12 09:35

LCSD: 1.0 mL

Instrument/Analyst LCS: FID/AAR

Dilution Factor LCS: 1.00

LCSD: FID/AAR

LCSD: 1.00

Range	Spike		LCS	LCSD	Spike		LCSD	RPD
	LCS	Added-LCS	Recovery		Added-LCSD	Recovery		
Diesel	2.32	3.00	77.3%	2.17	3.00	72.3%	6.7%	

**TPHD Surrogate Recovery**

	LCS	LCSD
o-Terphenyl	79.0%	67.1%

Results reported in mg/L

RPD calculated using sample concentrations per SW846.

**TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT**

Matrix: Water  
Date Received: 08/01/12

ARI Job: VE90  
Project: Cornwall  
0001020.400.500

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
12-14876-080612MB1	Method Blank	500 mL	1.00 mL	08/06/12
12-14876-080612LCS1	Lab Control	500 mL	1.00 mL	08/06/12
12-14876-080612LCSD1	Lab Control Dup	500 mL	1.00 mL	08/06/12
12-14876-VE90A	MW-16D-073112	500 mL	1.00 mL	08/06/12

**INORGANICS ANALYSIS DATA SHEET  
DISSOLVED METALS**

Sample ID: MW-16D-073112  
SAMPLE

Page 1 of 1

Lab Sample ID: VE38A


QC Report No: VE38-Landau Associates

LIMS ID: 12-14610

Project: Cornwall

Matrix: Water

0001020.400.500

Data Release Authorized: 

Date Sampled: 07/31/12

Reported: 08/10/12

Date Received: 08/01/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/03/12	200.8	08/07/12	7440-38-2	Arsenic	1	1	U
200.8	08/03/12	200.8	08/07/12	7440-50-8	Copper	1	1	U
200.8	08/03/12	200.8	08/07/12	7439-92-1	Lead	0.2	0.2	U
200.8	08/03/12	200.8	08/07/12	<b>7439-96-5</b>	<b>Manganese</b>	1	<b>540</b>	
200.8	08/03/12	200.8	08/07/12	<b>7440-66-6</b>	<b>Zinc</b>	10	<b>40</b>	

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**


Page 1 of 1

Sample ID: MW-12D-073112  
SAMPLE

Lab Sample ID: VE38B

LIMS ID: 12-14611

Matrix: Water

Data Release Authorized: 

Reported: 08/10/12

QC Report No: VE38-Landau Associates

Project: Cornwall

0001020.400.500

Date Sampled: 07/31/12


Date Received: 08/01/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/03/12	200.8	08/07/12	7440-38-2	Arsenic	0.5	0.5	U
200.8	08/03/12	200.8	08/06/12	<b>7440-50-8</b>	<b>Copper</b>	0.5	<b>0.6</b>	
200.8	08/03/12	200.8	08/06/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/03/12	200.8	08/06/12	<b>7439-96-5</b>	<b>Manganese</b>	0.5	<b>163</b>	
200.8	08/03/12	200.8	08/06/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

Sample ID: MW-11D-073112  
SAMPLE

Lab Sample ID: VE38C  
LIMS ID: 12-14612  
Matrix: Water  
Data Release Authorized:   
Reported: 08/10/12

QC Report No: VE38-Landau Associates  
Project: Cornwall  
0001020.400.500  
Date Sampled: 07/31/12  
Date Received: 08/01/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/03/12	200.8	08/06/12	7440-38-2	Arsenic	0.2	0.4	
200.8	08/03/12	200.8	08/07/12	7440-50-8	Copper	0.5	0.7	
200.8	08/03/12	200.8	08/06/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/03/12	200.8	08/06/12	7439-96-5	Manganese	0.5	84.0	
200.8	08/03/12	200.8	08/06/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1


Sample ID: MW-12S-073112

SAMPLE

Lab Sample ID: VE38D

LIMS ID: 12-14613

Matrix: Water

Data Release Authorized: 

Reported: 08/10/12

QC Report No: VE38-Landau Associates

Project: Cornwall

0001020.400.500

Date Sampled: 07/31/12

Date Received: 08/01/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/03/12	200.8	08/06/12	7440-38-2	Arsenic	0.2	0.6	
200.8	08/03/12	200.8	08/07/12	7440-50-8	Copper	1	1	U
200.8	08/03/12	200.8	08/06/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/03/12	200.8	08/09/12	7439-96-5	Manganese	10	680	
200.8	08/03/12	200.8	08/06/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL  
RL-Reporting Limit



**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

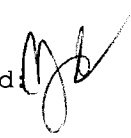
Page 1 of 1

Sample ID: MW-11S-073112  
SAMPLE

Lab Sample ID: VE38E

LIMS ID: 12-14614

Matrix: Water

Data Release Authorized: 

Reported: 08/10/12

QC Report No: VE38-Landau Associates

Project: Cornwall

0001020.400.500

Date Sampled: 07/31/12

Date Received: 08/01/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/03/12	200.8	08/06/12	7440-38-2	Arsenic	0.2	1.3	
200.8	08/03/12	200.8	08/07/12	7440-50-8	Copper	0.5	2.6	
200.8	08/03/12	200.8	08/06/12	7439-92-1	Lead	0.1	1.0	
200.8	08/03/12	200.8	08/07/12	7439-96-5	Manganese	2	1,430	
200.8	08/03/12	200.8	08/06/12	7440-66-6	Zinc	4	26	

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1


Sample ID: MW-16D-073112

**MATRIX SPIKE**

Lab Sample ID: VE38A

LIMS ID: 12-14610

Matrix: Water

Data Release Authorized 

Reported: 08/10/12

QC Report No: VE38-Landau Associates

Project: Cornwall

0001020.400.500

Date Sampled: 07/31/12

Date Received: 08/01/12

**MATRIX SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	200.8	1 U	25	25	100%	
Copper	200.8	1 U	26	25	104%	
Lead	200.8	0.2 U	25.6	25.0	102%	
Manganese	200.8	540	571	25	124%	H
Zinc	200.8	40	90	80	62.5%	N

Reported in µg/L

N-Control Limit Not Met

H-% Recovery Not Applicable, Sample Concentration Too High

NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**


Page 1 of 1

Sample ID: MW-16D-073112  
DUPLICATE

Lab Sample ID: VE38A

LIMS ID: 12-14610

Matrix: Water

Data Release Authorized: 

Reported: 08/10/12

QC Report No: VE38-Landau Associates

Project: Cornwall

0001020.400.500

Date Sampled: 07/31/12

Date Received: 08/01/12

**MATRIX DUPLICATE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	200.8	1 U	2	66.7%	+/- 1	L
Copper	200.8	1 U	1 U	0.0%	+/- 1	L
Lead	200.8	0.2 U	0.2 U	0.0%	+/- 0.2	L
Manganese	200.8	540	550	1.8%	+/- 20%	
Zinc	200.8	40	20	66.7%	+/- 10	L*

Reported in µg/L

\*-Control Limit Not Met

L-RPD Invalid, Limit = Detection Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

**Sample ID: METHOD BLANK**

Page 1 of 1

Lab Sample ID: VE38MB


QC Report No: VE38-Landau Associates

LIMS ID: 12-14611

Project: Cornwall

Matrix: Water

0001020.400.500

Data Release Authorized: 

Date Sampled: NA

Reported: 08/10/12

Date Received: NA


Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/03/12	200.8	08/07/12	7440-38-2	Arsenic	0.2	0.2	U
200.8	08/03/12	200.8	08/06/12	7440-50-8	Copper	0.5	0.5	U
200.8	08/03/12	200.8	08/06/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/03/12	200.8	08/06/12	7439-96-5	Manganese	0.5	0.5	U
200.8	08/03/12	200.8	08/06/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

**Sample ID: LAB CONTROL**

Lab Sample ID: VE38LCS  
LIMS ID: 12-14611  
Matrix: Water  
Data Release Authorized:   
Reported: 08/10/12

QC Report No: VE38-Landau Associates  
Project: Cornwall  
0001020.400.500  
Date Sampled: NA  
Date Received: NA

**BLANK SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	26.2	25.0	105%	
Copper	200.8	27.1	25.0	108%	
Lead	200.8	27.6	25.0	110%	
Manganese	200.8	25.5	25.0	102%	
Zinc	200.8	86	80	108%	

Reported in µg/L

N-Control limit not met  
Control Limits: 80-120%

INORGANICS ANALYSIS DATA SHEET  
Dissolved Mercury by Method SW7470A



Data Release Authorized: *[Signature]*  
Reported: 08/10/12  
Date Received: 08/01/12  
Page 1 of 1

QC Report No238: VE43-Landau Associates  
Project: Cornwall  
0001020.400.500

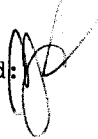
Client/ ARI ID	Date Sampled	Matrix	Prep Date Anal Date	RL	Result
MW-16D-073112 VE43A 12-14616	07/31/12	Water	08/02/12 08/10/12	20.0	20.0 U
MW-12D-073112 VE43B 12-14617	07/31/12	Water	08/02/12 08/10/12	20.0	20.0 U
MW-11D-073112 VE43C 12-14618	07/31/12	Water	08/02/12 08/10/12	20.0	20.0 U
MW-12S-073112 VE43D 12-14619	07/31/12	Water	08/02/12 08/10/12	20.0	20.0 U
MW-11S-073112 VE43E 12-14620	07/31/12	Water	08/02/12 08/10/12	20.0	20.0 U
MB-080212 Method Blank	NA	Water	08/02/12 08/10/12	20.0	20.0 U

Reported in ng/L

RL-Analytical reporting limit  
U-Undetected at reported detection limit

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

Sample ID: MW-16D-073112  
MATRIX SPIKE

Lab Sample ID: VE43A  
LIMS ID: 12-14616  
Matrix: Water  
Data Release Authorized:   
Reported: 08/10/12

QC Report No: VE43-Landau Associates  
Project: Cornwall  
0001020.400.500  
Date Sampled: 07/31/12  
Date Received: 08/01/12

**MATRIX SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Mercury	7470A	20.0 U	106	100	106%	

Reported in ng/L

N-Control Limit Not Met  
H-% Recovery Not Applicable, Sample Concentration Too High  
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1


Sample ID: MW-16D-073112

DUPLICATE

Lab Sample ID: VE43A

LIMS ID: 12-14616

Matrix: Water

Data Release Authorized: 

Reported: 08/10/12

QC Report No: VE43-Landau Associates

Project: Cornwall

0001020.400.500

Date Sampled: 07/31/12

Date Received: 08/01/12

**MATRIX DUPLICATE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Mercury	7470A	20.0 U	20.0 U	0.0%	+/- 20.0	L

Reported in ng/L

\*-Control Limit Not Met

L-RPD Invalid, Limit = Detection Limit



**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

Sample ID: LAB CONTROL

Lab Sample ID: VE43LCS  
LIMS ID: 12-14617  
Matrix: Water  
Data Release Authorized:  
Reported: 08/10/12



QC Report No: VE43-Landau Associates  
Project: Cornwall  
0001020.400.500  
Date Sampled: NA  
Date Received: NA

**BLANK SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Mercury	7470A	251	200	126%	N

Reported in ng/L

N-Control limit not met  
Control Limits: 80-120%

**SAMPLE RESULTS-CONVENTIONALS**  
**VE38-Landau Associates**



Matrix: Water  
 Data Release Authorized:  
 Reported: 08/15/12

Project: Cornwall  
 Event: 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

**Client ID: MW-16D-073112**  
**ARI ID: 12-14610 VE38A**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/01/12 080112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	08/02/12 080212#1	EPA 300.0	mg-N/L	0.5	< 0.5 U
Total Cyanide	08/10/12 081012#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.200	14.2
Sulfate	08/02/12 080212#1	EPA 300.0	mg/L	0.1	3.0
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.187
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	5.00	52.2
Biological Oxygen Demand	08/02/12 080212#1	EPA 405.1	mg/L	3.0	7.5
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	17.1

RL Analytical reporting limit  
 U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**VE38-Landau Associates**



Matrix: Water  
 Data Release Authorized  
 Reported: 08/15/12

Project: Cornwall  
 Event: 0001020.400.500  
 Date Sampled: 07/31/12  
 Date Received: 08/01/12

**Client ID: MW-12D-073112**  
**ARI ID: 12-14611 VE38B**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/01/12 080112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	08/01/12 080112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/10/12 081012#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.200	12.0
Sulfate	08/02/12 080212#1	EPA 300.0	mg/L	0.2	6.6
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.834
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	5.00	108
Biological Oxygen Demand	08/02/12 080212#1	EPA 405.1	mg/L	15.0	15.7
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	26.5

RL Analytical reporting limit  
 U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
VE38-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.500  
Date Sampled: 07/31/12  
Date Received: 08/01/12

Client ID: MW-11D-073112  
ARI ID: 12-14612 VE38C

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/01/12 080112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	08/01/12 080112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/10/12 081012#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.100	4.23
Sulfate	08/01/12 080112#1	EPA 300.0	mg/L	0.1	3.0
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.868
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	10.0	236
Biological Oxygen Demand	08/02/12 080212#1	EPA 405.1	mg/L	20.0	85.4
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	21.5

RL Analytical reporting limit  
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
VE38-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.500  
Date Sampled: 07/31/12  
Date Received: 08/01/12

Client ID: MW-12S-073112  
ARI ID: 12-14613 VE38D

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/01/12 080112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	08/01/12 080112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/10/12 081012#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.500	18.0
Sulfate	08/01/12 080112#1	EPA 300.0	mg/L	0.1	0.7
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.321
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	5.00	43.4
Biological Oxygen Demand	08/02/12 080212#1	EPA 405.1	mg/L	4.0	15.1
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	13.9

RL Analytical reporting limit  
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
VE38-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.500  
Date Sampled: 07/31/12  
Date Received: 08/01/12

Client ID: MW-11S-073112  
ARI ID: 12-14614 VE38E

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	08/01/12 080112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	08/01/12 080112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/10/12 081012#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.100	4.52
Sulfate	08/01/12 080112#1	EPA 300.0	mg/L	0.1	1.2
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.087
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	5.00	61.6
Biological Oxygen Demand	08/02/12 080212#1	EPA 405.1	mg/L	6.0	14.5
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	22.4

RL Analytical reporting limit  
U Undetected at reported detection limit

METHOD BLANK RESULTS-CONVENTIONALS  
VE38-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.500  
Date Sampled: NA  
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
N-Nitrate	EPA 300.0	08/01/12	mg-N/L	< 0.1 U	
N-Nitrite	EPA 300.0	08/01/12 08/02/12	mg-N/L	< 0.1 U < 0.1 U	
Total Cyanide	EPA 335.4	08/10/12	mg/L	< 0.005 U	
N-Ammonia	EPA 350.1M	08/03/12	mg-N/L	< 0.010 U	FB
Sulfate	EPA 300.0	08/01/12 08/02/12	mg/L	< 0.1 U < 0.1 U	
Sulfide	EPA 376.2	08/02/12	mg/L	< 0.050 U	
Chemical Oxygen Demand	EPA 410.4	08/13/12	mg/L	< 5.00 U	
Biological Oxygen Demand	EPA 405.1	08/02/12	mg/L	< 1.0 U	
Total Organic Carbon	EPA 9060	08/07/12	mg/L	< 1.50 U	

FB Filtration Blank

LAB CONTROL RESULTS-CONVENTIONALS  
VE38-Landau Associates



Matrix: Water  
Data Release Authorized  
Reported: 08/15/12

A handwritten signature in black ink, appearing to be a stylized 'A' or similar character, located to the right of the matrix information.

Project: Cornwall  
Event: 0001020.400.500  
Date Sampled: NA  
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Sulfide EPA 376.2	ICVL	08/02/12	mg/L	0.496	0.501	99.0%
Biological Oxygen Demand EPA 405.1	ICVL	08/02/12	mg/L	195	198	98.5%



STANDARD REFERENCE RESULTS-CONVENTIONALS  
VE38-Landau Associates



Matrix: Water  
Data Release Authorized  
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.500  
Date Sampled: NA  
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
N-Nitrate ERA #230511	EPA 300.0	08/01/12	mg-N/L	3.0	3.0	100.0%
N-Nitrite ERA #401010	EPA 300.0	08/01/12 08/02/12	mg-N/L	3.0 3.0	3.0 3.0	100.0% 100.0%
Total Cyanide ERA 11107	EPA 335.4	08/10/12	mg/L	0.386	0.400	96.5%
N-Ammonia ERA #15125	EPA 350.1M	08/03/12	mg-N/L	0.498	0.500	99.6%
Sulfate ERA #070811	EPA 300.0	08/01/12 08/02/12	mg/L	3.0 3.1	3.0 3.0	100.0% 103.3%
Chemical Oxygen Demand Thermo Orion #I01	EPA 410.4	08/13/12	mg/L	84.8	90.0	94.2%
Total Organic Carbon ERA 0409-12-01	EPA 9060	08/07/12	mg/L	20.4	20.0	102.0%

REPLICATE RESULTS-CONVENTIONALS  
VE38-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

A handwritten signature in black ink, appearing to be 'M. J. Landau', written over the 'Data Release Authorized' line.

Project: Cornwall  
Event: 0001020.400.500  
Date Sampled: 07/31/12  
Date Received: 08/01/12

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: VE38A		Client ID: MW-16D-073112				
N-Nitrate	EPA 300.0	08/01/12	mg-N/L	< 0.1	< 0.1	NA
N-Nitrite	EPA 300.0	08/02/12	mg-N/L	< 0.5	< 0.5	NA
Sulfate	EPA 300.0	08/02/12	mg/L	3.0	2.9	3.4%
Sulfide	EPA 376.2	08/02/12	mg/L	0.187	0.191	2.1%

MS/MSD RESULTS-CONVENTIONALS  
VE38-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

A handwritten signature in black ink, appearing to be a stylized name, located between the matrix information and the project details.

Project: Cornwall  
Event: 0001020.400.500  
Date Sampled: 07/31/12  
Date Received: 08/01/12

Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
<b>ARI ID: VE38A    Client ID: MW-16D-073112</b>							
N-Nitrate	EPA 300.0	08/01/12	mg-N/L	< 0.1	1.9	2.0	95.0%
N-Nitrite	EPA 300.0	08/02/12	mg-N/L	< 0.5	12.3	10.0	123.0%
Sulfate	EPA 300.0	08/02/12	mg/L	3.0	5.2	4.0	55.0%
Sulfide	EPA 376.2	08/02/12	mg/L	0.187	0.655	0.500	93.6%



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

August 16, 2012

Mr. Larry Beard  
Landau Associates, Inc.  
130 2<sup>nd</sup> Avenue South  
Edmonds, WA 98020

**RE: Client Project: Cornwall 001020.400.500**  
**ARI Job No: VE22, VE24**

Dear Larry,

Please find enclosed analytical results for the conventional analyses of samples received for the project referenced above. Analytical Resources, Inc. (ARI) accepted eight water samples and a trip blank on July 31, 2012. The samples were received in good condition and there were no discrepancies between the COC and containers' labels.

The samples were analyzed for SVOCs, SIM PAHs, HCID, VOCs, Pesticides, Herbicides, Dissolved Metals, Anions, Sulfide, COD, BOD, Ammonia, TOC, Cyanide and NWTPH-Dx follow ups as requested on the COC. The Tannins and Lignins were subcontracted to Aquatic Research, Inc.

The VOCs 8/6/12 method blank contained hexachlorobutadiene and n-Butylbenzene. All associated samples that contain analyte have been flagged with a "B" qualifier.

The VOCs 8/7/12 CCAL is out of control low for acrolein. All associated samples that contain analyte have been flagged with a "Q" qualifier.

The SVOCs 8/3/12 CCAL is out of control high for 2,4-Dinitrophenol and Pentachlorophenol. All associated samples that contain analyte have been flagged with a "Q" qualifier.

The SVOCs 8/6/12 CCAL is out of control low for 2,4-Dinitrophenol and 2,4,6-Tribromophenol. All associated samples that contain analyte have been flagged with a "Q" qualifier.

The BOD ICV is out of control low. All sample volume was consumed during the analysis. All other QC is in control and no further corrective action was taken.

The herbicide surrogate DCPA is out of control high in association with sample MW-16S-073012. The sample was non-detect and no further corrective action was taken.



## Analytical Resources, Incorporated

Analytical Chemists and Consultants

The herbicide LCS and LCSD are out of control low for 2,4,5-T. All other spike recoveries are in control and no further corrective action was taken.

Quality control analyses are included for your review. No other analytical complications were noted.

A copy of these reports and all associated data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Kelly Bottem  
Client Services Manager  
206-695-6211  
kellyb@arilabs.com

KFB/kfb

Enclosure

cc: File VE22 and VE24

VEED

Date 7/30/12  
 Page 1 of 2

# Chain-of-Custody Record

Project Name CORNWALL Project No. 0001020400.510  
 Project Location/Event BELLSINGHAM, WA / ADDITIONAL GW INVESTIGATION  
 Sampler's Name CHRISTOPHER VENUT  
 Project Contact " / JEREMY DAVIS / LARRY BEARD  
 Send Results To ANNE MALVORSEN / " / " / "

Sample I.D.	Date	Time	Matrix	No. of Containers	NOCS	PESTICIDES	HERBICIDES	DISSOLVED METALS	ANIONS	SULFIDE	NH3	TOTAL FREE CHLORIDE	TRINIONS + LEADONS	Observations/Comments
MW-15D-073012	073012	1050	AQ	18	X	X	X	X	X	X	X	X	X	X Allow water samples to settle, collect aliquot from clear portion X NWTPH-Dx - run acid wash/silica gel cleanup Centrifuge! Analyze for EPH if no specific product identified VOC/BTEX/VPH (soil): non-preserved preserved w/methanol preserved w/sodium bisulfate Freeze upon receipt X Dissolved metal water samples field filtered Other: <u>* LAT TO FOLLOW UP WITH NWTPH-DX / NWTPH-DX BASED ON RESULTS.</u> *** NOTE 48-HR HOLD TIME * At, Cu, Pb, Mn, Zn, Hg Cd, Cr, Ni, Hg
MW-16S-073012	073012	1215	AQ	18	X	X	X	X	X	X	X	X	X	
MW-15S-073012	073012	1220	AQ	18	X	X	X	X	X	X	X	X	X	
MW-14S-073012	073012	1350	AQ	18	X	X	X	X	X	X	X	X	X	
MW-13S-073012	073012	1505	AQ	18	X	X	X	X	X	X	X	X	X	
MW-14D-073012	073012	1540	AQ	18	X	X	X	X	X	X	X	X	X	
MW-13D-073012	073012	1625	AQ	18	X	X	X	X	X	X	X	X	X	
MW-DUP-073012	073012	---	AQ	18	X	X	X	X	X	X	X	X	X	
TBS			AQ	3	X									

Special Shipment/Handling or Storage Requirements: ON ICE

Method of Shipment: FTW-vp

Turnaround Time:  
 Standard  
 Accelerated

Relinquished by:  
 Signature: Jeremy Davis  
 Printed Name: Jeremy Davis  
 Company: Landau Associates  
 Date: 7/30/12 Time: 1100

Received by:  
 Signature: Stephany Trimmer  
 Printed Name: Stephany Trimmer  
 Company: Landau Associates  
 Date: 7/30/12 Time: 7:30pm

Relinquished by:  
 Signature: Stephany Trimmer  
 Printed Name: Stephany Trimmer  
 Company: Landau Associates  
 Date: 7/30/12 Time: 1100

Received by:  
 Signature: Stephany Trimmer  
 Printed Name: Stephany Trimmer  
 Company: Landau Associates  
 Date: 7/30/12 Time: 7:30pm

Relinquished by:  
 Signature: Stephany Trimmer  
 Printed Name: Stephany Trimmer  
 Company: Landau Associates  
 Date: 7/30/12 Time: 1100

Received by:  
 Signature: Stephany Trimmer  
 Printed Name: Stephany Trimmer  
 Company: Landau Associates  
 Date: 7/30/12 Time: 7:30pm

- Seattle/Edmonds (425) 778-0907
- Tacoma (253) 926-2493
- Spokane (509) 327-9737
- Portland (503) 542-1080



# Chain-of-Custody Record

Date 7/30/12  
Page 2 of 2

Project Name CORNWALL Project No. 0001020400.510

Project Location/Event BELLINGHAM, WA / ADDITIONAL GW INVESTIGATION

Sampler's Name CHRISTOPHE JENES

Project Contact A / JEREMY DAVIS / LARRY PENN

Send Results To ANNE HANUSSEN / " "

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters	Observations/Comments
MWHD-073012	073012	050	AR	6	TDS, COD, BOD, NUTPH-DX, NUTPH-GX	
MW-163-073012	073012	1215	AR	6		
MW-155-073012	073012	1220	AR	6		
MW-145-073012	073012	1350	AR	6		
MW-135-073012	073012	1505	AR	6		
MW-140-073012	073012	1540	AR	6		
MW-130-073012	073012	1625	AR	6		
MW-DUP-073012	073012	---	AR	6		
TBS			AR	2		

Observations/Comments:  
 Allow water samples to settle, collect aliquot from clear portion  
 NUTPH-DX - run acid wash/silica gel cleanup  
 Centrifuge! run samples standardized to \_\_\_\_\_ product  
 Analyze for EPH if no specific product identified  
 VOC/BTEX/VPH (soil):  
 non-preserved  
 preserved w/methanol  
 preserved w/sodium bisulfate  
 Freeze upon receipt  
 Dissolved metal water samples field filtered  
 Other **\* NOTE 48 hr HOLD TIME**  
**\* LAG TO FOLLOWUP WITH DFLW BASED ON HUSD RESULTS.**

Special Shipment/Handling or Storage Requirements: ON ICE

Method of Shipment: FEDEX

Relinquished by: Jeremy Davis Signature, Jeremy Davis Printed Name, Landau Associates Company, Date 7/31/12 Time 0800

Received by: Jeremy Davis Signature, Jeremy Davis Printed Name, Landau Associates Company, Date 7/31/12 Time 0800

Relinquished by: Shirley Jia Signature, Shirley Jia Printed Name, Landau Associates Company, Date 7/31/12 Time 0930

Received by: Shirley Jia Signature, Shirley Jia Printed Name, Landau Associates Company, Date 7/31/12 Time 0930

Relinquished by: Jeremy Davis Signature, Jeremy Davis Printed Name, Landau Associates Company, Date 7/31/12 Time 0930

Received by: Jeremy Davis Signature, Jeremy Davis Printed Name, Landau Associates Company, Date 7/31/12 Time 0930

Relinquished by: Jeremy Davis Signature, Jeremy Davis Printed Name, Landau Associates Company, Date 7/31/12 Time 0930

Received by: Jeremy Davis Signature, Jeremy Davis Printed Name, Landau Associates Company, Date 7/31/12 Time 0930



# Cooler Receipt Form

ARI Client: Landau  
 COC No(s): \_\_\_\_\_ (NA)  
 Assigned ARI Job No: VE22

Project Name: Cornwall  
 Delivered by: Fed-Ex UPS Courier  Hand Delivered  Other: \_\_\_\_\_  
 Tracking No: \_\_\_\_\_ (NA)

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO  
 Were custody papers included with the cooler? YES NO  
 Were custody papers properly filled out (ink, signed, etc.) YES NO  
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 4.1 5.1 1.6 5.1 3.4 4.5  
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877852  
 Cooler Accepted by: TS Date: 7-31-12 Time: 1305

Complete custody forms and attach all shipping documents

**Log-In Phase:**

Was a temperature blank included in the cooler? YES  NO   
 What kind of packing material was used? ... Bubble Wrap  Wet Ice  Gel Packs  Baggies  Foam Block  Paper  Other: Box  
 Was sufficient ice used (if appropriate)? NA YES  NO   
 Were all bottles sealed in individual plastic bags? YES  NO   
 Did all bottles arrive in good condition (unbroken)? YES  NO   
 Were all bottle labels complete and legible? YES  NO   
 Did the number of containers listed on COC match with the number of containers received? YES  NO   
 Did all bottle labels and tags agree with custody papers? YES  NO   
 Were all bottles used correct for the requested analyses? YES  NO   
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES  NO   
 Were all VOC vials free of air bubbles? NA YES  NO   
 Was sufficient amount of sample sent in each bottle? YES  NO   
 Date VOC Trip Blank was made at ARI: NA 7/31/12  
 Was Sample Split by ARI:  NA YES  Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

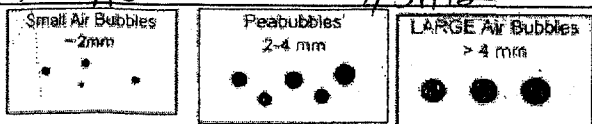
Samples Logged by: AV Date: 7/31/12 Time: 1430

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**  
3.3, 4.3, 2.9: Dup=3pb, 13D=4pb, 14D=5pb, 13S=3pb, 15=4pb  
14S=3pb, 15S=3pb, 11os=3pb, 15D=4pb. THESE ARE

By: AV Date: 7/31/12



Small → "sm"  
 Peabubbles → "pb"  
 Large → "lg"  
 Headspace → "hs"





ARI Job No: VE22  
PC: Kelly  
VTSR: 07/31/12

Inquiry Number: NONE  
Analysis Requested: 07/31/12  
Contact: Davis, Jeremy  
Client: Landau Associates  
Logged by: AV  
Sample Set Used: Yes-481  
Validatable Package: No  
Deliverables:

Project #: 0001020.400.510  
Project: Cornwall  
Sample Site:  
SDG No:  
Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 Fe2+ <2	DMET DOC FLT FLT	PARAMETER	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
12-14520 VE22A	MW-15D-073012	F		P	P		DIS					P	F		Y					
12-14521 VE22B	MW-16S-073012	F		P	P		DIS					P	F		Y					
12-14522 VE22C	MW-15S-073012	F		P	P		DIS Fail					P	F		Y		L2	M2276	2ml	8/1/12 CB
12-14523 VE22D	MW-14S-073012	F		P	P		DIS Fail					P	F		Y		L2	M2276	2ml	8/1/12 CB
12-14524 VE22E	MW-13S-073012	F		P	P		DIS					P	F		Y					
12-14525 VE22F	MW-14D-073012	F		P	P		DIS					P	F		Y					
12-14526 VE22G	MW-13D-073012	F		P	P		DIS					P	F		Y					
12-14527 VE22H	MW-DUP-073012	F		P	P		DIS					P	F		Y					

P=Pass Fail=AV F=Fail  
Cyanide=unpreserved  
Sulfide=only preserved with ZNOAC. Lab to adjust pH

preserved samples C-0 in  
196 - CB 08/01/12

Checked By AV Date 7/31/12



# Cooler Receipt Form

ARI Client: Lanzau  
 COC No(s): \_\_\_\_\_ (NA)  
 Assigned ARI Job No: VE24 VE21 AV

Project Name: Cornwall  
 Delivered by: Fed-Ex UPS Courier Hand Delivered  Other: \_\_\_\_\_  
 Tracking No: \_\_\_\_\_ (NA)

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler?  YES  NO  
 Were custody papers included with the cooler?  YES  NO  
 Were custody papers properly filled out (ink, signed, etc.)  YES  NO  
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 4.1 5.1 1.6 5.1 3.4 4.5  
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90877852  
 Cooler Accepted by: PS Date: 7-31-12 Time: 1305

*Complete custody forms and attach all shipping documents*

**Log-In Phase:**

Was a temperature blank included in the cooler?  YES  NO  
 What kind of packing material was used? ... Bubble Wrap  Wet Ice Gel Packs Baggies Foam Block Paper Other: Box  
 Was sufficient ice used (if appropriate)?  NA  YES  NO  
 Were all bottles sealed in individual plastic bags?  YES  NO  
 Did all bottles arrive in good condition (unbroken)?  YES  NO  
 Were all bottle labels complete and legible?  YES  NO  
 Did the number of containers listed on COC match with the number of containers received?  YES  NO  
 Did all bottle labels and tags agree with custody papers?  YES  NO  
 Were all bottles used correct for the requested analyses?  YES  NO  
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...  NA  YES  NO  
 Were all VOC vials free of air bubbles?  NA  YES  NO  
 Was sufficient amount of sample sent in each bottle?  YES  NO  
 Date VOC Trip Blank was made at ARI: \_\_\_\_\_  NA  
 Was Sample Split by ARI:  NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by: AV Date: 7/31/12 Time: 1430

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

3.3, 4.3, 2.9

By: \_\_\_\_\_ Date: \_\_\_\_\_

			Small → "sm"
			Peabubbles → "pb"
			Large → "lg"
			Headspace → "hs"

**PRESERVATION VERIFICATION 07/31/12**

Page 1 of 1

Inquiry Number: NONE  
 Analysis Requested: 07/31/12  
 Contact: Davis, Jeremy  
 Client: Landau Associates  
 Logged by: AV  
 Sample Set Used: Yes-481  
 Validatable Package: No  
 Deliverables:



ARI Job No: VE24

PC: Kelly  
 VTSR: 07/31/12

Project #: 0001020.400.510  
 Project: Cornwall  
 Sample Site:  
 SDG No:  
 Analytical Protocol: In-house

LOGNUM ARI ID	CLIENT ID	CN >12	WAD >12	NH3 <2	COD <2	FOG <2	MET <2	PHEN <2	PHOS <2	TKN <2	NO23 <2	TOC <2	S2 >9	AK102 <2	Fe2+ <2	DMET DOC FLT FLT	ADJUSTED TO	LOT NUMBER	AMOUNT ADDED	DATE/BY
12-14529 VE24A	MW-15D-073012						DIS									Y				
12-14530 VE24B	MW-16S-073012						DIS									Y				
12-14531 VE24C	MW-15S-073012						DIS									Y	L2	MP2226	2ml	8/1/12 CB
12-14532 VE24D	MW-14S-073012						DIS									Y	L2	MP2226	2ml	8/1/12 CB
12-14533 VE24E	MW-13S-073012						DIS									Y				
12-14534 VE24F	MW-14D-073012						DIS									Y				
12-14535 VE24G	MW-13D-073012						DIS									Y				
12-14536 VE24H	MW-DUP-073012						DIS									Y				

P=Pass F=Fail

Preserved Samples C-D in

196

CB 08/01/12

Checked By AV Date 7/31/12

# Sample ID Cross Reference Report



ARI Job No: VE22  
Client: Landau Associates  
Project Event: 0001020.400.510  
Project Name: Cornwall

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-15D-073012	VE22A	12-14520	Water	07/30/12 10:50	07/31/12 13:05
2. MW-16S-073012	VE22B	12-14521	Water	07/30/12 12:15	07/31/12 13:05
3. MW-15S-073012	VE22C	12-14522	Water	07/30/12 12:20	07/31/12 13:05
4. MW-14S-073012	VE22D	12-14523	Water	07/30/12 13:50	07/31/12 13:05
5. MW-13S-073012	VE22E	12-14524	Water	07/30/12 15:05	07/31/12 13:05
6. MW-14D-073012	VE22F	12-14525	Water	07/30/12 15:40	07/31/12 13:05
7. MW-13D-073012	VE22G	12-14526	Water	07/30/12 16:25	07/31/12 13:05
8. MW-DUP-073012	VE22H	12-14527	Water	07/30/12	07/31/12 13:05
9. Trip Blanks	VE22I	12-14528	Water	07/30/12	07/31/12 13:05

# Sample ID Cross Reference Report



ARI Job No: VE24  
Client: Landau Associates  
Project Event: 0001020.400.510  
Project Name: Cornwall

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. MW-15D-073012	VE24A	12-14529	Water	07/30/12 10:50	07/31/12 13:05
2. MW-16S-073012	VE24B	12-14530	Water	07/30/12 12:15	07/31/12 13:05
3. MW-15S-073012	VE24C	12-14531	Water	07/30/12 12:20	07/31/12 13:05
4. MW-14S-073012	VE24D	12-14532	Water	07/30/12 13:50	07/31/12 13:05
5. MW-13S-073012	VE24E	12-14533	Water	07/30/12 15:05	07/31/12 13:05
6. MW-14D-073012	VE24F	12-14534	Water	07/30/12 15:40	07/31/12 13:05
7. MW-13D-073012	VE24G	12-14535	Water	07/30/12 16:25	07/31/12 13:05
8. MW-DUP-073012	VE24H	12-14536	Water	07/30/12	07/31/12 13:05



## Data Reporting Qualifiers

Effective 2/14/2011

### Inorganic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Duplicate RPD is not within established control limits
- B Reported value is less than the CRDL but  $\geq$  the Reporting Limit
- N Matrix Spike recovery not within established control limits
- NA Not Applicable, analyte not spiked
- H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L Analyte concentration is  $\leq 5$  times the Reporting Limit and the replicate control limit defaults to  $\pm 1$  RL instead of the normal 20% RPD

### Organic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Flagged value is not within established control limits
- B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J Estimated concentration when the value is less than ARI's established reporting limits
- D The spiked compound was not detected due to sample extract dilution
- E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ( $< 20\%$  RSD,  $< 20\%$  Drift or minimum RRF).



- S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA The flagged analyte was not analyzed for
- NR Spiked compound recovery is not reported due to chromatographic interference
- NS The flagged analyte was not spiked into the sample
- M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria"  
**(Dioxin/Furan analysis only)**
- C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P The analyte was detected on both chromatographic columns but the quantified values differ by  $\geq 40\%$  RPD with no obvious chromatographic interference
- X Analyte signal includes interference from polychlorinated diphenyl ethers.  
**(Dioxin/Furan analysis only)**
- Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**



### **Geotechnical Data**

- A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F Samples were frozen prior to particle size determination
- SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W Weight of sample in some pipette aliquots was below the level required for accurate weighting





**Client:** Landau Associates

**ARI Job No.:** VE22

**Client Project:** Cornwall

**Client Project No.:** 0001020.400.510

### Case Narrative

1. Eight samples were submitted for analysis on July 31, 2012, and were in good condition. Each sample was received in eight 500 milliliters amber glass bottles, with a total of 32 liters for the entire job.
2. The samples were submitted for removal of solid particulate by means of centrifuging according to modified Corp of Engineers draft interim guide lines.
3. The samples were centrifuged in decontaminated 500mL glass bottles, in a pre-cooled centrifuge (4°C) at 1,000 x g for 30 minutes.
4. The supernatant water was decanted back into the original sample bottles and delivered to sample receiving for distribution.
5. There were no other anomalies in the sample or methods on this project.

Released by: *Guema Curtis*  
Geotechnical Laboratory Manager

Date: 8/2/12

Reviewed by: *Robert Noble*  
Technician

Date: August 2, 2012



# AQUATIC RESEARCH INCORPORATED

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

<b>CASE FILE NUMBER:</b>	<b>ARI098-45</b>	<b>PAGE 1</b>
<b>REPORT DATE:</b>	<b>08/16/12</b>	
<b>DATE SAMPLED:</b>	<b>07/30/12</b>	<b>DATE RECEIVED: 08/02/12</b>
<b>FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER</b>		
<b>SAMPLES FROM ANALYTICAL RESOURCES INC. / VE22</b>		

## CASE NARRATIVE

Eight water samples were received by the laboratory in good condition. Analysis was performed according to the chain of custody received with the samples. No difficulties were encountered in the preparation or analysis of these samples. Sample data follows while QA/QC data is contained on the following page.

## SAMPLE DATA

SAMPLE ID	LAB ID	TANNIN/LIGNIN (mg/L)
12-14520-VE22A	MW-15D-073012	1.46
12-14521-VE22B	MW-16S-073012	1.46
12-14522-VE22C	MW-15S-073012	1.95
12-14523-VE22D	MW-14S-073012	1.19
12-14524-VE22E	MW-13S-073012	1.07
12-14525-VE22F	MW-14D-073012	1.24
12-14526-VE22G	MW-13D-073012	1.12
12-14527-VE22H	MW-DUP-073012	1.22



# AQUATIC RESEARCH INCORPORATED

LABORATORY & CONSULTING SERVICES

3927 AURORA AVENUE NORTH, SEATTLE, WA 98103

PHONE: (206) 632-2715 FAX: (206) 632-2417

<b>CASE FILE NUMBER:</b>	<b>ARI098-45</b>	<b>PAGE 2</b>
<b>REPORT DATE:</b>	<b>08/16/12</b>	
<b>DATE SAMPLED:</b>	<b>07/30/12</b>	<b>DATE RECEIVED: 08/02/12</b>
<b>FINAL REPORT, LABORATORY ANALYSIS OF SELECTED PARAMETERS ON WATER</b>		
<b>SAMPLES FROM ANALYTICAL RESOURCES INC. / VE22</b>		

## QA/QC DATA

QC PARAMETER	TANNIN/LIGNIN (mg/L)
METHOD	SM5550
DATE ANALYZED	08/16/12
DETECTION LIMIT	0.010
DUPLICATE	
SAMPLE ID	MW-DUP-073012
ORIGINAL	1.22
DUPLICATE	1.22
RPD	0.00%
SPIKE SAMPLE	
SAMPLE ID	MW-DUP-073012
ORIGINAL	1.22
SPIKED SAMPLE	2.16
SPIKE ADDED	1.00
% RECOVERY	94.85%
QC CHECK	
FOUND	1.04
TRUE	1.00
% RECOVERY	103.58%
BLANK	<0.010

RPD = RELATIVE PERCENT DIFFERENCE

NA = NOT APPLICABLE OR NOT AVAILABLE

NC = NOT CALCULABLE DUE TO ONE OR MORE VALUES BEING BELOW THE DETECTION LIMIT

OR = RECOVERY NOT CALCULABLE DUE TO SPIKE SAMPLE OUT OF RANGE OR SPIKE TO LOW RELATIVE TOO SAMPLE CONCENTRATION

SUBMITTED BY:

*Damien Gadowski*

Damien Gadowski  
Project Manager

**SUBCONTRACTOR ANALYSIS REQUEST**  
**CUSTODY TRANSFER 07/31/12**



ARI Project: VE22

*AK1098-48*

Laboratory: Aquatic Research, Inc  
 Lab Contact: Steve Lazoff  
 Lab Address: 3927 Aurora Ave N.  
 Seattle, WA 98103  
 Phone: 206-632-2715  
 Fax: 206-632-2417

ARI Client: Landau Associates  
 Project ID: Cornwall  
 ARI PM: Kelly Bottem  
 Phone: 206-695-6211  
 Fax: 206-695-6201  
 Email: subdata@arilabs.com

Analytical Protocol: In-house  
 Special Instructions:

Requested Turn Around:  
 Email Results (Y/N): **email**

**Limits of Liability.** Subcontractor is expected to perform all requested services in accordance with appropriate methodology following Standard Operating Procedures that meet standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the negotiated amount for said services. The agreement by the Subcontractor to perform services requested by ARI releases ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Subcontractor.

ARI ID	Client ID/ Add'l ID	Sampled	Matrix	Bottles	Analyses
12-14520-VE22A	MW-15D-073012	07/30/12 10:50	Water	1	Tannins & Lignins
Special Instructions: None					
12-14521-VE22B	MW-16S-073012	07/30/12 12:15	Water	1	Tannins & Lignins
Special Instructions: None					
12-14522-VE22C	MW-15S-073012	07/30/12 12:20	Water	1	Tannins & Lignins
Special Instructions: None					
12-14523-VE22D	MW-14S-073012	07/30/12 13:50	Water	1	Tannins & Lignins
Special Instructions: None					
12-14524-VE22E	MW-13S-073012	07/30/12 15:05	Water	1	Tannins & Lignins
Special Instructions: None					
12-14525-VE22F	MW-14D-073012	07/30/12 15:40	Water	1	Tannins & Lignins
Special Instructions: None					
12-14526-VE22G	MW-13D-073012	07/30/12 16:25	Water	1	Tannins & Lignins
Special Instructions: None					

Carrier	Airbill		Date
Relinquished by	Company <i>ARI</i>	Date <i>8/2/12</i>	Time <i>1051</i>
Received by	Company <i>ARI</i>	Date <i>8/2/12</i>	Time <i>1051</i>

SUBCONTRACTOR ANALYSIS REQUEST  
CUSTODY TRANSFER 07/31/12



ARI Project: VE22

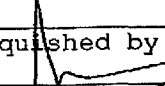

AR1098-45

Laboratory: Aquatic Research, Inc  
Lab Contact: Steve Lazoff

ARI Client: Landau Associates  
Project ID: 0001020.400.510

ARI Sample ID	Client Sample ID/ Add'l Sample ID	Sampled	Matrix	Bottles	Analyses
12-14527-VE22H	MW-DUP-073012	07/30/12	Water	1	Tannins & Lignins

Special Instructions: None

Carrier	Airbill	Date	
Relinquished by 	Company <i>ARI</i>	Date <i>8/2/12</i>	Time <i>1051</i>
Received by 	Company <i>ARI</i>	Date <i>8/2/12</i>	Time <i>1051</i>

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-15D-073012

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SAMPLE

Lab Sample ID: VE22A

QC Report No: VE22-Landau Associates

LIMS ID: 12-14520

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *MW*

Date Sampled: 07/30/12

Reported: 08/10/12

Date Received: 07/31/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/07/12 16:02

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>0.64</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>0.36</b>	

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-15D-073012**

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**SAMPLE**

Lab Sample ID: VE22A

QC Report No: VE22-Landau Associates

LIMS ID: 12-14520

Project: Cornwall

Matrix: Water

0001020.400.510

Date Analyzed: 08/07/12 16:02

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
<b>98-82-8</b>	<b>Isopropylbenzene</b>	<b>0.20</b>	<b>0.41</b>	
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.83</b>	
<b>99-87-6</b>	<b>4-Isopropyltoluene</b>	<b>0.20</b>	<b>1.4</b>	
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.26</b>	
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	99.2%
d8-Toluene	97.2%
Bromofluorobenzene	97.4%
d4-1,2-Dichlorobenzene	101%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-16S-073012**

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**SAMPLE**

Lab Sample ID: VE22B

QC Report No: VE22-Landau Associates

LIMS ID: 12-14521

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *mm*

Date Sampled: 07/30/12

Reported: 08/10/12

Date Received: 07/31/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/06/12 16:24

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U



**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-16S-073012

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SAMPLE

Lab Sample ID: VE22B

QC Report No: VE22-Landau Associates

LIMS ID: 12-14521

Project: Cornwall

Matrix: Water

0001020.400.510

Date Analyzed: 08/06/12 16:24

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	99.2%
d8-Toluene	97.9%
Bromofluorobenzene	100%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-15S-073012

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SAMPLE

Lab Sample ID: VE22C

QC Report No: VE22-Landau Associates

LIMS ID: 12-14522

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *MW*

Date Sampled: 07/30/12

Reported: 08/10/12

Date Received: 07/31/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/06/12 16:51

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
<b>71-43-2</b>	<b>Benzene</b>	<b>0.20</b>	<b>0.51</b>	
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>10</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.28</b>	
<b>95-50-1</b>	<b>1,2-Dichlorobenzene</b>	<b>0.20</b>	<b>0.32</b>	
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>3.2</b>	

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

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Sample ID: MW-15S-073012

SAMPLE

Lab Sample ID: VE22C

QC Report No: VE22-Landau Associates

LIMS ID: 12-14522

Project: Cornwall

Matrix: Water

0001020.400.510

Date Analyzed: 08/06/12 16:51

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
<b>95-63-6</b>	<b>1,2,4-Trimethylbenzene</b>	<b>0.20</b>	<b>0.26</b>	
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
<b>98-82-8</b>	<b>Isopropylbenzene</b>	<b>0.20</b>	<b>0.69</b>	
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
<b>98-06-6</b>	<b>tert-Butylbenzene</b>	<b>0.20</b>	<b>0.22</b>	
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>1.1</b>	
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.50</b>	<b>B</b>
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
<b>91-20-3</b>	<b>Naphthalene</b>	<b>0.50</b>	<b>7.6</b>	
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	100%
d8-Toluene	99.0%
Bromofluorobenzene	104%
d4-1,2-Dichlorobenzene	100%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-14S-073012**

Page 1 of 2

**SAMPLE**

Lab Sample ID: VE22D

QC Report No: VE22-Landau Associates

LIMS ID: 12-14523

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *mw*

Date Sampled: 07/30/12

Reported: 08/10/12

Date Received: 07/31/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/06/12 17:17

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
<b>71-43-2</b>	<b>Benzene</b>	<b>0.20</b>	<b>0.22</b>	
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>4.2</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.23</b>	
<b>95-50-1</b>	<b>1,2-Dichlorobenzene</b>	<b>0.20</b>	<b>0.24</b>	
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>1.9</b>	

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

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Sample ID: MW-14S-073012

SAMPLE

Lab Sample ID: VE22D

QC Report No: VE22-Landau Associates

LIMS ID: 12-14523

Project: Cornwall

Matrix: Water

0001020.400.510

Date Analyzed: 08/06/12 17:17

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
<b>98-82-8</b>	<b>Isopropylbenzene</b>	<b>0.20</b>	<b>0.23</b>	
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
<b>98-06-6</b>	<b>tert-Butylbenzene</b>	<b>0.20</b>	<b>0.22</b>	
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.96</b>	
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.38</b>	<b>B</b>
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	101%
d8-Toluene	98.4%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	105%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: MW-13S-073012

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SAMPLE

Lab Sample ID: VE22E

QC Report No: VE22-Landau Associates

LIMS ID: 12-14524

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *WW*

Date Sampled: 07/30/12

Reported: 08/10/12

Date Received: 07/31/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/06/12 17:44

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>1.6</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.25</b>	
<b>95-50-1</b>	<b>1,2-Dichlorobenzene</b>	<b>0.20</b>	<b>0.20</b>	
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>0.73</b>	

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

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**Sample ID: MW-13S-073012**

**SAMPLE**

Lab Sample ID: VE22E

QC Report No: VE22-Landau Associates

LIMS ID: 12-14524

Project: Cornwall

Matrix: Water

0001020.400.510

Date Analyzed: 08/06/12 17:44

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.35</b>	
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.25</b>	<b>B</b>
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
<b>91-20-3</b>	<b>Naphthalene</b>	<b>0.50</b>	<b>0.50</b>	
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	99.5%
d8-Toluene	98.3%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	104%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-14D-073012**

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**SAMPLE**

Lab Sample ID: VE22F

QC Report No: VE22-Landau Associates

LIMS ID: 12-14525

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *MW*

Date Sampled: 07/30/12

Reported: 08/10/12

Date Received: 07/31/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/06/12 18:10

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>3.6</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
<b>179601-23-1</b>	<b>m,p-Xylene</b>	<b>0.40</b>	<b>1.1</b>	
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.50</b>	
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>0.38</b>	



**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-14D-073012**

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**SAMPLE**

Lab Sample ID: VE22F

QC Report No: VE22-Landau Associates

LIMS ID: 12-14525

Project: Cornwall

Matrix: Water

0001020.400.510

Date Analyzed: 08/06/12 18:10

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.42</b>	
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	100%
d8-Toluene	98.9%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-13D-073012**

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**SAMPLE**

Lab Sample ID: VE22G

QC Report No: VE22-Landau Associates

LIMS ID: 12-14526

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *MW*

Date Sampled: 07/30/12

Reported: 08/10/12

Date Received: 07/31/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/06/12 18:37

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
<b>108-88-3</b>	<b>Toluene</b>	<b>0.20</b>	<b>0.20</b>	
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>0.30</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.31</b>	
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>0.24</b>	

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

Page 2 of 2

Sample ID: MW-13D-073012

SAMPLE

Lab Sample ID: VE22G

QC Report No: VE22-Landau Associates

LIMS ID: 12-14526

Project: Cornwall

Matrix: Water

0001020.400.510

Date Analyzed: 08/06/12 18:37

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
<b>98-82-8</b>	<b>Isopropylbenzene</b>	<b>0.20</b>	<b>0.40</b>	
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.66</b>	
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.33</b>	<b>B</b>
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
<b>91-20-3</b>	<b>Naphthalene</b>	<b>0.50</b>	<b>0.66</b>	
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	101%
d8-Toluene	98.8%
Bromofluorobenzene	103%
d4-1,2-Dichlorobenzene	105%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-DUP-073012**

Page 1 of 2

**SAMPLE**

Lab Sample ID: VE22H

QC Report No: VE22-Landau Associates

LIMS ID: 12-14527

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *MMW*

Date Sampled: 07/30/12

Reported: 08/10/12

Date Received: 07/31/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/06/12 19:03

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
<b>108-90-7</b>	<b>Chlorobenzene</b>	<b>0.20</b>	<b>3.4</b>	
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
<b>179601-23-1</b>	<b>m,p-Xylene</b>	<b>0.40</b>	<b>1.1</b>	
<b>95-47-6</b>	<b>o-Xylene</b>	<b>0.20</b>	<b>0.52</b>	
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>0.20</b>	<b>0.38</b>	

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MW-DUP-073012**

Page 2 of 2

**SAMPLE**

Lab Sample ID: VE22H

QC Report No: VE22-Landau Associates

LIMS ID: 12-14527

Project: Cornwall

Matrix: Water

0001020.400.510

Date Analyzed: 08/06/12 19:03

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
<b>135-98-8</b>	<b>sec-Butylbenzene</b>	<b>0.20</b>	<b>0.46</b>	
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	101%
d8-Toluene	100%
Bromofluorobenzene	101%
d4-1,2-Dichlorobenzene	102%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: Trip Blanks  
SAMPLE**

Page 1 of 2

Lab Sample ID: VE22I

QC Report No: VE22-Landau Associates

LIMS ID: 12-14528

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *TNW*

Date Sampled: 07/30/12

Reported: 08/10/12

Date Received: 07/31/12

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/06/12 19:30

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: Trip Blanks  
SAMPLE**

Page 2 of 2

Lab Sample ID: VE22I

QC Report No: VE22-Landau Associates

LIMS ID: 12-14528

Project: Cornwall

Matrix: Water

0001020.400.510

Date Analyzed: 08/06/12 19:30

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	101%
d8-Toluene	99.5%
Bromofluorobenzene	102%
d4-1,2-Dichlorobenzene	105%

2-Chloroethylvinylether is an acid labile compound and may not be recovered from an acid preserved sample.

EPA SW-846 indicates that vinyl chloride and styrene may degrade in the presence of acid preservative.

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MB-080712A**

Page 1 of 2

**METHOD BLANK**

Lab Sample ID: MB-080712A

QC Report No: VE22-Landau Associates

LIMS ID: 12-14520

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *MMW*

Date Sampled: NA

Reported: 08/10/12

Date Received: NA

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/07/12 11:56

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U



**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MB-080712A**

Page 2 of 2

**METHOD BLANK**

Lab Sample ID: MB-080712A

QC Report No: VE22-Landau Associates

LIMS ID: 12-14520

Project: Cornwall

Matrix: Water

0001020.400.510

Date Analyzed: 08/07/12 11:56

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
87-68-3	Hexachlorobutadiene	0.50	< 0.50	U
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
104-51-8	n-Butylbenzene	0.20	< 0.20	U
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	98.7%
d8-Toluene	96.7%
Bromofluorobenzene	97.7%
d4-1,2-Dichlorobenzene	100%

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: MB-080612A**

Page 1 of 2

**METHOD BLANK**

Lab Sample ID: MB-080612A

QC Report No: VE22-Landau Associates

LIMS ID: 12-14521

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *MMW*

Date Sampled: NA

Reported: 08/10/12

Date Received: NA

Instrument/Analyst: NT2/PKC

Sample Amount: 10.0 mL

Date Analyzed: 08/06/12 10:53

Purge Volume: 10.0 mL

CAS Number	Analyte	LOQ	Result	Q
74-87-3	Chloromethane	0.50	< 0.50	U
74-83-9	Bromomethane	1.0	< 1.0	U
75-01-4	Vinyl Chloride	0.20	< 0.20	U
75-00-3	Chloroethane	0.20	< 0.20	U
75-09-2	Methylene Chloride	1.0	< 1.0	U
67-64-1	Acetone	5.0	< 5.0	U
75-15-0	Carbon Disulfide	0.20	< 0.20	U
75-35-4	1,1-Dichloroethene	0.20	< 0.20	U
75-34-3	1,1-Dichloroethane	0.20	< 0.20	U
156-60-5	trans-1,2-Dichloroethene	0.20	< 0.20	U
156-59-2	cis-1,2-Dichloroethene	0.20	< 0.20	U
67-66-3	Chloroform	0.20	< 0.20	U
107-06-2	1,2-Dichloroethane	0.20	< 0.20	U
78-93-3	2-Butanone	5.0	< 5.0	U
71-55-6	1,1,1-Trichloroethane	0.20	< 0.20	U
56-23-5	Carbon Tetrachloride	0.20	< 0.20	U
108-05-4	Vinyl Acetate	0.20	< 0.20	U
75-27-4	Bromodichloromethane	0.20	< 0.20	U
78-87-5	1,2-Dichloropropane	0.20	< 0.20	U
10061-01-5	cis-1,3-Dichloropropene	0.20	< 0.20	U
79-01-6	Trichloroethene	0.20	< 0.20	U
124-48-1	Dibromochloromethane	0.20	< 0.20	U
79-00-5	1,1,2-Trichloroethane	0.20	< 0.20	U
71-43-2	Benzene	0.20	< 0.20	U
10061-02-6	trans-1,3-Dichloropropene	0.20	< 0.20	U
110-75-8	2-Chloroethylvinylether	1.0	< 1.0	U
75-25-2	Bromoform	0.20	< 0.20	U
108-10-1	4-Methyl-2-Pentanone (MIBK)	5.0	< 5.0	U
591-78-6	2-Hexanone	5.0	< 5.0	U
127-18-4	Tetrachloroethene	0.20	< 0.20	U
79-34-5	1,1,2,2-Tetrachloroethane	0.20	< 0.20	U
108-88-3	Toluene	0.20	< 0.20	U
108-90-7	Chlorobenzene	0.20	< 0.20	U
100-41-4	Ethylbenzene	0.20	< 0.20	U
100-42-5	Styrene	0.20	< 0.20	U
75-69-4	Trichlorofluoromethane	0.20	< 0.20	U
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	0.20	< 0.20	U
179601-23-1	m,p-Xylene	0.40	< 0.40	U
95-47-6	o-Xylene	0.20	< 0.20	U
95-50-1	1,2-Dichlorobenzene	0.20	< 0.20	U
541-73-1	1,3-Dichlorobenzene	0.20	< 0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	< 0.20	U

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

Page 2 of 2

Sample ID: MB-080612A

METHOD BLANK

Lab Sample ID: MB-080612A

QC Report No: VE22-Landau Associates

LIMS ID: 12-14521

Project: Cornwall

Matrix: Water

0001020.400.510

Date Analyzed: 08/06/12 10:53

CAS Number	Analyte	LOQ	Result	Q
107-02-8	Acrolein	5.0	< 5.0	U
74-88-4	Methyl Iodide	1.0	< 1.0	U
74-96-4	Bromoethane	0.20	< 0.20	U
107-13-1	Acrylonitrile	1.0	< 1.0	U
563-58-6	1,1-Dichloropropene	0.20	< 0.20	U
74-95-3	Dibromomethane	0.20	< 0.20	U
630-20-6	1,1,1,2-Tetrachloroethane	0.20	< 0.20	U
96-12-8	1,2-Dibromo-3-chloropropane	0.50	< 0.50	U
96-18-4	1,2,3-Trichloropropane	0.50	< 0.50	U
110-57-6	trans-1,4-Dichloro-2-butene	1.0	< 1.0	U
108-67-8	1,3,5-Trimethylbenzene	0.20	< 0.20	U
95-63-6	1,2,4-Trimethylbenzene	0.20	< 0.20	U
<b>87-68-3</b>	<b>Hexachlorobutadiene</b>	<b>0.50</b>	<b>0.45</b>	<b>J</b>
106-93-4	Ethylene Dibromide	0.20	< 0.20	U
74-97-5	Bromochloromethane	0.20	< 0.20	U
594-20-7	2,2-Dichloropropane	0.20	< 0.20	U
142-28-9	1,3-Dichloropropane	0.20	< 0.20	U
98-82-8	Isopropylbenzene	0.20	< 0.20	U
103-65-1	n-Propylbenzene	0.20	< 0.20	U
108-86-1	Bromobenzene	0.20	< 0.20	U
95-49-8	2-Chlorotoluene	0.20	< 0.20	U
106-43-4	4-Chlorotoluene	0.20	< 0.20	U
98-06-6	tert-Butylbenzene	0.20	< 0.20	U
135-98-8	sec-Butylbenzene	0.20	< 0.20	U
99-87-6	4-Isopropyltoluene	0.20	< 0.20	U
<b>104-51-8</b>	<b>n-Butylbenzene</b>	<b>0.20</b>	<b>0.16</b>	<b>J</b>
120-82-1	1,2,4-Trichlorobenzene	0.50	< 0.50	U
91-20-3	Naphthalene	0.50	< 0.50	U
87-61-6	1,2,3-Trichlorobenzene	0.50	< 0.50	U

Reported in µg/L (ppb)

**Volatile Surrogate Recovery**

d4-1,2-Dichloroethane	99.7%
d8-Toluene	98.9%
Bromofluorobenzene	98.4%
d4-1,2-Dichlorobenzene	101%

**VOA SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510

<u>ARI ID</u>	<u>Client ID</u>	<u>PV</u>	<u>DCE</u>	<u>TOL</u>	<u>BFB</u>	<u>DCB</u>	<u>TOT OUT</u>
MB-080712A	Method Blank	10	98.7%	96.7%	97.7%	100%	0
LCS-080712A	Lab Control	10	99.9%	99.2%	98.6%	99.9%	0
LCSD-080712A	Lab Control Dup	10	101%	99.8%	99.0%	102%	0
VE22A	MW-15D-073012	10	99.2%	97.2%	97.4%	101%	0
MB-080612A	Method Blank	10	99.7%	98.9%	98.4%	101%	0
LCS-080612A	Lab Control	10	99.0%	99.6%	99.9%	100%	0
LCSD-080612A	Lab Control Dup	10	100%	100%	100%	101%	0
VE22B	MW-16S-073012	10	99.2%	97.9%	100%	102%	0
VE22C	MW-15S-073012	10	100%	99.0%	104%	100%	0
VE22D	MW-14S-073012	10	101%	98.4%	102%	105%	0
VE22E	MW-13S-073012	10	99.5%	98.3%	103%	104%	0
VE22F	MW-14D-073012	10	100%	98.9%	103%	102%	0
VE22G	MW-13D-073012	10	101%	98.8%	103%	105%	0
VE22H	MW-DUP-073012	10	101%	100%	101%	102%	0
VE22I	Trip Blanks	10	101%	99.5%	102%	105%	0

**LCS/MB LIMITS**

**QC LIMITS**

**SW8260C**

(DCE) = d4-1,2-Dichloroethane	(80-120)	(80-130)
(TOL) = d8-Toluene	(80-120)	(80-120)
(BFB) = Bromofluorobenzene	(80-120)	(80-120)
(DCB) = d4-1,2-Dichlorobenzene	(80-120)	(80-120)

Prep Method: SW5030B  
Log Number Range: 12-14520 to 12-14528

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: LCS-080712A**

Page 1 of 2

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-080712A

QC Report No: VE22-Landau Associates

LIMS ID: 12-14520

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *MW*

Date Sampled: NA

Reported: 08/10/12

Date Received: NA

Instrument/Analyst LCS: NT2/PKC

Sample Amount LCS: 10.0 mL

LCSD: NT2/PKC

LCSD: 10.0 mL

Date Analyzed LCS: 08/07/12 10:25

Purge Volume LCS: 10.0 mL

LCSD: 08/07/12 10:52

LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	8.72	10.0	87.2%	8.42	10.0	84.2%	3.5%
Bromomethane	8.94	10.0	89.4%	8.87	10.0	88.7%	0.8%
Vinyl Chloride	8.94	10.0	89.4%	8.67	10.0	86.7%	3.1%
Chloroethane	9.00	10.0	90.0%	8.75	10.0	87.5%	2.8%
Methylene Chloride	8.84	10.0	88.4%	8.50	10.0	85.0%	3.9%
Acetone	45.5	50.0	91.0%	45.6	50.0	91.2%	0.2%
Carbon Disulfide	9.30	10.0	93.0%	8.96	10.0	89.6%	3.7%
1,1-Dichloroethene	9.33	10.0	93.3%	9.12	10.0	91.2%	2.3%
1,1-Dichloroethane	9.29	10.0	92.9%	8.95	10.0	89.5%	3.7%
trans-1,2-Dichloroethene	8.73	10.0	87.3%	8.56	10.0	85.6%	2.0%
cis-1,2-Dichloroethene	8.99	10.0	89.9%	8.73	10.0	87.3%	2.9%
Chloroform	9.43	10.0	94.3%	9.11	10.0	91.1%	3.5%
1,2-Dichloroethane	9.63	10.0	96.3%	9.54	10.0	95.4%	0.9%
2-Butanone	45.3	50.0	90.6%	44.7	50.0	89.4%	1.3%
1,1,1-Trichloroethane	9.65	10.0	96.5%	9.25	10.0	92.5%	4.2%
Carbon Tetrachloride	9.88	10.0	98.8%	9.75	10.0	97.5%	1.3%
Vinyl Acetate	8.80	10.0	88.0%	8.56	10.0	85.6%	2.8%
Bromodichloromethane	9.79	10.0	97.9%	9.54	10.0	95.4%	2.6%
1,2-Dichloropropane	9.24	10.0	92.4%	9.14	10.0	91.4%	1.1%
cis-1,3-Dichloropropene	9.61	10.0	96.1%	9.35	10.0	93.5%	2.7%
Trichloroethene	9.58	10.0	95.8%	9.43	10.0	94.3%	1.6%
Dibromochloromethane	10.3	10.0	103%	9.84	10.0	98.4%	4.6%
1,1,2-Trichloroethane	9.59	10.0	95.9%	9.35	10.0	93.5%	2.5%
Benzene	9.31	10.0	93.1%	9.20	10.0	92.0%	1.2%
trans-1,3-Dichloropropene	9.74	10.0	97.4%	9.52	10.0	95.2%	2.3%
2-Chloroethylvinylether	9.04	10.0	90.4%	8.77	10.0	87.7%	3.0%
Bromoform	10.4	10.0	104%	9.85	10.0	98.5%	5.4%
4-Methyl-2-Pentanone (MIBK)	46.5	50.0	93.0%	45.8	50.0	91.6%	1.5%
2-Hexanone	47.9	50.0	95.8%	46.1	50.0	92.2%	3.8%
Tetrachloroethene	10.0	10.0	100%	9.56	10.0	95.6%	4.5%
1,1,2,2-Tetrachloroethane	9.47	10.0	94.7%	9.28	10.0	92.8%	2.0%
Toluene	9.57	10.0	95.7%	9.36	10.0	93.6%	2.2%
Chlorobenzene	10.1	10.0	101%	9.72	10.0	97.2%	3.8%
Ethylbenzene	9.91	10.0	99.1%	9.56	10.0	95.6%	3.6%
Styrene	10.0	10.0	100%	9.42	10.0	94.2%	6.0%
Trichlorofluoromethane	9.90	10.0	99.0%	9.50	10.0	95.0%	4.1%
1,1,2-Trichloro-1,2,2-trifluoroethane	9.56	10.0	95.6%	9.14	10.0	91.4%	4.5%
m,p-Xylene	20.3	20.0	102%	19.6	20.0	98.0%	3.5%
o-Xylene	10.1	10.0	101%	9.86	10.0	98.6%	2.4%
1,2-Dichlorobenzene	9.91	10.0	99.1%	9.90	10.0	99.0%	0.1%
1,3-Dichlorobenzene	9.91	10.0	99.1%	9.74	10.0	97.4%	1.7%
1,4-Dichlorobenzene	9.96	10.0	99.6%	9.71	10.0	97.1%	2.5%
Acrolein	42.0 Q	50.0	84.0%	41.4 Q	50.0	82.8%	1.4%
Methyl Iodide	9.58	10.0	95.8%	9.23	10.0	92.3%	3.7%
Bromoethane	9.56	10.0	95.6%	9.20	10.0	92.0%	3.8%
Acrylonitrile	8.43	10.0	84.3%	8.34	10.0	83.4%	1.1%
1,1-Dichloropropene	9.48	10.0	94.8%	9.31	10.0	93.1%	1.8%
Dibromomethane	9.72	10.0	97.2%	9.65	10.0	96.5%	0.7%

**ORGANICS ANALYSIS DATA SHEET**

Volatiles by Purge & Trap GC/MS-Method SW8260C

Sample ID: LCS-080712A

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LAB CONTROL SAMPLE

Lab Sample ID: LCS-080712A

QC Report No: VE22-Landau Associates

LIMS ID: 12-14520

Project: Cornwall

Matrix: Water

0001020.400.510

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1,1,2-Tetrachloroethane	10.3	10.0	103%	10.1	10.0	101%	2.0%
1,2-Dibromo-3-chloropropane	8.63	10.0	86.3%	8.75	10.0	87.5%	1.4%
1,2,3-Trichloropropane	9.89	10.0	98.9%	9.54	10.0	95.4%	3.6%
trans-1,4-Dichloro-2-butene	9.35	10.0	93.5%	8.77	10.0	87.7%	6.4%
1,3,5-Trimethylbenzene	9.97	10.0	99.7%	9.81	10.0	98.1%	1.6%
1,2,4-Trimethylbenzene	10.0	10.0	100%	9.84	10.0	98.4%	1.6%
Hexachlorobutadiene	8.87	10.0	88.7%	9.25	10.0	92.5%	4.2%
Ethylene Dibromide	9.76	10.0	97.6%	9.46	10.0	94.6%	3.1%
Bromochloromethane	9.39	10.0	93.9%	8.96	10.0	89.6%	4.7%
2,2-Dichloropropane	9.42	10.0	94.2%	9.03	10.0	90.3%	4.2%
1,3-Dichloropropane	9.78	10.0	97.8%	9.32	10.0	93.2%	4.8%
Isopropylbenzene	9.85	10.0	98.5%	9.53	10.0	95.3%	3.3%
n-Propylbenzene	9.91	10.0	99.1%	9.61	10.0	96.1%	3.1%
Bromobenzene	9.79	10.0	97.9%	9.39	10.0	93.9%	4.2%
2-Chlorotoluene	9.88	10.0	98.8%	9.57	10.0	95.7%	3.2%
4-Chlorotoluene	9.82	10.0	98.2%	9.58	10.0	95.8%	2.5%
tert-Butylbenzene	10.2	10.0	102%	10.0	10.0	100%	2.0%
sec-Butylbenzene	9.96	10.0	99.6%	9.87	10.0	98.7%	0.9%
4-Isopropyltoluene	9.95	10.0	99.5%	9.92	10.0	99.2%	0.3%
n-Butylbenzene	9.49	10.0	94.9%	9.41	10.0	94.1%	0.8%
1,2,4-Trichlorobenzene	8.82	10.0	88.2%	9.25	10.0	92.5%	4.8%
Naphthalene	8.53	10.0	85.3%	8.95	10.0	89.5%	4.8%
1,2,3-Trichlorobenzene	8.28	10.0	82.8%	8.90	10.0	89.0%	7.2%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**Volatile Surrogate Recovery**

	LCS	LCSD
d4-1,2-Dichloroethane	99.9%	101%
d8-Toluene	99.2%	99.8%
Bromofluorobenzene	98.6%	99.0%
d4-1,2-Dichlorobenzene	99.9%	102%

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: LCS-080612A**

Page 1 of 2

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-080612A

QC Report No: VE22-Landau Associates

LIMS ID: 12-14521

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *MM*

Date Sampled: NA

Reported: 08/10/12

Date Received: NA

Instrument/Analyst LCS: NT2/PKC

Sample Amount LCS: 10.0 mL

LCSD: NT2/PKC

LCSD: 10.0 mL

Date Analyzed LCS: 08/06/12 09:59

Purge Volume LCS: 10.0 mL

LCSD: 08/06/12 10:26

LCSD: 10.0 mL

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Chloromethane	9.61	10.0	96.1%	9.55	10.0	95.5%	0.6%
Bromomethane	9.38	10.0	93.8%	9.27	10.0	92.7%	1.2%
Vinyl Chloride	9.60	10.0	96.0%	9.70	10.0	97.0%	1.0%
Chloroethane	9.67	10.0	96.7%	9.70	10.0	97.0%	0.3%
Methylene Chloride	9.33	10.0	93.3%	9.43	10.0	94.3%	1.1%
Acetone	51.4	50.0	103%	50.6	50.0	101%	1.6%
Carbon Disulfide	9.83	10.0	98.3%	9.93	10.0	99.3%	1.0%
1,1-Dichloroethene	9.87	10.0	98.7%	9.99	10.0	99.9%	1.2%
1,1-Dichloroethane	9.91	10.0	99.1%	9.90	10.0	99.0%	0.1%
trans-1,2-Dichloroethene	9.20	10.0	92.0%	9.31	10.0	93.1%	1.2%
cis-1,2-Dichloroethene	9.42	10.0	94.2%	9.51	10.0	95.1%	1.0%
Chloroform	9.84	10.0	98.4%	9.93	10.0	99.3%	0.9%
1,2-Dichloroethane	10.1	10.0	101%	10.1	10.0	101%	0.0%
2-Butanone	52.7	50.0	105%	51.9	50.0	104%	1.5%
1,1,1-Trichloroethane	9.73	10.0	97.3%	9.87	10.0	98.7%	1.4%
Carbon Tetrachloride	10.2	10.0	102%	10.2	10.0	102%	0.0%
Vinyl Acetate	10.0	10.0	100%	9.99	10.0	99.9%	0.1%
Bromodichloromethane	10.3	10.0	103%	10.4	10.0	104%	1.0%
1,2-Dichloropropane	9.81	10.0	98.1%	9.91	10.0	99.1%	1.0%
cis-1,3-Dichloropropene	10.3	10.0	103%	10.2	10.0	102%	1.0%
Trichloroethene	9.98	10.0	99.8%	9.93	10.0	99.3%	0.5%
Dibromochloromethane	10.7	10.0	107%	10.7	10.0	107%	0.0%
1,1,2-Trichloroethane	10.2	10.0	102%	10.2	10.0	102%	0.0%
Benzene	9.74	10.0	97.4%	9.84	10.0	98.4%	1.0%
trans-1,3-Dichloropropene	10.4	10.0	104%	10.5	10.0	105%	1.0%
2-Chloroethylvinylether	10.3	10.0	103%	10.2	10.0	102%	1.0%
Bromoform	11.0	10.0	110%	11.1	10.0	111%	0.9%
4-Methyl-2-Pentanone (MIBK)	51.0	50.0	102%	51.5	50.0	103%	1.0%
2-Hexanone	51.3	50.0	103%	51.0	50.0	102%	0.6%
Tetrachloroethene	9.98	10.0	99.8%	9.99	10.0	99.9%	0.1%
1,1,2,2-Tetrachloroethane	9.86	10.0	98.6%	9.81	10.0	98.1%	0.5%
Toluene	10.1	10.0	101%	10.0	10.0	100%	1.0%
Chlorobenzene	10.0	10.0	100%	10.1	10.0	101%	1.0%
Ethylbenzene	9.94	10.0	99.4%	9.88	10.0	98.8%	0.6%
Styrene	10.1	10.0	101%	9.97	10.0	99.7%	1.3%
Trichlorofluoromethane	10.1	10.0	101%	10.1	10.0	101%	0.0%
1,1,2-Trichloro-1,2,2-trifluoroethane	10.0	10.0	100%	10.1	10.0	101%	1.0%
m,p-Xylene	20.3	20.0	102%	20.2	20.0	101%	0.5%
o-Xylene	10.1	10.0	101%	10.0	10.0	100%	1.0%
1,2-Dichlorobenzene	9.89	10.0	98.9%	9.78	10.0	97.8%	1.1%
1,3-Dichlorobenzene	9.73	10.0	97.3%	9.82	10.0	98.2%	0.9%
1,4-Dichlorobenzene	9.79	10.0	97.9%	9.79	10.0	97.9%	0.0%
Acrolein	49.0	50.0	98.0%	48.1	50.0	96.2%	1.9%
Methyl Iodide	9.96	10.0	99.6%	10.0	10.0	100%	0.4%
Bromoethane	9.82	10.0	98.2%	9.81	10.0	98.1%	0.1%
Acrylonitrile	9.73	10.0	97.3%	9.42	10.0	94.2%	3.2%
1,1-Dichloropropene	9.82	10.0	98.2%	9.93	10.0	99.3%	1.1%
Dibromomethane	10.2	10.0	102%	10.3	10.0	103%	1.0%

**ORGANICS ANALYSIS DATA SHEET**

**Volatiles by Purge & Trap GC/MS-Method SW8260C**

**Sample ID: LCS-080612A**

Page 2 of 2

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-080612A

QC Report No: VE22-Landau Associates

LIMS ID: 12-14521

Project: Cornwall

Matrix: Water

0001020.400.510

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
1,1,1,2-Tetrachloroethane	10.4	10.0	104%	10.3	10.0	103%	1.0%
1,2-Dibromo-3-chloropropane	9.84	10.0	98.4%	9.18	10.0	91.8%	6.9%
1,2,3-Trichloropropane	10.0	10.0	100%	10.0	10.0	100%	0.0%
trans-1,4-Dichloro-2-butene	10.1	10.0	101%	9.71	10.0	97.1%	3.9%
1,3,5-Trimethylbenzene	9.97	10.0	99.7%	10.0	10.0	100%	0.3%
1,2,4-Trimethylbenzene	9.87	10.0	98.7%	9.86	10.0	98.6%	0.1%
Hexachlorobutadiene	9.67 B	10.0	96.7%	9.51 B	10.0	95.1%	1.7%
Ethylene Dibromide	10.2	10.0	102%	10.2	10.0	102%	0.0%
Bromochloromethane	10.0	10.0	100%	9.97	10.0	99.7%	0.3%
2,2-Dichloropropane	9.34	10.0	93.4%	9.40	10.0	94.0%	0.6%
1,3-Dichloropropane	10.1	10.0	101%	10.1	10.0	101%	0.0%
Isopropylbenzene	9.77	10.0	97.7%	9.93	10.0	99.3%	1.6%
n-Propylbenzene	9.88	10.0	98.8%	9.99	10.0	99.9%	1.1%
Bromobenzene	9.75	10.0	97.5%	9.89	10.0	98.9%	1.4%
2-Chlorotoluene	9.71	10.0	97.1%	9.81	10.0	98.1%	1.0%
4-Chlorotoluene	9.79	10.0	97.9%	9.88	10.0	98.8%	0.9%
tert-Butylbenzene	10.1	10.0	101%	10.1	10.0	101%	0.0%
sec-Butylbenzene	9.95	10.0	99.5%	9.93	10.0	99.3%	0.2%
4-Isopropyltoluene	9.92	10.0	99.2%	9.95	10.0	99.5%	0.3%
n-Butylbenzene	9.58 B	10.0	95.8%	9.47 B	10.0	94.7%	1.2%
1,2,4-Trichlorobenzene	9.61	10.0	96.1%	9.52	10.0	95.2%	0.9%
Naphthalene	9.74	10.0	97.4%	9.37	10.0	93.7%	3.9%
1,2,3-Trichlorobenzene	9.69	10.0	96.9%	9.45	10.0	94.5%	2.5%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**Volatile Surrogate Recovery**

	LCS	LCSD
d4-1,2-Dichloroethane	99.0%	100%
d8-Toluene	99.6%	100%
Bromofluorobenzene	99.9%	100%
d4-1,2-Dichlorobenzene	100%	101%



**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-15D-073012**  
**SAMPLE**

Lab Sample ID: VE22A  
 LIMS ID: 12-14520  
 Matrix: Water  
 Data Release Authorized: *CB*  
 Reported: 08/06/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/03/12 21:25  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-15D-073012**  
**SAMPLE**

Lab Sample ID: VE22A  
 LIMS ID: 12-14520  
 Matrix: Water  
 Date Analyzed: 08/03/12 21:25

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>2.5</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	58.4%	2-Fluorobiphenyl	53.2%
d14-p-Terphenyl	56.4%	d4-1,2-Dichlorobenzene	36.9%
d5-Phenol	62.7%	2-Fluorophenol	58.9%
2,4,6-Tribromophenol	81.6%	d4-2-Chlorophenol	62.9%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-16S-073012**  
**SAMPLE**

Lab Sample ID: VE22B  
 LIMS ID: 12-14521  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 08/06/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/03/12 21:59  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-16S-073012**  
**SAMPLE**

Lab Sample ID: VE22B  
 LIMS ID: 12-14521  
 Matrix: Water  
 Date Analyzed: 08/03/12 21:59

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>2.4</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	61.6%	2-Fluorobiphenyl	54.4%
d14-p-Terphenyl	65.6%	d4-1,2-Dichlorobenzene	38.4%
d5-Phenol	64.0%	2-Fluorophenol	60.3%
2,4,6-Tribromophenol	85.6%	d4-2-Chlorophenol	64.0%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-15S-073012**  
**SAMPLE**

Lab Sample ID: VE22C  
 LIMS ID: 12-14522  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 08/06/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/03/12 22:33  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
<b>106-46-7</b>	<b>1,4-Dichlorobenzene</b>	<b>1.0</b>	<b>1.4</b>
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
<b>91-20-3</b>	<b>Naphthalene</b>	<b>1.0</b>	<b>3.4</b>
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
<b>91-57-6</b>	<b>2-Methylnaphthalene</b>	<b>1.0</b>	<b>2.5</b>
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
<b>83-32-9</b>	<b>Acenaphthene</b>	<b>1.0</b>	<b>1.2</b>
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-15S-073012**  
**SAMPLE**

Lab Sample ID: VE22C  
 LIMS ID: 12-14522  
 Matrix: Water  
 Date Analyzed: 08/03/12 22:33

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
<b>86-73-7</b>	<b>Fluorene</b>	<b>1.0</b>	<b>1.1</b>
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
<b>85-01-8</b>	<b>Phenanthrene</b>	<b>1.0</b>	<b>1.4</b>
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>3.0</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
<b>90-12-0</b>	<b>1-Methylnaphthalene</b>	<b>1.0</b>	<b>2.8</b>
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	62.0%	2-Fluorobiphenyl	56.4%
d14-p-Terphenyl	73.6%	d4-1,2-Dichlorobenzene	40.8%
d5-Phenol	66.4%	2-Fluorophenol	61.9%
2,4,6-Tribromophenol	86.9%	d4-2-Chlorophenol	65.6%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-14S-073012**  
**SAMPLE**

Lab Sample ID: VE22D  
 LIMS ID: 12-14523  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 08/06/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/03/12 23:07  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-14S-073012**  
**SAMPLE**

Lab Sample ID: VE22D  
 LIMS ID: 12-14523  
 Matrix: Water  
 Date Analyzed: 08/03/12 23:07

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>2.2</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	58.8%	2-Fluorobiphenyl	53.2%
d14-p-Terphenyl	59.6%	d4-1,2-Dichlorobenzene	39.8%
d5-Phenol	61.1%	2-Fluorophenol	58.1%
2,4,6-Tribromophenol	80.3%	d4-2-Chlorophenol	61.3%



**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-13S-073012**  
**SAMPLE**

Lab Sample ID: VE22E  
 LIMS ID: 12-14524  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 08/06/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/06/12 13:04  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-13S-073012**  
**SAMPLE**

Lab Sample ID: VE22E  
 LIMS ID: 12-14524  
 Matrix: Water  
 Date Analyzed: 08/06/12 13:04

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>2.5</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	59.2%	2-Fluorobiphenyl	54.4%
d14-p-Terphenyl	69.2%	d4-1,2-Dichlorobenzene	41.2%
d5-Phenol	62.7%	2-Fluorophenol	59.7%
2,4,6-Tribromophenol	82.1%	d4-2-Chlorophenol	62.9%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-14D-073012**  
**SAMPLE**

Lab Sample ID: VE22F  
 LIMS ID: 12-14525  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 08/06/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/06/12 13:38  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-14D-073012**  
**SAMPLE**

Lab Sample ID: VE22F  
 LIMS ID: 12-14525  
 Matrix: Water  
 Date Analyzed: 08/06/12 13:38

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>2.2</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U


Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	67.2%	2-Fluorobiphenyl	61.6%
d14-p-Terphenyl	77.6%	d4-1,2-Dichlorobenzene	44.0%
d5-Phenol	70.4%	2-Fluorophenol	66.9%
2,4,6-Tribromophenol	92.8%	d4-2-Chlorophenol	71.2%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-13D-073012**  
**SAMPLE**

Lab Sample ID: VE22G  
 LIMS ID: 12-14526  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 08/06/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/06/12 14:13  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-13D-073012**  
**SAMPLE**

Lab Sample ID: VE22G  
 LIMS ID: 12-14526  
 Matrix: Water  
 Date Analyzed: 08/06/12 14:13

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>2.1</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	62.4%	2-Fluorobiphenyl	60.8%
d14-p-Terphenyl	75.2%	d4-1,2-Dichlorobenzene	44.8%
d5-Phenol	64.0%	2-Fluorophenol	60.3%
2,4,6-Tribromophenol	86.1%	d4-2-Chlorophenol	64.3%

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MW-DUP-073012**  
**SAMPLE**

Lab Sample ID: VE22H  
 LIMS ID: 12-14527  
 Matrix: Water  
 Data Release Authorized:  
 Reported: 08/06/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/06/12 14:47  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MW-DUP-073012**  
**SAMPLE**

Lab Sample ID: VE22H  
 LIMS ID: 12-14527  
 Matrix: Water  
 Date Analyzed: 08/06/12 14:47

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
<b>117-81-7</b>	<b>bis(2-Ethylhexyl)phthalate</b>	<b>1.0</b>	<b>1.9</b>
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	54.0%	2-Fluorobiphenyl	47.6%
d14-p-Terphenyl	56.0%	d4-1,2-Dichlorobenzene	36.3%
d5-Phenol	54.4%	2-Fluorophenol	53.3%
2,4,6-Tribromophenol	68.5%	d4-2-Chlorophenol	56.5%



**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 1 of 2

**Sample ID: MB-080212**  
**METHOD BLANK**

Lab Sample ID: MB-080212  
 LIMS ID: 12-14520  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 08/06/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 08/02/12  
 Date Analyzed: 08/03/12 19:43  
 Instrument/Analyst: NT6/JZ

Sample Amount: 500 mL  
 Final Extract Volume: 0.50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
108-95-2	Phenol	1.0	< 1.0 U
111-44-4	Bis-(2-Chloroethyl) Ether	1.0	< 1.0 U
95-57-8	2-Chlorophenol	1.0	< 1.0 U
541-73-1	1,3-Dichlorobenzene	1.0	< 1.0 U
106-46-7	1,4-Dichlorobenzene	1.0	< 1.0 U
100-51-6	Benzyl Alcohol	5.0	< 5.0 U
95-50-1	1,2-Dichlorobenzene	1.0	< 1.0 U
95-48-7	2-Methylphenol	1.0	< 1.0 U
108-60-1	2,2'-Oxybis(1-Chloropropane)	1.0	< 1.0 U
106-44-5	4-Methylphenol	1.0	< 1.0 U
621-64-7	N-Nitroso-Di-N-Propylamine	1.0	< 1.0 U
67-72-1	Hexachloroethane	1.0	< 1.0 U
98-95-3	Nitrobenzene	1.0	< 1.0 U
78-59-1	Isophorone	1.0	< 1.0 U
88-75-5	2-Nitrophenol	5.0	< 5.0 U
105-67-9	2,4-Dimethylphenol	1.0	< 1.0 U
65-85-0	Benzoic Acid	10	< 10 U
111-91-1	bis(2-Chloroethoxy) Methane	1.0	< 1.0 U
120-83-2	2,4-Dichlorophenol	5.0	< 5.0 U
120-82-1	1,2,4-Trichlorobenzene	1.0	< 1.0 U
91-20-3	Naphthalene	1.0	< 1.0 U
106-47-8	4-Chloroaniline	5.0	< 5.0 U
87-68-3	Hexachlorobutadiene	1.0	< 1.0 U
59-50-7	4-Chloro-3-methylphenol	5.0	< 5.0 U
91-57-6	2-Methylnaphthalene	1.0	< 1.0 U
77-47-4	Hexachlorocyclopentadiene	5.0	< 5.0 U
88-06-2	2,4,6-Trichlorophenol	5.0	< 5.0 U
95-95-4	2,4,5-Trichlorophenol	5.0	< 5.0 U
91-58-7	2-Chloronaphthalene	1.0	< 1.0 U
88-74-4	2-Nitroaniline	5.0	< 5.0 U
131-11-3	Dimethylphthalate	1.0	< 1.0 U
208-96-8	Acenaphthylene	1.0	< 1.0 U
99-09-2	3-Nitroaniline	5.0	< 5.0 U
83-32-9	Acenaphthene	1.0	< 1.0 U
51-28-5	2,4-Dinitrophenol	10	< 10 U
100-02-7	4-Nitrophenol	5.0	< 5.0 U
132-64-9	Dibenzofuran	1.0	< 1.0 U
606-20-2	2,6-Dinitrotoluene	5.0	< 5.0 U
121-14-2	2,4-Dinitrotoluene	5.0	< 5.0 U

**ORGANICS ANALYSIS DATA SHEET**  
**Semivolatiles by SW8270D GC/MS**  
**Extraction Method: SW3520C**  
 Page 2 of 2

**Sample ID: MB-080212**  
**METHOD BLANK**

Lab Sample ID: MB-080212  
 LIMS ID: 12-14520  
 Matrix: Water  
 Date Analyzed: 08/03/12 19:43

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510

CAS Number	Analyte	RL	Result
84-66-2	Diethylphthalate	1.0	< 1.0 U
7005-72-3	4-Chlorophenyl-phenylether	1.0	< 1.0 U
86-73-7	Fluorene	1.0	< 1.0 U
100-01-6	4-Nitroaniline	5.0	< 5.0 U
534-52-1	4,6-Dinitro-2-Methylphenol	10	< 10 U
86-30-6	N-Nitrosodiphenylamine	1.0	< 1.0 U
101-55-3	4-Bromophenyl-phenylether	1.0	< 1.0 U
118-74-1	Hexachlorobenzene	1.0	< 1.0 U
87-86-5	Pentachlorophenol	5.0	< 5.0 U
85-01-8	Phenanthrene	1.0	< 1.0 U
86-74-8	Carbazole	1.0	< 1.0 U
120-12-7	Anthracene	1.0	< 1.0 U
84-74-2	Di-n-Butylphthalate	1.0	< 1.0 U
206-44-0	Fluoranthene	1.0	< 1.0 U
129-00-0	Pyrene	1.0	< 1.0 U
85-68-7	Butylbenzylphthalate	1.0	< 1.0 U
91-94-1	3,3'-Dichlorobenzidine	5.0	< 5.0 U
56-55-3	Benzo(a)anthracene	1.0	< 1.0 U
117-81-7	bis(2-Ethylhexyl)phthalate	1.0	< 1.0 U
218-01-9	Chrysene	1.0	< 1.0 U
117-84-0	Di-n-Octyl phthalate	1.0	< 1.0 U
50-32-8	Benzo(a)pyrene	1.0	< 1.0 U
193-39-5	Indeno(1,2,3-cd)pyrene	1.0	< 1.0 U
53-70-3	Dibenz(a,h)anthracene	1.0	< 1.0 U
191-24-2	Benzo(g,h,i)perylene	1.0	< 1.0 U
90-12-0	1-Methylnaphthalene	1.0	< 1.0 U
TOTBFA	Total Benzofluoranthenes	1.0	< 1.0 U

Reported in µg/L (ppb)

**Semivolatile Surrogate Recovery**

d5-Nitrobenzene	66.4%	2-Fluorobiphenyl	60.0%
d14-p-Terphenyl	80.4%	d4-1,2-Dichlorobenzene	46.4%
d5-Phenol	69.6%	2-Fluorophenol	67.2%
2,4,6-Tribromophenol	81.1%	d4-2-Chlorophenol	70.4%

**SW8270 SEMIVOLATILES WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510


Client ID	NBZ	FBP	TPH	DCB	PHL	2FP	TBP	2CP	TOT	OUT
MB-080212	66.4%	60.0%	80.4%	46.4%	69.6%	67.2%	81.1%	70.4%		0
LCS-080212	62.4%	60.8%	77.2%	48.0%	64.8%	61.3%	86.9%	64.3%		0
LCS-D-080212	61.2%	60.4%	76.0%	45.6%	63.5%	59.7%	87.7%	63.7%		0
MW-15D-073012	58.4%	53.2%	56.4%	36.9%	62.7%	58.9%	81.6%	62.9%		0
MW-16S-073012	61.6%	54.4%	65.6%	38.4%	64.0%	60.3%	85.6%	64.0%		0
MW-15S-073012	62.0%	56.4%	73.6%	40.8%	66.4%	61.9%	86.9%	65.6%		0
MW-14S-073012	58.8%	53.2%	59.6%	39.8%	61.1%	58.1%	80.3%	61.3%		0
MW-13S-073012	59.2%	54.4%	69.2%	41.2%	62.7%	59.7%	82.1%	62.9%		0
MW-14D-073012	67.2%	61.6%	77.6%	44.0%	70.4%	66.9%	92.8%	71.2%		0
MW-13D-073012	62.4%	60.8%	75.2%	44.8%	64.0%	60.3%	86.1%	64.3%		0
MW-DUP-073012	54.0%	47.6%	56.0%	36.3%	54.4%	53.3%	68.5%	56.5%		0

	LCS/MB LIMITS	QC LIMITS
(NBZ) = d5-Nitrobenzene	(50-100)	(34-101)
(FBP) = 2-Fluorobiphenyl	(51-100)	(38-100)
(TPH) = d14-p-Terphenyl	(54-117)	(27-122)
(DCB) = d4-1,2-Dichlorobenzene	(40-100)	(27-100)
(PHL) = d5-Phenol	(15-121)	(16-106)
(2FP) = 2-Fluorophenol	(33-100)	(23-100)
(TBP) = 2,4,6-Tribromophenol	(46-125)	(31-128)
(2CP) = d4-2-Chlorophenol	(46-102)	(33-100)

Prep Method: SW3520C  
Log Number Range: 12-14520 to 12-14527

**ORGANICS ANALYSIS DATA SHEET**  
Semivolatiles by SW8270D GC/MS  
Page 1 of 2

Sample ID: LCS-080212  
LCS/LCSD

Lab Sample ID: LCS-080212  
LIMS ID: 12-14520  
Matrix: Water  
Data Release Authorized:   
Reported: 08/06/12

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510  
Date Sampled: 07/30/12  
Date Received: 07/31/12

Date Extracted LCS/LCSD: 08/02/12

Sample Amount LCS: 500 mL

Date Analyzed LCS: 08/03/12 20:17  
LCSD: 08/03/12 20:51

Final Extract Volume LCS: 0.50 mL  
LCSD: 0.50 mL

Instrument/Analyst LCS: NT6/JZ  
LCSD: NT6/JZ

Dilution Factor LCS: 1.00  
LCSD: 1.00

GPC Cleanup: NO

Analyte	Spike		LCS		Spike		LCSD		RPD
	LCS	Added-LCS	Recovery	LCSD	Added-LCSD	Recovery	LCSD		
Phenol	17.1	25.0	68.4%	17.4	25.0	69.6%	1.7%		
Bis-(2-Chloroethyl) Ether	16.1	25.0	64.4%	16.4	25.0	65.6%	1.8%		
2-Chlorophenol	17.1	25.0	68.4%	17.3	25.0	69.2%	1.2%		
1,3-Dichlorobenzene	9.9	25.0	39.6%	9.6	25.0	38.4%	3.1%		
1,4-Dichlorobenzene	10.4	25.0	41.6%	10.0	25.0	40.0%	3.9%		
Benzyl Alcohol	14.1	25.0	56.4%	14.6	25.0	58.4%	3.5%		
1,2-Dichlorobenzene	10.9	25.0	43.6%	10.6	25.0	42.4%	2.8%		
2-Methylphenol	16.8	25.0	67.2%	17.3	25.0	69.2%	2.9%		
2,2'-Oxybis(1-Chloropropane)	15.5	25.0	62.0%	15.6	25.0	62.4%	0.6%		
4-Methylphenol	33.2	50.0	66.4%	34.7	50.0	69.4%	4.4%		
N-Nitroso-Di-N-Propylamine	16.0	25.0	64.0%	16.7	25.0	66.8%	4.3%		
Hexachloroethane	8.9	25.0	35.6%	8.5	25.0	34.0%	4.6%		
Nitrobenzene	16.0	25.0	64.0%	16.5	25.0	66.0%	3.1%		
Isophorone	18.4	25.0	73.6%	19.4	25.0	77.6%	5.3%		
2-Nitrophenol	18.2	25.0	72.8%	19.0	25.0	76.0%	4.3%		
2,4-Dimethylphenol	44.5	75.0	59.3%	48.2	75.0	64.3%	8.0%		
Benzoic Acid	112	138	81.2%	115	138	83.3%	2.6%		
bis(2-Chloroethoxy) Methane	16.1	25.0	64.4%	16.7	25.0	66.8%	3.7%		
2,4-Dichlorophenol	49.4	75.0	65.9%	51.9	75.0	69.2%	4.9%		
1,2,4-Trichlorobenzene	11.2	25.0	44.8%	11.1	25.0	44.4%	0.9%		
Naphthalene	12.6	25.0	50.4%	12.7	25.0	50.8%	0.8%		
4-Chloroaniline	36.8	75.0	49.1%	40.0	75.0	53.3%	8.3%		
Hexachlorobutadiene	9.7	25.0	38.8%	9.6	25.0	38.4%	1.0%		
4-Chloro-3-methylphenol	52.5	75.0	70.0%	54.8	75.0	73.1%	4.3%		
2-Methylnaphthalene	12.1	25.0	48.4%	12.3	25.0	49.2%	1.6%		
Hexachlorocyclopentadiene	23.5	75.0	31.3%	27.8	75.0	37.1%	16.8%		
2,4,6-Trichlorophenol	54.8	75.0	73.1%	58.1	75.0	77.5%	5.8%		
2,4,5-Trichlorophenol	54.6	75.0	72.8%	58.1	75.0	77.5%	6.2%		
2-Chloronaphthalene	15.3	25.0	61.2%	15.7	25.0	62.8%	2.6%		
2-Nitroaniline	41.6	75.0	55.5%	44.3	75.0	59.1%	6.3%		
Dimethylphthalate	18.7	25.0	74.8%	19.6	25.0	78.4%	4.7%		
Acenaphthylene	15.3	25.0	61.2%	15.9	25.0	63.6%	3.8%		
3-Nitroaniline	46.8	75.0	62.4%	50.6	75.0	67.5%	7.8%		
Acenaphthene	14.9	25.0	59.6%	15.6	25.0	62.4%	4.6%		
2,4-Dinitrophenol	137 Q	138	99.3%	139 Q	138	101%	1.4%		
4-Nitrophenol	66.4	75.0	88.5%	70.0	75.0	93.3%	5.3%		
Dibenzofuran	14.1	25.0	56.4%	14.7	25.0	58.8%	4.2%		
2,6-Dinitrotoluene	55.7	75.0	74.3%	58.8	75.0	78.4%	5.4%		
2,4-Dinitrotoluene	57.1	75.0	76.1%	60.2	75.0	80.3%	5.3%		
Diethylphthalate	19.0	25.0	76.0%	19.8	25.0	79.2%	4.1%		
4-Chlorophenyl-phenylether	17.2	25.0	68.8%	17.8	25.0	71.2%	3.4%		
Fluorene	16.3	25.0	65.2%	16.8	25.0	67.2%	3.0%		
4-Nitroaniline	48.5	75.0	64.7%	52.5	75.0	70.0%	7.9%		
4,6-Dinitro-2-Methylphenol	122	138	88.4%	126	138	91.3%	3.2%		
N-Nitrosodiphenylamine	16.7	25.0	66.8%	17.6	25.0	70.4%	5.2%		

**ORGANICS ANALYSIS DATA SHEET**  
Semivolatiles by SW8270D GC/MS  
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Sample ID: LCS-080212  
LCS/LCSD

Lab Sample ID: LCS-080212  
LIMS ID: 12-14520  
Matrix: Water  
Date Analyzed LCS: 08/03/12 20:17  
LCSD: 08/03/12 20:51

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510

Analyte	Spike		LCS		Spike		LCSD		RPD
	LCS	Added-LCS	Recovery	LCS	Added-LCSD	Recovery	LCSD		
4-Bromophenyl-phenylether	17.8	25.0	71.2%	18.3	25.0	73.2%	2.8%		
Hexachlorobenzene	17.3	25.0	69.2%	17.7	25.0	70.8%	2.3%		
Pentachlorophenol	68.9 Q	75.0	91.9%	72.4 Q	75.0	96.5%	5.0%		
Phenanthrene	17.0	25.0	68.0%	17.3	25.0	69.2%	1.7%		
Carbazole	18.9	25.0	75.6%	19.6	25.0	78.4%	3.6%		
Anthracene	15.2	25.0	60.8%	15.9	25.0	63.6%	4.5%		
Di-n-Butylphthalate	19.5	25.0	78.0%	20.0	25.0	80.0%	2.5%		
Fluoranthene	17.0	25.0	68.0%	17.7	25.0	70.8%	4.0%		
Pyrene	17.1	25.0	68.4%	17.5	25.0	70.0%	2.3%		
Butylbenzylphthalate	18.8	25.0	75.2%	18.8	25.0	75.2%	0.0%		
3,3'-Dichlorobenzidine	49.0	75.0	65.3%	53.3	75.0	71.1%	8.4%		
Benzo(a)anthracene	17.2	25.0	68.8%	17.8	25.0	71.2%	3.4%		
bis(2-Ethylhexyl)phthalate	19.4	25.0	77.6%	20.0	25.0	80.0%	3.0%		
Chrysene	16.1	25.0	64.4%	16.4	25.0	65.6%	1.8%		
Di-n-Octyl phthalate	18.4	25.0	73.6%	19.2	25.0	76.8%	4.3%		
Benzo(a)pyrene	16.5	25.0	66.0%	17.0	25.0	68.0%	3.0%		
Indeno(1,2,3-cd)pyrene	15.9	25.0	63.6%	16.3	25.0	65.2%	2.5%		
Dibenz(a,h)anthracene	15.1	25.0	60.4%	15.5	25.0	62.0%	2.6%		
Benzo(g,h,i)perylene	14.5	25.0	58.0%	14.8	25.0	59.2%	2.0%		
1-Methylnaphthalene	17.7	25.0	70.8%	17.8	25.0	71.2%	0.6%		
Total Benzofluoranthenes	32.8	50.0	65.6%	34.2	50.0	68.4%	4.2%		

**Semivolatile Surrogate Recovery**

	LCS	LCSD
d5-Nitrobenzene	62.4%	61.2%
2-Fluorobiphenyl	60.8%	60.4%
d14-p-Terphenyl	77.2%	76.0%
d4-1,2-Dichlorobenzene	48.0%	45.6%
d5-Phenol	64.8%	63.5%
2-Fluorophenol	61.3%	59.7%
2,4,6-Tribromophenol	86.9%	87.7%
d4-2-Chlorophenol	64.3%	63.7%

Results reported in µg/L  
RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-15D-073012**  
**SAMPLE**

Lab Sample ID: VE22A  
 LIMS ID: 12-14520  
 Matrix: Water  
 Data Release Authorized: *MMW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/08/12 12:40  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	0.17
91-57-6	2-Methylnaphthalene	0.010	0.21
90-12-0	1-Methylnaphthalene	0.010	0.40
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	0.10
86-73-7	Fluorene	0.010	0.10
85-01-8	Phenanthrene	0.010	0.11
120-12-7	Anthracene	0.010	0.011
206-44-0	Fluoranthene	0.010	0.017
129-00-0	Pyrene	0.010	0.015
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	0.016
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 68.0%  
 d14-Dibenzo(a,h)anthracene 66.7%

**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
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**Sample ID: MW-16S-073012**  
**SAMPLE**

Lab Sample ID: VE22B  
 LIMS ID: 12-14521  
 Matrix: Water  
 Data Release Authorized: *YWW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/08/12 13:08  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	0.14
91-57-6	2-Methylnaphthalene	0.010	0.016
90-12-0	1-Methylnaphthalene	0.010	0.049
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	0.19
86-73-7	Fluorene	0.010	0.070
85-01-8	Phenanthrene	0.010	0.017
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 71.0%  
 d14-Dibenzo(a,h)anthracene 73.7%

**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
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**Sample ID: MW-15S-073012**  
**SAMPLE**

Lab Sample ID: VE22C  
 LIMS ID: 12-14522  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/08/12 13:37  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	3.7 E
91-57-6	2-Methylnaphthalene	0.010	3.1 E
90-12-0	1-Methylnaphthalene	0.010	2.4 E
208-96-8	Acenaphthylene	0.010	0.038
83-32-9	Acenaphthene	0.010	1.4 E
86-73-7	Fluorene	0.010	1.3 E
85-01-8	Phenanthrene	0.010	1.4 E
120-12-7	Anthracene	0.010	0.14
206-44-0	Fluoranthene	0.010	0.18
129-00-0	Pyrene	0.010	0.11
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	0.54
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 71.7%  
 d14-Dibenzo(a,h)anthracene 69.7%



**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
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**Sample ID: MW-15S-073012**  
**DILUTION**

Lab Sample ID: VE22C  
 LIMS ID: 12-14522  
 Matrix: Water  
 Data Release Authorized: *mmw*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/08/12 16:58  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 10.0

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.10	3.9
91-57-6	2-Methylnaphthalene	0.10	3.3
90-12-0	1-Methylnaphthalene	0.10	2.5
208-96-8	Acenaphthylene	0.10	< 0.10 U
83-32-9	Acenaphthene	0.10	1.4
86-73-7	Fluorene	0.10	1.4
85-01-8	Phenanthrene	0.10	1.5
120-12-7	Anthracene	0.10	0.19
206-44-0	Fluoranthene	0.10	0.24
129-00-0	Pyrene	0.10	0.17
56-55-3	Benzo(a)anthracene	0.10	< 0.10 U
218-01-9	Chrysene	0.10	< 0.10 U
50-32-8	Benzo(a)pyrene	0.10	< 0.10 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.10	< 0.10 U
53-70-3	Dibenz(a,h)anthracene	0.10	< 0.10 U
191-24-2	Benzo(g,h,i)perylene	0.10	< 0.10 U
132-64-9	Dibenzofuran	0.10	0.58
TOTBFA	Total Benzofluoranthenes	0.20	< 0.20 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 73.0%  
 d14-Dibenzo(a,h)anthracene 58.7%

**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
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**Sample ID: MW-14S-073012**  
**SAMPLE**

Lab Sample ID: VE22D  
 LIMS ID: 12-14523  
 Matrix: Water  
 Data Release Authorized: *mw*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/08/12 14:06  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	0.084
91-57-6	2-Methylnaphthalene	0.010	0.32
90-12-0	1-Methylnaphthalene	0.010	0.56
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	0.18
86-73-7	Fluorene	0.010	0.14
85-01-8	Phenanthrene	0.010	0.12
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	0.024
129-00-0	Pyrene	0.010	0.030
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 63.3%  
 d14-Dibenzo(a,h)anthracene 61.3%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13S-073012**  
**SAMPLE**

Lab Sample ID: VE22E  
 LIMS ID: 12-14524  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/08/12 14:35  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	0.14
91-57-6	2-Methylnaphthalene	0.010	0.12
90-12-0	1-Methylnaphthalene	0.010	0.27
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	0.16
86-73-7	Fluorene	0.010	0.12
85-01-8	Phenanthrene	0.010	0.11
120-12-7	Anthracene	0.010	0.015
206-44-0	Fluoranthene	0.010	0.020
129-00-0	Pyrene	0.010	0.018
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 67.3%  
 d14-Dibenzo(a,h)anthracene 66.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
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**Sample ID: MW-14D-073012**  
**SAMPLE**

Lab Sample ID: VE22F  
 LIMS ID: 12-14525  
 Matrix: Water  
 Data Release Authorized: *mmw*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/08/12 15:04  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	0.12
91-57-6	2-Methylnaphthalene	0.010	0.13
90-12-0	1-Methylnaphthalene	0.010	0.21
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	0.18
86-73-7	Fluorene	0.010	0.12
85-01-8	Phenanthrene	0.010	0.14
120-12-7	Anthracene	0.010	0.014
206-44-0	Fluoranthene	0.010	0.026
129-00-0	Pyrene	0.010	0.020
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	0.019
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 65.7%  
 d14-Dibenzo(a,h)anthracene 59.7%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
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**Sample ID: MW-13D-073012**  
**SAMPLE**

Lab Sample ID: VE22G  
 LIMS ID: 12-14526  
 Matrix: Water  
 Data Release Authorized: *mmw*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/08/12 16:00  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	0.31
91-57-6	2-Methylnaphthalene	0.010	0.48
90-12-0	1-Methylnaphthalene	0.010	0.66
208-96-8	Acenaphthylene	0.010	0.011
83-32-9	Acenaphthene	0.010	0.091
86-73-7	Fluorene	0.010	0.16
85-01-8	Phenanthrene	0.010	0.18
120-12-7	Anthracene	0.010	0.018
206-44-0	Fluoranthene	0.010	0.028
129-00-0	Pyrene	0.010	0.025
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	0.024
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 71.7%  
 d14-Dibenzo(a,h)anthracene 69.7%

**ORGANICS ANALYSIS DATA SHEET**  
**PNAs by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-DUP-073012**  
**SAMPLE**

Lab Sample ID: VE22H  
 LIMS ID: 12-14527  
 Matrix: Water  
 Data Release Authorized: *MMW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/08/12 16:29  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	0.12
91-57-6	2-Methylnaphthalene	0.010	0.13
90-12-0	1-Methylnaphthalene	0.010	0.22
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	0.20
86-73-7	Fluorene	0.010	0.14
85-01-8	Phenanthrene	0.010	0.16
120-12-7	Anthracene	0.010	0.018
206-44-0	Fluoranthene	0.010	0.030
129-00-0	Pyrene	0.010	0.024
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenzo(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	0.021
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 66.7%  
 d14-Dibenzo(a,h)anthracene 69.0%

**ORGANICS ANALYSIS DATA SHEET**  
**PNA's by Low Level SW8270D-SIM GC/MS**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MB-080312**  
**METHOD BLANK**

Lab Sample ID: MB-080312  
 LIMS ID: 12-14520  
 Matrix: Water  
 Data Release Authorized: *mm*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 08/03/12  
 Date Analyzed: 08/08/12 10:44  
 Instrument/Analyst: NT11/VTS

Sample Amount: 500 mL  
 Final Extract Volume: 0.5 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
91-20-3	Naphthalene	0.010	< 0.010 U
91-57-6	2-Methylnaphthalene	0.010	< 0.010 U
90-12-0	1-Methylnaphthalene	0.010	< 0.010 U
208-96-8	Acenaphthylene	0.010	< 0.010 U
83-32-9	Acenaphthene	0.010	< 0.010 U
86-73-7	Fluorene	0.010	< 0.010 U
85-01-8	Phenanthrene	0.010	< 0.010 U
120-12-7	Anthracene	0.010	< 0.010 U
206-44-0	Fluoranthene	0.010	< 0.010 U
129-00-0	Pyrene	0.010	< 0.010 U
56-55-3	Benzo(a)anthracene	0.010	< 0.010 U
218-01-9	Chrysene	0.010	< 0.010 U
50-32-8	Benzo(a)pyrene	0.010	< 0.010 U
193-39-5	Indeno(1,2,3-cd)pyrene	0.010	< 0.010 U
53-70-3	Dibenz(a,h)anthracene	0.010	< 0.010 U
191-24-2	Benzo(g,h,i)perylene	0.010	< 0.010 U
132-64-9	Dibenzofuran	0.010	< 0.010 U
TOTBFA	Total Benzofluoranthenes	0.020	< 0.020 U

Reported in µg/L (ppb)

**SIM Semivolatile Surrogate Recovery**

d10-2-Methylnaphthalene 62.7%  
 d14-Dibenzo(a,h)anthracene 65.7%

**SIM SW8270 SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510

<u>Client ID</u>	<u>MNP</u>	<u>DBA</u>	<u>TOT OUT</u>
MB-080312	62.7%	65.7%	0
LCS-080312	70.7%	77.3%	0
LCSD-080312	63.0%	68.0%	0
MW-15D-073012	68.0%	66.7%	0
MW-16S-073012	71.0%	73.7%	0
MW-15S-073012	71.7%	69.7%	0
MW-15S-073012 DL	73.0%	58.7%	0
MW-14S-073012	63.3%	61.3%	0
MW-13S-073012	67.3%	66.0%	0
MW-14D-073012	65.7%	59.7%	0
MW-13D-073012	71.7%	69.7%	0
MW-DUP-073012	66.7%	69.0%	0

**LCS/MB LIMITS      QC LIMITS**

(MNP) = d10-2-Methylnaphthalene      (40-93)      (35-94)  
(DBA) = d14-Dibenzo(a,h)anthracene      (31-115)      (26-115)

Prep Method: SW3510C  
Log Number Range: 12-14520 to 12-14527



**ORGANICS ANALYSIS DATA SHEET**

**PNAs by Low Level SW8270D-SIM GC/MS**

Page 1 of 1

**Sample ID: LCS-080312**

**LAB CONTROL SAMPLE**

Lab Sample ID: LCS-080312

LIMS ID: 12-14520

Matrix: Water

Data Release Authorized: *mmw*

Reported: 08/09/12

QC Report No: VE22-Landau Associates

Project: Cornwall

Event: 0001020.400.510

Date Sampled: NA

Date Received: NA

Date Extracted LCS/LCSD: 08/03/12

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 08/08/12 11:13

Final Extract Volume LCS: 0.50 mL

LCSD: 08/08/12 11:42

LCSD: 0.50 mL

Instrument/Analyst LCS: NT11/VTS

Dilution Factor LCS: 1.00

LCSD: NT11/VTS

LCSD: 1.00

Analyte	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Naphthalene	0.200	0.300	66.7%	0.183	0.300	61.0%	8.9%
2-Methylnaphthalene	0.200	0.300	66.7%	0.181	0.300	60.3%	10.0%
1-Methylnaphthalene	0.200	0.300	66.7%	0.181	0.300	60.3%	10.0%
Acenaphthylene	0.230	0.300	76.7%	0.209	0.300	69.7%	9.6%
Acenaphthene	0.211	0.300	70.3%	0.196	0.300	65.3%	7.4%
Fluorene	0.228	0.300	76.0%	0.219	0.300	73.0%	4.0%
Phenanthrene	0.213	0.300	71.0%	0.200	0.300	66.7%	6.3%
Anthracene	0.200	0.300	66.7%	0.167	0.300	55.7%	18.0%
Fluoranthene	0.240	0.300	80.0%	0.217	0.300	72.3%	10.1%
Pyrene	0.243	0.300	81.0%	0.214	0.300	71.3%	12.7%
Benzo(a)anthracene	0.236	0.300	78.7%	0.217	0.300	72.3%	8.4%
Chrysene	0.224	0.300	74.7%	0.208	0.300	69.3%	7.4%
Benzo(a)pyrene	0.200	0.300	66.7%	0.166	0.300	55.3%	18.6%
Indeno(1,2,3-cd)pyrene	0.215	0.300	71.7%	0.194	0.300	64.7%	10.3%
Dibenz(a,h)anthracene	0.213	0.300	71.0%	0.192	0.300	64.0%	10.4%
Benzo(g,h,i)perylene	0.227	0.300	75.7%	0.206	0.300	68.7%	9.7%
Dibenzofuran	0.194	0.300	64.7%	0.182	0.300	60.7%	6.4%
Total Benzofluoranthenes	0.665	0.600	111%	0.612	0.600	102%	8.3%

Reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**SIM Semivolatile Surrogate Recovery**

	LCS	LCSD
d10-2-Methylnaphthalene	70.7%	63.0%
d14-Dibenzo(a,h)anthracene	77.3%	68.0%

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-15D-073012**  
**SAMPLE**

Lab Sample ID: VE22A  
 LIMS ID: 12-14520  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/07/12 14:02  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	59.8%
Tetrachlorometaxylene	45.5%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-16S-073012**  
**SAMPLE**

Lab Sample ID: VE22B  
 LIMS ID: 12-14521  
 Matrix: Water  
 Data Release Authorized: *mm*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/07/12 14:19  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	66.0%
Tetrachlorometaxylene	51.0%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-15S-073012**  
**SAMPLE**

Lab Sample ID: VE22C  
 LIMS ID: 12-14522  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/07/12 14:37  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	60.2%
Tetrachlorometaxylene	52.5%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-14S-073012**  
**SAMPLE**

Lab Sample ID: VE22D  
 LIMS ID: 12-14523  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/07/12 14:55  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	56.0%
Tetrachlorometaxylene	49.8%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13S-073012**  
**SAMPLE**

Lab Sample ID: VE22E  
 LIMS ID: 12-14524  
 Matrix: Water  
 Data Release Authorized: *MMW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/07/12 15:13  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	60.8%
Tetrachlorometaxylene	53.2%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-14D-073012**  
**SAMPLE**

Lab Sample ID: VE22F  
 LIMS ID: 12-14525  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/07/12 15:31  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	54.2%
Tetrachlorometaxylene	50.0%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13D-073012**  
**SAMPLE**

Lab Sample ID: VE22G  
 LIMS ID: 12-14526  
 Matrix: Water  
 Data Release Authorized: *WWW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/07/12 15:48  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	57.5%
Tetrachlorometaxylene	50.2%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.



**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-DUP-073012**  
**SAMPLE**

Lab Sample ID: VE22H  
 LIMS ID: 12-14527  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/03/12  
 Date Analyzed: 08/07/12 16:06  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane #	0.050	< 0.050 U
5103-71-9	cis-Chlordane \$	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	59.0%
Tetrachlorometaxylene	48.2%

# This analyte (CAS registry No. 5103-74-2) is named trans-Chlordane in EPA Method 8081B(Feb 2007). It has also been named gamma-Chlordane and beta-Chlordane.

\$ This analyte (CAS registry No. 5103-71-9) is named cis-Chlordane in EPA Method 8081B(Feb 2007). It has also been named alpha-Chlordane.

**ORGANICS ANALYSIS DATA SHEET**  
**Pesticides by GC/ECD Method SW8081B**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MB-080312**  
**METHOD BLANK**

Lab Sample ID: MB-080312  
 LIMS ID: 12-14520  
 Matrix: Water  
 Data Release Authorized: *mw*  
 Reported: 08/09/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 08/03/12  
 Date Analyzed: 08/07/12 12:50  
 Instrument/Analyst: ECD6/AAR  
 GPC Cleanup: No  
 Sulfur Cleanup: Yes

Sample Amount: 500 mL  
 Final Extract Volume: 5.0 mL  
 Dilution Factor: 1.00  
 pH: NA  
 Florisil Cleanup: No  
 Silica Gel: Yes

CAS Number	Analyte	RL	Result
319-84-6	alpha-BHC	0.050	< 0.050 U
319-85-7	beta-BHC	0.050	< 0.050 U
319-86-8	delta-BHC	0.050	< 0.050 U
58-89-9	gamma-BHC (Lindane)	0.050	< 0.050 U
76-44-8	Heptachlor	0.050	< 0.050 U
309-00-2	Aldrin	0.050	< 0.050 U
1024-57-3	Heptachlor Epoxide	0.050	< 0.050 U
959-98-8	Endosulfan I	0.050	< 0.050 U
60-57-1	Dieldrin	0.10	< 0.10 U
72-55-9	4,4'-DDE	0.10	< 0.10 U
72-20-8	Endrin	0.10	< 0.10 U
33213-65-9	Endosulfan II	0.10	< 0.10 U
72-54-8	4,4'-DDD	0.10	< 0.10 U
1031-07-8	Endosulfan Sulfate	0.10	< 0.10 U
50-29-3	4,4'-DDT	0.10	< 0.10 U
72-43-5	Methoxychlor	0.50	< 0.50 U
53494-70-5	Endrin Ketone	0.10	< 0.10 U
7421-93-4	Endrin Aldehyde	0.10	< 0.10 U
5103-74-2	trans-Chlordane	0.050	< 0.050 U
5103-71-9	cis-Chlordane	0.050	< 0.050 U
8001-35-2	Toxaphene	5.0	< 5.0 U

Reported in µg/L (ppb)

**Pest/PCB Surrogate Recovery**

Decachlorobiphenyl	72.0%
Tetrachlorometaxylene	54.5%

**SW8081/PESTICIDE WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510

<u>Client ID</u>	<u>DCBP</u>	<u>TCMX</u>	<u>TOT OUT</u>
MB-080312	72.0%	54.5%	0
LCS-080312	67.5%	54.5%	0
LCSD-080312	59.5%	52.8%	0
MW-15D-073012	59.8%	45.5%	0
MW-16S-073012	66.0%	51.0%	0
MW-15S-073012	60.2%	52.5%	0
MW-14S-073012	56.0%	49.8%	0
MW-13S-073012	60.8%	53.2%	0
MW-14D-073012	54.2%	50.0%	0
MW-13D-073012	57.5%	50.2%	0
MW-DUP-073012	59.0%	48.2%	0

**LCS/MB LIMITS      QC LIMITS**

(DCBP) = Decachlorobiphenyl      (54-100)      (32-116)  
(TCMX) = Tetrachlorometaxylene      (52-100)      (43-106)

Prep Method: SW3510C  
Log Number Range: 12-14520 to 12-14527

**ORGANICS ANALYSIS DATA SHEET**

**Pesticides/PCB by GC/ECD Method SW8081B**

Page 1 of 1

**Sample ID: LCS-080312**

**LCS/LCSD**

Lab Sample ID: LCS-080312

QC Report No: VE22-Landau Associates

LIMS ID: 12-14520

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *mw*

Date Sampled: 07/30/12

Reported: 08/09/12

Date Received: 07/31/12

Date Extracted LCS/LCSD: 08/03/12

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 08/07/12 13:08

Final Extract Volume LCS: 5.0 mL

LCSD: 08/07/12 13:26

LCSD: 5.0 mL

Instrument/Analyst LCS: ECD6/AAR

Dilution Factor LCS: 1.00

LCSD: ECD6/AAR

LCSD: 1.00

GPC Cleanup: No

Sulfur Cleanup: Yes

Florisil Cleanup: No

Silica Gel: Yes

Analyte	Spike		LCS		Spike		LCSD	
	LCS	Added-LCS	Recovery	LCSD	Added-LCSD	Recovery	RPD	
alpha-BHC	0.163	0.200	81.5%	0.162	0.200	81.0%	0.6%	
beta-BHC	0.159	0.200	79.5%	0.158	0.200	79.0%	0.6%	
delta-BHC	0.105	0.200	52.5%	0.0971	0.200	48.6%	7.8%	
gamma-BHC (Lindane)	0.162	0.200	81.0%	0.159	0.200	79.5%	1.9%	
Heptachlor	0.161	0.200	80.5%	0.158	0.200	79.0%	1.9%	
Aldrin	0.136	0.200	68.0%	0.135	0.200	67.5%	0.7%	
Heptachlor Epoxide	0.201	0.200	100%	0.199	0.200	99.5%	1.0%	
Endosulfan I	0.205	0.200	102%	0.201	0.200	100%	2.0%	
Dieldrin	0.402	0.400	100%	0.392	0.400	98.0%	2.5%	
4,4'-DDE	0.394	0.400	98.5%	0.386	0.400	96.5%	2.1%	
Endrin	0.359	0.400	89.8%	0.326	0.400	81.5%	9.6%	
Endosulfan II	0.353	0.400	88.2%	0.322	0.400	80.5%	9.2%	
4,4'-DDD	0.355	0.400	88.8%	0.325	0.400	81.2%	8.8%	
Endosulfan Sulfate	0.312	0.400	78.0%	0.286	0.400	71.5%	8.7%	
4,4'-DDT	0.332	0.400	83.0%	0.302	0.400	75.5%	9.5%	
Methoxychlor	1.67	2.00	83.5%	1.51	2.00	75.5%	10.1%	
Endrin Ketone	0.377	0.400	94.2%	0.350	0.400	87.5%	7.4%	
Endrin Aldehyde	0.273	0.400	68.2%	0.265	0.400	66.2%	3.0%	
trans-Chlordane	0.209	0.200	104%	0.207	0.200	104%	1.0%	
cis-Chlordane	0.188	0.200	94.0%	0.191	0.200	95.5%	1.6%	

**Pest/PCB Surrogate Recovery**

	LCS	LCSD
Decachlorobiphenyl	67.5%	59.5%
Tetrachlorometaxylene	54.5%	52.8%

Results reported in µg/L (ppb)

RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-15D-073012**  
**SAMPLE**

Lab Sample ID: VE22A  
 LIMS ID: 12-14520  
 Matrix: Water  
 Data Release Authorized: *R*  
 Reported: 08/15/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/15/12 11:23  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 105%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-16S-073012**  
**SAMPLE**

Lab Sample ID: VE22B  
 LIMS ID: 12-14521  
 Matrix: Water  
 Data Release Authorized: *RS*  
 Reported: 08/15/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/15/12 13:47  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 306%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-15S-073012**  
**SAMPLE**

Lab Sample ID: VE22C  
 LIMS ID: 12-14522  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 08/15/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/08/12 19:46  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 95.0%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-14S-073012**  
**SAMPLE**

Lab Sample ID: VE22D  
 LIMS ID: 12-14523  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 08/15/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/08/12 20:22  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 95.7%



**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13S-073012**  
**SAMPLE**

Lab Sample ID: VE22E  
 LIMS ID: 12-14524  
 Matrix: Water  
 Data Release Authorized: *[Signature]*  
 Reported: 08/15/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/08/12 20:58  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 98.5%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-14D-073012**  
**SAMPLE**

Lab Sample ID: VE22F  
 LIMS ID: 12-14525  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 08/15/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/08/12 21:34  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 107%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-13D-073012**  
**SAMPLE**

Lab Sample ID: VE22G  
 LIMS ID: 12-14526  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 08/15/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/08/12 22:10  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U


Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 98.8%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MW-DUP-073012**  
**SAMPLE**

Lab Sample ID: VE22H  
 LIMS ID: 12-14527  
 Matrix: Water  
 Data Release Authorized:   
 Reported: 08/15/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted: 08/02/12  
 Date Analyzed: 08/08/12 22:46  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 110%

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
**Extraction Method: SW3510C**  
 Page 1 of 1

**Sample ID: MB-080212**  
**METHOD BLANK**

Lab Sample ID: MB-080212  
 LIMS ID: 12-14520  
 Matrix: Water  
 Data Release Authorized: *AB*  
 Reported: 08/15/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 08/02/12  
 Date Analyzed: 08/08/12 16:11  
 Instrument/Analyst: ECD1/AAR

Sample Amount: 500 mL  
 Final Extract Volume: 50 mL  
 Dilution Factor: 1.00

CAS Number	Analyte	RL	Result
93-72-1	2,4,5-TP (Silvex)	0.25	< 0.25 U
93-76-5	2,4,5-T	0.25	< 0.25 U
88-85-7	Dinoseb	0.50	< 0.50 U
1918-00-9	Dicamba	0.50	< 0.50 U
94-75-7	2,4-D	1.0	< 1.0 U
94-82-6	2,4-DB	5.0	< 5.0 U
75-99-0	Dalapon	1.0	< 1.0 U
94-74-6	MCPA	250	< 250 U
120-36-5	Dichloroprop	1.0	< 1.0 U

Reported in µg/L (ppb)

**Herbicide Surrogate Recovery**

2,4-Dichlorophenylacetic Acid 104%

**SW8151A/HERBICIDE WATER SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510

<u>Client ID</u>	<u>DCPA</u>	<u>TOT OUT</u>
MB-080212	104%	0
LCS-080212	87.8%	0
LCSD-080212	104%	0
MW-15D-073012	105%	0
MW-16S-073012	306%*	1
MW-15S-073012	95.0%	0
MW-14S-073012	95.7%	0
MW-13S-073012	98.5%	0
MW-14D-073012	107%	0
MW-13D-073012	98.8%	0
MW-DUP-073012	110%	0

**LCS/MB LIMITS      QC LIMITS**

(DCPA) = 2,4-Dichlorophenylacetic Acid      (66-112)      (28-140)

Log Number Range: 12-14520 to 12-14527

**ORGANICS ANALYSIS DATA SHEET**  
**Herbicides by SW8151A GC/ECD**  
 Page 1 of 1

**Sample ID: LCS-080212**  
**LCS/LCSD**

Lab Sample ID: LCS-080212  
 LIMS ID: 12-14520  
 Matrix: Water  
 Data Release Authorized: *B*  
 Reported: 08/15/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted LCS/LCSD: 08/02/12

Sample Amount LCS: 500 mL  
 LCSD: 500 mL

Date Analyzed LCS: 08/15/12 10:47  
 LCSD: 08/08/12 17:22

Final Extract Volume LCS: 50 mL  
 LCSD: 50 mL

Instrument/Analyst LCS: ECD1/AAR  
 LCSD: ECD1/AAR

Dilution Factor LCS: 1.00  
 LCSD: 1.00

Analyte	Spike		LCS		Spike		LCSD		RPD
	LCS	Added-LCS	Recovery	LCSD	Added-LCSD	Recovery	LCSD		
2,4,5-TP (Silvex)	7.05	10.0	70.5%	6.99	10.0	69.9%	0.9%		
2,4,5-T	1.71	2.50	68.4%	1.72	2.50	68.8%	0.6%		
Dinoseb	2.64	5.00	52.8%	2.55	5.00	51.0%	3.5%		
Dicamba	3.88	5.00	77.6%	4.52	5.00	90.4%	15.2%		
2,4-D	8.49	10.0	84.9%	8.00	10.0	80.0%	5.9%		
2,4-DB	45.0	50.0	90.0%	46.8	50.0	93.6%	3.9%		
Dalapon	5.79	10.0	57.9%	6.60	10.0	66.0%	13.1%		
Dichloroprop	7.61	10.0	76.1%	7.43	10.0	74.3%	2.4%		

**Herbicide Surrogate Recovery**

	LCS	LCSD
2,4-Dichlorophenylacetic	87.8%	104%

Results reported in µg/L  
 RPD calculated using sample concentrations per SW846.

**ORGANICS ANALYSIS DATA SHEET**

NWTPH-HCID Method by GC/FID  
Extraction Method: SW3510C  
Page 1 of 1

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510

Matrix: Water

Data Release Authorized: *mm*  
Reported: 08/03/12

ARI ID	Sample ID	Extraction Date	Analysis Date	DL	Range	Result
MB-080112 12-14520	Method Blank	08/01/12	08/02/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 87.6%
VE22A 12-14520	MW-15D-073012 HC ID: DRO	08/01/12	08/02/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U > 0.50 < 0.50 U 83.0%
VE22B 12-14521	MW-16S-073012 HC ID: DRO	08/01/12	08/02/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U > 0.50 < 0.50 U 81.0%
VE22C 12-14522	MW-15S-073012 HC ID: DRO	08/01/12	08/02/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U > 0.50 < 0.50 U 80.9%
VE22D 12-14523	MW-14S-073012 HC ID: DRO	08/01/12	08/02/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U > 0.50 < 0.50 U 82.9%
VE22E 12-14524	MW-13S-073012 HC ID: ---	08/01/12	08/03/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 75.8%
VE22F 12-14525	MW-14D-073012 HC ID: ---	08/01/12	08/03/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 82.6%
VE22G 12-14526	MW-13D-073012 HC ID: ---	08/01/12	08/03/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 81.3%
VE22H 12-14527	MW-DUP-073012 HC ID: ---	08/01/12	08/03/12	1.0	Gas Diesel Oil o-Terphenyl	< 0.25 U < 0.50 U < 0.50 U 84.8%

Reported in mg/L (ppm)

Gas value based on total peaks in the range from Toluene to C12.  
Diesel value based on the total peaks in the range from C12 to C24.  
Oil value based on the total peaks in the range from C24 to C38.



Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120802.b/0802a038.d  
Method: /chem3/fid4a.i/20120802.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/03/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22MBW1  
Client ID:  
Injection: 02-AUG-2012 21:50  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.405	0.018	2634	7882	GAS (Tol-C12)	110130	7.32
C8	1.613	-0.051	1210	3285	DIESEL (C12-C24)	34039	2.32
C10	3.231	0.001	536	385	M.OIL (C24-C38)	65819	5.24
C12	4.120	-0.004	402	220	AK-102 (C10-C25)	62770	3.63
C14	4.803	0.000	198	185	AK-103 (C25-C36)	47434	5.56
C16	5.394	0.010	149	244			
C18	5.945	0.000	135	193			
C20	6.530	0.013	351	658	JET-A (C10-C18)	47395	3.83
C22	7.074	0.005	138	233	MIN.OIL (C24-C38)	65819	4.90
C24	7.618	0.028	110	180			
C25	7.836	-0.007	53	19			
C26	8.093	0.008	93	117			
C28	8.556	0.017	7599	6658			
C32	9.342	-0.005	557	1314			
C34	9.719	-0.001	690	1787			
Filter Peak	9.938	-0.007	697	275	BUNKERC (C10-C38)	128388	16.82
C36	10.103	0.020	868	1149			
C38	10.435	0.000	1029	1568			
C40	10.781	0.000	1521	2006			
o-terph	6.089	0.000	628537	802553			
Triacon Surr	8.964	0.000	731554	792964	NAS DIES (C10-C24)	62569	3.65

Range Times: NW Diesel (4.124 - 7.590) AK102 (3.23 - 7.84) Jet A (3.23 - 5.94)  
NW M.Oil (7.59 - 10.43) AK103 (7.84 - 10.08) OR Diesel (3.23 - 8.54)

Surrogate	Area	Amount	%Rec
o-Terphenyl	802553	39.4	87.5
Triacontane	792964	41.5	92.3

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120802.b/0802a038.d

Date : 02-AUG-2012 21:50

Client ID:

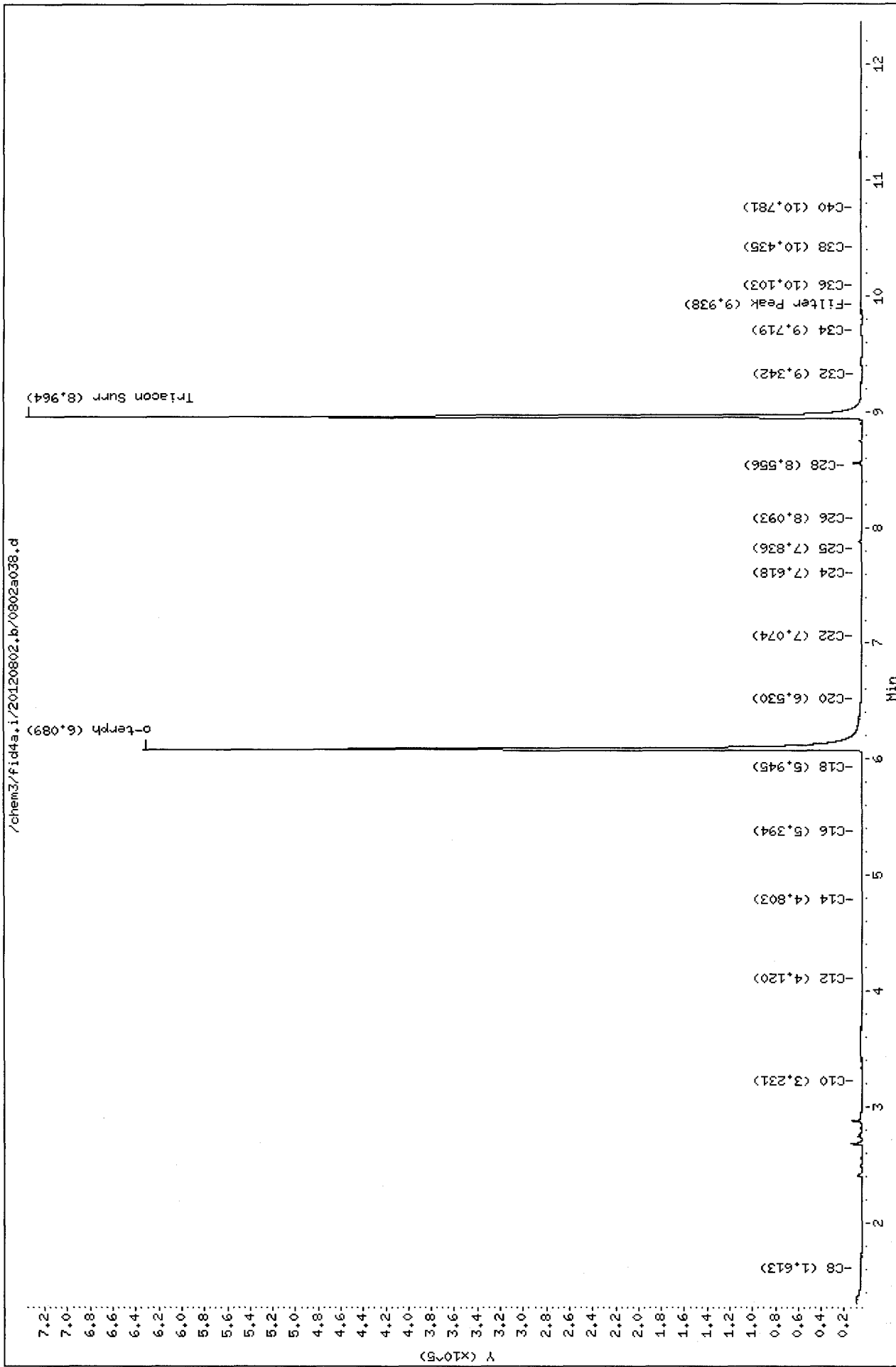
Sample Info: VE22MBW1

Instrument: fid4a.i

Operator: AR

Column diameter: 0.25

Column phase: RTX-1



Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120802.b/0802a041.d  
Method: /chem3/fid4a.i/20120802.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/03/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22A  
Client ID:  
Injection: 02-AUG-2012 22:54  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.403	0.016	3550	7028	GAS (Tol-C12)	808096	53.72 GPO
C8	1.667	0.003	954	1866	DIESEL (C12-C24)	6681177	456.05 DFO
C10	3.246	0.015	2797	4301	M.OIL (C24-C38)	1434542	114.13 RPO
C12	4.120	-0.003	21668	11496	AK-102 (C10-C25)	7519008	434.65
C14	4.788	-0.014	65971	141479	AK-103 (C25-C36)	1193629	139.80
C16	5.360	-0.024	56988	157424			
C18	5.931	-0.013	33220	65607			
C20	6.509	-0.008	23290	32308	JET-A (C10-C18)	5182208	419.20
C22	7.076	0.007	20261	18509	MIN.OIL (C24-C38)	1434542	106.73
C24	7.568	-0.022	25676	87516			
C25	7.841	-0.002	17095	5419			
C26	8.077	-0.008	15286	21100			
C28	8.549	0.010	11269	26297			
C32	9.329	-0.018	7613	20490			
C34	9.696	-0.024	5345	9527			
Filter Peak	9.957	0.012	4251	5482	BUNKERC (C10-C38)	8776852	1149.71
C36	10.087	0.005	3944	2340			
C38	10.441	0.006	3244	3721			
C40	10.769	-0.012	3256	3762			
o-terph	6.091	0.003	898677	761352			
Triacon Surr	8.957	-0.006	789768	734414	NAS DIES (C10-C24)	7342310	428.52

Range Times: NW Diesel (4.124 - 7.590) AK102 (3.23 - 7.84) Jet A (3.23 - 5.94)  
NW M.Oil (7.59 - 10.43) AK103 (7.84 - 10.08) OR Diesel (3.23 - 8.54)

Surrogate	Area	Amount	%Rec
o-Terphenyl	761352	37.4	83.1 M
Triacontane	734414	38.5	85.5 M

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120802.b/0802a041.d

Date : 02-AUG-2012 22:54

Client ID:

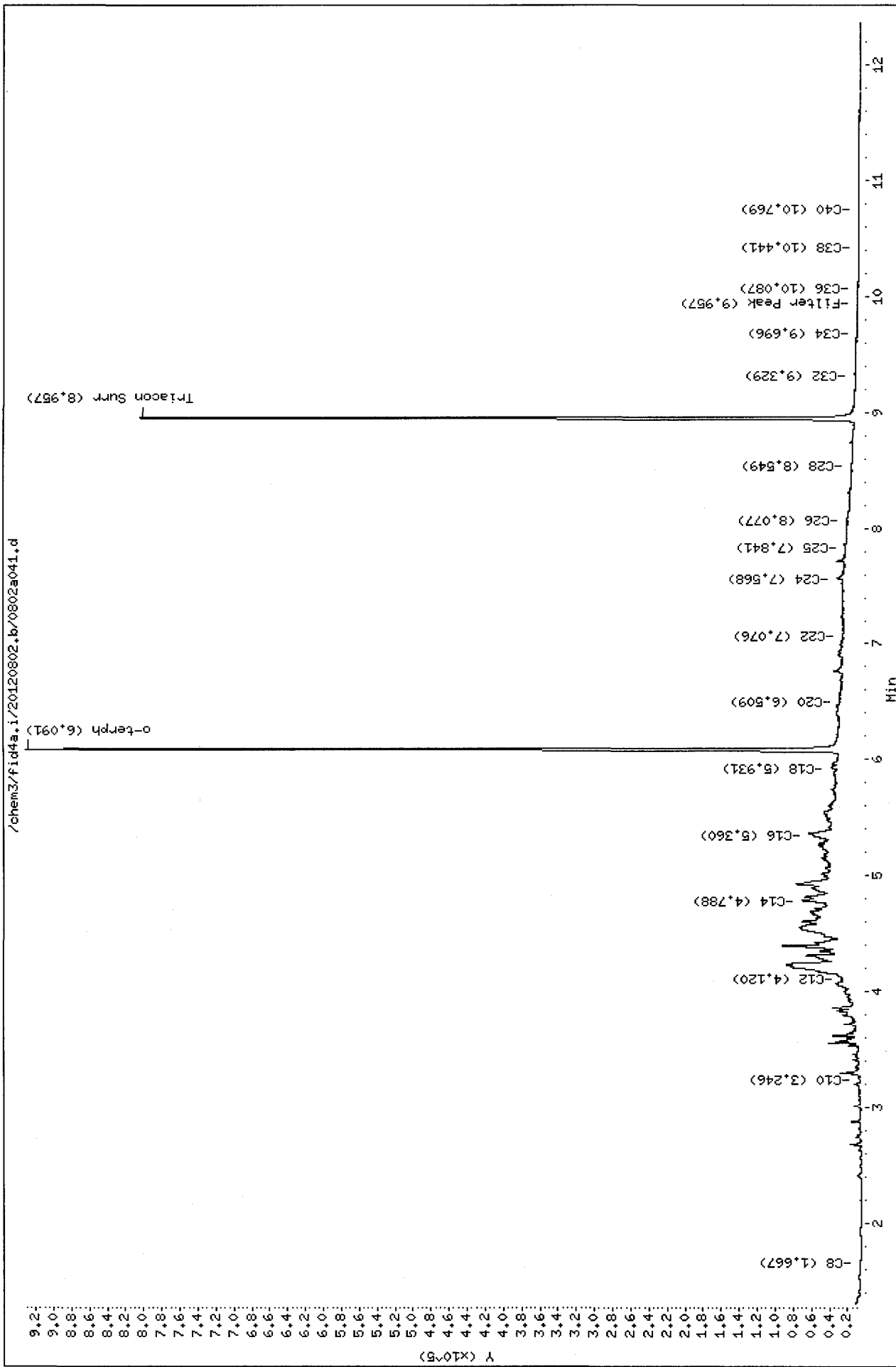
Sample Info: VE22A

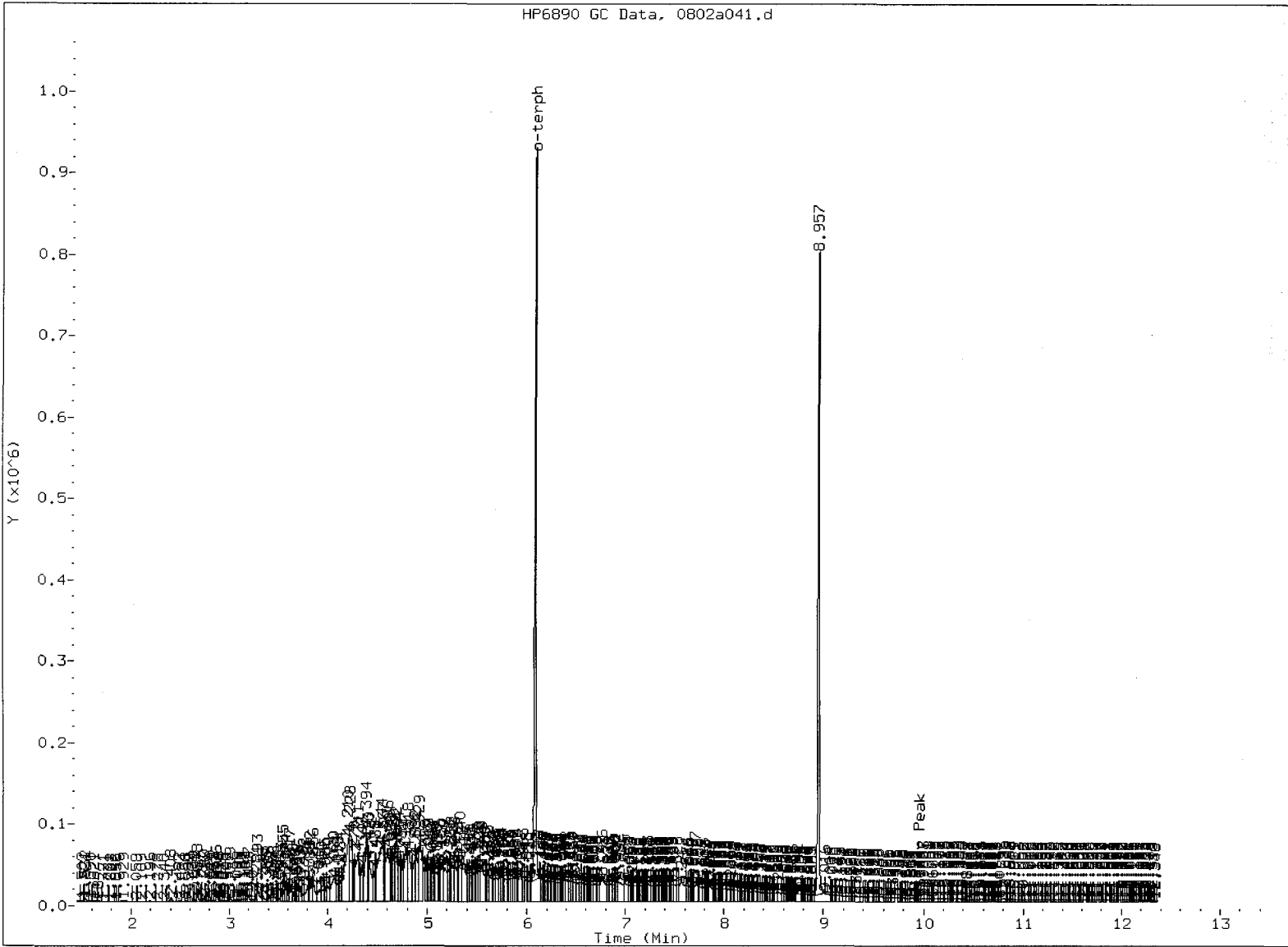
Instrument: fid4a.i

Operator: AR

Column diameter: 0.25

Column phase: RTX-1





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst: AR

Date: 8/12/12

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120802.b/0802a042.d  
Method: /chem3/fid4a.i/20120802.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/03/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22B  
Client ID:  
Injection: 02-AUG-2012 23:15  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.400	0.013	4988	12027	GAS (Tol-C12)	312457	20.77 <i>GRD</i>
C8	1.718	0.054	1073	2719	DIESEL (C12-C24)	4388798	299.58 <i>JRC</i>
C10	3.248	0.018	1076	1619	M.OIL (C24-C38)	1587345	126.29 <i>PRD</i>
C12	4.125	0.002	11152	18857	AK-102 (C10-C25)	4757392	275.01
C14	4.827	0.024	18716	10681	AK-103 (C25-C36)	1347633	157.84
C16	5.411	0.027	28567	55850			
C18	5.935	-0.010	25037	42916			
C20	6.525	0.008	23405	11092	JET-A (C10-C18)	2449119	198.12
C22	7.057	-0.012	20932	42395	MIN.OIL (C24-C38)	1587345	118.10
C24	7.582	-0.009	25367	60611			
C25	7.835	-0.008	19862	24772			
C26	8.077	-0.008	17822	42318			
C28	8.548	0.009	15088	22959			
C32	9.354	0.006	7984	7630			
C34	9.734	0.014	5811	3450			
Filter Peak	9.943	-0.003	5209	2477	BUNKERC (C10-C38)	6181223	809.70
C36	10.080	-0.003	4667	2025			
C38	10.442	0.007	3759	2009			
C40	10.777	-0.004	3881	7224			
o-terph	6.091	0.002	864099	742771			
Triacon Surr	8.954	-0.010	790653	737283	NAS DIES (C10-C24)	4593877	268.11

Range Times: NW Diesel (4.124 - 7.590) AK102 (3.23 - 7.84) Jet A (3.23 - 5.94)  
NW M.Oil (7.59 - 10.43) AK103 (7.84 - 10.08) OR Diesel (3.23 - 8.54)

Surrogate	Area	Amount	%Rec
o-Terphenyl	742771	36.5	81.0 M
Triacontane	737283	38.6	85.8 M

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/ftd4a.i/20120802.b/0802a042.d

Date : 02-AUG-2012 23:15

Client ID:

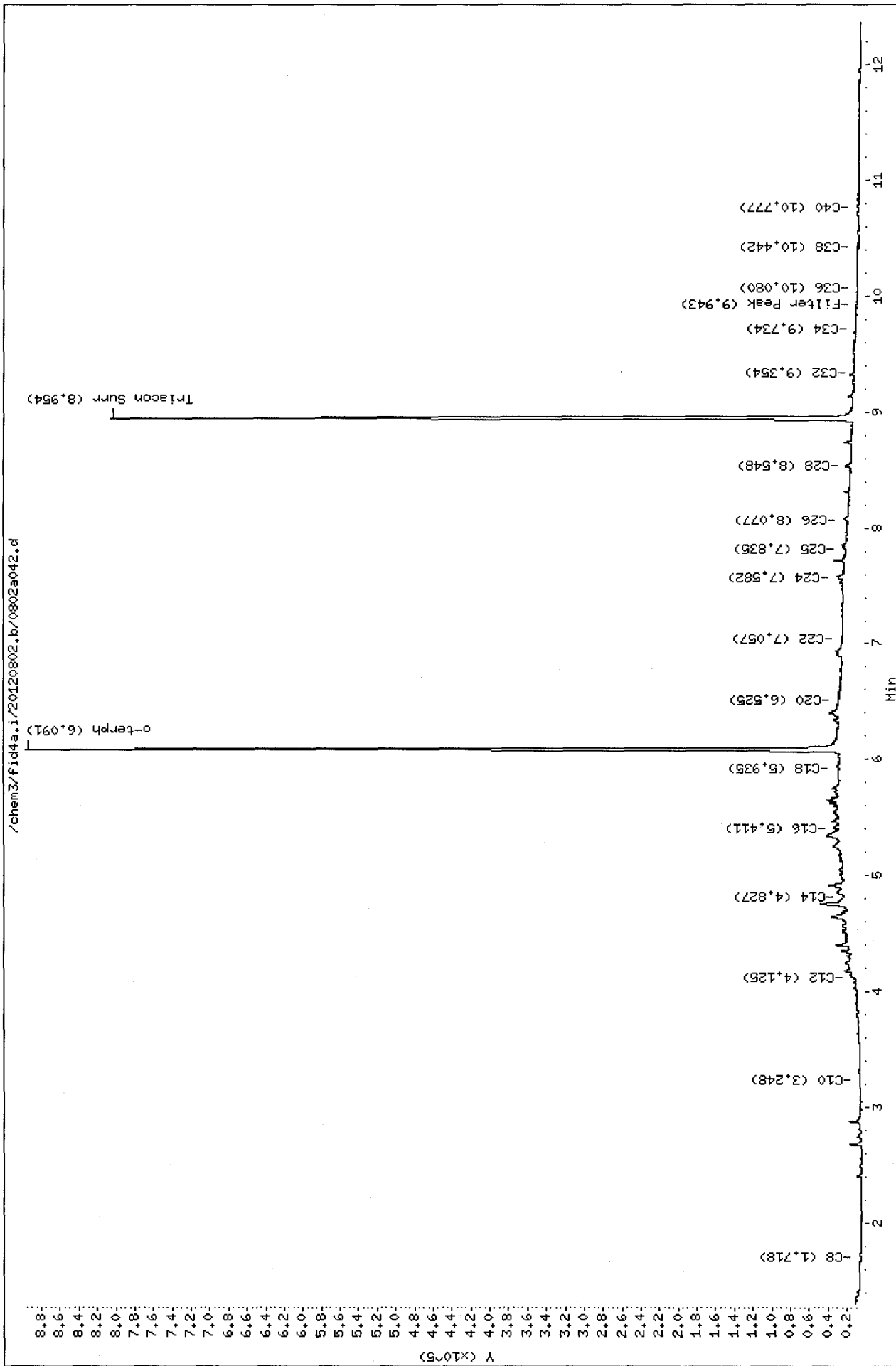
Sample Info: VE22B

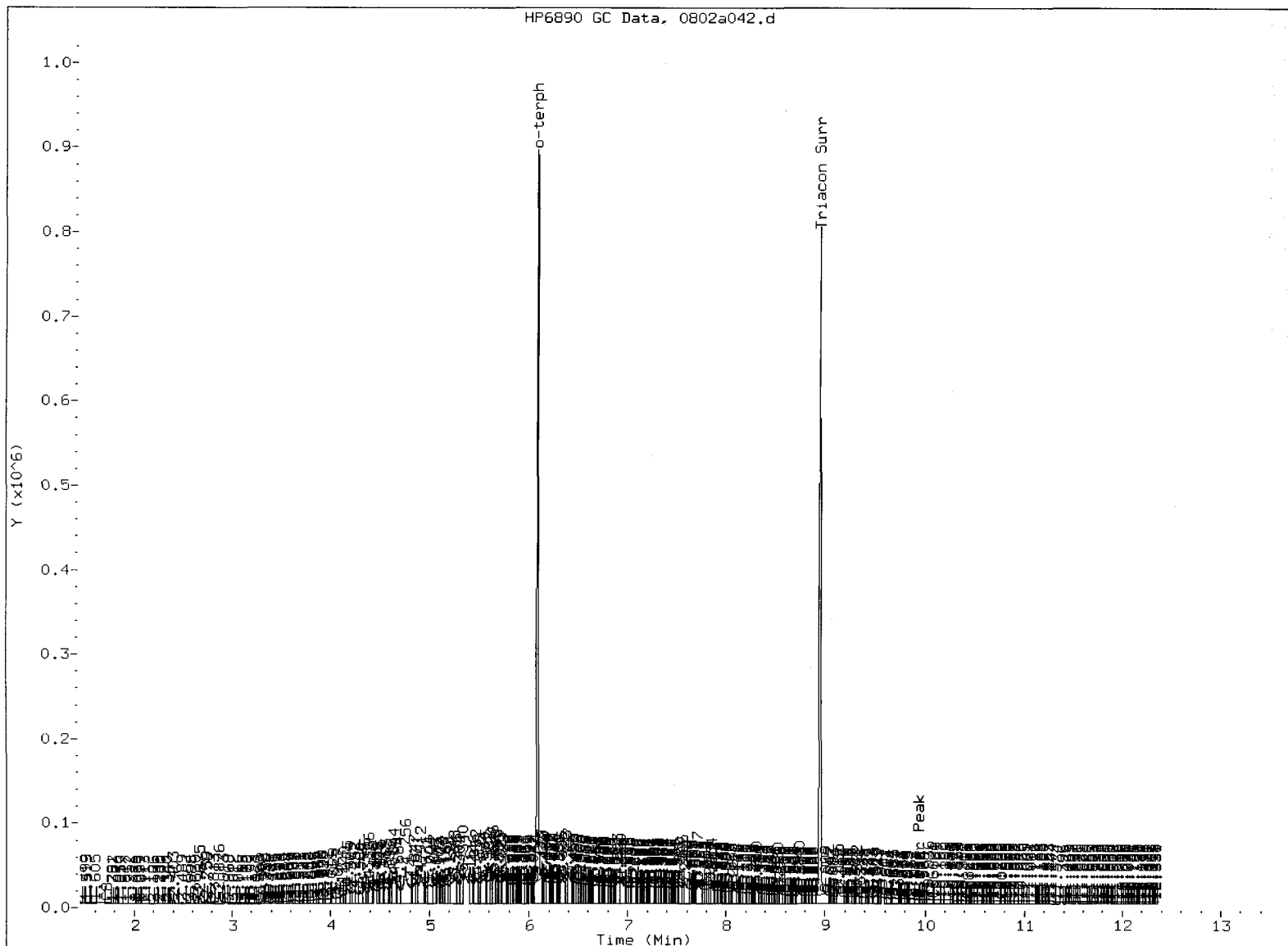
Instrument: ftd4a.i

Operator: AR

Column diameter: 0.25

Column phase: RTX-1





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 4. Skipped surrogate

Analyst: AL

Date: 8/3/2012



Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120802.b/0802a043.d  
Method: /chem3/fid4a.i/20120802.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/03/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22C  
Client ID:  
Injection: 02-AUG-2012 23:36  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.404	0.017	3608	9914	GAS (Tol-C12)	700654	46.57
C8	1.620	-0.045	1334	4935	DIESEL (C12-C24)	4937676	337.04
C10	3.247	0.016	4026	4946	M.OIL (C24-C38)	1296671	103.16
C12	4.099	-0.024	14563	15274	AK-102 (C10-C25)	5616801	324.69
C14	4.826	0.023	27099	9669	AK-103 (C25-C36)	1086418	127.25
C16	5.408	0.024	28706	20771			
C18	5.937	-0.008	25571	37147			
C20	6.523	0.006	19676	32074	JET-A (C10-C18)	3617603	292.64
C22	7.073	0.004	16838	12662	MIN.OIL (C24-C38)	1296671	96.47
C24	7.601	0.010	16577	10123			
C25	7.840	-0.003	14284	3384			
C26	8.082	-0.003	12432	11169			
C28	8.532	-0.007	9857	9934			
C32	9.337	-0.011	7187	18214			
C34	9.707	-0.013	5220	16643			
Filter Peak	9.950	0.004	4240	4967	BUNKERC (C10-C38)	6766107	886.31
C36	10.083	0.001	3840	2445			
C38	10.442	0.007	3182	4717			
C40	10.780	-0.001	3255	1621			
o-terph	6.091	0.002	885868	741593			
Triacon Surr	8.959	-0.005	789282	735725	NAS DIES (C10-C24)	5469436	319.22

Range Times: NW Diesel(4.124 - 7.590) AK102(3.23 - 7.84) Jet A(3.23 - 5.94)  
NW M.Oil(7.59 - 10.43) AK103(7.84 - 10.08) OR Diesel(3.23 - 8.54)

Surrogate	Area	Amount	%Rec
o-Terphenyl	741593	36.4	80.9 M
Triacontane	735725	38.5	85.7 M

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120802.b/0802a043.d

Date : 02-AUG-2012 23:36

Client ID:

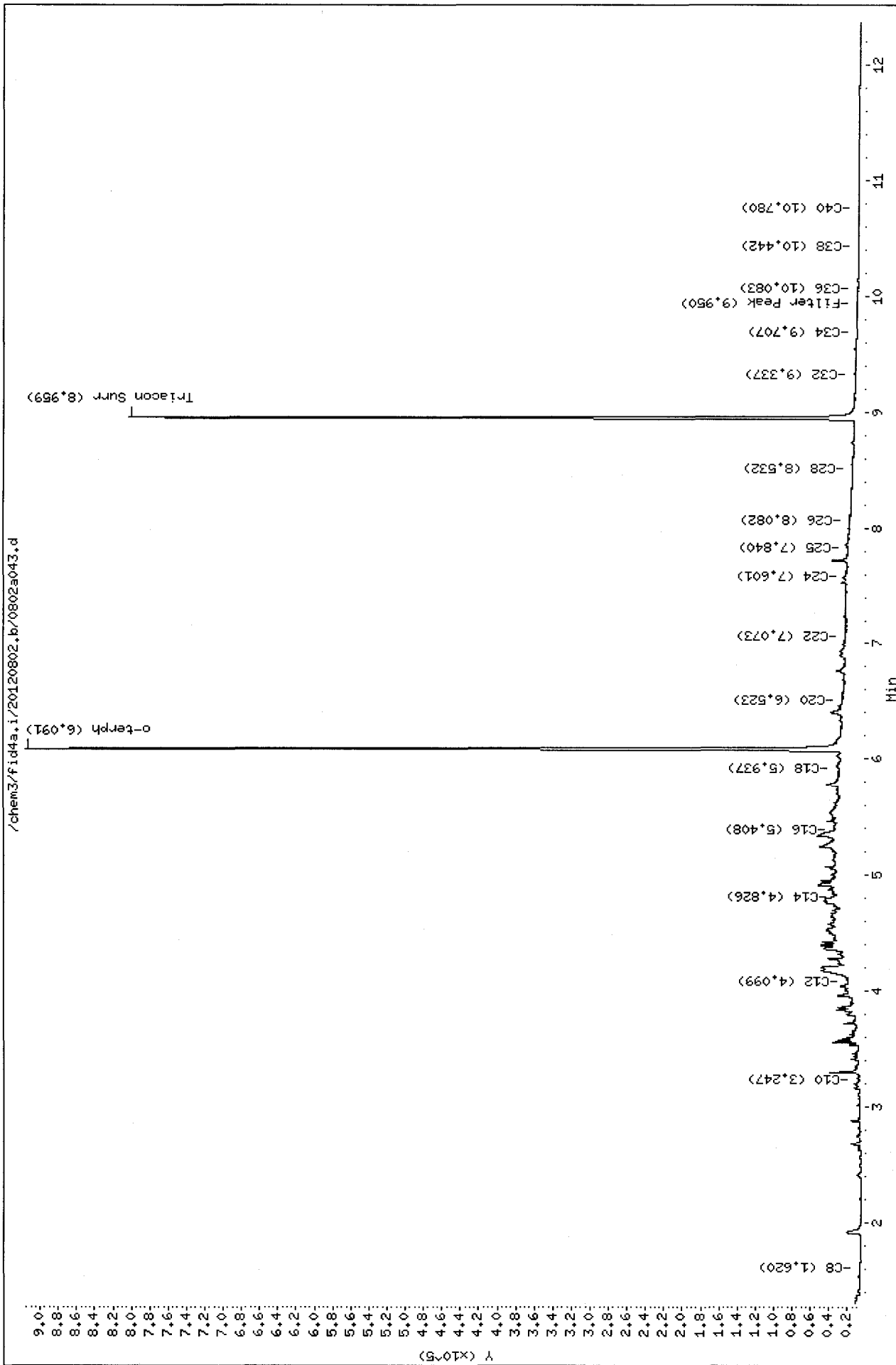
Sample Info: VE22C

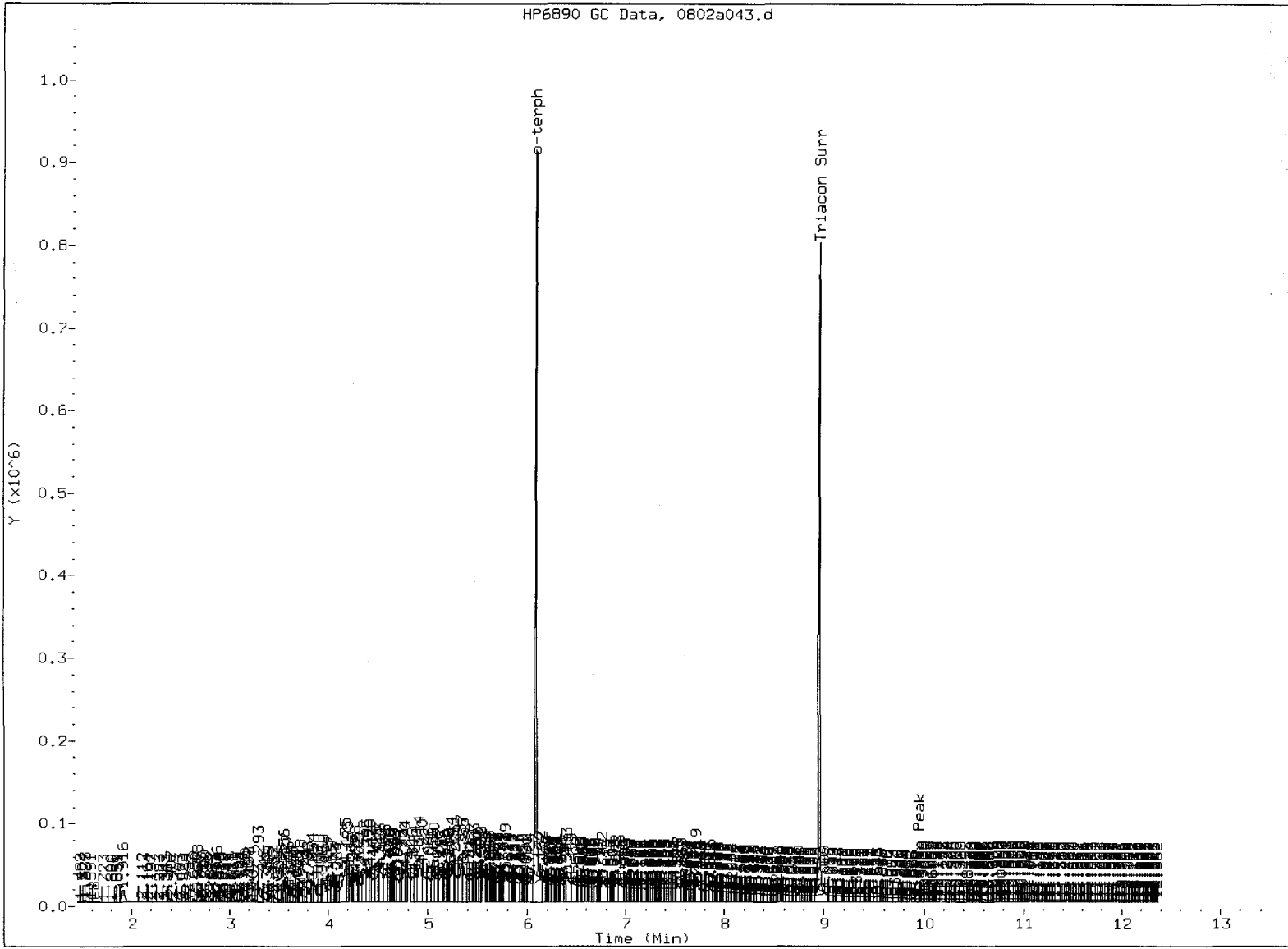
Instrument: fid4a.i

Operator: AR

Column diameter: 0.25

Column phase: RTX-1





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst: AR

Date: 8/3/2012

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120802.b/0802a044.d

ARI ID: VE22D

Method: /chem3/fid4a.i/20120802.b/ftphfid4a.m

Client ID:

Instrument: fid4a.i

Injection: 02-AUG-2012 23:57

Operator: AR

Report Date: 08/03/2012

Dilution Factor: 1

Macro: 13-JUL-2012

Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.388	0.000	3356	5537	GAS (Tol-C12)	711364	47.29
C8	1.708	0.044	534	1550	DIESEL (C12-C24)	4406956	300.82
C10	3.241	0.011	3102	5293	M.OIL (C24-C38)	1240482	98.69
C12	4.099	-0.025	14256	14146	AK-102 (C10-C25)	5097901	294.69
C14	4.796	-0.006	37554	64549	AK-103 (C25-C36)	1025597	120.12
C16	5.401	0.017	24966	12344			
C18	5.952	0.007	19422	8104			
C20	6.510	-0.007	17043	24875	JET-A (C10-C18)	3328297	269.24
C22	7.071	0.002	15863	6553	MIN.OIL (C24-C38)	1240482	92.29
C24	7.601	0.011	15415	10950			
C25	7.843	0.000	13949	5205			
C26	8.095	0.010	11738	14276			
C28	8.531	-0.008	9382	11079			
C32	9.328	-0.020	7031	20597			
C34	9.715	-0.005	4688	4174			
Filter Peak	9.957	0.012	4115	5638	BUNKERC (C10-C38)	6193530	811.31
C36	10.085	0.003	3780	3077			
C38	10.433	-0.002	3240	4896			
C40	10.776	-0.005	3510	7035			
o-terph	6.091	0.002	904428	759930			
Triacon Surr	8.956	-0.007	793565	748755	NAS DIES (C10-C24)	4953048	289.08

Range Times: NW Diesel (4.124 - 7.590) AK102 (3.23 - 7.84) Jet A (3.23 - 5.94)  
 NW M.Oil (7.59 - 10.43) AK103 (7.84 - 10.08) OR Diesel (3.23 - 8.54)

Surrogate	Area	Amount	%Rec
o-Terphenyl	759930	37.3	82.9 M
Triacotane	748755	39.2	87.2 M

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120802.b/0802a044.d

Date : 02-AUG-2012 23:57

Client ID:

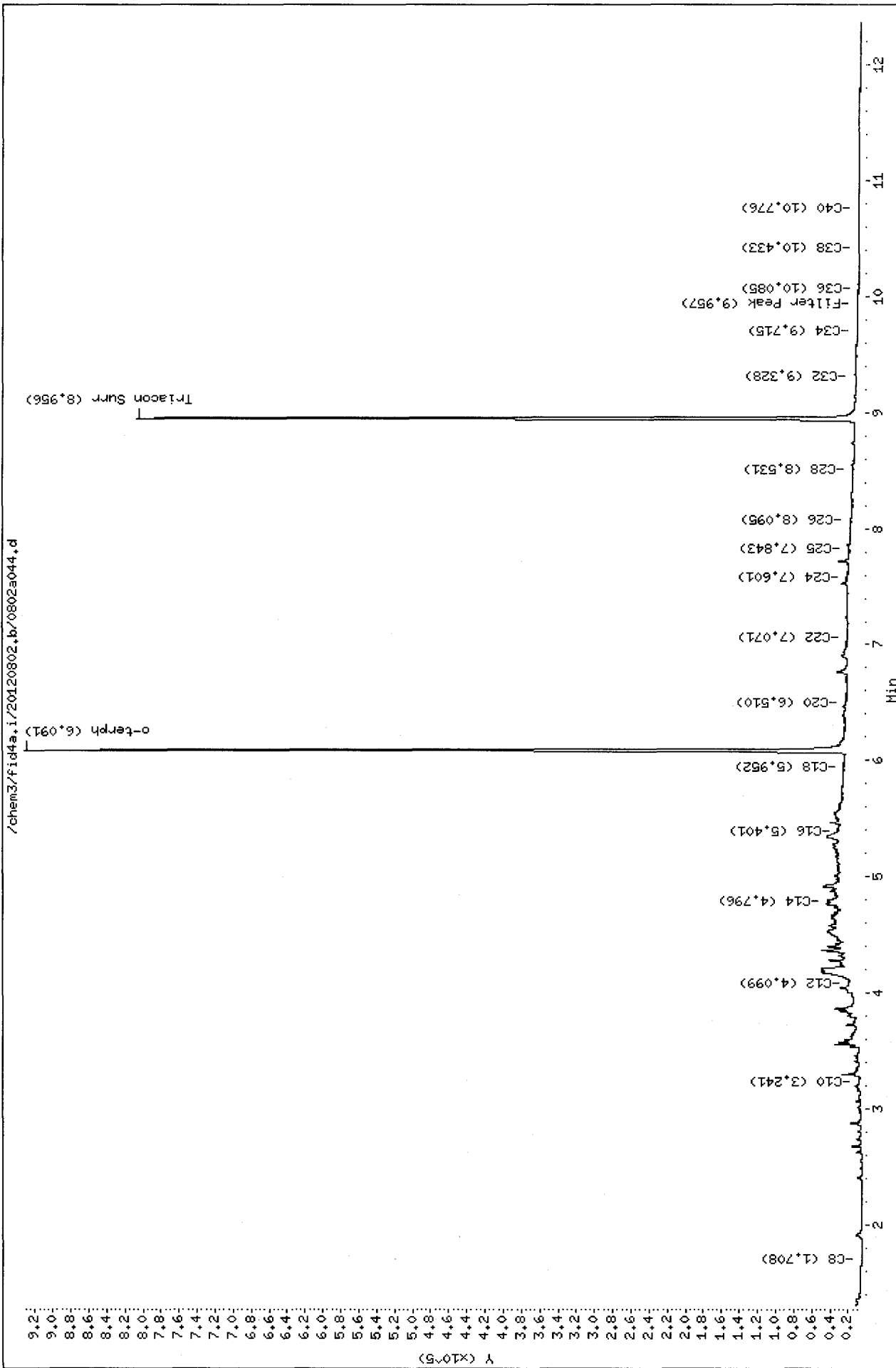
Sample Info: VE22D

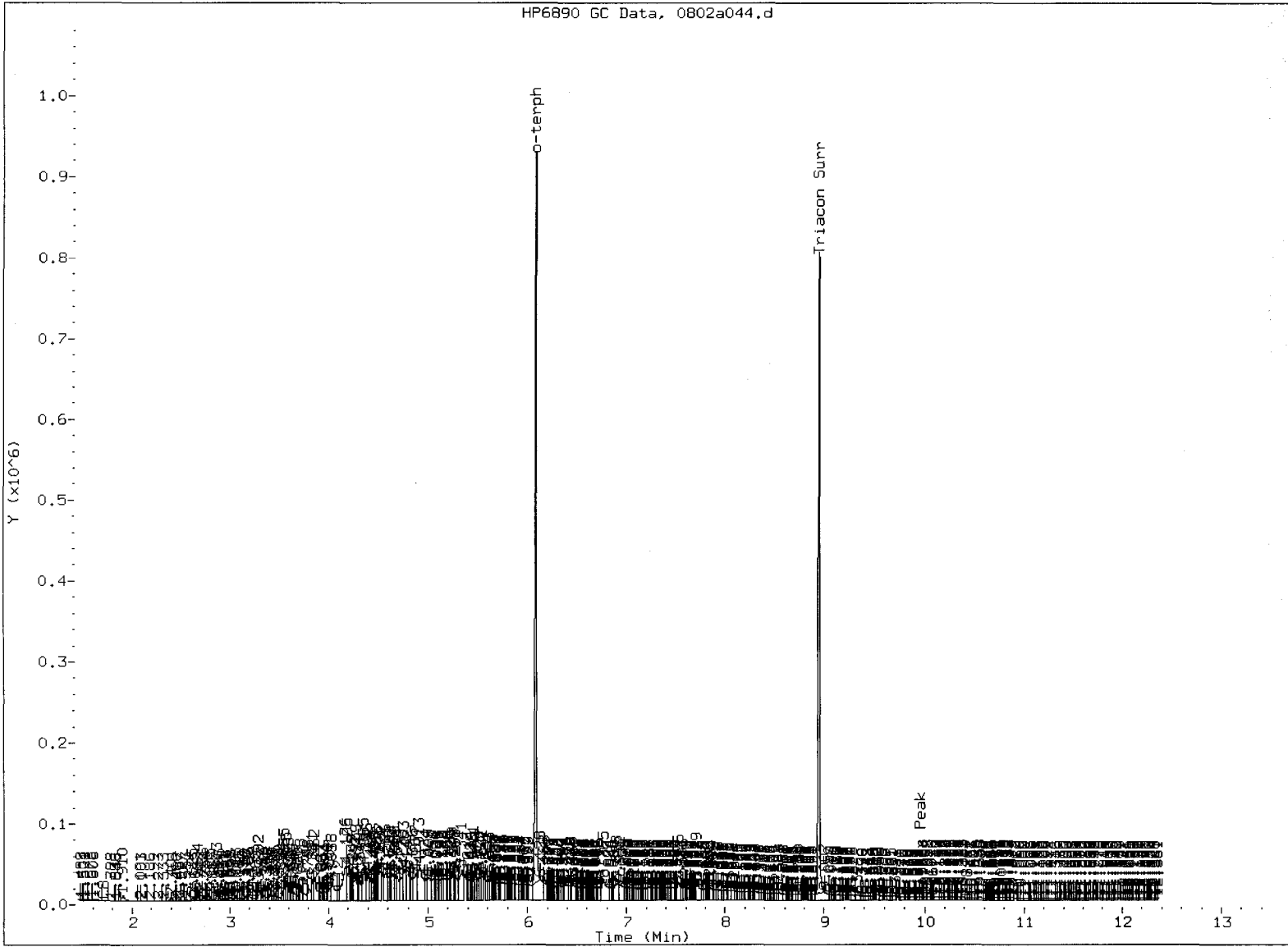
Instrument: fid4a.i

Operator: AR

Column diameter: 0.25

Column phase: RTX-1





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- /5. Skipped surrogate

Analyst: AL

Date: 8/3/2012

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120802.b/0802a045.d  
Method: /chem3/fid4a.i/20120802.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/03/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22E  
Client ID:  
Injection: 03-AUG-2012 00:19  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.402	0.014	3209	10477	GAS (Tol-C12)	579702	38.53
C8	1.617	-0.047	1467	5484	DIESEL (C12-C24)	3320446	226.65
C10	3.247	0.017	3289	5086	M.OIL (C24-C38)	964819	76.76
C12	4.101	-0.022	12365	11205	AK-102 (C10-C25)	3863798	223.35
C14	4.793	-0.010	29545	77131	AK-103 (C25-C36)	810244	94.90
C16	5.409	0.025	18428	31693			
C18	5.939	-0.006	14605	26854			
C20	6.522	0.006	11072	6116	JET-A (C10-C18)	2671331	216.09
C22	7.060	-0.009	10836	17549	MIN.OIL (C24-C38)	964819	71.78
C24	7.590	-0.001	11397	19822			
C25	7.843	0.000	9769	9326			
C26	8.090	0.005	8246	5647			
C28	8.534	-0.005	7510	4416			
C32	9.335	-0.013	5602	14807			
C34	9.729	0.009	4201	6773			
Filter Peak	9.938	-0.007	3591	4332	BUNKERC (C10-C38)	4738876	620.76
C36	10.086	0.004	3262	3504			
C38	10.430	-0.005	2898	2755			
C40	10.776	-0.005	3113	1606			
o-terph	6.090	0.001	831146	694835			
Triacon Surr	8.957	-0.007	741285	695765	NAS DIES (C10-C24)	3774056	220.27

Range Times: NW Diesel(4.124 - 7.590) AK102(3.23 - 7.84) Jet A(3.23 - 5.94)  
NW M.Oil(7.59 - 10.43) AK103(7.84 - 10.08) OR Diesel(3.23 - 8.54)

Surrogate	Area	Amount	%Rec
o-Terphenyl	694835	34.1	75.8 M
Triacotane	695765	36.5	81.0 M

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120802.b/0802a045.d

Date : 03-AUG-2012 00:19

Client ID:

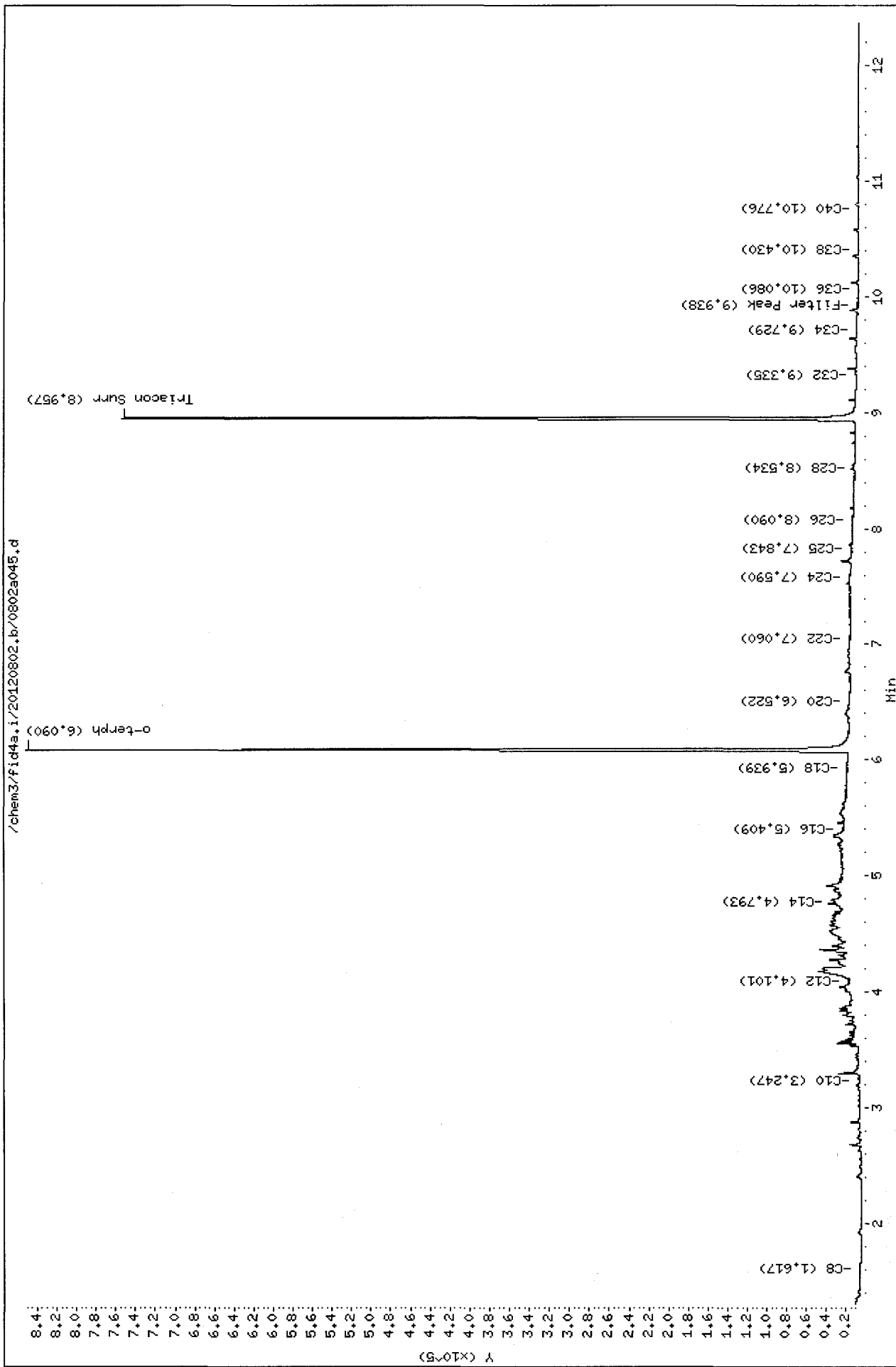
Sample Info: VE22E

Instrument: fid4a.i

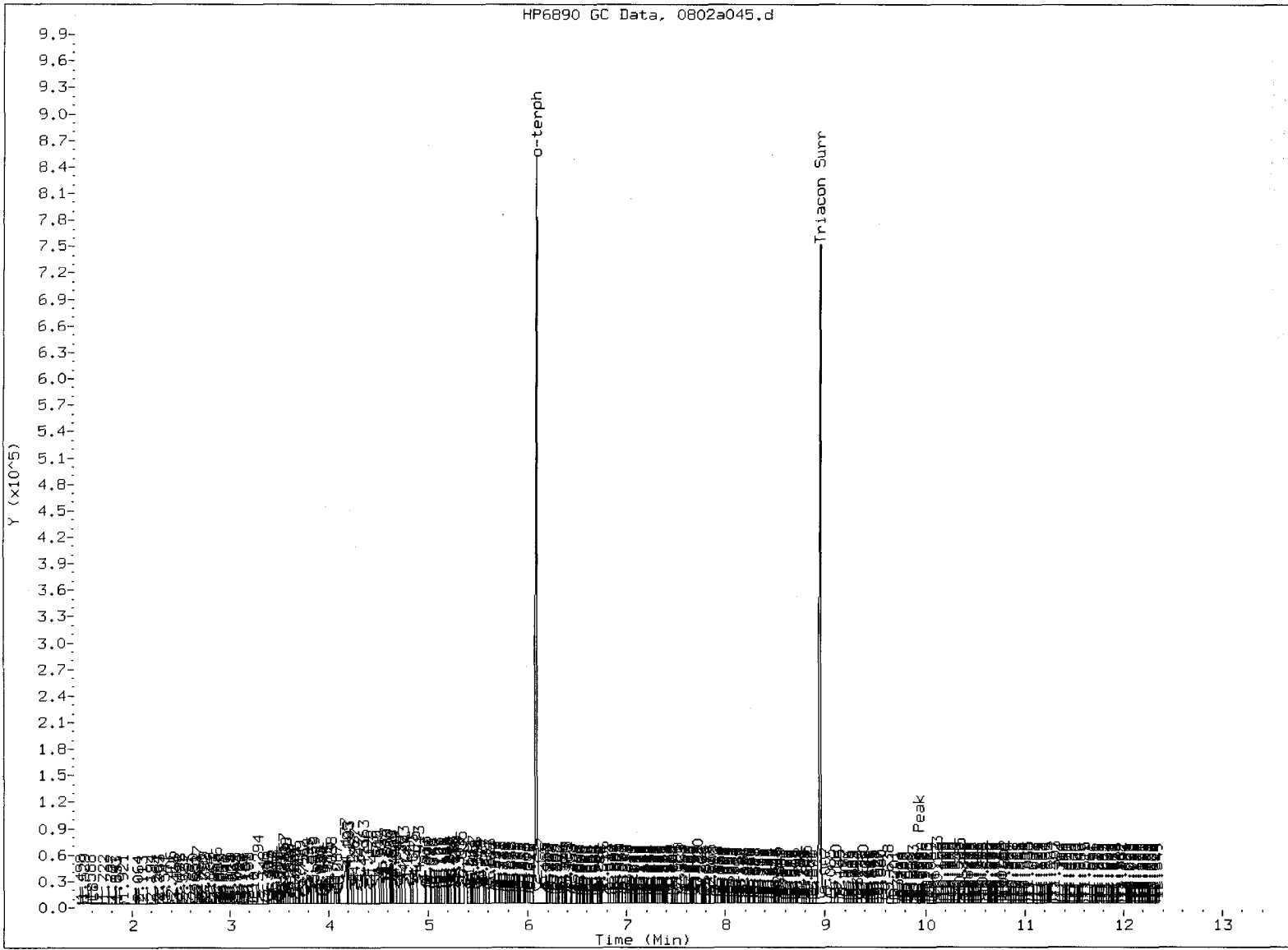
Operator: AR

Column diameter: 0.25

Column phase: RTX-1







MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst: AR

Date: 8/2/2012

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120802.b/0802a046.d  
Method: /chem3/fid4a.i/20120802.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/03/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22F  
Client ID:  
Injection: 03-AUG-2012 00:40  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.396	0.009	5043	13001	GAS (Tol-C12)	442088	29.39
C8	1.659	-0.005	743	1715	DIESEL (C12-C24)	2842448	194.02
C10	3.239	0.009	1584	2463	M.OIL (C24-C38)	1022782	81.37
C12	4.151	0.028	20847	54311	AK-102 (C10-C25)	3260654	188.49
C14	4.781	-0.021	19796	55502	AK-103 (C25-C36)	861607	100.91
C16	5.394	0.011	17349	8547			
C18	5.932	-0.012	14567	32966			
C20	6.507	-0.009	11964	10329	JET-A (C10-C18)	2014395	162.95
C22	7.067	-0.002	11280	12659	MIN.OIL (C24-C38)	1022782	76.10
C24	7.587	-0.003	12835	22124			
C25	7.838	-0.004	10769	11103			
C26	8.078	-0.007	9650	25506			
C28	8.533	-0.005	9775	11351			
C32	9.334	-0.013	6333	18522			
C34	9.727	0.007	4610	6902			
Filter Peak	9.932	-0.013	3895	7965	BUNKERC (C10-C38)	4183440	548.00
C36	10.075	-0.007	3552	3499			
C38	10.440	0.005	3055	2895			
C40	10.788	0.008	3372	7043			
o-terph	6.090	0.002	912820	757542			
Triacon Surr	8.957	-0.006	794548	740452	NAS DIES (C10-C24)	3160658	184.47

Range Times: NW Diesel (4.124 - 7.590) AK102 (3.23 - 7.84) Jet A (3.23 - 5.94)  
NW M.Oil (7.59 - 10.43) AK103 (7.84 - 10.08) OR Diesel (3.23 - 8.54)

Surrogate	Area	Amount	%Rec
o-Terphenyl	757542	37.2	82.6 M
Triacontane	740452	38.8	86.2 M

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120802.b/0802a046.d

Date : 03-AUG-2012 00:40

Client ID:

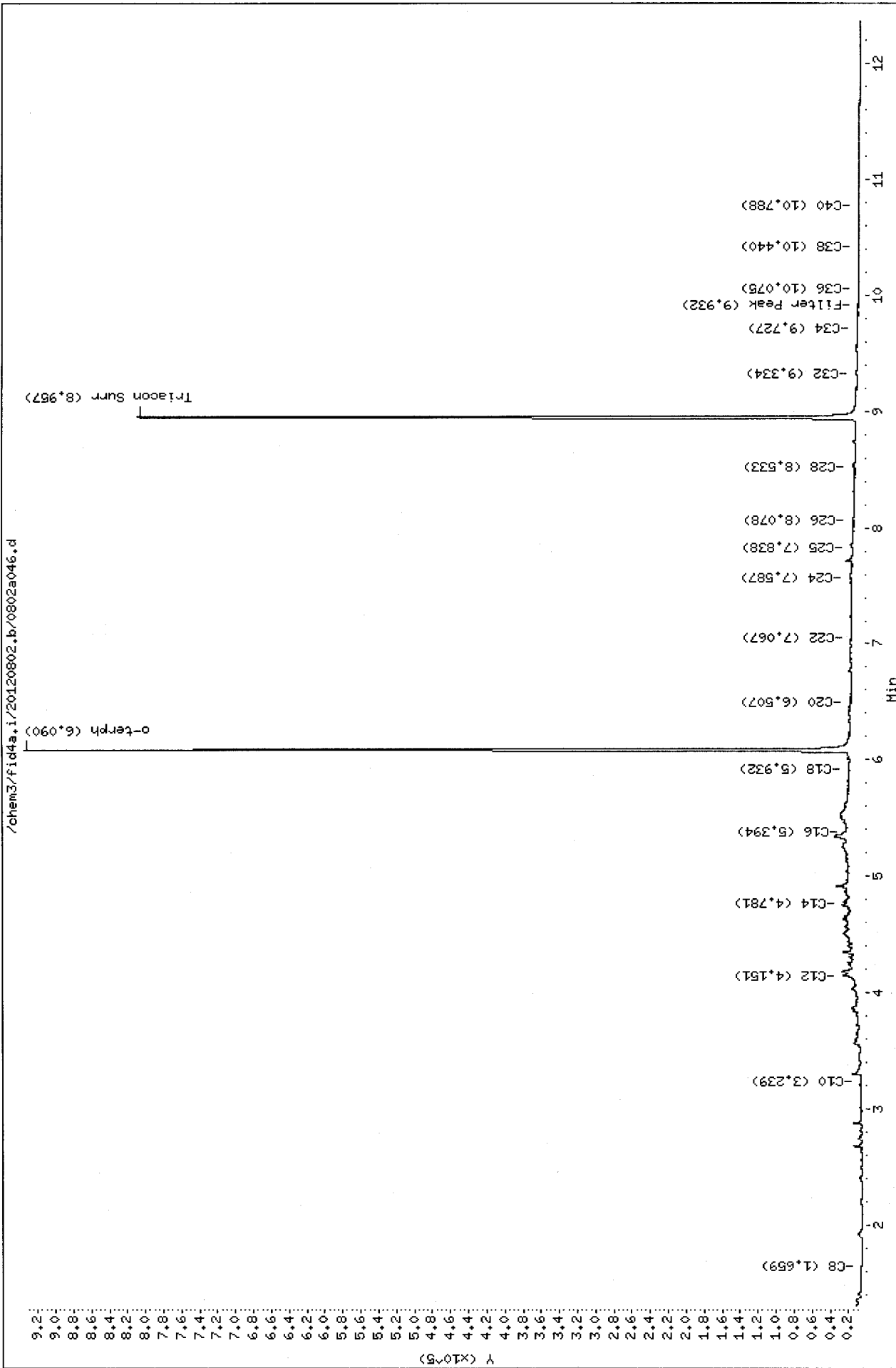
Sample Info: VE22F

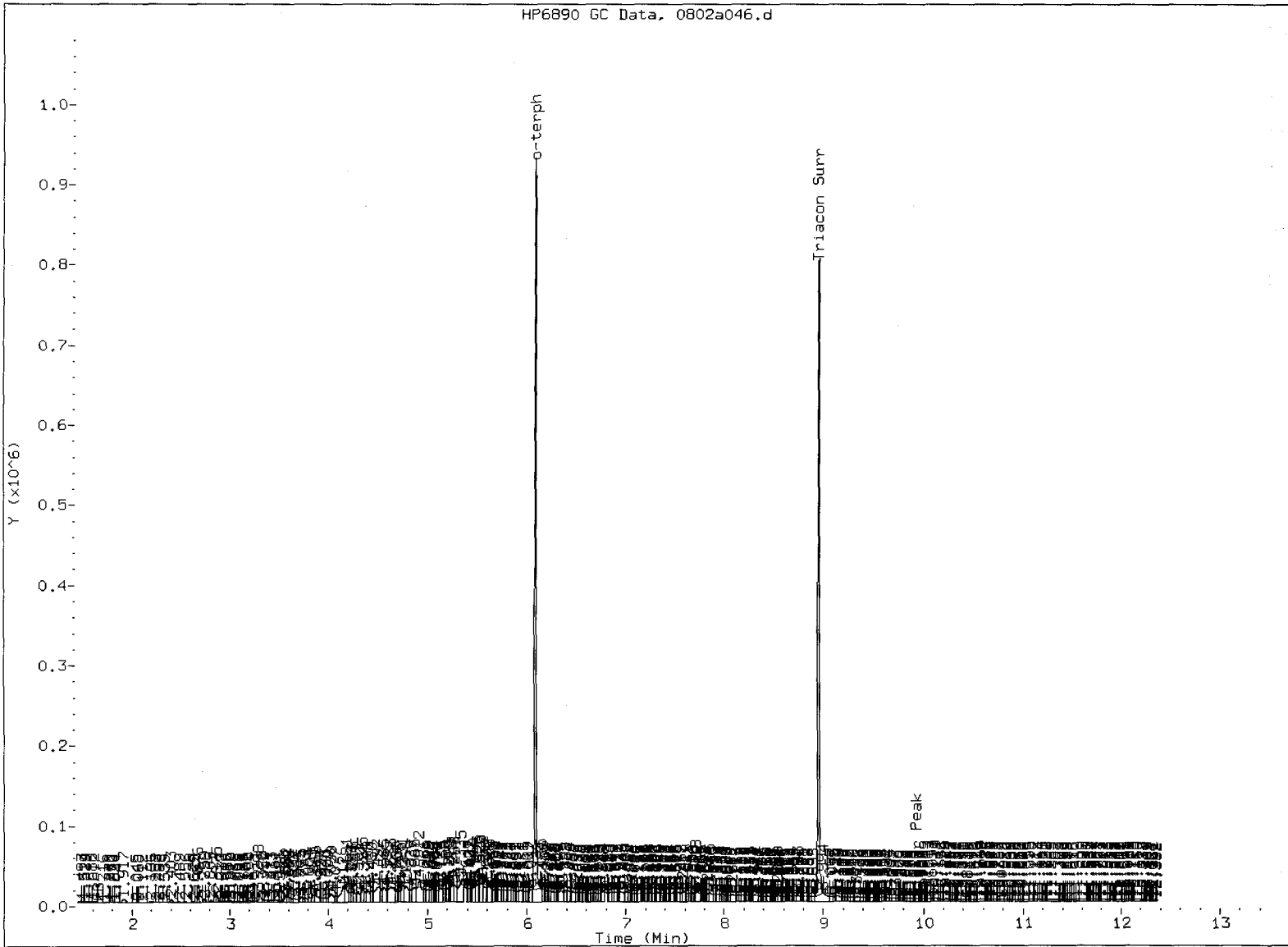
Instrument: fid4a.i

Operator: AR

Column diameter: 0.25

Column phase: RTX-1





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst: AR Date: 8/3/12

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120802.b/0802a047.d  
Method: /chem3/fid4a.i/20120802.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/03/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22G  
Client ID:  
Injection: 03-AUG-2012 01:01  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.395	0.008	6795	13761	GAS (Tol-C12)	820946	54.57
C8	1.658	-0.006	1014	1919	DIESEL (C12-C24)	3492393	238.39
C10	3.244	0.014	4157	4500	M.OIL (C24-C38)	923551	73.48
C12	4.101	-0.022	13312	14694	AK-102 (C10-C25)	4243049	245.28
C14	4.795	-0.008	36187	82537	AK-103 (C25-C36)	766860	89.82
C16	5.415	0.031	18306	19650			
C18	5.935	-0.010	14388	27948			
C20	6.508	-0.008	10659	12986	JET-A (C10-C18)	3109067	251.50
C22	7.074	0.005	10256	10265	MIN.OIL (C24-C38)	923551	68.71
C24	7.583	-0.008	11673	18297			
C25	7.839	-0.004	9535	9177			
C26	8.072	-0.013	8330	9026			
C28	8.536	-0.003	8255	8989			
C32	9.353	0.006	4995	3351			
C34	9.721	0.001	5226	14407			
Filter Peak	9.945	0.000	3619	1930	BUNKERC (C10-C38)	5070695	664.23
C36	10.092	0.010	3394	3408			
C38	10.440	0.005	2985	1896			
C40	10.772	-0.009	3501	13418			
o-terph	6.091	0.003	845472	745494			
Triacon Surr	8.956	-0.007	757635	727303	NAS DIES (C10-C24)	4147145	242.04

Range Times: NW Diesel(4.124 - 7.590) AK102(3.23 - 7.84) Jet A(3.23 - 5.94)  
NW M.Oil(7.59 - 10.43) AK103(7.84 - 10.08) OR Diesel(3.23 - 8.54)

Surrogate	Area	Amount	%Rec
o-Terphenyl	745494	36.6	81.3 M
Triacontane	727303	38.1	84.7 M

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120802.b/0802a047.d

Date : 03-AUG-2012 01:01

Client ID:

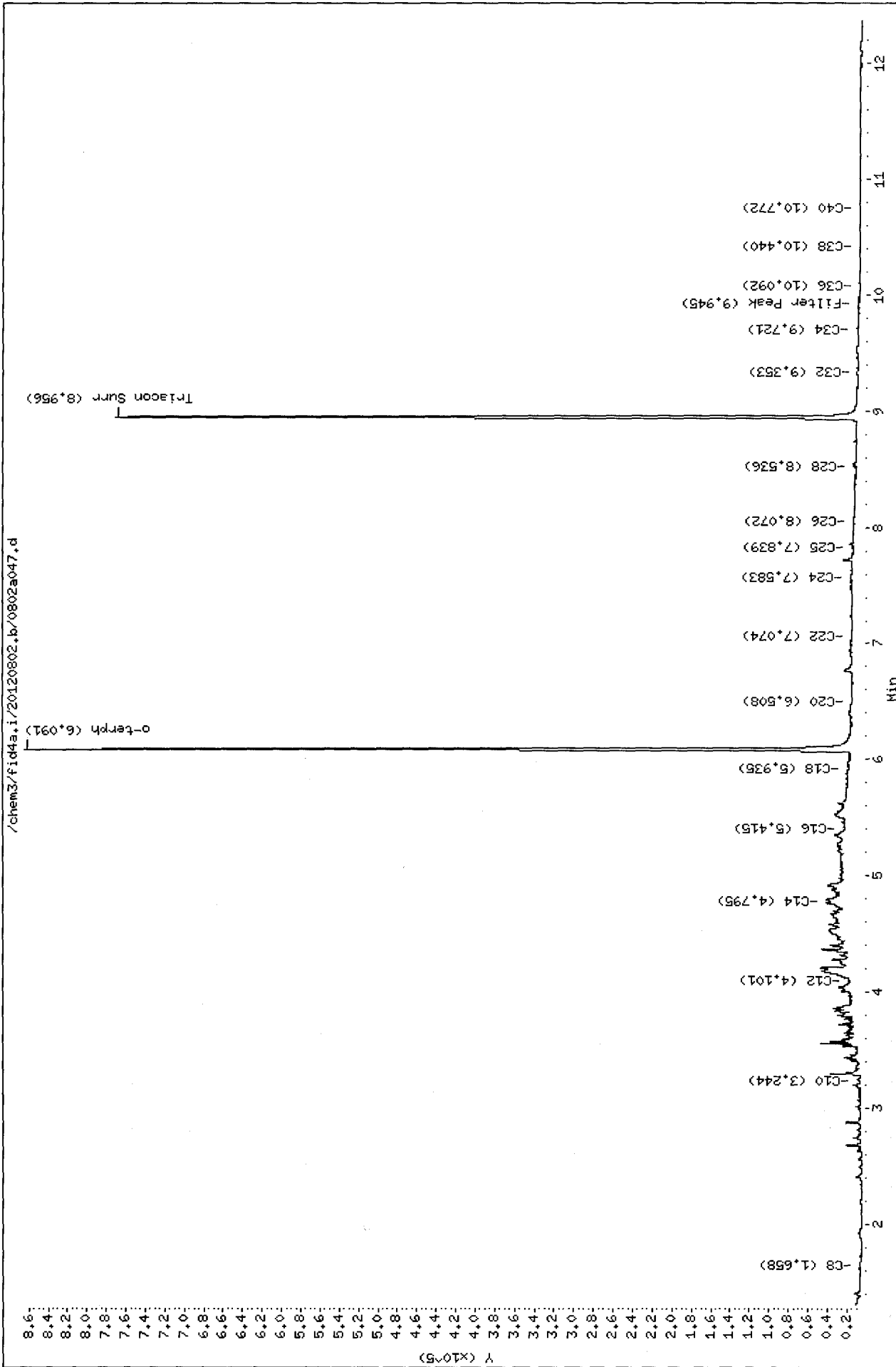
Sample Info: VE22C

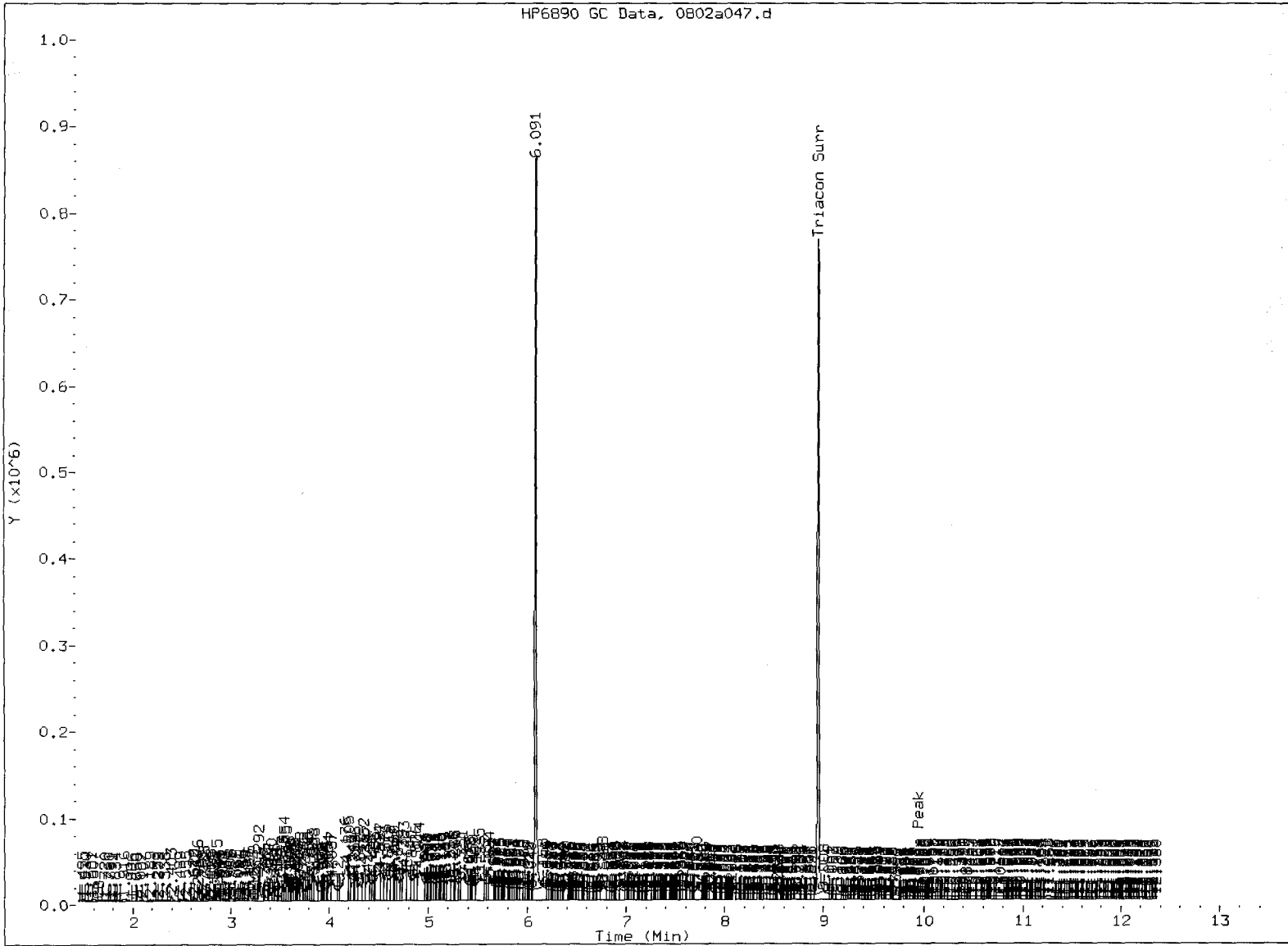
Instrument: fid4a.i

Operator: AR

Column diameter: 0.25

Column phase: RTX-1





MANUAL INTEGRATION

- 1. Baseline correction
- 2. Peak not found
- 5. Skipped surrogate

Analyst: AL

Date: 8/31/12

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120802.b/0802a048.d  
Method: /chem3/fid4a.i/20120802.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/03/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22H  
Client ID:  
Injection: 03-AUG-2012 01:22  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.395	0.007	3596	10875	GAS (Tol-C12)	492802	32.76
C8	1.713	0.049	647	1862	DIESEL (C12-C24)	3064201	209.16
C10	3.249	0.018	1906	4220	M.OIL (C24-C38)	990334	78.79
C12	4.155	0.032	23188	63992	AK-102 (C10-C25)	3515474	203.22
C14	4.782	-0.021	21115	55811	AK-103 (C25-C36)	835659	97.88
C16	5.404	0.020	18673	26095			
C18	5.936	-0.009	15413	28529			
C20	6.505	-0.011	12403	15892	JET-A (C10-C18)	2236029	180.88
C22	7.072	0.003	11443	15796	MIN.OIL (C24-C38)	990334	73.68
C24	7.590	0.000	12861	25142			
C25	7.842	-0.001	10095	5354			
C26	8.088	0.003	8596	5222			
C28	8.534	-0.005	7757	8369			
C32	9.360	0.013	5324	6967			
C34	9.708	-0.012	4278	4148			
Filter Peak	9.952	0.006	3748	3334	BUNKERC (C10-C38)	4412889	578.06
C36	10.085	0.003	3441	2451			
C38	10.437	0.002	3008	1788			
C40	10.771	-0.010	3373	16713			
o-terph	6.090	0.002	917455	777027			
Triacon Surr	8.955	-0.008	802049	764547	NAS DIES (C10-C24)	3422555	199.75

Range Times: NW Diesel(4.124 - 7.590) AK102(3.23 - 7.84) Jet A(3.23 - 5.94)  
NW M.Oil(7.59 - 10.43) AK103(7.84 - 10.08) OR Diesel(3.23 - 8.54)

Surrogate	Area	Amount	%Rec
o-Terphenyl	777027	38.1	84.8 M
Triacontane	764547	40.1	89.0 M

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012



Data File: /chem3/fid4a.i/20120802.b/0802a048.d

Date : 03-HUG-2012 01:22

Client ID:

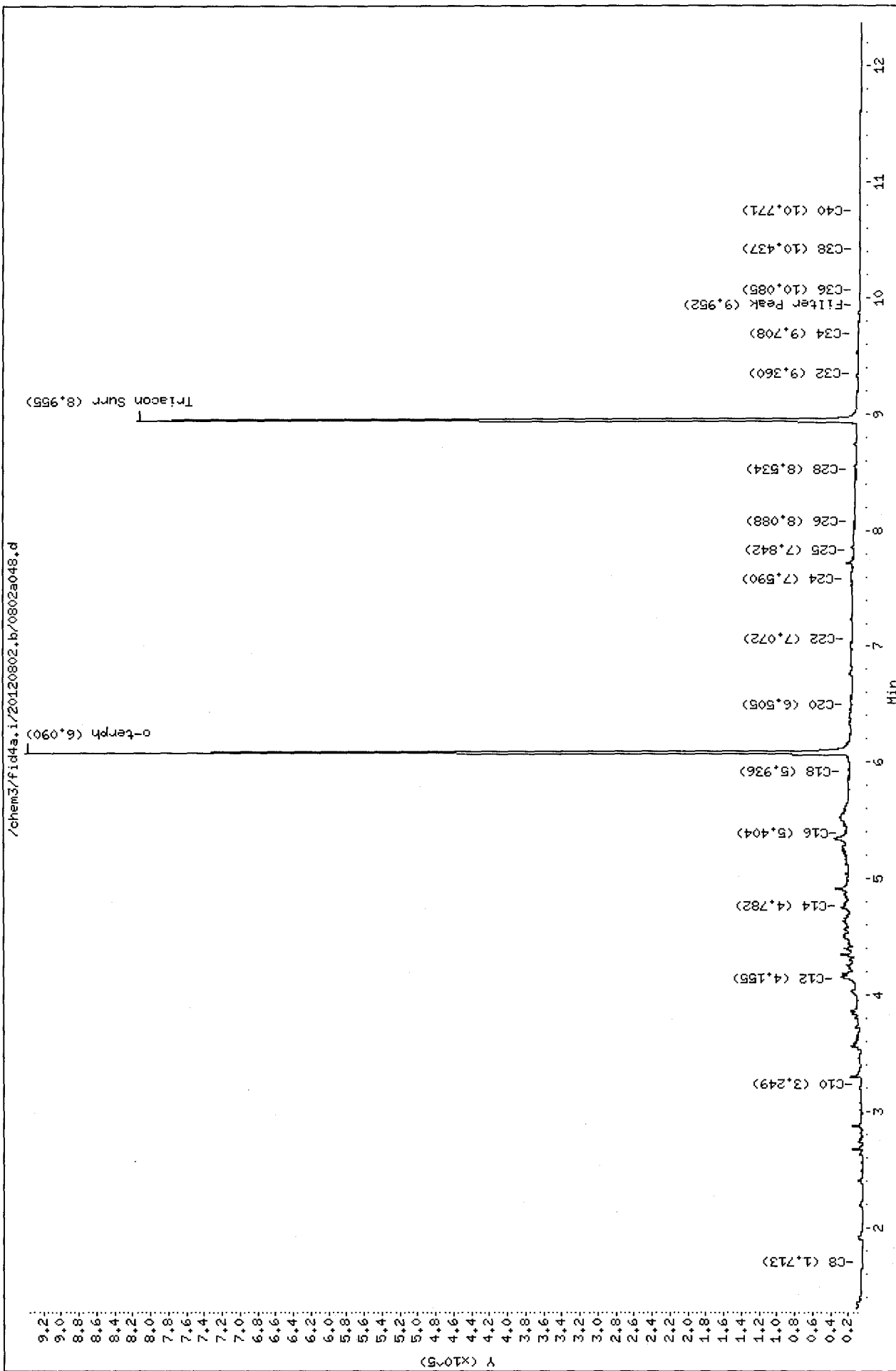
Sample Info: VE22H

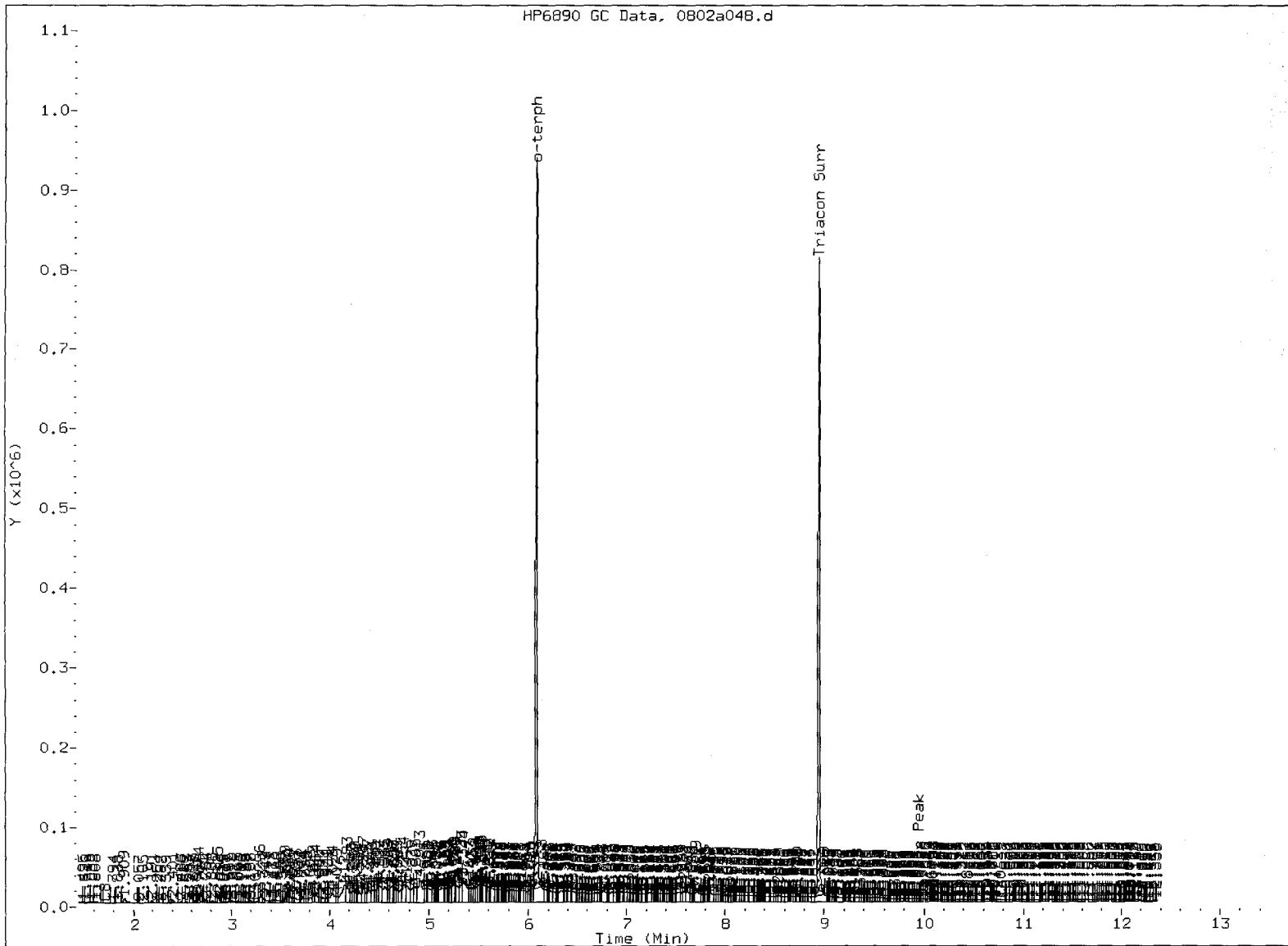
Instrument: fid4a.i

Operator: AR

Column diameter: 0.25

Column phase: RTX-1





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skimmed surrogate

Analyst: AR

Date: 8/3/12

**HCID SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510

<u>Client ID</u>	<u>O-TER</u>	<u>TOT OUT</u>
MB-080112	87.6%	0
LCS-080112	79.3%	0
LCSD-080112	80.4%	0
MW-15D-073012	83.0%	0
MW-16S-073012	81.0%	0
MW-15S-073012	80.9%	0
MW-14S-073012	82.9%	0
MW-13S-073012	75.8%	0
MW-14D-073012	82.6%	0
MW-13D-073012	81.3%	0
MW-DUP-073012	84.8%	0

**LCS/MB LIMITS      QC LIMITS**

(O-TER) = o-Terphenyl

(55-110)

(50-150)

Prep Method: SW3510C  
Log Number Range: 12-14520 to 12-14527

**ORGANICS ANALYSIS DATA SHEET**  
**NWTPH-HCID Method by GC/FID**  
 Page 1 of 1

**Sample ID: LCS-080112**  
**LCS/LCSD**

Lab Sample ID: LCS-080112  
 LIMS ID: 12-14520  
 Matrix: Water  
 Data Release Authorized: *MW*  
 Reported: 08/03/12

QC Report No: VE22-Landau Associates  
 Project: Cornwall  
 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Date Extracted LCS/LCSD: 08/01/12  
 Date Analyzed LCS: 08/02/12 22:11  
 LCSD: 08/02/12 22:32  
 Instrument/Analyst LCS: FID/AAR  
 LCSD: FID/AAR

Sample Amount LCS: 500 mL  
 LCSD: 500 mL  
 Final Extract Volume LCS: 1.0 mL  
 LCSD: 1.0 mL  
 Dilution Factor LCS: 1.00  
 LCSD: 1.00

Range	Spike		LCS		Spike		LCSD		RPD
	LCS	Added-LCS	Recovery	LCSD	Added-LCSD	Recovery	LCSD		
Diesel	2.44	3.00	81.3%	2.44	3.00	81.3%	0.0%		

**HCID Surrogate Recovery**

	LCS	LCSD
o-Terphenyl	79.3%	80.4%

Results reported in mg/L  
 RPD calculated using sample concentrations per SW846.

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120802.b/0802a039.d  
Method: /chem3/fid4a.i/20120802.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/03/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22LCSW1  
Client ID:  
Injection: 02-AUG-2012 22:11  
Dilution Factor: 1

FID:4A RESULTS

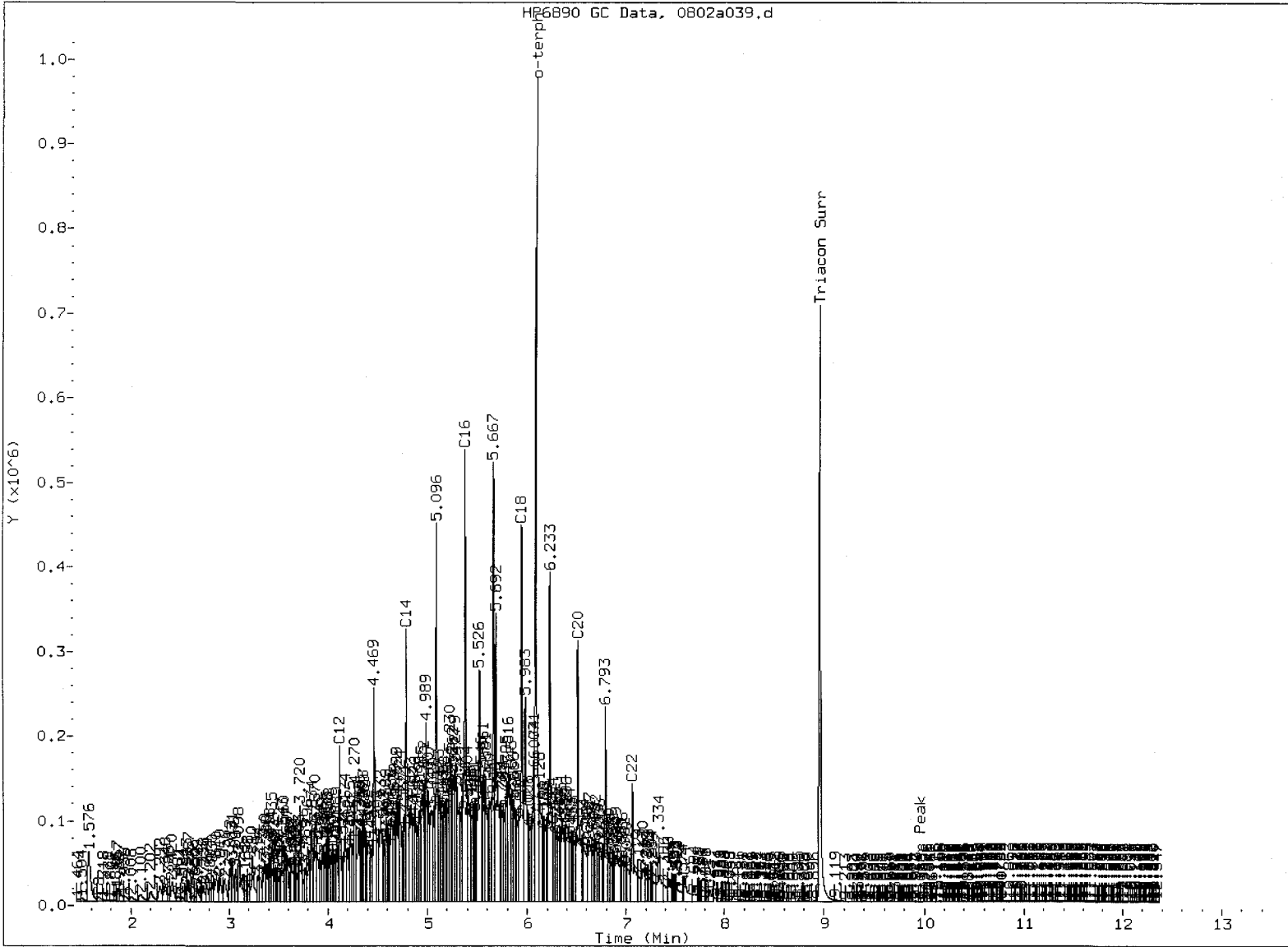
Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.406	0.018	5353	11351	GAS (Tol-C12)	3541175	235.39
C8	1.677	0.013	4754	10860	DIESEL (C12-C24)	17875078	1220.14
C10	3.234	0.004	54696	100426	M.OIL (C24-C38)	171414	13.64
C12	4.119	-0.005	183515	164246	AK-102 (C10-C25)	20387200	1178.52
C14	4.793	-0.010	322220	373297	AK-103 (C25-C36)	117302	13.74
C16	5.383	-0.001	534997	658135			
C18	5.949	0.004	444568	580680			
C20	6.516	-0.001	307647	458602	JET-A (C10-C18)	14870021	1202.88
C22	7.065	-0.004	139430	251520	MIN.OIL (C24-C38)	171414	12.75
C24	7.596	0.006	29282	77393			
C25	7.850	0.007	13736	27395			
C26	8.092	0.007	6309	11311			
C28	8.538	-0.001	1466	1151			
C32	9.344	-0.003	102	144			
C34	9.711	-0.009	61	82			
Filter Peak	9.957	0.011	94	72	BUNKERC (C10-C38)	20511446	2686.86
C36	10.078	-0.004	222	159			
C38	10.439	0.004	341	198			
C40	10.780	-0.001	824	473			
o-terph	6.096	0.007	866090	726752			
Triacon Surr	8.963	-0.001	704955	763361	NAS DIES (C10-C24)	20340032	1187.12

Range Times: NW Diesel (4.124 - 7.590) AK102 (3.23 - 7.84) Jet A (3.23 - 5.94)  
NW M.Oil (7.59 - 10.43) AK103 (7.84 - 10.08) OR Diesel (3.23 - 8.54)

Surrogate	Area	Amount	%Rec
o-Terphenyl	726752	35.7	79.3 M
Triacontane	763361	40.0	88.9

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012



MANUAL INTEGRATION

- 1. Baseline correction
- 2. Peak not found
- 5. Skipped surrogate

Analyst: AR

Date: 8/31/12

Data File: /chem3/fid4a.i/20120802.b/0802a039.d

Date: 02-AUG-2012 22:11

Client ID:

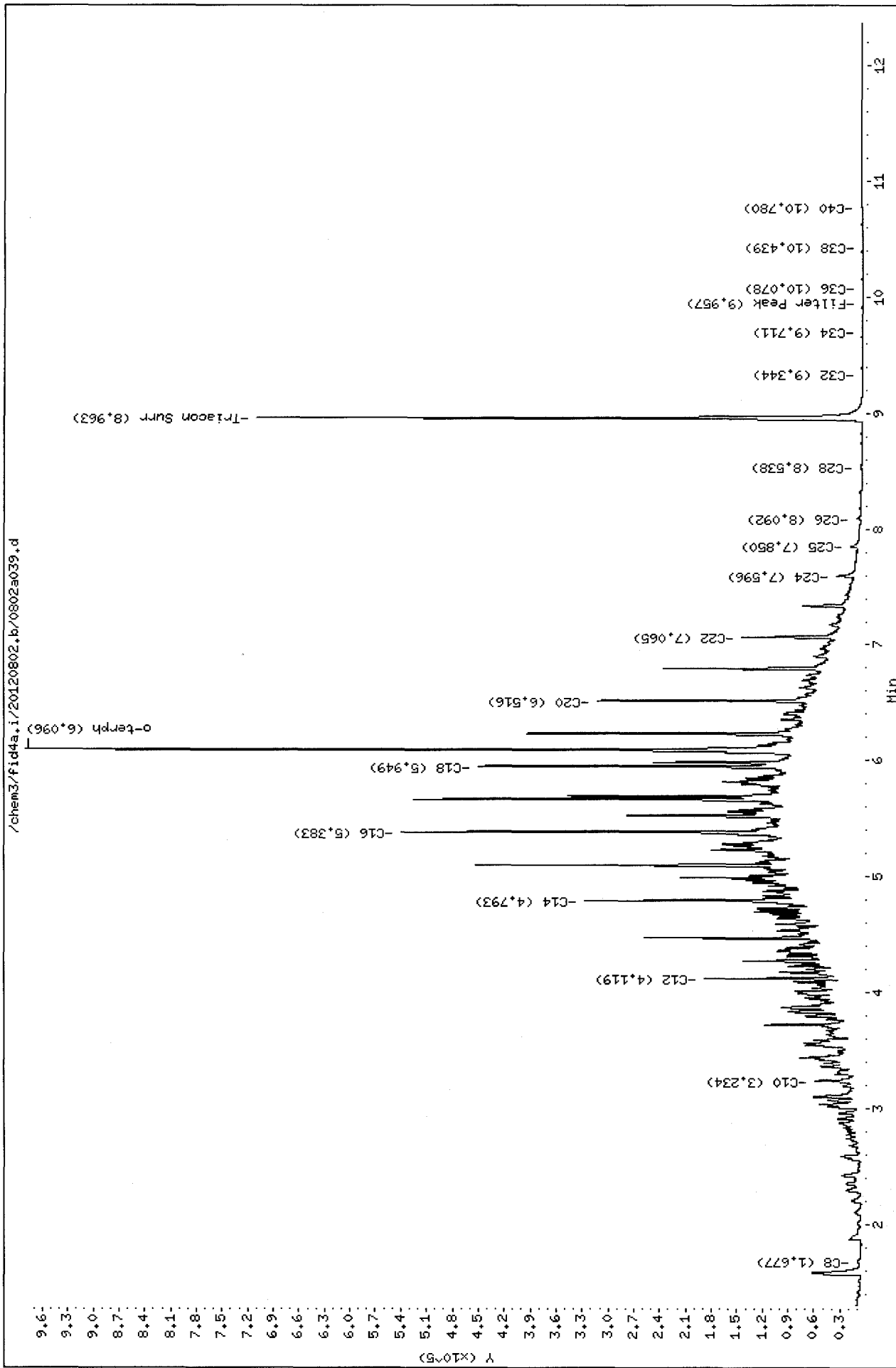
Sample Info: VE22LCSM1

Instrument: fid4a.i

Operator: AR

Column diameter: 0.25

Column phase: RTX-1



Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120802.b/0802a040.d  
Method: /chem3/fid4a.i/20120802.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: AR  
Report Date: 08/03/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22LCSDW1  
Client ID:  
Injection: 02-AUG-2012 22:32  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.396	0.009	5843	5471	GAS (Tol-C12)	3477075	231.13 <i>NS</i>
C8	1.660	-0.004	4296	3539	DIESEL (C12-C24)	17892717	1221.35 <i>✓</i>
C10	3.234	0.004	55682	94943	M.OIL (C24-C38)	162145	12.90 <i>✓</i>
C12	4.119	-0.005	172346	160512	AK-102 (C10-C25)	20333936	1175.44
C14	4.793	-0.010	299374	371153	AK-103 (C25-C36)	119173	13.96
C16	5.382	-0.002	506217	530164			
C18	5.950	0.005	432636	582766			
C20	6.516	-0.001	301626	404351	JET-A (C10-C18)	14753370	1193.45
C22	7.066	-0.003	139478	238211	MIN.OIL (C24-C38)	162145	12.06
C24	7.598	0.007	29489	77270			
C25	7.851	0.009	14027	26956			
C26	8.092	0.007	6223	11791			
C28	8.539	0.000	1440	1131			
C32	9.358	0.011	84	30			
C34	9.722	0.002	72	76			
Filter Peak	9.940	-0.006	105	63	BUNKERC (C10-C38)	20460622	2680.20
C36	10.081	-0.001	231	497			
C38	10.437	0.002	365	263			
C40	10.792	0.011	906	1301			
o-terph	6.096	0.008	901833	736634			
Triacon Surr	8.960	-0.003	716951	772779	NAS DIES (C10-C24)	20298478	1184.69

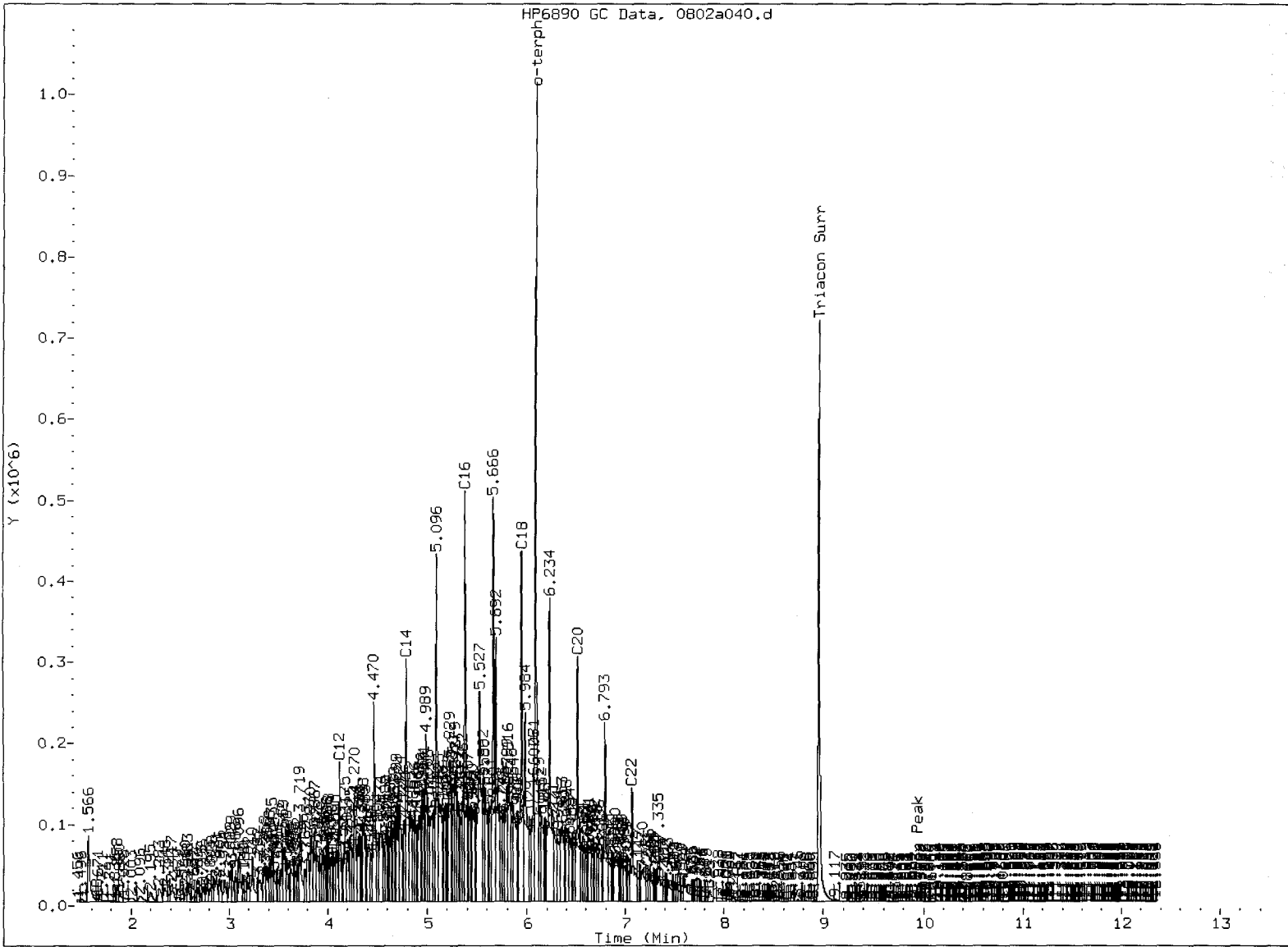
Range Times: NW Diesel (4.124 - 7.590) AK102 (3.23 - 7.84) Jet A (3.23 - 5.94)  
NW M.Oil (7.59 - 10.43) AK103 (7.84 - 10.08) OR Diesel (3.23 - 8.54)

Surrogate	Area	Amount	%Rec
o-Terphenyl	736634	36.2	80.4 M
Triacontane	772779	40.5	90.0

M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst: AR

Date: 5/3/12

Data File: /chem3/fid4a.i/20120802.b/0802a040.d

Date: 02-AUG-2012 22:32

Client ID:

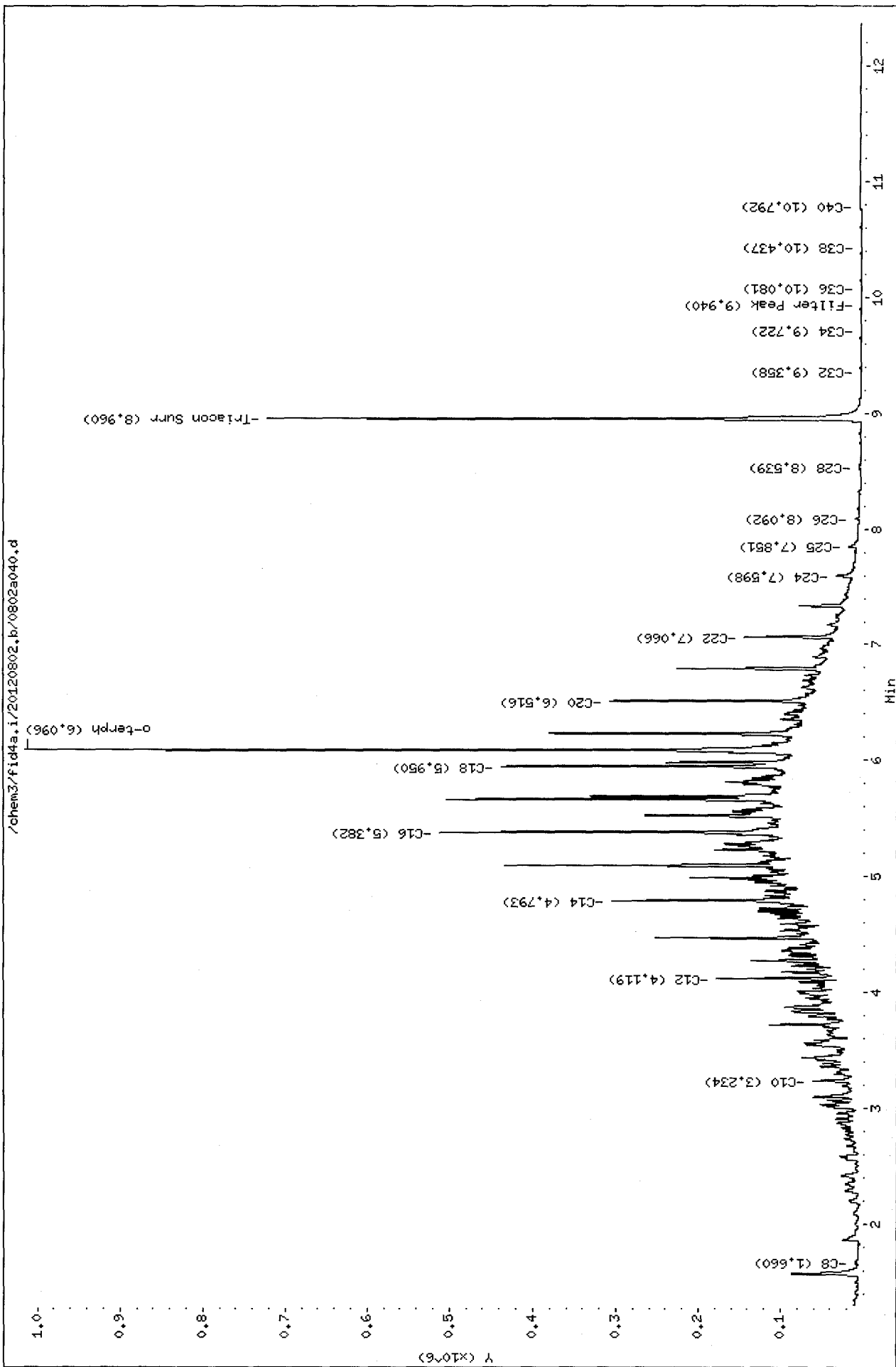
Sample Info: VE22LCSDM1

Instrument: fid4a.i

Operator: AR

Column diameter: 0.25

Column phase: RTX-1



**TOTAL HCID RANGE HYDROCARBONS-EXTRACTION REPORT**

Matrix: Water  
Date Received: 07/31/12

ARI Job: VE22  
Project: Cornwall  
0001020.400.510

ARI ID	Client ID	Sample Amt	Final Vol	Prep Date
12-14520-080112MB	Method Blank	500 mL	1.00 mL	08/01/12
12-14520-080112LCS	Lab Control	500 mL	1.00 mL	08/01/12
12-14520-080112LCSD	Lab Control Dup	500 mL	1.00 mL	08/01/12
12-14520-VE22A	MW-15D-073012	500 mL	1.00 mL	08/01/12
12-14521-VE22B	MW-16S-073012	500 mL	1.00 mL	08/01/12
12-14522-VE22C	MW-15S-073012	500 mL	1.00 mL	08/01/12
12-14523-VE22D	MW-14S-073012	500 mL	1.00 mL	08/01/12
12-14524-VE22E	MW-13S-073012	500 mL	1.00 mL	08/01/12
12-14525-VE22F	MW-14D-073012	500 mL	1.00 mL	08/01/12
12-14526-VE22G	MW-13D-073012	500 mL	1.00 mL	08/01/12
12-14527-VE22H	MW-DUP-073012	500 mL	1.00 mL	08/01/12

**ORGANICS ANALYSIS DATA SHEET  
TOTAL DIESEL RANGE HYDROCARBONS**

NWTPHD by GC/FID-Silica and Acid Cleaned  
Extraction Method:  
Page 1 of 1

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510

Matrix: Water  
Data Release Authorized: *AB*  
Reported: 08/07/12

ARI ID	Sample ID	Extraction Date	Analysis Date	EFV DL	Range/Surrogate	RL	Result
MB-080312 12-14520	Method Blank HC ID: ---	08/03/12	08/06/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 76.2%
VE22A 12-14520	MW-15D-073012 HC ID: ---	08/03/12	08/06/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 75.2%
VE22B 12-14521	MW-16S-073012 HC ID: ---	08/03/12	08/06/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 71.5%
VE22C 12-14522	MW-15S-073012 HC ID: <b>DIESEL</b>	08/03/12	08/06/12 FID4A	1.00 1.0	<b>Diesel Range</b> Motor Oil Range o-Terphenyl	<b>0.10</b> 0.20	<b>0.20</b> < 0.20 U 67.9%
VE22D 12-14523	MW-14S-073012 HC ID: ---	08/03/12	08/06/12 FID4A	1.00 1.0	Diesel Range Motor Oil Range o-Terphenyl	0.10 0.20	< 0.10 U < 0.20 U 70.9%

Reported in mg/L (ppm)

EFV-Effective Final Volume in mL.  
DL-Dilution of extract prior to analysis.  
RL-Reporting limit.

Diesel range quantitation on total peaks in the range from C12 to C24.  
Motor Oil range quantitation on total peaks in the range from C24 to C38.  
HC ID: DRO/RRO indicate results of organics or additional hydrocarbons in ranges are not identifiable.

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120806.b/0806a025.d  
Method: /chem3/fid4a.i/20120806.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 08/07/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22MBW1  
Client ID:  
Injection: 06-AUG-2012 21:09  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.387	0.006	2851	6248	GAS (Tol-C12)	55060	3.66
C8	1.662	0.002	464	844	DIESEL (C12-C24)	179672	12.26
C10	3.240	0.006	269	168	M.OIL (C24-C38)	337481	26.85
C12	4.137	0.005	319	304	AK-102 (C10-C25)	205581	11.88
C14	4.822	0.014	331	118	AK-103 (C25-C36)	310170	36.33
C16	5.400	0.010	885	1490			
C18	5.952	0.002	1295	2193			
C20	6.529	0.007	1043	2129	JET-A (C10-C18)	136489	11.04
C22	7.083	0.010	957	1870	MIN.OIL (C24-C38)	337481	25.11
C24	7.590	-0.006	673	225			
C25	7.847	0.000	468	213			
C26	8.088	-0.003	708	1056			
C28	8.542	-0.007	1015	1208			
C32	9.387	-0.007	702	1096			
C34	9.779	-0.013	978	1229			
Filter Peak	9.939	-0.018	1023	1139	BUNKERC (C10-C38)	537224	70.37
C36	10.222	0.044	1774	3296			
C38	10.551	-0.003	1298	1826			
C40	10.930	0.005	1735	2194			
o-terph	6.094	0.000	530883	698219			
Triacon Surr	8.962	-0.028	706569	708966	NAS DIES (C10-C24)	199743	11.66

Range Times: NW Diesel (4.131 - 7.595) AK102 (3.23 - 7.85) Jet A (3.23 - 5.95)  
NW M.Oil (7.60 - 10.55) AK103 (7.85 - 10.18) OR Diesel (3.23 - 8.55)

Surrogate	Area	Amount	%Rec
o-Terphenyl	698219	34.3	76.2
Triacontane	708966	37.1	82.5

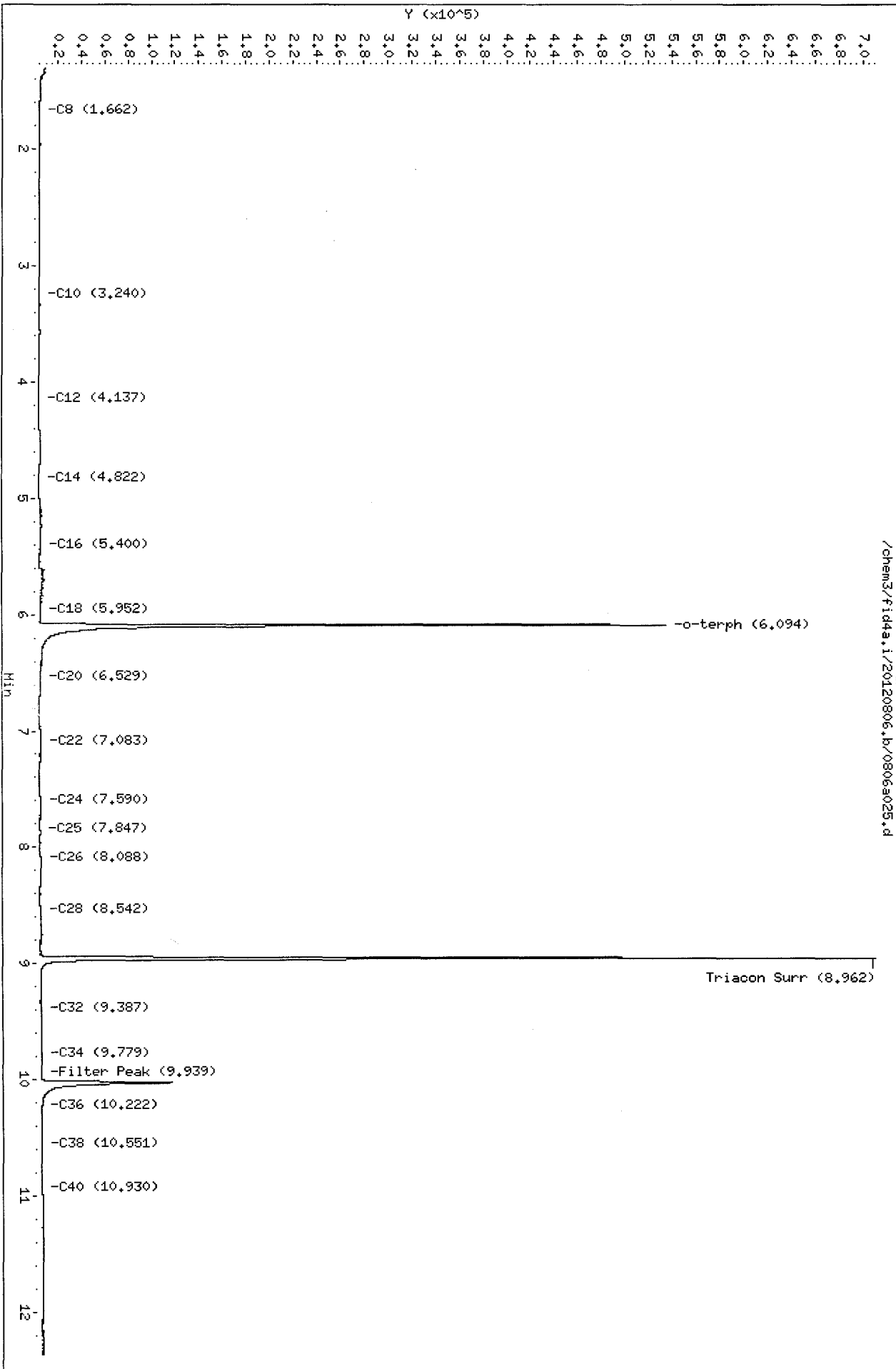
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

*WJ*  
*8.7.12*

Data File: /chem3/fid4a.i/20120806.b/0806a025.d  
Date: 06-AUG-2012 21:09  
Client ID:  
Sample Info: VE22HBM1  
Column phase: RTX-1

Instrument: fid4a.i  
Operator: JR  
Column diameter: 0.25



4432

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120806.b/0806a028.d      ARI ID: VE22A  
 Method: /chem3/fid4a.i/20120806.b/ftphfid4a.m      Client ID:  
 Instrument: fid4a.i      Injection: 06-AUG-2012 22:12  
 Operator: JR  
 Report Date: 08/07/2012      Dilution Factor: 1  
 Macro: 13-JUL-2012  
 Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.395	0.014	6838	9781	GAS (Tol-C12)	228134	15.16
C8	1.665	0.005	594	1780	DIESEL (C12-C24)	224779	15.34
C10	3.257	0.024	989	1393	M.OIL (C24-C38)	132698	10.56
C12	4.142	0.011	2938	8299	AK-102 (C10-C25)	397847	23.00
C14	4.811	0.003	1927	839	AK-103 (C25-C36)	109976	12.88
C16	5.401	0.011	1368	615			
C18	5.954	0.004	992	924			
C20	6.527	0.006	900	1048	JET-A (C10-C18)	338094	27.35
C22	7.084	0.012	862	1805	MIN.OIL (C24-C38)	132698	9.87
C24	7.595	0.000	510	352			
C25	7.822	-0.025	507	860			
C26	8.084	-0.006	361	275			
C28	8.545	-0.004	999	816			
C32	9.388	-0.006	1051	3206			
C34	9.801	0.009	453	713			
Filter Peak C36	9.947	-0.010	511	708	BUNKERC (C10-C38)	526113	68.92
C38	10.561	0.008	929	1504			
C40	10.918	-0.006	1342	1547			
o-terph	6.095	0.001	556217	689566			
Triacon Surr	8.968	-0.023	631912	670916	NAS DIES (C10-C24)	393415	22.96

Range Times: NW Diesel (4.131 - 7.595)      AK102 (3.23 - 7.85)      Jet A (3.23 - 5.95)  
 NW M.Oil (7.60 - 10.55)      AK103 (7.85 - 10.18)      OR Diesel (3.23 - 8.55)

Surrogate	Area	Amount	%Rec
o-Terphenyl	689566	33.9	75.2
Triacontane	670916	35.2	78.1

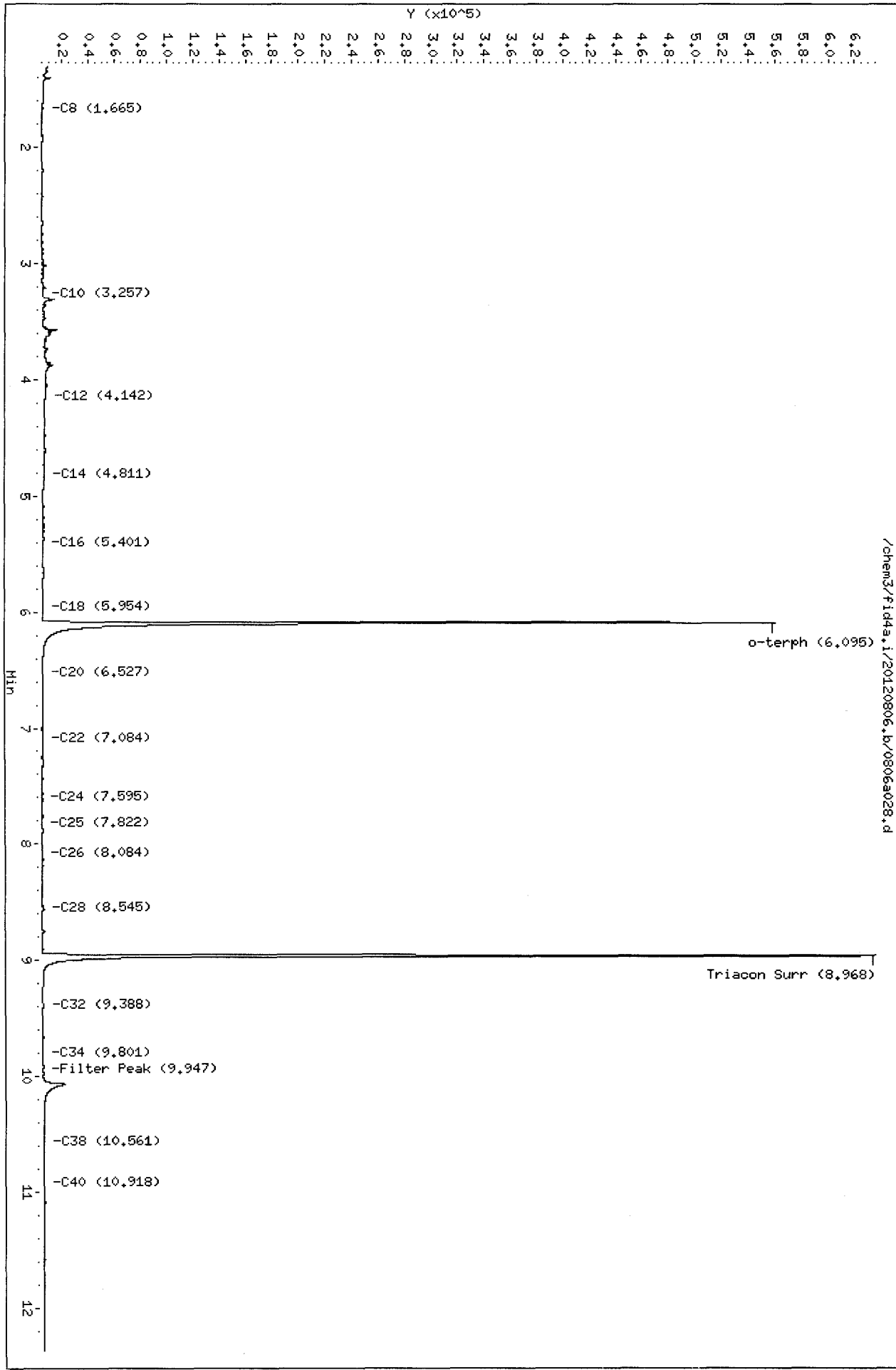
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

*Handwritten:* 8.7.12

Data File: /chem3/fid4s.i/20120806.b/0806a028.d  
Date: 06-AUG-2012 22:12  
Client ID:  
Sample Info: WE22A  
Column phase: RTX-1

Instrument: fid4s.i  
Operator: JR  
Column diameter: 0.25





Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120806.b/0806a029.d  
Method: /chem3/fid4a.i/20120806.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 08/07/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22B  
Client ID:  
Injection: 06-AUG-2012 22:34  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.397	0.016	4951	9283	GAS (Tol-C12)	72438	4.82
C8	1.663	0.003	470	1303	DIESEL (C12-C24)	116947	7.98
C10	3.251	0.018	343	663	M.OIL (C24-C38)	123492	9.83
C12	4.133	0.002	650	793	AK-102 (C10-C25)	152055	8.79
C14	4.800	-0.008	500	642	AK-103 (C25-C36)	104715	12.26
C16	5.403	0.013	695	1136			
C18	5.952	0.001	798	418			
C20	6.530	0.008	746	1037	JET-A (C10-C18)	107195	8.67
C22	7.068	-0.005	411	191	MIN.OIL (C24-C38)	123492	9.19
C24	7.624	0.028	607	2050			
C25	7.867	0.019	737	795			
C26	8.099	0.009	750	1138			
C28	8.543	-0.006	1152	1011			
C32	9.391	-0.003	1186	2958			
C34	9.794	0.002	411	703			
Filter Peak	9.965	0.007	477	476	BUNKERC (C10-C38)	273096	35.77
C36	10.194	0.016	1782	2911			
C38	10.557	0.003	871	778			
C40	10.917	-0.007	1283	611			
o-terph	6.095	0.001	498148	655626			
Triacon Surr	8.966	-0.025	598244	658532	NAS DIES (C10-C24)	149604	8.73

Range Times: NW Diesel (4.131 - 7.595) AK102 (3.23 - 7.85) Jet A (3.23 - 5.95)  
NW M.Oil (7.60 - 10.55) AK103 (7.85 - 10.18) OR Diesel (3.23 - 8.55)

Surrogate	Area	Amount	%Rec
o-Terphenyl	655626	32.2	71.5
Triacontane	658532	34.5	76.7

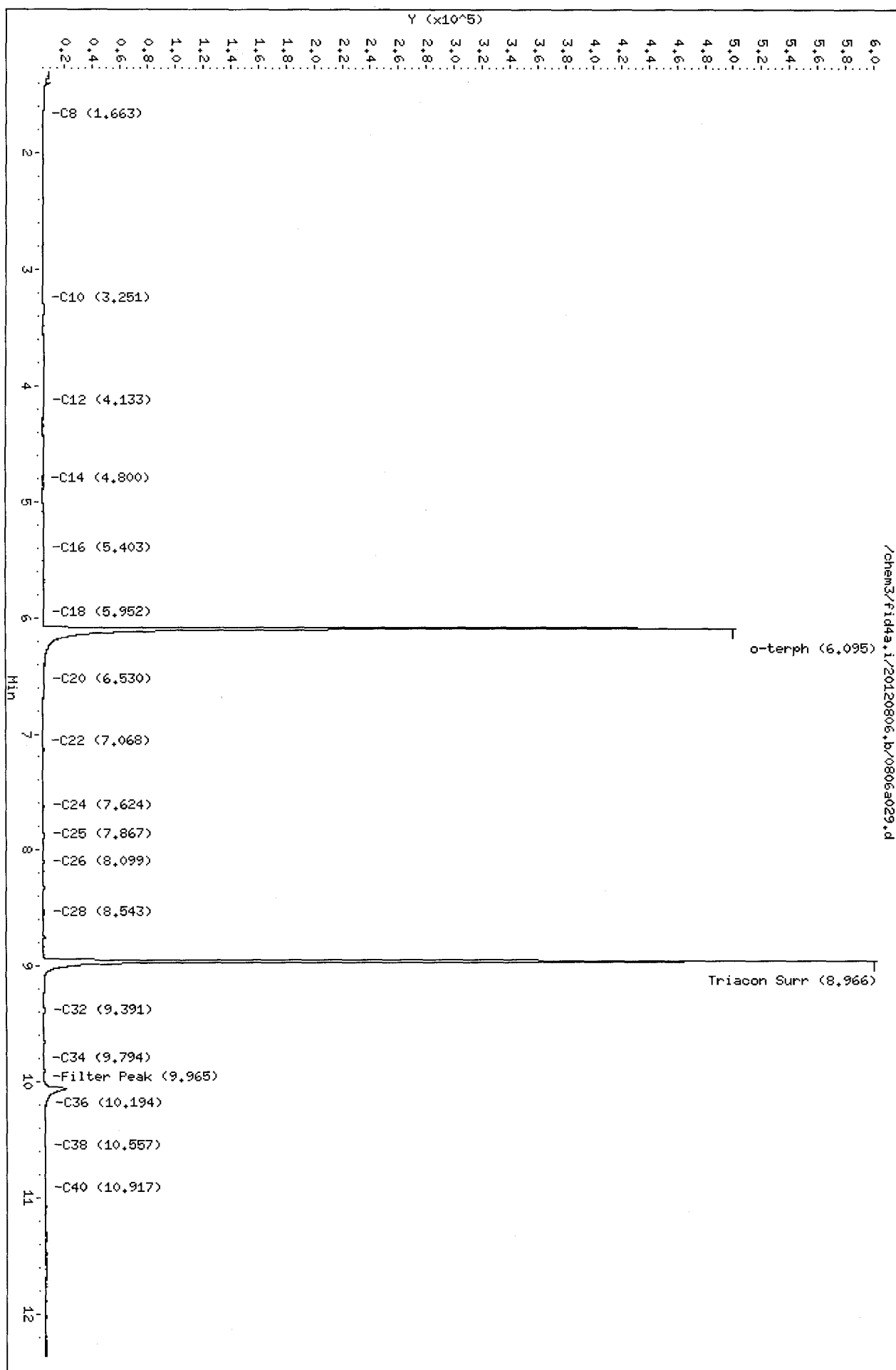
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

LA  
8.7.12

Data File: /chem3/fid4s.i/20120806.b/0806a029.d  
Date: 06-AUG-2012 22:34  
Client ID:  
Sample Info: WE22B  
Column phase: RTX-1

Instrument: fid4s.i  
Operator: JR  
Column diameter: 0.25



Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120806.b/0806a030.d  
Method: /chem3/fid4a.i/20120806.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 08/07/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22C  
Client ID:  
Injection: 06-AUG-2012 22:55  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.385	0.004	3357	5630	GAS (Tol-C12)	433570	28.82
C8	1.650	-0.010	497	1170	DIESEL (C12-C24)	1449730	98.96
C10	3.253	0.020	2271	3769	M.OIL (C24-C38)	322118	25.63
C12	4.125	-0.006	10003	14117	AK-102 (C10-C25)	1810315	104.65
C14	4.792	-0.016	15559	37398	AK-103 (C25-C36)	278382	32.61
C16	5.421	0.031	9393	24316			
C18	5.951	0.000	5458	7575			
C20	6.528	0.006	3986	4197	JET-A (C10-C18)	1468341	118.78
C22	7.083	0.011	3268	1817	MIN.OIL (C24-C38)	322118	23.97
C24	7.592	-0.003	2186	1100			
C25	7.841	-0.006	1704	1312			
C26	8.096	0.006	1331	1872			
C28	8.544	-0.006	1310	1218			
C32	9.388	-0.006	767	1993			
C34	9.808	0.016	649	724			
Filter Peak	9.938	-0.019	859	1661	BUNKERC (C10-C38)	2108002	276.13
C36	10.220	0.042	1553	3070			
C38	10.551	-0.003	1146	1247			
C40	10.933	0.008	1513	1466			
o-terph	6.095	0.001	638347	622832			
Triacon Surr	8.963	-0.027	620568	658417	NAS DIES (C10-C24)	1785883	104.23

Range Times: NW Diesel(4.131 - 7.595) AK102(3.23 - 7.85) Jet A(3.23 - 5.95)  
NW M.Oil(7.60 - 10.55) AK103(7.85 - 10.18) OR Diesel(3.23 - 8.55)

Surrogate	Area	Amount	%Rec
o-Terphenyl	622832	30.6	67.9 M
Triacontane	658417	34.5	76.7

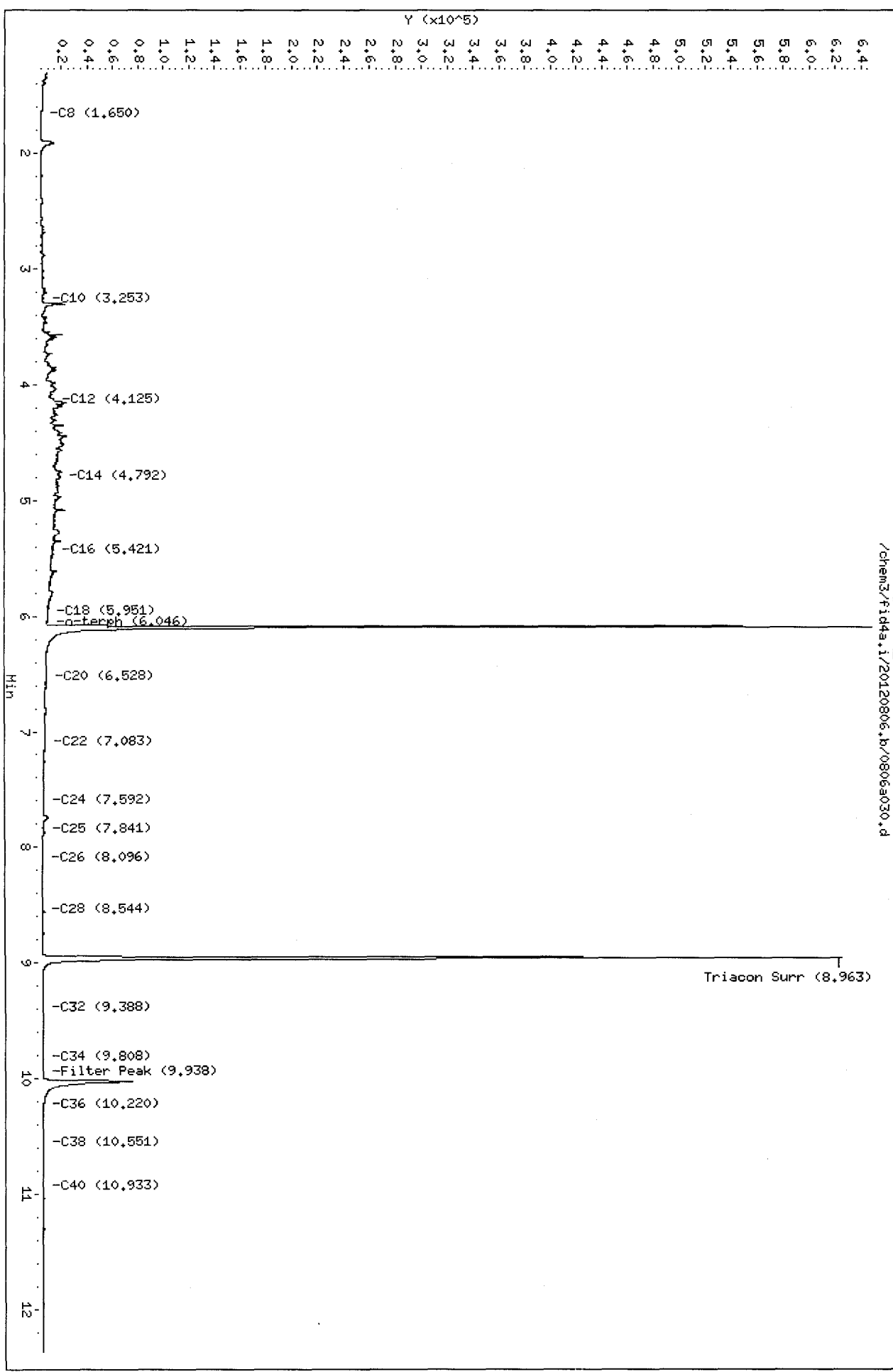
M Indicates the peak was manually integrated

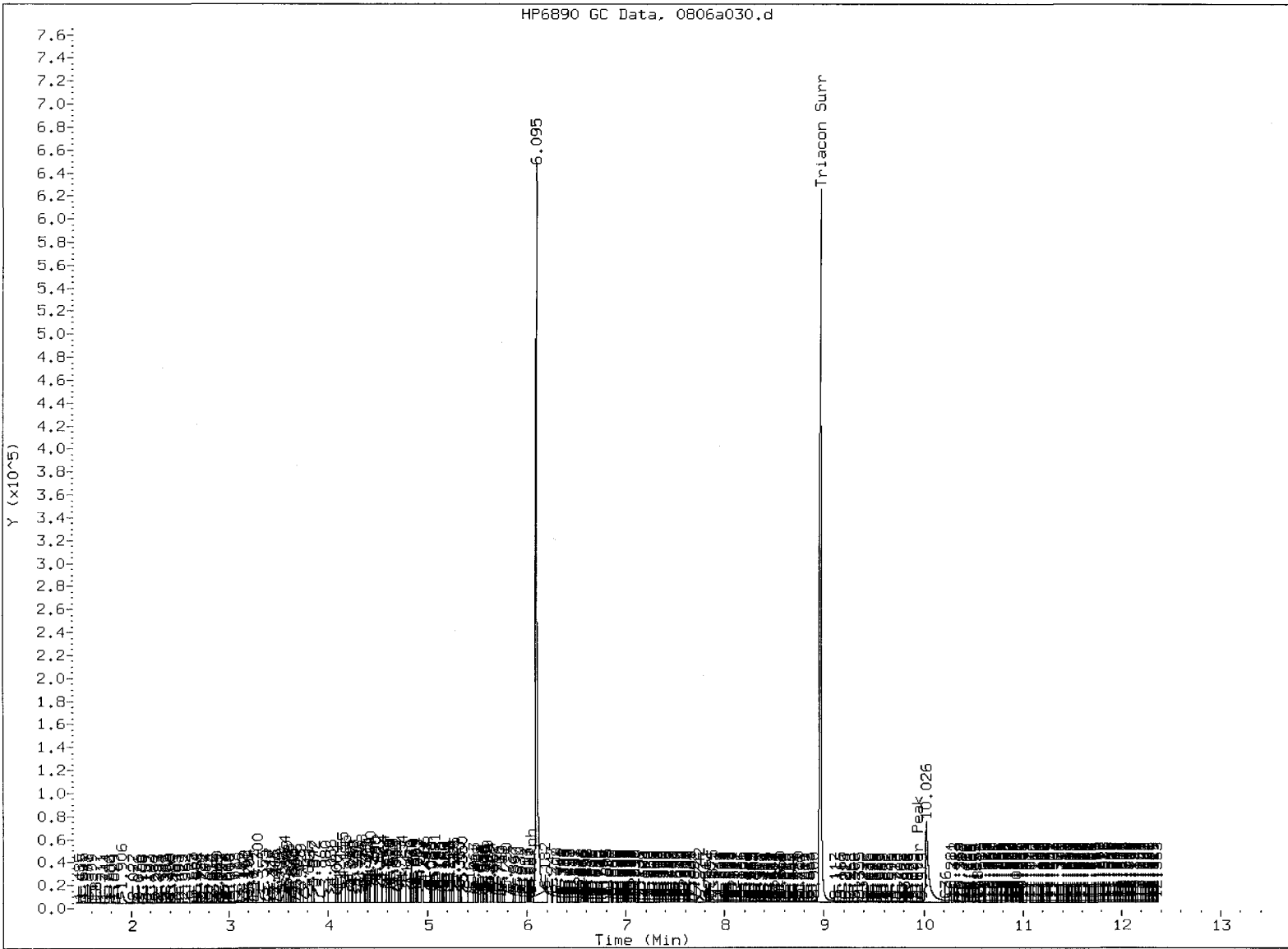
Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120806.b/0806a030.d  
Date: 06-AUG-2012 22:55  
Client ID:  
Sample Info: WE22C  
Column phase: RTX-1

Instrument: fid4a.i  
Operator: JR  
Column diameter: 0.25

*Handwritten:* S.P.R.T





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skipped surrogate

Analyst: VID

Date: 8.7.12

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120806.b/0806a031.d      ARI ID: VE22D  
 Method: /chem3/fid4a.i/20120806.b/ftphfid4a.m      Client ID:  
 Instrument: fid4a.i      Injection: 06-AUG-2012 23:16  
 Operator: JR  
 Report Date: 08/07/2012      Dilution Factor: 1  
 Macro: 13-JUL-2012  
 Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.389	0.008	5412	9029	GAS (Tol-C12)	298848	19.87
C8	1.655	-0.005	488	1221	DIESEL (C12-C24)	253605	17.31
C10	3.255	0.021	1416	1869	M.OIL (C24-C38)	184401	14.67
C12	4.121	-0.010	3825	5912	AK-102 (C10-C25)	481210	27.82
C14	4.789	-0.019	1872	1138	AK-103 (C25-C36)	162089	18.98
C16	5.401	0.011	1399	3486			
C18	5.957	0.006	1046	951			
C20	6.523	0.001	965	966	JET-A (C10-C18)	414391	33.52
C22	7.066	-0.007	616	899	MIN.OIL (C24-C38)	184401	13.72
C24	7.586	-0.009	554	598			
C25	7.823	-0.024	503	840			
C26	8.082	-0.009	367	437			
C28	8.546	-0.003	843	643			
C32	9.386	-0.009	783	900			
C34	9.826	0.034	451	441			
Filter Peak	9.938	-0.019	684	1564	BUNKERC (C10-C38)	662245	86.75
C36	10.171	-0.007	1975	6469			
C38	10.544	-0.009	1013	743			
C40	10.921	-0.004	1418	1496			
o-terph	6.096	0.002	487167	649939			
Triacon Surr	8.962	-0.028	602254	650438	NAS DIES (C10-C24)	477844	27.89

Range Times: NW Diesel (4.131 - 7.595)      AK102 (3.23 - 7.85)      Jet A (3.23 - 5.95)  
 NW M.Oil (7.60 - 10.55)      AK103 (7.85 - 10.18)      OR Diesel (3.23 - 8.55)

Surrogate	Area	Amount	%Rec
o-Terphenyl	649939	31.9	70.9
Triacontane	650438	34.1	75.7

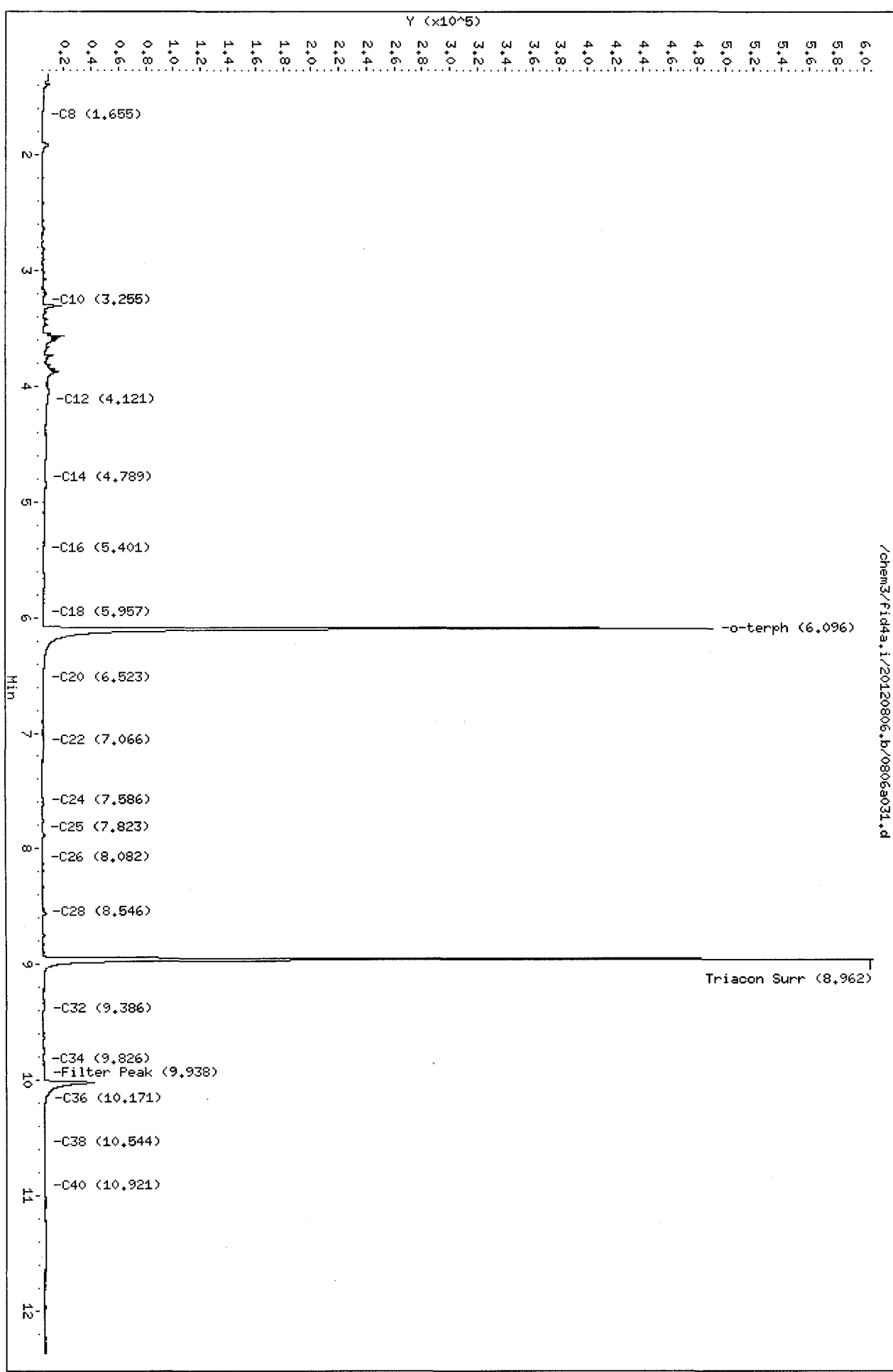
M Indicates the peak was manually integrated

Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120806.b/0806a031.d  
Date: 06-AUG-2012 23:16  
Client ID:  
Sample Info: VE220  
Column phase: RTX-1

Instrument: fid4a.i  
Operator: JR  
Column diameter: 0.25

2012.8.7.12



**CLEANED TPHD SURROGATE RECOVERY SUMMARY**

Matrix: Water

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510

<u>Client ID</u>	<u>OTER</u>	<u>TOT OUT</u>
MB-080312	76.2%	0
LCS-080312	59.6%	0
LCSD-080312	68.6%	0
MW-15D-073012	75.2%	0
MW-16S-073012	71.5%	0
MW-15S-073012	67.9%	0
MW-14S-073012	70.9%	0

(OTER) = o-Terphenyl

**LCS/MB LIMITS      QC LIMITS**

(50-150)

(50-150)

Prep Method: SW3510C  
Log Number Range: 12-14520 to 12-14523



**ORGANICS ANALYSIS DATA SHEET**

NWTPHD by GC/FID-Silica and Acid Cleaned

Sample ID: LCS-080312

Page 1 of 1

LCS/LCSD

Lab Sample ID: LCS-080312

QC Report No: VE22-Landau Associates

LIMS ID: 12-14520

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: *[Signature]*

Date Sampled: 07/30/12

Reported: 08/07/12

Date Received: 07/31/12

Date Extracted LCS/LCSD: 08/03/12

Sample Amount LCS: 500 mL

LCSD: 500 mL

Date Analyzed LCS: 08/06/12 21:30

Final Extract Volume LCS: 1.0 mL

LCSD: 08/06/12 21:51

LCSD: 1.0 mL

Instrument/Analyst LCS: FID/VTS

Dilution Factor LCS: 1.00

LCSD: FID/VTS

LCSD: 1.00

Range	LCS	Spike Added-LCS	LCS Recovery	LCSD	Spike Added-LCSD	LCSD Recovery	RPD
Diesel	1.97	3.00	65.7%	1.98	3.00	66.0%	0.5%

**TPHD Surrogate Recovery**

	LCS	LCSD
o-Terphenyl	59.6%	68.6%

Results reported in mg/L

RPD calculated using sample concentrations per SW846.

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120806.b/0806a026.d  
Method: /chem3/fid4a.i/20120806.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 08/07/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22LCSW1  
Client ID:  
Injection: 06-AUG-2012 21:30  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.381	0.000	4348	3480	GAS (Tol-C12)	2664675	177.13
C8	1.661	0.001	2593	3539	DIESEL (C12-C24)	14451591	986.46
C10	3.238	0.005	39724	61184	M.OIL (C24-C38)	272925	21.71
C12	4.125	-0.006	147334	135831	AK-102 (C10-C25)	16483912	952.88
C14	4.799	-0.009	261365	286442	AK-103 (C25-C36)	220409	25.82
C16	5.388	-0.002	427159	415601			
C18	5.956	0.005	381737	392717			
C20	6.521	0.000	259614	360564	JET-A (C10-C18)	11906073	963.12
C22	7.072	0.000	112765	223247	MIN.OIL (C24-C38)	272925	20.31
C24	7.607	0.012	22689	57823			
C25	7.859	0.012	11721	25529			
C26	8.099	0.008	5461	10007			
C28	8.545	-0.004	1194	1749			
C32	9.381	-0.013	852	1172			
C34	9.803	0.012	98	71			
Filter Peak	9.960	0.003	198	213	BUNKERC (C10-C38)	16714281	2189.45
C36	----						
C38	10.544	-0.010	564	344			
C40	10.921	-0.003	1044	970			
o-terph	6.101	0.006	714727	546368			
Triacon Surr	8.973	-0.018	590217	649441	NAS DIES (C10-C24)	16441356	959.57

Range Times: NW Diesel (4.131 - 7.595) AK102 (3.23 - 7.85) Jet A (3.23 - 5.95)  
NW M.Oil (7.60 - 10.55) AK103 (7.85 - 10.18) OR Diesel (3.23 - 8.55)

Surrogate	Area	Amount	%Rec
o-Terphenyl	546368	26.8	59.6 M
Triacontane	649441	34.0	75.6

M Indicates the peak was manually integrated

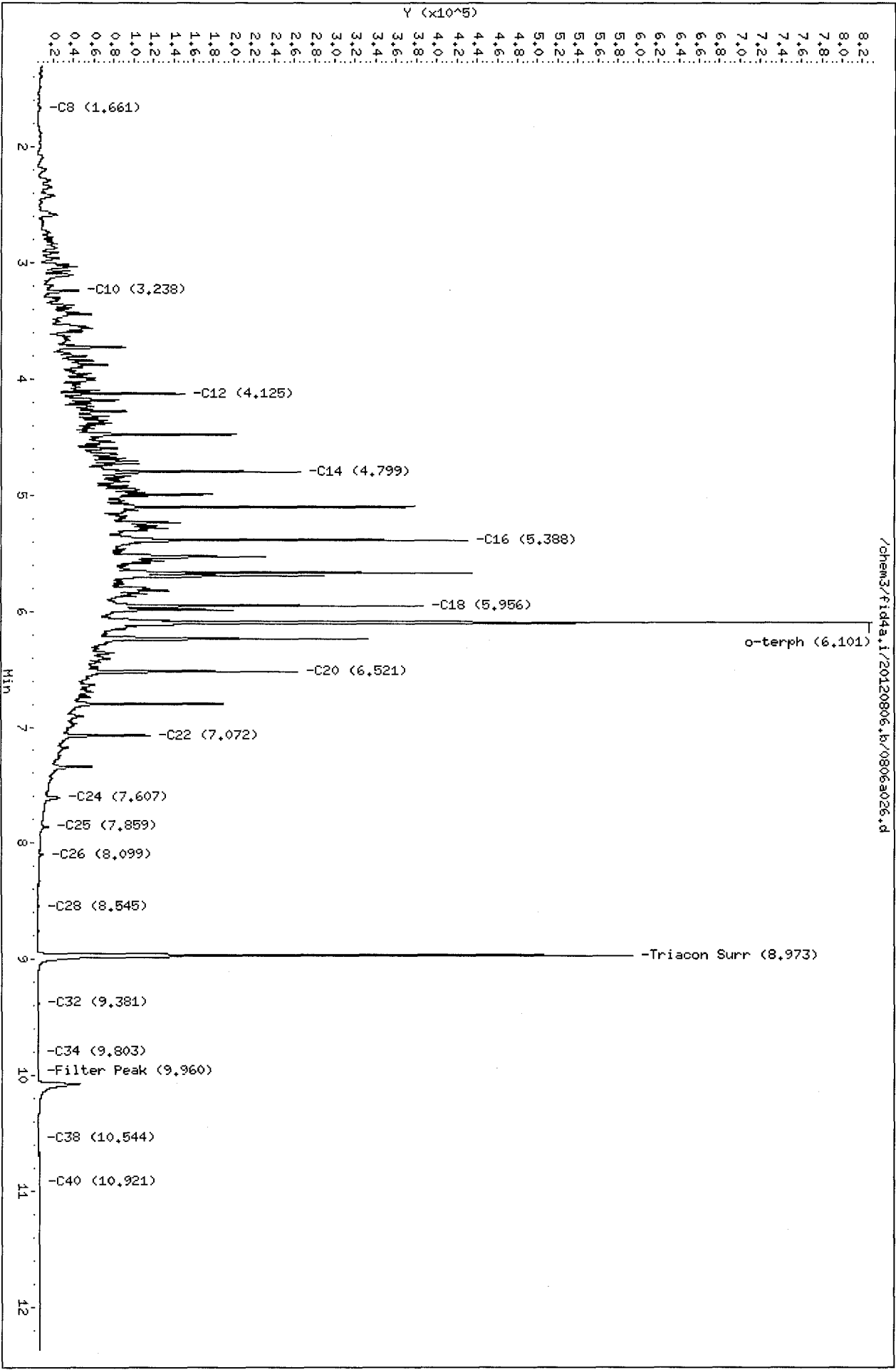
Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

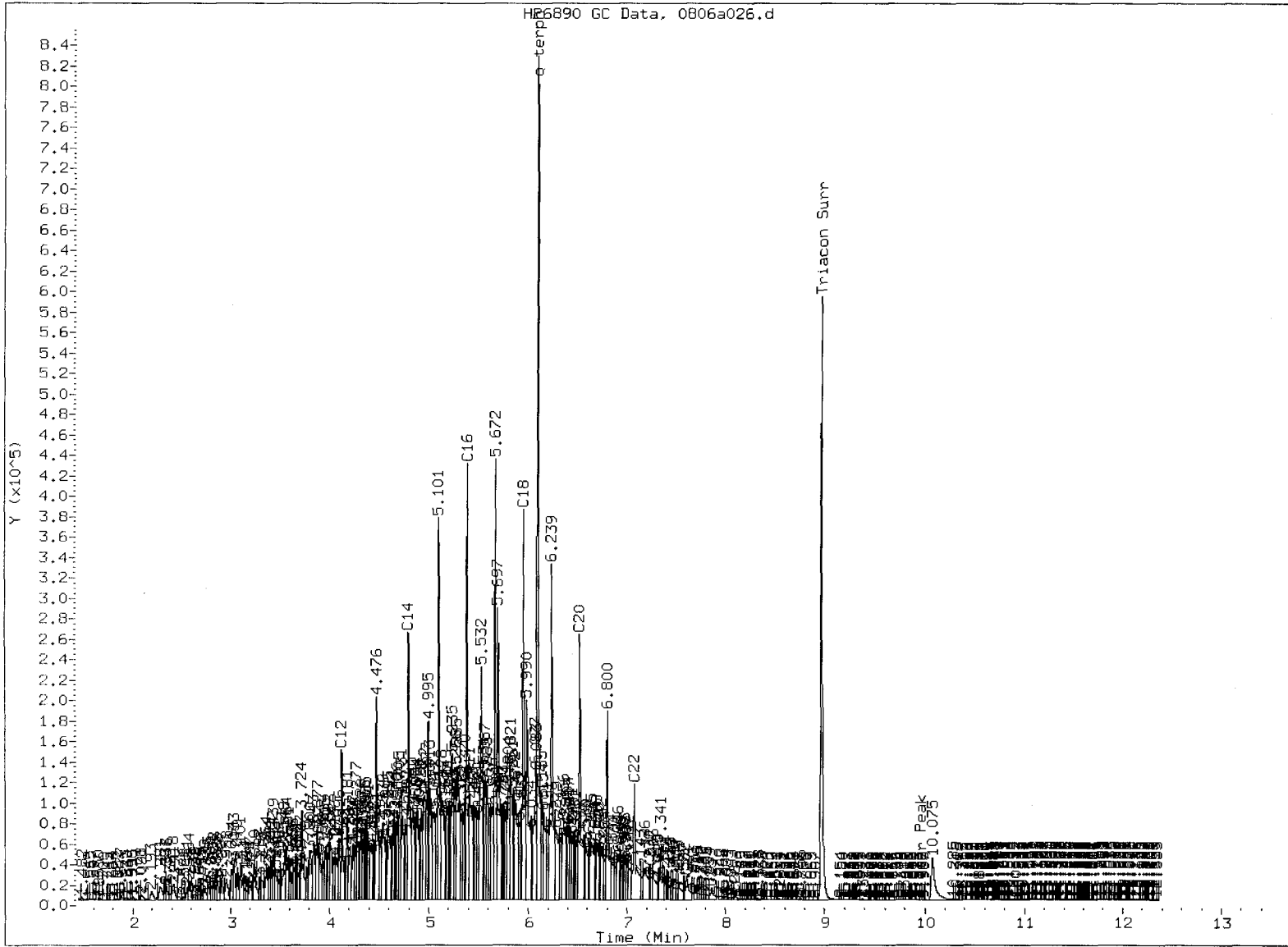
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Data File: /chem3/fid4a.i/20120806.b/0806a026.d  
Date: 06-AUG-2012 21:30  
Client ID:  
Sample Info: VE22LCSM1  
Column phase: RTX-1

Instrument: fid4a.i  
Operator: JR  
Column diameter: 0.25

*Handwritten:* 2.7.12





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5. Skimmed surrogate

Analyst: VI

Date: 8.7.12

Analytical Resources Inc.  
407S TPH Quantitation Report

Data file: /chem3/fid4a.i/20120806.b/0806a027.d  
Method: /chem3/fid4a.i/20120806.b/ftphfid4a.m  
Instrument: fid4a.i  
Operator: JR  
Report Date: 08/07/2012  
Macro: 13-JUL-2012  
Calibration Dates: Gas:10-MAY-2012 Diesel:10-JUL-2012 M.Oil:12-JUN-2012

ARI ID: VE22LCSDW1  
Client ID:  
Injection: 06-AUG-2012 21:51  
Dilution Factor: 1

FID:4A RESULTS

Compound	RT	Shift	Height	Area	Range	Total Area	Conc
Toluene	1.388	0.007	6940	4823	GAS (Tol-C12)	2709770	180.12
C8	1.667	0.007	2903	5475	DIESEL (C12-C24)	14475822	988.11
C10	3.239	0.006	44417	50962	M.OIL (C24-C38)	307529	24.47
C12	4.124	-0.007	158033	137523	AK-102 (C10-C25)	16538700	956.05
C14	4.798	-0.010	276561	298496	AK-103 (C25-C36)	258739	30.30
C16	5.387	-0.003	441814	499765			
C18	5.955	0.005	392564	473421			
C20	6.522	0.001	263537	338865	JET-A (C10-C18)	12004956	971.12
C22	7.072	0.000	117874	211506	MIN.OIL (C24-C38)	307529	22.88
C24	7.605	0.010	23456	70730			
C25	7.858	0.011	12133	27712			
C26	8.097	0.007	5478	9977			
C28	8.543	-0.006	1372	1270			
C32	9.395	0.001	166	163			
C34	9.781	-0.011	133	282			
Filter Peak C36	9.953	-0.004	210	283	BUNKERC (C10-C38)	16809854	2201.97
C38	10.552	-0.001	621	607			
C40	10.916	-0.008	1072	1062			
o-terph	6.100	0.006	770393	629188			
Triacon Surr	8.966	-0.024	638682	680351	NAS DIES (C10-C24)	16502325	963.13

Range Times: NW Diesel(4.131 - 7.595) AK102(3.23 - 7.85) Jet A(3.23 - 5.95)  
NW M.Oil(7.60 - 10.55) AK103(7.85 - 10.18) OR Diesel(3.23 - 8.55)

Surrogate	Area	Amount	%Rec
o-Terphenyl	629188	30.9	68.6 M
Triacontane	680351	35.6	79.2

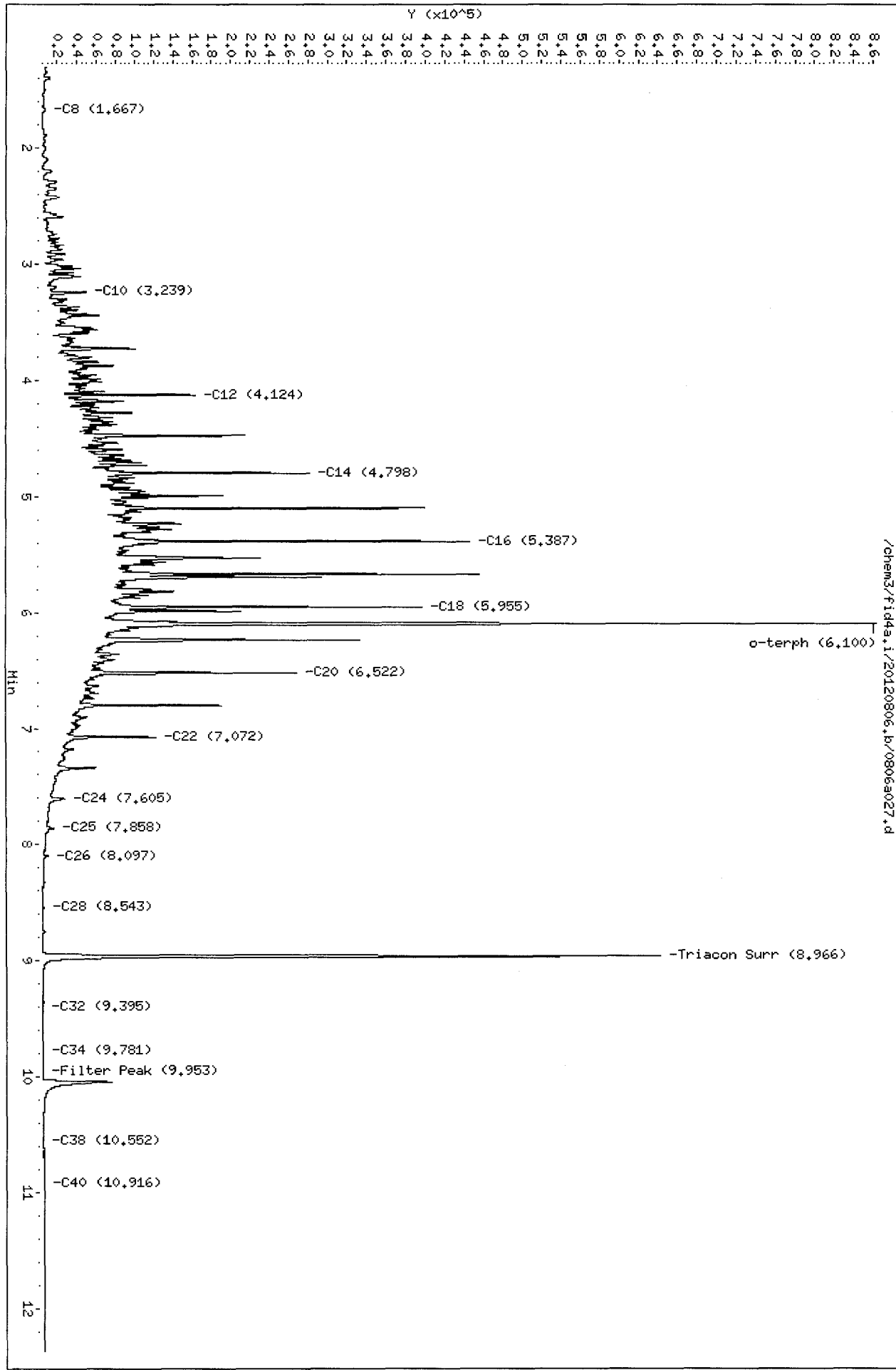
M Indicates the peak was manually integrated

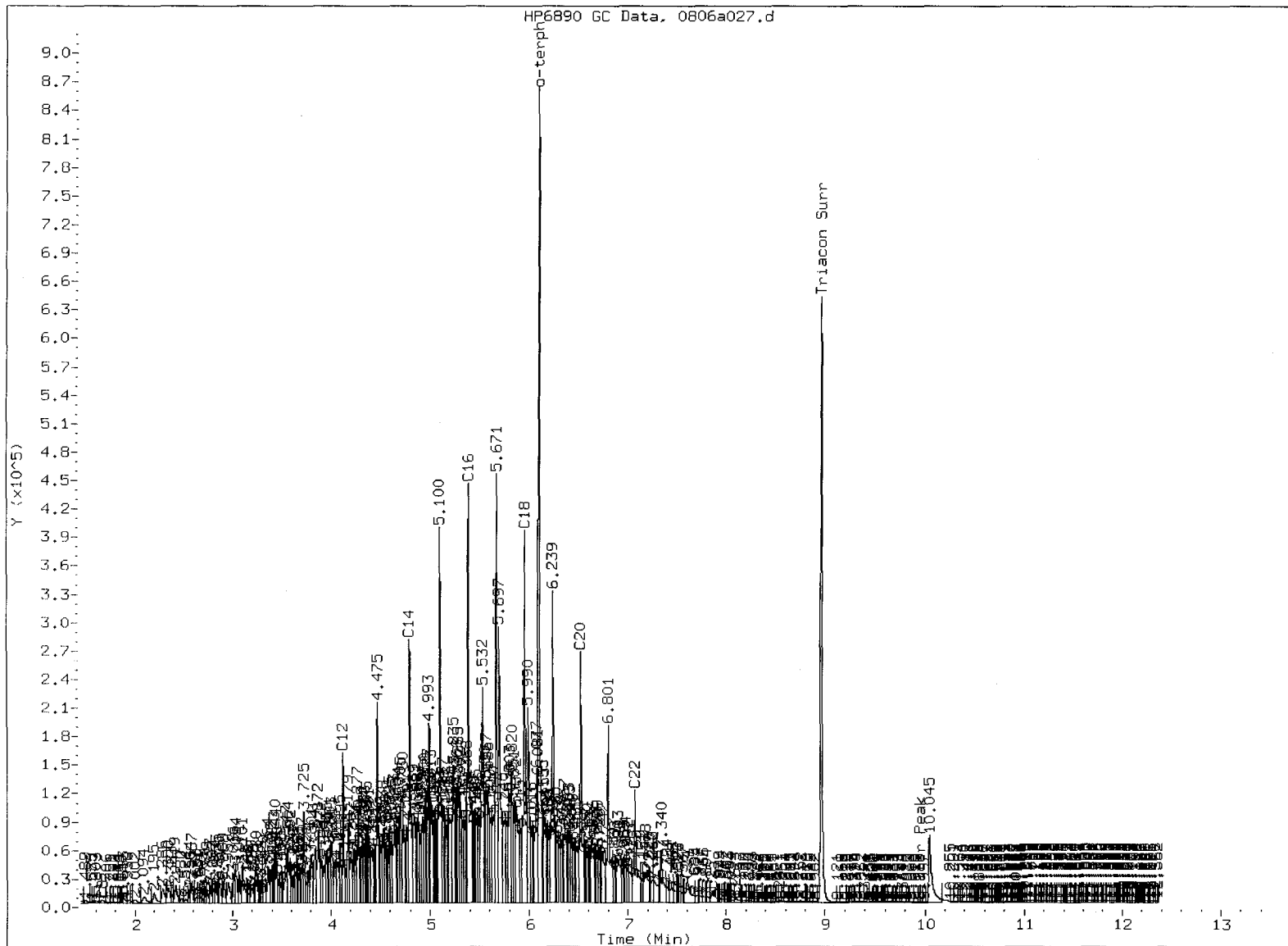
Analyte	RF	Curve Date
o-Terph Surr	20371.2	10-JUL-2012
Triacon Surr	19086.0	12-JUN-2012
Gas	15043.9	10-MAY-2012
Diesel	14650.0	10-JUL-2012
Motor Oil	12569.0	12-JUN-2012
AK102	17299.0	10-JUL-2012
AK103	8538.0	24-MAY-2012
JetA	12362.0	31-JUL-2012
Min Oil	13440.7	09-MAY-2012
NAS Diesel	17134.0	10-JUL-2012
Bunker C	7634.0	13-JUL-2012

Data File: /chem3/fid4a.i/20120806.br/0806a027.d  
Date: 06-AUG-2012 21:51  
Client ID:  
Sample Info: VE22LCSDM1  
Column phase: RTX-1

2.7.12

Instrument: fid4a.i  
Operator: JR  
Column diameter: 0.25





MANUAL INTEGRATION

- 1. Baseline correction
- 3. Peak not found
- 5 Skipped surrogate

Analyst: VD

Date: 8.7.12

**TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT**

Matrix: Water  
Date Received: 07/31/12

ARI Job: VE22  
Project: Cornwall  
0001020.400.510

ARI ID	Client ID	Samp Amt	Final Vol	Prep Date
12-14520-080312MB1	Method Blank	500 mL	1.00 mL	08/03/12
12-14520-080312LCS1	Lab Control	500 mL	1.00 mL	08/03/12
12-14520-080312LCSD1	Lab Control Dup	500 mL	1.00 mL	08/03/12
12-14520-VE22A	MW-15D-073012	500 mL	1.00 mL	08/03/12
12-14521-VE22B	MW-16S-073012	500 mL	1.00 mL	08/03/12
12-14522-VE22C	MW-15S-073012	500 mL	1.00 mL	08/03/12
12-14523-VE22D	MW-14S-073012	500 mL	1.00 mL	08/03/12



**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

Sample ID: MW-15D-073012

SAMPLE

Lab Sample ID: VE22A


QC Report No: VE22-Landau Associates

LIMS ID: 12-14520

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: 

Date Sampled: 07/30/12

Reported: 08/07/12

Date Received: 07/31/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/01/12	200.8	08/03/12	7440-38-2	Arsenic	0.5	0.8	
200.8	08/01/12	200.8	08/03/12	7440-50-8	Copper	0.5	0.5	U
200.8	08/01/12	200.8	08/03/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/01/12	200.8	08/03/12	7439-96-5	Manganese	1	182	
200.8	08/01/12	200.8	08/03/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

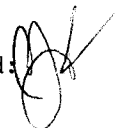
Sample ID: MW-16S-073012

**SAMPLE**

Lab Sample ID: VE22B

LIMS ID: 12-14521

Matrix: Water

Data Release Authorized: 

Reported: 08/07/12

QC Report No: VE22-Landau Associates

Project: Cornwall

0001020.400.510

Date Sampled: 07/30/12

Date Received: 07/31/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/01/12	200.8	08/03/12	7440-38-2	Arsenic	0.5	0.8	
200.8	08/01/12	200.8	08/03/12	7440-50-8	Copper	0.5	0.5	U
200.8	08/01/12	200.8	08/03/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/01/12	200.8	08/03/12	7439-96-5	Manganese	1	380	
200.8	08/01/12	200.8	08/03/12	7440-66-6	Zinc	4	5	

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

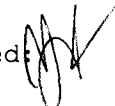
Sample ID: MW-15S-073012

**SAMPLE**

Lab Sample ID: VE22C

LIMS ID: 12-14522

Matrix: Water

Data Release Authorized: 

Reported: 08/07/12

QC Report No: VE22-Landau Associates

Project: Cornwall

0001020.400.510

Date Sampled: 07/30/12

Date Received: 07/31/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/01/12	200.8	08/03/12	7440-38-2	Arsenic	0.5	0.7	
200.8	08/01/12	200.8	08/03/12	7440-50-8	Copper	0.5	0.5	U
200.8	08/01/12	200.8	08/03/12	7439-92-1	Lead	0.1	0.1	
200.8	08/01/12	200.8	08/03/12	7439-96-5	Manganese	1	529	
200.8	08/01/12	200.8	08/03/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

Sample ID: MW-14S-073012

SAMPLE

Lab Sample ID: VE22D

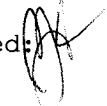
QC Report No: VE22-Landau Associates

LIMS ID: 12-14523

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: 

Date Sampled: 07/30/12

Reported: 08/07/12

Date Received: 07/31/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/01/12	200.8	08/03/12	7440-38-2	Arsenic	0.5	0.8	
200.8	08/01/12	200.8	08/03/12	7440-50-8	Copper	0.5	0.5	U
200.8	08/01/12	200.8	08/03/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/01/12	200.8	08/03/12	7439-96-5	Manganese	1	584	
200.8	08/01/12	200.8	08/03/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

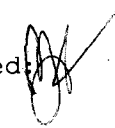
Sample ID: MW-13S-073012

**SAMPLE**

Lab Sample ID: VE22E

LIMS ID: 12-14524

Matrix: Water

Data Release Authorized: 

Reported: 08/07/12

QC Report No: VE22-Landau Associates

Project: Cornwall

0001020.400.510

Date Sampled: 07/30/12

Date Received: 07/31/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/01/12	200.8	08/03/12	7440-38-2	Arsenic	0.5	0.6	
200.8	08/01/12	200.8	08/03/12	7440-50-8	Copper	0.5	0.5	U
200.8	08/01/12	200.8	08/03/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/01/12	200.8	08/03/12	7439-96-5	Manganese	1	704	
200.8	08/01/12	200.8	08/03/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1

Sample ID: MW-14D-073012

SAMPLE

Lab Sample ID: VE22F

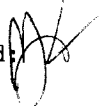
QC Report No: VE22-Landau Associates

LIMS ID: 12-14525

Project: Cornwall

Matrix: Water

0001020.400.510

Data Release Authorized: 

Date Sampled: 07/30/12

Reported: 08/07/12

Date Received: 07/31/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/01/12	200.8	08/03/12	7440-38-2	Arsenic	0.5	0.7	
200.8	08/01/12	200.8	08/03/12	7440-50-8	Copper	0.5	0.5	U
200.8	08/01/12	200.8	08/03/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/01/12	200.8	08/06/12	7439-96-5	Manganese	5	1,440	
200.8	08/01/12	200.8	08/03/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1


Sample ID: MW-13D-073012

**SAMPLE**

Lab Sample ID: VE22G

LIMS ID: 12-14526

Matrix: Water

Data Release Authorized: 

Reported: 08/07/12

QC Report No: VE22-Landau Associates

Project: Cornwall

0001020.400.510

Date Sampled: 07/30/12

Date Received: 07/31/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/01/12	200.8	08/03/12	<b>7440-38-2</b>	<b>Arsenic</b>	0.5	<b>0.9</b>	
200.8	08/01/12	200.8	08/03/12	7440-50-8	Copper	0.5	0.5	U
200.8	08/01/12	200.8	08/03/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/01/12	200.8	08/03/12	<b>7439-96-5</b>	<b>Manganese</b>	0.5	<b>257</b>	
200.8	08/01/12	200.8	08/03/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1


Sample ID: MW-DUP-073012

SAMPLE

Lab Sample ID: VE22H

LIMS ID: 12-14527

Matrix: Water

Data Release Authorized: 

Reported: 08/07/12

QC Report No: VE22-Landau Associates

Project: Cornwall

0001020.400.510

Date Sampled: 07/30/12

Date Received: 07/31/12

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/01/12	200.8	08/03/12	7440-38-2	Arsenic	0.5	0.5	U
200.8	08/01/12	200.8	08/03/12	7440-50-8	Copper	0.5	0.5	U
200.8	08/01/12	200.8	08/03/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/01/12	200.8	08/06/12	<b>7439-96-5</b>	<b>Manganese</b>	5	<b>1,430</b>	
200.8	08/01/12	200.8	08/03/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL

RL-Reporting Limit



**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

**Sample ID: MW-15D-073012**  
**MATRIX SPIKE**

Lab Sample ID: VE22A  
LIMS ID: 12-14520  
Matrix: Water  
Data Release Authorized:  
Reported: 08/07/12

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510  
Date Sampled: 07/30/12  
Date Received: 07/31/12

**MATRIX SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Arsenic	200.8	0.8	24.9	25.0	96.4%	
Copper	200.8	0.5 U	23.2	25.0	92.8%	
Lead	200.8	0.1 U	27.7	25.0	111%	
Manganese	200.8	182	204	25	88.0%	H
Zinc	200.8	4 U	64	80	80.0%	


Reported in µg/L

N-Control Limit Not Met  
H-% Recovery Not Applicable, Sample Concentration Too High  
NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

**Sample ID: MW-15D-073012**  
**DUPLICATE**

Lab Sample ID: VE22A  
LIMS ID: 12-14520  
Matrix: Water  
Data Release Authorized:   
Reported: 08/07/12

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510  
Date Sampled: 07/30/12  
Date Received: 07/31/12

**MATRIX DUPLICATE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Arsenic	200.8	0.8	0.7	13.3%	+/- 0.5	L
Copper	200.8	0.5 U	0.5 U	0.0%	+/- 0.5	L
Lead	200.8	0.1 U	0.1 U	0.0%	+/- 0.1	L
Manganese	200.8	182	184	1.1%	+/- 20%	
Zinc	200.8	4 U	4 U	0.0%	+/- 4	L

Reported in µg/L

\*-Control Limit Not Met

L-RPD Invalid, Limit = Detection Limit

**INORGANICS ANALYSIS DATA SHEET  
DISSOLVED METALS**

**Sample ID: METHOD BLANK**

Page 1 of 1

Lab Sample ID: VE22MB  
LIMS ID: 12-14521  
Matrix: Water  
Data Release Authorized: *OK*  
Reported: 08/07/12


QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510  
Date Sampled: NA  
Date Received: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	µg/L	Q
200.8	08/01/12	200.8	08/03/12	7440-38-2	Arsenic	0.2	0.2	U
200.8	08/01/12	200.8	08/03/12	7440-50-8	Copper	0.5	0.5	U
200.8	08/01/12	200.8	08/03/12	7439-92-1	Lead	0.1	0.1	U
200.8	08/01/12	200.8	08/03/12	7439-96-5	Manganese	0.5	0.5	U
200.8	08/01/12	200.8	08/03/12	7440-66-6	Zinc	4	4	U

U-Analyte undetected at given RL  
RL-Reporting Limit

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

**Sample ID: LAB CONTROL**

Lab Sample ID: VE22LCS  
LIMS ID: 12-14521  
Matrix: Water  
Data Release Authorized:   
Reported: 08/07/12

QC Report No: VE22-Landau Associates  
Project: Cornwall  
0001020.400.510  
Date Sampled: NA  
Date Received: NA

**BLANK SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Spike Found	Spike Added	% Recovery	Q
Arsenic	200.8	25.1	25.0	100%	
Copper	200.8	26.6	25.0	106%	
Lead	200.8	25.6	25.0	102%	
Manganese	200.8	25.8	25.0	103%	
Zinc	200.8	78	80	97.5%	

Reported in µg/L

N-Control limit not met  
Control Limits: 80-120%

INORGANICS ANALYSIS DATA SHEET  
Dissolved Mercury by Method SW7470A



Data Release Authorized: *[Signature]*  
Reported: 08/10/12  
Date Received: 07/31/12  
Page 1 of 1

QC Report No238: VE24-Landau Associates  
Project: Cornwall  
0001020.400.510

Client/ ARI ID	Date Sampled	Matrix	Prep Date Anal Date	RL	Result
MW-15D-073012 VE24A 12-14529	07/30/12	Water	08/01/12 08/10/12	20.0	20.0 U
MW-16S-073012 VE24B 12-14530	07/30/12	Water	08/01/12 08/10/12	20.0	20.0 U
MW-15S-073012 VE24C 12-14531	07/30/12	Water	08/01/12 08/10/12	20.0	20.0 U
MW-14S-073012 VE24D 12-14532	07/30/12	Water	08/01/12 08/10/12	20.0	20.0 U
MW-13S-073012 VE24E 12-14533	07/30/12	Water	08/01/12 08/10/12	20.0	20.0 U
MW-14D-073012 VE24F 12-14534	07/30/12	Water	08/01/12 08/10/12	20.0	20.0 U
MW-13D-073012 VE24G 12-14535	07/30/12	Water	08/01/12 08/10/12	20.0	20.0 U
MW-DUP-073012 VE24H 12-14536	07/30/12	Water	08/01/12 08/10/12	20.0	20.0 U
MB-080112 Method Blank	NA	Water	08/01/12 08/10/12	20.0	20.0 U

Reported in ng/L

RL-Analytical reporting limit  
U-Undetected at reported detection limit

**INORGANICS ANALYSIS DATA SHEET**

**DISSOLVED METALS**

Page 1 of 1


Sample ID: MW-15D-073012

MATRIX SPIKE

Lab Sample ID: VE24A

LIMS ID: 12-14529

Matrix: Water

Data Release Authorized 

Reported: 08/10/12

QC Report No: VE24-Landau Associates

Project: Cornwall

0001020.400.510

Date Sampled: 07/30/12

Date Received: 07/31/12

**MATRIX SPIKE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Spike	Spike Added	% Recovery	Q
Mercury	7470A	20.0 U	115	100	115%	

Reported in ng/L

N-Control Limit Not Met

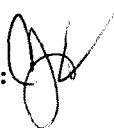
H-% Recovery Not Applicable, Sample Concentration Too High

NA-Not Applicable, Analyte Not Spiked

Percent Recovery Limits: 75-125%

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

**Sample ID: MW-15D-073012**  
**DUPLICATE**

Lab Sample ID: VE24A  
LIMS ID: 12-14529  
Matrix: Water  
Data Release Authorized:   
Reported: 08/10/12

QC Report No: VE24-Landau Associates  
Project: Cornwall  
0001020.400.510  
Date Sampled: 07/30/12  
Date Received: 07/31/12

**MATRIX DUPLICATE QUALITY CONTROL REPORT**

Analyte	Analysis Method	Sample	Duplicate	RPD	Control Limit	Q
Mercury	7470A	20.0 U	20.0 U	0.0%	+/- 20.0	L

Reported in ng/L

\*-Control Limit Not Met  
L-RPD Invalid, Limit = Detection Limit

**INORGANICS ANALYSIS DATA SHEET**  
**DISSOLVED METALS**  
Page 1 of 1

**Sample ID: LAB CONTROL**

Lab Sample ID: VE24LCS  
LIMS ID: 12-14530  
Matrix: Water  
Data Release Authorized:  
Reported: 08/10/12



QC Report No: VE24-Landau Associates  
Project: Cornwall  
0001020.400.510  
Date Sampled: NA  
Date Received: NA

**BLANK SPIKE QUALITY CONTROL REPORT**

<b>Analyte</b>	<b>Analysis Method</b>	<b>Spike Found</b>	<b>Spike Added</b>	<b>% Recovery</b>	<b>Q</b>
Mercury	7470A	225	200	112%	

Reported in ng/L  
N-Control limit not met  
Control Limits: 80-120%



SAMPLE RESULTS-CONVENTIONALS  
VE22-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.510  
Date Sampled: 07/30/12  
Date Received: 07/31/12

Client ID: MW-15D-073012  
ARI ID: 12-14520 VE22A

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/09/12 080912#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	1.00	29.7
Sulfate	07/31/12 073112#1	EPA 300.0	mg/L	0.1	2.0
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.153
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	5.00	42.4
Biological Oxygen Demand	08/01/12 080112#1	EPA 405.1	mg/L	6.0	19.5
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	13.8

RL Analytical reporting limit  
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
VE22-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.510  
Date Sampled: 07/30/12  
Date Received: 07/31/12

Client ID: MW-16S-073012  
ARI ID: 12-14521 VE22B

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/09/12 080912#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.500	16.9
Sulfate	07/31/12 073112#1	EPA 300.0	mg/L	0.1	3.2
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.076
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	5.00	59.0
Biological Oxygen Demand	08/01/12 080112#1	EPA 405.1	mg/L	4.0	12.9
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	20.9

RL Analytical reporting limit  
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
VE22-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.510  
Date Sampled: 07/30/12  
Date Received: 07/31/12

Client ID: MW-15S-073012  
ARI ID: 12-14522 VE22C

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/09/12 080912#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.500	22.2
Sulfate	07/31/12 073112#1	EPA 300.0	mg/L	0.1	1.1
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.091
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	5.00	50.5
Biological Oxygen Demand	08/01/12 080112#1	EPA 405.1	mg/L	4.0	14.9
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	16.2

RL Analytical reporting limit  
U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**VE22-Landau Associates**



Matrix: Water  
 Data Release Authorized:  
 Reported: 08/15/12

Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

**Client ID: MW-14S-073012**  
**ARI ID: 12-14523 VE22D**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/09/12 080912#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.500	21.3
Sulfate	07/31/12 073112#1	EPA 300.0	mg/L	0.1	1.6
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.084
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	10.0	183
Biological Oxygen Demand	08/01/12 080112#1	EPA 405.1	mg/L	6.0	19.6
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	16.1

RL Analytical reporting limit  
 U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
VE22-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.510  
Date Sampled: 07/30/12  
Date Received: 07/31/12

Client ID: MW-13S-073012  
ARI ID: 12-14524 VE22E

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/09/12 080912#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.500	17.6
Sulfate	07/31/12 073112#1	EPA 300.0	mg/L	0.1	0.8
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.118
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	5.00	31.6
Biological Oxygen Demand	08/01/12 080112#1	EPA 405.1	mg/L	4.0	18.7
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	11.2

RL Analytical reporting limit  
U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
VE22-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.510  
Date Sampled: 07/30/12  
Date Received: 07/31/12

Client ID: MW-14D-073012  
ARI ID: 12-14525 VE22F

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/09/12 080912#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/09/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.200	13.4
Sulfate	07/31/12 073112#1	EPA 300.0	mg/L	0.1	0.8
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.132
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	5.00	42.7
Biological Oxygen Demand	08/01/12 080112#1	EPA 405.1	mg/L	6.0	17.9
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	13.2

RL Analytical reporting limit  
U Undetected at reported detection limit

**SAMPLE RESULTS-CONVENTIONALS**  
**VE22-Landau Associates**



Matrix: Water  
 Data Release Authorized:  
 Reported: 08/15/12

Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12


**Client ID: MW-13D-073012**  
**ARI ID: 12-14526 VE22G**

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/10/12 081012#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.500	19.7
Sulfate	07/31/12 073112#1	EPA 300.0	mg/L	0.1	1.2
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.201
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	5.00	33.2
Biological Oxygen Demand	08/01/12 080112#1	EPA 405.1	mg/L	4.0	13.9
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	11.8

RL Analytical reporting limit  
 U Undetected at reported detection limit

SAMPLE RESULTS-CONVENTIONALS  
VE22-Landau Associates



Matrix: Water  
Data Release Authorized:   
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.510  
Date Sampled: 07/30/12  
Date Received: 07/31/12

Client ID: MW-DUP-073012  
ARI ID: 12-14527 VE22H

Analyte	Date Batch	Method	Units	RL	Sample
N-Nitrate	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
N-Nitrite	07/31/12 073112#1	EPA 300.0	mg-N/L	0.1	< 0.1 U
Total Cyanide	08/10/12 081012#1	EPA 335.4	mg/L	0.005	< 0.005 U
Post Chlorination Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
Amenable Cyanide	08/10/12	EPA 335.1	mg/L	0.005	< 0.005 U
N-Ammonia	08/03/12 080312#1	EPA 350.1M	mg-N/L	0.200	14.2
Sulfate	07/31/12 073112#1	EPA 300.0	mg/L	0.1	1.2
Sulfide	08/02/12 080212#1	EPA 376.2	mg/L	0.050	0.123
Chemical Oxygen Demand	08/13/12 081312#1	EPA 410.4	mg/L	5.00	43.7
Biological Oxygen Demand	08/01/12 080112#1	EPA 405.1	mg/L	4.0	15.2
Total Organic Carbon	08/07/12 080712#1	EPA 9060	mg/L	1.50	12.3

RL Analytical reporting limit  
U Undetected at reported detection limit



METHOD BLANK RESULTS-CONVENTIONALS  
VE22-Landau Associates



Matrix: Water  
Data Release Authorized  
Reported: 08/15/12


Project: Cornwall  
Event: 0001020.400.510  
Date Sampled: NA  
Date Received: NA

Analyte	Method	Date	Units	Blank	ID
N-Nitrate	EPA 300.0	07/31/12	mg-N/L	< 0.1 U	
N-Nitrite	EPA 300.0	07/31/12	mg-N/L	< 0.1 U	
Total Cyanide	EPA 335.4	08/09/12 08/10/12	mg/L	< 0.005 U < 0.005 U	
N-Ammonia	EPA 350.1M	08/03/12 08/03/12	mg-N/L	< 0.010 U < 0.010 U	FB FB
Sulfate	EPA 300.0	07/31/12	mg/L	< 0.1 U	
Sulfide	EPA 376.2	08/02/12	mg/L	< 0.050 U	
Chemical Oxygen Demand	EPA 410.4	08/13/12	mg/L	< 5.00 U	
Biological Oxygen Demand	EPA 405.1	08/01/12	mg/L	< 1.0 U	
Total Organic Carbon	EPA 9060	08/07/12	mg/L	< 1.50 U	

FB Filtration Blank

LAB CONTROL RESULTS-CONVENTIONALS  
VE22-Landau Associates



Matrix: Water  
Data Release Authorized:   
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.510  
Date Sampled: NA  
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
Sulfide EPA 376.2	ICVL	08/02/12	mg/L	0.496	0.501	99.0%
Biological Oxygen Demand EPA 405.1	ICVL	08/01/12	mg/L	101	198	51.0%

STANDARD REFERENCE RESULTS-CONVENTIONALS  
VE22-Landau Associates



Matrix: Water  
Data Release Authorized:  
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.510  
Date Sampled: NA  
Date Received: NA

Analyte/SRM ID	Method	Date	Units	SRM	True Value	Recovery
N-Nitrate ERA #230511	EPA 300.0	07/31/12	mg-N/L	2.8	3.0	93.3%
N-Nitrite ERA #401010	EPA 300.0	07/31/12	mg-N/L	2.9	3.0	96.7%
Total Cyanide ERA 11107	EPA 335.4	08/09/12 08/10/12	mg/L	0.376 0.386	0.400 0.400	94.0% 96.5%
N-Ammonia ERA #15125	EPA 350.1M	08/03/12 08/03/12	mg-N/L	0.484 0.498	0.500 0.500	96.8% 99.6%
Sulfate ERA #070811	EPA 300.0	07/31/12	mg/L	3.0	3.0	100.0%
Chemical Oxygen Demand Thermo Orion #I01	EPA 410.4	08/13/12	mg/L	84.8	90.0	94.2%
Total Organic Carbon ERA 0409-12-01	EPA 9060	08/07/12	mg/L	20.4	20.0	102.0%

**REPLICATE RESULTS-CONVENTIONALS**  
**VE22-Landau Associates**




Matrix: Water  
 Data Release Authorized:  
 Reported: 08/15/12

Project: Cornwall  
 Event: 0001020.400.510  
 Date Sampled: 07/30/12  
 Date Received: 07/31/12

Analyte	Method	Date	Units	Sample	Replicate(s)	RPD/RSD
<b>ARI ID: VE22A</b>		<b>Client ID: MW-15D-073012</b>				
N-Nitrate	EPA 300.0	07/31/12	mg-N/L	< 0.1	< 0.1	NA
N-Nitrite	EPA 300.0	07/31/12	mg-N/L	< 0.1	< 0.1	NA
Total Cyanide	EPA 335.4	08/09/12	mg/L	< 0.005	< 0.005	NA
N-Ammonia	EPA 350.1M	08/03/12	mg-N/L	29.7	29.5	0.7%
Sulfate	EPA 300.0	07/31/12	mg/L	2.0	2.0	0.0%
Sulfide	EPA 376.2	08/02/12	mg/L	0.153	0.169	9.9%
Chemical Oxygen Demand	EPA 410.4	08/13/12	mg/L	42.4	37.8	11.5%
Total Organic Carbon	EPA 9060	08/07/12	mg/L	13.8	15.0	8.3%
<b>ARI ID: VE22F</b>		<b>Client ID: MW-14D-073012</b>				
N-Ammonia	EPA 350.1M	08/03/12	mg-N/L	13.4	13.4	0.0%

MS/MSD RESULTS-CONVENTIONALS  
VE22-Landau Associates



Matrix: Water  
Data Release Authorized:   
Reported: 08/15/12

Project: Cornwall  
Event: 0001020.400.510  
Date Sampled: 07/30/12  
Date Received: 07/31/12


Analyte	Method	Date	Units	Sample	Spike	Spike Added	Recovery
<b>ARI ID: VE22A</b>		<b>Client ID: MW-15D-073012</b>					
N-Nitrate	EPA 300.0	07/31/12	mg-N/L	< 0.1	1.9	2.0	95.0%
N-Nitrite	EPA 300.0	07/31/12	mg-N/L	< 0.1	2.2	2.0	110.0%
Total Cyanide	EPA 335.4	08/09/12	mg/L	< 0.005	0.160	0.200	80.0%
Sulfate	EPA 300.0	07/31/12	mg/L	2.0	4.1	2.0	105.0%
Sulfide	EPA 376.2	08/02/12	mg/L	0.153	0.693	0.500	108.0%
Chemical Oxygen Demand	EPA 410.4	08/13/12	mg/L	42.4	128	100	85.6%
Total Organic Carbon	EPA 9060	08/07/12	mg/L	13.8	34.4	20.0	103.0%
<b>ARI ID: VE22F</b>		<b>Client ID: MW-14D-073012</b>					
N-Ammonia	EPA 350.1M	08/03/12	mg-N/L	13.4	41.4	25.0	112.0%

Table of Contents: ARI Job UK00, UK01, UK02

Client: Landau Associates, Inc.

Project: 1020.400.480 Port Of Bellingham

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 \_\_\_\_\_  
 Signature

March-21-2012  
 Date



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

March 21, 2012

Jeremy Davis  
Landau Associates, Inc.  
130 2<sup>nd</sup> Avenue S.  
Edmonds, WA 98020

**RE: Project: Cornwall Avenue**  
**ARI Job No: UK00, UK01, UK02**

Dear Jeremy:

Please find enclosed the original and revised Chain of Custody documentation, e-mail documentation and the analytical results for the samples from the projects referenced above. Analytical Resources, Inc. (ARI) accepted several sediment samples between February 2, 2012 and February 27, 2012. There were no discrepancies between the sample containers' labels and the COCs.

Please reference the Case Narrative for analytical details associated with this project.

An electronic copy of these reports and the supporting data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Kelly Bottem  
Client Services Manager  
kellyb@arilabs.com  
206/695-6211

Enclosures

cc: files UK00, UK01 and UK02

page 1 of 465

**Chain of Custody Documentation**

**ARI Job ID: UK00, UK01, UK02**



- Seattle/Edmonds (425) 778-0907
- Tacoma (253) 926-2493
- Spokane (509) 327-9737
- Portland (503) 542-1080

LANDAU ASSOCIATES



# Chain-of-Custody Record

Date 2/1/2012  
 Page 1 of 1

UG 98

Project Name <u>Cornwall Avenue LF / Interim Action / Interim Placement Area #1</u> Project Location/Event <u>Interim Placement Area #1</u> Sampler's Name <u>Brian Christianson</u> Project Contact <u>Jeremy Davis 425-778-6907</u> Send Results To <u>Jeremy Davis - Edmonds</u>	Project No. <u>001020.400.470</u> Testing Parameters Turnaround Time <input type="checkbox"/> Standard <input type="checkbox"/> Accelerated <input checked="" type="checkbox"/> <u>HOLD</u>	Observations/Comments <input checked="" type="checkbox"/> Allow water samples to settle, collect aliquot from clear portion <input checked="" type="checkbox"/> NWTPH-Dx - run acid wash/silica gel cleanup  <input type="checkbox"/> run samples standardized to _____ product <input type="checkbox"/> Analyze for EPH if no specific product identified VOC/BTEX/VPH (soil): <input type="checkbox"/> non-preserved <input type="checkbox"/> preserved w/methanol <input type="checkbox"/> preserved w/sodium bisulfate <input type="checkbox"/> Freeze upon receipt <input type="checkbox"/> Dissolved metal water samples field filtered Other _____	
Sample I.D.    Date    Time    Matrix    Containers    No. of Containers <u>CA-LF-IPAZ-020112A</u> <u>2/1/12</u> <u>1310</u> <u>Soil</u> <u>1</u>			
Special Shipment/Handling or Storage Requirements <u>Keep Cool / Hold Sample for Analysis</u>			
Relinquished by <u>Brian Christianson</u> Signature <u>Brian Christianson</u> Printed Name <u>Brian Christianson</u> Company <u>Landau Associates</u> Date <u>2/1/12</u> Time <u>1445</u>	Relinquished by Signature _____ Printed Name _____ Company _____ Date _____    Time _____	Received by <u>Federal Express Courier</u> Signature _____ Printed Name _____ Company _____ Date _____    Time _____	Method of Shipment <u>Federal Express Courier</u>

Dioxins (EPA 1631B)

UK00 : 00000



# Cooler Receipt Form

ARI Client: Lindau  
 COC No(s): \_\_\_\_\_ NA  
 Assigned ARI Job No 1698

Project Name: Cornwall Ave LP  
 Delivered by: Fed-Ex/UPS Courier Hand Delivered Other: \_\_\_\_\_  
 Tracking No 846770578730 NA

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO  
 Were custody papers included with the cooler? YES NO  
 Were custody papers properly filled out (ink, signed, etc) YES NO  
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 4.8  
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID# 90941019  
 Cooler Accepted by AV Date 2/2/12 Time 955

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? YES (NO)  
 What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_  
 Was sufficient ice used (if appropriate)? NA YES NO  
 Were all bottles sealed in individual plastic bags? YES (NO)  
 Did all bottles arrive in good condition (unbroken)? YES NO  
 Were all bottle labels complete and legible? YES NO  
 Did the number of containers listed on COC match with the number of containers received? YES NO  
 Did all bottle labels and tags agree with custody papers? YES NO  
 Were all bottles used correct for the requested analyses? YES NO  
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) .. (NA) YES NO  
 Were all VOC vials free of air bubbles? (NA) YES NO  
 Was sufficient amount of sample sent in each bottle? YES NO  
 Date VOC Trip Blank was made at ARI. (NA)  
 Was Sample Split by ARI: (NA) YES Date/Time \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_  
 Samples Logged by JK Date 2-2-12 Time 1124

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

By \_\_\_\_\_ Date \_\_\_\_\_

<p>Small Air Bubbles ~2mm</p>	<p>Peabubbles 2-4 mm</p>	<p>LARGE Air Bubbles &gt; 4 mm</p>	Small → "sm" Peabubbles → "pb" Large → "lg" Headspace → "hs"
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# Chain-of-Custody Record

Date 2/15/12  
 Page 1 of 1

Project Name POB - Cornwall LF Interiors PKR 7020.400.400  
 Project Location/Event IPAI Stackpile Sample  
 Sampler's Name Brian Christian  
 Project Contact Jeremy Davis  
 Send Results To Jeremy Davis

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters	Observations/Comments
CA-LF-IPAI-021512B	2/15/12	0830	soil	2		<input checked="" type="checkbox"/> Allow water samples to settle, collect aliquot from clear portion <input checked="" type="checkbox"/> NWTPH-Dx - run acid wash/silica gel cleanup  ___ run samples standardized to ___ product ___ Analyze for EPH if no specific product identified VOC/BTEX/VPH (soil): ___ non-preserved ___ preserved w/methanol ___ preserved w/sodium bisulfate ___ Freeze upon receipt  ___ Dissolved metal water samples field filtered  Other <u>Hold For TESTING-60</u>
CA-LF-IPAI-021512C	2/15/12	0845	soil	2		

Special Shipment/Handling or Storage Requirements Keep Cool

Relinquished by	Received by	Relinquished by	Received by
Signature <u>Brian Christian</u> Printed Name <u>Brian Christian</u> Company <u>Landau Associates</u> Date <u>2/15/12</u> Time <u>12:50 PM</u>	Signature <u>[Signature]</u> Printed Name <u>Chris Akers</u> Company <u>AEI</u> Date <u>2/15/12</u> Time <u>15:14</u>	Signature _____ Printed Name _____ Company _____ Date _____ Time _____	Signature _____ Printed Name _____ Company _____ Date _____ Time _____

Method of Shipment AAI Courier



# Cooler Receipt Form

ARI Client: Landau

Project Name POB - Cornwall

COC No(s) \_\_\_\_\_ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_

Assigned ARI Job No. UI 34

Tracking No \_\_\_\_\_ NA

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc) YES NO

Temperature of Cooler(s) (°C) (recommended 2 0-6.0 °C for chemistry) 11.4

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 90941619

Cooler Accepted by: CA Date: 2/15/12 Time: 15:14

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_

Was sufficient ice used (if appropriate)? NA YES NO

Were all bottles sealed in individual plastic bags? YES NO

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI. NA

Was Sample Split by ARI. NA YES Date/Time \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_

Samples Logged by JS Date 2-15-12 Time 170Z

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

By \_\_\_\_\_ Date \_\_\_\_\_

			Small → "sm"
			Peabubbles → "pb"
			Large → "lg"
			Headspace → "hs"



# Cooler Temperature Compliance Form

Cooler#: 7 Temperature(°C): 11.4

Sample ID	Bottle Count	Bottle Type
Samples received above 6°C		

Cooler#: \_\_\_\_\_ Temperature(°C): \_\_\_\_\_

Sample ID	Bottle Count	Bottle Type

Cooler#: \_\_\_\_\_ Temperature(°C): \_\_\_\_\_

Sample ID	Bottle Count	Bottle Type

Cooler#: \_\_\_\_\_ Temperature(°C): \_\_\_\_\_

Sample ID	Bottle Count	Bottle Type

Completed by: JS Date: 2-16-12 Time: 17:04





# Cooler Receipt Form

ARI Client: Port of Bellingham  
 COC No(s) \_\_\_\_\_ NA  
 Assigned ARI Job No: UJ76

Project Name: Port of Bellingham  
 Delivered by: Fed-Ex UPS Courier Hand Delivered Other: \_\_\_\_\_  
 Tracking No: \_\_\_\_\_ NA

**Preliminary Examination Phase:**

Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES NO  
 Were custody papers included with the cooler? YES NO  
 Were custody papers properly filled out (ink, signed, etc.) YES NO  
 Temperature of Cooler(s) (°C) (recommended 2 0-6 0 °C for chemistry) 5.1  
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 9094/67  
 Cooler Accepted by [Signature] Date 4/27/12 Time 1315

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

Was a temperature blank included in the cooler? YES NO  
 What kind of packing material was used? Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: \_\_\_\_\_  
 Was sufficient ice used (if appropriate)? NA YES NO  
 Were all bottles sealed in individual plastic bags? YES NO  
 Did all bottles arrive in good condition (unbroken)? YES NO  
 Were all bottle labels complete and legible? YES NO  
 Did the number of containers listed on COC match with the number of containers received? YES NO  
 Did all bottle labels and tags agree with custody papers? YES NO  
 Were all bottles used correct for the requested analyses? YES NO  
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) NA YES NO  
 Were all VOC vials free of air bubbles? NA YES NO  
 Was sufficient amount of sample sent in each bottle? YES NO  
 Date VOC Trip Blank was made at ARI... NA  
 Was Sample Split by ARI: NA YES Date/Time: \_\_\_\_\_ Equipment: \_\_\_\_\_ Split by: \_\_\_\_\_  
 Samples Logged by TS Date: 2-27-12 Time 5:03 PM 1701

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

**Additional Notes, Discrepancies, & Resolutions:**

By \_\_\_\_\_ Date \_\_\_\_\_

<b>Small Air Bubbles</b> ~2mm 	<b>Peabubbles</b> 2-4 mm 	<b>LARGE Air Bubbles</b> > 4 mm 	Small → "sm" Peabubbles → "pb" Large → "lg" Headspace → "hs"
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UK02 : 00005

**Case Narrative, Data Qualifiers, Control Limits**

**ARI Job ID: UK00, UK01, UK02**





**Case Narrative**

**Landau Associates, Inc.  
Cornwall Avenue  
ARI Job:UK00, UK01 and UK02  
March 21, 2012**

**Sample Receipt:**

Please find enclosed the original chain of custody and a revised (COC) record, e-mail documentation and analytical results for the project referenced above. Analytical Resources, Inc. originally accepted several sediment samples in good condition between February 2, 2012 and February 27, 2012. The samples were received at cooler temperatures between 4.8 and 11.4°C. Please see the Cooler Receipt Form for further details.

**Dioxin/Furans by Method 1613B:**

The samples were extracted on 3/7/12. The extracts were analyzed between 3/14/12 and 3/15/12 - within the method recommended holding times.

Analysis was performed using the application specific RTX-Dioxin 2 column, which has a unique elution order and selectivity for the target compounds, as well as a unique isomer separation for the 2378-TCDF. A resolution test mixture was designed specifically for this column, consisting of 2348-TCDF, 2378-TCDF and 3467-TCDF to evaluate the method required minimum valley between isomer of 25%. Use of the RTX-Dioxin2 column eliminates the need for second column confirmation.

Initial and continuing calibration results were within method requirements.

The percent recoveries for all preparation and cleanup surrogates were within established QC limits.

The method blank contained reportable responses below the reporting limit for all compounds. "B" qualifiers were applied to associated results that were less than ten times the levels found in the method blank. No qualifiers were applied to sample results that were greater than ten times the levels found in the method blank.

The OPR (Ongoing Precision and Accuracy or LCS) sample percent recoveries were within control limits.

The TEQ was calculated with WHO2005 with both ND=0 for undetects (flagged "U") and ND= ½ EDL. The TEC includes EMPC values in the calculation.



**Case Narrative**

**Landau Associates, Inc.  
Cornwall Avenue  
ARI Job:UK00, UK01 and UK02  
March 21, 2012**

**pH Analysis:**

The samples were analyzed on 3/1/12 – The ph analysis for ARI associated job UK00 was analyzed outside of the method recommended holding time per the client request.

**Initial calibration (s):** All analytes were within method acceptance criteria.

**Continuing calibration (s):** All analytes of interest were within method acceptance criteria.

**Sample Duplicates:** Are in control.

**Samples:** There were no anomalies associated with this analysis.

**LCS:** The LCS is in control.

# Sample ID Cross Reference Report



ARI Job No: UK00  
Client: Landau Associates, Inc.  
Project Event: 001020.400.470  
Project Name: Cornwall Avenue LF/Interim Action

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. CA-LF-IPA1-0201112A	UK00A	12-3457	Soil	02/01/12 13:10	02/02/12 09:55

# Sample ID Cross Reference Report



ARI Job No: UK01  
Client: Landau Associates, Inc.  
Project Event: 07020.400.480  
Project Name: POB-Cornwall LF Interim

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. CA-LF-IPA1-021512B	UK01A	12-3474	Soil	02/15/12 08:30	02/15/12 15:14
2. CA-LF-IPA1-021512C	UK01B	12-3475	Soil	02/15/12 08:45	02/15/12 15:14

# Sample ID Cross Reference Report



ARI Job No: UK02  
Client: Landau Associates, Inc.  
Project Event: 1020.400.480  
Project Name: Port Of Bellingham

Sample ID	ARI Lab ID	ARI LIMS ID	Matrix	Sample Date/Time	VTSR
1. CA-LF-IPA2-022412D	UK02A	12-3476	Soil	02/24/12 15:35	02/27/12 13:15
2. CA-LF-IPA2-022412E	UK02B	12-3477	Soil	02/24/12 15:45	02/27/12 13:15



## Data Reporting Qualifiers

Effective 2/14/2011

### Inorganic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Duplicate RPD is not within established control limits
- B Reported value is less than the CRDL but  $\geq$  the Reporting Limit
- N Matrix Spike recovery not within established control limits
- NA Not Applicable, analyte not spiked
- H The natural concentration of the spiked element is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- L Analyte concentration is  $\leq 5$  times the Reporting Limit and the replicate control limit defaults to  $\pm 1$  RL instead of the normal 20% RPD

### Organic Data

- U Indicates that the target analyte was not detected at the reported concentration
- \* Flagged value is not within established control limits
- B Analyte detected in an associated Method Blank at a concentration greater than one-half of ARI's Reporting Limit or 5% of the regulatory limit or 5% of the analyte concentration in the sample.
- J Estimated concentration when the value is less than ARI's established reporting limits
- D The spiked compound was not detected due to sample extract dilution
- E Estimated concentration calculated for an analyte response above the valid instrument calibration range. A dilution is required to obtain an accurate quantification of the analyte.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ( $< 20\%$  RSD,  $< 20\%$  Drift or minimum RRF).



- S Indicates an analyte response that has saturated the detector. The calculated concentration is not valid; a dilution is required to obtain valid quantification of the analyte
- NA The flagged analyte was not analyzed for
- NR Spiked compound recovery is not reported due to chromatographic interference
- NS The flagged analyte was not spiked into the sample
- M Estimated value for an analyte detected and confirmed by an analyst but with low spectral match parameters. This flag is used only for GC-MS analyses
- M2 The sample contains PCB congeners that do not match any standard Aroclor pattern. The PCBs are identified and quantified as the Aroclor whose pattern most closely matches that of the sample. The reported value is an estimate.
- N The analysis indicates the presence of an analyte for which there is presumptive evidence to make a "tentative identification"
- Y The analyte is not detected at or above the reported concentration. The reporting limit is raised due to chromatographic interference. The Y flag is equivalent to the U flag with a raised reporting limit.
- EMPC Estimated Maximum Possible Concentration (EMPC) defined in EPA Statement of Work DLM02.2 as a value "calculated for 2,3,7,8-substituted isomers for which the quantitation and /or confirmation ion(s) has signal to noise in excess of 2.5, but does not meet identification criteria"  
**(Dioxin/Furan analysis only)**
- C The analyte was positively identified on only one of two chromatographic columns. Chromatographic interference prevented a positive identification on the second column
- P The analyte was detected on both chromatographic columns but the quantified values differ by  $\geq 40\%$  RPD with no obvious chromatographic interference
- X Analyte signal includes interference from polychlorinated diphenyl ethers.  
**(Dioxin/Furan analysis only)**
- Z Analyte signal includes interference from the sample matrix or perfluorokerosene ions. **(Dioxin/Furan analysis only)**



## Geotechnical Data

- A The total of all fines fractions. This flag is used to report total fines when only sieve analysis is requested and balances total grain size with sample weight.
- F Samples were frozen prior to particle size determination
- SM Sample matrix was not appropriate for the requested analysis. This normally refers to samples contaminated with an organic product that interferes with the sieving process and/or moisture content, porosity and saturation calculations
- SS Sample did not contain the proportion of "fines" required to perform the pipette portion of the grain size analysis
- W Weight of sample in some pipette aliquots was below the level required for accurate weighting





**Spike Recovery Control Limits for Conventional Wet Chemistry**  
Effective 5/1/09

Control limits are updated periodically. Assure that you have ARI's current control limits by downloading the files at the time of use. <http://www.arilabs.com/portal/downloads/ARI-CLs.zip>

Sample Matrix:	ARI's Control Limits	
	Water	Soil / Sediment
<b>Matrix Spike Recoveries</b>	% Recovery	% Recovery
Ammonia	75 - 125	75 - 125
Bromide	75 - 125	75 - 125
Chloride	75 - 125	75 - 125
Cyanide	75 - 125	75 - 125
Ferrous Iron	75 - 125	75 - 125
Fluoride	75 - 125	75 - 125
Formaldehyde	75 - 125	75 - 125
Hexane Extractable Material	-- - --	78 - 114
Hexavalent Chromium	75 - 125	75 - 125
Nitrate/Nitrite	75 - 125	75 - 125
Oil and Grease	75 - 125	75 - 125
Phenol	75 - 125	75 - 125
Phosphorous	75 - 125	75 - 125
Sulfate	75 - 125	75 - 125
Sulfide	75 - 125	75 - 125
Total Kjeldahl Nitrogen	75 - 125	75 - 125
Total Organic Carbon	75 - 125	75 - 125
<b>Duplicate RPDs</b>		
Acidity	±20%	±20%
Alkalinity	±20%	±20%
BOD	±20%	±20%
Cation Exchange	±20%	±20%
COD	±20%	±20%
Conductivity	±20%	±20%
Salinity	±20%	±20%
Solids	±20%	±20%
Turbidity	±20%	±20%

**Dioxin Analysis  
Report and Summary QC Forms**

**ARI Job ID: UK00, UK01, UK02**

**ORGANICS ANALYSIS DATA SHEET**  
**Dioxins/Furans by EPA 1613B**  
 Page 1 of 1

Sample ID: CA-LF-IPA1-0201112A

Lab Sample ID: UK00A  
 LIMS ID: 12-3457  
 Matrix: Soil  
 Data Release Authorized: *mw*  
 Reported: 03/21/12

QC Report No: UK00-Landau Associates, Inc.  
 Project: Cornwall Avenue LF/Interim Action  
 001020.400.470  
 Date Sampled: 02/01/12  
 Date Received: 02/02/12

Date Extracted: 03/07/12  
 Date Analyzed: 03/14/12 16:40  
 Instrument/Analyst: AS1/PK  
 Acid Cleanup: Yes  
 Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt  
 Final Extract Volume: 20 uL  
 Dilution Factor: 1.00  
 Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.75	0.65-0.89		0.998	1.51	
2,3,7,8-TCDD	0.50	0.65-0.89		0.998	0.269	JEMPC
1,2,3,7,8-PeCDF	1.29	1.32-1.78		2.00	0.828	JEMPC
2,3,4,7,8-PeCDF	1.71	1.32-1.78		0.998	1.08	
1,2,3,7,8-PeCDD	1.48	1.32-1.78		0.998	1.83	
1,2,3,4,7,8-HxCDF	1.24	1.05-1.43		2.00	3.32	
1,2,3,6,7,8-HxCDF	1.25	1.05-1.43		2.00	1.42	J
2,3,4,6,7,8-HxCDF	1.14	1.05-1.43		2.00	2.19	
1,2,3,7,8,9-HxCDF	1.01	1.05-1.43		2.00	1.23	JEMPC
1,2,3,4,7,8-HxCDD	1.29	1.05-1.43		2.00	3.24	
1,2,3,6,7,8-HxCDD	1.26	1.05-1.43		2.00	13.2	
1,2,3,7,8,9-HxCDD	1.31	1.05-1.43		2.00	7.23	
1,2,3,4,6,7,8-HpCDF	1.00	0.88-1.20		2.00	35.7	
1,2,3,4,7,8,9-HpCDF	0.83	0.88-1.20		2.00	2.12	EMPC
1,2,3,4,6,7,8-HpCDD	1.02	0.88-1.20		2.00	355	
OCDF	0.87	0.76-1.02		4.99	83.9	
OCDD	0.88	0.76-1.02		4.99	3,220	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.998	6.31	8.53
Total TCDD		0.998	22.5	23.9
Total PeCDF		2.00	21.8	24.7
Total PeCDD		0.998	27.9	28.7
Total HxCDF		2.00	68.0	69.3
Total HxCDD		2.00	120	122
Total HpCDF		2.00	118	120
Total HpCDD		2.00	836	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 10.7

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 10.7

Reported in pg/g

**ORGANICS ANALYSIS DATA SHEET**  
**Dioxins/Furans by EPA 1613B**  
 Page 1 of 1

**Sample ID: CA-LF-IPA1-0201112A**

Lab Sample ID: UK00A  
 LIMS ID: 12-3457  
 Matrix: Soil  
 Data Release Authorized: *MW*  
 Reported: 03/21/12

QC Report No: UK00-Landau Associates, Inc.  
 Project: Cornwall Avenue LF/Interim Action  
 001020.400.470  
 Date Sampled: 02/01/12  
 Date Received: 02/02/12

Date Extracted: 03/07/12  
 Date Analyzed: 03/14/12 16:40  
 Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt  
 Final Extract Volume: 20 uL  
 Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-2,3,7,8-TCDF	0.77	0.65-0.89	85.7	24-169
13C-2,3,7,8-TCDD	0.78	0.65-0.89	83.0	25-164
13C-1,2,3,7,8-PeCDF	1.54	1.32-1.78	72.3	24-185
13C-2,3,4,7,8-PeCDF	1.54	1.32-1.78	70.6	21-178
13C-1,2,3,7,8-PeCDD	1.60	1.32-1.78	73.0	25-181
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	84.5	26-152
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	79.9	26-123
13C-2,3,4,6,7,8-HxCDF	0.53	0.43-0.59	83.0	28-136
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	90.5	29-147
13C-1,2,3,4,7,8-HxCDD	1.25	1.05-1.43	86.3	32-141
13C-1,2,3,6,7,8-HxCDD	1.25	1.05-1.43	83.7	28-130
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	72.6	28-143
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	73.9	26-138
13C-1,2,3,4,6,7,8-HpCDD	1.06	0.88-1.20	80.7	23-140
13C-OCDD	0.91	0.76-1.02	69.5	17-157
37C14-2,3,7,8-TCDD			86.4	35-197

Reported in Percent Recovery

**ORGANICS ANALYSIS DATA SHEET**

**Dioxins/Furans by EPA 1613B**

Page 1 of 1

**Sample ID: CA-LF-IPA1-021512B**

Lab Sample ID: UK01A

QC Report No: UK01-Landau Associates, Inc.

LIMS ID: 12-3474

Project: POB-Cornwall LF Interim

Matrix: Soil

07020.400.480

Data Release Authorized: *MW*

Date Sampled: 02/15/12

Reported: 03/21/12

Date Received: 02/15/12

Date Extracted: 03/07/12

Sample Amount: 10.0 g-dry-wt

Date Analyzed: 03/14/12 17:33

Final Extract Volume: 20 uL

Instrument/Analyst: AS1/PK

Dilution Factor: 1.00

Acid Cleanup: Yes

Silica-Florisil Cleanup: Yes

Silica-Carbon Cleanup: No

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.82	0.65-0.89		1.00	2.17	
2,3,7,8-TCDD	0.54	0.65-0.89		1.00	0.312	JEMPC
1,2,3,7,8-PeCDF	1.52	1.32-1.78		2.00	2.36	
2,3,4,7,8-PeCDF	1.68	1.32-1.78		1.00	2.24	
1,2,3,7,8-PeCDD	1.61	1.32-1.78		1.00	3.87	
1,2,3,4,7,8-HxCDF	1.18	1.05-1.43		2.00	6.31	
1,2,3,6,7,8-HxCDF	1.14	1.05-1.43		2.00	2.85	
2,3,4,6,7,8-HxCDF	1.23	1.05-1.43		2.00	4.40	
1,2,3,7,8,9-HxCDF	1.18	1.05-1.43		2.00	3.21	
1,2,3,4,7,8-HxCDD	1.21	1.05-1.43		2.00	5.72	
1,2,3,6,7,8-HxCDD	1.23	1.05-1.43		2.00	31.7	
1,2,3,7,8,9-HxCDD	1.22	1.05-1.43		2.00	15.3	
1,2,3,4,6,7,8-HpCDF	1.01	0.88-1.20		2.00	76.4	
1,2,3,4,7,8,9-HpCDF	1.05	0.88-1.20		2.00	3.68	
1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20		2.00	735	
OCDF	0.85	0.76-1.02		5.00	142	
OCDD	0.89	0.76-1.02		25.0	6,330	#

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		1.00	9.23	12.3
Total TCDD		1.00	22.8	23.7
Total PeCDF		2.00	58.8	60.2
Total PeCDD		1.00	34.6	36.1
Total HxCDF		2.00	173	
Total HxCDD		2.00	223	
Total HpCDF		2.00	256	258
Total HpCDD		2.00	1,660	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 22.2

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 22.2

#-Result from diluted secondary analysis.

Reported in pg/g

**ORGANICS ANALYSIS DATA SHEET**  
**Dioxins/Furans by EPA 1613B**  
 Page 1 of 1

Sample ID: CA-LF-IPA1-021512B

Lab Sample ID: UK01A  
 LIMS ID: 12-3474  
 Matrix: Soil  
 Data Release Authorized: *mmw*  
 Reported: 03/21/12

QC Report No: UK01-Landau Associates, Inc.  
 Project: POB-Cornwall LF Interim  
 07020.400.480  
 Date Sampled: 02/15/12  
 Date Received: 02/15/12

Date Extracted: 03/07/12  
 Date Analyzed: 03/14/12 17:33  
 Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt  
 Final Extract Volume: 20 uL  
 Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-2,3,7,8-TCDF	0.78	0.65-0.89	81.6	24-169
13C-2,3,7,8-TCDD	0.77	0.65-0.89	84.2	25-164
13C-1,2,3,7,8-PeCDF	1.56	1.32-1.78	76.4	24-185
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	77.1	21-178
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	77.6	25-181
13C-1,2,3,4,7,8-HxCDF	0.51	0.43-0.59	78.5	26-152
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	73.3	26-123
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	78.0	28-136
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	94.0	29-147
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	83.6	32-141
13C-1,2,3,6,7,8-HxCDD	1.26	1.05-1.43	78.5	28-130
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	70.2	28-143
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	75.2	26-138
13C-1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20	81.3	23-140
13C-OCDD	0.90	0.76-1.02	75.7	17-157
37Cl4-2,3,7,8-TCDD			89.6	35-197

Reported in Percent Recovery

**ORGANICS ANALYSIS DATA SHEET**  
**Dioxins/Furans by EPA 1613B**  
 Page 1 of 1

**Sample ID: CA-LF-IPA1-021512B**  
**DILUTION**

Lab Sample ID: UK01A  
 LIMS ID: 12-3474  
 Matrix: Soil  
 Data Release Authorized: *mm*  
 Reported: 03/21/12

QC Report No: UK01-Landau Associates, Inc.  
 Project: POB-Cornwall LF Interim  
 07020.400.480  
 Date Sampled: 02/15/12  
 Date Received: 02/15/12

Date Extracted: 03/07/12  
 Date Analyzed: 03/15/12 11:37  
 Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt  
 Final Extract Volume: 20 uL  
 Dilution Factor: 5.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-OCDD	0.88	0.76-1.02	98.8	17-157
37C14-2,3,7,8-TCDD			99.2	35-197

Reported in Percent Recovery

**ORGANICS ANALYSIS DATA SHEET**

**Dioxins/Furans by EPA 1613B**

Page 1 of 1

**Sample ID: CA-LF-IPA1-021512C**

Lab Sample ID: UK01B

LIMS ID: 12-3475

Matrix: Soil

Data Release Authorized: *mmw*

Reported: 03/21/12

QC Report No: UK01-Landau Associates, Inc.

Project: POB-Cornwall LF Interim

07020.400.480

Date Sampled: 02/15/12

Date Received: 02/15/12

Date Extracted: 03/07/12

Date Analyzed: 03/15/12 12:27

Instrument/Analyst: AS1/PK

Acid Cleanup: Yes

Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt

Final Extract Volume: 20 uL

Dilution Factor: 5.00

Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result
2,3,7,8-TCDF	0.76	0.65-0.89		4.99	1.70
2,3,7,8-TCDD	0.59	0.65-0.89		4.99	0.405 JEMPC
1,2,3,7,8-PeCDF	1.34	1.32-1.78		9.98	1.07 J
2,3,4,7,8-PeCDF	1.29	1.32-1.78		4.99	1.04 JEMPC
1,2,3,7,8-PeCDD	1.83	1.32-1.78		4.99	3.43 JEMPC
1,2,3,4,7,8-HxCDF	1.21	1.05-1.43		9.98	4.75 J
1,2,3,6,7,8-HxCDF	0.98	1.05-1.43		9.98	1.95 JEMPC
2,3,4,6,7,8-HxCDF	1.03	1.05-1.43		9.98	3.33 JEMPC
1,2,3,7,8,9-HxCDF	1.32	1.05-1.43		9.98	1.70 J
1,2,3,4,7,8-HxCDD	1.19	1.05-1.43		9.98	6.24 J
1,2,3,6,7,8-HxCDD	1.17	1.05-1.43		9.98	24.6
1,2,3,7,8,9-HxCDD	1.22	1.05-1.43		9.98	15.6
1,2,3,4,6,7,8-HpCDF	1.00	0.88-1.20		9.98	80.4
1,2,3,4,7,8,9-HpCDF	1.21	0.88-1.20		9.98	3.63 JEMPC
1,2,3,4,6,7,8-HpCDD	1.02	0.88-1.20		9.98	695
OCDF	0.88	0.76-1.02		25.0	230
OCDD	0.88	0.76-1.02		25.0	6,550

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		4.99	6.37	9.51
Total TCDD		4.99	24.9	28.3
Total PeCDF		9.98	30.4	36.6
Total PeCDD		4.99	38.8	45.5
Total HxCDF		9.98	114	121
Total HxCDD		9.98	258	261
Total HpCDF		9.98	260	265
Total HpCDD		9.98	1,810	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 20.0

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 20.0

Reported in pg/g



**ORGANICS ANALYSIS DATA SHEET**

**Dioxins/Furans by EPA 1613B**

Page 1 of 1

**Sample ID: CA-LF-IPA1-021512C**

Lab Sample ID: UK01B

QC Report No: UK01-Landau Associates, Inc.

LIMS ID: 12-3475

Project: POB-Cornwall LF Interim

Matrix: Soil

07020.400.480

Data Release Authorized: *mw*

Date Sampled: 02/15/12

Reported: 03/21/12

Date Received: 02/15/12

Date Extracted: 03/07/12

Sample Amount: 10.0 g-dry-wt

Date Analyzed: 03/15/12 12:27

Final Extract Volume: 20 uL

Instrument/Analyst: AS1/PK

Dilution Factor: 5.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-2,3,7,8-TCDF	0.76	0.65-0.89	91.6	24-169
13C-2,3,7,8-TCDD	0.79	0.65-0.89	96.3	25-164
13C-1,2,3,7,8-PeCDF	1.58	1.32-1.78	89.6	24-185
13C-2,3,4,7,8-PeCDF	1.54	1.32-1.78	89.8	21-178
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	91.1	25-181
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	92.3	26-152
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	92.5	26-123
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	94.4	28-136
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	105	29-147
13C-1,2,3,4,7,8-HxCDD	1.29	1.05-1.43	99.2	32-141
13C-1,2,3,6,7,8-HxCDD	1.22	1.05-1.43	97.2	28-130
13C-1,2,3,4,6,7,8-HpCDF	0.45	0.37-0.51	88.6	28-143
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	100	26-138
13C-1,2,3,4,6,7,8-HpCDD	1.03	0.88-1.20	104	23-140
13C-OCDD	0.90	0.76-1.02	107	17-157
37C14-2,3,7,8-TCDD			100	35-197

Reported in Percent Recovery

**ORGANICS ANALYSIS DATA SHEET**  
**Dioxins/Furans by EPA 1613B**  
Page 1 of 1

Sample ID: CA-LF-IPA2-022412D

Lab Sample ID: UK02A  
LIMS ID: 12-3476  
Matrix: Soil  
Data Release Authorized: *YMW*  
Reported: 03/21/12

QC Report No: UK02-Landau Associates, Inc.  
Project: Port Of Bellingham  
1020.400.480  
Date Sampled: 02/24/12  
Date Received: 02/27/12

Date Extracted: 03/07/12  
Date Analyzed: 03/14/12 19:20  
Instrument/Analyst: AS1/PK  
Acid Cleanup: Yes  
Silica-Carbon Cleanup: No

Sample Amount: 10.2 g-dry-wt  
Final Extract Volume: 20 uL  
Dilution Factor: 1.00  
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.81	0.65-0.89		0.984	1.53	
2,3,7,8-TCDD	0.50	0.65-0.89		0.984	0.248	JEMPC
1,2,3,7,8-PeCDF	1.61	1.32-1.78		1.97	0.813	J
2,3,4,7,8-PeCDF	1.91	1.32-1.78		0.984	0.900	JEMPC
1,2,3,7,8-PeCDD	1.68	1.32-1.78		0.984	2.42	
1,2,3,4,7,8-HxCDF	1.09	1.05-1.43		1.97	3.22	
1,2,3,6,7,8-HxCDF	1.18	1.05-1.43		1.97	1.72	J
2,3,4,6,7,8-HxCDF	1.55	1.05-1.43		1.97	1.06	JEMPC
1,2,3,7,8,9-HxCDF	1.16	1.05-1.43		1.97	1.37	J
1,2,3,4,7,8-HxCDD	1.35	1.05-1.43		1.97	4.17	
1,2,3,6,7,8-HxCDD	1.22	1.05-1.43		1.97	17.4	
1,2,3,7,8,9-HxCDD	1.27	1.05-1.43		1.97	9.94	
1,2,3,4,6,7,8-HpCDF	0.99	0.88-1.20		1.97	42.3	
1,2,3,4,7,8,9-HpCDF	1.03	0.88-1.20		1.97	2.38	
1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20		1.97	459	
OCDF	0.86	0.76-1.02		4.92	103	
OCDD	0.90	0.76-1.02		24.6	4,280	#

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.984	8.93	9.69
Total TCDD		0.984	23.6	25.0
Total PeCDF		1.97	24.7	27.8
Total PeCDD		0.984	31.6	33.5
Total HxCDF		1.97	77.1	79.1
Total HxCDD		1.97	166	168
Total HpCDF		1.97	139	140
Total HpCDD		1.97	1,190	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 13.4

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 13.4

#-Result from diluted secondary analysis.

Reported in pg/g

**ORGANICS ANALYSIS DATA SHEET**

**Dioxins/Furans by EPA 1613B**

Page 1 of 1

**Sample ID: CA-LF-IPA2-022412D**

Lab Sample ID: UK02A

LIMS ID: 12-3476

Matrix: Soil

Data Release Authorized: *MW*

Reported: 03/21/12

QC Report No: UK02-Landau Associates, Inc.

Project: Port Of Bellingham

1020.400.480

Date Sampled: 02/24/12

Date Received: 02/27/12

Date Extracted: 03/07/12

Date Analyzed: 03/14/12 19:20

Instrument/Analyst: AS1/PK

Sample Amount: 10.2 g-dry-wt

Final Extract Volume: 20 uL

Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-2,3,7,8-TCDF	0.77	0.65-0.89	85.4	24-169
13C-2,3,7,8-TCDD	0.77	0.65-0.89	85.4	25-164
13C-1,2,3,7,8-PeCDF	1.59	1.32-1.78	76.6	24-185
13C-2,3,4,7,8-PeCDF	1.58	1.32-1.78	75.4	21-178
13C-1,2,3,7,8-PeCDD	1.54	1.32-1.78	77.3	25-181
13C-1,2,3,4,7,8-HxCDF	0.51	0.43-0.59	85.1	26-152
13C-1,2,3,6,7,8-HxCDF	0.51	0.43-0.59	82.3	26-123
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	82.4	28-136
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	90.2	29-147
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	87.1	32-141
13C-1,2,3,6,7,8-HxCDD	1.25	1.05-1.43	84.9	28-130
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	75.8	28-143
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	79.0	26-138
13C-1,2,3,4,6,7,8-HpCDD	1.05	0.88-1.20	85.1	23-140
13C-OCDD	0.90	0.76-1.02	77.5	17-157
37Cl4-2,3,7,8-TCDD			88.8	35-197

Reported in Percent Recovery

**ORGANICS ANALYSIS DATA SHEET**  
**Dioxins/Furans by EPA 1613B**  
 Page 1 of 1

**Sample ID: CA-LF-IPA2-022412D**  
**DILUTION**

Lab Sample ID: UK02A  
 LIMS ID: 12-3476  
 Matrix: Soil  
 Data Release Authorized: *MW*  
 Reported: 03/21/12

QC Report No: UK02-Landau Associates, Inc.  
 Project: Port Of Bellingham  
 1020.400.480  
 Date Sampled: 02/24/12  
 Date Received: 02/27/12

Date Extracted: 03/07/12  
 Date Analyzed: 03/15/12 13:21  
 Instrument/Analyst: AS1/PK

Sample Amount: 10.2 g-dry-wt  
 Final Extract Volume: 20 uL  
 Dilution Factor: 5.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-OCDD	0.86	0.76-1.02	98.1	17-157
37C14-2,3,7,8-TCDD			95.2	35-197

Reported in Percent Recovery

**ORGANICS ANALYSIS DATA SHEET**  
**Dioxins/Furans by EPA 1613B**  
Page 1 of 1

Sample ID: CA-LF-IPA2-022412E

Lab Sample ID: UK02B  
LIMS ID: 12-3477  
Matrix: Soil  
Data Release Authorized: *mm*  
Reported: 03/21/12

QC Report No: UK02-Landau Associates, Inc.  
Project: Port Of Bellingham  
1020.400.480  
Date Sampled: 02/24/12  
Date Received: 02/27/12

Date Extracted: 03/07/12  
Date Analyzed: 03/14/12 20:13  
Instrument/Analyst: AS1/PK  
Acid Cleanup: Yes  
Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt  
Final Extract Volume: 20 uL  
Dilution Factor: 1.00  
Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF	0.82	0.65-0.89		0.997	1.16	
2,3,7,8-TCDD	0.51	0.65-0.89		0.997	0.201	JEMPC
1,2,3,7,8-PeCDF	1.51	1.32-1.78		1.99	0.634	J
2,3,4,7,8-PeCDF	1.24	1.32-1.78		0.997	0.670	JEMPC
1,2,3,7,8-PeCDD	1.60	1.32-1.78		0.997	1.67	
1,2,3,4,7,8-HxCDF	1.22	1.05-1.43		1.99	2.49	
1,2,3,6,7,8-HxCDF	1.03	1.05-1.43		1.99	1.27	JEMPC
2,3,4,6,7,8-HxCDF	1.07	1.05-1.43		1.99	1.06	J
1,2,3,7,8,9-HxCDF	1.34	1.05-1.43		1.99	0.921	J
1,2,3,4,7,8-HxCDD	1.33	1.05-1.43		1.99	2.84	
1,2,3,6,7,8-HxCDD	1.23	1.05-1.43		1.99	13.2	
1,2,3,7,8,9-HxCDD	1.31	1.05-1.43		1.99	7.02	
1,2,3,4,6,7,8-HpCDF	0.98	0.88-1.20		1.99	35.5	
1,2,3,4,7,8,9-HpCDF	0.90	0.88-1.20		1.99	2.05	
1,2,3,4,6,7,8-HpCDD	1.03	0.88-1.20		1.99	348	
OCDF	0.85	0.76-1.02		4.99	94.1	
OCDD	0.89	0.76-1.02		4.99	3,380	

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		0.997	4.23	6.29
Total TCDD		0.997	15.2	16.1
Total PeCDF		1.99	19.5	20.5
Total PeCDD		0.997	22.6	
Total HxCDF		1.99	60.8	63.2
Total HxCDD		1.99	114	118
Total HpCDF		1.99	120	
Total HpCDD		1.99	922	

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 9.98

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 9.98

Reported in pg/g

**ORGANICS ANALYSIS DATA SHEET**

**Dioxins/Furans by EPA 1613B**

Page 1 of 1

**Sample ID: CA-LF-IPA2-022412E**

Lab Sample ID: UK02B

LIMS ID: 12-3477

Matrix: Soil

Data Release Authorized: *mw*

Reported: 03/21/12

QC Report No: UK02-Landau Associates, Inc.

Project: Port Of Bellingham

1020.400.480

Date Sampled: 02/24/12

Date Received: 02/27/12

Date Extracted: 03/07/12

Date Analyzed: 03/14/12 20:13

Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt

Final Extract Volume: 20 uL

Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-2,3,7,8-TCDF	0.78	0.65-0.89	89.6	24-169
13C-2,3,7,8-TCDD	0.77	0.65-0.89	81.3	25-164
13C-1,2,3,7,8-PeCDF	1.54	1.32-1.78	70.7	24-185
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	68.9	21-178
13C-1,2,3,7,8-PeCDD	1.59	1.32-1.78	70.6	25-181
13C-1,2,3,4,7,8-HxCDF	0.51	0.43-0.59	79.9	26-152
13C-1,2,3,6,7,8-HxCDF	0.52	0.43-0.59	75.4	26-123
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	78.5	28-136
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	89.2	29-147
13C-1,2,3,4,7,8-HxCDD	1.26	1.05-1.43	83.0	32-141
13C-1,2,3,6,7,8-HxCDD	1.26	1.05-1.43	78.2	28-130
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	71.7	28-143
13C-1,2,3,4,7,8,9-HpCDF	0.45	0.37-0.51	76.4	26-138
13C-1,2,3,4,6,7,8-HpCDD	1.03	0.88-1.20	80.1	23-140
13C-OCDD	0.88	0.76-1.02	76.4	17-157
37Cl4-2,3,7,8-TCDD			87.4	35-197

Reported in Percent Recovery

**ORGANICS ANALYSIS DATA SHEET**

**Dioxins/Furans by EPA 1613B**

Page 1 of 1

**Sample ID: OPR-030712**

Lab Sample ID: OPR-030712

LIMS ID: 12-3457

Matrix: Soil

Data Release Authorized: *MW*

Reported: 03/21/12

QC Report No: UK00-Landau Associates, Inc.

Project: Cornwall Avenue LF/Interim Action

001020.400.470

Date Sampled: NA

Date Received: NA

Date Extracted: 03/07/12

Date Analyzed: 03/14/12 15:47

Instrument/Analyst: AS1/PK

Acid Cleanup: Yes

Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt

Final Extract Volume: 20 uL

Dilution Factor: 1.00

Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	RL	Result
2,3,7,8-TCDF	0.74	0.65-0.89	1.00	19.5
2,3,7,8-TCDD	0.78	0.65-0.89	1.00	19.6
1,2,3,7,8-PeCDF	1.51	1.32-1.78	2.00	99.0
2,3,4,7,8-PeCDF	1.49	1.32-1.78	1.00	96.5
1,2,3,7,8-PeCDD	1.55	1.32-1.78	1.00	100
1,2,3,4,7,8-HxCDF	1.19	1.05-1.43	2.00	98.3
1,2,3,6,7,8-HxCDF	1.19	1.05-1.43	2.00	96.1
2,3,4,6,7,8-HxCDF	1.21	1.05-1.43	2.00	97.8
1,2,3,7,8,9-HxCDF	1.23	1.05-1.43	2.00	100
1,2,3,4,7,8-HxCDD	1.25	1.05-1.43	2.00	101
1,2,3,6,7,8-HxCDD	1.25	1.05-1.43	2.00	98.2
1,2,3,7,8,9-HxCDD	1.23	1.05-1.43	2.00	99.6
1,2,3,4,6,7,8-HpCDF	1.02	0.88-1.20	2.00	116
1,2,3,4,7,8,9-HpCDF	1.02	0.88-1.20	2.00	98.4
1,2,3,4,6,7,8-HpCDD	1.10	0.88-1.20	2.00	99.5
OCDF	0.87	0.76-1.02	5.00	171
OCDD	0.87	0.76-1.02	5.00	203

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF		1.00	21.1	21.5
Total TCDD		1.00	19.6	20.1
Total PeCDF		2.00	202	205
Total PeCDD		1.00	100	101
Total HxCDF		2.00	395	
Total HxCDD		2.00	299	
Total HpCDF		2.00	215	
Total HpCDD		2.00	99.5	100

Reported in pg/g

**ORGANICS ANALYSIS DATA SHEET**

**Dioxins/Furans by EPA 1613B**

Page 1 of 1

**Sample ID: OPR-030712**

Lab Sample ID: OPR-030712

LIMS ID: 12-3457

Matrix: Soil

Data Release Authorized: *mmw*

Reported: 03/21/12

QC Report No: UK00-Landau Associates, Inc.

Project: Cornwall Avenue LF/Interim Action

001020.400.470

Date Sampled: NA

Date Received: NA

Date Extracted: 03/07/12

Date Analyzed: 03/14/12 15:47

Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt

Final Extract Volume: 20 uL

Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-2,3,7,8-TCDF	0.76	0.65-0.89	88.8	24-169
13C-2,3,7,8-TCDD	0.76	0.65-0.89	87.0	25-164
13C-1,2,3,7,8-PeCDF	1.55	1.32-1.78	74.4	24-185
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	71.2	21-178
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	76.0	25-181
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	82.0	26-152
13C-1,2,3,6,7,8-HxCDF	0.54	0.43-0.59	86.0	26-123
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	80.7	28-136
13C-1,2,3,7,8,9-HxCDF	0.52	0.43-0.59	74.0	29-147
13C-1,2,3,4,7,8-HxCDD	1.25	1.05-1.43	88.4	32-141
13C-1,2,3,6,7,8-HxCDD	1.26	1.05-1.43	90.2	28-130
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	71.6	28-143
13C-1,2,3,4,7,8,9-HpCDF	0.43	0.37-0.51	71.0	26-138
13C-1,2,3,4,6,7,8-HpCDD	1.06	0.88-1.20	82.9	23-140
13C-OCDD	0.89	0.76-1.02	69.8	17-157
37Cl4-2,3,7,8-TCDD			89.2	35-197

Reported in Percent Recovery



**ORGANICS ANALYSIS DATA SHEET**  
**Dioxins/Furans by EPA 1613B**  
 Page 1 of 1

Sample ID: OPR-030712

Lab Sample ID: OPR-030712  
 LIMS ID: 12-3457  
 Matrix: Soil  
 Data Release Authorized: *MW*  
 Reported: 03/21/12

QC Report No: UK00-Landau Associates, Inc.  
 Project: Cornwall Avenue LF/Interim Action  
 001020.400.470  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 03/07/12  
 Date Analyzed: 03/14/12 15:47  
 Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt  
 Final Extract Volume: 20 uL  
 Dilution Factor: 1.00

Analyte	OPR	Spiked	Recovery	Limits
2,3,7,8-TCDF	19.5	20.0	97.5	30-160
2,3,7,8-TCDD	19.6	20.0	98.0	30-160
1,2,3,7,8-PeCDF	99.0	100	99.0	30-160
2,3,4,7,8-PeCDF	96.5	100	96.5	30-160
1,2,3,7,8-PeCDD	100	100	100	30-160
1,2,3,4,7,8-HxCDF	98.3	100	98.3	30-160
1,2,3,6,7,8-HxCDF	96.1	100	96.1	30-160
2,3,4,6,7,8-HxCDF	97.8	100	97.8	30-160
1,2,3,7,8,9-HxCDF	100	100	100	30-160
1,2,3,4,7,8-HxCDD	101	100	101	30-160
1,2,3,6,7,8-HxCDD	98.2	100	98.2	30-160
1,2,3,7,8,9-HxCDD	99.6	100	99.6	30-160
1,2,3,4,6,7,8-HpCDF	116	100	116	30-160
1,2,3,4,7,8,9-HpCDF	98.4	100	98.4	30-160
1,2,3,4,6,7,8-HpCDD	99.5	100	99.5	30-160
OCDF	171	200	85.5	30-160
OCDD	203	200	102	30-160

Reported in pg/g

4DF - FORM IV-HR CDD  
 CDD/CDF METHOD BLANK SUMMARY  
 HIGH RESOLUTION

Blank No.

UK00MB

Lab Name: ANALYTICAL RESOURCES, INC.  
 Lab Code: UK00  
 Matrix: (Soil/Water/Ash/Tissue/Oil) SOIL  
 Sample wt/vol: 10 (g/ml) g  
 Water Sample Prep: (sep/spe)  
 GC Column: RTX-DIOXIN2 ID: 0.25 mm  
 Instrument ID: AUTOSPEC1

Contract: LANDAU  
 Project: CORNWALL AVE.  
 Lab Sample ID: UK00MB  
 Lab File ID: 12031405  
 Date Received: 02-FEB-12  
 Date Extracted: 07-MAR-12  
 Date Analyzed: 14-MAR-12

Client Sample No.	Lab Sample ID	Lab File ID	Date Analyzed
UK00OPR	UK05OPR	12031406	03/14/12
CA-LF-IPA1-0201112A	UK00A	12031407	03/14/12
CA-LF-IPA1-0201512B	UK01A	12031408	03/14/12
CA-LF-IPA1-0201512C	UK01B	12031409	03/14/12
CA-LF-IPA2-0202412D	UK02A	12031410	03/14/12
CA-LF-IPA2-0202412E	UK02B	12031411	03/14/12
CA-LF-IPA1-0201512B	UK01A 5X	12031504	03/15/12
CA-LF-IPA1-0201512C	UK01B 5X	12031505	03/15/12
CA-LF-IPA2-0202412D	UK02A 5X	12031506	03/15/12

**ORGANICS ANALYSIS DATA SHEET**  
**Dioxins/Furans by EPA 1613B**  
 Page 1 of 1

Sample ID: MB-030712

Lab Sample ID: MB-030712  
 LIMS ID: 12-3457  
 Matrix: Soil  
 Data Release Authorized: YWW  
 Reported: 03/21/12

QC Report No: UK00-Landau Associates, Inc.  
 Project: Cornwall Avenue LF/Interim Action  
 001020.400.470  
 Date Sampled: NA  
 Date Received: NA

Date Extracted: 03/07/12  
 Date Analyzed: 03/14/12 14:57  
 Instrument/Analyst: AS1/PK  
 Acid Cleanup: Yes  
 Silica-Carbon Cleanup: No

Sample Amount: 10.0 g-dry-wt  
 Final Extract Volume: 20 uL  
 Dilution Factor: 1.00  
 Silica-Florisil Cleanup: Yes

Analyte	Ion Ratio	Ratio Limits	EDL	RL	Result	
2,3,7,8-TCDF		0.65-0.89	0.0102	1.00	< 0.0102	U
2,3,7,8-TCDD		0.65-0.89	0.0230	1.00	< 0.0230	U
1,2,3,7,8-PeCDF		1.32-1.78	0.0143	2.00	< 0.0143	U
2,3,4,7,8-PeCDF	1.91	1.32-1.78		1.00	0.0360	JEMPC
1,2,3,7,8-PeCDD		1.32-1.78	0.0219	1.00	< 0.0219	U
1,2,3,4,7,8-HxCDF		1.05-1.43	0.0217	2.00	< 0.0217	U
1,2,3,6,7,8-HxCDF		1.05-1.43	0.0196	2.00	< 0.0196	U
2,3,4,6,7,8-HxCDF		1.05-1.43	0.0227	2.00	< 0.0227	U
1,2,3,7,8,9-HxCDF		1.05-1.43	0.0364	2.00	< 0.0364	U
1,2,3,4,7,8-HxCDD		1.05-1.43	0.0288	2.00	< 0.0288	U
1,2,3,6,7,8-HxCDD		1.05-1.43	0.0300	2.00	< 0.0300	U
1,2,3,7,8,9-HxCDD		1.05-1.43	0.0318	2.00	< 0.0318	U
1,2,3,4,6,7,8-HpCDF	1.26	0.88-1.20		2.00	0.0680	JEMPC
1,2,3,4,7,8,9-HpCDF		0.88-1.20	0.0444	2.00	< 0.0444	U
1,2,3,4,6,7,8-HpCDD		0.88-1.20	0.0397	2.00	< 0.0397	U
OCDF		0.76-1.02	0.0810	5.00	< 0.0810	U
OCDD	0.83	0.76-1.02		5.00	0.334	J

Homologue Group	EDL	RL	W/O EMPC	WITH EMPC
Total TCDF	0.0102	1.00	< 0.0102	U
Total TCDD	0.0230	1.00	< 0.0230	U
Total PeCDF		2.00	< 0.0143	0.0360 U
Total PeCDD	0.0219	1.00	< 0.0219	U
Total HxCDF	0.0364	2.00	< 0.0364	U
Total HxCDD	0.0318	2.00	< 0.0318	U
Total HpCDF		2.00	< 0.0444	0.0680 U
Total HpCDD	0.0397	2.00	< 0.0397	U

Reported in pg/g

**ORGANICS ANALYSIS DATA SHEET**

**Dioxins/Furans by EPA 1613B**

Page 1 of 1

**Sample ID: MB-030712**

Lab Sample ID: MB-030712

LIMS ID: 12-3457

Matrix: Soil

Data Release Authorized: *MW*

Reported: 03/21/12

QC Report No: UK00-Landau Associates, Inc.

Project: Cornwall Avenue LF/Interim Action

001020.400.470

Date Sampled: NA

Date Received: NA

Date Extracted: 03/07/12

Date Analyzed: 03/14/12 14:57

Instrument/Analyst: AS1/PK

Sample Amount: 10.0 g-dry-wt

Final Extract Volume: 20 uL

Dilution Factor: 1.00

Analyte	Ion Ratio	Ratio Limits	Result	Limits
13C-2,3,7,8-TCDF	0.78	0.65-0.89	88.6	24-169
13C-2,3,7,8-TCDD	0.76	0.65-0.89	86.6	25-164
13C-1,2,3,7,8-PeCDF	1.55	1.32-1.78	74.4	24-185
13C-2,3,4,7,8-PeCDF	1.56	1.32-1.78	68.8	21-178
13C-1,2,3,7,8-PeCDD	1.58	1.32-1.78	74.8	25-181
13C-1,2,3,4,7,8-HxCDF	0.52	0.43-0.59	84.4	26-152
13C-1,2,3,6,7,8-HxCDF	0.53	0.43-0.59	88.8	26-123
13C-2,3,4,6,7,8-HxCDF	0.52	0.43-0.59	83.0	28-136
13C-1,2,3,7,8,9-HxCDF	0.51	0.43-0.59	72.6	29-147
13C-1,2,3,4,7,8-HxCDD	1.27	1.05-1.43	92.0	32-141
13C-1,2,3,6,7,8-HxCDD	1.26	1.05-1.43	91.9	28-130
13C-1,2,3,4,6,7,8-HpCDF	0.44	0.37-0.51	71.8	28-143
13C-1,2,3,4,7,8,9-HpCDF	0.44	0.37-0.51	68.5	26-138
13C-1,2,3,4,6,7,8-HpCDD	1.04	0.88-1.20	83.2	23-140
13C-OCDD	0.90	0.76-1.02	67.3	17-157
37C14-2,3,7,8-TCDD			89.5	35-197

Reported in Percent Recovery

5DFA - FORM V-HR CDD-1  
CDD/CDF WINDOW DEFINING MIX (WDM) SUMMARY  
HIGH RESOLUTION

Standard No.

CS3

Lab Name: ANALYTICAL RESOURCES, INC. Contract: LANDAU  
Lab Code: UK00 Project: CORNWALL AVE.  
GC Column: RTX-DIOXIN2 ID: 0.25 mm Lab File ID: 12031402  
Instrument ID: AUTOSPEC1 Date Analyzed: 14-MAR-12  
Time Analyzed: 1145

CDD/CDF	RT First Eluting	RT Last Eluting
TCDD	22.75	26.17
TCDF	21.51	26.42
PeCDD	27.89	30.99
PeCDF	26.24	31.36
HxCDD	33.04	35.72
HxCDF	32.25	36.18
HpCDD	38.74	39.89
HpCDF	38.23	40.71

5DFB - FORM V-HR CDD-2  
CDD/CDF CHROMATOGRAPHIC RESOLUTION SUMMARY  
HIGH RESOLUTION

Standard No.

TETRA ISC

Lab Name: ANALYTICAL RESOURCES, INC.  
Lab Code: UK00  
GC Column: RTX-DIOXIN2 ID: .25 mm  
Instrument ID:  
AUTOSPEC1

Contract: LANDAU  
Project: CORNWALL AVE.  
Lab File ID: 12031403  
Date Analyzed: 14-MAR-12  
Time Analyzed: 1237

Percent Valley determination for RTX-DIOXIN2 column -  
For the column performance solution beginning 12-hour period:

1278-TCDD/2378-TCDD: 21.4

Quality Control (QC) Limits:

Percent Valley between the TCDD isomers must be less than or equal to 25%

Percent Valley determination for RTX-DIOXIN2 column -  
For the column performance solution beginning 12-hour period:

3467-TCDF/2378-TCDF: 17.7

QC Limits:

Percent Valley between the TCDD/TCDF isomers must be less than or equal to 25%

5DFB - FORM V-HR CDD-3  
 CDD/CDF ANALYTICAL SEQUENCE SUMMARY  
 HIGH RESOLUTION

Lab Name: ANALYTICAL RESOURCES, INC. Contract: LANDAU  
 Lab Code: UK00 Project: CORNWALL AVE.  
 GC Column: RTX-DIOXIN2 ID: 0.25 mm Instrument ID: AUTOSPEC1  
 Init. Calib. Date(s): 15-FEB-11  
 Init. Calib. Times: 17:54 to 22:21

The Analytical Sequence of standards, samples, blanks, and Laboratory Control Samples (LCS) is as follows:

Client Sample No.	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
I6804	CS3	12031402	03/14/12	1145
1929-2	TETRA ISC	12031403	03/14/12	1237
UK00MB	UK00MB	12031405	03/14/12	1457
UK00OPR	UK00OPR	12031406	03/14/12	1547
CA-LF-IPA1-0201112A	UK00A	12031407	03/14/12	1640
CA-LF-IPA1-0201512B	UK01A	12031408	03/14/12	1733
CA-LF-IPA1-0201512C	UK01B	12031409	03/14/12	1827
CA-LF-IPA2-0202412D	UK02A	12031410	03/14/12	1920
CA-LF-IPA2-0202412E	UK02B	12031411	03/14/12	2013
I6804	CS3	12031412	03/14/12	2106

5DFB - FORM V-HR CDD-3  
 CDD/CDF ANALYTICAL SEQUENCE SUMMARY  
 HIGH RESOLUTION

Lab Name: ANALYTICAL RESOURCES, INC. Contract: LANDAU  
 Lab Code: UK00 Project: CORNWALL AVE.  
 GC Column: RTX-DIOXIN2 ID: 0.25 mm Instrument ID: AUTOSPEC1  
 Init. Calib. Date(s): 15-FEB-11  
 Init: Calib. Times: 17:54 to 22:21

The Analytical Sequence of standards, samples, blanks, and Laboratory Control Samples (LCS) is as follows:

Client Sample No.	Lab Sample ID	Lab File ID	Date Analyzed	Time Analyzed
I6804	CS3	12031502	03/15/12	0941
1929-2	TETRA ISC	12031503	03/15/12	1032
CA-LF-IPA1-0201512B	UK01A 5X	12031504	03/15/12	1137
CA-LF-IPA1-0201512C	UK01B 5X	12031505	03/15/12	1227
CA-LF-IPA2-0202412D	UK02A 5X	12031506	03/15/12	1321
I6804	CS3	12031509	03/15/12	1600



**USEPA  
6DFA - Form VI-HR CDD-1  
CDD/CDF INITIAL CALIBRATION RESPONSE FACTOR SUMMARY  
HIGH RESOLUTION**

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	UK00	Case No.:	CORNWALL AVE.
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1		
Init.Calib.Date CSL:	15-Feb-12	Init.Calib.Time CSL:	17:54:44
Init.Calib.Date CS1:	15-Feb-12	Init.Calib.Time CS1:	18:48:03
Init.Calib.Date CS2:	15-Feb-12	Init.Calib.Time CS2:	19:41:15
Init.Calib.Date CS3:	15-Feb-12	Init.Calib.Time CS3:	20:34:33
Init.Calib.Date CS4:	15-Feb-12	Init.Calib.Time CS4:	21:27:45
Init.Calib.Date CS5:	15-Feb-12	Init.Calib.Time CS5:	22:21:04

Target Analytes	RRF						Mean RRF	% RSD	QC Limits
	CSL	CS1	CS2	CS3	CS4	CS5			
2378-TCDD	1.15	0.98	1.00	1.02	1.02	1.02	1.03	5.8	20.0
2378-TCDF	0.84	0.84	0.84	0.83	0.88	0.89	0.85	2.8	20.0
12378-PeCDF	0.96	0.87	0.89	0.90	0.91	0.95	0.91	3.9	20.0
12378-PeCDD	1.04	0.97	0.95	0.96	0.97	1.00	0.98	3.3	20.0
23478-PeCDF	0.88	0.94	0.92	0.93	0.95	0.96	0.93	3.1	20.0
123478-HxCDF	1.05	1.07	1.09	1.10	1.12	1.13	1.09	2.6	20.0
123678-HxCDF	1.06	1.05	1.06	1.08	1.07	1.10	1.07	1.8	20.0
123478-HxCDD	0.99	0.96	0.94	0.98	0.97	0.97	0.97	1.7	20.0
123678-HxCDD	0.88	0.93	0.90	0.90	0.95	0.93	0.91	2.7	20.0
123789-HxCDD <sup>2</sup>	0.86	0.86	0.86	0.89	0.89	0.89	0.88	1.9	20.0
234678-HxCDF	1.04	1.08	1.07	1.08	1.08	1.11	1.08	2.2	20.0
123789-HxCDF	0.95	1.00	1.00	1.00	1.04	1.04	1.01	3.4	20.0
1234678-HpCDF	1.28	1.17	1.22	1.26	1.24	1.28	1.24	3.2	20.0
1234678-HpCDD	1.02	0.99	1.00	0.99	1.00	1.02	1.00	1.5	20.0
1234789-HpCDF	1.19	1.20	1.22	1.26	1.27	1.27	1.24	2.9	20.0
OCDD	0.95	0.97	0.96	0.99	0.99	1.01	0.98	2.1	20.0
OCDF <sup>1</sup>	1.02	1.10	1.08	1.13	1.18	1.23	1.12	6.8	20.0

(1) The RRF is calculated based on the labeled analog of OCDD.  
 (2) The relative response factor (RRF) is calculated based on the labeled analogs of the other two HxCDDs.

Labeled Compounds	RRF						Mean RRF	% RSD	QC Limits
	CSL	CS1	CS2	CS3	CS4	CS5			
13C-2378-TCDD	0.95	0.94	0.91	0.91	0.93	1.06	0.95	5.9	20.0
13C-12378-PeCDD	0.69	0.71	0.68	0.68	0.73	0.86	0.72	9.5	20.0
13C-123478-HxCDD	1.03	1.02	1.04	1.00	1.02	1.04	1.03	1.4	20.0
13C-123678-HxCDD	1.11	1.10	1.13	1.10	1.08	1.08	1.10	1.8	20.0
13C-1234678-HpCDD	0.75	0.75	0.77	0.76	0.78	0.77	0.76	1.6	20.0
13C-OCDD	0.56	0.56	0.59	0.61	0.65	0.68	0.61	8.1	20.0
13C-2378-TCDF	1.48	1.42	1.39	1.40	1.42	1.57	1.45	4.8	20.0
13C-12378-PeCDF	1.13	1.14	1.11	1.11	1.17	1.37	1.17	8.4	20.0
13C-23478-PeCDF	1.06	1.07	1.04	1.03	1.10	1.31	1.10	9.6	20.0
13C-123478-HxCDF	1.28	1.26	1.31	1.27	1.27	1.22	1.27	2.1	20.0
13C-123678-HxCDF	1.45	1.40	1.47	1.42	1.42	1.34	1.42	3.2	20.0
13C-234678-HxCDF	1.26	1.26	1.29	1.27	1.28	1.24	1.27	1.4	20.0
13C-123789-HxCDF	0.99	1.01	1.02	1.05	1.02	1.06	1.03	2.4	20.0
13C-1234678-HpCDF	0.98	1.01	1.01	0.98	1.02	0.98	1.00	1.9	20.0
13C-1234789-HpCDF	0.65	0.67	0.68	0.68	0.70	0.72	0.68	3.6	20.0

**USEPA**  
**6DFB - Form VI-HR CDD-2**  
**CDD/CDF INITIAL CALIBRATION ION ABUNDANCE RATIO SUMMARY**  
**HIGH RESOLUTION**

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	UK00	Case No.:	CORNWALL AVE
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm)	25
Instrument ID:	AUTOSPEC1		
Init Calib.Date CSL:	15-Feb-12	Init.Calib.Time CSL	17.54 44
Init.Calib.Date CS1:	15-Feb-12	Init.Calib.Time CS1	18:48.03
Init.Calib.Date CS2:	15-Feb-12	Init.Calib.Time CS2:	19:41:15
Init.Calib.Date CS3:	15-Feb-12	Init.Calib.Time CS3	20:34:33
Init.Calib.Date CS4:	15-Feb-12	Init.Calib.Time CS4	21:27:45
Init.Calib.Date CS5:	15-Feb-12	Init.Calib.Time CS5	22:21:04

Target Analytes	Selected Ions	Ion Abundance Ratio						Ratio Flag	Ratio QC Limits <sup>#</sup>
		CSL	CS1	CS2	CS3	CS4	CS5		
2378-TCDD	320/322	0.77	0.72	0.79	0.75	0.79	0.77		0.65 - 0.89
2378-TCDF	304/306	0.77	0.72	0.78	0.74	0.74	0.76		0.65 - 0.89
12378-PeCDF	340/342	1.67	1.53	1.53	1.52	1.52	1.53		1.32 - 1.78
12378-PeCDD	356/358	1.59	1.44	1.58	1.54	1.52	1.55		1.32 - 1.78
23478-PeCDF	340/342	1.59	1.58	1.52	1.50	1.53	1.52		1.32 - 1.78
123478-HxCDF	374/376	1.20	1.26	1.23	1.20	1.21	1.24		1.05 - 1.43
123678-HxCDF	374/376	1.19	1.19	1.21	1.19	1.18	1.21		1.05 - 1.43
123478-HxCDD	390/392	1.39	1.23	1.23	1.23	1.25	1.24		1.05 - 1.43
123678-HxCDD	390/392	1.22	1.15	1.27	1.22	1.27	1.24		1.05 - 1.43
123789-HxCDD	390/392	1.16	1.19	1.26	1.24	1.25	1.23		1.05 - 1.43
234678-HxCDF	374/376	1.13	1.19	1.22	1.19	1.22	1.22		1.05 - 1.43
123789-HxCDF	374/376	1.25	1.26	1.24	1.18	1.22	1.22		1.05 - 1.43
1234678-HpCDF	408/410	1.09	0.97	0.99	0.99	1.00	1.01		0.89 - 1.21
1234678-HpCDD	424/426	1.01	1.01	1.01	1.03	1.05	1.05		0.89 - 1.21
1234789-HpCDF	408/410	0.89	0.95	0.99	1.01	0.98	1.01		0.89 - 1.21
OCDD	458/460	0.84	0.86	0.91	0.88	0.86	0.89		0.76 - 1.02
OCDF	442/444	0.88	0.85	0.88	0.89	0.88	0.89		0.76 - 1.02

Labeled Compounds	Selected Ions	Ion Abundance Ratio						Ratio Flag	Ratio QC Limits
		CSL	CS1	CS2	CS3	CS4	CS5		
13C-2378-TCDD	332/334	0.76	0.77	0.78	0.77	0.78	0.78		0.65 - 0.89
13C-12378-PeCDD	368/370	1.57	1.59	1.62	1.56	1.57	1.57		1.32 - 1.78
13C-123478-HxCDD	402/404	1.26	1.25	1.25	1.26	1.26	1.26		1.05 - 1.43
13C-123678-HxCDD	402/404	1.25	1.21	1.27	1.22	1.24	1.24		1.05 - 1.43
13C-1234678-HpCDD	436/438	1.06	1.03	1.03	1.05	1.07	1.04		0.89 - 1.21
13C-OCDD	470/472	0.88	0.88	0.89	0.91	0.90	0.88		0.76 - 1.02
13C-2378-TCDF	316/318	0.78	0.80	0.76	0.76	0.77	0.77		0.65 - 0.89
13C-12378-PeCDF	352/354	1.57	1.57	1.56	1.55	1.56	1.56		1.32 - 1.78
13C-23478-PeCDF	352/354	1.57	1.56	1.52	1.57	1.56	1.55		1.32 - 1.78
13C-123478-HxCDF	384/386	0.52	0.52	0.52	0.52	0.52	0.52		0.43 - 0.59
13C-123678-HxCDF	384/386	0.51	0.51	0.52	0.52	0.53	0.52		0.43 - 0.59
13C-234678-HxCDF	384/386	0.52	0.52	0.52	0.52	0.52	0.53		0.43 - 0.59
13C-123789-HxCDF	384/386	0.54	0.53	0.52	0.51	0.52	0.52		0.43 - 0.59
13C-1234678-HpCDF	418/420	0.45	0.45	0.45	0.45	0.46	0.45		0.37 - 0.51
13C-1234789-HpCDF	418/420	0.46	0.46	0.46	0.46	0.46	0.45		0.37 - 0.51

Internal Standards	Selected Ions	Ion Abundance Ratio						Ratio Flag	Ion Ratio QC Limits
		CSL	CS1	CS2	CS3	CS4	CS5		
13C-1234-TCDD	332/334	0.79	0.78	0.79	0.78	0.79	0.79		0.65 - 0.89
13C-123789-HxCDD	402/404	1.20	1.25	1.24	1.23	1.24	1.24		1.05 - 1.43

(#) Quality Control (QC) limits represent ±15% window around the theoretical ion abundance ratio. The laboratory must flag any analyte in any calibration solution which does not meet the ion abundance ratio QC limit by placing an asterisk in the flag column.

**USEPA  
7DFA - Form VII-HR CDD-1  
CDD/CDF CONTINUING CALIBRATION SUMMARY  
HIGH RESOLUTION**

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	UK00	Case No.:	CORNWALL AVE.
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	12031402
Date Analysed:	14-Mar-12	Time Analysed:	11:45:50
Init.Calib.Date:	15-FEB-12	Init.Calib.Time:	

Target Analytes	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits
2378-TCDD	320/322	1.00	1.03	-3.2		0.83		0.65 - 0.89
2378-TCDF	304/306	0.84	0.85	-1.8		0.74		0.65 - 0.89
12378-PeCDF	340/342	0.86	0.91	-5.3		1.48		1.32 - 1.78
12378-PeCDD	356/358	0.95	0.98	-3.2		1.55		1.32 - 1.78
23478-PeCDF	340/342	0.91	0.93	-1.7		1.50		1.32 - 1.78
123478-HxCDF	374/376	1.08	1.09	-0.6		1.19		1.05 - 1.43
123678-HxCDF	374/376	1.07	1.07	-0.5		1.20		1.05 - 1.43
123478-HxCDD	390/392	0.95	0.97	-1.4		1.22		1.05 - 1.43
123678-HxCDD	390/392	0.87	0.91	-4.8		1.23		1.05 - 1.43
123789-HxCDD	390/392	0.87	0.88	-1.1		1.24		1.05 - 1.43
234678-HxCDF	374/376	1.02	1.08	-5.1		1.18		1.05 - 1.43
123789-HxCDF	374/376	1.01	1.01	0.0		1.20		1.05 - 1.43
1234678-HpCDF	408/410	1.21	1.24	-2.8		1.01		0.89 - 1.21
1234678-HpCDD	424/426	1.00	1.00	-0.6		1.05		0.89 - 1.21
1234789-HpCDF	408/410	1.21	1.24	-2.2		0.99		0.89 - 1.21
OCDD	458/460	0.97	0.98	-1.0		0.89		0.76 - 1.02
OCDF	442/444	1.05	1.12	-6.5		0.88		0.76 - 1.02

Labeled Compounds	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits
13C-2378-TCDD	332/334	0.94	0.95	-1.2		0.75		0.65 - 0.89
13C-12378-PeCDD	368/370	0.64	0.72	-12.2		1.59		1.32 - 1.78
13C-123478-HxCDD	402/404	1.03	1.03	0.0		1.26		1.05 - 1.43
13C-123678-HxCDD	402/404	1.13	1.10	2.7		1.25		1.05 - 1.43
13C-1234678-HpCDD	436/438	0.76	0.76	-0.8		1.03		0.89 - 1.21
13C-OCDD	470/472	0.56	0.61	-7.3		0.90		0.76 - 1.02
13C-2378-TCDF	316/318	1.43	1.45	-1.1		0.75		0.65 - 0.89
13C-12378-PeCDF	352/354	1.00	1.17	-15.2		1.55		1.32 - 1.78
13C-23478-PeCDF	352/354	0.92	1.10	-16.4		1.54		1.32 - 1.78
13C-123478-HxCDF	384/386	1.21	1.27	-4.3		0.51		0.43 - 0.59
13C-123678-HxCDF	384/386	1.35	1.42	-4.9		0.51		0.43 - 0.59
13C-234678-HxCDF	384/386	1.22	1.27	-3.7		0.53		0.43 - 0.59
13C-123789-HxCDF	384/386	0.96	1.03	-6.7		0.52		0.43 - 0.59
13C-1234678-HpCDF	418/420	0.93	1.00	-7.0		0.45		0.37 - 0.51
13C-1234789-HpCDF	418/420	0.64	0.68	-6.8		0.45		0.37 - 0.51

Clean-up	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits

Internal Standards	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ion Ratio Flag <sup>#</sup>	Ion Ratio QC Limits
13C-1234-TCDD	332/334	NA	NA	NA	NA	0.78		0.65 - 0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.24		1.05 - 1.43

(#) The laboratory must flag any analyte which does not meet the criteria for Percentage Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate

**USEPA  
7DFB - Form VII-HR CDD-2  
CDD/CDF CONTINUING CALIBRATION RETENTION TIME SUMMARY  
HIGH RESOLUTION**

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	UK00	Case No.:	CORNWALL AVE.
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	12031402
Date Analysed	14-Mar-12	Time Analysed	11:45:50
Init.Calib.Date:	15-FEB-12	Init.Calib.Time:	

Target Analytes	RRT <sup>#</sup>	RT
2378-TCDD	1.00	25.57
2378-TCDF	1.00	24.94
12378-PeCDF	1.00	29.00
12378-PeCDD	1.00	30.58
23478-PeCDF	1.00	30.34
123478-HxCDF	1.00	33.95
123678-HxCDF	1.00	34.10
123478-HxCDD	1.00	35.16
123678-HxCDD	1.00	35.30
123789-HxCDD	1.01	35.72
234678-HxCDF	1.00	35.06
123789-HxCDF	1.00	36.18
1234678-HpCDF	1.00	38.23
1234678-HpCDD	1.00	39.89
1234789-HpCDF	1.00	40.71
OCDD	1.00	45.25
OCDF	1.01	45.51

Labeled Compounds	RRT <sup>#</sup>	RT
13C-2378-TCDD	1.03	25.54
13C-12378-PeCDD	1.23	30.56
13C-123478-HxCDD	0.98	35.15
13C-123678-HxCDD	0.99	35.27
13C-1234678-HpCDD	1.12	39.88
13C-OCDD	1.27	45.23
13C-2378-TCDF	1.01	24.93
13C-12378-PeCDF	1.17	28.98
13C-23478-PeCDF	1.22	30.32
13C-123478-HxCDF	0.95	33.94
13C-123678-HxCDF	0.95	34.08
13C-234678-HxCDF	0.98	35.03
13C-123789-HxCDF	1.01	36.16
13C-1234678-HpCDF	1.07	38.21
13C-1234789-HpCDF	1.14	40.69

Clean up Standard	RRT <sup>#</sup>	RT

Internal Standards	RRT <sup>#</sup>	RT
13C-1234-TCDD	0.00	24.76
13C-123789-HxCDD	0.00	35.70

(#) RRT = (RT of Analyte)/(RT of appropriate labeled compound).

**USEPA  
7DFA - Form VII-HR CDD-1  
CDD/CDF CONTINUING CALIBRATION SUMMARY  
HIGH RESOLUTION**

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	UK00	Case No.:	CORNWALL AVE.
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	12031412
Date Analysed	14-Mar-12	Time Analysed	21:06:48
Init. Calib. Date:	15-FEB-12	Init. Calib. Time:	

Target Analytes	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits
2378-TCDD	320/322	1.00	1.03	-3.5		0.81		0.65 - 0.89
2378-TCDF	304/306	0.83	0.85	-2.6		0.75		0.65 - 0.89
12378-PeCDF	340/342	0.87	0.91	-5.0		1.50		1.32 - 1.78
12378-PeCDD	356/358	0.96	0.98	-2.4		1.60		1.32 - 1.78
23478-PeCDF	340/342	0.91	0.93	-2.7		1.47		1.32 - 1.78
123478-HxCDF	374/376	1.07	1.09	-1.9		1.17		1.05 - 1.43
123678-HxCDF	374/376	1.04	1.07	-2.8		1.18		1.05 - 1.43
123478-HxCDD	390/392	0.96	0.97	-0.4		1.23		1.05 - 1.43
123678-HxCDD	390/392	0.88	0.91	-4.3		1.22		1.05 - 1.43
123789-HxCDD	390/392	0.86	0.88	-2.0		1.23		1.05 - 1.43
234678-HxCDF	374/376	1.04	1.08	-3.1		1.17		1.05 - 1.43
123789-HxCDF	374/376	0.98	1.01	-2.5		1.18		1.05 - 1.43
1234678-HpCDF	408/410	1.20	1.24	-3.3		0.99		0.89 - 1.21
1234678-HpCDD	424/426	0.98	1.00	-2.8		1.03		0.89 - 1.21
1234789-HpCDF	408/410	1.18	1.24	-4.6		0.99		0.89 - 1.21
OCDD	458/460	0.95	0.98	-2.8		0.84		0.76 - 1.02
OCDF	442/444	1.07	1.12	-4.6		0.85		0.76 - 1.02

Labeled Compounds	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits
13C-2378-TCDD	332/334	0.95	0.95	-0.4		0.76		0.65 - 0.89
13C-12378-PeCDD	368/370	0.64	0.72	-11.7		1.56		1.32 - 1.78
13C-123478-HxCDD	402/404	1.01	1.03	-1.4		1.29		1.05 - 1.43
13C-123678-HxCDD	402/404	1.14	1.10	3.9		1.25		1.05 - 1.43
13C-1234678-HpCDD	436/438	0.76	0.76	0.0		1.02		0.89 - 1.21
13C-OCDD	470/472	0.58	0.61	-4.0		0.89		0.76 - 1.02
13C-2378-TCDF	316/318	1.46	1.45	0.6		0.78		0.65 - 0.89
13C-12378-PeCDF	352/354	1.01	1.17	-14.0		1.55		1.32 - 1.78
13C-23478-PeCDF	352/354	0.94	1.10	-14.7		1.56		1.32 - 1.78
13C-123478-HxCDF	384/386	1.20	1.27	-5.2		0.52		0.43 - 0.59
13C-123678-HxCDF	384/386	1.40	1.42	-1.2		0.52		0.43 - 0.59
13C-234678-HxCDF	384/386	1.22	1.27	-4.1		0.52		0.43 - 0.59
13C-123789-HxCDF	384/386	0.98	1.03	-4.4		0.53		0.43 - 0.59
13C-1234678-HpCDF	418/420	0.93	1.00	-6.7		0.44		0.37 - 0.51
13C-1234789-HpCDF	418/420	0.66	0.68	-4.0		0.45		0.37 - 0.51

Clean-up	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits

Internal Standards	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ion Ratio Flag <sup>#</sup>	Ion Ratio QC Limits
13C-1234-TCDD	332/334	NA	NA	NA	NA	0.78		0.65 - 0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.24		1.05 - 1.43

(#) The laboratory must flag any analyte which does not meet the criteria for Percentage Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate

**USEPA  
7DFB - Form VII-HR CDD-2  
CDD/CDF CONTINUING CALIBRATION RETENTION TIME SUMMARY  
HIGH RESOLUTION**

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	UK00	Case No.:	CORNWALL AVE.
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	12031412
Date Analysed	14-Mar-12	Time Analysed	21:06:48
Init.Calib.Date:	15-FEB-12	Init.Calib.Time:	

Target Analytes	RRT <sup>#</sup>	RT
2378-TCDD	1.00	25.56
2378-TCDF	1.00	24.94
12378-PeCDF	1.00	29.01
12378-PeCDD	1.00	30.58
23478-PeCDF	1.00	30.34
123478-HxCDF	1.00	33.95
123678-HxCDF	1.00	34.10
123478-HxCDD	1.00	35.17
123678-HxCDD	1.00	35.30
123789-HxCDD	1.01	35.72
234678-HxCDF	1.00	35.04
123789-HxCDF	1.00	36.19
1234678-HpCDF	1.00	38.23
1234678-HpCDD	1.00	39.89
1234789-HpCDF	1.00	40.71
OCDD	1.00	45.24
OCDF	1.01	45.50

Labeled Compounds	RRT <sup>#</sup>	RT
13C-2378-TCDD	1.03	25.54
13C-12378-PeCDD	1.23	30.56
13C-123478-HxCDD	0.98	35.14
13C-123678-HxCDD	0.99	35.28
13C-1234678-HpCDD	1.12	39.88
13C-OCDD	1.27	45.22
13C-2378-TCDF	1.01	24.93
13C-12378-PeCDF	1.17	28.98
13C-23478-PeCDF	1.23	30.32
13C-123478-HxCDF	0.95	33.94
13C-123678-HxCDF	0.95	34.08
13C-234678-HxCDF	0.98	35.03
13C-123789-HxCDF	1.01	36.16
13C-1234678-HpCDF	1.07	38.21
13C-1234789-HpCDF	1.14	40.70

Clean up Standard	RRT <sup>#</sup>	RT

Internal Standards	RRT <sup>#</sup>	RT
13C-1234-TCDD	0.00	24.75
13C-123789-HxCDD	0.00	35.70

(#) RRT = (RT of Analyte)/(RT of appropriate labeled compound).

**USEPA  
7DFA - Form VII-HR CDD-1  
CDD/CDF CONTINUING CALIBRATION SUMMARY  
HIGH RESOLUTION**

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	UK00	Case No.:	CORNWALL AVE.
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	12031502
Date Analysed	15-Mar-12	Time Analysed	09:41:53
Init. Calib. Date:	15-FEB-12	Init Calib. Time:	

Target Analytes	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits
2378-TCDD	320/322	1.00	1.03	-3.4		0.80		0.65 - 0.89
2378-TCDF	304/306	0.80	0.85	-6.1		0.74		0.65 - 0.89
12378-PeCDF	340/342	0.90	0.91	-1.5		1.51		1.32 - 1.78
12378-PeCDD	356/358	0.95	0.98	-3.0		1.54		1.32 - 1.78
23478-PeCDF	340/342	0.89	0.93	-3.9		1.48		1.32 - 1.78
123478-HxCDF	374/376	1.06	1.09	-3.1		1.20		1.05 - 1.43
123678-HxCDF	374/376	1.02	1.07	-4.8		1.16		1.05 - 1.43
123478-HxCDD	390/392	0.95	0.97	-1.5		1.24		1.05 - 1.43
123678-HxCDD	390/392	0.87	0.91	-4.6		1.22		1.05 - 1.43
123789-HxCDD	390/392	0.86	0.88	-2.3		1.25		1.05 - 1.43
234678-HxCDF	374/376	1.03	1.08	-4.6		1.19		1.05 - 1.43
123789-HxCDF	374/376	0.95	1.01	-5.4		1.24		1.05 - 1.43
1234678-HpCDF	408/410	1.19	1.24	-4.5		1.01		0.89 - 1.21
1234678-HpCDD	424/426	0.97	1.00	-3.5		1.02		0.89 - 1.21
1234789-HpCDF	408/410	1.17	1.24	-5.1		1.01		0.89 - 1.21
OCDD	458/460	0.98	0.98	-0.2		0.87		0.76 - 1.02
OCDF	442/444	1.06	1.12	-5.9		0.88		0.76 - 1.02

Labeled Compounds	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits
13C-2378-TCDD	332/334	0.94	0.95	-1.5		0.79		0.65 - 0.89
13C-12378-PeCDD	368/370	0.63	0.72	-12.7		1.54		1.32 - 1.78
13C-123478-HxCDD	402/404	1.02	1.03	-0.9		1.25		1.05 - 1.43
13C-123678-HxCDD	402/404	1.13	1.10	3.0		1.22		1.05 - 1.43
13C-1234678-HpCDD	436/438	0.75	0.76	-2.2		1.04		0.89 - 1.21
13C-OCDD	470/472	0.59	0.61	-2.5		0.87		0.76 - 1.02
13C-2378-TCDF	316/318	1.43	1.45	-1.2		0.75		0.65 - 0.89
13C-12378-PeCDF	352/354	0.96	1.17	-18.4		1.56		1.32 - 1.78
13C-23478-PeCDF	352/354	0.93	1.10	-15.4		1.53		1.32 - 1.78
13C-123478-HxCDF	384/386	1.23	1.27	-3.0		0.52		0.43 - 0.59
13C-123678-HxCDF	384/386	1.39	1.42	-2.1		0.51		0.43 - 0.59
13C-234678-HxCDF	384/386	1.21	1.27	-5.0		0.52		0.43 - 0.59
13C-123789-HxCDF	384/386	0.98	1.03	-4.8		0.51		0.43 - 0.59
13C-1234678-HpCDF	418/420	0.88	1.00	-12.2		0.44		0.37 - 0.51
13C-1234789-HpCDF	418/420	0.64	0.68	-5.7		0.45		0.37 - 0.51

Clean-up	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits

Internal Standards	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ion Ratio Flag <sup>#</sup>	Ion Ratio QC Limits
13C-1234-TCDD	332/334	NA	NA	NA	NA	0.79		0.65 - 0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.27		1.05 - 1.43

(#) The laboratory must flag any analyte which does not meet the criteria for Percentage Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate

**USEPA  
7DFB - Form VII-HR CDD-2  
CDD/CDF CONTINUING CALIBRATION RETENTION TIME SUMMARY  
HIGH RESOLUTION**

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	UK00	Case No.:	CORNWALL AVE.
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	12031502
Date Analysed	15-Mar-12	Time Analysed	09:41:53
Init.Calib.Date:	15-FEB-12	Init.Calib.Time:	

Target Analytes	RRT#	RT
2378-TCDD	1.00	25.59
2378-TCDF	1.00	24.97
12378-PeCDF	1.00	29.03
12378-PeCDD	1.00	30.61
23478-PeCDF	1.00	30.36
123478-HxCDF	1.00	33.97
123678-HxCDF	1.00	34.12
123478-HxCDD	1.00	35.19
123678-HxCDD	1.00	35.31
123789-HxCDD	1.01	35.75
234678-HxCDF	1.00	35.07
123789-HxCDF	1.00	36.20
1234678-HpCDF	1.00	38.25
1234678-HpCDD	1.00	39.91
1234789-HpCDF	1.00	40.73
OCDD	1.00	45.27
OCDF	1.01	45.53

Labeled Compounds	RRT#	RT
13C-2378-TCDD	1.03	25.57
13C-12378-PeCDD	1.23	30.58
13C-123478-HxCDD	0.98	35.17
13C-123678-HxCDD	0.99	35.30
13C-1234678-HpCDD	1.12	39.90
13C-OCDD	1.27	45.25
13C-2378-TCDF	1.01	24.94
13C-12378-PeCDF	1.17	29.01
13C-23478-PeCDF	1.22	30.34
13C-123478-HxCDF	0.95	33.96
13C-123678-HxCDF	0.95	34.10
13C-234678-HxCDF	0.98	35.06
13C-123789-HxCDF	1.01	36.18
13C-1234678-HpCDF	1.07	38.23
13C-1234789-HpCDF	1.14	40.71

Clean up Standard	RRT#	RT

Internal Standards	RRT#	RT
13C-1234-TCDD	0.00	24.78
13C-123789-HxCDD	0.00	35.72

(#) RRT = (RT of Analyte)/(RT of appropriate labeled compound)



**USEPA  
7DFA - Form VII-HR CDD-1  
CDD/CDF CONTINUING CALIBRATION SUMMARY  
HIGH RESOLUTION**

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	UK00	Case No.:	CORNWALL AVE.
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	12031509
Date Analysed	15-Mar-12	Time Analysed	16:00:57
Init. Calib. Date:	15-FEB-12	Init. Calib. Time:	

Target Analytes	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits
2378-TCDD	320/322	1.04	1.03	0.6		0.75		0.65 - 0.89
2378-TCDF	304/306	0.83	0.85	-3.2		0.72		0.65 - 0.89
12378-PeCDF	340/342	0.87	0.91	-4.8		1.53		1.32 - 1.78
12378-PeCDD	356/358	0.95	0.98	-3.0		1.54		1.32 - 1.78
23478-PeCDF	340/342	0.90	0.93	-3.2		1.50		1.32 - 1.78
123478-HxCDF	374/376	1.06	1.09	-2.6		1.22		1.05 - 1.43
123678-HxCDF	374/376	1.03	1.07	-3.4		1.19		1.05 - 1.43
123478-HxCDD	390/392	0.93	0.97	-4.0		1.25		1.05 - 1.43
123678-HxCDD	390/392	0.92	0.91	0.9		1.22		1.05 - 1.43
123789-HxCDD	390/392	0.86	0.88	-1.4		1.23		1.05 - 1.43
234678-HxCDF	374/376	1.05	1.08	-2.5		1.20		1.05 - 1.43
123789-HxCDF	374/376	0.98	1.01	-2.3		1.23		1.05 - 1.43
1234678-HpCDF	408/410	1.22	1.24	-2.1		1.01		0.89 - 1.21
1234678-HpCDD	424/426	0.98	1.00	-1.9		1.03		0.89 - 1.21
1234789-HpCDF	408/410	1.19	1.24	-3.3		0.97		0.89 - 1.21
OCDD	458/460	0.99	0.98	0.9		0.88		0.76 - 1.02
OCDF	442/444	1.08	1.12	-4.0		0.88		0.76 - 1.02

Labeled Compounds	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits
13C-2378-TCDD	332/334	0.93	0.95	-2.4		0.77		0.65 - 0.89
13C-12378-PeCDD	368/370	0.66	0.72	-9.1		1.54		1.32 - 1.78
13C-123478-HxCDD	402/404	1.01	1.03	-2.0		1.26		1.05 - 1.43
13C-123678-HxCDD	402/404	1.10	1.10	-0.4		1.24		1.05 - 1.43
13C-1234678-HpCDD	436/438	0.77	0.76	1.1		1.06		0.89 - 1.21
13C-OCDD	470/472	0.62	0.61	2.9		0.87		0.76 - 1.02
13C-2378-TCDF	316/318	1.47	1.45	1.2		0.77		0.65 - 0.89
13C-12378-PeCDF	352/354	1.03	1.17	-12.0		1.59		1.32 - 1.78
13C-23478-PeCDF	352/354	0.98	1.10	-11.4		1.59		1.32 - 1.78
13C-123478-HxCDF	384/386	1.16	1.27	-8.2		0.51		0.43 - 0.59
13C-123678-HxCDF	384/386	1.32	1.42	-7.0		0.55		0.43 - 0.59
13C-234678-HxCDF	384/386	1.18	1.27	-6.8		0.51		0.43 - 0.59
13C-123789-HxCDF	384/386	0.97	1.03	-5.3		0.52		0.43 - 0.59
13C-1234678-HpCDF	418/420	0.90	1.00	-9.3		0.44		0.37 - 0.51
13C-1234789-HpCDF	418/420	0.67	0.68	-2.1		0.45		0.37 - 0.51

Clean-up	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ratio Flag <sup>#</sup>	Ratio QC Limits

Internal Standards	Selected Ions	RRF	Mean RRF	%D	%D Flag <sup>#</sup>	Ion Ratio	Ion Ratio Flag <sup>#</sup>	Ion Ratio QC Limits
13C-1234-TCDD	332/334	NA	NA	NA	NA	0.79		0.65 - 0.89
13C-123789-HxCDD	402/404	NA	NA	NA	NA	1.22		1.05 - 1.43

(#) The laboratory must flag any analyte which does not meet the criteria for Percentage Difference (%D) or ion abundance ratio by placing an asterisk in the appropriate

**USEPA  
7DFB - Form VII-HR CDD-2  
CDD/CDF CONTINUING CALIBRATION RETENTION TIME SUMMARY  
HIGH RESOLUTION**

Lab Name:	ARI	Contract:	LANDAU
Lab Code:	UK00	Case No.:	CORNWALL AVE.
TO No.:		SDG No.:	
GC Column:	RTX-DIOXIN2	ID (mm):	.25
Instrument ID:	AUTOSPEC1	Lab File ID:	12031509
Date Analysed	15-Mar-12	Time Analysed	16:00:57
Init.Calib.Date:	15-FEB-12	Init.Calib.Time:	

Target Analytes	RRT#	RT
2378-TCDD	1.00	25.57
2378-TCDF	1.00	24.94
12378-PeCDF	1.00	29.01
12378-PeCDD	1.00	30.58
23478-PeCDF	1.00	30.34
123478-HxCDF	1.00	33.96
123678-HxCDF	1.00	34.10
123478-HxCDD	1.00	35.18
123678-HxCDD	1.00	35.30
123789-HxCDD	1.01	35.72
234678-HxCDF	1.00	35.06
123789-HxCDF	1.00	36.18
1234678-HpCDF	1.00	38.23
1234678-HpCDD	1.00	39.90
1234789-HpCDF	1.00	40.72
OCDD	1.00	45.26
OCDF	1.01	45.52

Labeled Compounds	RRT#	RT
13C-2378-TCDD	1.03	25.54
13C-12378-PeCDD	1.23	30.56
13C-123478-HxCDD	0.98	35.15
13C-123678-HxCDD	0.99	35.29
13C-1234678-HpCDD	1.12	39.88
13C-OCDD	1.27	45.24
13C-2378-TCDF	1.01	24.93
13C-12378-PeCDF	1.17	28.99
13C-23478-PeCDF	1.22	30.32
13C-123478-HxCDF	0.95	33.94
13C-123678-HxCDF	0.95	34.09
13C-234678-HxCDF	0.98	35.03
13C-123789-HxCDF	1.01	36.17
13C-1234678-HpCDF	1.07	38.22
13C-1234789-HpCDF	1.14	40.70

Clean up Standard	RRT#	RT

Internal Standards	RRT#	RT
13C-1234-TCDD	0.00	24.76
13C-123789-HxCDD	0.00	35.71

(#) RRT = (RT of Analyte)/(RT of appropriate labeled compound).

**General Chemistry Analysis  
Report and Summary QC Forms**

**ARI Job ID: UK00, UK01, UK02**

**SAMPLE RESULTS-CONVENTIONALS**  
UK00-Landau Associates, Inc.



Matrix: Soil  
Data Release Authorized  
Reported: 03/02/12

A handwritten signature in black ink, appearing to be 'M. J. Landau'.

Project: Cornwall Avenue LF/Interim A  
Event: 001020.400.470  
Date Sampled: 02/01/12  
Date Received: 02/02/12

**Client ID: CA-LF-IPA1-0201112A**  
**ARI ID: 12-3457 UK00A**

Analyte	Date	Method	Units	RL	Sample
pH	03/01/12 030112#1	SW9045	std units	0.01	11.98

RL Analytical reporting limit  
U Undetected at reported detection limit

Results reported on a fresh weight basis  
pH determined on 1:1 soil:D.I. water extracts.

LAB CONTROL RESULTS-CONVENTIONALS  
UK00-Landau Associates, Inc.



Matrix: Soil  
Data Release Authorized: *[Signature]*  
Reported: 03/02/12

Project: Cornwall Avenue LF/Interim A  
Event: 001020.400.470  
Date Sampled: NA  
Date Received: NA

Analyte/Method	QC ID	Date	Units	LCS	Spike Added	Recovery
pH SW9045	ICVL	03/01/12	std units	6.96	7.00	0.04

pH is evaluated as the Absolute Difference between the values rather than Percent Recovery.

REPLICATE RESULTS-CONVENTIONALS  
UK00-Landau Associates, Inc.



Matrix: Soil  
Data Release Authorized: *[Signature]*  
Reported: 03/02/12

Project: Cornwall Avenue LF/Interim A  
Event: 001020.400.470  
Date Sampled: 02/01/12  
Date Received: 02/02/12

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
---------	------	-------	--------	--------------	---------


ARI ID: UK00A Client ID: CA-LF-IPA1-0201112A

pH	03/01/12	std units	11.98	12.04	0.06
----	----------	-----------	-------	-------	------

pH is evaluated as the Absolute Difference between the values rather than Relative Percent Difference

INORGANICS ANALYSIS DATA SHEET  
pH by Method SW9045



Data Release Authorized:   
Reported: 03/02/12  
Date Received: 02/15/12  
Page 1 of 1

QC Report No: UK01-Landau Associates, Inc.  
Project: POB-Cornwall LF Interim  
07020.400.480

Client/ ARI ID	Date Sampled	Matrix	Analysis Date	RL	Result
CA-LF-IP1A1-021512B UK01A 12-3474	02/15/12	Soil	03/01/12	0.01	11.54
CA-LF-IP1A1-021512C UK01B 12-3475	02/15/12	Soil	03/01/12	0.01	12.17

Reported in std units

RL-Analytical reporting limit  
U-Undetected at reported detection limit

LAB CONTROL RESULTS-CONVENTIONALS  
UK01-Landau Associates, Inc.



Matrix: Soil  
Data Release Authorized:  
Reported: 03/02/12

A handwritten signature in black ink, appearing to be 'Jt', is written over the 'Data Release Authorized:' line.

Project: POB-Cornwall LF Interim  
Event: 07020.400.480  
Date Sampled: NA  
Date Received: NA


Analyte	Date	Units	LCS	Spike Added	Recovery
pH	03/01/12	std units	6.96	7.00	0.04

pH is evaluated as the Absolute Difference between the values rather than Percent Recovery.



REPLICATE RESULTS-CONVENTIONALS  
UK01-Landau Associates, Inc.



Matrix: Soil  
Data Release Authorized:   
Reported: 03/02/12


Project: POB-Cornwall LF Interim  
Event: 07020.400.480  
Date Sampled: 02/15/12  
Date Received: 02/15/12

Analyte	Date	Units	Sample	Replicate (s)	RPD/RSD
ARI ID: UK01A Client ID: CA-LF-IPA1-021512B					
pH	03/01/12	std units	11.54	11.57	0.03

pH is evaluated as the Absolute Difference between the values rather than Relative Percent Difference

INORGANICS ANALYSIS DATA SHEET  
pH by Method SW9045



Data Release Authorized:   
Reported: 03/02/12  
Date Received: 02/27/12  
Page 1 of 1

QC Report No: UK02-Landau Associates, Inc.  
Project: Port Of Bellingham  
1020.400.480


Client/ ARI ID	Date Sampled	Matrix	Analysis Date	RL	Result
CA-LF-IPA2-022412D UK02A 12-3476	02/24/12	Soil	03/01/12	0.01	12.18
CA-LF-IPA2-022412E UK02B 12-3477	02/24/12	Soil	03/01/12	0.01	11.85

Reported in std units

RL-Analytical reporting limit  
U-Undetected at reported detection limit

LAB CONTROL RESULTS-CONVENTIONALS  
UK02-Landau Associates, Inc.



Matrix: Soil  
Data Release Authorized:   
Reported: 03/02/12

Project: Port Of Bellingham  
Event: 1020.400.480  
Date Sampled: NA  
Date Received: NA

Analyte	Date	Units	LCS	Spike Added	Recovery
pH	03/01/12	std units	6.96	7.00	0.04

pH is evaluated as the Absolute Difference between the values rather than Percent Recovery.

REPLICATE RESULTS-CONVENTIONALS  
UK02-Landau Associates, Inc.



Matrix: Soil  
Data Release Authorized:  
Reported: 03/02/12

A handwritten signature in black ink, appearing to be 'WJ' or similar, written over the 'Data Release Authorized' line.

Project: Port Of Bellingham  
Event: 1020.400.480  
Date Sampled: 02/24/12  
Date Received: 02/27/12

Analyte	Date	Units	Sample	Replicate(s)	RPD/RSD
ARI ID: UK02A Client ID: CA-LF-IPA2-022412D					
pH	03/01/12	std units	12.18	12.14	0.04

pH is evaluated as the Absolute Difference between the values rather than Relative Percent Difference

**Total Solids**

**ARI Job ID: UK00, UK01, UK02**

Extractions Total Solids-exttts  
Data By: Yen Luu  
Created: 2/29/12

Worklist: 9909  
Analyst: RVR  
Comments:

Oven ID: \_\_\_\_\_

Balance ID: \_\_\_\_\_

Samples In:            Date: \_\_\_\_\_ Time: \_\_\_\_\_ Temp: \_\_\_\_\_ Analyst: \_\_\_\_\_

Samples Out:           Date: \_\_\_\_\_ Time: \_\_\_\_\_ Temp: \_\_\_\_\_ Analyst: \_\_\_\_\_

ARI ID CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1. UK00A 12-3457 CA-LF-IPA1-0201112A	1.13	12.26	7.59	58.0	NR

Extractions Total Solids-exttts

Data By: Yen Luu

Created: 2/29/12

Worklist: 9909

Analyst: YL

Comments:

Oven ID: 015

Balance ID: B139298002

Samples In: Date: 2/29/12 Time: 20:00 Temp: 104 Analyst: XL

Samples Out: Date: 03/01/12 Time: 08:15 Temp: 98 Analyst: RR

ARI ID CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1. UK00A 12-3457 CA-LF-IPA1-0201112A	<u>1.13</u>	<u>12.26</u>	<u>7.59</u>		NR

Total Solids Targets-Extractions  
Data By: Steve Potter  
Created: 3/ 1/12

Worklist: 9966  
Analyst: SDP  
Comments:

ARI ID	Target Dry Wt (g)	Total Solids	Min Wet Wt (g)
1. UK00A	10.00	58.0	17.24



Extractions Total Solids-exttts  
Data By: Yen Luu  
Created: 2/29/12

Worklist: 9910  
Analyst: RVR  
Comments:

Oven ID: \_\_\_\_\_

Balance ID: \_\_\_\_\_

Samples In:            Date: \_\_\_\_\_ Time: \_\_\_\_\_ Temp: \_\_\_\_\_ Analyst: \_\_\_\_\_

Samples Out:           Date: \_\_\_\_\_ Time: \_\_\_\_\_ Temp: \_\_\_\_\_ Analyst: \_\_\_\_\_

	ARI ID CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1.	UK01A 12-3474 CA-LF-IPA1-021512B	1.14	12.68	7.83	58.0	NR
2.	UK01B 12-3475 CA-LF-IPA1-021512C	1.15	12.34	7.84	59.8	NR

Extractions Total Solids-exttts  
Data By: Yen Luu  
Created: 2/29/12

Worklist: 9910  
Analyst: YL  
Comments:

Oven ID: 015

Balance ID: B139298002

Samples In: Date: 2/29/12 Time: 20:00 Temp: 104 Analyst: YL

Samples Out: Date: 03/01/12 Time: 08:15 Temp: 99 Analyst: RR

ARI ID CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1. UK01A 12-3474 CA-LF-IPA1-021512B	1.14	12.68	<del>7.26</del> <sup>RR 03/01/12</sup> 7.83		NR
2. UK01B 12-3475 CA-LF-IPA1-021512C	1.15	12.34	7.84		NR

Total Solids Targets-Extractions  
Data By: Steve Potter  
Created: 3/ 1/12

Worklist: 9967  
Analyst: SDP  
Comments:

ARI ID	Target Dry Wt (g)	Total Solids	Min Wet Wt (g)
1. UK01A	10.00	58.0	17.24
2. UK01B	10.00	59.8	16.72

Extractions Total Solids-exttts  
Data By: Yen Luu  
Created: 2/29/12

Worklist: 9911  
Analyst: RVR  
Comments:

Oven ID: \_\_\_\_\_

Balance ID: \_\_\_\_\_

Samples In:            Date: \_\_\_\_\_ Time: \_\_\_\_\_ Temp: \_\_\_\_\_ Analyst: \_\_\_\_\_

Samples Out:          Date: \_\_\_\_\_ Time: \_\_\_\_\_ Temp: \_\_\_\_\_ Analyst: \_\_\_\_\_

	ARI ID CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1.	UK02A 12-3476 CA-LF-IPA2-022412D	1.14	12.23	7.48	57.2	NR
2.	UK02B 12-3477 CA-LF-IPA2-022412E	1.15	12.47	7.73	58.1	NR

Extractions Total Solids-exttts  
Data By: Yen Luu  
Created: 2/29/12

Worklist: 9911  
Analyst: YL  
Comments:

Oven ID: 015

Balance ID: B139298002

Samples In: Date: 2/29/12 Time: 20:00 Temp: 104 Analyst: YL

Samples Out: Date: 3/1/12 Time: 18:15 Temp: 98 Analyst: RR

ARI ID CLIENT ID	Tare Wt (g)	Wet Wt (g)	Dry Wt (g)	% Solids	pH
1. UK02A 12-3476 CA-LF-IPA2-022412D	<u>1.14</u>	<u>12.23</u>	<u>7.48</u>		NR
2. UK02B 12-3477 CA-LF-IPA2-022412E	<u>1.15</u>	<u>12.47</u>	<u>7.73</u>		NR

Total Solids Targets-Extractions  
Data By: Steve Potter  
Created: 3/ 1/12

Worklist: 9968  
Analyst: SDP  
Comments:

ARI ID	Target Dry Wt (g)	Total Solids	Min Wet Wt (g)
1. UK02A	10.00	57.2	17.48
2. UK02B	10.00	58.1	17.21



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

June 8, 2007

Shannon Khounnala  
Landau Associates, Inc.  
130 2<sup>nd</sup> Avenue S.  
Edmonds, WA 98020

**RE: Project: Gate 3- POB 053097**  
**ARI Job No: KQ93 (8290 Data)**

*Data Package amended to Level IV on June 2, 2010*

Dear Shannon:

Please find enclosed the original chain of custody documentation and the analytical results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted forty five sediment samples on March 7, and March 8, 2007. There were no discrepancies between the sample containers' labels and the COCs. Thirty seven samples have been placed on hold pending further instructions and immediately frozen to protect the holding times.

The samples were analyzed for PSDDA VOCs, PSDDA PCBs, TBT, PSDDA Pesticides, SIM PNAs, PSDDA SVOA, TOC, TVS, TS, Ammonia, sulfide, Grainsize and Total Metals, as requested on the COC.

On May 16, 2007 at the request of Landau Associates select samples were removed from hold and subcontracted to Frontier Analytical Laboratory for EPA Method 8290. The samples were previously frozen to protect the holding time for the 8290 analysis.

Please reference the Frontier Analytical Laboratory data package for details.

An electronic copy of these reports and the supporting data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Kelly Bottem  
Project Manager  
kellyb@arilabs.com  
206/695-6211

Enclosures  
cc: files KQ93

LANDAU ASSOCIATES, INC.

JUN 08 2010

RECEIVED

PAGE 2 OF 389



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

June 8, 2007

Shannon Khounnala  
Landau Associates, Inc.  
130 2<sup>nd</sup> Avenue S.  
Edmonds, WA 98020

**RE: Project: Gate 3- POB 053097**  
**ARI Job No: KQ93 (8290 Data)**

Dear Shannon:

Please find enclosed the original chain of custody documentation and the analytical results for the samples from the project referenced above. Analytical Resources, Inc. (ARI) accepted forty five sediment samples on March 7, and March 8, 2007. There were no discrepancies between the sample containers' labels and the COCs. Thirty seven samples have been placed on hold pending further instructions and immediately frozen to protect the holding times.

The samples were analyzed for PSDDA VOCs, PSDDA PCBs, TBT, PSDDA Pesticides, SIM PNAs, PSDDA SVOA, TOC, TVS, TS, Ammonia, sulfide, Grainsize and Total Metals, as requested on the COC.

On May 16, 2007 at the request of Landau Associates select samples were removed from hold and subcontracted to Frontier Analytical Laboratory for EPA Method 8290. The samples were previously frozen to protect the holding time for the 8290 analysis.

Please reference the Frontier Analytical Laboratory data package for details.

An electronic copy of these reports and the supporting data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

A handwritten signature in black ink that reads "Kelly Bottom".

Kelly Bottom  
Project Manager  
kellyb@arilabs.com  
206/695-6211

Enclosures

cc: files KQ93





# Chain-of-Custody Record

Date 3/8/07  
Page 1 of 1

Project Name Gate 3 - POB Project No. 053 097  
 Project Location/Event POB  
 Sampler's Name SM + NBM  
 Project Contact Shannon Whounnala  
 Send Results To 11

Turnaround Time  
 Standard  
 Accelerated

Sample I.D. Date Time Matrix No. of Containers

Sample I.D.	Date	Time	Matrix	No. of Containers
Gate 3 - C-MPI	3/8/07	1450	sed	8
Gate 3 - S1-Z		1430	✓	1
Gate 3 - S2-Z		1435	✓	1
Gate 3 - S3-Z		1440	✓	1
Gate 3 - S4-Z		1445	✓	1
Gate 3 - S1-A		1455	✓	1
Gate 3 - S2-A		1500	✓	1
Gate 3 - S3-A		1505	✓	1
Gate 3 - S4-A		1510	✓	1
Gate 3 - emp 1 B		0945	✓	2
Gate 3 - core 1		0945	✓	2

Testing Parameters

Parameter	Gate 3 - C-MPI	Gate 3 - S1-Z	Gate 3 - S2-Z	Gate 3 - S3-Z	Gate 3 - S4-Z	Gate 3 - S1-A	Gate 3 - S2-A	Gate 3 - S3-A	Gate 3 - S4-A	Gate 3 - emp 1 B	Gate 3 - core 1
PCOB/PCDFs	X										
Organics	X										
VOCs	X										
BTEX/PAHs	X										
MTEB/Hg	X										
TDE/TVE/TM/TM/Z	X										
Substrate	X										
TBT	X										
Arxyl H2O	X										
Biokasay (Archive)	X										

Observations/Comments

Allow water samples to settle, collect aliquot from clear portion  
 NWTPH-Dx:  
 run acid wash/silica gel cleanup  
 run samples standardized to \_\_\_\_\_ product  
 Analyze for EPH if no specific product identified  
 VOC/BTEX/VPH (soil):  
 non-preserved  
 preserved w/methanol  
 preserved w/sodium bisulfate  
 Freeze upon receipt  
 Dissolved metal water samples field filtered  
 Other Hold Biokasay Analysis  
Wait further notice  
Hold PCOB (Archival)  
Wait further notice

Special Shipment/Handling or Storage Requirements

Method of Shipment

Relinquished by  
 Signature [Signature]  
 Printed Name SACHA MAYHEW  
 Company LANDAU ASSOCIATES  
 Date 3/8/07 Time 1530

Received by  
 Signature [Signature]  
 Printed Name Nicole Aragon  
 Company ART  
 Date 3/8/07 Time 1530

Relinquished by  
 Signature \_\_\_\_\_  
 Printed Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_

Received by  
 Signature \_\_\_\_\_  
 Printed Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_



# Chain-of-Custody Record

Date 3/8/07  
Page 1 of 1

Project Name Gate 3 - POB Project No. 053-097  
 Project Location/Event POB  
 Sampler's Name SM + NJM  
 Project Contact SEK  
 Send Results To SEK Shannon Whorwell

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters	Observations/Comments
Gate 3 - CMP - Z	3/8/07	1940	Seq.	8	PCDD/PCDF Organics VOCs Metals/Bromines TD/CHC/THM Sulfide/Hg TST TST for H2O Inorganic Lead	<input type="checkbox"/> Allow water samples to settle, collect aliquot from clear portion NWTPH-Dx: <input type="checkbox"/> run acid wash/silica gel cleanup <input type="checkbox"/> run samples standardized to _____ product <input type="checkbox"/> Analyze for EPH if no specific product identified VOC/BTEX/VPH (sol): <input type="checkbox"/> non-preserved <input type="checkbox"/> preserved w/methanol <input type="checkbox"/> preserved w/sodium bisulfate <input type="checkbox"/> Freeze upon receipt <input type="checkbox"/> Dissolved metal water samples field filtered Other: <u>* Archive Bingham with further notice</u>
Gate 3 - SS - Z		1900		1		
Gate 3 - S6 - Z		1905		1		
Gate 3 - S7 - Z		1910		1		
Gate 3 - S8 - Z		1915		1		
Gate 3 - S5 - A		1920		1		
Gate 3 - S6 - A		1925		1		
Gate 3 - S7 - A		1930		1		
Gate 3 - S8 - A		1935		1		
Gate 3 - Core 15		1620		2		

Turnaround Time  
 Standard  
 Accelerated

Method of Shipment: \_\_\_\_\_  
 Received by: \_\_\_\_\_  
 Relinquished by: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 Printed Name: \_\_\_\_\_  
 Company: \_\_\_\_\_  
 Date: 3/6/07 Time: 1945

- Seattle (Edmonds) (425) 778-0907
- Tacoma (253) 926-2493
- Spokane (509) 327-9737
- Portland (Tigard) (503) 443-6010



# Chain-of-Custody Record

Date 3/9/07  
Page 1 of 1

Project Name POB Project No. 053-097

Project Location/Event Gate 3

Sampler's Name SM + URM

Project Contact SEK

Send Results To Sharon Khoumala

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters	Observations/Comments
Gate 3 - core 9	3/9/07	0835	sed.	2	PDD/PCDFS ORGANICS VOCs Grassme/Leak Methc/Hg TDC/TCS/TSS/MSG SPL Hg TRT Hg Archve H2O Archve Archve (Archve)	Allow water samples to settle, collect aliquot from clear portion NWTPH-Dx: run acid wash/silica gel cleanup run samples standardized to _____ product Analyze for EPH if no specific product identified VOC/BTEX/VPH (soil): non-preserved preserved w/methanol preserved w/sodium bisulfate Freeze upon receipt Dissolved metal water samples field filtered
Gate 3 - CMP 3	3/9/07	1010		8	X	* Hblid (Archve) PCAO (Archve) UHM gather n.d.r.e
Gate 3 - core 9A		1035		1	X	* Hblid (Archve) TRT Agency until further notice
Gate 3 - core 10A		1040		1	X	
Gate 3 - core 11A		1045		1	X	
Gate 3 - core 12A		1050		1	X	
Gate 3 - core 10Z		1015		1	X	
Gate 3 - core 11Z		1020		1	X	
Gate 3 - core 12Z		1025		1	X	
Gate 3 - core 9Z		1030		1	X	

Special Shipment/Handling or Storage Requirements \_\_\_\_\_

Method of Shipment \_\_\_\_\_

**Relinquished by**  
Signature [Signature]  
Printed Name SACHA MAXWELL  
Company LANDAU ASSOCIATES  
Date 3/9/07 Time 1100

**Received by**  
Signature [Signature]  
Printed Name ARON  
Company \_\_\_\_\_  
Date 3/9/07 Time 1100

**Relinquished by**  
Signature \_\_\_\_\_  
Printed Name \_\_\_\_\_  
Company \_\_\_\_\_  
Date \_\_\_\_\_ Time \_\_\_\_\_

**Received by**  
Signature \_\_\_\_\_  
Printed Name \_\_\_\_\_  
Company \_\_\_\_\_  
Date \_\_\_\_\_ Time \_\_\_\_\_

- Seattle (Edmonds) (425) 778-0907
- Tacoma (253) 926-2493
- Spokane (509) 327-9737
- Portland (Tigard) (503) 443-6010



# Chain-of-Custody Record

Date 3/9/07  
Page 1 of 1

Project Name POB Project No. 053-697

Project Location/Event Gate 3

Sampler's Name SM + NDM

Project Contact SEK

Send Results To Sharon Whelan

Sample I.D.	Date	Time	Matrix	No. of Containers	Testing Parameters	Observations/Comments
Gate 3 - Core 13	3/9/07	1200	Sed.	2	PCBs / PCBs Dioxins Furans BTEX VOCs TSCA TC Sulfide TFT TFT Peroxide Aroclor STD Array	Allow water samples to settle, collect aliquot from clear portion
Gate 3 - CMP 4		1330		1	X	NWTPH-DX: run acid wash/silica gel cleanup run samples standardized to _____ product
Gate 3 - S13-A		1400		1	X	Analyze for EPH if no specific product identified
Gate 3 - S14-A		1405		1	X	VOC/BTEX/MPH (soil): non-preserved preserved w/methanol preserved w/sodium bisulfate Freeze upon receipt
Gate 3 - S15-A		1410		1	X	Dissolved metal water samples field filtered
Gate 3 - S16-A		1340		1	X	Other * Hold (archive) PDD COXINS until further notice.
Gate 3 - S17-A		1345		1	X	* Hold (archive) Dioxins until further notice.
Gate 3 - S18-A		1350		1	X	
Gate 3 - S19-A		1355		1	X	
Gate 3 - S20-A		1415		1	X	

Turnaround Time  
 Standard  
 Accelerated

Special Shipment/Handling or Storage Requirements

Relinquished by [Signature]  
Signature  
Printed Name  
Company  
Date 3/9/07 Time 1445

Relinquished by [Signature]  
Signature  
Printed Name  
Company  
Date 3/9/07 Time 1445

Received by [Signature]  
Signature  
Printed Name  
Company  
Date 3/9/07 Time 1445

Received by [Signature]  
Signature  
Printed Name  
Company  
Date 3/9/07 Time 1445

0005





# Cooler Receipt Form

ARI Client: Landau  
COC No:         
Assigned ARI Job No: 8093

Project Name: Gate 3 POB  
Delivered by: Hand  
Tracking No:       

**Preliminary Examination Phase:**

- Were intact, properly signed and dated custody seals attached to the outside of to cooler? YES  NO
- Were custody papers included with the cooler?  YES NO
- Were custody papers properly filled out (ink, signed, etc.)  YES NO
- Record cooler temperature (recommended 2.0-6.0 °C for chemistry) AMB °C

Cooler Accepted by: NA Date: 3/8/07 Time: 1530

**Complete custody forms and attach all shipping documents**

**Log-In Phase:**

- Was a temperature blank included in the cooler? YES  NO
- What kind of packing material was used?
- Was sufficient ice used (if appropriate)? YES  NO  \*
- Were all bottles sealed in individual plastic bags?  YES NO
- Did all bottle arrive in good condition (unbroken)?  YES NO
- Were all bottle labels complete and legible?  YES NO
- Did all bottle labels and tags agree with custody papers?  YES NO
- Were all bottles used correct for the requested analyses?  YES NO
- Do any of the analyses (bottles) require preservation? (attach preservation checklist) YES  NO
- Were all VOC vials free of air bubbles?  NA YES NO
- Was sufficient amount of sample sent in each bottle?  YES NO

Samples Logged by: Bob Congleton Date: 3/12/07 Time: 1230

**\*\* Notify Project Manager of discrepancies or concerns \*\***

Explain discrepancies or negative responses:

\* - Sample cores processed at ARI by  
LANDAU - NO ICE USED.

By: \_\_\_\_\_ Date: \_\_\_\_\_

June 5, 2007

**FAL Project ID: 4451**

Ms. Kelly Bottem  
Analytical Resources Incorporated  
4611 South 134<sup>th</sup> Place  
Tukwila, WA 98168-3240

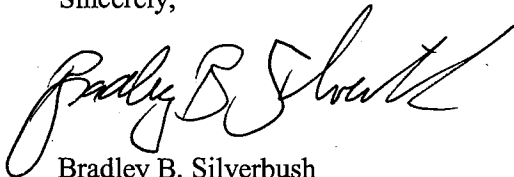
Dear Ms. Bottem,

Enclosed are the results for Frontier Analytical Laboratory project **4451**. This corresponds to ARI Project; **KQ93** and Project ID; Gate 3 - POB. The five soil samples received on 5/17/2007 were extracted and analyzed by EPA Method 8290 for tetra through octa chlorinated dibenzo dioxins and dibenzo furans. All five samples were received after the recommended hold time for EPA Method 8290. You were contacted via telephone and notified us that your client wanted us to continue with the analysis. In addition the 2005 WHO TEF values were used in calculating the TEQ for each sample. Analytical Resources Incorporated requested a turnaround time of fifteen business days for project **4451**.

The following Level I report consists of an Analytical Data section and a Sample Receipt section. The Analytical Data section contains the project-sample tracking log and the analytical results. The Sample Receipt section contains your original chain of custody, our sample login form and sample photo. The Electronic Data Deliverable (EDD) you requested has been sent to you via email. The enclosed results are specifically for the samples referenced in this report only. These results meet all NELAC requirements and shall not be reproduced except in full.

If you have any questions regarding project **4451**, please contact me at (916) 934-0900. Thank you for choosing Frontier Analytical Laboratory for your analytical testing needs.

Sincerely,



Bradley B. Silverbush  
Director of Operations



## Analytical Data



## Frontier Analytical Laboratory

### Sample Tracking Log

FAL Project ID: **4451**

Received on: **05/17/2007**

Project Due: **06/08/2007**

Storage: **R2**

FAL Sample ID	Dup	Client Project ID	Client Sample ID	Requested Method	Matrix	Sampling Date	Sampling Time
4451-001-SA	0	Gate 3 - POB	07-4032-KQ93A	EPA 8290 D/F	Sediment	03/08/2007	02:50 pm
4451-002-SA	0	Gate 3 - POB	07-4034-KQ93C	EPA 8290 D/F	Sediment	03/08/2007	06:40 pm
4451-003-SA	0	Gate 3 - POB	07-4037-KQ93F	EPA 8290 D/F	Sediment	03/09/2007	10:10 am
4451-004-SA	0	Gate 3 - POB	07-4039-KQ93H	EPA 8290 D/F	Sediment	03/09/2007	01:30 pm
4451-005-SA	0	Gate 3 - POB	07-4040-KQ93I	EPA 8290 D/F	Sediment	03/09/2007	04:15 pm

FAL Sample ID

Notes

4451-005-SA

\*Bottom of bottle broken during shipping. The integrity of sample was not compromised; analysis will proceed.

EPA Method 8290  
PCDD/F



FAL ID: 4451-001-MB  
Client ID: Method Blank  
Matrix: Sediment  
Batch No: X1156

Date Extracted: 05-30-2007  
Date Received: NA  
Amount: 10.00 g

ICal: PCDDFAL3-4-17-07  
GC Column: DB5  
Units: pg/g

Acquired: 06-01-2007  
2005 WHO TEQ: 0.00

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	ND	0.0754		-	0.0463				
1,2,3,7,8-PeCDD	ND	0.0856		-	0.0277				
1,2,3,4,7,8-HxCDD	ND	0.174		-	0.0904				
1,2,3,6,7,8-HxCDD	ND	0.185		-	0.100	Total TCDD	ND	0.0754	
1,2,3,7,8,9-HxCDD	ND	0.183		-	0.0918	Total PeCDD	ND	0.0856	
1,2,3,4,6,7,8-HpCDD	ND	0.188		-	0.0806	Total HxCDD	ND	0.187	
OCDD	ND	0.550		-	0.191	Total HpCDD	ND	0.188	
2,3,7,8-TCDF	ND	0.0704		-	0.0373				
1,2,3,7,8-PeCDF	ND	0.156		-	0.0383				
2,3,4,7,8-PeCDF	ND	0.165		-	0.0426				
1,2,3,4,7,8-HxCDF	ND	0.0638		-	0.0282				
1,2,3,6,7,8-HxCDF	ND	0.0630		-	0.0285				
2,3,4,6,7,8-HxCDF	ND	0.0720		-	0.0322				
1,2,3,7,8,9-HxCDF	ND	0.105		-	0.0289	Total TCDF	ND	0.0704	
1,2,3,4,6,7,8-HpCDF	ND	0.122		-	0.0383	Total PeCDF	ND	0.165	
1,2,3,4,7,8,9-HpCDF	ND	0.132		-	0.0403	Total HxCDF	ND	0.105	
OCDF	ND	0.444		-	0.104	Total HpCDF	ND	0.132	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	52.0	40.0 - 135	
13C-1,2,3,7,8-PeCDD	44.8	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	61.3	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	70.5	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	46.2	40.0 - 135	
13C-OCDD	41.8	40.0 - 135	
13C-2,3,7,8-TCDF	55.6	40.0 - 135	
13C-1,2,3,7,8-PeCDF	45.3	40.0 - 135	
13C-2,3,4,7,8-PeCDF	46.5	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	67.1	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	76.3	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	66.5	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	57.9	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	50.9	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	60.0	40.0 - 135	
13C-OCDF	41.3	40.0 - 135	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected
- NP Not Provided
- S Sample acceptance criteria not met
- X Matrix interferences
- \* Result taken from dilution or reinjection

Cleanup Surrogate

37Cl-2,3,7,8-TCDD	52.7	50.0 - 150
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Analyst: [Signature]

Date: 6/4/07

Reviewed By: [Signature]

Date: 6/5/07

EPA Method 8290  
PCDD/F



FAL ID: 4451-001-OPR  
Client ID: OPR  
Matrix: Sediment  
Batch No: X1156

Date Extracted: 05-30-2007  
Date Received: NA  
Amount: 10.00 g

ICal: PCDDFAL3-4-17-07  
GC Column: DB5  
Units: ng/ml

Acquired: 06-01-2007  
2005 WHO TEQ: NA

Compound	Conc	QC Limits	Qual
2,3,7,8-TCDD	9.38	7.00 - 13.0	
1,2,3,7,8-PeCDD	48.9	35.0 - 65.0	
1,2,3,4,7,8-HxCDD	49.4	35.0 - 65.0	
1,2,3,6,7,8-HxCDD	50.0	35.0 - 65.0	
1,2,3,7,8,9-HxCDD	44.5	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDD	48.7	35.0 - 65.0	
OCDD	93.3	70.0 - 130	
2,3,7,8-TCDF	9.19	7.00 - 13.0	
1,2,3,7,8-PeCDF	49.7	35.0 - 65.0	
2,3,4,7,8-PeCDF	49.3	35.0 - 65.0	
1,2,3,4,7,8-HxCDF	49.2	35.0 - 65.0	
1,2,3,6,7,8-HxCDF	47.9	35.0 - 65.0	
2,3,4,6,7,8-HxCDF	47.6	35.0 - 65.0	
1,2,3,7,8,9-HxCDF	48.1	35.0 - 65.0	
1,2,3,4,6,7,8-HpCDF	47.4	35.0 - 65.0	
1,2,3,4,7,8,9-HpCDF	48.1	35.0 - 65.0	
OCDF	94.8	70.0 - 130	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	81.1	40.0 - 135	
13C-1,2,3,7,8-PeCDD	73.4	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	96.3	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	109	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	71.5	40.0 - 135	
13C-OCDD	61.4	40.0 - 135	
13C-2,3,7,8-TCDF	88.9	40.0 - 135	
13C-1,2,3,7,8-PeCDF	73.2	40.0 - 135	
13C-2,3,4,7,8-PeCDF	74.9	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	104	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	117	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	101	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	89.9	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	79.4	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	97.2	40.0 - 135	
13C-OCDF	65.6	40.0 - 135	

Cleanup Surrogate

37Cl-2,3,7,8-TCDD	79.5	50.0 - 150	
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- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected
- NP Not Provided
- S Sample acceptance criteria not met
- X Matrix interferences
- \* Result taken from dilution or reinjection

Analyst: [Signature]  
Date: 6/16/07

Reviewed By: [Signature]  
Date: 6/15/07

EPA Method 8290  
PCDD/F



FAL ID: 4451-001-SA  
Client ID: 07-4032-KQ93A  
Matrix: Sediment  
Batch No: X1156

Date Extracted: 05-30-2007  
Date Received: 05-17-2007  
Amount: 10.12 g  
% Solids: 53.92

ICal: PCDDFAL3-4-17-07  
GC Column: DB5  
Units: pg/g

Acquired: 06-01-2007  
2005 WHO TEQ: 10.6

Compound	Conc	DL	Qual	2005		Compound	Conc	DL	Qual
				WHO Tox	MDL				
2,3,7,8-TCDD	0.270	-	J	0.270	0.0463				
1,2,3,7,8-PeCDD	1.60	-	J	1.60	0.0277				
1,2,3,4,7,8-HxCDD	3.90	-		0.390	0.0904				
1,2,3,6,7,8-HxCDD	14.7	-		1.47	0.100	Total TCDD	51.2	-	
1,2,3,7,8,9-HxCDD	8.05	-		0.805	0.0918	Total PeCDD	41.4	-	
1,2,3,4,6,7,8-HpCDD	349	-		3.49	0.0806	Total HxCDD	212	-	
OCDD	2390	-		0.717	0.191	Total HpCDD	1040	-	
2,3,7,8-TCDF	2.04	-	F	0.204	0.0373				
1,2,3,7,8-PeCDF	1.05	-	J	0.0315	0.0383				
2,3,4,7,8-PeCDF	1.13	-	J	0.339	0.0426				
1,2,3,4,7,8-HxCDF	3.45	-		0.345	0.0282				
1,2,3,6,7,8-HxCDF	1.50	-	J	0.150	0.0285				
2,3,4,6,7,8-HxCDF	2.39	-	J	0.239	0.0322				
1,2,3,7,8,9-HxCDF	1.30	-	J	0.130	0.0289	Total TCDF	14.7	-	D,M
1,2,3,4,6,7,8-HpCDF	34.8	-		0.348	0.0383	Total PeCDF	30.5	-	D,M
1,2,3,4,7,8,9-HpCDF	2.08	-	J	0.0208	0.0403	Total HxCDF	87.3	-	D,M
OCDF	98.0	-		0.0294	0.104	Total HpCDF	131	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	82.9	40.0 - 135	
13C-1,2,3,7,8-PeCDD	63.0	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	90.2	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	107	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	79.2	40.0 - 135	
13C-OCDD	80.8	40.0 - 135	
13C-2,3,7,8-TCDF	88.2	40.0 - 135	
13C-1,2,3,7,8-PeCDF	68.7	40.0 - 135	
13C-2,3,4,7,8-PeCDF	68.4	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	96.8	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	114	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	98.7	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	90.3	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	82.5	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	101	40.0 - 135	
13C-OCDF	76.6	40.0 - 135	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected
- NP Not Provided
- S Sample acceptance criteria not met
- X Matrix interferences
- \* Result taken from dilution or reinjection

Cleanup Surrogate

37Cl-2,3,7,8-TCDD	78.1	50.0 - 150
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Analyst: 

Date: 6/4/07

Reviewed By: 

Date: 6/5/07

000005 of 000012

EPA Method 8290  
PCDD/F



FAL ID: 4451-002-SA  
Client ID: 07-4034-KQ93C  
Matrix: Sediment  
Batch No: X1156

Date Extracted: 05-30-2007  
Date Received: 05-17-2007  
Amount: 10.21 g  
% Solids: 54.13

ICal: PCDDFAL3-4-17-07  
GC Column: DB5  
Units: pg/g

Acquired: 06-01-2007  
2005 WHO TEQ: 6.24

Compound	Conc	DL	Qual	2005		Compound	Conc	DL	Qual
				WHO Tox	MDL				
2,3,7,8-TCDD	0.178	-	J	0.178	0.0463				
1,2,3,7,8-PeCDD	0.882	-	J	0.882	0.0277				
1,2,3,4,7,8-HxCDD	2.65	-	-	0.265	0.0904				
1,2,3,6,7,8-HxCDD	8.31	-	-	0.831	0.100	Total TCDD	50.4	-	-
1,2,3,7,8,9-HxCDD	4.36	-	-	0.436	0.0918	Total PeCDD	36.8	-	-
1,2,3,4,6,7,8-HpCDD	205	-	-	2.05	0.0806	Total HxCDD	128	-	-
OCDD	1910	-	-	0.573	0.191	Total HpCDD	599	-	-
2,3,7,8-TCDF	1.52	-	F	0.152	0.0373				
1,2,3,7,8-PeCDF	0.581	-	J	0.0174	0.0383				
2,3,4,7,8-PeCDF	0.493	-	J	0.148	0.0426				
1,2,3,4,7,8-HxCDF	1.99	-	J	0.199	0.0282				
1,2,3,6,7,8-HxCDF	0.951	-	J	0.0951	0.0285				
2,3,4,6,7,8-HxCDF	1.38	-	J	0.138	0.0322				
1,2,3,7,8,9-HxCDF	0.757	-	J	0.0757	0.0289	Total TCDF	9.49	-	D,M
1,2,3,4,6,7,8-HpCDF	17.1	-	-	0.171	0.0383	Total PeCDF	15.2	-	D,M
1,2,3,4,7,8,9-HpCDF	1.27	-	J	0.0127	0.0403	Total HxCDF	47.0	-	-
OCDF	49.6	-	-	0.0149	0.104	Total HpCDF	67.4	-	-

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	83.2	40.0 - 135	
13C-1,2,3,7,8-PeCDD	68.6	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	90.5	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	109	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	80.7	40.0 - 135	
13C-OCDD	87.1	40.0 - 135	
13C-2,3,7,8-TCDF	88.1	40.0 - 135	
13C-1,2,3,7,8-PeCDF	72.0	40.0 - 135	
13C-2,3,4,7,8-PeCDF	72.1	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	102	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	118	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	102	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	89.7	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	87.8	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	104	40.0 - 135	
13C-OCDF	83.8	40.0 - 135	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected
- NP Not Provided
- S Sample acceptance criteria not met
- X Matrix interferences
- \* Result taken from dilution or reinjection

Cleanup Surrogate

37Cl-2,3,7,8-TCDD	73.8	50.0 - 150
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Analyst: [Signature]  
Date: 6/4/07

Reviewed By: [Signature]  
Date: 6/5/07

EPA Method 8290  
PCDD/F



FAL ID: 4451-003-SA  
Client ID: 07-4037-KQ93F  
Matrix: Sediment  
Batch No: X1156

Date Extracted: 05-30-2007  
Date Received: 05-17-2007  
Amount: 10.21 g  
% Solids: 50.50

ICal: PCDDFAL3-4-17-07  
GC Column: DB5  
Units: pg/g

Acquired: 06-01-2007  
2005 WHO TEQ: 27.3

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.385	-	J	0.385	0.0463				
1,2,3,7,8-PeCDD	3.85	-		3.85	0.0277				
1,2,3,4,7,8-HxCDD	10.6	-		1.06	0.0904				
1,2,3,6,7,8-HxCDD	42.1	-		4.21	0.100	Total TCDD	58.0	-	
1,2,3,7,8,9-HxCDD	23.3	-		2.33	0.0918	Total PeCDD	56.2	-	
1,2,3,4,6,7,8-HpCDD	954	-		9.54	0.0806	Total HxCDD	370	-	
OCDD	6670	-		2.00	0.191	Total HpCDD	2320	-	
2,3,7,8-TCDF	2.79	-	F	0.279	0.0373				
1,2,3,7,8-PeCDF	2.92	-		0.0876	0.0383				
2,3,4,7,8-PeCDF	1.85	-	J	0.555	0.0426				
1,2,3,4,7,8-HxCDF	7.47	-		0.747	0.0282				
1,2,3,6,7,8-HxCDF	3.91	-		0.391	0.0285				
2,3,4,6,7,8-HxCDF	5.54	-		0.554	0.0322				
1,2,3,7,8,9-HxCDF	3.13	-		0.313	0.0289	Total TCDF	18.4	-	D,M
1,2,3,4,6,7,8-HpCDF	87.3	-		0.873	0.0383	Total PeCDF	80.2	-	D,M
1,2,3,4,7,8,9-HpCDF	3.68	-		0.0368	0.0403	Total HxCDF	248	-	D,M
OCDF	181	-		0.0543	0.104	Total HpCDF	291	-	

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	71.4	40.0 - 135	
13C-1,2,3,7,8-PeCDD	54.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	76.2	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	92.4	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	70.1	40.0 - 135	
13C-OCDD	85.7	40.0 - 135	
13C-2,3,7,8-TCDF	72.6	40.0 - 135	
13C-1,2,3,7,8-PeCDF	58.2	40.0 - 135	
13C-2,3,4,7,8-PeCDF	59.0	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	84.1	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	97.2	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	82.9	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	73.6	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	71.6	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	88.6	40.0 - 135	
13C-OCDF	76.6	40.0 - 135	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected
- NP Not Provided
- S Sample acceptance criteria not met
- X Matrix interferences
- \* Result taken from dilution or reinjection

Cleanup Surrogate

37Cl-2,3,7,8-TCDD	67.6	50.0 - 150
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Analyst: [Signature]

Date: 6/4/07

Reviewed By: [Signature]

Date: 6/5/07

EPA Method 8290  
PCDD/F



FAL ID: 4451-004-SA  
Client ID: 07-4039-KQ93H  
Matrix: Sediment  
Batch No: X1156

Date Extracted: 05-30-2007  
Date Received: 05-17-2007  
Amount: 10.19 g  
% Solids: 50.95

ICal: PCDDFAL3-4-17-07  
GC Column: DB5  
Units: pg/g

Acquired: 06-01-2007  
2005 WHO TEQ: 47.1

Compound	Conc	DL	Qual	2005 WHO Tox	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.684	-		0.684	0.0463				
1,2,3,7,8-PeCDD	7.12	-		7.12	0.0277				
1,2,3,4,7,8-HxCDD	19.3	-		1.93	0.0904				
1,2,3,6,7,8-HxCDD	64.7	-		6.47	0.100	Total TCDD	63.8	-	
1,2,3,7,8,9-HxCDD	41.9	-		4.19	0.0918	Total PeCDD	75.3	-	
1,2,3,4,6,7,8-HpCDD	1670	-		16.7	0.0806	Total HxCDD	688	-	
OCDD	12400	-		3.72	0.191	Total HpCDD	3680	-	
2,3,7,8-TCDF	2.93	-	F	0.293	0.0373				
1,2,3,7,8-PeCDF	3.12	-		0.0936	0.0383				
2,3,4,7,8-PeCDF	3.65	-		1.10	0.0426				
1,2,3,4,7,8-HxCDF	12.5	-		1.25	0.0282				
1,2,3,6,7,8-HxCDF	6.15	-		0.615	0.0285				
2,3,4,6,7,8-HxCDF	9.22	-		0.922	0.0322				
1,2,3,7,8,9-HxCDF	4.62	-		0.462	0.0289	Total TCDF	23.8	-	D,M
1,2,3,4,6,7,8-HpCDF	136	-		1.36	0.0383	Total PeCDF	100	-	D,M
1,2,3,4,7,8,9-HpCDF	6.83	-		0.0683	0.0403	Total HxCDF	332	-	D,M
OCDF	365	-		0.110	0.104	Total HpCDF	480	-	


Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	85.2	40.0 - 135	
13C-1,2,3,7,8-PeCDD	69.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	87.2	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	106	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	85.4	40.0 - 135	
13C-OCDD	106	40.0 - 135	
13C-2,3,7,8-TCDF	90.1	40.0 - 135	
13C-1,2,3,7,8-PeCDF	72.1	40.0 - 135	
13C-2,3,4,7,8-PeCDF	76.0	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	94.4	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	109	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	96.6	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	86.3	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	82.8	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	99.6	40.0 - 135	
13C-OCDF	90.5	40.0 - 135	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected
- NP Not Provided
- S Sample acceptance criteria not met
- X Matrix interferences
- \* Result taken from dilution or reinjection

Cleanup Surrogate

37Cl-2,3,7,8-TCDD 81.8 50.0 - 150

Analyst:   
Date: 6/4/07

Reviewed By:   
Date: 6/5/07

EPA Method 8290  
PCDD/F



FAL ID: 4451-005-SA  
Client ID: 07-4040-KQ93I  
Matrix: Sediment  
Batch No: X1156

Date Extracted: 05-30-2007  
Date Received: 05-17-2007  
Amount: 10.09 g  
% Solids: 54.86

ICal: PCDDFAL3-4-17-07  
GC Column: DB5  
Units: pg/g

Acquired: 06-01-2007  
2005 WHO TEQ: 2.72

Compound	Conc	DL	Qual	2005 WHO	MDL	Compound	Conc	DL	Qual
2,3,7,8-TCDD	0.146	-	J	0.146	0.0463				
1,2,3,7,8-PeCDD	0.343	-	J	0.343	0.0277				
1,2,3,4,7,8-HxCDD	1.23	-	J	0.123	0.0904				
1,2,3,6,7,8-HxCDD	3.49	-	-	0.349	0.100	Total TCDD	38.4	-	-
1,2,3,7,8,9-HxCDD	1.68	-	J	0.168	0.0918	Total PeCDD	26.0	-	-
1,2,3,4,6,7,8-HpCDD	73.6	-	-	0.736	0.0806	Total HxCDD	69.9	-	-
OCDD	656	-	-	0.197	0.191	Total HpCDD	185	-	-
2,3,7,8-TCDF	1.48	-	F	0.148	0.0373				
1,2,3,7,8-PeCDF	0.371	-	J	0.0111	0.0383				
2,3,4,7,8-PeCDF	0.442	-	J	0.133	0.0426				
1,2,3,4,7,8-HxCDF	0.958	-	J	0.0958	0.0282				
1,2,3,6,7,8-HxCDF	0.542	-	J	0.0542	0.0285				
2,3,4,6,7,8-HxCDF	0.681	-	J	0.0681	0.0322				
1,2,3,7,8,9-HxCDF	0.442	-	J	0.0442	0.0289	Total TCDF	8.91	-	D,M
1,2,3,4,6,7,8-HpCDF	8.53	-	-	0.0853	0.0383	Total PeCDF	8.13	-	D,M
1,2,3,4,7,8,9-HpCDF	0.707	-	J	0.00707	0.0403	Total HxCDF	20.5	-	-
OCDF	27.4	-	-	0.00822	0.104	Total HpCDF	34.1	-	-

Internal Standards	% Rec	QC Limits	Qual
13C-2,3,7,8-TCDD	83.7	40.0 - 135	
13C-1,2,3,7,8-PeCDD	70.4	40.0 - 135	
13C-1,2,3,4,7,8-HxCDD	91.1	40.0 - 135	
13C-1,2,3,6,7,8-HxCDD	107	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDD	77.0	40.0 - 135	
13C-OCDD	81.6	40.0 - 135	
13C-2,3,7,8-TCDF	88.2	40.0 - 135	
13C-1,2,3,7,8-PeCDF	72.2	40.0 - 135	
13C-2,3,4,7,8-PeCDF	73.7	40.0 - 135	
13C-1,2,3,4,7,8-HxCDF	100	40.0 - 135	
13C-1,2,3,6,7,8-HxCDF	114	40.0 - 135	
13C-2,3,4,6,7,8-HxCDF	100	40.0 - 135	
13C-1,2,3,7,8,9-HxCDF	91.3	40.0 - 135	
13C-1,2,3,4,6,7,8-HpCDF	81.9	40.0 - 135	
13C-1,2,3,4,7,8,9-HpCDF	101	40.0 - 135	
13C-OCDF	81.9	40.0 - 135	

- A Isotopic Labeled Standard outside QC range but signal to noise ratio is >10:1
- B Analyte is present in Method Blank
- C Chemical Interference
- D Presence of Diphenyl Ethers
- E Analyte concentration is above calibration range
- F Analyte confirmation on secondary column
- J Analyte concentration is below calibration range
- M Maximum possible concentration
- ND Analyte Not Detected
- NP Not Provided
- S Sample acceptance criteria not met
- X Matrix interferences
- \* Result taken from dilution or reinjection

Cleanup Surrogate

37Cl-2,3,7,8-TCDD	81.3	50.0 - 150
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Analyst: JK

Date: 6/4/07

Reviewed By: [Signature]

Date: 6/5/07



# Sample Receipt

SUBCONTRACTOR ANALYSIS REQUEST  
CUSTODY TRANSFER 05/16/07



4451  
0°

ARI Project: KQ93

Laboratory: Frontier Analytical Laboratory  
Lab Contact: BRAD SILVERBUSH  
Lab Address: 5172 Hillside Circle  
El Dorado Hills, CA 95762  
Phone: 916-934-0900  
Fax: 916-934-0999

ARI Client: Landau Associates, Inc.  
Project ID: Gate 3 - POB  
ARI PM: Kelly Bottem  
Phone: 206-695-6211  
Fax: 206-695-6201

Analytical Protocol: PSDDA  
Special Instructions:

Requested Turn Around: 06/14/07  
Fax Results (Y/N):

**Limits of Liability.** Subcontractor is expected to perform all requested services in accordance with appropriate methodology following Standard Operating Procedures that meet standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the negotiated amount for said services. The agreement by the Subcontractor to perform services requested by ARI releases ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Subcontractor.

ARI ID	Client ID/ Add'l ID	Sampled	Matrix	Bottles	Analyses	
07-4032-KQ93A	Gate3-CMP1	03/08/07	Sediment	1	PCDD/PCDF	14:50
Special Instructions: None						
07-4034-KQ93C	Gate3-CMP2	03/08/07	Sediment	1	PCDD/PCDF	13:40
Special Instructions: None						
07-4037-KQ93F	Gate3-CMP3	03/09/07	Sediment		PCDD/PCDF	10:10
Special Instructions: None						
07-4039-KQ93H	Gate3-CMP4	03/09/07	Sediment	1	PCDD/PCDF	13:30
Special Instructions: None						
07-4040-KQ93I	Gate3-CMPHab	03/09/07	Sediment	1	PCDD/PCDF	16:15
Special Instructions: None						

Use 2005 TEFs to calculate TEQ. All samples to be analyzed by EPA 8290 DIF, as requested by Kelly to Brad.

Kelly to Kathy - Client authorize ~~FAL~~ to proceed w/ analysis after being informed samples have passed 30 day hold time. Client requested 15-MAT. 5/17/07.

Kelly B @ arilabs.com

Carrier UPS	Airbill 1Z 832 695 134490 1237	Date 5/16/07
Relinquished by <i>[Signature]</i>	Company FAL	Date 5/16/07
Received by <i>[Signature]</i>	Company FAL	Date 5/17/07
		Time 1600
		Time 1110

## Frontier Analytical Laboratory

### Sample Login Form

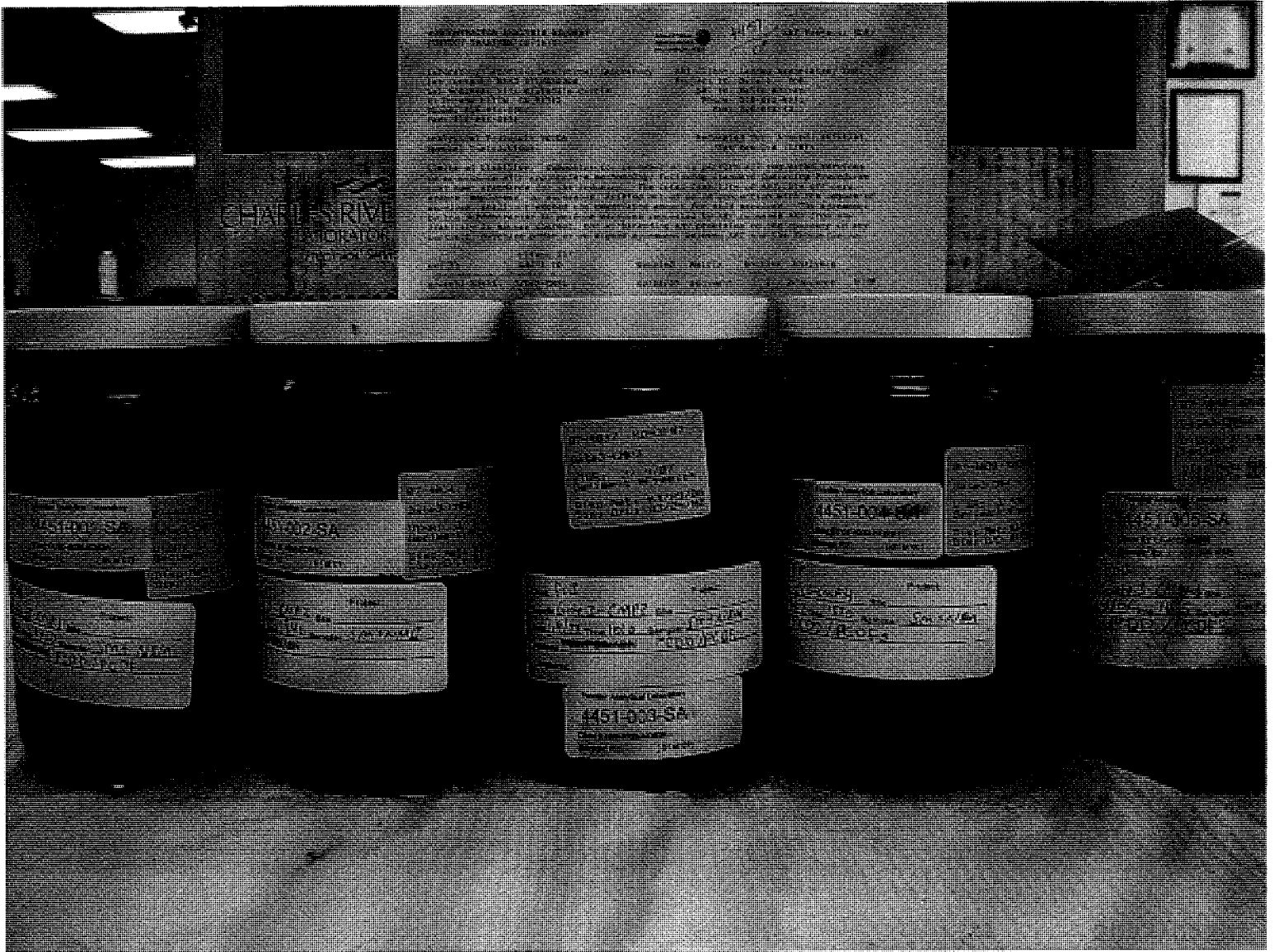
FAL Project ID: **4451**

Client:	Analytical Resources Inc. Kelly Bottem
Client Project ID:	Gate 3 - POB
Date Received:	05/17/2007
Time Received:	11:10 am
Received By:	NM
Logged In By:	JN
# of Samples Received:	5
Duplicates:	0
Storage Location:	R2

Method of Delivery:	UPS
Tracking Number:	1Z8326951344901237
Shipping Container Received Intact	Yes
Custody seals(s) present?	Yes
Custody seals(s) intact?	Yes
Sample Arrival Temperature (C)	0
Cooling Method	Ice
Chain Of Custody Present?	Yes
Return Shipping Container To Client	Yes
Test for residual Chlorine	No
Thiosulfate Added	No
Earliest Sample Hold Time Expiration	04/07/2007
Adequate Sample Volume	Yes

Anomalies or additional comments:

Use 2005 TEF's to calculate TEQ. Samples past EPA Method 8290 recommended hold time of 30 days - client was informed of this anomaly and authorized FAL to proceed with analysis.





# **Instrument Raw Data**


## Sample Results



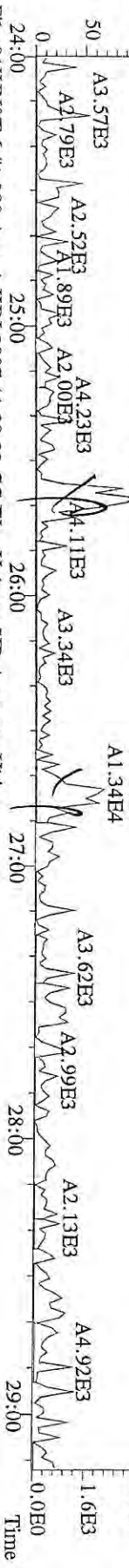
FAL ID: 1156-001-0001-MB      Filename: 01JUN07M      Sam:3      Acquired: 1-JUN-07 11:28:33      ICal: PCDDFAL3-4-17-07  
 Client ID: Method Blank      ConCal: ST060107M1      EndCal: ST060107M2  
 Results: 1156      GC Column: db5      Amount: 10.00

NATO 1989 Tox: 0.00  
 WHO 1998 Tox: 0.00

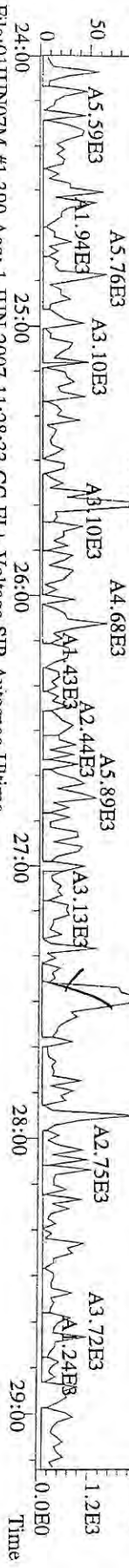
Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise	DL	Rec	#Hom
2,3,7,8-TCDD	*	* n	NotFnd	1.11	*		2.50	928	0.0754		
1,2,3,7,8-PeCDD	*	* n	NotFnd	1.10	*		2.50	616	0.0856		
1,2,3,4,7,8-HxCDD	*	* n	NotFnd	0.82	*		2.50	738	0.174		
1,2,3,6,7,8-HxCDD	*	* n	NotFnd	0.74	*		2.50	738	0.185		
1,2,3,7,8,9-HxCDD	*	* n	NotFnd	0.80	*		2.50	738	0.183		
1,2,3,4,6,7,8-HpCDD	*	* n	NotFnd	0.75	*		2.50	518	0.188		
OCDD	*	* n	NotFnd	0.80	*		2.50	933	0.550		
2,3,7,8-TCDF	*	* n	NotFnd	0.85	*		2.50	1440	0.0704		
1,2,3,7,8-PeCDF	*	* n	NotFnd	0.78	*		2.50	1300	0.156		
2,3,4,7,8-PeCDF	*	* n	NotFnd	0.76	*		2.50	1300	0.165		
1,2,3,4,7,8-HxCDF	*	* n	NotFnd	1.02	*		2.50	648	0.0638		
1,2,3,6,7,8-HxCDF	*	* n	NotFnd	0.92	*		2.50	648	0.0630		
2,3,4,6,7,8-HxCDF	*	* n	NotFnd	0.93	*		2.50	648	0.0720		
1,2,3,7,8,9-HxCDF	*	* n	NotFnd	0.92	*		2.50	648	0.105		
1,2,3,4,6,7,8-HpCDF	*	* n	NotFnd	1.10	*		2.50	853	0.122		
1,2,3,4,7,8,9-HpCDF	*	* n	NotFnd	0.99	*		2.50	853	0.132		
OCDF	*	* n	NotFnd	0.77	*		2.50	962	0.444		
13C-2,3,7,8-TCDD	4.46e+07	0.79	y 27:28	1.03	104					52.0	
13C-1,2,3,7,8-PeCDD	4.30e+07	1.57	y 33:16	1.15	89.7					44.8	
13C-1,2,3,4,7,8-HxCDD	3.08e+07	1.27	y 38:37	1.34	123					61.3	
13C-1,2,3,6,7,8-HxCDD	3.57e+07	1.27	y 38:47	1.35	141					70.5	
13C-1,2,3,4,6,7,8-HpCDD	2.40e+07	1.00	y 44:12	1.38	92.4					46.2	
13C-OCDD	3.46e+07	0.90	y 49:44	1.10	167					41.8	
13C-2,3,7,8-TCDF	9.36e+07	0.80	y 26:44	1.28	111					55.6	
13C-1,2,3,7,8-PeCDF	6.57e+07	1.60	y 31:33	1.10	90.7					45.3	
13C-2,3,4,7,8-PeCDF	6.55e+07	1.59	y 32:52	1.07	93.1					46.5	
13C-1,2,3,4,7,8-HxCDF	3.94e+07	0.52	y 37:14	1.56	134					67.1	
13C-1,2,3,6,7,8-HxCDF	4.98e+07	0.50	y 37:26	1.74	153					76.3	
13C-2,3,4,6,7,8-HxCDF	4.12e+07	0.50	y 38:22	1.65	133					66.5	
13C-1,2,3,7,8,9-HxCDF	3.20e+07	0.51	y 39:48	1.47	116					57.9	
13C-1,2,3,4,6,7,8-HpCDF	2.72e+07	0.44	y 42:19	1.42	102					50.9	
13C-1,2,3,4,7,8,9-HpCDF	3.02e+07	0.44	y 45:07	1.34	120					60.0	
13C-OCDF	4.48e+07	0.88	y 50:06	1.44	165					41.3	
37Cl-2,3,7,8-TCDD	1.34e+07		27:30	0.77	42.1					52.7	
13C-1,2,3,4-TCDD	8.33e+07	0.79	y 26:54	-	9.81						
13C-1,2,3,4-TCDF	1.31e+08	0.79	y 25:39	-	10.2						
13C-1,2,3,7,8,9-HxCDD	3.76e+07	1.26	y 39:14	-	5.20						
Total Tetra-Dioxins	*		NotFnd	1.11	*		2.50	928	0.0754	0	
Total Penta-Dioxins	*		NotFnd	1.10	*		2.50	616	0.0856	0	
Total Hexa-Dioxins	*		NotFnd	0.79	*		2.50	738	0.187	0	
Total Hepta-Dioxins	*		NotFnd	0.75	*		2.50	518	0.188	0	
Total Tetra-Furans	*		NotFnd	0.85	*		2.50	1440	0.0704	0	
1st Fn. Tot Penta-Furans	*		NotFnd	0.77	*		2.50	1300	0.165	0	PeCDF
Total Penta-Furans	*		NotFnd	0.77	*		2.50	1300	0.165	0	*
Total Hexa-Furans	*		NotFnd	0.95	*		2.50	648	0.105	0	
Total Hepta-Furans	*		NotFnd	1.04	*		2.50	853	0.132	0	

Analyst:       Date: 6/4/07

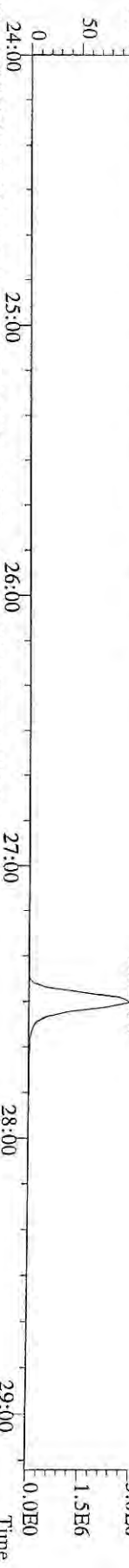
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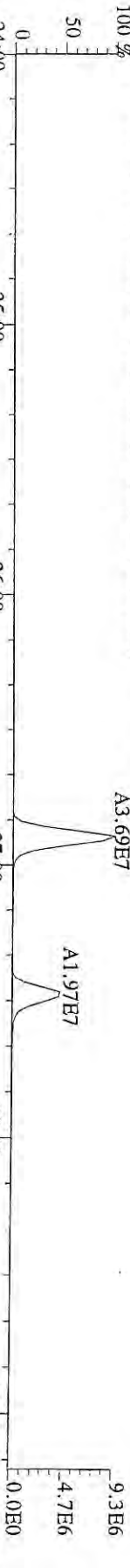
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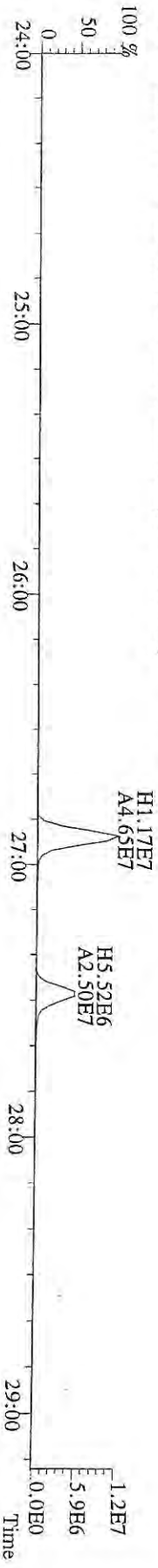
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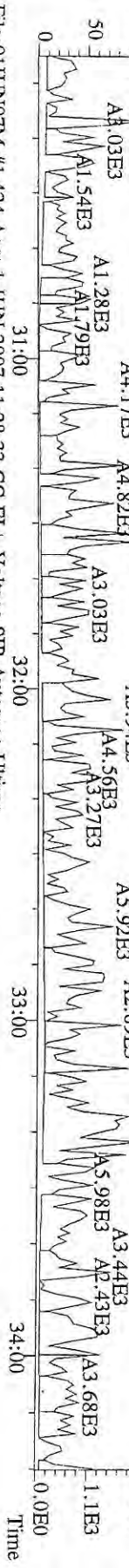


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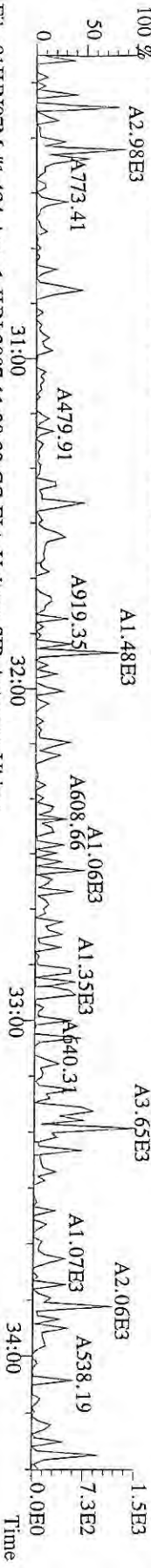




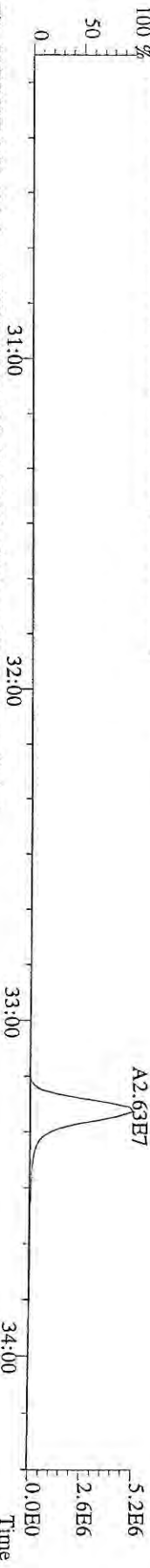
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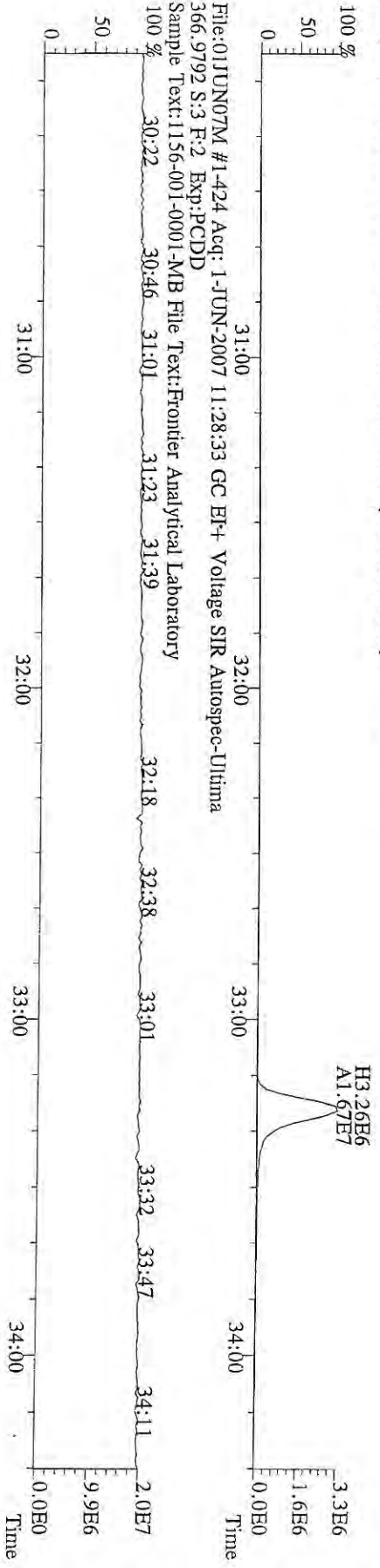
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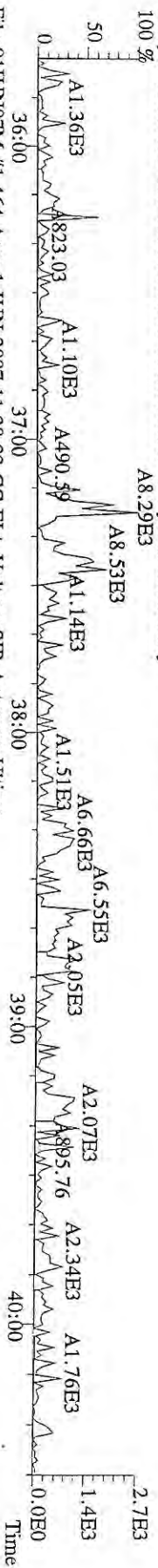


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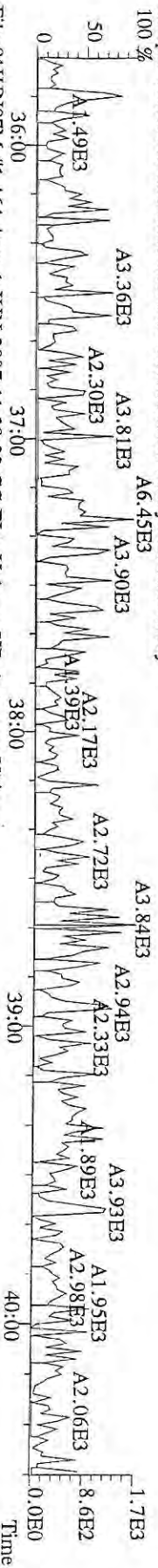


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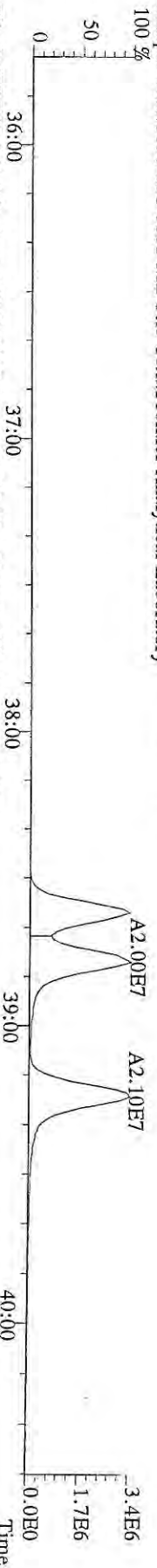
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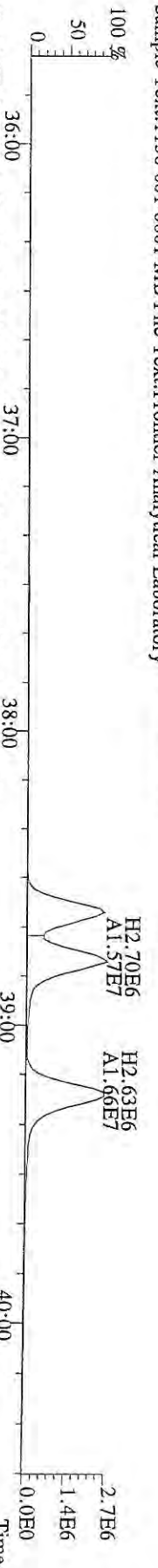
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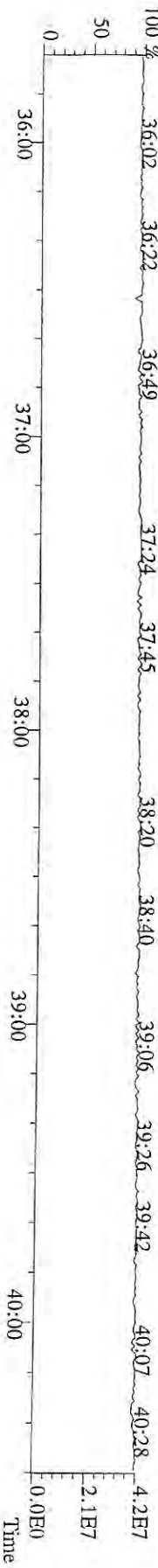
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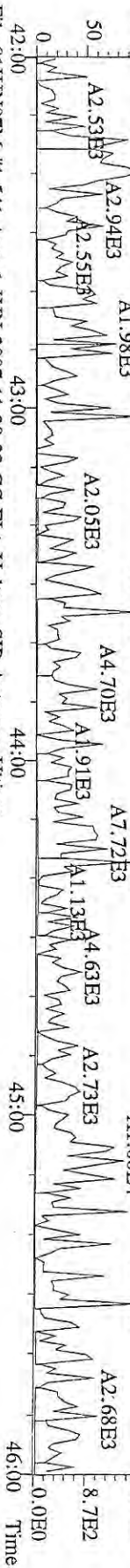


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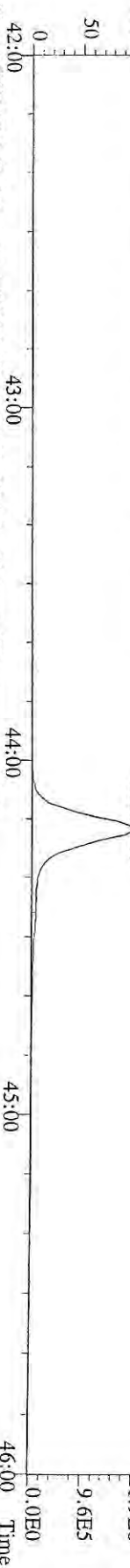
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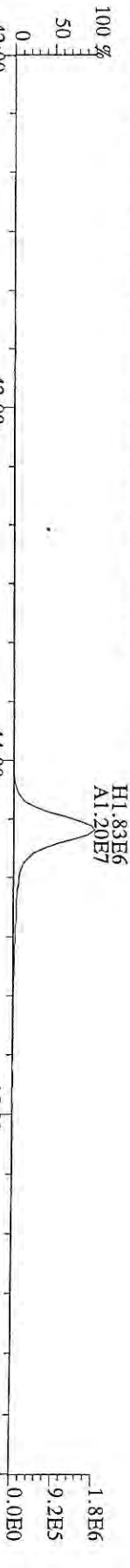
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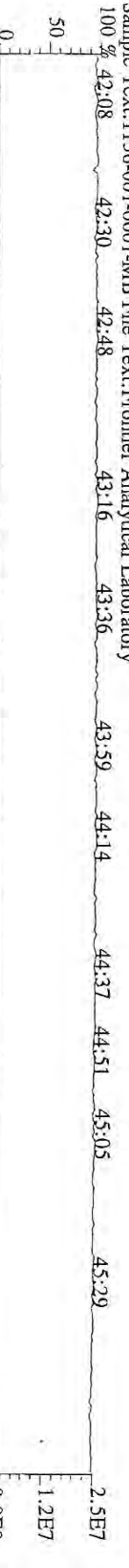
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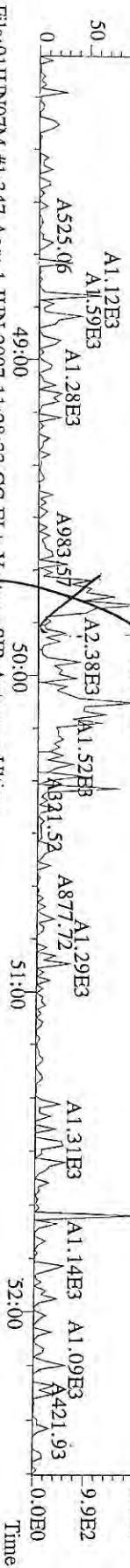
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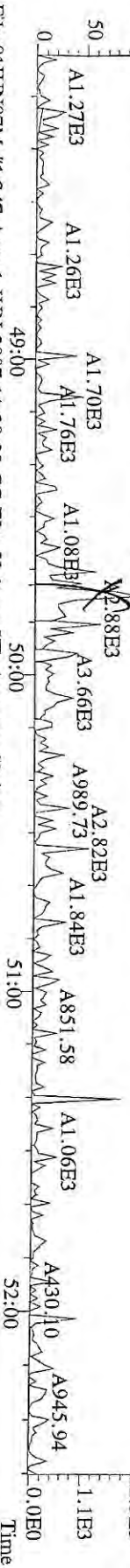
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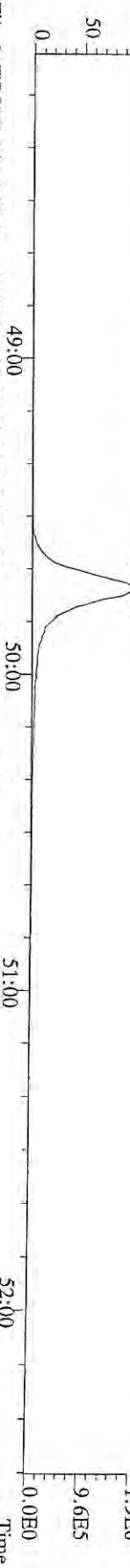
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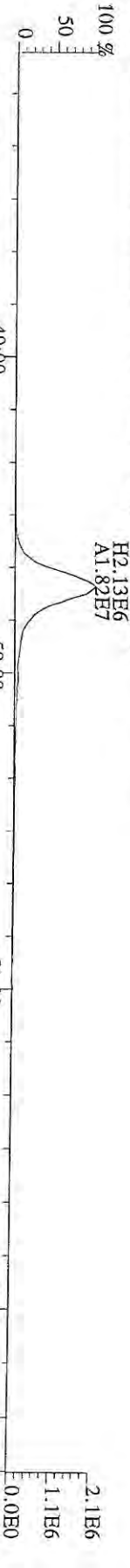
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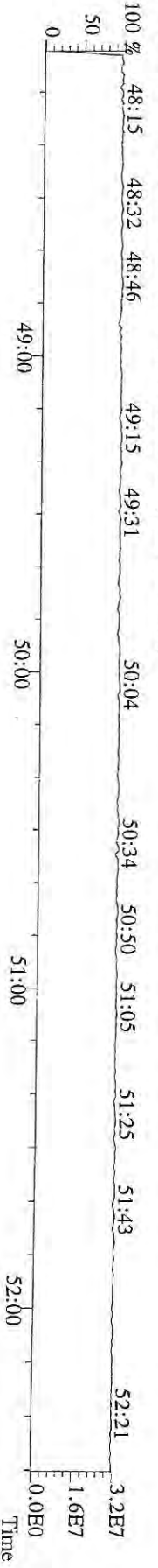
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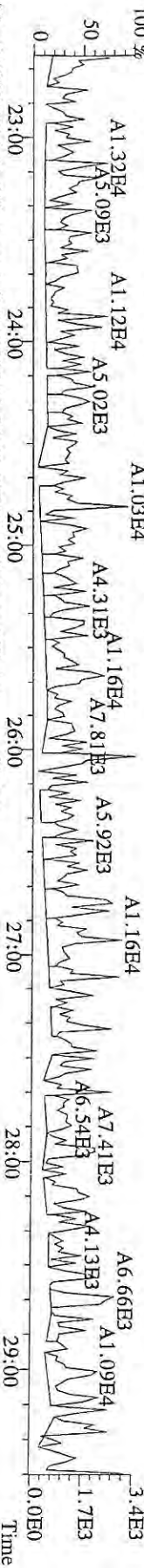
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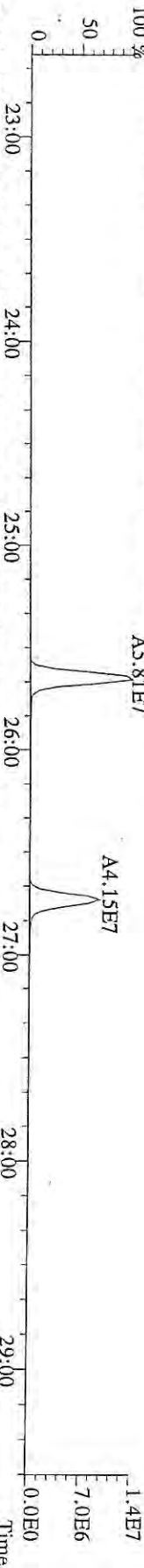
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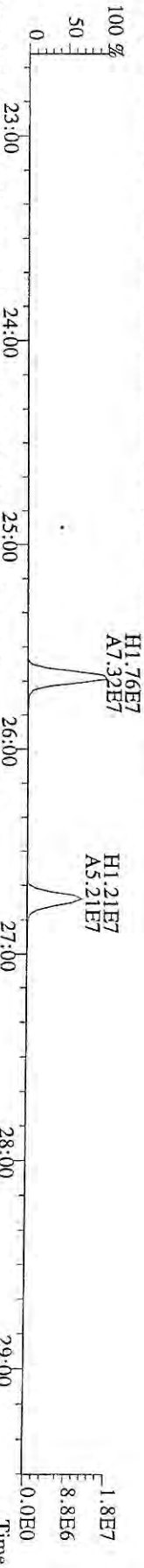
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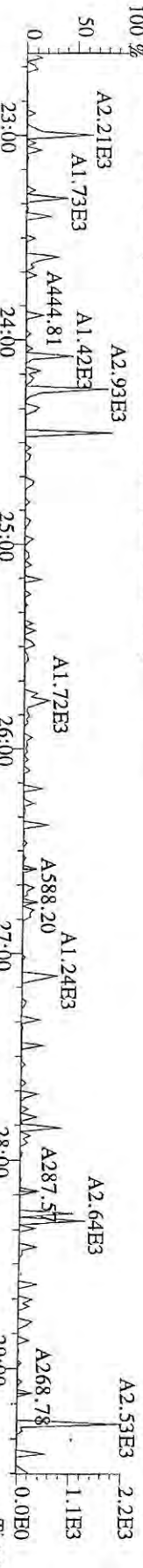
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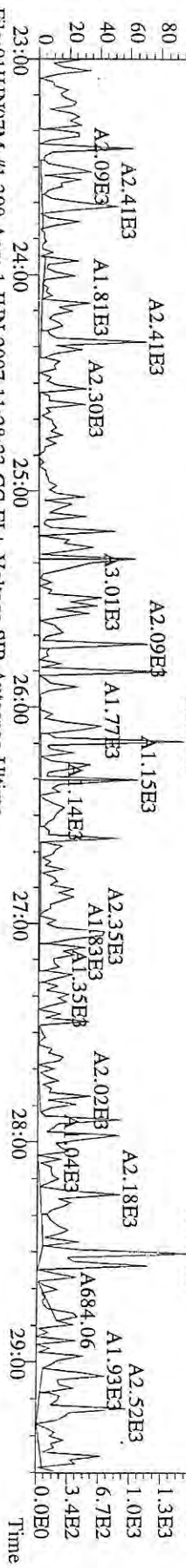


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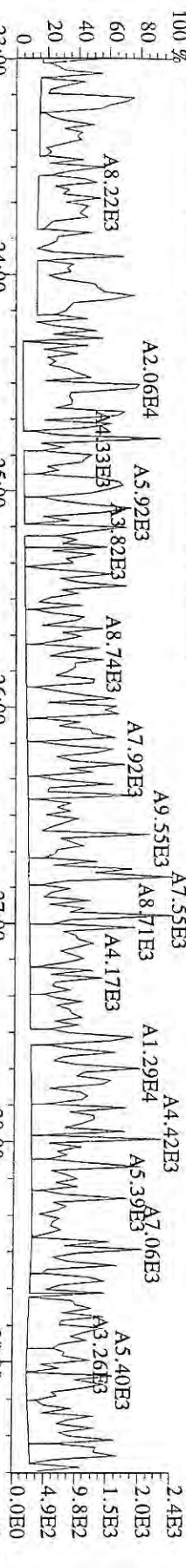




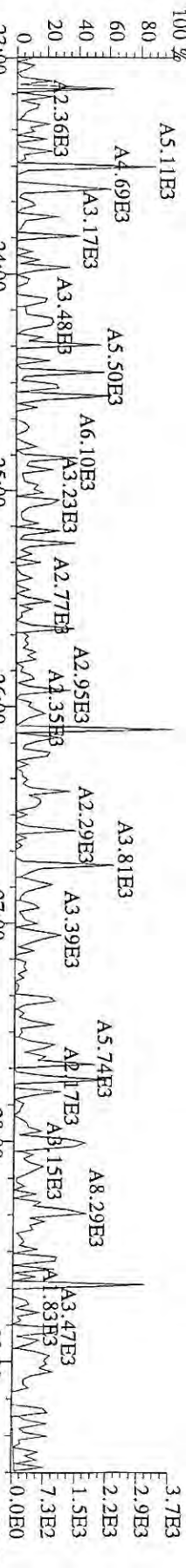
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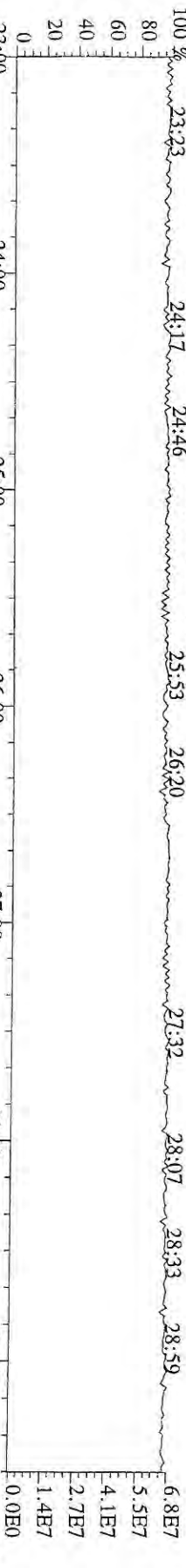
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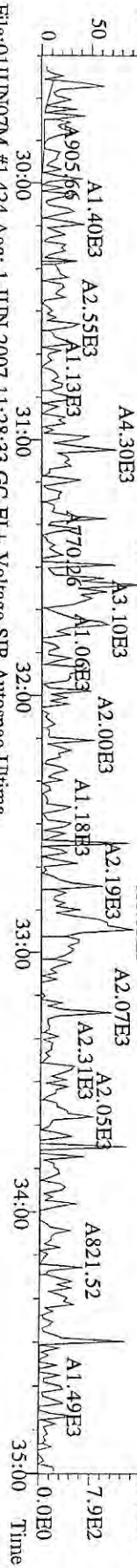
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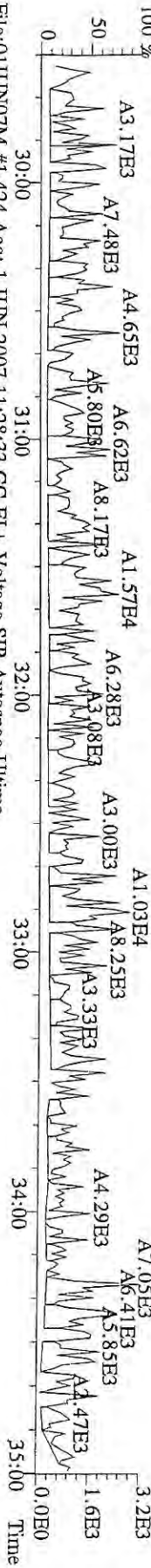
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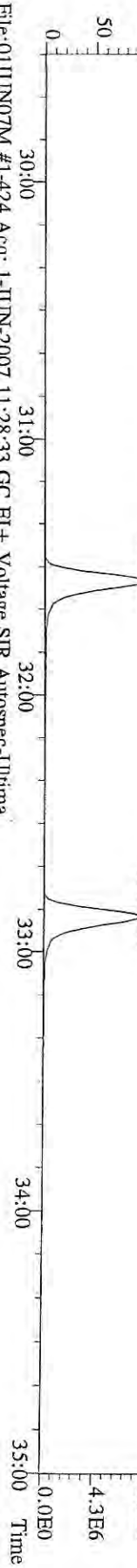
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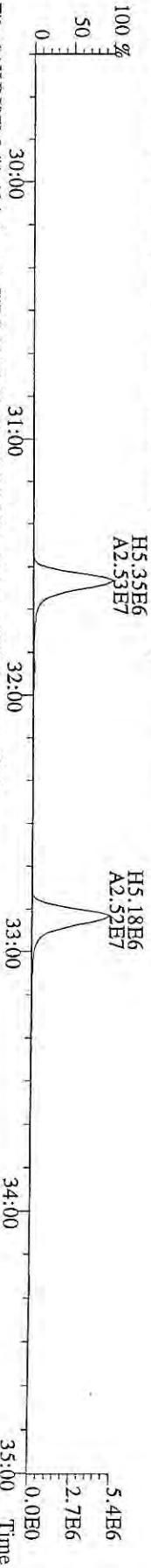
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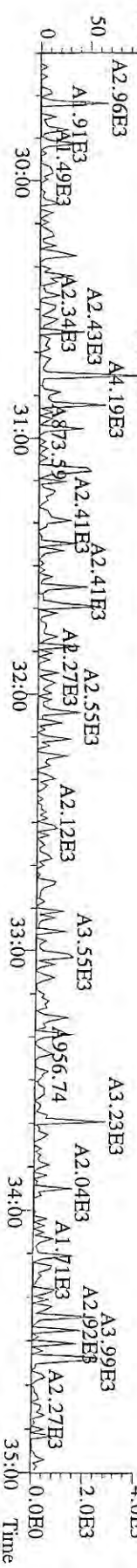
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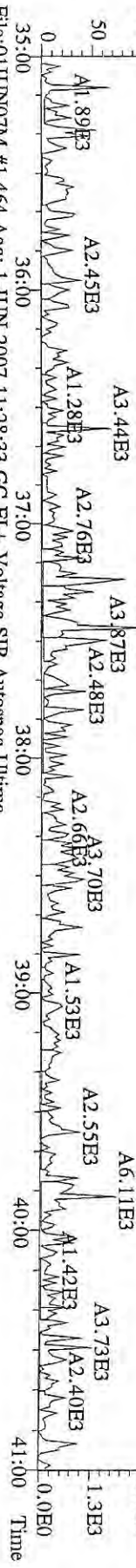


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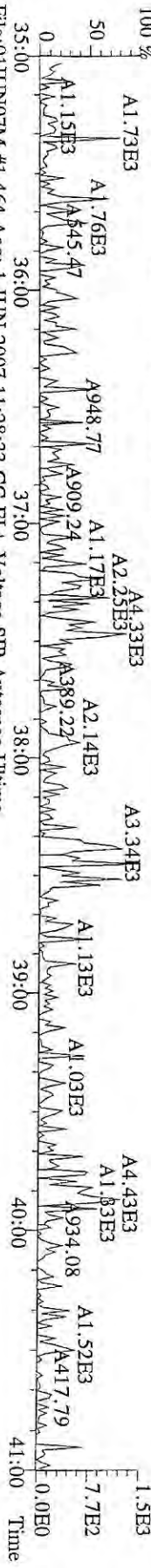


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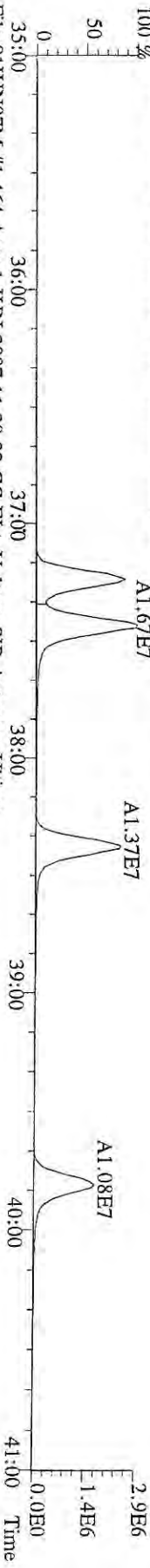
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373.8207 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
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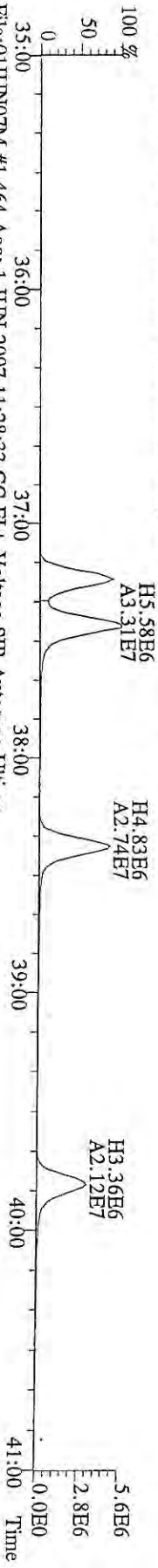
File:01JUN07M #1-464 Acq: 1-JUN-2007 11:28:33 GC EI+ Voltage SIR Autospec-Ultima  
375.8178 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-MB File Text:Frontier Analytical Laboratory



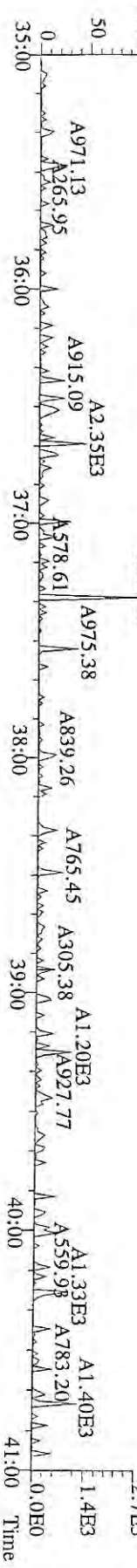
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383.8639 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-MB File Text:Frontier Analytical Laboratory



File:01JUN07M #1-464 Acq: 1-JUN-2007 11:28:33 GC EI+ Voltage SIR Autospec-Ultima  
385.8610 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
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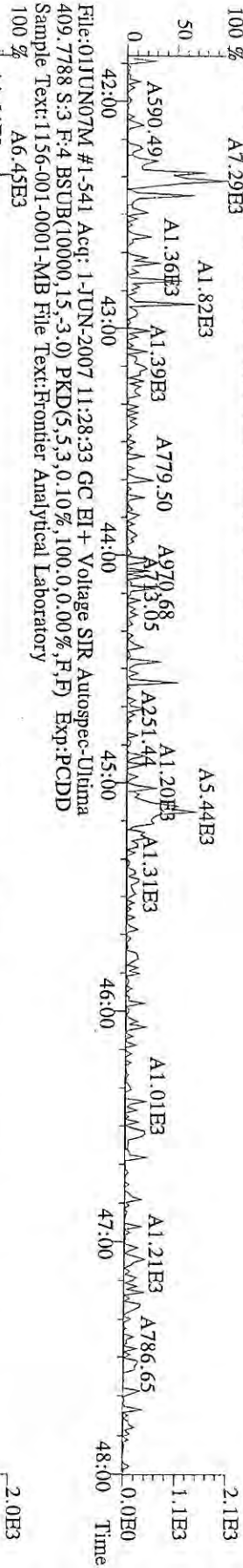
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445.7555 S:3 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
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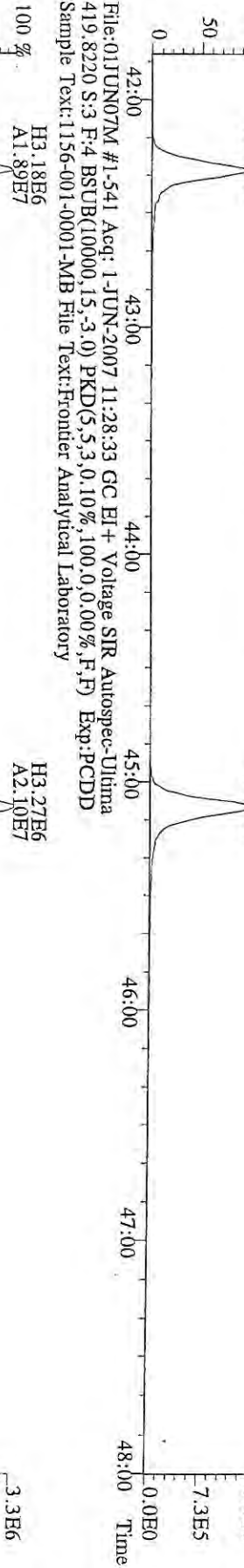
01JUN07M #1-464



File:01JUN07M #1-541 Acq: 1-JUN-2007 11:28:33 GC EI+ Voltage SIR Autospec-Ultima  
 407.7818 S:3 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) F,F) Exp:PCDD  
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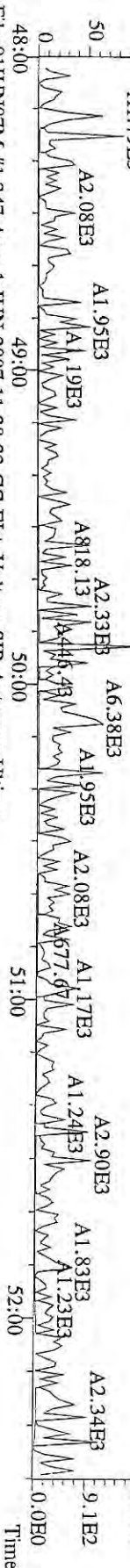
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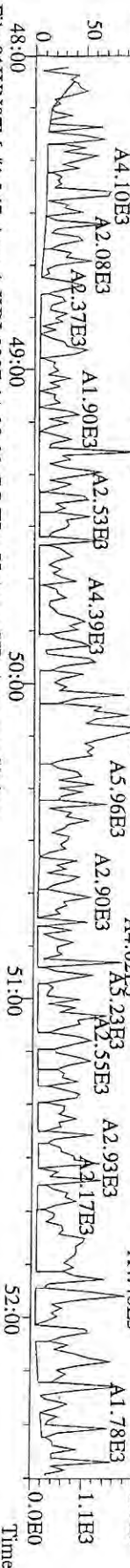
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 479.7165 S:3 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%) F,F) Exp:PCDD  
 Sample Text:1156-001-0001-MB File Text:Frontier Analytical Laboratory



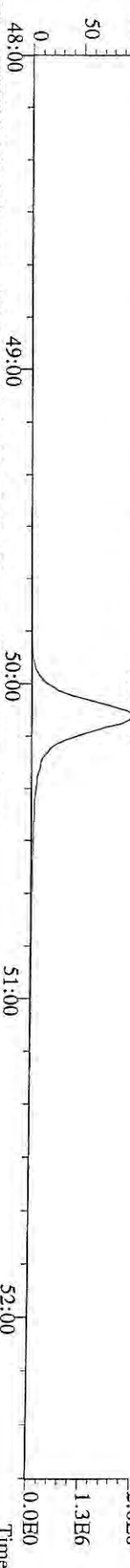
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 441.7428 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD  
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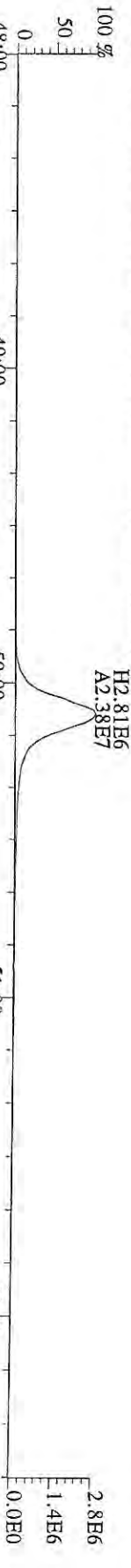
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 443.7398 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD  
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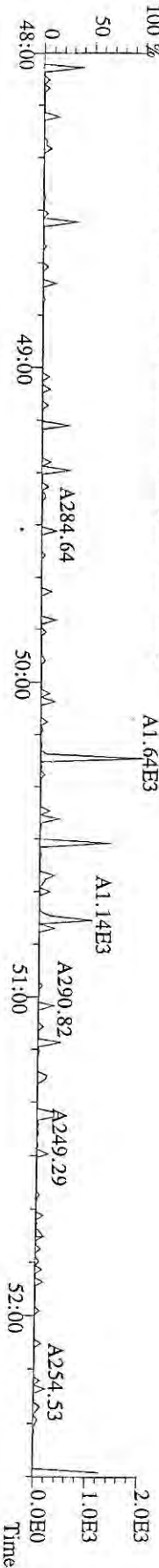
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 453.7831 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-MB File Text:Frontier Analytical Laboratory



File:01JUN07M #1-347 Acq: 1-JUN-2007 11:28:33 GC EI+ Voltage SIR Autospec-Utima  
 455.7801 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-MB File Text:Frontier Analytical Laboratory



File:01JUN07M #1-347 Acq: 1-JUN-2007 11:28:33 GC EI+ Voltage SIR Autospec-Utima  
 513.6775 S:3 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-MB File Text:Frontier Analytical Laboratory



EPA Method 8290  
FORM 8A  
PCDD/PCDF ONGOING PRECISION AND RECOVERY (OPR)

Lab Name: Frontier Analytical Laboratory      Episode No.:

Contract No.:      SAS No.:

Matrix (aqueous/solid/leachate): Soil      OPR Data Filename: 01JUN07M      Sam:2

Ext. Date: 5/30/07      Shift: Day      Analysis Date: 1-JUN-07      10:33:13

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT.

	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	OPR CONC. LIMITS (ng/mL)
NATIVE ANALYTES			
2,3,7,8-TCDD	10	9.38	7.00 - 13.0
1,2,3,7,8-PeCDD	50	48.9	35.0 - 65.0
1,2,3,4,7,8-HxCDD	50	49.4	35.0 - 65.0
1,2,3,6,7,8-HxCDD	50	50.0	35.0 - 65.0
1,2,3,7,8,9-HxCDD	50	44.5	35.0 - 65.0
1,2,3,4,6,7,8-HpCDD	50	48.7	35.0 - 65.0
OCDD	100	93.3	70.0 - 130
2,3,7,8-TCDF	10	9.19	7.00 - 13.0
1,2,3,7,8-PeCDF	50	49.7	35.0 - 65.0
2,3,4,7,8-PeCDF	50	49.3	35.0 - 65.0
1,2,3,4,7,8-HxCDF	50	49.2	35.0 - 65.0
1,2,3,6,7,8-HxCDF	50	47.9	35.0 - 65.0
2,3,4,6,7,8-HxCDF	50	47.6	35.0 - 65.0
1,2,3,7,8,9-HxCDF	50	48.1	35.0 - 65.0
1,2,3,4,6,7,8-HpCDF	50	47.4	35.0 - 65.0
1,2,3,4,7,8,9-HpCDF	50	48.1	35.0 - 65.0
OCDF	100	94.8	70.0 - 130

Analyst: 

Date: 6/4/07

EPA Method 8290  
FORM 88  
PCDD/PCDF ONGOING PRECISION AND RECOVERY (OPR)

Lab Name: Frontier Analytical Laboratory Episode No.:  
Contract No.: SAS No.:  
Matrix (aqueous/solid/leachate): Soil OPR Data Filename: 01JUN07M Sam:2  
Ext. Date: 5/30/07 Shift: Day Analysis Date: 1-JUN-07 10:33:13

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT.

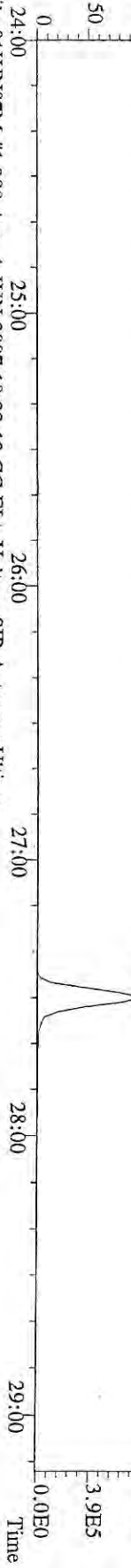
	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	OPR CONC. LIMITS (1) (ng/mL)
LABELED COMPOUNDS			
13C-2,3,7,8-TCDD	100	81.1	40.0 - 135.0
13C-1,2,3,7,8-PeCDD	100	73.4	40.0 - 135.0
13C-1,2,3,4,7,8-HxCDD	100	96.3	40.0 - 135.0
13C-1,2,3,6,7,8-HxCDD	100	109	40.0 - 135.0
13C-1,2,3,4,6,7,8-HpCDD	100	71.5	40.0 - 135.0
13C-OCDD	200	123	80.0 - 270
13C-2,3,7,8-TCDF	100	88.9	40.0 - 135.0
13C-1,2,3,7,8-PeCDF	100	73.2	40.0 - 135.0
13C-2,3,4,7,8-PeCDF	100	74.9	40.0 - 135.0
13C-1,2,3,4,7,8-HxCDF	100	104	40.0 - 135.0
13C-1,2,3,6,7,8-HxCDF	100	117	40.0 - 135.0
13C-2,3,4,6,7,8-HxCDF	100	101	40.0 - 135.0
13C-1,2,3,7,8,9-HxCDF	100	89.9	40.0 - 135.0
13C-1,2,3,4,6,7,8-HpCDF	100	79.4	40.0 - 135.0
13C-1,2,3,4,7,8,9-HpCDF	100	97.2	40.0 - 135.0
13C-OCDF	200	131	80.0 - 270
CLEANUP STANDARD			
37Cl-2,3,7,8-TCDD	40	31.8	10.0 - 60.0

Analyst: 

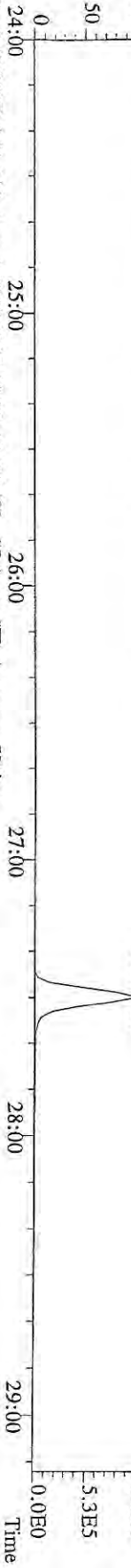
Date: 6/4/07



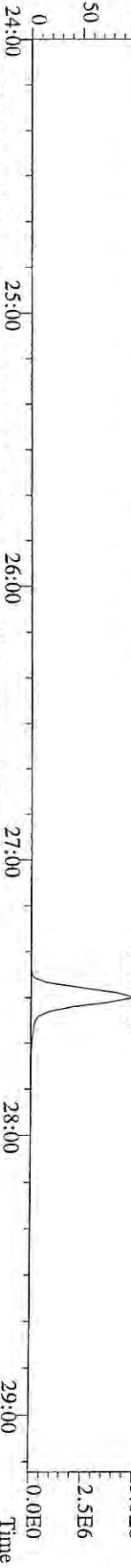
File:01JUN07M #1-390 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
319.8965 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
100 %



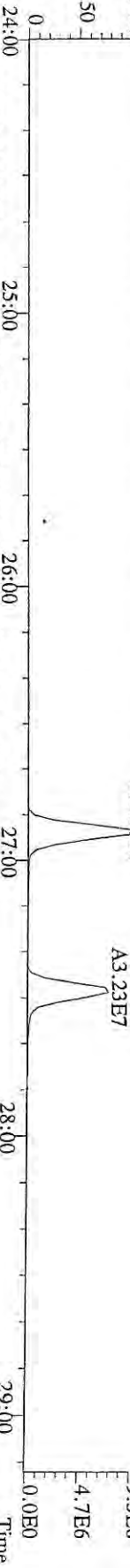
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321.8936 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
100 %



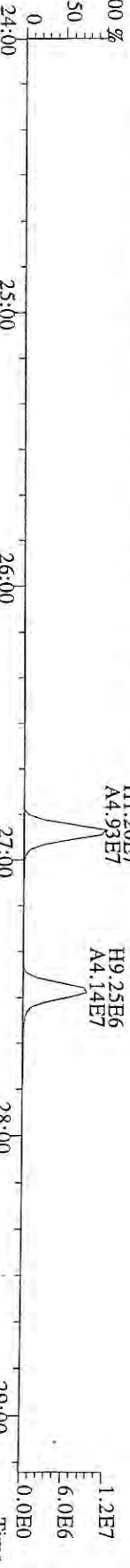
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327.8847 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
100 %



File:01JUN07M #1-390 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
331.9368 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
100 %



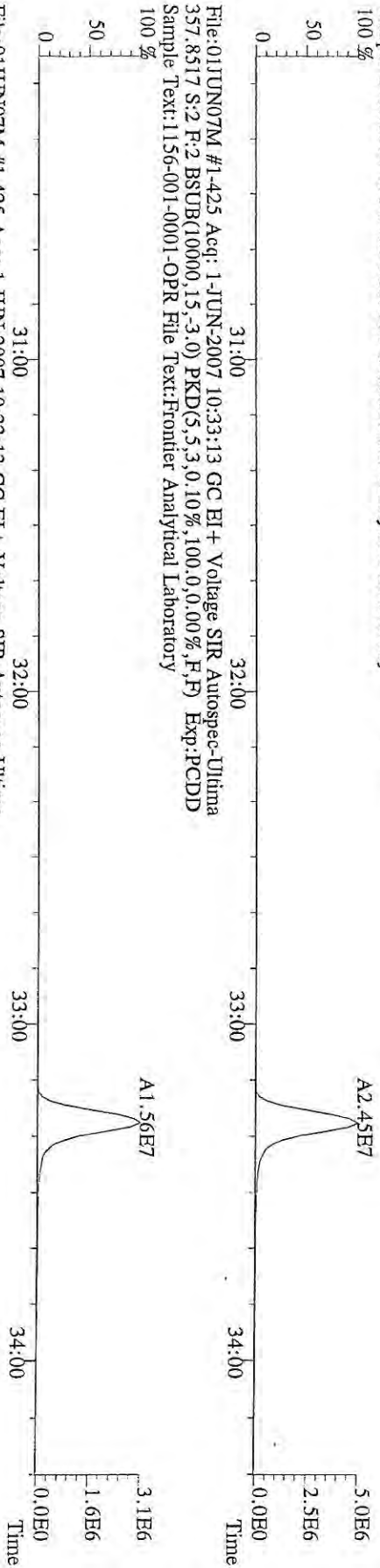
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333.9339 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD  
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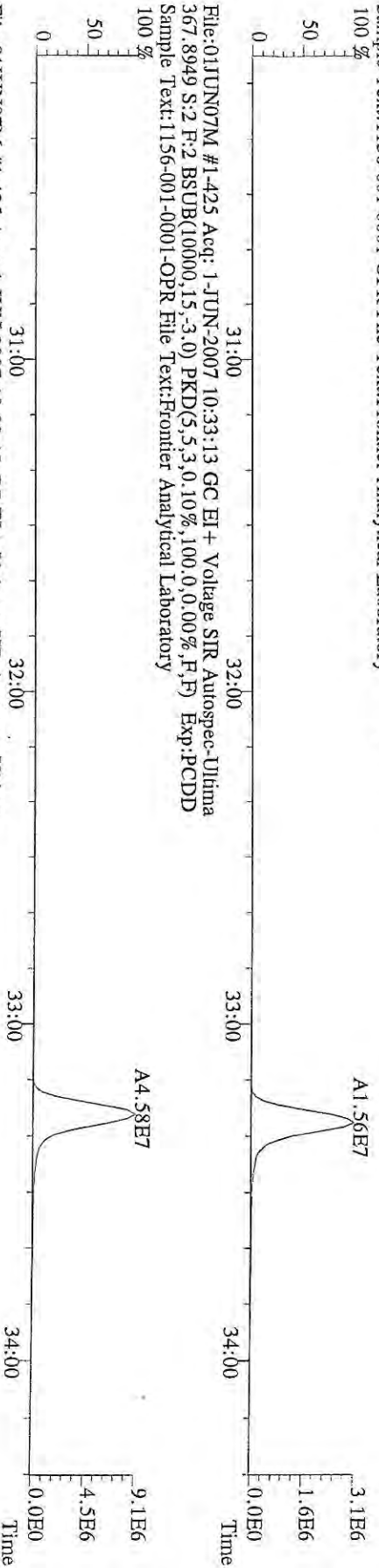
015555 1 000000



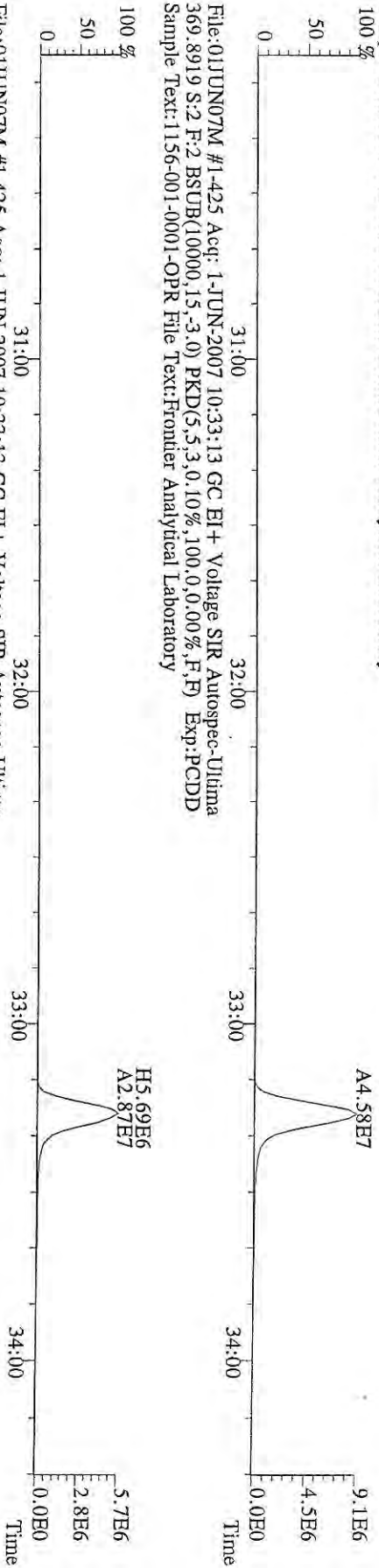
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355.8546 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
100 %



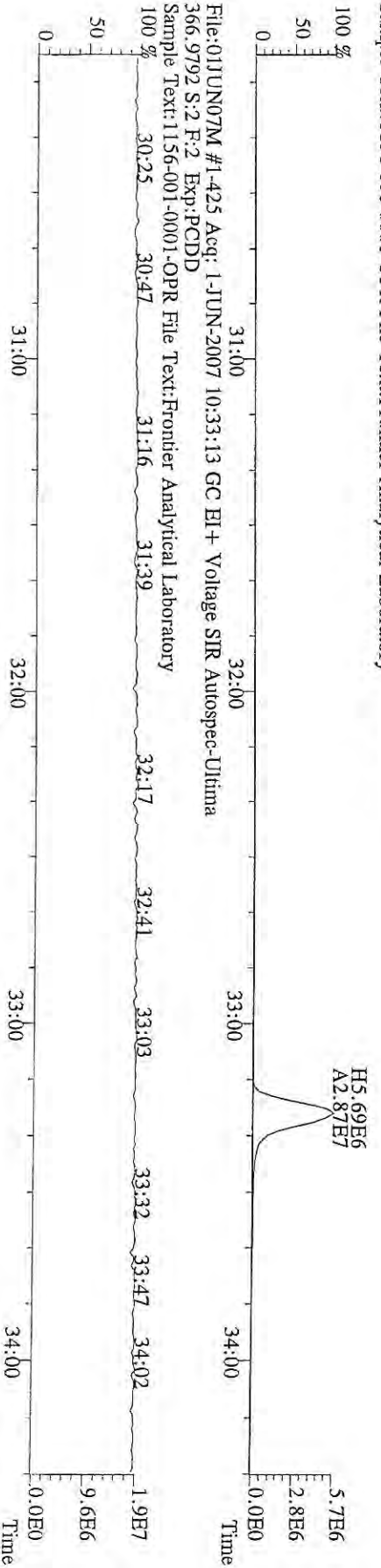
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357.8517 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
100 %



File:01JUN07M #1-425 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
367.8949 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
100 %



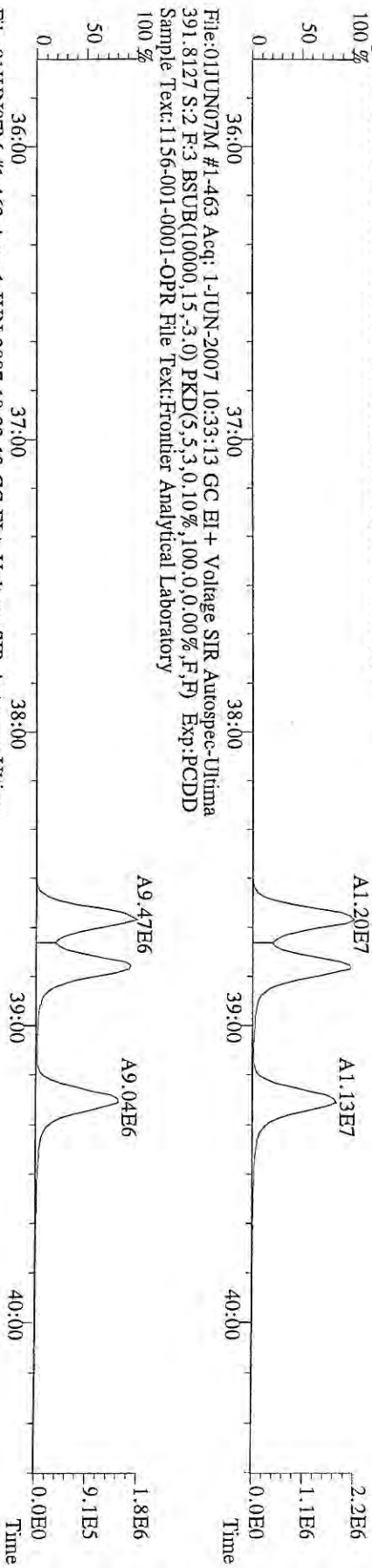
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369.8919 S:2 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
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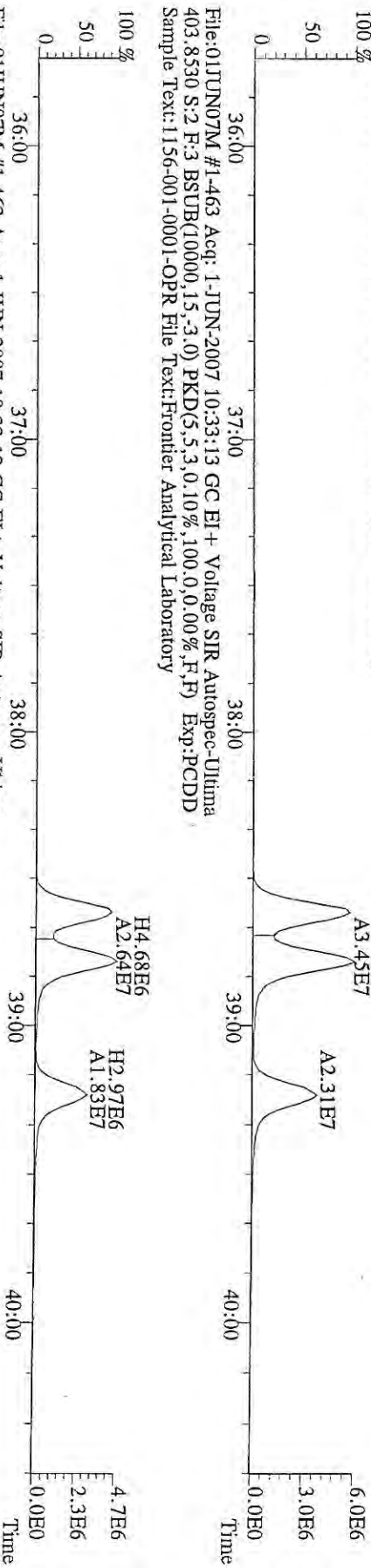
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366.9792 S:2 F:2 Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
100 %



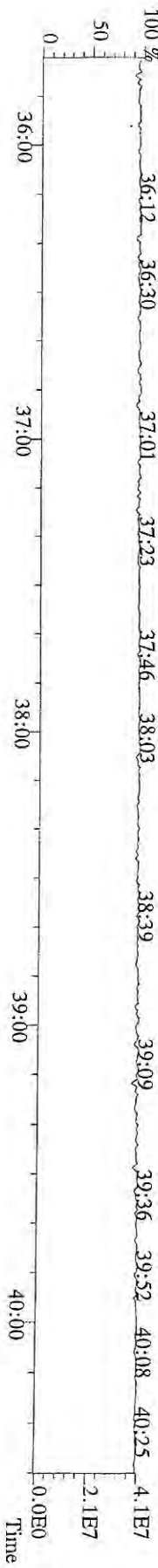
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389.8156 S:2 F:3 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,H) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



File:01JUN07M #1-463 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
401.8559 S:2 F:3 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,H) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



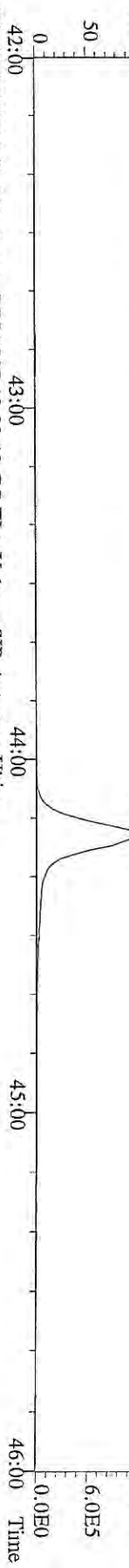
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380.9760 S:2 F:3 Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



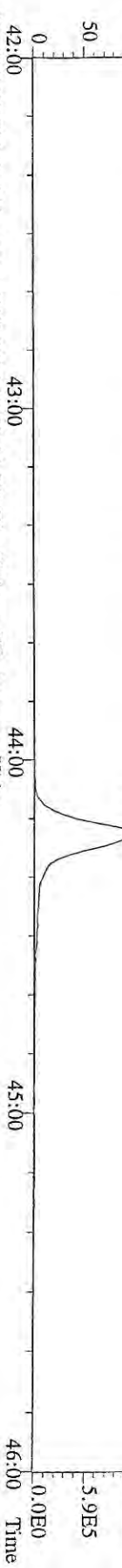
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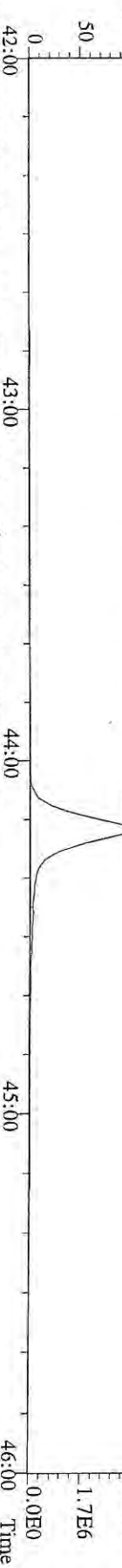
File:01JUN07M #1-541 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
423.7767 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD  
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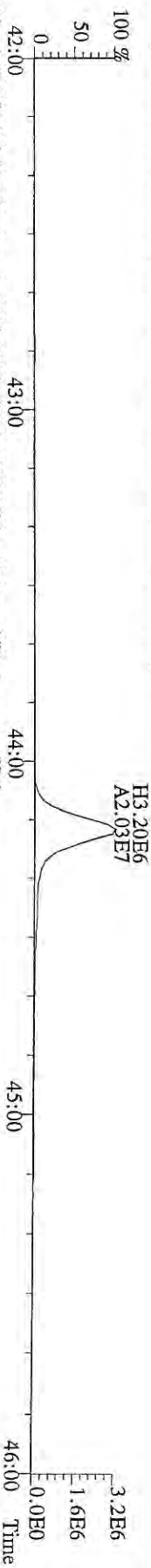
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425.7737 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD  
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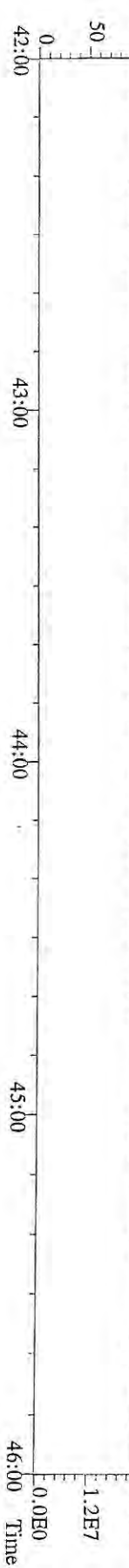
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435.8169 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



File:01JUN07M #1-541 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
437.8140 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory

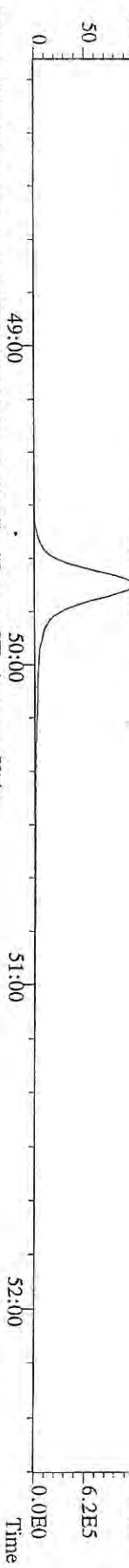


File:01JUN07M #1-541 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
430.9728 S:2 F:4 Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



PCDD 1156-001-0001

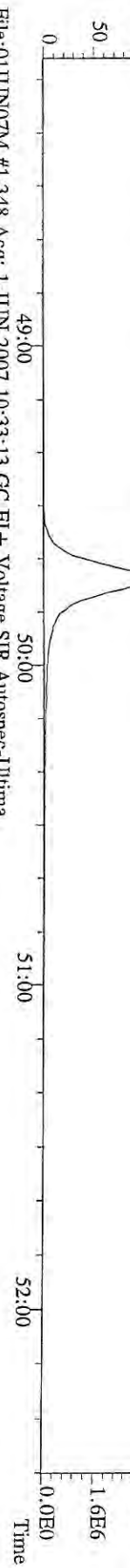
File:01JUN07M #1-348 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 457.7377 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



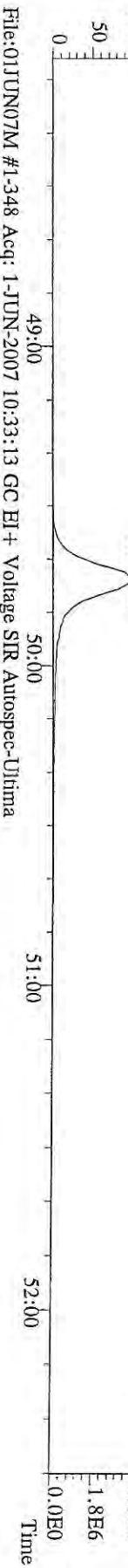
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 459.7348 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



File:01JUN07M #1-348 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 469.7780 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



File:01JUN07M #1-348 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 471.7750 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD  
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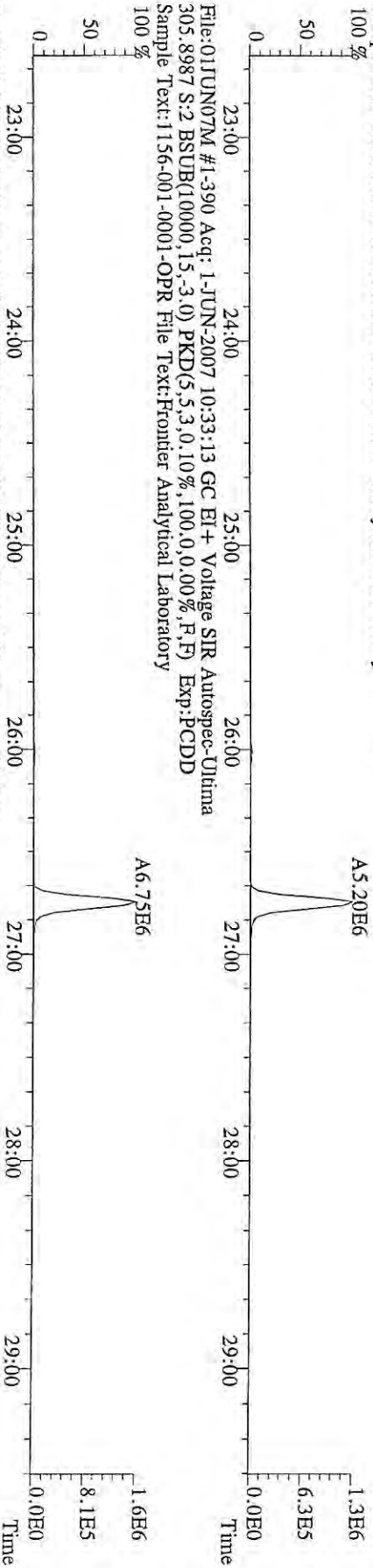


File:01JUN07M #1-348 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 454.9728 S:2 F:5 Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory

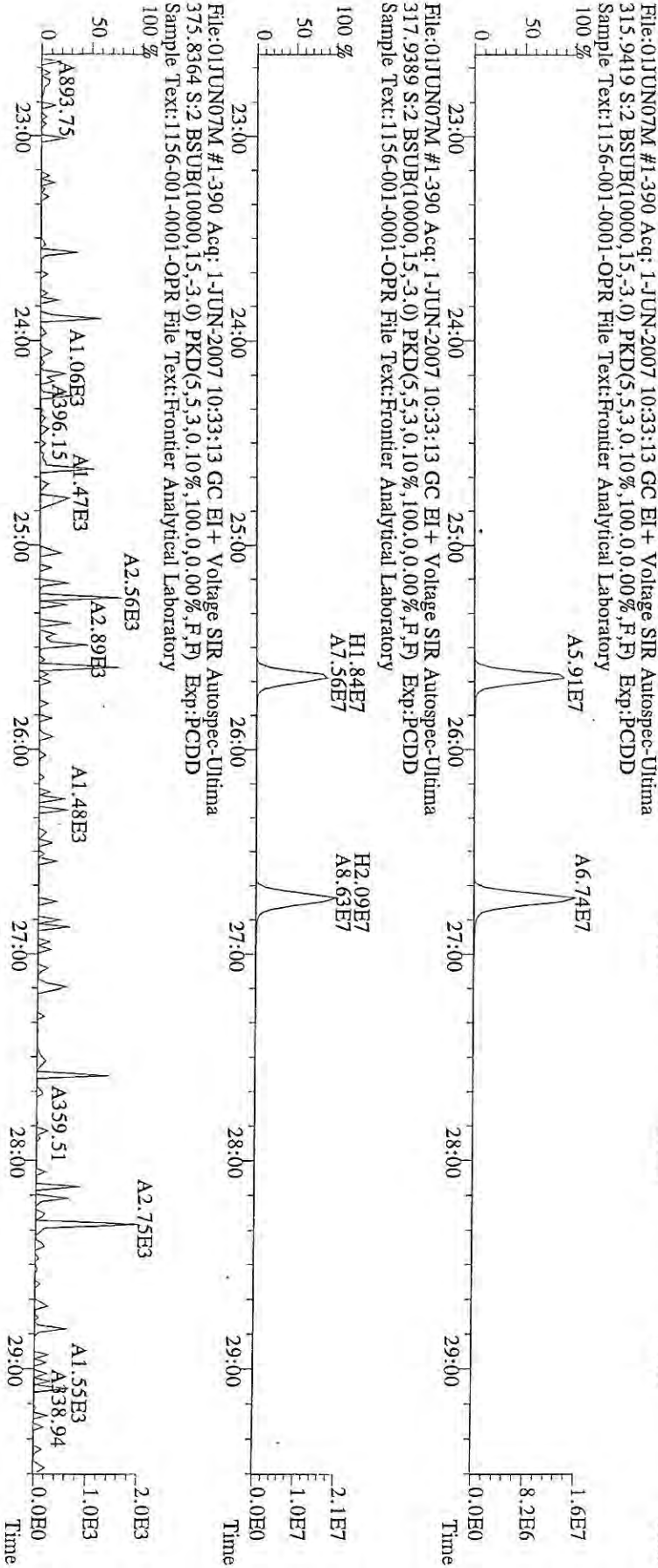


W2559 : 01 JUN 2007

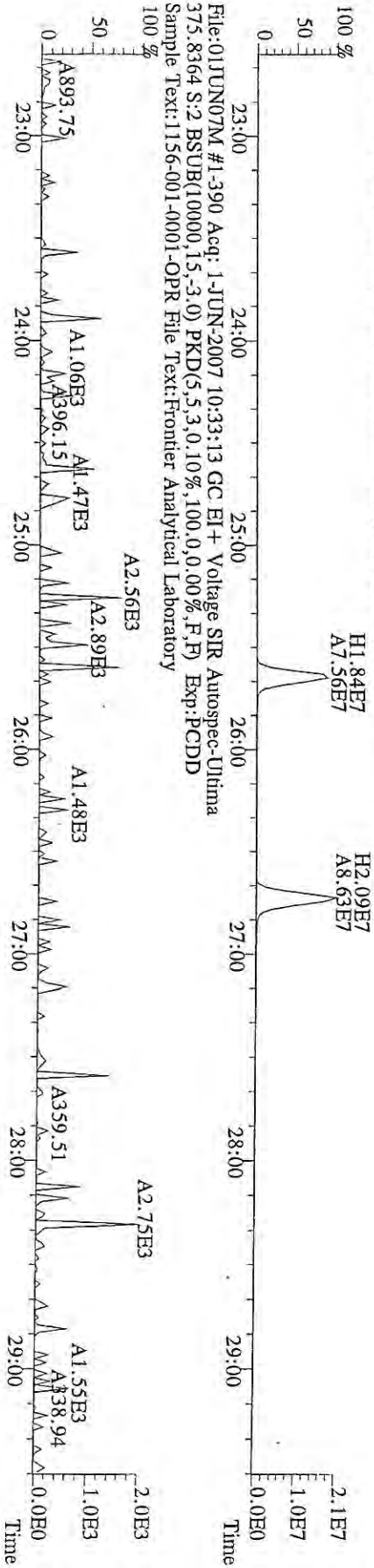
File:01JUN07M #1-390 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultime  
 303.9016 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



File:01JUN07M #1-390 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultime  
 315.9419 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory

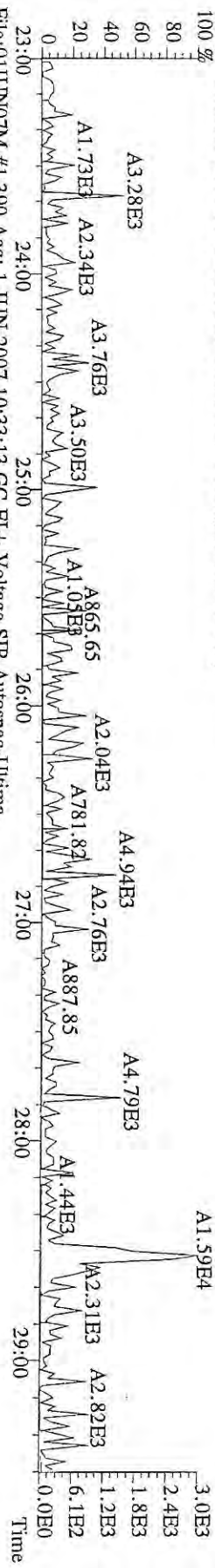


File:01JUN07M #1-390 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultime  
 317.9389 S:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory

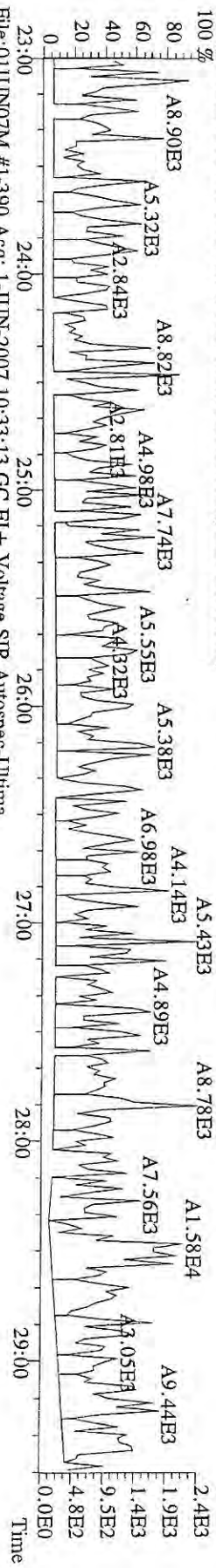


1156-001-0001-OPR

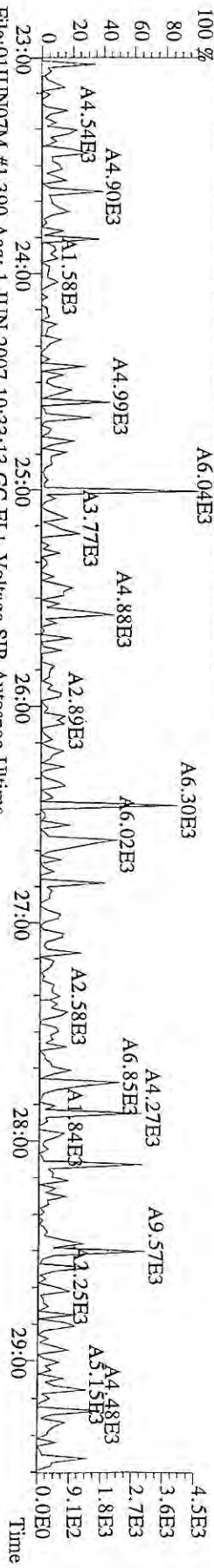
File:01JUN07M #1-390 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 339.8597 S:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



File:01JUN07M #1-390 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 341.8568 S:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



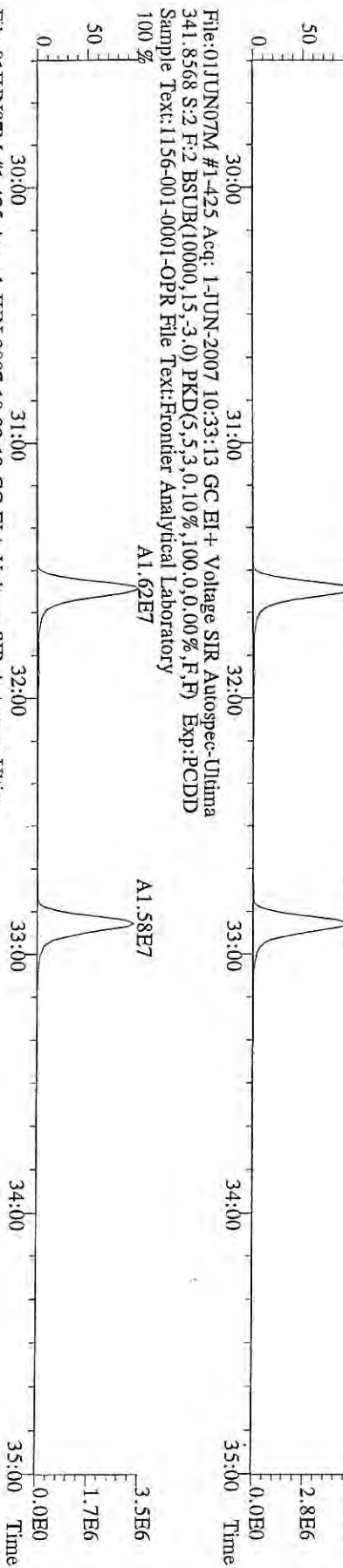
File:01JUN07M #1-390 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 409.7974 S:2 BSUB(10000,15,-3.0) PKD(5.5,3.0,10%,100.0,0.00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



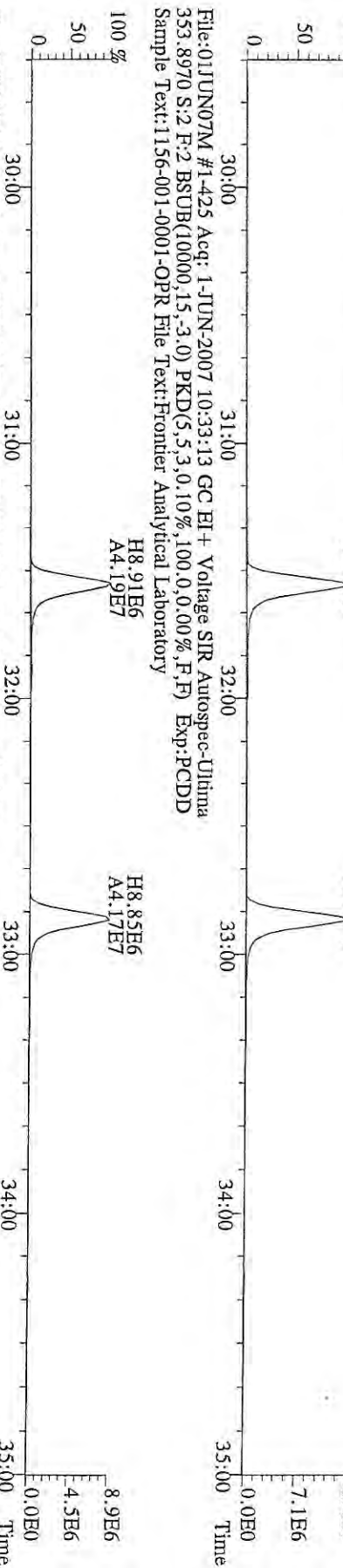
File:01JUN07M #1-390 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 330.9792 S:2 Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



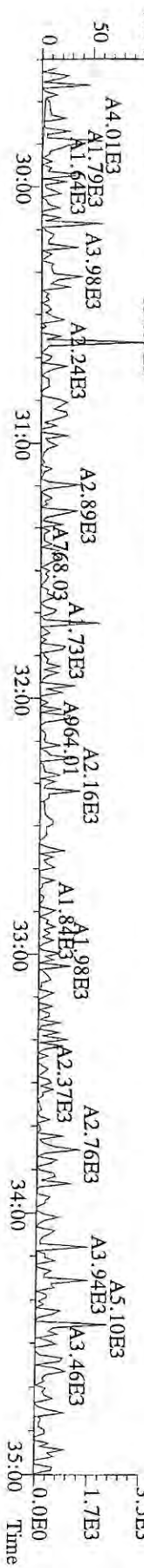
File:01JUN07M #1-425 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 339.8597 S:2 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



File:01JUN07M #1-425 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 351.9000 S:2 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory

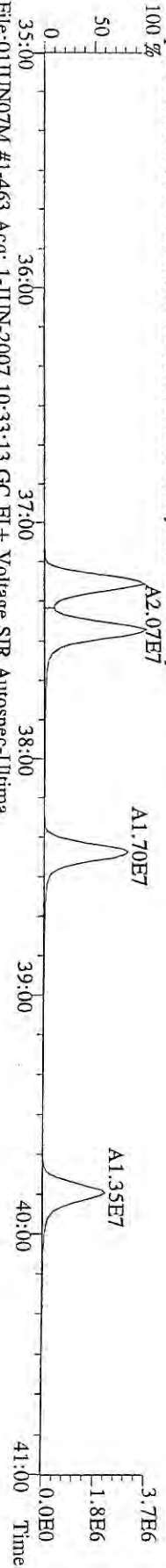


File:01JUN07M #1-425 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 409.7974 S:2 F:2 BSUB(10000,15,-3.0) PKD(5.5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory

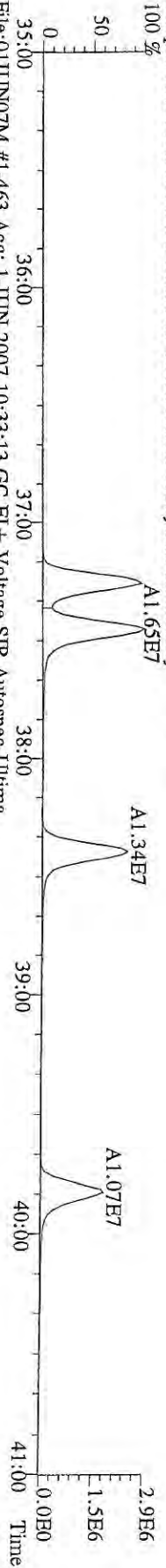




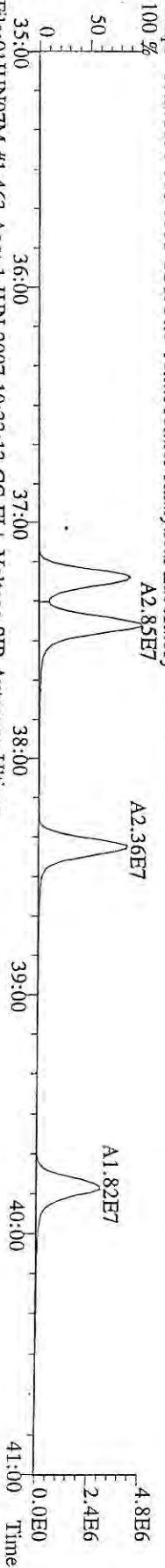
File:01JUN07M #1-463 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Utima  
 373.8207 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



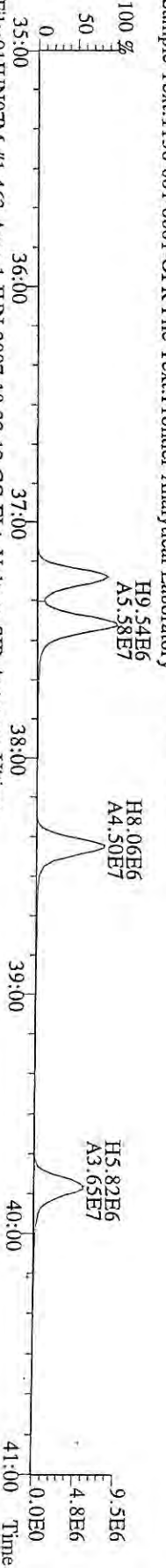
File:01JUN07M #1-463 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Utima  
 375.8178 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



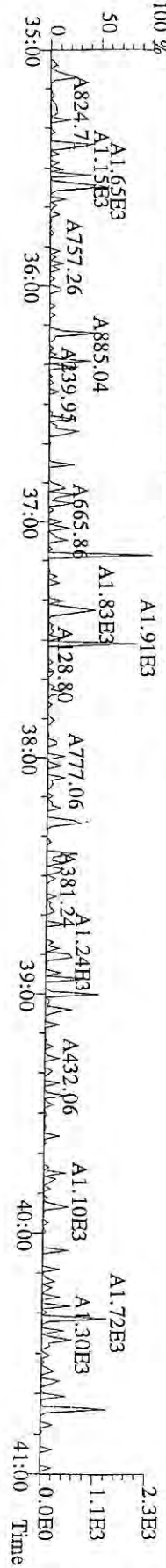
File:01JUN07M #1-463 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Utima  
 383.8639 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



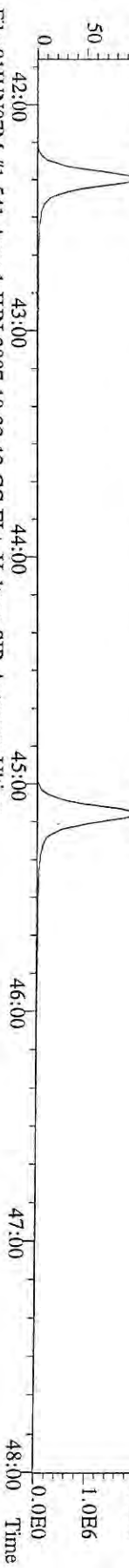
File:01JUN07M #1-463 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Utima  
 385.8610 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



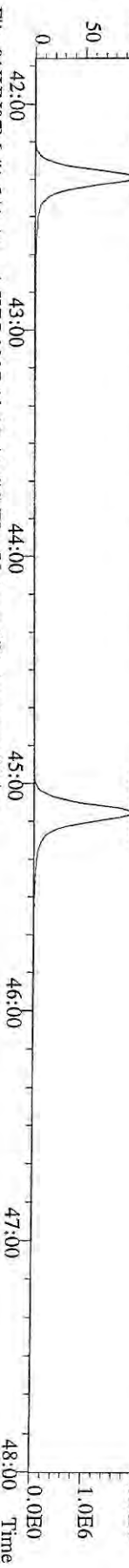
File:01JUN07M #1-463 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Utima  
 445.7555 S:2 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



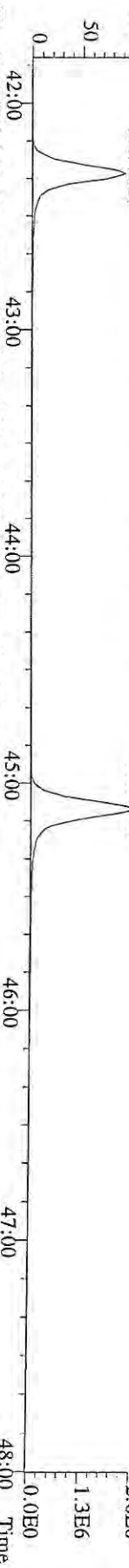
File:01JUN07M #1-541 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 407.7818 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
 100 % A1.23E7



File:01JUN07M #1-541 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 409.7788 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
 100 % A1.19E7



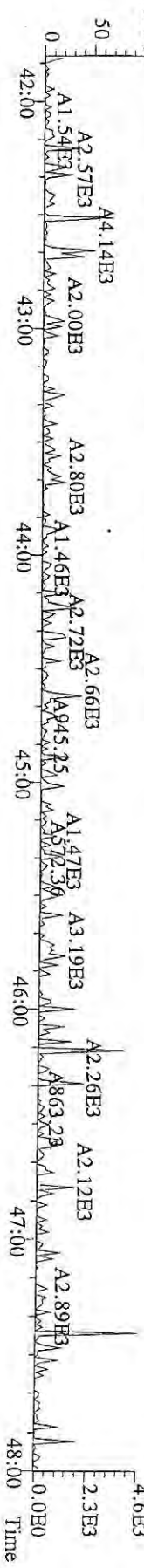
File:01JUN07M #1-541 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 417.8253 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
 100 % A1.42E7



File:01JUN07M #1-541 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 419.8220 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory

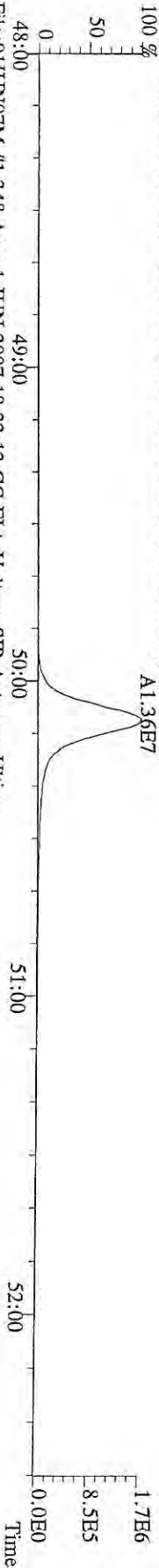


File:01JUN07M #1-541 Acq: 1-JUN-2007 10:33:13 GC EI+ Voltage SIR Autospec-Ultima  
 479.7165 S:2 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD  
 Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory  
 100 %

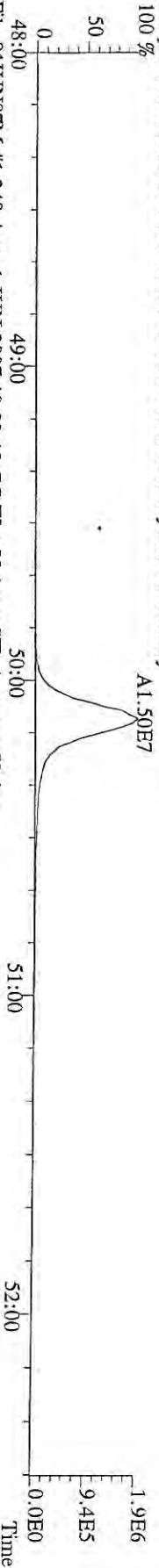


01 JUN 2007 10:33:13

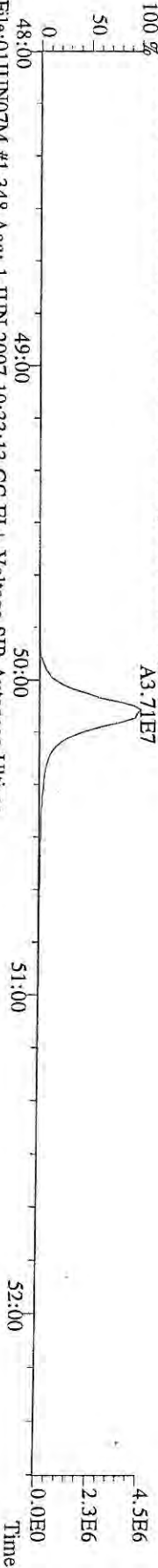
File:01JUN07M #1-348 Acq: 1-JUN-2007 10:33:13 GC EI + Voltage SIR Autospec-Ultima  
441.7428 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



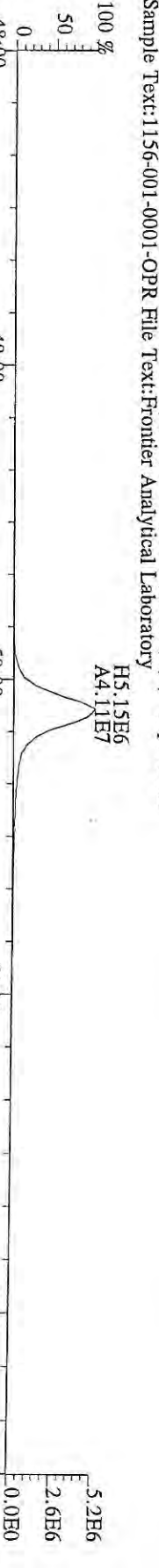
File:01JUN07M #1-348 Acq: 1-JUN-2007 10:33:13 GC EI + Voltage SIR Autospec-Ultima  
443.7398 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



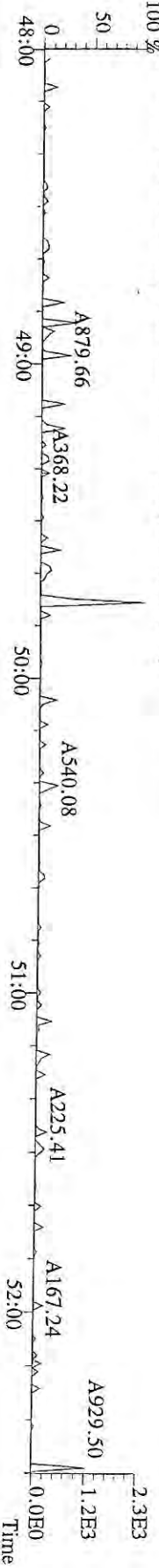
File:01JUN07M #1-348 Acq: 1-JUN-2007 10:33:13 GC EI + Voltage SIR Autospec-Ultima  
453.7831 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



File:01JUN07M #1-348 Acq: 1-JUN-2007 10:33:13 GC EI + Voltage SIR Autospec-Ultima  
455.7801 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



File:01JUN07M #1-348 Acq: 1-JUN-2007 10:33:13 GC EI + Voltage SIR Autospec-Ultima  
513.6775 S:2 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:1156-001-0001-OPR File Text:Frontier Analytical Laboratory



000026A of 000384A



Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise	DL	Rec
2,3,7,8-TCDD	1.25e+05	0.75 y	27:30	1.11	0.270	J	2.50	-	*	
1,2,3,7,8-PeCDD	6.22e+05	1.57 y	33:18	1.10	1.60	J	2.50	-	*	
1,2,3,4,7,8-HxCDD	8.02e+05	1.10 y	38:39	0.82	3.90		2.50	-	*	
1,2,3,6,7,8-HxCDD	3.27e+06	1.27 y	38:49	0.74	14.7		2.50	-	*	
1,2,3,7,8,9-HxCDD	1.79e+06	1.16 y	39:15	0.80	8.05		2.50	-	*	
1,2,3,4,6,7,8-HpCDD	6.01e+07	1.03 y	44:13	0.75	349		2.50	-	*	
OCDD	3.53e+08	0.89 y	49:46	0.80	2390		2.50	-	*	
2,3,7,8-TCDF	1.40e+06	0.75 y	26:45	0.85	2.04	F	2.50	-	*	
1,2,3,7,8-PeCDF	4.46e+05	1.59 y	31:35	0.78	1.05	J	2.50	-	*	
2,3,4,7,8-PeCDF	4.52e+05	1.60 y	32:55	0.76	1.13	J	2.50	-	*	
1,2,3,4,7,8-HxCDF	1.11e+06	1.31 y	37:16	1.02	3.45		2.50	-	*	
1,2,3,6,7,8-HxCDF	5.73e+05	1.24 y	37:27	0.92	1.50	J	2.50	-	*	
2,3,4,6,7,8-HxCDF	7.56e+05	1.32 y	38:24	0.93	2.39	J	2.50	-	*	
1,2,3,7,8,9-HxCDF	3.32e+05	1.20 y	39:53	0.92	1.30	J	2.50	-	*	
1,2,3,4,6,7,8-HpCDF	9.35e+06	1.03 y	42:20	1.10	34.8		2.50	-	*	
1,2,3,4,7,8,9-HpCDF	5.78e+05	0.95 y	45:08	0.99	2.08	J	2.50	-	*	
OCDF	1.75e+07	0.88 y	50:08	0.77	98.0		2.50	-	*	
13C-2,3,7,8-TCDD	8.20e+07	0.80 y	27:29	1.03	164					82.9
13C-1,2,3,7,8-PeCDD	6.96e+07	1.60 y	33:16	1.15	124					63.0
13C-1,2,3,4,7,8-HxCDD	4.98e+07	1.27 y	38:37	1.34	178					90.2
13C-1,2,3,6,7,8-HxCDD	5.95e+07	1.28 y	38:47	1.35	211					107
13C-1,2,3,4,6,7,8-HpCDD	4.52e+07	1.05 y	44:13	1.38	156					79.2
13C-OCDD	7.34e+07	0.89 y	49:45	1.10	319					80.8
13C-2,3,7,8-TCDF	1.61e+08	0.78 y	26:44	1.28	174					88.2
13C-1,2,3,7,8-PeCDF	1.08e+08	1.59 y	31:33	1.10	136					68.7
13C-2,3,4,7,8-PeCDF	1.04e+08	1.61 y	32:52	1.07	135					68.4
13C-1,2,3,4,7,8-HxCDF	6.23e+07	0.51 y	37:14	1.56	191					96.8
13C-1,2,3,6,7,8-HxCDF	8.18e+07	0.51 y	37:27	1.74	225					114
13C-2,3,4,6,7,8-HxCDF	6.72e+07	0.53 y	38:23	1.65	195					98.7
13C-1,2,3,7,8,9-HxCDF	5.49e+07	0.50 y	39:48	1.47	178					90.3
13C-1,2,3,4,6,7,8-HpCDF	4.84e+07	0.44 y	42:19	1.42	163					82.5
13C-1,2,3,4,7,8,9-HpCDF	5.57e+07	0.43 y	45:07	1.34	199					101
13C-OCDF	9.13e+07	0.91 y	50:07	1.44	303					76.6
37Cl-2,3,7,8-TCDD	2.29e+07		27:30	0.77	61.7					78.1
13C-1,2,3,4-TCDD	9.59e+07	0.80 y	26:55	-	11.2					
13C-1,2,3,4-TCDF	1.42e+08	0.78 y	25:39	-	10.9					
13C-1,2,3,7,8,9-HxCDD	4.13e+07	1.26 y	39:14	-	5.64					
Total Tetra-Dioxins	2.37e+07		24:30	1.11	51.2		2.50	-	*	12
Total Penta-Dioxins	1.61e+07		30:20	1.10	41.4		2.50	-	*	10
Total Hexa-Dioxins	4.60e+07		36:12	0.79	212		2.50	-	*	8
Total Hepta-Dioxins	1.79e+08		42:51	0.75	1040		2.50	-	*	2
Total Tetra-Furans	1.01e+07		23:10	0.85	14.7	D,M	2.50	-	*	23
1st Fn. Tot Penta-Furans	7.21e+06		28:33	0.77	17.5	D,M	2.50	-	*	1 PeCDF
Total Penta-Furans	5.39e+06		30:10	0.77	13.0	D,M	2.50	-	*	11 30.5
Total Hexa-Furans	2.78e+07		35:20	0.95	87.3	D,M	2.50	-	*	10
Total Hepta-Furans	3.57e+07		42:20	1.04	131		2.50	-	*	4

OK Dioxins

Analyst: [Signature]      Date: 6/19/07

Totals class: Total Tetra-Dioxins

Entry #: 38

Run: 16

File: 01JUN07M

S: 12 I: 1 F: 1

Acquired: 1-JUN-07 19:46:28

Total Concentration: 51.2

Unnamed Concentration: 50.945

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
24:30	4.90e+06	6.37e+06	0.77 y	1.13e+07	24.4	
24:48	2.93e+06	3.92e+06	0.75 y	6.84e+06	14.8	
25:06	6.22e+04	8.02e+04	0.78 y	1.42e+05	0.308	
25:52	1.81e+05	2.17e+05	0.83 y	3.98e+05	0.861	
26:03	2.86e+05	3.83e+05	0.75 y	6.68e+05	1.45	
26:11	5.34e+04	7.07e+04	0.76 y	1.24e+05	0.269	
26:35	5.62e+04	7.17e+04	0.78 y	1.28e+05	0.277	
26:56	1.33e+06	1.74e+06	0.77 y	3.07e+06	6.64	
27:15	3.41e+05	4.53e+05	0.75 y	7.94e+05	1.72	
27:30	5.33e+04	7.15e+04	0.75 y	1.25e+05	0.270	2,3,7,8-TCDD
27:48	3.53e+04	4.82e+04	0.73 y	8.35e+04	0.181	
28:12	1.63e+04	2.09e+04	0.78 y	3.72e+04	0.0805	

Totals class: Total Penta-Dioxins

Entry #: 39

Run: 16

File: 01JUN07M

S: 12 I: 1 F: 2

Acquired: 1-JUN-07 19:46:28

Total Concentration: 41.4

Unnamed Concentration: 39.845

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:20	2.32e+06	1.47e+06	1.58 y	3.79e+06	9.78	
30:56	1.92e+05	1.29e+05	1.49 y	3.21e+05	0.829	
31:33	2.83e+06	1.73e+06	1.63 y	4.56e+06	11.8	
31:46	3.83e+05	2.44e+05	1.57 y	6.27e+05	1.62	
31:56	2.54e+06	1.60e+06	1.58 y	4.14e+06	10.7	
32:13	3.08e+05	2.02e+05	1.53 y	5.10e+05	1.32	
32:41	7.96e+05	4.77e+05	1.67 y	1.27e+06	3.28	
33:18	3.80e+05	2.42e+05	1.57 y	6.22e+05	1.60	1,2,3,7,8-PeCDD
33:24	6.82e+04	4.74e+04	1.44 y	1.16e+05	0.298	
33:53	6.91e+04	3.93e+04	1.76 y	1.08e+05	0.280	

Totals class: Total Hexa-Dioxins

Entry #: 40

Run: 16

File: 01JUN07M

S: 12 I: 1 F: 3

Acquired: 1-JUN-07 19:46:28

Total Concentration: 212

Unnamed Concentration: 184.937

RT	mL Resp	m2 Resp	RA	Resp	Concentration	Name
36:12	1.00e+07	8.02e+06	1.25 y	1.80e+07	83.1	
37:07	6.05e+06	4.84e+06	1.25 y	1.09e+07	50.2	
37:33	5.43e+06	4.34e+06	1.25 y	9.77e+06	45.0	
37:44	6.04e+05	5.42e+05	1.12 y	1.15e+06	5.28	
38:39	4.20e+05	3.82e+05	1.10 y	8.02e+05	3.90	1,2,3,4,7,8-HxCDD
38:49	1.83e+06	1.44e+06	1.27 y	3.27e+06	14.7	1,2,3,6,7,8-HxCDD
39:06	1.71e+05	1.39e+05	1.24 y	3.10e+05	1.43	
39:15	9.60e+05	8.27e+05	1.16 y	1.79e+06	8.05	1,2,3,7,8,9-HxCDD

Totals class: Total Hepta-Dioxins

Entry #: 41

Run: 16

File: 01JUN07M

S: 12 I: 1 F: 4

Acquired: 1-JUN-07 19:46:28

Total Concentration: 1040

Unnamed Concentration: 688.694

RT	mL Resp	m2 Resp	RA	Resp	Concentration	Name
42:51	6.02e+07	5.84e+07	1.03 y	1.19e+08	689	
44:13	3.06e+07	2.96e+07	1.03 y	6.01e+07	349	1,2,3,4,6,7,8-HpCDD

Totals class: Total Tetra-Furans

Entry #: 42

Run: 16

File: 01JUN07M

S: 12 I: 1 F: 1

Acquired: 1-JUN-07 19:46:28

Total Concentration: 14.7

Unnamed Concentration: 12.642

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
23:10	9.56e+04	1.34e+05	0.71 y	2.30e+05	0.333	
23:31	9.01e+04	1.29e+05	0.70 y	2.19e+05	0.318	
23:55	4.77e+05	6.42e+05	0.74 y	1.12e+06	1.62	
24:18	3.52e+05	4.63e+05	0.76 y	8.15e+05	1.18	
24:32	3.71e+05	4.96e+05	0.75 y	8.67e+05	1.26	
24:51	2.35e+05	3.01e+05	0.78 y	5.35e+05	0.776	
24:56	7.67e+04	1.04e+05	0.74 y	1.80e+05	0.262	
25:05	1.08e+05	1.43e+05	0.76 y	2.51e+05	0.364	
25:26	1.45e+05	2.06e+05	0.70 y	3.51e+05	0.509	
25:33	2.22e+05	3.01e+05	0.74 y	5.23e+05	0.759	
25:40	3.32e+05	4.46e+05	0.75 y	7.79e+05	1.13	
26:02	3.79e+05	4.86e+05	0.78 y	8.66e+05	1.26	
26:15	8.39e+04	1.00e+05	0.84 y	1.84e+05	0.267	
26:23	6.60e+04	9.73e+04	0.68 y	1.63e+05	0.237	
26:39	1.75e+05	2.36e+05	0.74 y	4.10e+05	0.595	
26:45	5.99e+05	8.04e+05	0.75 y	1.40e+06	2.04	2,3,7,8-TCDF
27:05	2.28e+05	3.03e+05	0.75 y	5.31e+05	0.771	
27:17	2.71e+04	3.70e+04	0.73 y	6.41e+04	0.0929	
27:35	1.58e+04	2.16e+04	0.73 y	3.74e+04	0.0543	
27:56	3.11e+04	4.09e+04	0.76 y	7.20e+04	0.104	
28:09	2.39e+04	3.49e+04	0.68 y	5.87e+04	0.0852	
28:34	1.25e+05	1.74e+05	0.72 y	2.99e+05	0.434	
28:40	7.17e+04	8.84e+04	0.81 y	1.60e+05	0.232	

Totals class: 1st Fn. Tot Penta-Furans      Entry #: 43

Run: 16      File: 01JUN07M      S: 12 I: 1 F: 1  
Acquired: 1-JUN-07 19:46:28

Total Concentration: 17.5      Unnamed Concentration: 17.473

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
28:33	4.43e+06	2.78e+06	1.59 y	7.21e+06	17.5	

Totals class: Total Penta-Furans

Entry #: 44

Run: 16 File: 01JUN07M  
Acquired: 1-JUN-07 19:46:28

S: 12 I: 1 F: 2

Total Concentration: 13.0

Unnamed Concentration: 10.865

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:10	1.86e+05	1.14e+05	1.63 y	3.01e+05	0.728	
30:20	1.18e+06	7.87e+05	1.50 y	1.96e+06	4.76	
31:01	4.19e+05	2.74e+05	1.53 y	6.94e+05	1.68	
31:20	1.21e+05	7.49e+04	1.62 y	1.96e+05	0.475	
31:35	2.74e+05	1.73e+05	1.59 y	4.46e+05	1.05	1,2,3,7,8-PeCDF
31:48	6.99e+04	4.60e+04	1.52 y	1.16e+05	0.281	
31:54	3.11e+05	1.90e+05	1.63 y	5.02e+05	1.21	
32:06	5.68e+04	4.22e+04	1.35 y	9.90e+04	0.240	
32:44	6.78e+04	5.03e+04	1.35 y	1.18e+05	0.286	
32:55	2.78e+05	1.74e+05	1.60 y	4.52e+05	1.13	2,3,4,7,8-PeCDF
32:56	3.09e+05	1.89e+05	1.63 y	4.98e+05	1.21	



Totals class: Total Hexa-Furans

Entry #: 45

Run: 16

File: 01JUN07M

S: 12 I: 1 F: 3

Acquired: 1-JUN-07 19:46:28

Total Concentration: 87.3

Unnamed Concentration: 78.629

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
35:20	1.63e+06	1.29e+06	1.26 y	2.91e+06	9.14	
35:35	4.79e+06	3.80e+06	1.26 y	8.59e+06	27.0	
36:10	1.24e+05	8.70e+04	1.42 y	2.11e+05	0.662	
36:29	7.23e+06	5.74e+06	1.26 y	1.30e+07	40.7	
37:05	8.62e+04	6.88e+04	1.25 y	1.55e+05	0.487	
37:16	6.26e+05	4.79e+05	1.31 y	1.11e+06	3.45	1,2,3,4,7,8-HxCDF
37:27	3.17e+05	2.55e+05	1.24 y	5.73e+05	1.50	1,2,3,6,7,8-HxCDF
38:07	1.23e+05	9.72e+04	1.26 y	2.20e+05	0.691	
38:24	4.30e+05	3.26e+05	1.32 y	7.56e+05	2.39	2,3,4,6,7,8-HxCDF
39:53	1.81e+05	1.51e+05	1.20 y	3.32e+05	1.30	1,2,3,7,8,9-HxCDF

Totals class: Total Hepta-Furans

Entry #: 46

Run: 16

File: 01JUN07M

S: 12 I: 1 F: 4

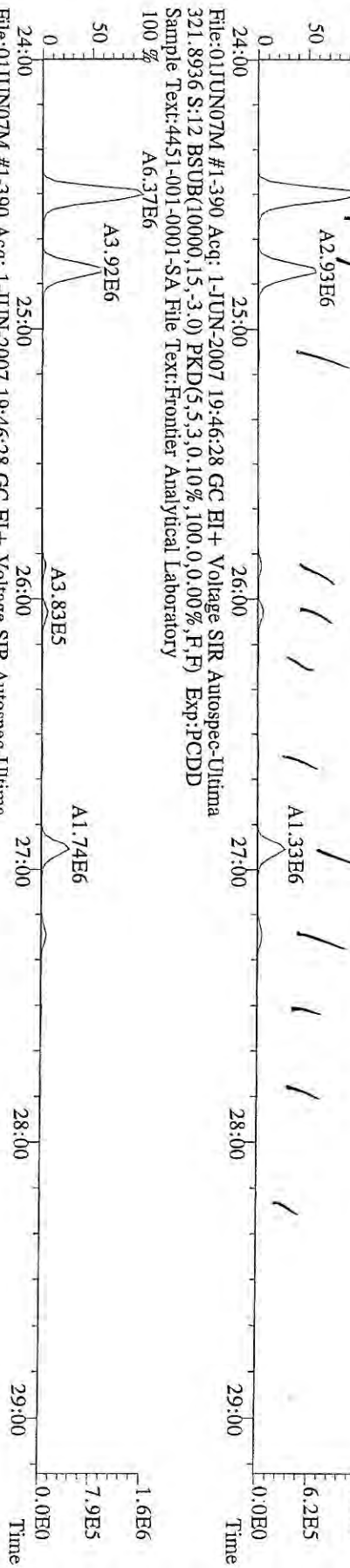
Acquired: 1-JUN-07 19:46:28

Total Concentration: 131

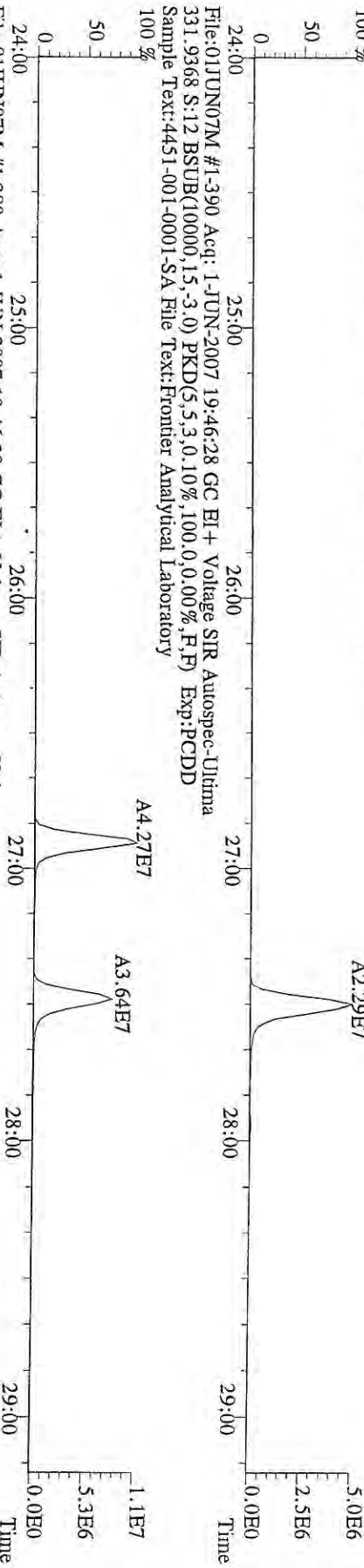
Unnamed Concentration: 93.716

RT	m1 Resp	m2 Resp	RA	Resp	Concentration	Name
42:20	4.73e+06	4.62e+06	1.03 y	9.35e+06	34.8	1,2,3,4,6,7,8-HpCDF
42:53	2.21e+05	2.14e+05	1.03 y	4.35e+05	1.58	
43:09	1.28e+07	1.25e+07	1.03 y	2.53e+07	92.1	
45:08	2.82e+05	2.96e+05	0.95 y	5.78e+05	2.08	1,2,3,4,7,8,9-HpCDF

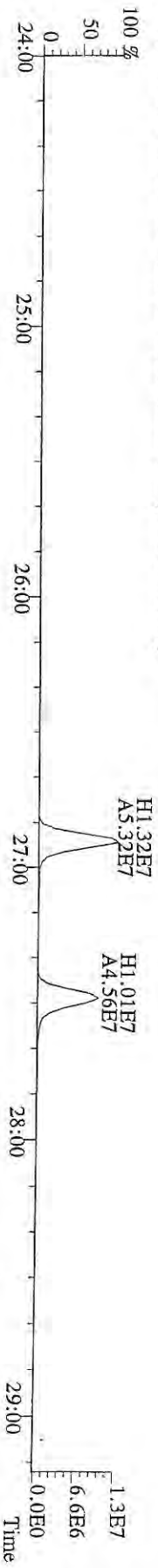
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 319.8965 S:12 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0p01-SA File Text:Frontier Analytical Laboratory  
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File:01JUN07M #1-390 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 327.8847 S:12 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory  
 100%

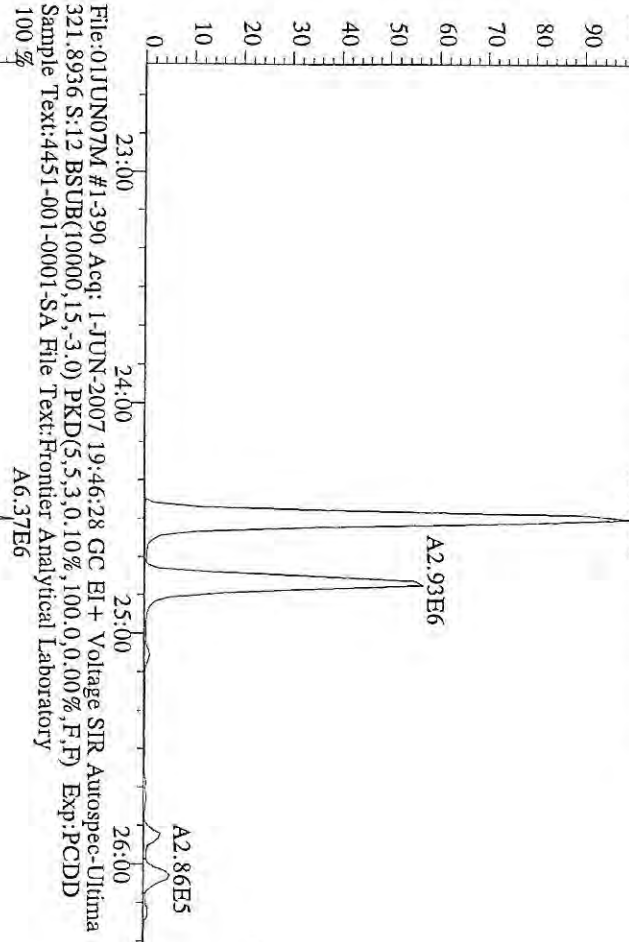


File:01JUN07M #1-390 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 331.9368 S:12 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory  
 100%



5475 01 JUN 07 19:46:28

File:01JUN07M #1-390 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 319.8965 S:12 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%, 100,0,0.00%, F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



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A2.93E6

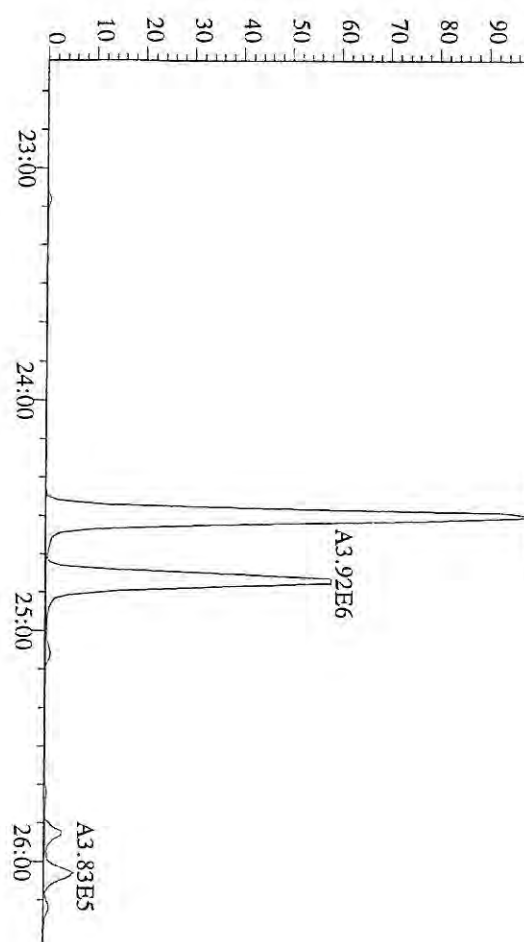
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A3.92E6

A3.83E5

A1.74E6



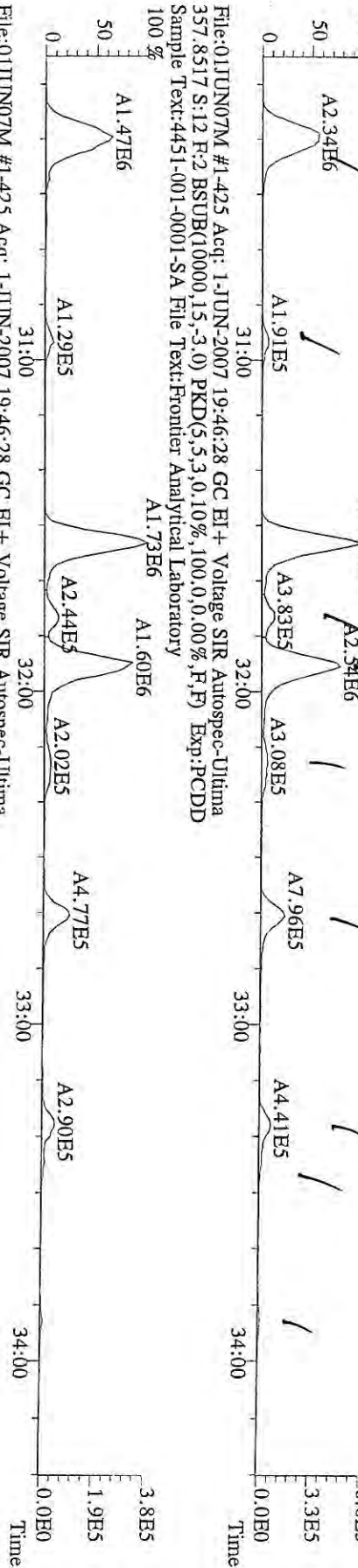
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3.7E5  
2.5E5  
1.2E5  
0.0E0  
1.6E6  
1.4E6  
1.3E6  
1.1E6  
9.5E5  
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Time

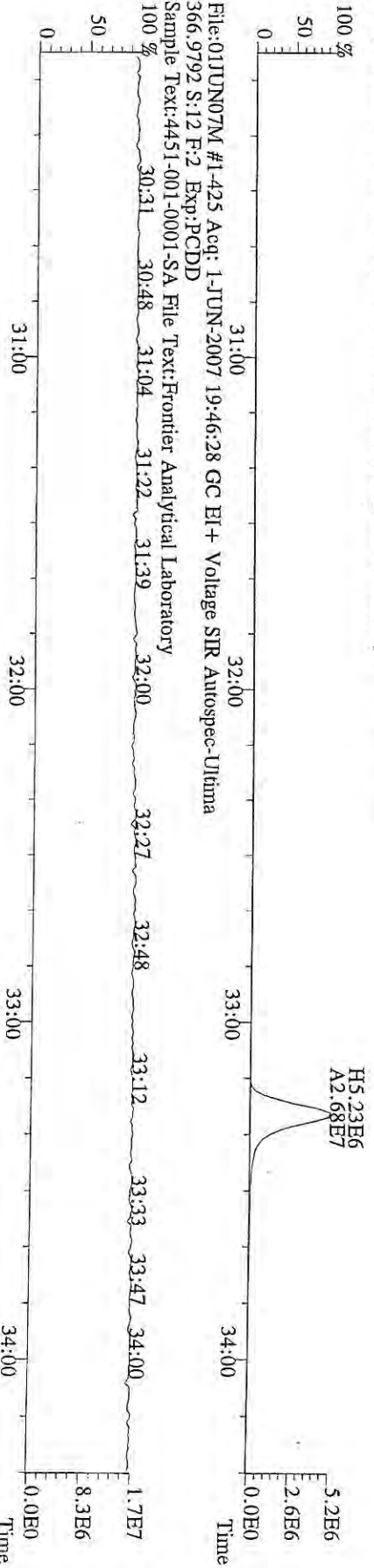
Time

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File:01JUN07M #1-425 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 355.8546 S:12 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory

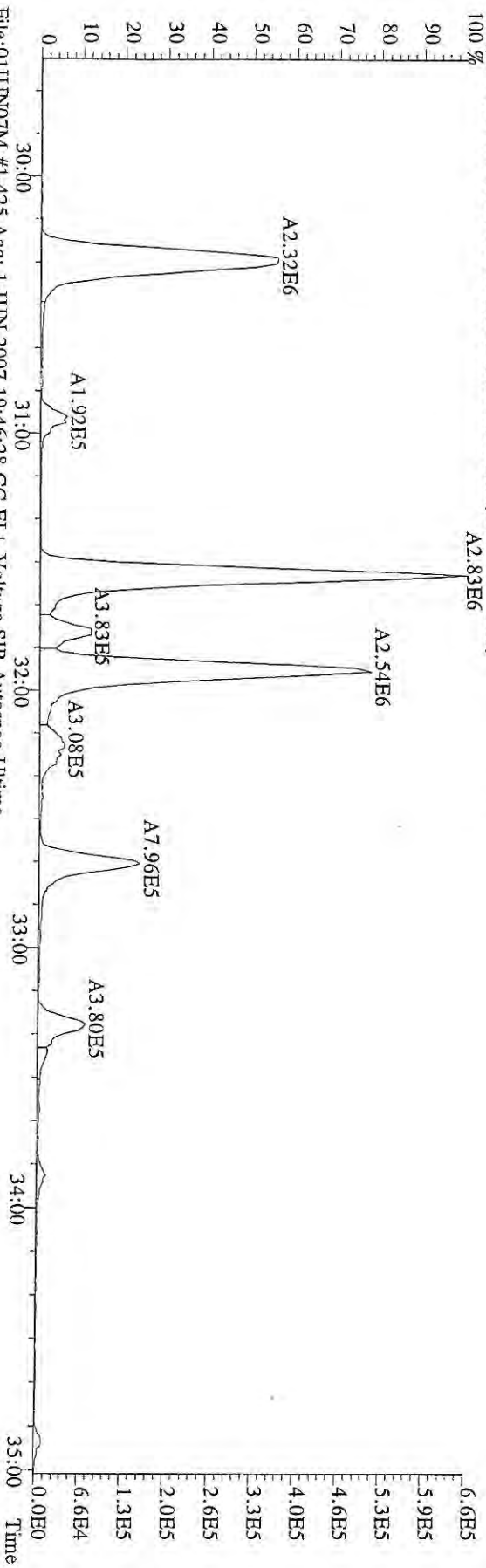


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 367.8949 S:12 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
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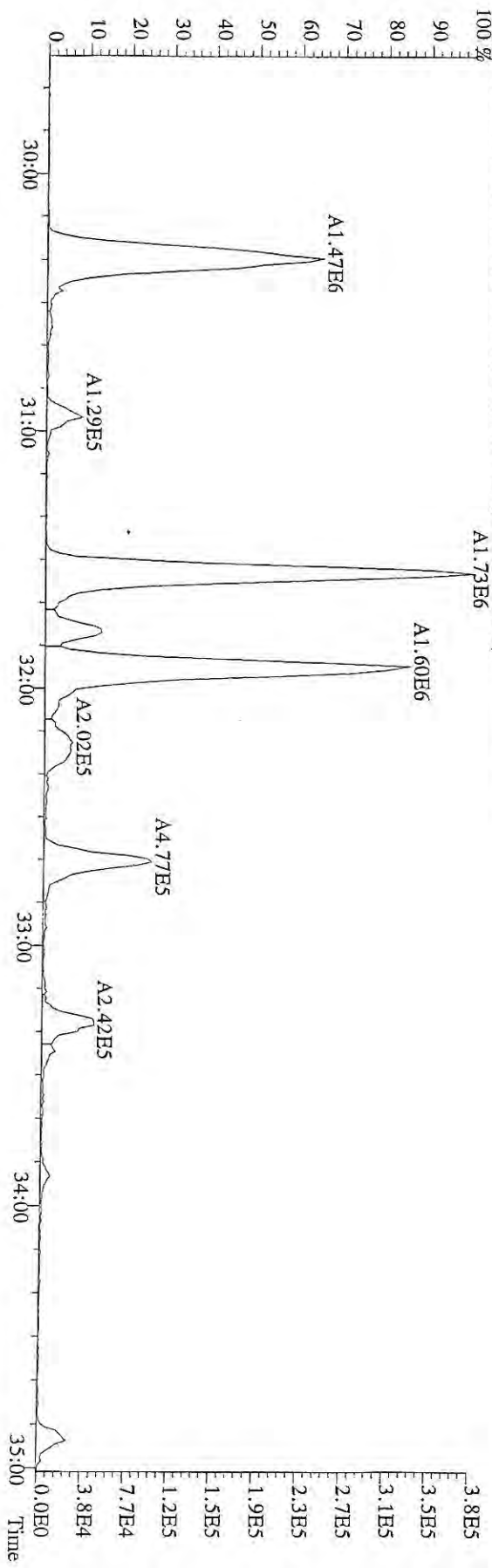


2007 JUN 1 10:00 AM

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 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory

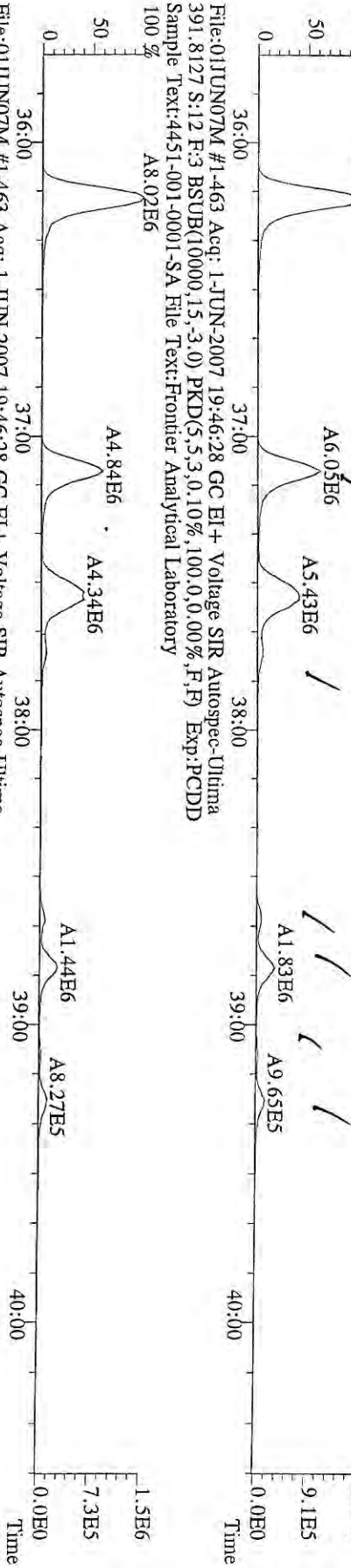


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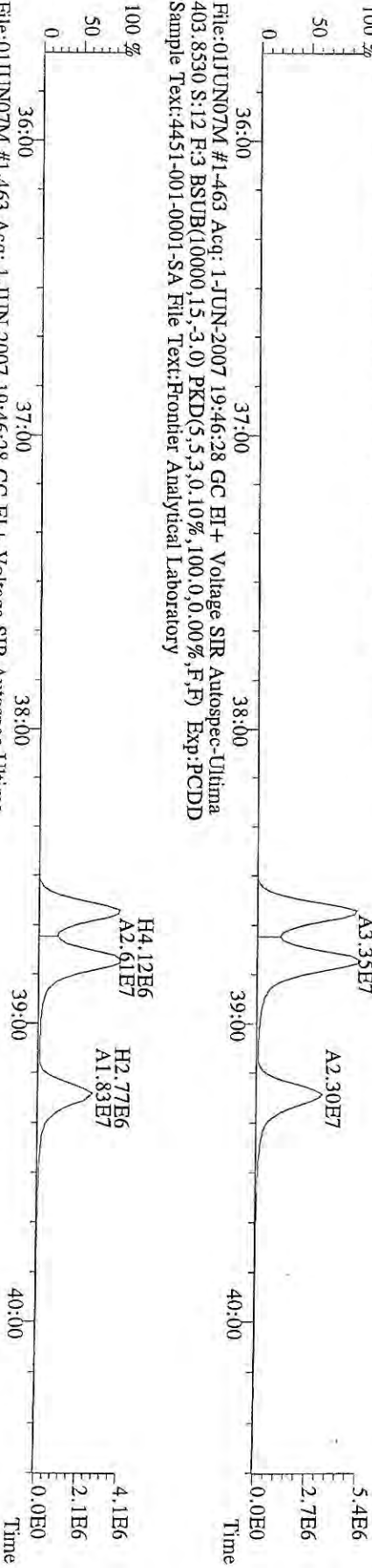


075555 : 0001-0001

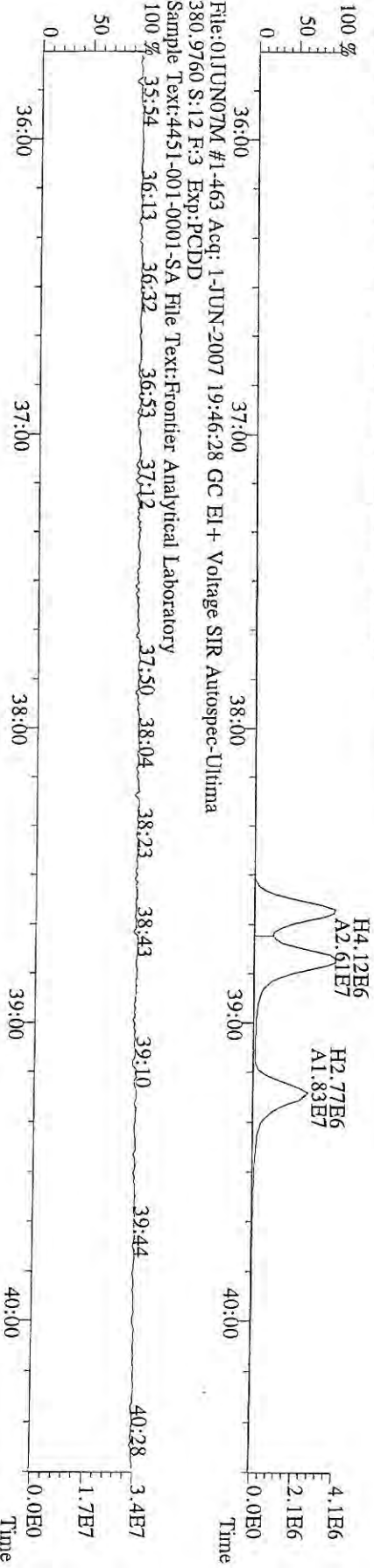
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 389.8156 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



File:01JUN07M #1-463 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 401.8559 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
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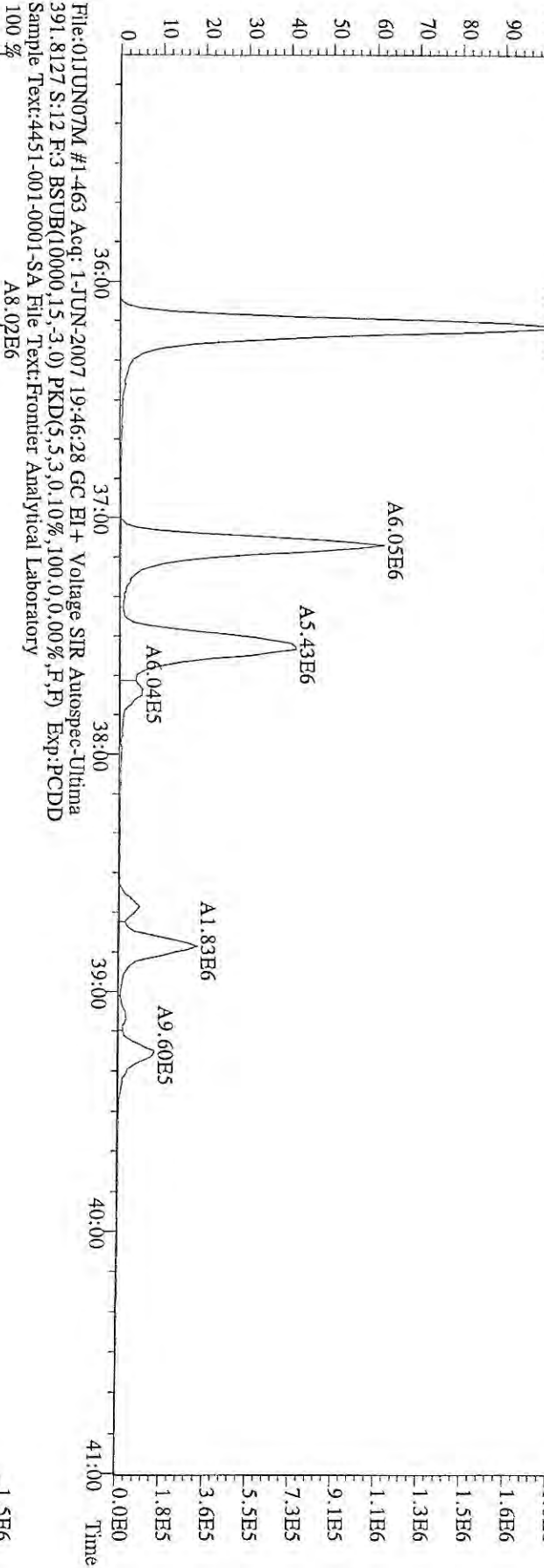


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 403.8530 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
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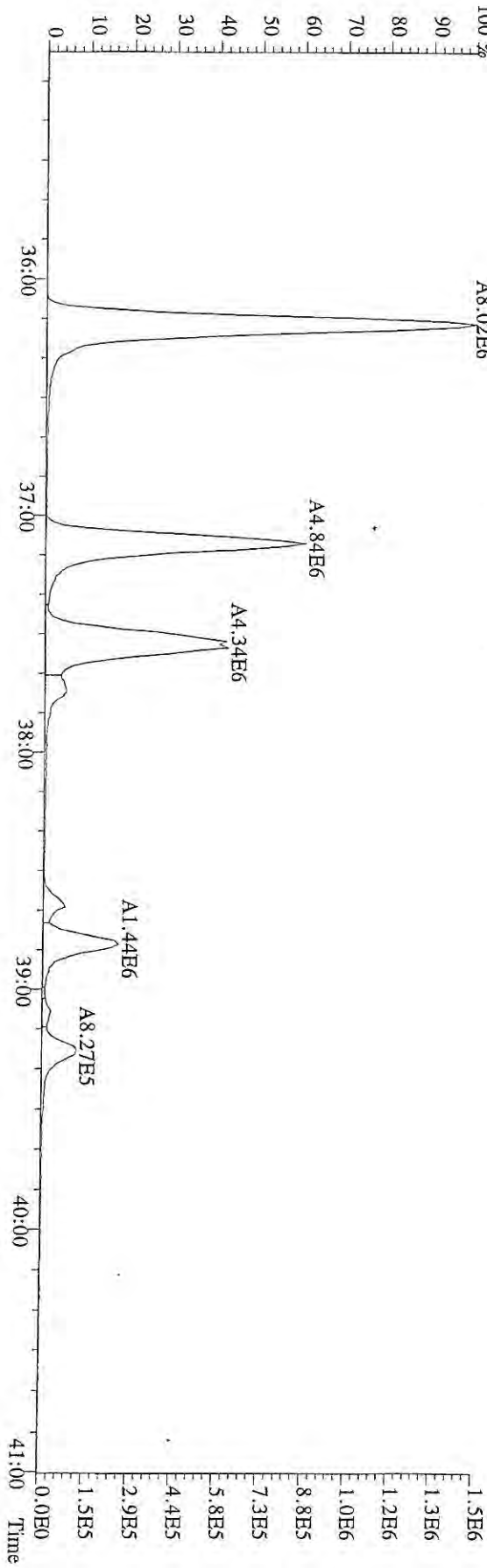


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 389.8156 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory  
 100%

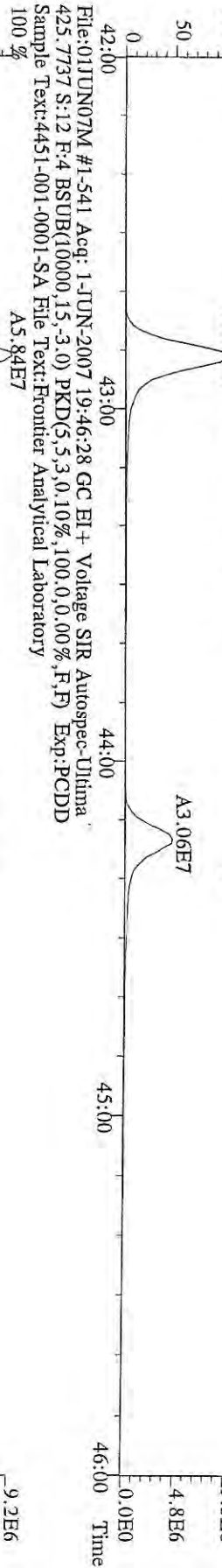


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 391.8127 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0.00%,F,F) Exp:PCDD  
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 100%

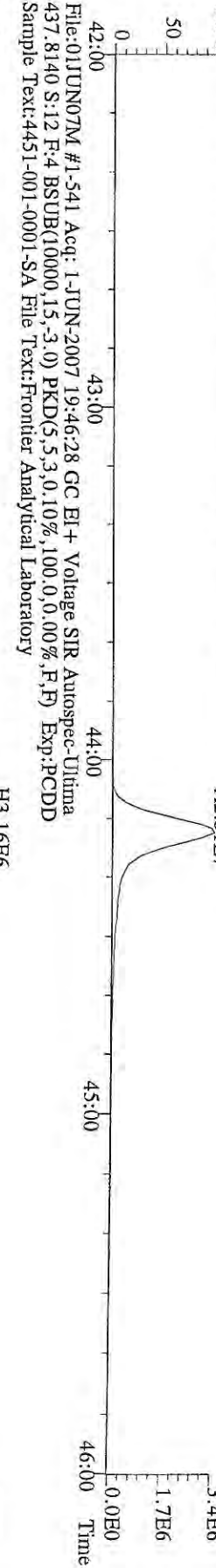




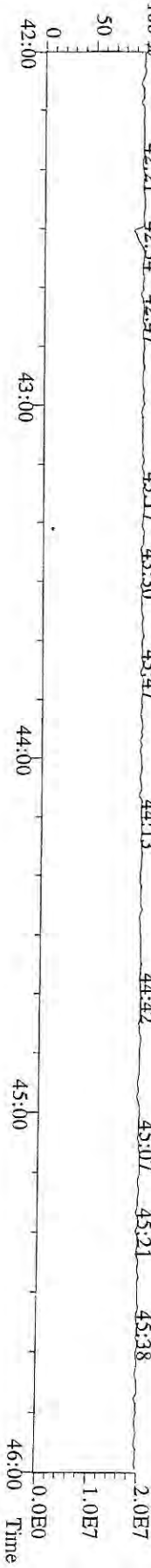
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423.7767 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD  
Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



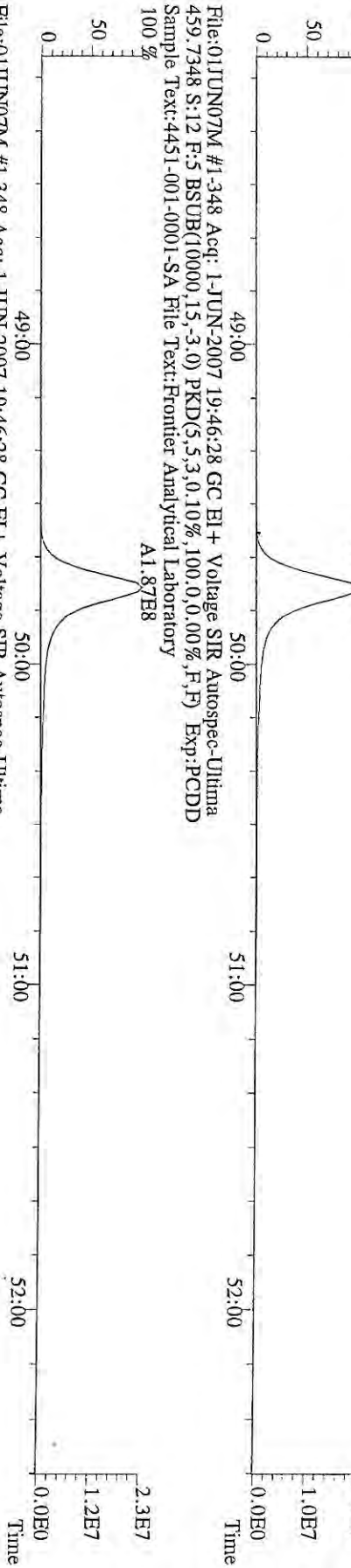
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435.8169 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,0,0%,F,F) Exp:PCDD  
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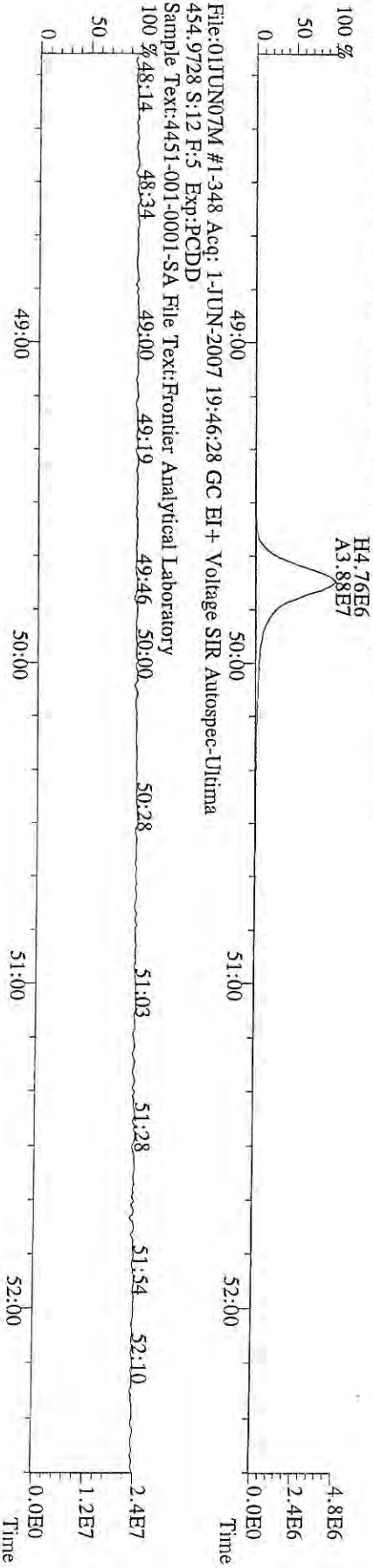
File:01JUN07M #1-541 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
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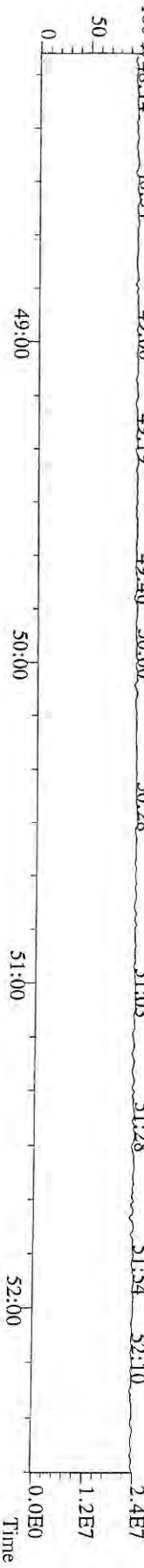
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 457.7377 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



File:01JUN07M #1-348 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 469.7780 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD  
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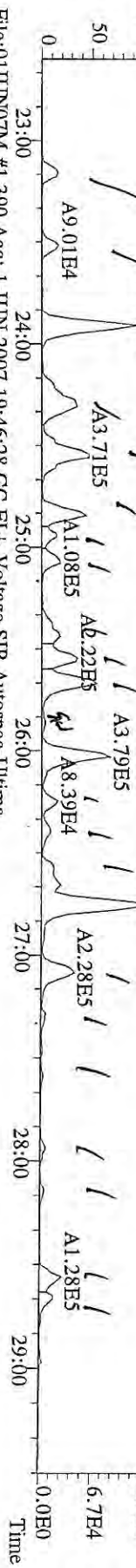


File:01JUN07M #1-348 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 454.9728 S:12 F:5 Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory

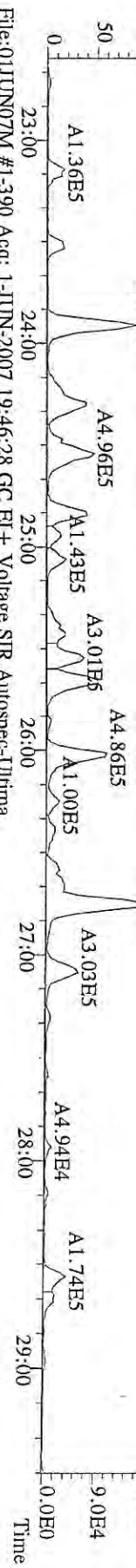


NOV 1 10 55 47

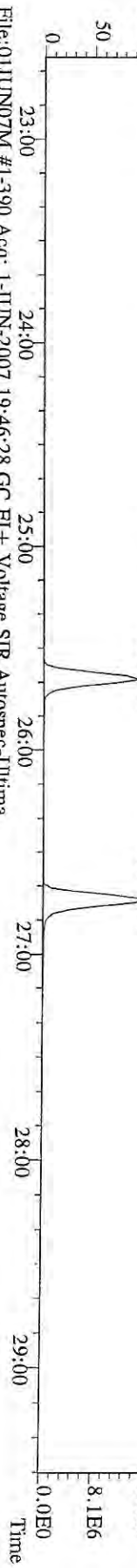
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 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



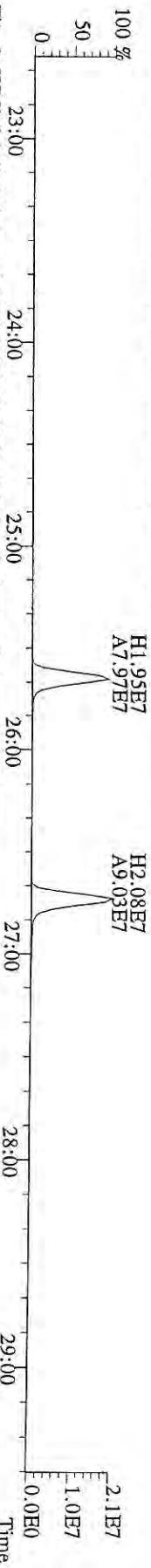
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 305.8987 S:12 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



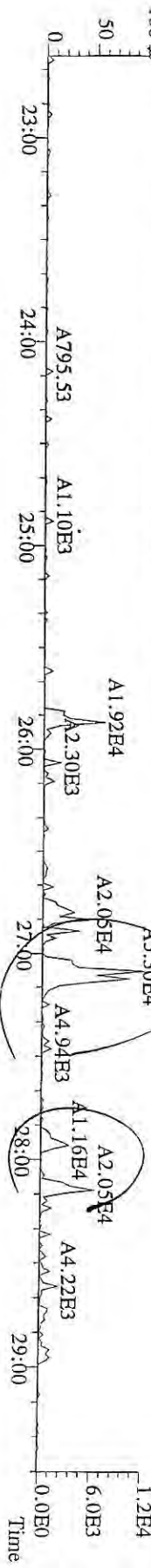
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 315.9419 S:12 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD  
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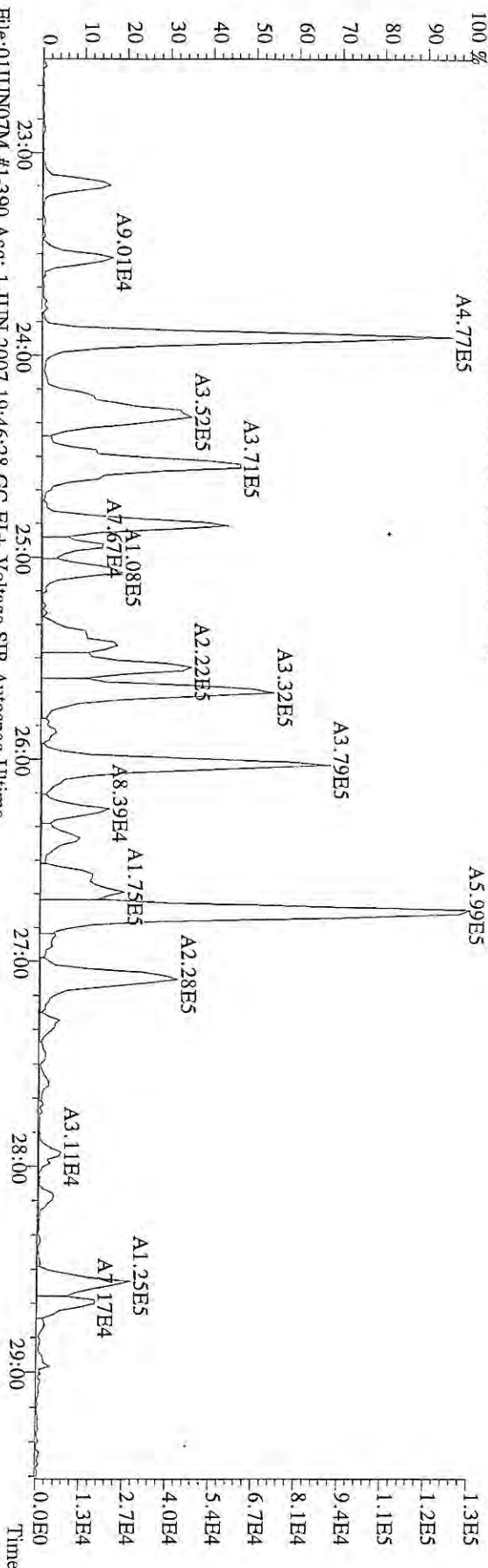
File:01JUN07M #1-390 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 317.9389 S:12 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



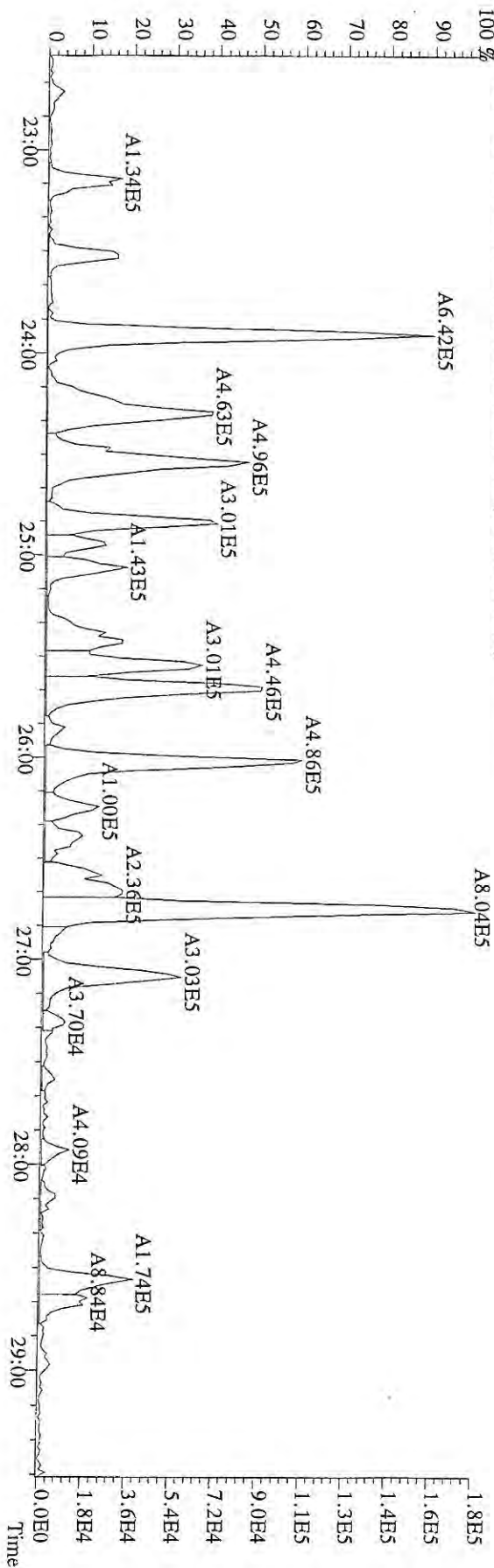
File:01JUN07M #1-390 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 375.8364 S:12 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



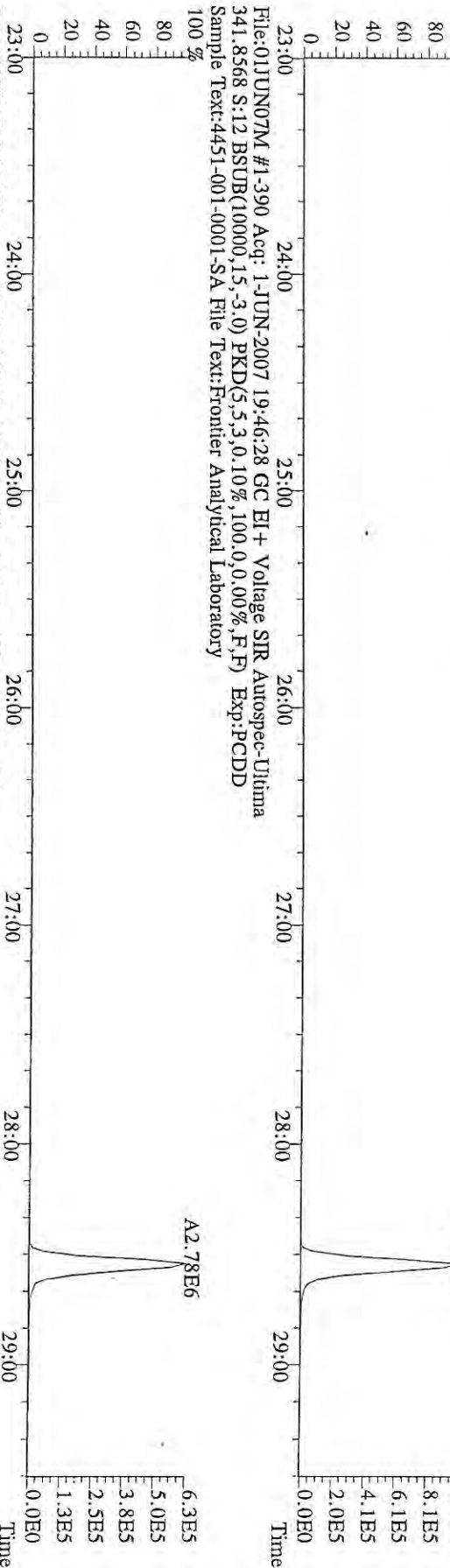
File:01JUN07M #1-390 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 305.8987 S:12 BSUB(10000,15,-3.0) PKD(5.5,3.0,100,0.00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



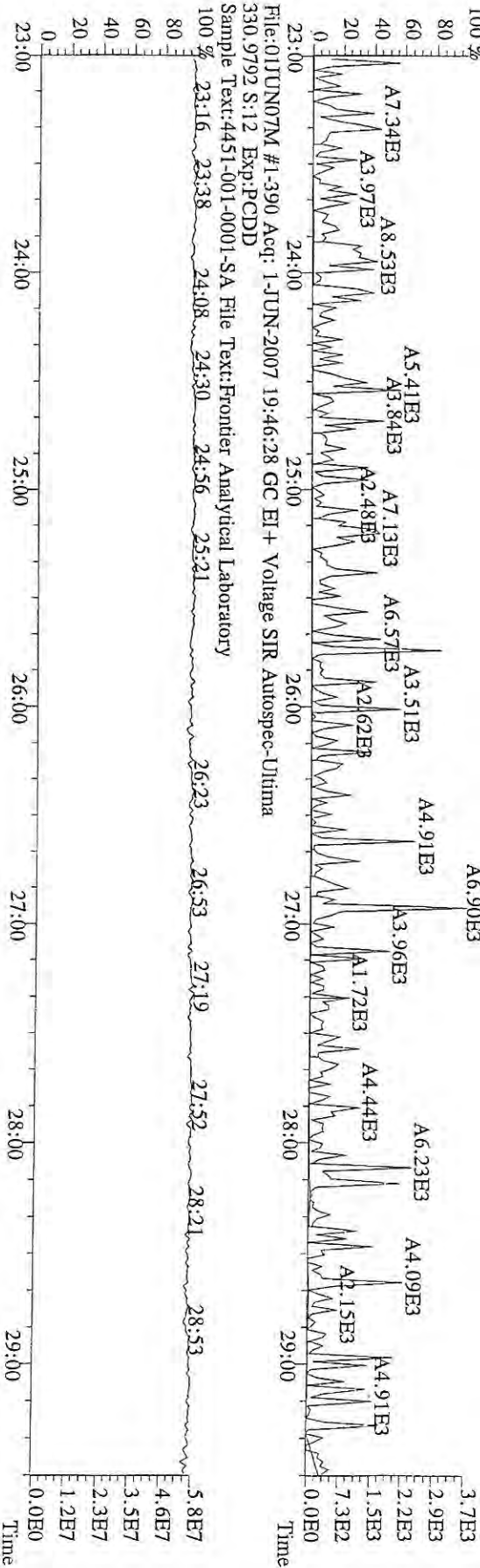
File:01JUN07M #1-390 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 305.8987 S:12 BSUB(10000,15,-3.0) PKD(5.5,3.0,100,0.00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



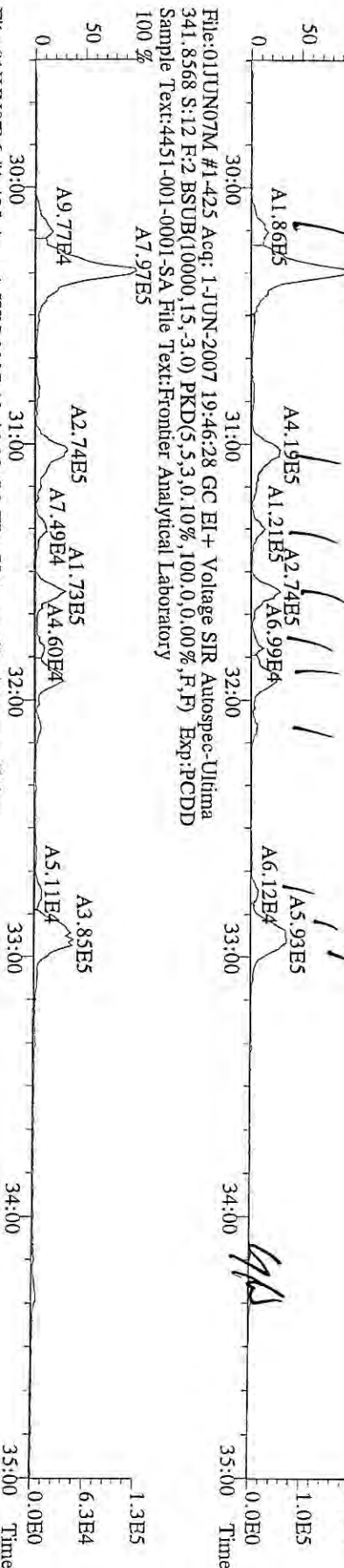
File:01JUN07M #1-390 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Utima  
 339.8597 S:12 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



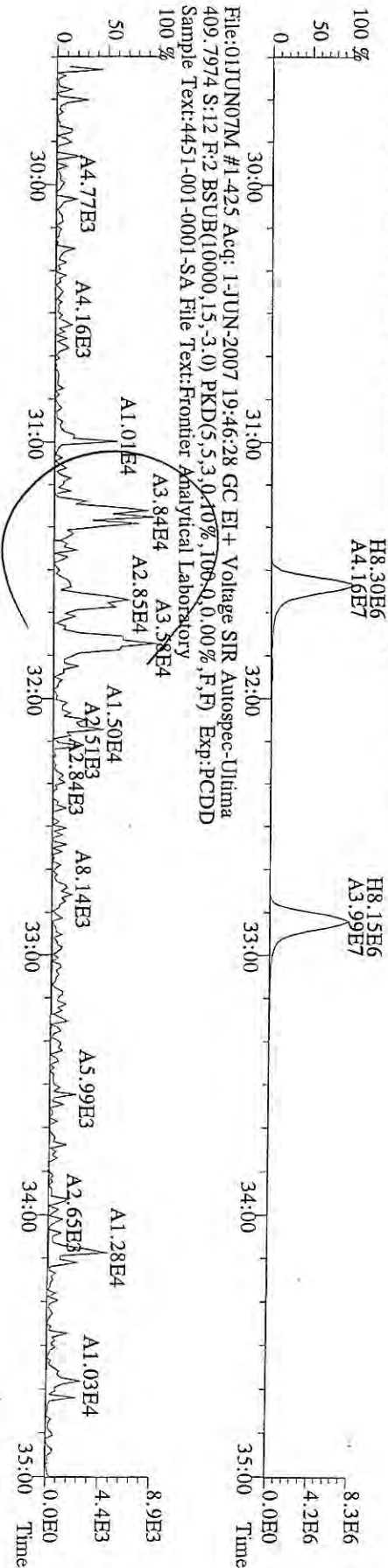
File:01JUN07M #1-390 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Utima  
 409.7974 S:12 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



File:01JUN07M #1-425 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
359.8597 S:12 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory

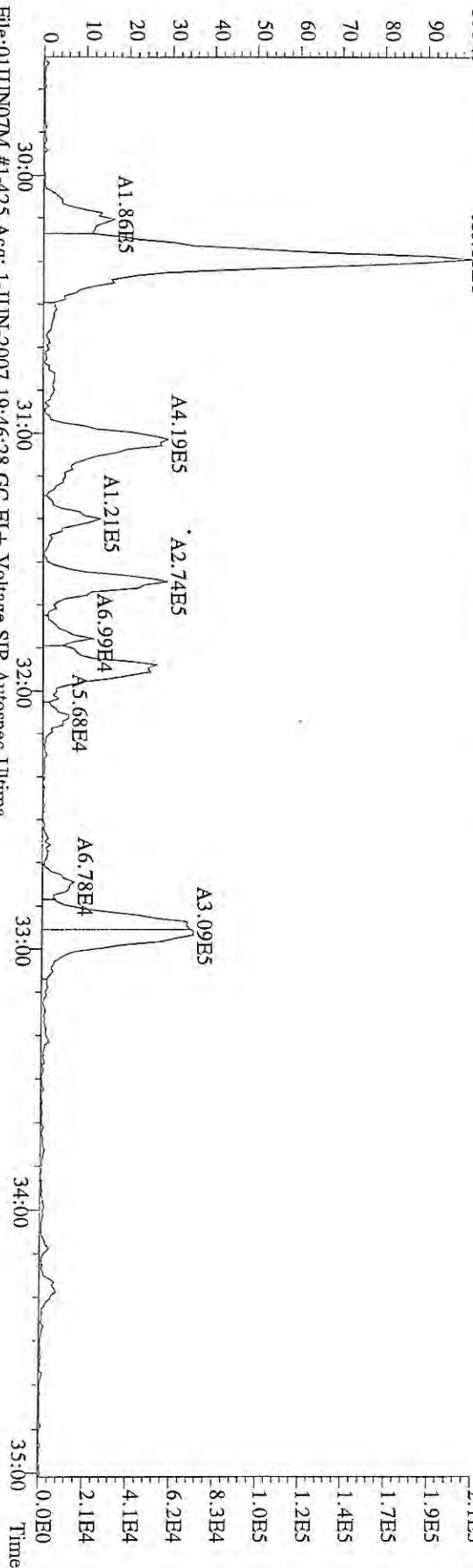


File:01JUN07M #1-425 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
351.9000 S:12 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory

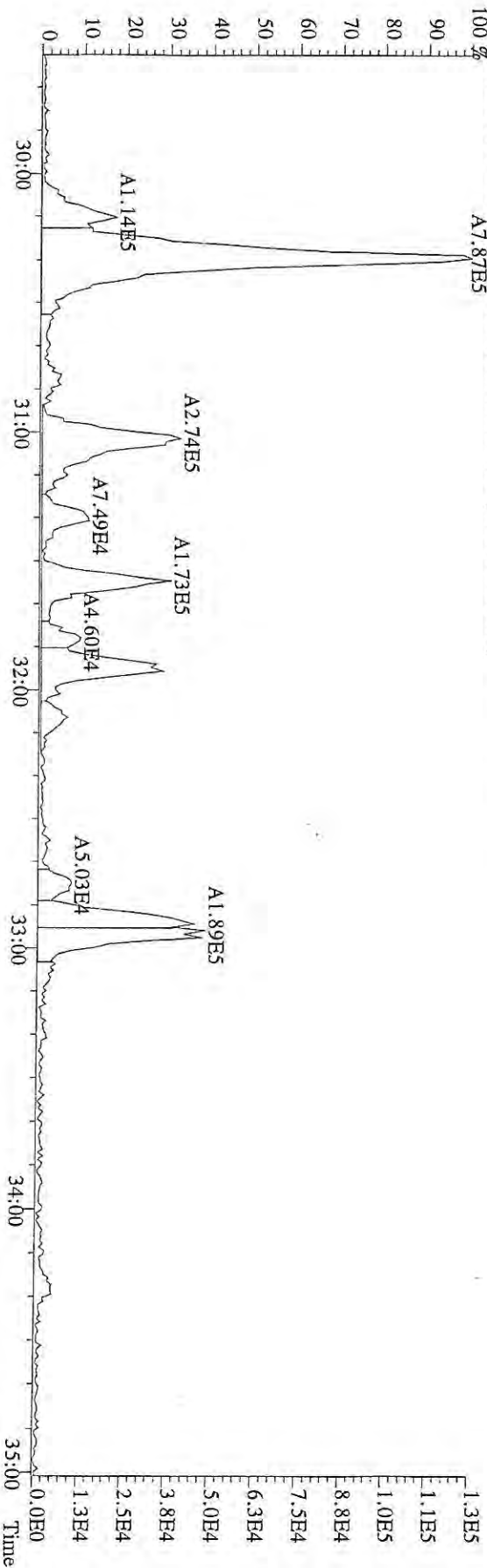




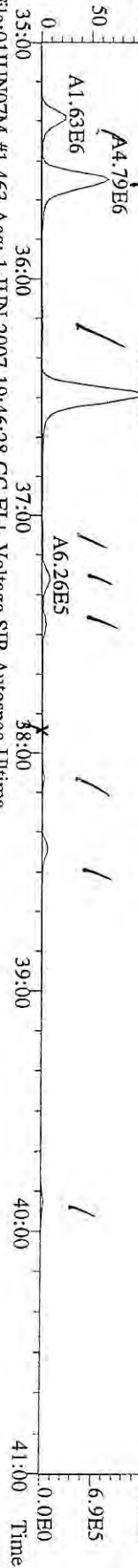
File:01JUN07M #1-425 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 339.8597 S:12 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



File:01JUN07M #1-425 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 341.8568 S:12 F:2 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



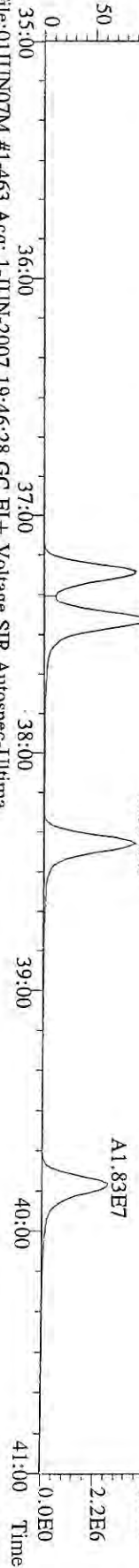
File:01JUN07M #1-463 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 373.8207 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



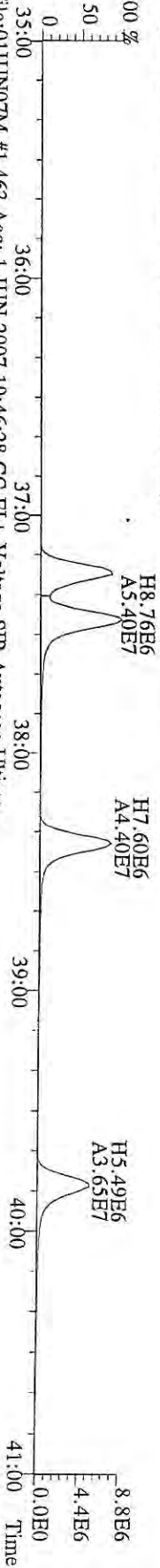
File:01JUN07M #1-463 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 375.8178 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



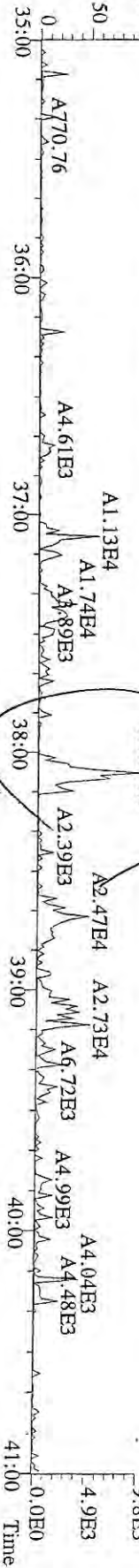
File:01JUN07M #1-463 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 383.8639 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



File:01JUN07M #1-463 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 385.8610 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



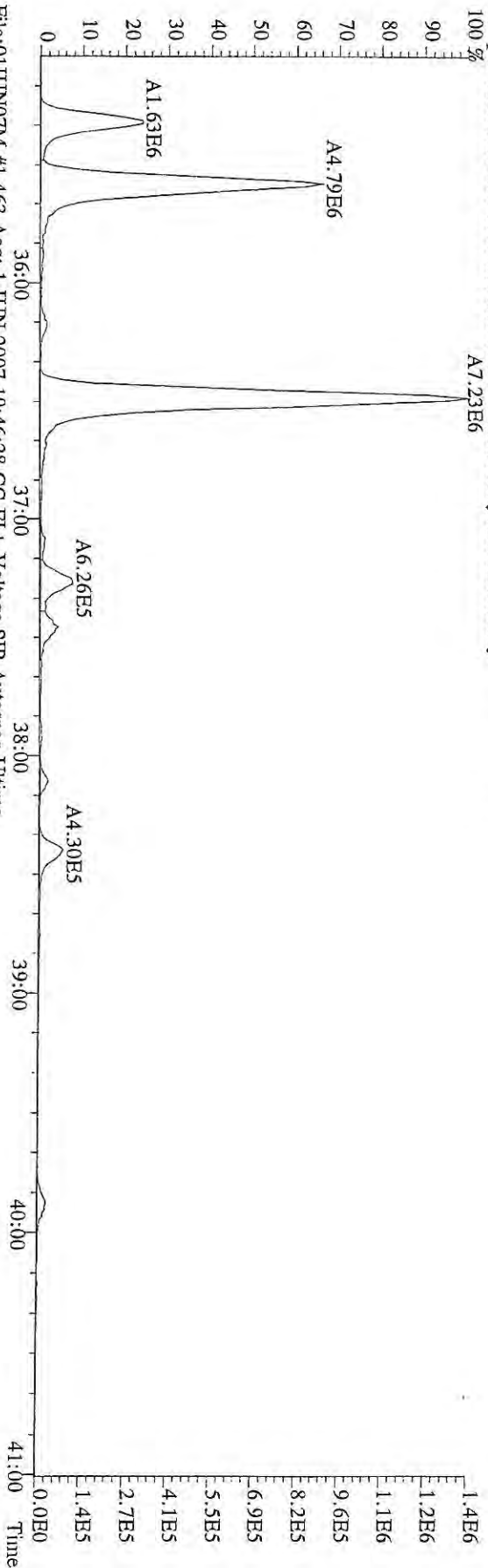
File:01JUN07M #1-463 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
 445.7555 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



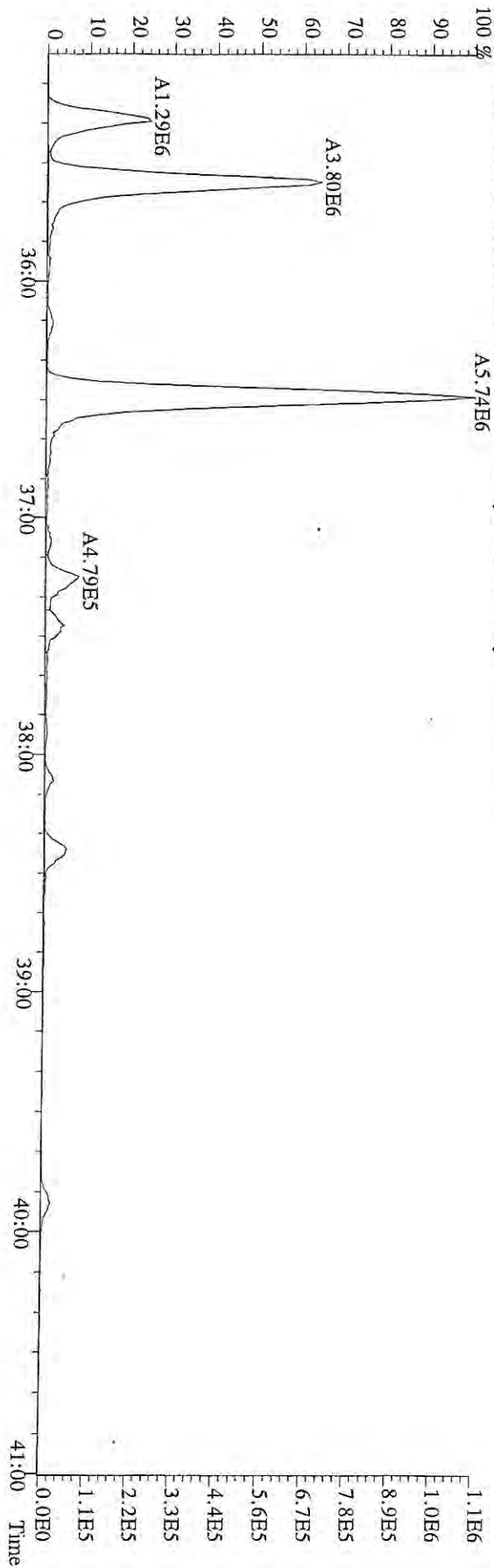
000050 A of 000384 A



File:01JUN07M #1-463 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Utima  
 373.8178 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory

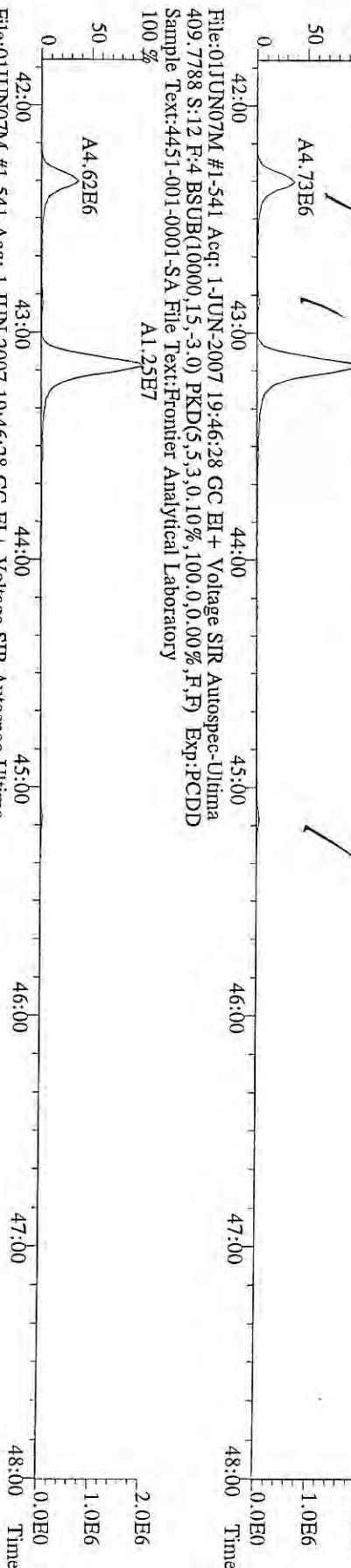


File:01JUN07M #1-463 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Utima  
 375.8178 S:12 F:3 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100,0,0.00%,F,F) Exp:PCDD  
 Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory

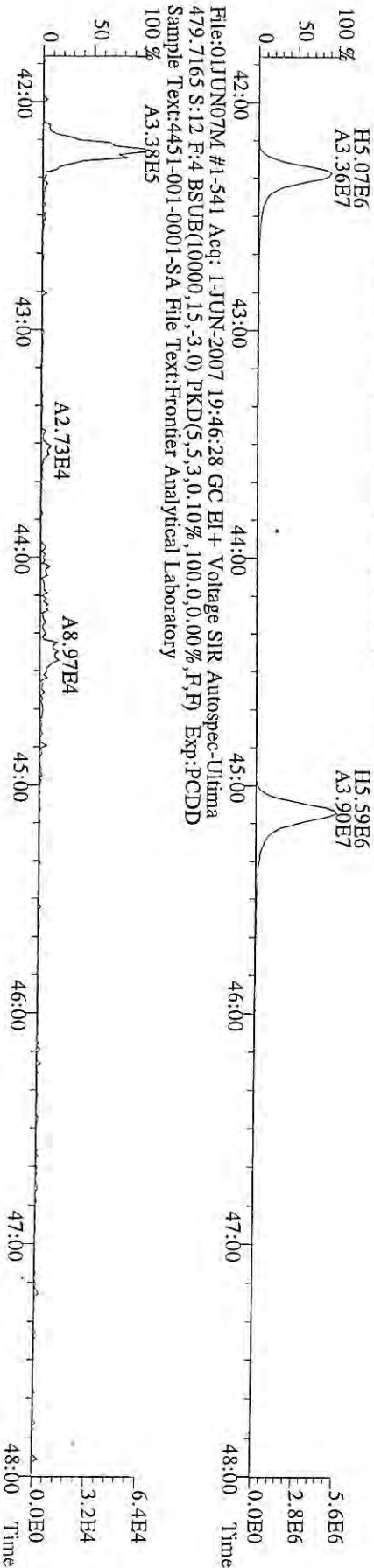


10000-0001-0001

File:01JUN07M #1-541 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Utima  
407.7818 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory  
100 %



File:01JUN07M #1-541 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Utima  
417.8253 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory  
100 %



File:01JUN07M #1-541 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Utima  
479.7165 S:12 F:4 BSUB(10000,15,-3.0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp:PCDD  
Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory  
100 %

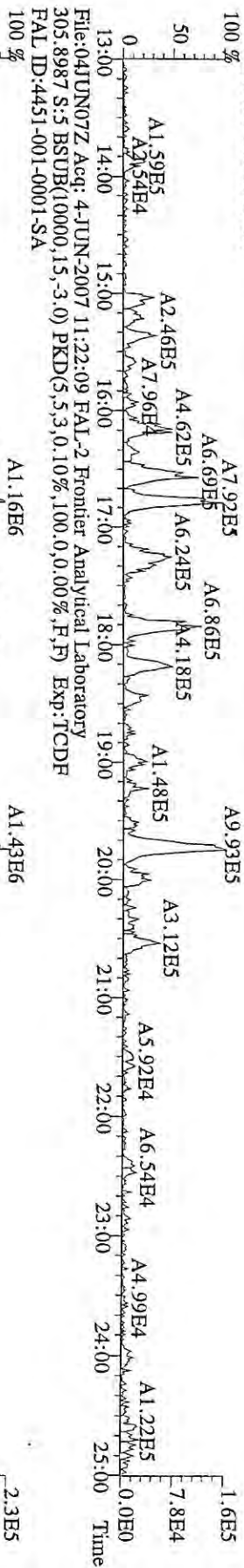
FAL ID: 4451-001-0001-SA Filename: 04JUN07Z Sam:5 Acquired: 4-JUN-07 11:22:09 ICal: tcdffal2-4-27-07  
Client ID: 07-4032-KQ93A ConCal: ST060407Z1 EndCal: ST060407Z2  
Results: 4444TCDF GC Column: DB225 Amount: 10.12

Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise	DL	#Hom	Rec
2,3,7,8-TCDF	2.42e+06	0.69 y	19:45	0.95	2.48		2.50	-	-	1	
13C-2,3,7,8-TCDF	2.02e+08	0.82 y	19:42	1.27	193						97.5
13C-1,2,3,4-TCDF	1.63e+08	0.82 y	17:15	-	4.63						

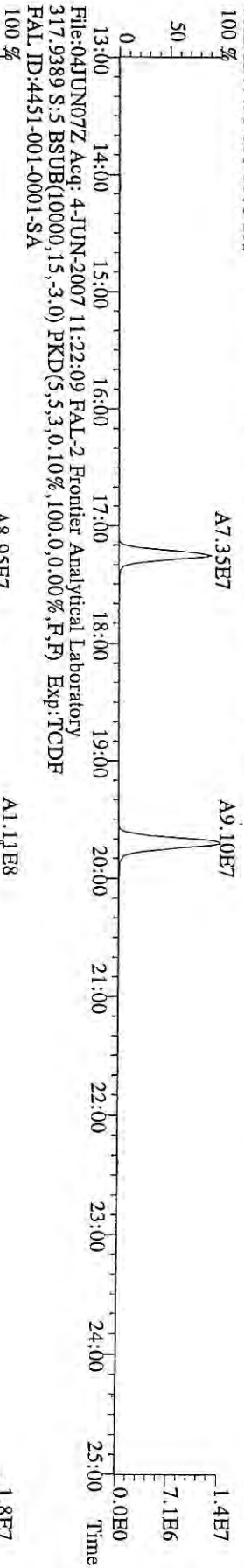
Analyst: 

Date: 6/5/07

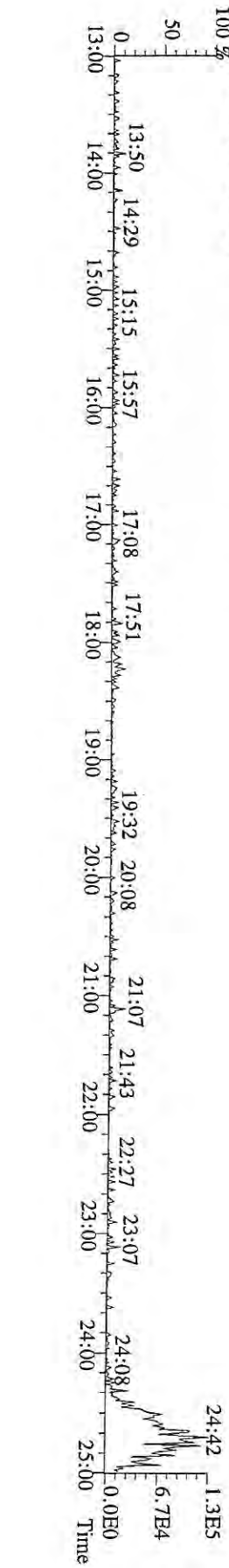
File:04JUN07Z Acq: 4-JUN-2007 11:22:09 FAL-2 Frontier Analytical Laboratory  
303.9016 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp.:TCDF  
FAL ID:4451-001-0001-SA  
100 %



File:04JUN07Z Acq: 4-JUN-2007 11:22:09 FAL-2 Frontier Analytical Laboratory  
315.9419 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp.:TCDF  
FAL ID:4451-001-0001-SA  
100 %

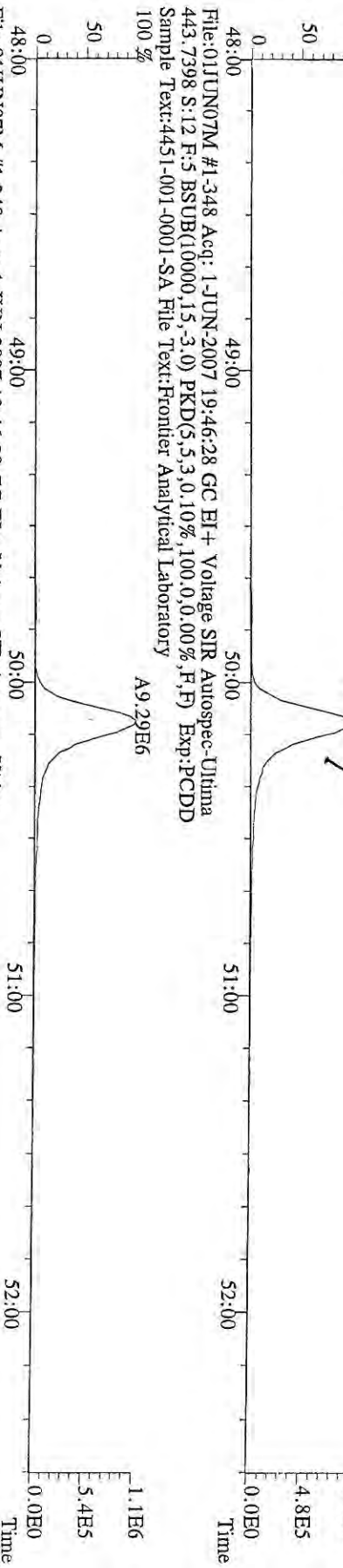


File:04JUN07Z Acq: 4-JUN-2007 11:22:09 FAL-2 Frontier Analytical Laboratory  
317.9389 S:5 BSUB(10000,15,-3,0) PKD(5,5,3,0,10%,100,0,0,00%,F,F) Exp.:TCDF  
FAL ID:4451-001-0001-SA  
100 %

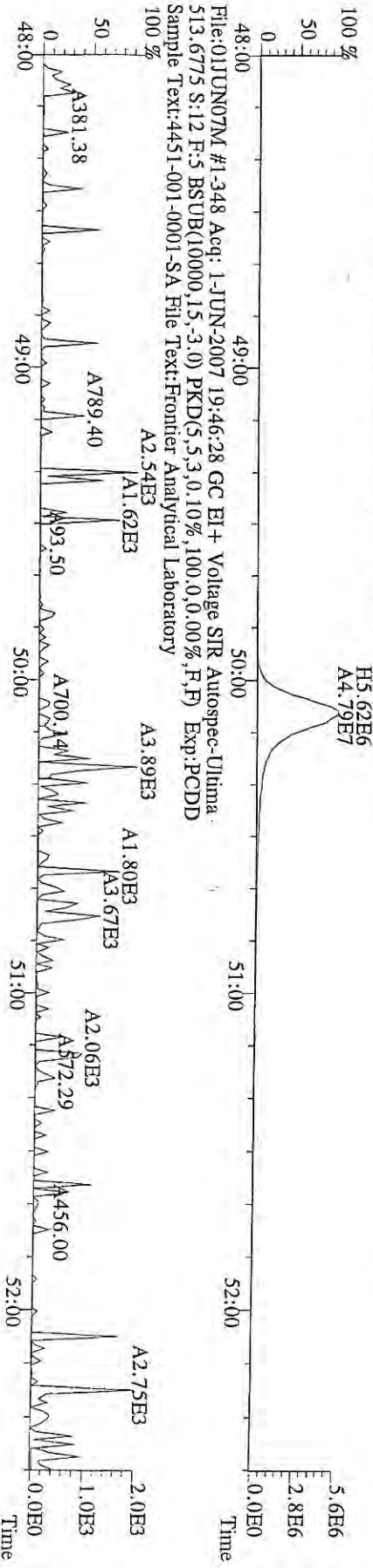


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File:01JUN07M #1-348 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
441.7428 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD  
Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



File:01JUN07M #1-348 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
453.7831 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD  
Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



File:01JUN07M #1-348 Acq: 1-JUN-2007 19:46:28 GC EI+ Voltage SIR Autospec-Ultima  
513.6775 S:12 F:5 BSUB(10000,15,-3.0) PKD(5,5,3,0.10%,100.0,0.00%,F,F) Exp:PCDD  
Sample Text:4451-001-0001-SA File Text:Frontier Analytical Laboratory



000055A of 000384A

FAL ID: 4451-002-0001-SA      Filename: 01JUN07M      Sam:13      Acquired: 1-JUN-07 20:41:51      ICal: PCDDFAL3-4-17-07  
 Client ID: 07-4034-KQ93C      ConCal: ST060107M2      EndCal: ST060107M3  
 Results: 4457      GC Column: DB5      Amount: 10.21 NATO 1989 Tox: 7.28

WHO 1998 Tox: 5.96      WHO 2005 Tox: 6.24

Name	Resp	RA	RT	RRF	Conc	Qual	Fac	Noise	DL	Rec
2,3,7,8-TCDD	8.68e+04	0.69 y	27:31	1.11	0.178	J	2.50	-	*	
1,2,3,7,8-PeCDD	3.92e+05	1.46 y	33:18	1.10	0.882	J	2.50	-	*	
1,2,3,4,7,8-HxCDD	5.88e+05	1.30 y	38:39	0.82	2.65		2.50	-	*	
1,2,3,6,7,8-HxCDD	2.04e+06	1.27 y	38:48	0.74	8.31		2.50	-	*	
1,2,3,7,8,9-HxCDD	1.06e+06	1.27 y	39:15	0.80	4.36		2.50	-	*	
1,2,3,4,6,7,8-HpCDD	3.88e+07	1.03 y	44:14	0.75	205		2.50	-	*	
OCDD	3.27e+08	0.89 y	49:46	0.80	1910		2.50	-	*	
2,3,7,8-TCDF	1.12e+06	0.79 y	26:46	0.85	1.52	F	2.50	-	*	
1,2,3,7,8-PeCDF	2.79e+05	1.48 y	31:34	0.78	0.581	J	2.50	-	*	
2,3,4,7,8-PeCDF	2.24e+05	1.47 y	32:54	0.76	0.493	J	2.50	-	*	
1,2,3,4,7,8-HxCDF	7.26e+05	1.19 y	37:16	1.02	1.99	J	2.50	-	*	
1,2,3,6,7,8-HxCDF	4.05e+05	1.17 y	37:28	0.92	0.951	J	2.50	-	*	
2,3,4,6,7,8-HxCDF	4.83e+05	1.34 y	38:23	0.93	1.38	J	2.50	-	*	
1,2,3,7,8,9-HxCDF	2.07e+05	1.28 y	39:53	0.92	0.757	J	2.50	-	*	
1,2,3,4,6,7,8-HpCDF	5.27e+06	1.03 y	42:20	1.10	17.1		2.50	-	*	
1,2,3,4,7,8,9-HpCDF	3.95e+05	1.12 y	45:09	0.99	1.27	J	2.50	-	*	
OCDF	1.04e+07	0.89 y	50:07	0.77	49.6		2.50	-	*	
13C-2,3,7,8-TCDD	8.57e+07	0.79 y	27:29	1.03	163					83.2
13C-1,2,3,7,8-PeCDD	7.90e+07	1.58 y	33:17	1.15	134					68.6
13C-1,2,3,4,7,8-HxCDD	5.33e+07	1.27 y	38:37	1.34	177					90.5
13C-1,2,3,6,7,8-HxCDD	6.51e+07	1.28 y	38:47	1.35	214					109
13C-1,2,3,4,6,7,8-HpCDD	4.92e+07	1.06 y	44:12	1.38	158					80.7
13C-OCDD	8.45e+07	0.89 y	49:45	1.10	341					87.1
13C-2,3,7,8-TCDF	1.72e+08	0.79 y	26:44	1.28	173					88.1
13C-1,2,3,7,8-PeCDF	1.21e+08	1.61 y	31:34	1.10	141					72.0
13C-2,3,4,7,8-PeCDF	1.17e+08	1.62 y	32:53	1.07	141					72.1
13C-1,2,3,4,7,8-HxCDF	7.03e+07	0.51 y	37:14	1.56	200					102
13C-1,2,3,6,7,8-HxCDF	9.05e+07	0.51 y	37:26	1.74	232					118
13C-2,3,4,6,7,8-HxCDF	7.39e+07	0.52 y	38:23	1.65	199					102
13C-1,2,3,7,8,9-HxCDF	5.82e+07	0.51 y	39:49	1.47	176					89.7
13C-1,2,3,4,6,7,8-HpCDF	5.50e+07	0.44 y	42:19	1.42	172					87.8
13C-1,2,3,4,7,8,9-HpCDF	6.17e+07	0.43 y	45:07	1.34	204					104
13C-OCDF	1.07e+08	0.89 y	50:07	1.44	328					83.8
37Cl-2,3,7,8-TCDD	2.26e+07		27:31	0.77	57.8					73.8
13C-1,2,3,4-TCDD	1.00e+08	0.79 y	26:54	-	11.5					
13C-1,2,3,4-TCDF	1.52e+08	0.79 y	25:39	-	11.5					
13C-1,2,3,7,8,9-HxCDD	4.41e+07	1.28 y	39:15	-	5.97					
Total Tetra-Dioxins	2.46e+07		24:30	1.11	50.4		2.50	-	*	12
Total Penta-Dioxins	1.64e+07		30:21	1.10	36.8		2.50	-	*	9
Total Hexa-Dioxins	3.05e+07		36:12	0.79	128		2.50	-	*	8
Total Hepta-Dioxins	1.13e+08		42:51	0.75	599		2.50	-	*	2
Total Tetra-Furans	7.04e+06		23:10	0.85	9.49	D,M	2.50	-	*	20
1st Fn. Tot Penta-Furans	3.65e+06		28:33	0.77	7.81	D,M	2.50	-	*	1
Total Penta-Furans	3.45e+06		30:09	0.77	7.37	D,M	2.50	-	*	9
Total Hexa-Furans	1.66e+07		35:19	0.95	47.0		2.50	-	*	10
Total Hepta-Furans	2.09e+07		42:20	1.04	67.4		2.50	-	*	4

*OK Dioxins*

Analyst: 

Date: 6/4/07

Totals class: Total Tetra-Dioxins

Entry #: 38

Run: 17

File: 01JUN07M

S: 13 I: 1 F: 1

Acquired: 1-JUN-07 20:41:51

Total Concentration: 50.4

Unnamed Concentration: 50.231

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
24:30	5.14e+06	6.70e+06	0.77 y	1.18e+07	24.3	
24:47	3.16e+06	4.12e+06	0.77 y	7.28e+06	14.9	
25:05	4.41e+04	6.23e+04	0.71 y	1.06e+05	0.218	
25:53	1.55e+05	1.86e+05	0.84 y	3.41e+05	0.698	
26:03	2.70e+05	3.60e+05	0.75 y	6.30e+05	1.29	
26:13	3.51e+04	4.85e+04	0.72 y	8.36e+04	0.171	
26:36	3.73e+04	4.67e+04	0.80 y	8.40e+04	0.172	
26:56	1.46e+06	1.86e+06	0.78 y	3.32e+06	6.81	
27:15	2.99e+05	4.10e+05	0.73 y	7.09e+05	1.45	
27:31	3.55e+04	5.13e+04	0.69 y	8.68e+04	0.178	2,3,7,8-TCDD
27:48	2.10e+04	2.46e+04	0.86 y	4.57e+04	0.0936	
28:13	2.06e+04	2.87e+04	0.72 y	4.93e+04	0.101	

Totals class: Total Penta-Dioxins

Entry #: 39

Run: 17

File: 01JUN07M

S: 13 I: 1 F: 2

Acquired: 1-JUN-07 20:41:51

Total Concentration: 36.8

Unnamed Concentration: 35.965

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
30:21	2.41e+06	1.49e+06	1.62 y	3.90e+06	8.77	
30:56	1.14e+05	6.78e+04	1.68 y	1.81e+05	0.408	
31:34	3.11e+06	1.93e+06	1.61 y	5.04e+06	11.3	
31:47	2.60e+05	1.66e+05	1.56 y	4.26e+05	0.960	
31:55	2.82e+06	1.76e+06	1.60 y	4.59e+06	10.3	
32:12	2.33e+05	1.60e+05	1.45 y	3.93e+05	0.884	
32:40	8.31e+05	5.39e+05	1.54 y	1.37e+06	3.08	
33:18	2.33e+05	1.59e+05	1.46 y	3.92e+05	0.882	1,2,3,7,8-PeCDD
33:23	5.12e+04	3.83e+04	1.34 y	8.96e+04	0.202	



Totals class: Total Hexa-Dioxins

Entry #: 40

Run: 17

File: 01JUN07M

S: 13 I: 1 F: 3

Acquired: 1-JUN-07 20:41:51

Total Concentration: 128

Unnamed Concentration: 113.143

RT	mL Resp	m2 Resp	RA	Resp	Concentration	Name
36:12	4.28e+06	3.38e+06	1.27 y	7.66e+06	32.3	
37:07	6.62e+06	5.21e+06	1.27 y	1.18e+07	49.9	
37:32	3.65e+06	2.84e+06	1.28 y	6.49e+06	27.3	
37:43	3.69e+05	2.73e+05	1.35 y	6.42e+05	2.71	
38:39	3.32e+05	2.56e+05	1.30 y	5.88e+05	2.65	1,2,3,4,7,8-HxCDD
38:48	1.14e+06	8.98e+05	1.27 y	2.04e+06	8.31	1,2,3,6,7,8-HxCDD
39:06	1.29e+05	9.63e+04	1.34 y	2.26e+05	0.952	
39:15	5.91e+05	4.67e+05	1.27 y	1.06e+06	4.36	1,2,3,7,8,9-HxCDD

Totals class: Total Hepta-Dioxins

Entry #: 41

Run: 17

File: 01JUN07M

S: 13 I: 1 F: 4

Acquired: 1-JUN-07 20:41:51

Total Concentration: 599

Unnamed Concentration: 393.296

RT	mL Resp	m2 Resp	RA	Resp	Concentration	Name
42:51	3.78e+07	3.65e+07	1.04 y	7.43e+07	393	
44:14	1.97e+07	1.91e+07	1.03 y	3.88e+07	205	1,2,3,4,6,7,8-HpCDD

Totals class: Total Hepta-Furans

Entry #: 46

Run: 17

File: 01JUN07M

S: 13 I: 1 F: 4

Acquired: 1-JUN-07 20:41:51

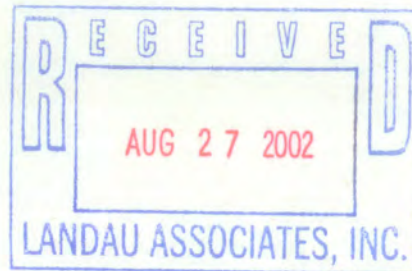
Total Concentration: 67.4

Unnamed Concentration: 48.955

RT	ml Resp	m2 Resp	RA	Resp	Concentration	Name
42:20	2.68e+06	2.60e+06	1.03 y	5.27e+06	17.1	1,2,3,4,6,7,8-HpCDF
42:51	1.17e+05	1.22e+05	0.95 y	2.39e+05	0.770	
43:09	7.68e+06	7.29e+06	1.05 y	1.50e+07	48.2	
45:09	2.08e+05	1.86e+05	1.12 y	3.95e+05	1.27	1,2,3,4,7,8,9-HpCDF



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants



August 26, 2002

Ms. Shannon Dunn  
Landau Associates, Inc.  
130 2<sup>nd</sup> Avenue South  
Edmonds, WA 98020

**RE: Client Project: Cornwall Ave. Landfill; 001020.220**  
**ARI Job No: EQ21**

Dear Shannon,

Please find enclosed original chain of custody (COC) and analytical results for the project referenced above. Analytical Resources, Inc. (ARI) accepted four water samples on August 8, 2002. The samples were received in good condition and there were no discrepancies between the COC and containers' labels.

The samples were analyzed for PCBs referencing US EPA method 8082, diesel and motor oil range hydrocarbons referencing WDOE method NWTPH-Dx with acid/si cleanup, total and dissolved metals referencing US EPA methods 6010B and 7421, and general chemistry parameters as referenced specifically on the reports.

No analytical complications were noted. A copy of this report and all associated data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

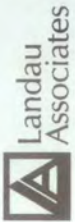
Respectfully,

ANALYTICAL RESOURCES, INC.

Mary Lou Fox  
Project Manager  
206-695-6211  
marylou@arilabs.com

MLF/mlf  
Enclosure  
cc: File EQ21

- Seattle (Edmonds) (425) 778-0907
- Tacoma (253) 926-2493
- Spokane (509) 327-9737
- Portland (Lake Oswego) (503) 443-6010



# Chain-of-Custody Record

Date 8/8/02  
 Page 1 of 1

EQ21  
02-10451 02-10457

Project Name		Project No.		Testing Parameters		Turnaround Time	Observations/Comments
Sample I.D.	Date	Time	Matrix	No. of Containers	Method of Shipment	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Accelerated	
S-1	8/8/02	1115	water	12			
S-2	8/8/02	1215		12			
S-3	8/8/02	1245		10			
MV-6	8/8/02	1455		1			
Special Shipment/Handling or Storage Requirements: <u>on ice</u>							
<b>Relinquished by</b> Signature: <u>[Signature]</u> Printed Name: <u>Ken Keith</u> Company: <u>Landau Associates</u> Date: <u>8/8/02</u> Time: <u>10:30</u>				<b>Received by</b> Signature: <u>[Signature]</u> Printed Name: <u>Eric Johnson</u> Company: <u>ARI</u> Date: <u>8/8/02</u> Time: <u>0845</u>			
<b>Relinquished by</b> Signature: <u>[Signature]</u> Printed Name: <u>Ken Keith</u> Company: <u>Landau Associates</u> Date: <u>8/8/02</u> Time: <u>10:30</u>				<b>Received by</b> Signature: <u>[Signature]</u> Printed Name: <u>Eric Johnson</u> Company: <u>ARI</u> Date: <u>8/8/02</u> Time: <u>0845</u>			



ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Sample No: Method Blank

Lab Sample ID: EQ21MB  
LIMS ID: 02-10451  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: NA  
Date Received: NA

Data Release Authorized: *AB*  
Reported: 08/16/02

Date extracted: 08/09/02  
Date analyzed: 08/15/02 04:02  
Instrument ID: ECD3  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value	
12674-11-2	Aroclor 1016	0.050	U
53469-21-9	Aroclor 1242	0.050	U
12672-29-6	Aroclor 1248	0.050	U
11097-69-1	Aroclor 1254	0.050	U
11096-82-5	Aroclor 1260	0.050	U
11104-28-2	Aroclor 1221	0.10	U
11141-16-5	Aroclor 1232	0.050	U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 107%  
Tetrachlorometaxylene 86.5%

Data Qualifiers


- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Sample No: S-1

Lab Sample ID: EQ21A  
LIMS ID: 02-10451  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 08/08/02  
Date Received: 08/09/02

Data Release Authorized:   
Reported: 08/16/02

Date extracted: 08/09/02  
Date analyzed: 08/15/02 05:44  
Instrument ID: ECD3  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.14
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 93.5%  
Tetrachlorometaxylene 78.5%

Data Qualifiers


- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Sample No: S-2

Lab Sample ID: EQ21B  
LIMS ID: 02-10452  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 08/08/02  
Date Received: 08/09/02

Data Release Authorized:   
Reported: 08/16/02

Date extracted: 08/09/02  
Date analyzed: 08/15/02 06:19  
Instrument ID: ECD3  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	0.050 U
<b>53469-21-9</b>	<b>Aroclor 1242</b>	<b>0.16</b>
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 88.5%  
Tetrachlorometaxylene 74.0%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.




ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Sample No: S-3

Lab Sample ID: EQ21C  
LIMS ID: 02-10453  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 08/08/02  
Date Received: 08/09/02

Data Release Authorized:   
Reported: 08/16/02

Date extracted: 08/09/02  
Date analyzed: 08/15/02 06:53  
Instrument ID: ECD3  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.050 U
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 103%  
Tetrachlorometaxylene 84.0%


Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Lab Sample ID: EQ21SB  
LIMS ID: 02-10451  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Data Release Authorized:   
Reported: 08/16/02

LABORATORY CONTROL SAMPLE RECOVERY

Date extracted: 08/09/02

CONSTITUENT	SPIKE VALUE	SPIKE ADDED	% RECOVERY	RPD
LABORATORY CONTROL SAMPLE				
Aroclor 1242	0.418	0.504	82.9%	
LAB CONTROL DUPLICATE				
Aroclor 1242	0.413	0.504	81.9%	1.2%

Aroclor Surrogate Recoveries

LCS-Decachlorobiphenyl 112%  
LCS-Tetrachlorometaxylene 88.5%  
  
LCSD-Decachlorobiphenyl 109%  
LCSD-Tetrachlorometaxylene 93.0%

Values reported in ug/L

WATER AROCLOR SURROGATE SUMMARY

Matrix: Water

QC Report No: EQ21  
Project: Cornwall Ave. Landfill  
001020.220

LIMS ID	Lab ID	Client ID	TCMX #	DCBP #	TOT OUT
02-10451MB	080902MB	Method Blank	86.5%	107%	0
02-10451LCS080902LCS		Lab Control	88.5%	112%	0
02-10451LCS080902LCSD		Lab Control Dup	93.0%	109%	0
02-10451	EQ21A	S-1	78.5%	93.5%	0
02-10452	EQ21B	S-2	74.0%	88.5%	0
02-10453	EQ21C	S-3	84.0%	103%	0

	Control	Sample
	QC LIMITS	QC LIMITS
(TCMX) = Tetrachloro-m-xylene	(48-93)	(50-91)
(DCBP) = Decachlorobiphenyl	(53-126)	(30-128)

# Column to be used to flag recovery values

\* Values outside of required QC limits

D Surrogate Compound diluted out

TOTAL DIESEL RANGE HYDROCARBONS  
NWTPHD Range C12 to C24 by GC/FID  
and Motor Oil  
Silica and Acid-Cleaned

LIMS ID: 02-10451

QC Report No: EQ21-Landau Associates, Inc.

Matrix: Water

Project: Cornwall Ave. Landfill

001020.220

Data Release Authorized: 

Date Received: 08/09/02

Reported: 08/21/02

Lab ID	Sample ID	Date Analyzed	Dilution Factor	Diesel Range	*HC ID	Motor Oil Range	Surrogate Recovery
EQ21MB	Method Blank	08/12/02	1:1	0.25 U	---	0.50 U	94.0%
EQ21A	S-1	08/12/02	1:1	0.25 U	---	0.50 U	99.0%
EQ21B	S-2	08/12/02	1:1	0.25 U	---	0.50 U	88.0%

Surrogate is O-Terphenyl.


- \* ID indicates, in the opinion of the analyst, the petroleum product with the best pattern match. 'NO' indicates that there was not a good match for any of the requested products. Values reported in ppm (mg/L).  
Diesel quantitation on total peaks in the range from C12 to C24.  
Motor Oil quantitation on total peaks in the Motor Oil Standard range.

Data Qualifiers

- U Compound not detected at the given detection limit.
- E Value detected above linear range of instrument. Dilution required.
- J Indicates an estimated value below the calculated detection limit.
- S No value reported due to saturation of the detector. Dilution required.
- D Indicates the surrogate was not detected because of dilution of the extract.
- E Indicates a value above the linear range of the detector. Dilution required.
- NR Indicates no recovery due to matrix interference.

TOTAL DIESEL RANGE HYDROCARBONS  
NWTPHD Range C12 to C24 by GC/FID  
Acid-Cleaned

Lab Sample ID: 080902LCS      QC Report No: EQ21-Landau Associates, Inc.  
LIMS ID: 02-10451              Project: Cornwall Ave. Landfill  
Matrix: Water                      001020.220

Data Release Authorized:   
Reported: 08/21/02

LABORATORY CONTROL SAMPLE RECOVERY REPORT  
Date analyzed: 08/12/02

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY
Diesel Range Hydrocarbons	2.58	3.00	86.0%

TPHd Surrogate Recovery

LCS o-Terphenyl      90.0%

Values reported in parts per million (mg/L)

TOTAL ACID & SILICA CLEANED DIESEL HYDROCARBONS SUMMARY

Matrix: Water

QC Report No: EQ21

LIMS ID	Lab ID	Client ID	O-TerPh	TOT OUT
02-10451	080902MB	Method Blank	94%	0
02-10451	080902LCS	Lab Control	90%	0
02-10451	EQ21A	S-1	99%	0
02-10452	EQ21B	S-2	88%	0

(O-TerP) = O-Terphenyl

Control	Sample
<u>QC LIMITS</u>	<u>QC LIMITS</u>
(30-150)	(30-150)

# Column to be used to flag recovery values

\* Values outside of required QC limits

D System Monitoring Compound diluted out

TOTAL DIESEL RANGE HYDROCARBONS-EXTRACTION REPORT



Matrix: Water  
 Date Received: 08/09/02

ARI Job: EQ21  
 Project: Cornwall Ave. Landfill  
 001020.220

ARI ID	Client ID	Sample Amt	Final Vol	Prep Date
02-10451-080902MB1	Method Blank	500 mL	1.00 mL	08/09/02
02-10451-080902LCS1	Lab Control	500 mL	1.00 mL	08/09/02
02-10451-080902LCSD1	Lab Control Dup	500 mL	1.00 mL	08/09/02
02-10451-EQ21A	S-1	500 mL	1.00 mL	08/09/02
02-10452-EQ21B	S-2	500 mL	1.00 mL	08/09/02



INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: Method Blank

Lab Sample ID: EQ21MB  
LIMS ID: 02-10451  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Date Sampled: NA  
Date Received: NA

Data Release Authorized   
Reported: 08/20/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	08/12/02	6010B	08/15/02	7440-50-8	Copper	0.002	0.002 U
3020A	08/12/02	7421	08/14/02	7439-92-1	Lead	0.001	0.001 U
3010A	08/12/02	6010B	08/15/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL  
RL Reporting Limit



INORGANICS ANALYSIS DATA SHEET

Sample No: S-1

TOTAL METALS

Lab Sample ID: EQ21A

QC Report No: EQ21-Landau Associates, Inc.

LIMS ID: 02-10451

Project: Cornwall Ave. Landfill

Matrix: Water

001020.220

Date Sampled: 08/08/02

Date Received: 08/09/02

Data Release Authorized: 

Reported: 08/20/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	08/12/02	6010B	08/15/02	7440-50-8	Copper	0.004	0.005
3020A	08/12/02	7421	08/20/02	7439-92-1	Lead	0.001	0.001 U
3010A	08/12/02	6010B	08/15/02	7440-66-6	Zinc	0.01	0.01 U

U Analyte undetected at given RL

RL Reporting Limit

INORGANICS ANALYSIS DATA SHEET

Sample No: S-2

TOTAL METALS

Lab Sample ID: EQ21B

QC Report No: EQ21-Landau Associates, Inc.

LIMS ID: 02-10452

Project: Cornwall Ave. Landfill

Matrix: Water

001020.220

Date Sampled: 08/08/02

Date Received: 08/09/02

Data Release Authorized: 

Reported: 08/20/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	08/12/02	6010B	08/15/02	7440-50-8	Copper	0.004	0.007
3020A	08/12/02	7421	08/14/02	7439-92-1	Lead	0.001	0.002
3010A	08/12/02	6010B	08/15/02	7440-66-6	Zinc	0.01	0.01 U

U Analyte undetected at given RL

RL Reporting Limit

INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: S-3

Lab Sample ID: EQ21C  
LIMS ID: 02-10453  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 08/08/02  
Date Received: 08/09/02

Data Release Authorized:   
Reported: 08/20/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	08/12/02	6010B	08/15/02	7440-50-8	Copper	0.004	0.005
3020A	08/12/02	7421	08/14/02	7439-92-1	Lead	0.001	0.002
3010A	08/12/02	6010B	08/15/02	7440-66-6	Zinc	0.01	0.01 U


U Analyte undetected at given RL  
RL Reporting Limit

INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS



Lab Sample ID: EQ21LCS  
LIMS ID: 02-10451  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Data Release Authorized:   
Reported: 08/20/02

BLANK SPIKE QUALITY CONTROL REPORT

<u>Analyte</u>	<u>Spike mg/L</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Q</u>
Copper	0.476	0.500	95.2%	
Lead	0.106	0.100	106%	
Zinc	0.468	0.500	93.6%	

'Q' codes: N = control limit not met

Control Limits: 80-120%

INORGANIC ANALYSIS DATA SHEET  
DISSOLVED METALS

Sample No: Method Blank

Lab Sample ID: EQ21MB  
LIMS ID: 02-10455  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: NA  
Date Received: NA

Data Release Authorized:   
Reported: 08/20/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	08/12/02	6010B	08/15/02	7440-50-8	Copper	0.002	0.002 U
7000A	08/12/02	7421	08/14/02	7439-92-1	Lead	0.001	0.001 U
6010B	08/12/02	6010B	08/15/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL  
RL Reporting Limit

INORGANIC ANALYSIS DATA SHEET  
DISSOLVED METALS

Sample No: S-1

Lab Sample ID: EQ21E  
LIMS ID: 02-10455  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 08/08/02  
Date Received: 08/09/02

Data Release Authorized:   
Reported: 08/20/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	08/12/02	6010B	08/15/02	7440-50-8	Copper	0.004	0.004 U
7000A	08/12/02	7421	08/14/02	7439-92-1	Lead	0.001	0.001
6010B	08/12/02	6010B	08/15/02	7440-66-6	Zinc	0.01	0.01 U

U Analyte undetected at given RL

RL Reporting Limit

INORGANIC ANALYSIS DATA SHEET  
DISSOLVED METALS

Sample No: S-2

Lab Sample ID: EQ21F  
LIMS ID: 02-10456  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 08/08/02  
Date Received: 08/09/02

Data Release Authorized:   
Reported: 08/20/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	08/12/02	6010B	08/15/02	7440-50-8	Copper	0.004	0.005
7000A	08/12/02	7421	08/20/02	7439-92-1	Lead	0.001	0.001 U
6010B	08/12/02	6010B	08/15/02	7440-66-6	Zinc	0.01	0.01 U

U Analyte undetected at given RL

RL Reporting Limit

INORGANIC ANALYSIS DATA SHEET  
DISSOLVED METALS

Sample No: S-3

Lab Sample ID: EQ21G  
LIMS ID: 02-10457  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 08/08/02  
Date Received: 08/09/02

Data Release Authorized   
Reported: 08/20/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	08/12/02	6010B	08/15/02	7440-50-8	Copper	0.004	0.004 U
7000A	08/12/02	7421	08/14/02	7439-92-1	Lead	0.001	0.002
6010B	08/12/02	6010B	08/15/02	7440-66-6	Zinc	0.01	0.01 U

U Analyte undetected at given RL

RL Reporting Limit




INORGANICS ANALYSIS DATA SHEET  
DISSOLVED METALS



Lab Sample ID: EQ21LCS  
LIMS ID: 02-10455  
Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Data Release Authorized:   
Reported: 08/20/02

BLANK SPIKE QUALITY CONTROL REPORT

<u>Analyte</u>	<u>Spike mg/L</u>	<u>Spike Added</u>	<u>% Recovery</u>	<u>Q</u>
Copper	0.492	0.500	98.4%	
Lead	0.020	0.020	100%	
Zinc	0.488	0.500	97.6%	

'Q' codes: N = control limit not met  
NA = Not applicable - analyte not spiked

Control Limits: 80-120%

QA Report - Method Blank Analysis

Matrix: Water  
 QC Report No: EQ21-Landau Associates, Inc.  
 Project: Cornwall Ave. Landfill  
 001020.220  
 Date Received: NA  
 Data Release Authorized: *ast*  
 Reported: 08/23/02 Amy S. Phillips

METHOD BLANK RESULTS  
CONVENTIONALS

Analysis Date & Batch	Constituent	Units	Result
08/09/02 08092#1	Total Suspended Solids	mg/L	< 1.0 U
08/09/02 08092#1	Turbidity	NTU	< 0.05 U
08/16/02 08162#1	Total Cyanide	mg/L	< 0.005 U
08/20/02 08202#1	N-Ammonia	mg-N/L	< 0.010 U
08/14/02 08142#1	Total Organic Carbon	mg/L	< 1.5 U
08/10/02 08102#1	Fecal Coliform	CFU/100 mL	< 1 U

**Final Report**  
**Laboratory Analysis of Conventional Parameters**

Sample No: S-1

Lab Sample ID: EQ21A                      QC Report No: EQ21-Landau Associates, Inc.  
LIMS ID: 02-10451                      Project: Cornwall Ave. Landfill  
Matrix: Water                              001020.220  
Date Sampled: 08/08/02  
Data Release Authorized: *ast*              Date Received: 08/09/02  
Reported: 08/23/02      Amy S. Phillips

Analyte	Analysis			Units	Result
	Date & Batch	Method	RL		
Total Suspended Solids	08/09/02 08092#1	EPA 160.2	1.1	mg/L	6.6
Turbidity	08/09/02 08092#1	EPA 180.1	0.05	NTU	2.4
Total Cyanide	08/16/02 08162#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Ammonia	08/20/02 08202#1	EPA 350.1M	0.20	mg-N/L	6.9
Total Organic Carbon	08/14/02 08142#1	EPA 415.1	1.5	mg/L	4.6
Fecal Coliform	08/10/02 08102#1	SM 9222 D	1	CFU/100 mL	< 1 U

Fecal Coliform analysis performed by membrane filtration technique.

RL Analytical reporting limit  
U Undetected at reported detection limit

Report for EQ21 received 08/09/02

**Final Report**  
**Laboratory Analysis of Conventional Parameters**

Sample No: S-2

Lab Sample ID: EQ21B                      QC Report No: EQ21-Landau Associates, Inc.  
LIMS ID: 02-10452                      Project: Cornwall Ave. Landfill  
Matrix: Water                                      001020.220  
Date Sampled: 08/08/02  
Data Release Authorized: *asp*              Date Received: 08/09/02  
Reported: 08/23/02      Amy S. Phillips

Analyte	Analysis			Units	Result
	Date & Batch	Method	RL		
Total Suspended Solids	08/09/02 08092#1	EPA 160.2	1.0	mg/L	6.3
Turbidity	08/09/02 08092#1	EPA 180.1	0.05	NTU	39
Total Cyanide	08/16/02 08162#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Ammonia	08/20/02 08202#1	EPA 350.1M	0.20	mg-N/L	6.3
Total Organic Carbon	08/14/02 08142#1	EPA 415.1	1.5	mg/L	4.4
Fecal Coliform	08/10/02 08102#1	SM 9222 D	1	CFU/100 mL	< 1 U

Fecal Coliform analysis performed by membrane filtration technique.

RL Analytical reporting limit  
U Undetected at reported detection limit

Report for EQ21 received 08/09/02

Final Report  
Laboratory Analysis of Conventional Parameters

Sample No: S-3

Lab Sample ID: EQ21C                      QC Report No: EQ21-Landau Associates, Inc.  
LIMS ID: 02-10453                      Project: Cornwall Ave. Landfill  
Matrix: Water                                      001020.220  
Date Sampled: 08/08/02  
Data Release Authorized: *all*              Date Received: 08/09/02  
Reported: 08/23/02      Amy S. Phillips

Analyte	Analysis			Units	Result
	Date & Batch	Method	RL		
Total Suspended Solids	08/09/02 08092#1	EPA 160.2	1.0	mg/L	5.2
Turbidity	08/09/02 08092#1	EPA 180.1	0.05	NTU	2.1
Total Cyanide	08/16/02 08162#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Ammonia	08/20/02 08202#1	EPA 350.1M	0.10	mg-N/L	1.1
Total Organic Carbon	08/14/02 08142#1	EPA 415.1	1.5	mg/L	< 1.5 U
Fecal Coliform	08/10/02 08102#1	SM 9222 D	1	CFU/100 mL	< 1 U

Fecal Coliform analysis performed by membrane filtration technique.

RL Analytical reporting limit  
U Undetected at reported detection limit

Report for EQ21 received 08/09/02

**Final Report**  
**Laboratory Analysis of Conventional Parameters**

Sample No: MW-6

Lab Sample ID: EQ21D                      QC Report No: EQ21-Landau Associates, Inc.  
LIMS ID: 02-10454                      Project: Cornwall Ave. Landfill  
Matrix: Water                                      001020.220  
Date Sampled: 08/08/02  
Data Release Authorized: *att*              Date Received: 08/09/02  
Reported: 08/23/02    Amy S. Phillips

Analyte	Analysis			RL	Units	Result
	Date & Batch	Method				
Fecal Coliform	08/10/02	SM 9222 D	1		CFU/100 mL	< 1 U
	08102#1					

Fecal Coliform analysis performed by membrane filtration technique.

RL Analytical reporting limit  
U Undetected at reported detection limit

Report for EQ21 received 08/09/02





QA Report - Laboratory Control Samples

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Date Received: NA

Data Release Authorized: *asp*  
Reported: 08/23/02 Amy S. Phillips

LABORATORY CONTROL SAMPLES  
CONVENTIONALS

<u>Constituent</u>	<u>Units</u>	<u>Measured Value</u>	<u>True Value</u>	<u>Recovery</u>
<b>Laboratory Control Sample</b>				
Turbidity	NTU	17.3	17.4	99.4%
Date analyzed: 08/09/02 Batch ID: 08092#1				
<b>Laboratory Control Sample</b>				
Total Cyanide	mg/L	0.133	0.150	88.7%
Date analyzed: 08/16/02 Batch ID: 08162#1				



QA Report - Standard Reference Material Analysis

QC Report No: EQ21-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Date Received: NA

Data Release Authorized: *atp*  
Reported: 08/23/02 Amy S. Phillips

STANDARD REFERENCE MATERIAL ANALYSIS  
CONVENTIONALS

Constituent	Units	Value	True Value	Recovery
<b>ERA 16042</b>				
N-Ammonia	mg-N/L	0.743	0.800	92.9%
Date analyzed: 08/20/02 Batch ID: 08202#1				
<b>ERA #0206-02-02</b>				
Total Organic Carbon	mg/L	19.3	20.0	96.5%
Date analyzed: 08/14/02 Batch ID: 08142#1				

QA Report - Replicate Analysis

Matrix: Water  
 QC Report No: EQ21-Landau Associates, Inc.  
 Project: Cornwall Ave. Landfill  
 001020.220  
 Date Received: 08/09/02  
 Data Release Authorized: *asp*  
 Reported: 08/23/02 Amy S. Phillips

DUPLICATE ANALYSIS RESULTS  
CONVENTIONALS

Constituent	Units	Sample Value	Duplicate Value	RPD
ARI ID: 02-10451, EQ21 A		Client Sample ID: S-1		
Turbidity	NTU	2.4	2.2	8.7%
Total Cyanide	mg/L	< 0.005 U	< 0.005 U	NA
N-Ammonia	mg-N/L	6.9	6.8	1.5%
Total Organic Carbon	mg/L	4.6	4.9	6.3%

QA Report - Matrix Spike/Matrix Spike Duplicate Analysis

Matrix: Water

QC Report No: EQ21-Landau Associates, Inc.

Project: Cornwall Ave. Landfill

001020.220

Date Received: 08/09/02

Data Release Authorized: *amp*

Reported: 08/23/02 Amy S. Phillips

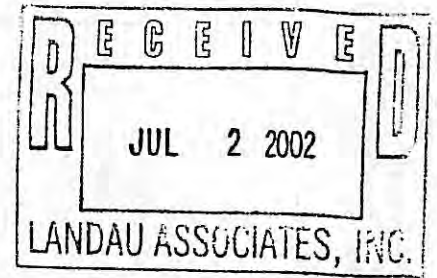
MATRIX SPIKE QA/QC REPORT  
CONVENTIONALS

Constituent	Units	Sample Value	Spike Value	Spike Added	Recovery
ARI ID: 02-10451, EQ21 A Client Sample ID: S-1					
Total Cyanide	mg/L	< 0.005	0.128	0.147	87.1%
N-Ammonia	mg-N/L	6.9	12.9	5.00	120%
Total Organic Carbon	mg/L	4.6	25.6	20.0	105%

MS/MSD Recovery Limits: 75 - 125 %



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants



July 2, 2002

Ms. Shannon Dunn  
Landau Associates, Inc.  
130 2<sup>nd</sup> Avenue South  
Edmonds, WA 98020

**RE: Client Project: Cornwall Ave; 001020.200**  
**ARI Job No: EL51**

Dear Shannon,

Please find enclosed a carbon copy of the original chain of custody (COC) and analytical results for the project referenced above. Analytical Resources, Inc. (ARI) accepted four seven sediment samples on June 11, 2002. The samples were received in good condition and there were no discrepancies between the COC and containers' labels.

The samples were analyzed for total metals referencing US EPA methods 6010B/7421/7471A, bis(2-ethylhexyl)phthalate referencing US EPA method 8270, PCBs referencing US EPA method 8082, and TOC referencing Plumb, 1981. Pete Rude (Landau Associates) canceled the request for grain size analysis by telephone on 6/12/02. Quality control analyses are included for your review, including batch matrix QC for the bis(2-ethylhexyl)phthalate, PCBs, and total metals analyses. The total metals matrix spike and sample duplicate reported under LIMS ID 02-7482 is applicable to the ICP and lead analyses. The total metals matrix spikes and sample duplicates reported under LIMS IDs 02-7599 and 02-7623 are applicable for the mercury analysis.

Samples **SRI-SED-5**, **SRI-SED-6**, and **SRI-SED-9**, were analyzed and reported at a two times dilution because the initial analyses of these samples without dilution showed surrogate recoveries above the QC limit due to suppression of the internal standard.

No further analytical complications were noted. A copy of this report and all associated data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Mary Lou Fox  
Project Manager  
206-695-6211  
marylou@arilabs.com

MLF/mlf  
Enclosure  
cc: File EL51

- Seattle (Edmonds) (425) 778-0907
- Tacoma (253) 926-2493
- Spokane (509) 327-9737
- Portland (Lake Oswego) (503) 443-6010



Landau Associates

# Chain-of-Custody Record

Project Name CORNWALL AVE Project No. 001020200  
 Project Location/Event SPI-SED  
 Sampler's Name SHA/NHS  
 Project Contact SHANNON DUNN  
 Send Results To SHANNON DUNN

Sample I.D.	Date	Time	Matrix	No. of Containers	Observations/Comments
SPI-SED-1	6-10-07	11:05	SED	6	
SPI-SED-2		11:35		4	
SPI-SED-3		12:10		4	
SPI-SED-4		12:25		4	
SPI-SED-5		12:50		4	
SPI-SED-6		13:05		4	
SPI-SED-9		11:40	↓	4	

Testing Parameters

Cu, Pb, Ag, Zn, EPA 600.7	X
BIS (2-ETHYLHEXYL) (PHTH)	X
Pb, EPA 8082	X
Pb, EPA 8082	X
FRAND 5132C PUMP	X
TOC EPA 9060	X
TOTAL SOLIDS RS	X
Hg	X

Turnaround Time  
 Standard  
 Accelerated

Special Shipment/Handling or Storage Requirements

Relinquished by Signature <u>[Signature]</u> Printed Name <u>SHANNON DUNN</u> Company <u>LANDAU</u>	Relinquished by Signature Printed Name Company	Received by Signature <u>[Signature]</u> Printed Name <u>ERIC BRANSON</u> Company <u>ARI</u>	Received by Signature Printed Name Company
Date <u>6-11-07</u> Time <u>8:40</u>	Date Time	Date <u>6-11-07</u> Time <u>16:30</u>	Date Time

3.5

Date \_\_\_\_\_ of \_\_\_\_\_  
 Page \_\_\_\_\_ of \_\_\_\_\_

ORGANICS ANALYSIS DATA SHEET  
PSDDA Semivolatiles by GC/MS

Sample No: SRI-SED-1



Page 1 of 1

Lab Sample ID: EL51A

QC Report No: EL51-Landau Associates, Inc.

LIMS ID: 02-7765

Project: Cornwall Ave.

Matrix: Sediment

001020.200

Data Release Authorized: *[Signature]*

Date Sampled: 06/10/02

Reported: 06/26/02

Date Received: 06/11/02

Date extracted: 06/18/02

Sample Amount: 25.4 g-dry-wt

Date analyzed: 06/24/02 16:57

Final Extract Volume: 0.5 mL

Instrument: NT1

Dilution Factor: 1:1

GPC Cleanup: NO

Percent Moisture: 61.3%

pH: 14.0

<u>CAS Number</u>	<u>Analyte</u>	<u>ug/kg</u>
117-81-7	bis(2-Ethylhexyl)phthalate	220

Semivolatiles Surrogate Recovery

d14-p-Terphenyl 121%

ORGANICS ANALYSIS DATA SHEET

PSDDA Semivolatiles by GC/MS

Page 1 of 1

Lab Sample ID: EL51B

LIMS ID: 02-7766

Matrix: Sediment

Data Release Authorized: *SP*

Reported: 06/26/02

Sample No: SRI-SED-2

QC Report No: EL51-Landau Associates, Inc.

Project: Cornwall Ave.

001020.200

Date Sampled: 06/10/02

Date Received: 06/11/02



Date extracted: 06/18/02

Date analyzed: 06/24/02 17:40

Instrument: NT1

GPC Cleanup: NO

Sample Amount: 25.4 g-dry-wt

Final Extract Volume: 0.5 mL

Dilution Factor: 1:1

Percent Moisture: 61.6%

pH: 12.0

<u>CAS Number</u>	<u>Analyte</u>	<u>ug/kg</u>
117-81-7	bis(2-Ethylhexyl)phthalate	160

Semivolatiles Surrogate Recovery

d14-p-Terphenyl 89.8%



ORGANICS ANALYSIS DATA SHEET  
PSDDA Semivolatiles by GC/MS

Sample No: SRI-SED-3



Page 1 of 1

Lab Sample ID: EL51C

QC Report No: EL51-Landau Associates, Inc.

LIMS ID: 02-7767

Project: Cornwall Ave.

Matrix: Sediment

001020.200

Data Release Authorized: *[Signature]*

Date Sampled: 06/10/02

Reported: 06/26/02

Date Received: 06/11/02

Date extracted: 06/18/02

Sample Amount: 25.6 g-dry-wt

Date analyzed: 06/24/02 18:22

Final Extract Volume: 0.5 mL

Instrument: NT1

Dilution Factor: 1:1

GPC Cleanup: NO

Percent Moisture: 59.2%

pH: 7.4

<u>CAS Number</u>	<u>Analyte</u>	<u>ug/kg</u>
117-81-7	bis(2-Ethylhexyl)phthalate	160

Semivolatiles Surrogate Recovery

d14-p-Terphenyl 104%



ORGANICS ANALYSIS DATA SHEET  
PSDDA Semivolatiles by GC/MS

Sample No: SRI-SED-4



Page 1 of 1

Lab Sample ID: EL51D

QC Report No: EL51-Landau Associates, Inc.

LIMS ID: 02-7768

Project: Cornwall Ave.

Matrix: Sediment

001020.200

Data Release Authorized *[Signature]*

Date Sampled: 06/10/02

Reported: 06/26/02

Date Received: 06/11/02

Date extracted: 06/18/02

Sample Amount: 25.2 g-dry-wt

Date analyzed: 06/24/02 19:05

Final Extract Volume: 0.5 mL

Instrument: NT1

Dilution Factor: 1:1

GPC Cleanup: NO

Percent Moisture: 58.8%

pH: 5.6

<u>CAS Number</u>	<u>Analyte</u>	<u>ug/kg</u>
117-81-7	bis(2-Ethylhexyl)phthalate	390

Semivolatiles Surrogate Recovery

d14-p-Terphenyl 123%

Sample No: Batch Sample  
QC Batch: EL51  
Date Received: 06/10/02

Data Release Authorized:  
Reported: 07/01/02

**MATRIX SPIKE/SPIKE DUPLICATE RECOVERY**

Date extracted: 06/17/02  
Date analyzed: 06/19/02

CONSTITUENT		SAMPLE VALUE	SPIKE VALUE	SPIKE ADDED	% RECOVERY	RPD
Phenol	<	39.2	542.	735	73.7%	
Pentachlorophenol	<	97.9	590.	735	80.3%	
MATRIX SPIKE DUPLICATE						
Phenol	<	39.2	524.	734	71.4%	3.2%
Pentachlorophenol	<	97.9	533.	734	72.6%	10%

Values reported in ug/kg-dry-weight

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD


Sample No: SRI-SED-1

Lab Sample ID: EL51A  
LIMS ID: 02-7765  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.

001020.200

Date Sampled: 06/10/02

Data Release Authorized:   
Reported: 06/25/02

Date Received: 06/11/02

Date extracted: 06/18/02  
Date analyzed: 06/20/02 15:21  
Instrument ID: ECD1  
Sample Amount: 25.5 g-dry-wt  
Final Ext Vol: 5.0 mL  
pH: 14.

GPC Cleanup: No  
Florisol Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1  
Percent Moisture: 61.3%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	20 U
53469-21-9	Aroclor 1242	20 U
12672-29-6	Aroclor 1248	130
11097-69-1	Aroclor 1254	130
11096-82-5	Aroclor 1260	42 Y
11104-28-2	Aroclor 1221	39 U
11141-16-5	Aroclor 1232	20 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	86.8%
Tetrachlorometaxylene	64.5%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Sample No: SRI-SED-2

Lab Sample ID: EL51B                      QC Report No: EL51-Landau Associates, Inc.  
LIMS ID: 02-7766                          Project: Cornwall Ave.  
Matrix: Sediment                              001020.200  
Date Released Authorized: 06/25/02      Date Sampled: 06/10/02  
Reported: 06/25/02                          Date Received: 06/11/02

Date extracted: 06/18/02                      GPC Cleanup: No  
Date analyzed: 06/20/02 15:49              Florisil Cleanup: No  
Instrument ID: ECD1                              Acid Cleanup: Yes  
Sample Amount: 25.5 g-dry-wt                Sulfur Cleanup: Yes  
Final Ext Vol: 5.0 mL                          Conc/Dilution Factor: 1:1  
pH: 12.    Percent Moisture: 61.6%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	20 U
53469-21-9	Aroclor 1242	20 U
12672-29-6	Aroclor 1248	32 Y
11097-69-1	Aroclor 1254	31
11096-82-5	Aroclor 1260	20 U
11104-28-2	Aroclor 1221	39 U
11141-16-5	Aroclor 1232	20 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl                          79.8%  
Tetrachlorometaxylene                      70.5%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD



Sample No: SRI-SED-3

Lab Sample ID: EL51C  
LIMS ID: 02-7767  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200

Data Release Authorized:   
Reported: 06/25/02

Date Sampled: 06/10/02  
Date Received: 06/11/02

Date extracted: 06/18/02  
Date analyzed: 06/20/02 16:17  
Instrument ID: ECD1  
Sample Amount: 25.3 g-dry-wt  
Final Ext Vol: 5.0 mL  
pH: 7.4

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1  
Percent Moisture: 59.2%

Reported in Total ug/kg Dry Weight

<u>CAS Number</u>	<u>Analyte</u>	<u>Value</u>
12674-11-2	Aroclor 1016	20 U
53469-21-9	Aroclor 1242	20 U
12672-29-6	Aroclor 1248	31 Y
11097-69-1	Aroclor 1254	28
11096-82-5	Aroclor 1260	20 U
11104-28-2	Aroclor 1221	39 U
11141-16-5	Aroclor 1232	20 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 78.2%  
Tetrachlorometaxylene 72.5%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

**ORGANICS ANALYSIS DATA SHEET**  
PCB by GC/ECD

Sample No: SRI-SED-4

Lab Sample ID: EL51D                      QC Report No: EL51-Landau Associates, Inc.  
LIMS ID: 02-7768                          Project: Cornwall Ave.  
Matrix: Sediment                              001020.200  
Date Released: 06/10/02  
Date Received: 06/11/02  
Data Release Authorized: ~~Yes~~  
Reported: 06/25/02

Date extracted: 06/18/02                      GPC Cleanup: No  
Date analyzed: 06/20/02 16:45              Florisil Cleanup: No  
Instrument ID: ECD1                              Acid Cleanup: Yes  
Sample Amount: 25.2 g-dry-wt                  Sulfur Cleanup: Yes  
Final Ext Vol: 5.0 mL                              Conc/Dilution Factor: 1:1  
pH: 5.6    Percent Moisture: 58.8%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	20 U
53469-21-9	Aroclor 1242	20 U
12672-29-6	Aroclor 1248	75
11097-69-1	Aroclor 1254	84
11096-82-5	Aroclor 1260	32 Y
11104-28-2	Aroclor 1221	40 U
11141-16-5	Aroclor 1232	20 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	78.8%
Tetrachlorometaxylene	69.0%

Data Qualifiers


- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: SRI-SED-3

Lab Sample ID: EL51C  
LIMS ID: 02-7767  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200  
Date Sampled: 06/10/02  
Date Received: 06/11/02

Data Release Authorized:   
Reported: 06/24/02

Percent Total Solids: 38.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050B	06/13/02	6010B	06/18/02	7440-50-8	Copper	0.5	63.2
3050B	06/13/02	7421	06/18/02	7439-92-1	Lead	1	22
CLP	06/14/02	7471A	06/17/02	7439-97-6	Mercury	0.1	0.4
3050B	06/13/02	6010B	06/18/02	7440-22-4	Silver	0.7	0.7 U
3050B	06/13/02	6010B	06/18/02	7440-66-6	Zinc	1	126

U Analyte undetected at given RL


RL Reporting Limit

INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: SRI-SED-4

Lab Sample ID: EL51D  
LIMS ID: 02-7768  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200  
Date Sampled: 06/10/02  
Date Received: 06/11/02

Data Release Authorized:   
Reported: 06/24/02

Percent Total Solids: 38.5%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050B	06/13/02	6010B	06/18/02	7440-50-8	Copper	0.5	104
3050B	06/13/02	7421	06/21/02	7439-92-1	Lead	2	56
3050B	06/13/02	6010B	06/18/02	7440-22-4	Silver	0.8	0.8
3050B	06/13/02	6010B	06/18/02	7440-66-6	Zinc	2	215

U Analyte undetected at given RL

RL Reporting Limit




INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: SRI-SED-5

Lab Sample ID: EL51E  
LIMS ID: 02-7769  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200  
Date Sampled: 06/10/02  
Date Received: 06/11/02

Data Release Authorized:   
Reported: 06/24/02

Percent Total Solids: 36.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050B	06/13/02	6010B	06/18/02	7440-50-8	Copper	0.5	69.9
3050B	06/13/02	7421	06/18/02	7439-92-1	Lead	1	33
CLP	06/14/02	7471A	06/17/02	7439-97-6	Mercury	0.1	0.7
3050B	06/13/02	6010B	06/18/02	7440-22-4	Silver	0.8	0.8 U
3050B	06/13/02	6010B	06/18/02	7440-66-6	Zinc	2	151


U Analyte undetected at given RL  
RL Reporting Limit

INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: SRI-SED-6

Lab Sample ID: EL51F  
LIMS ID: 02-7770  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200  
Date Sampled: 06/10/02  
Date Received: 06/11/02

Data Release Authorized  
Reported: 06/24/02 

Percent Total Solids: 37.3%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050B	06/13/02	6010B	06/18/02	7440-50-8	Copper	0.5	126
3050B	06/13/02	7421	06/20/02	7439-92-1	Lead	3	57
3050B	06/13/02	6010B	06/18/02	7440-22-4	Silver	0.8	0.8 U
3050B	06/13/02	6010B	06/18/02	7440-66-6	Zinc	2	175

U Analyte undetected at given RL


RL Reporting Limit

INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: SRI-SED-9

Lab Sample ID: EL51G  
LIMS ID: 02-7771  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200  
Date Sampled: 06/10/02  
Date Received: 06/11/02

Data Release Authorized   
Reported: 06/24/02

Percent Total Solids: 36.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050B	06/13/02	6010B	06/18/02	7440-50-8	Copper	0.5	81.4
3050B	06/13/02	7421	06/20/02	7439-92-1	Lead	1	34
3050B	06/13/02	6010B	06/18/02	7440-22-4	Silver	0.8	0.8
3050B	06/13/02	6010B	06/18/02	7440-66-6	Zinc	2	139

U Analyte undetected at given RL

RL Reporting Limit

INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS



Lab Sample ID: EL51LCS  
LIMS ID: 02-7767  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200

Data Release Authorized, *[Signature]*  
Reported: 06/24/02

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike mg/kg-dry	Spike Added	% Recovery	Q
Copper	6010B	47.7	50.0	95.4%	
Lead	7421	9.6	10.0	96.0%	
Mercury	7471A	1.07	1.00	107%	
Silver	6010B	50.6	50.0	101%	
Zinc	6010B	50.2	50.0	100%	

'Q' codes: N = control limit not met

Control Limits: 80-120%

Final Report  
Laboratory Analysis of Conventional Parameters

Sample No: SRI-SED-1

Lab Sample ID: EL51A  
LIMS ID: 02-7765  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.

001020.200

Date Sampled: 06/10/02

Data Release Authorized *MS*

Date Received: 06/11/02

Reported: 06/21/02 Dr. M.A. Perkins

Analyte	Analysis		Dilution		Units	Result
	Date/Batch	Method	Factor	RL		
Total Solids	06/12/02	EPA 160.3		0.01	Percent	38.9
	06122#1	SM 2540 B				
Total Organic Carbon	06/18/02	Plumb, 1981		0.0050	Percent	3.1
	06182#1					

RL Analytical reporting limit  
U Undetected at reported detection limit  
B Analyte found in method blank above detection

Report for EL51 received 06/11/02

Final Report  
Laboratory Analysis of Conventional Parameters

Sample No: SRI-SED-2

Lab Sample ID: EL51B                      QC Report No: EL51-Landau Associates, Inc.  
LIMS ID: 02-7766                          Project: Cornwall Ave.  
Matrix: Sediment                              001020.200  
Date Sampled: 06/10/02  
Data Release Authorized: *mf*              Date Received: 06/11/02  
Reported: 06/21/02    Dr. M.A. Perkins

Analyte	Analysis		Dilution		Units	Result
	Date/Batch	Method	Factor	RL		
Total Solids	06/12/02	EPA 160.3		0.01	Percent	36.9
	06122#1	SM 2540 B				
Total Organic Carbon	06/18/02	Plumb, 1981		0.0050	Percent	3.1
	06182#1					

RL Analytical reporting limit  
U Undetected at reported detection limit  
B Analyte found in method blank above detection

Report for EL51 received 06/11/02

Final Report  
Laboratory Analysis of Conventional Parameters

Sample No: SRI-SED-3

Lab Sample ID: EL51C                      QC Report No: EL51-Landau Associates, Inc.  
LIMS ID: 02-7767                          Project: Cornwall Ave.  
Matrix: Sediment                              001020.200  
Date Sampled: 06/10/02  
Data Release Authorized: *MB*              Date Received: 06/11/02  
Reported: 06/21/02    Dr. M.A. Perkins

Analyte	Analysis		Dilution		Units	Result
	Date/Batch	Method	Factor	RL		
Total Solids	06/12/02 06122#1	EPA 160.3 SM 2540 B	0.01		Percent	39.5
Total Organic Carbon	06/18/02 06182#1	Plumb, 1981	0.0050		Percent	2.9

RL Analytical reporting limit  
U Undetected at reported detection limit  
B Analyte found in method blank above detection

Report for EL51 received 06/11/02

Final Report  
Laboratory Analysis of Conventional Parameters

Sample No: SRI-SED-4

Lab Sample ID: EL51D                      QC Report No: EL51-Landau Associates, Inc.  
LIMS ID: 02-7768                          Project: Cornwall Ave.  
Matrix: Sediment                              001020.200  
Date Sampled: 06/10/02  
Data Release Authorized: *MB*              Date Received: 06/11/02  
Reported: 06/21/02 Dr. *MB* M.A. Perkins

Analyte	Analysis		Dilution		Units	Result
	Date/Batch	Method	Factor	RL		
Total Solids	06/12/02	EPA 160.3		0.01	Percent	38.6
	06122#1	SM 2540 B				
Total Organic Carbon	06/18/02	Plumb, 1981		0.0050	Percent	3.6
	06182#1					

RL Analytical reporting limit  
U Undetected at reported detection limit  
B Analyte found in method blank above detection

Report for EL51 received 06/11/02



Final Report  
Laboratory Analysis of Conventional Parameters

Sample No: SRI-SED-5

Lab Sample ID: EL51E                      QC Report No: EL51-Landau Associates, Inc.  
LIMS ID: 02-7769                          Project: Cornwall Ave.  
Matrix: Sediment                              001020.200  
Date Released: 06/10/02  
Data Release Authorized: *MP*              Date Received: 06/11/02  
Reported: 06/21/02    Dr. M.A. Perkins

Analyte	Analysis		Dilution		Units	Result
	Date/Batch	Method	Factor	RL		
Total Solids	06/12/02	EPA 160.3		0.01	Percent	37.8
	06122#1	SM 2540 B				
Total Organic Carbon	06/18/02	Plumb, 1981		0.0050	Percent	3.7
	06182#1					

RL Analytical reporting limit  
U Undetected at reported detection limit  
B Analyte found in method blank above detection

Report for EL51 received 06/11/02

ORGANICS ANALYSIS DATA SHEET

PSDDA Semivolatiles by GC/MS

Page 1 of 1

Lab Sample ID: EL51E

LIMS ID: 02-7769

Matrix: Sediment

Data Release Authorized: *AS*

Reported: 06/26/02

Sample No: SRI-SED-5



QC Report No: EL51-Landau Associates, Inc.

Project: Cornwall Ave.

001020.200

Date Sampled: 06/10/02

Date Received: 06/11/02

Date extracted: 06/18/02

Date analyzed: 06/25/02 13:43

Instrument: NT1

GPC Cleanup: NO

Sample Amount: 25.5 g-dry-wt

Final Extract Volume: 0.5 mL

Dilution Factor: 1:2

Percent Moisture: 62.2%

pH: 12.0

CAS Number	Analyte	ug/kg
117-81-7	bis(2-Ethylhexyl)phthalate	290

Semivolatiles Surrogate Recovery

d14-p-Terphenyl 92.6%

ORGANICS ANALYSIS DATA SHEET  
PSDDA Semivolatiles by GC/MS  
Page 1 of 1  
Lab Sample ID: EL51F  
LIMS ID: 02-7770  
Matrix: Sediment  
Data Release Authorized: *MS*  
Reported: 06/26/02

Sample No: SRI-SED-6



QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200  
Date Sampled: 06/10/02  
Date Received: 06/11/02

Date extracted: 06/18/02  
Date analyzed: 06/25/02 15:08  
Instrument: NT1  
GPC Cleanup: NO

Sample Amount: 25.2 g-dry-wt  
Final Extract Volume: 0.5 mL  
Dilution Factor: 1:2  
Percent Moisture: 61.4%  
pH: 11.0

<u>CAS Number</u>	<u>Analyte</u>	<u>ug/kg</u>
117-81-7	bis(2-Ethylhexyl)phthalate	300

Semivolatiles Surrogate Recovery  
d14-p-Terphenyl 93.8%

Final Report  
Laboratory Analysis of Conventional Parameters

Sample No: SRI-SED-6

Lab Sample ID: EL51F                      QC Report No: EL51-Landau Associates, Inc.  
LIMS ID: 02-7770                              Project: Cornwall Ave.  
Matrix: Sediment                                001020.200  
Date Sampled: 06/10/02  
Data Release Authorized: *MB*              Date Received: 06/11/02  
Reported: 06/21/02    Dr. M.A. Perkins

Analyte	Analysis		Dilution		Units	Result
	Date/Batch	Method	Factor	RL		
Total Solids	06/12/02	EPA 160.3		0.01	Percent	40.1
	06122#1	SM 2540 B				
Total Organic Carbon	06/18/02	Plumb, 1981		0.0050	Percent	4.2
	06182#1					

RL Analytical reporting limit  
U Undetected at reported detection limit  
B Analyte found in method blank above detection

Report for EL51 received 06/11/02

Final Report  
Laboratory Analysis of Conventional Parameters

Sample No: SRI-SED-9

Lab Sample ID: EL51G

QC Report No: EL51-Landau Associates, Inc.

LIMS ID: 02-7771

Project: Cornwall Ave.

Matrix: Sediment

001020.200

Date Sampled: 06/10/02

Data Release Authorized: *mf*

Date Received: 06/11/02

Reported: 06/21/02 Dr. M.A. Perkins

Analyte	Analysis		Dilution		Units	Result
	Date/Batch	Method	Factor	RL		
Total Solids	06/12/02	EPA 160.3		0.01	Percent	37.5
	06122#1	SM 2540 B				
Total Organic Carbon	06/18/02	Plumb, 1981		0.0050	Percent	2.8
	06182#1					

RL Analytical reporting limit  
U Undetected at reported detection limit  
B Analyte found in method blank above detection

Report for EL51 received 06/11/02

ORGANICS ANALYSIS DATA SHEET

PSDDA Semivolatiles by GC/MS

Page 1 of 1

Lab Sample ID: EL51G

LIMS ID: 02-7771

Matrix: Sediment

Data Release Authorized: *[Signature]*

Reported: 06/26/02

Sample No: SRI-SED-9



QC Report No: EL51-Landau Associates, Inc.

Project: Cornwall Ave.

001020.200

Date Sampled: 06/10/02

Date Received: 06/11/02

Date extracted: 06/18/02

Date analyzed: 06/25/02 16:34

Instrument: NT1

GPC Cleanup: NO

Sample Amount: 25.1 g-dry-wt

Final Extract Volume: 0.5 mL

Dilution Factor: 1:2

Percent Moisture: 60.9%

pH: 15.0

<u>CAS Number</u>	<u>Analyte</u>	<u>ug/kg</u>
117-81-7	bis(2-Ethylhexyl)phthalate	130

Semivolatiles Surrogate Recovery

d14-p-Terphenyl 82.9%

ORGANICS ANALYSIS DATA SHEET

Semivolatiles by GC/MS

Page 1 of 1

Lab Sample ID: EL51LCS

LIMS ID: 02-7765


Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.

Project: Cornwall Ave.

001020.200



Data Release Authorized: 

Reported: 06/26/02

LABORATORY CONTROL SAMPLE

Date extracted: 06/18/02

Date analyzed: 06/25/02

CONSTITUENT	SPIKE VALUE	SPIKE ADDED	% RECOVERY
Phenol	475	750	63.3%
2-Chlorophenol	494	750	65.9%
1,4-Dichlorobenzene	293	500	58.6%
N-Nitroso-Di-N-Propylamine	279	500	55.8%
1,2,4-Trichlorobenzene	316	500	63.2%
4-Chloro-3-methylphenol	553	750	73.7%
Acenaphthene	346	500	69.2%
4-Nitrophenol	673	750	89.7%
2,4-Dinitrotoluene	413	500	82.6%
Pentachlorophenol	628	750	83.7%
Pyrene	386	500	77.2%

Lab Control Surrogate Recovery

d14-p-Terphenyl 87.9%

Values reported in ug/kg-dry-weight

**ORGANICS ANALYSIS DATA SHEET**  
PCB by GC/ECD

Sample No: SRI-SED-9

Lab Sample ID: EL51G  
LIMS ID: 02-7771  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200

Data Release Authorized: *[Signature]*  
Reported: 06/25/02

Date Sampled: 06/10/02  
Date Received: 06/11/02

Date extracted: 06/18/02  
Date analyzed: 06/20/02 18:09  
Instrument ID: ECD1  
Sample Amount: 25.2 g-dry-wt  
Final Ext Vol: 5.0 mL  
pH: 15.

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1  
Percent Moisture: 60.9%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	20 U
53469-21-9	Aroclor 1242	20 U
12672-29-6	Aroclor 1248	42 Y
11097-69-1	Aroclor 1254	62
11096-82-5	Aroclor 1260	20 U
11104-28-2	Aroclor 1221	40 U
11141-16-5	Aroclor 1232	20 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	71.0%
Tetrachlorometaxylene	66.2%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.




**INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS**

Sample No: SRI-SED-1

Lab Sample ID: EL51A  
LIMS ID: 02-7765  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200  
Date Sampled: 06/10/02  
Date Received: 06/11/02

Data Release Authorized:   
Reported: 06/24/02

Percent Total Solids: 37.2%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050B	06/13/02	6010B	06/18/02	7440-50-8	Copper	0.5	88.3
3050B	06/13/02	7421	06/18/02	7439-92-1	Lead	3	51
3050B	06/13/02	6010B	06/18/02	7440-22-4	Silver	0.8	0.9
3050B	06/13/02	6010B	06/18/02	7440-66-6	Zinc	2	156

U Analyte undetected at given RL


RL Reporting Limit

INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: SRI-SED-2

Lab Sample ID: EL51B  
LIMS ID: 02-7766  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200  
Date Sampled: 06/10/02  
Date Received: 06/11/02

Data Release Authorized  
Reported: 06/24/02 

Percent Total Solids: 36.1%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050B	06/13/02	6010B	06/18/02	7440-50-8	Copper	0.5	68.9
3050B	06/13/02	7421	06/18/02	7439-92-1	Lead	1	30
3050B	06/13/02	6010B	06/18/02	7440-22-4	Silver	0.8	0.8 U
3050B	06/13/02	6010B	06/18/02	7440-66-6	Zinc	2	142

U Analyte undetected at given RL

RL Reporting Limit

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD



Sample No: SRI-SED-5

Lab Sample ID: EL51E  
LIMS ID: 02-7769  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.

001020.200

Date Sampled: 06/10/02

Data Release Authorized:   
Reported: 06/25/02

Date Received: 06/11/02

Date extracted: 06/18/02  
Date analyzed: 06/20/02 17:13  
Instrument ID: ECD1  
Sample Amount: 25.4 g-dry-wt  
Final Ext Vol: 5.0 mL  
pH: 12.

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1  
Percent Moisture: 62.2%

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	20 U
53469-21-9	Aroclor 1242	20 U
12672-29-6	Aroclor 1248	46 Y
11097-69-1	Aroclor 1254	46
11096-82-5	Aroclor 1260	21 Y
11104-28-2	Aroclor 1221	39 U
11141-16-5	Aroclor 1232	20 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 67.8%  
Tetrachlorometaxylene 64.5%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

**ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD**

Sample No: SRI-SED-6

Lab Sample ID: EL51F  
LIMS ID: 02-7770  
Matrix: Sediment

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.

001020.200

Date Sampled: 06/10/02

Data Release Authorized: ~~X~~  
Reported: 06/25/02

Date Received: 06/11/02

Date extracted: 06/18/02  
Date analyzed: 06/20/02 17:41  
Instrument ID: ECD1  
Sample Amount: 25.4 g-dry-wt  
Final Ext Vol: 5.0 mL  
pH: 11.

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1  
Percent Moisture: 61.4%

Reported in Total ug/kg Dry Weight

<u>CAS Number</u>	<u>Analyte</u>	<u>Value</u>
12674-11-2	Aroclor 1016	20 U
53469-21-9	Aroclor 1242	20 U
12672-29-6	Aroclor 1248	150 Y
11097-69-1	Aroclor 1254	110
11096-82-5	Aroclor 1260	32 Y
11104-28-2	Aroclor 1221	39 U
11141-16-5	Aroclor 1232	20 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 84.0%  
Tetrachlorometaxylene 70.2%


Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- NV Indicates no value reportable - see additional analyses.
- Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

QA Report - Standard Reference Material Analysis

QC Report No: EL51-Landau Associates, Inc.  
Project: Cornwall Ave.  
001020.200

Date Received: NA

Data Release Authorized   
Reported: 06/21/02 Dr. M.A. Perkins

STANDARD REFERENCE MATERIAL ANALYSIS  
CONVENTIONALS

<u>Constituent</u>	<u>Units</u>	<u>Value</u>	<u>True Value</u>	<u>Recovery</u>
NIST #8704				
Total Carbon	Percent	3.27	3.35	97.6%
Date analyzed: 06/18/02 Batch ID: 06182#1				

QA Report - Replicate Analysis

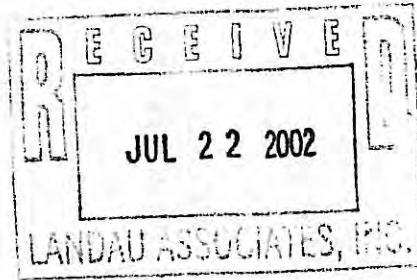
Matrix: Sediment  
 QC Report No: EL51-Landau Associates, Inc.  
 Project: Cornwall Ave.  
 001020.200  
 Date Received: 06/11/02  
 Data Release Authorized: *MB*  
 Reported: 06/21/02 Dr. M.A. Perkins

REPLICATE ANALYSIS RESULTS  
CONVENTIONALS

Constituent	Units	Sample Value	Replicate Value(s)	RPD/RSD
ARI ID: 02-7765, EL51 A		Client Sample ID: SRI-SED-1		
Total Solids	Percent	38.9	38.1	RPD: 2.1%
Total Organic Carbon	Percent	3.1	3.3 3.8	RSD: 10.6%



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants



July 22, 2002

Mr. Tim Syverson  
Landau Associates, Inc.  
130 2<sup>nd</sup> Avenue South  
Edmonds, WA 98020

**RE: Client Project: Cornwall Ave. Landfill; 001020.220**  
**ARI Job No: EN15**

Dear Tim,

Please find enclosed original chain of custody (COC) and analytical results for the project referenced above. Analytical Resources, Inc. (ARI) accepted three samples on July 1, 2002. The samples were received in good condition and there were no discrepancies between the COC and containers' labels. The **MW-6-3.0** soil sample and **TP-18** product sample were placed on hold per the client's request. Only the **TP-13** product, floating on top of the water phase of TP-13 was analyzed.

The **TP-13** product sample was analyzed for PAHs referencing US EPA method 8270, diesel and oil range hydrocarbons referencing WDOE method NWTPH-Dx, BTEX compounds referencing US EPA method 8021Bm, and PCBs referencing US EPA method 8082.

No analytical complications were noted. A copy of this report and all associated data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Mary Lou Fox  
Project Manager  
206-695-6211  
marylou@arilabs.com

MLF/mlf  
Enclosure  
cc: File EN15



- Seattle (Edmonds) (425) 778-0907
- Tacoma (253) 926-2493
- Spokane (509) 327-9737
- Portland (Lake Oswego) (503) 443-6010



Landau Associates

# Chain-of-Custody Record

Project Name Cornwall Ave Landfill Project No. 001020220  
 Project Location/Event Bellingham  
 Sampler's Name KTR (Ken Reid)  
 Project Contact Tim Spensson  
 Send Results To 11 11

Sample I.D.	Date	Time	Matrix	No. of Containers
TP-13	6/26/02	945	H <sub>2</sub> O	5
11W-6-3.0	6/27/02	1445	Soil	1
TP-18	6/28/02	1500	Product	1

Testing Parameters	Turnaround Time					Observations/Comments
	Standard	Accelerated	Other	Other	Other	
8270 BTEX Meth PAHs	X					IP product
8270 BTEX Meth PAHs	X					IP product
619 HCD HCD	X					IP product
619 HCD HCD	X					IP product

Special Shipment/Handling or Storage Requirements \_\_\_\_\_

Relinquished by	Received by	Relinquished by	Received by
Signature: <u>[Signature]</u>	Signature: <u>[Signature]</u>	Signature: _____	Signature: _____
Printed Name: <u>Ken Reid</u>	Printed Name: <u>Joshua L. Kennedy</u>	Printed Name: _____	Printed Name: _____
Company: <u>Landau Assoc.</u>	Company: <u>AFI</u>	Company: _____	Company: _____
Date: <u>7/1/02</u> Time: <u>1115</u>	Date: <u>7/1/02</u> Time: <u>14:35</u>	Date: _____ Time: _____	Date: _____ Time: _____

15.06

EN15

Date 7/1/02  
Page 1 of 1



ORGANICS ANALYSIS DATA SHEET  
PNAs by GC/MS

Sample No: TP-13

Lab Sample ID: EN15A


QC Report No: EN15-Landau Associates

LIMS ID: 02-8726

Project: Cornwall Ave. Landfill

Matrix: Product

001020.220

Data Release Authorized: 

Date Sampled: 06/26/02

Reported: 07/18/02

Date Received: 07/01/02

Date extracted: 07/08/02

Sample Amount: 2.00 g-as-rec

Date analyzed: 07/14/02 23:36

Final Extract Volume: 10. mL

Instrument: FINN4

Conc/Dilution Factor: 1:20

GPC Cleanup: NO

Moisture: NA

Alumina: 1:10

pH: NA


CAS Number	Analyte	ug/kg
91-20-3	Naphthalene	2,200,000
91-57-6	2-Methylnaphthalene	18,000,000 E
208-96-8	Acenaphthylene	100,000 U
83-32-9	Acenaphthene	670,000
86-73-7	Fluorene	720,000
85-01-8	Phenanthrene	1,900,000
120-12-7	Anthracene	100,000 U
206-44-0	Fluoranthene	100,000 U
129-00-0	Pyrene	120,000
56-55-3	Benzo (a) anthracene	100,000 U
218-01-9	Chrysene	100,000 U
205-99-2	Benzo (b) fluoranthene	100,000 U
207-08-9	Benzo (k) fluoranthene	100,000 U
50-32-8	Benzo (a) pyrene	100,000 U
193-39-5	Indeno (1,2,3-cd) pyrene	100,000 U
53-70-3	Dibenz (a, h) anthracene	100,000 U
191-24-2	Benzo (g, h, i) perylene	100,000 U
132-64-9	Dibenzofuran	280,000

Base/Neutral Surrogate Recovery

d14-p-Terphenyl	53.6%
d10-Diphenyl	65.6%

ORGANICS ANALYSIS DATA SHEET  
PNAs by GC/MS

Sample No: TP-13  
DILUTION

Lab Sample ID: EN15ADL  
LIMS ID: 02-8726  
Matrix: Product  
Data Release Authorized   
Reported: 07/18/02

QC Report No: EN15-Landau Associates  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 06/26/02  
Date Received: 07/01/02

Date extracted: 07/08/02  
Date analyzed: 07/15/02 0:07  
Instrument: FINN4  
GPC Cleanup: NO  
Alumina: 1:10

Sample Amount: 2.00 g-as-rec  
Final Extract Volume: 10. mL  
Conc/Dilution Factor: 1:120  
Moisture: NA  
pH: NA

CAS Number	Analyte	ug/kg
91-20-3	Naphthalene	2,300,000
91-57-6	2-Methylnaphthalene	17,000,000
208-96-8	Acenaphthylene	600,000 U
83-32-9	Acenaphthene	680,000
86-73-7	Fluorene	730,000
85-01-8	Phenanthrene	1,700,000
120-12-7	Anthracene	600,000 U
206-44-0	Fluoranthene	600,000 U
129-00-0	Pyrene	600,000 U
56-55-3	Benzo (a) anthracene	600,000 U
218-01-9	Chrysene	600,000 U
205-99-2	Benzo (b) fluoranthene	600,000 U
207-08-9	Benzo (k) fluoranthene	600,000 U
50-32-8	Benzo (a) pyrene	600,000 U
193-39-5	Indeno (1,2,3-cd) pyrene	600,000 U
53-70-3	Dibenz (a, h) anthracene	600,000 U
191-24-2	Benzo (g, h, i) perylene	600,000 U
132-64-9	Dibenzofuran	600,000 U

Base/Neutral Surrogate Recovery

d14-p-Terphenyl D  
d10-Diphenyl D

Sample No: TP-13

Lab Sample ID: EN15A  
LIMS ID: 02-8726  
Matrix: Product

QC Report No: EN15-Landau Associates  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 06/26/02  
Date Received: 07/01/02

Data Release Authorized: VS  
Reported: 07/11/02

Date analyzed: 07/02/02

Volume Purged: 5.0 mL  
Dilution: 1:100

Reported in ppb (ug/L)

<u>CAS Number</u>	<u>Analyte</u>	<u>Value</u>
71-43-2	Benzene	100 U
108-88-3	Toluene	100 U
100-41-4	Ethylbenzene	3,700
	m,p-Xylene	12,000
95-47-6	o-Xylene	6,700

BETX Surrogate Recovery

Trifluorotoluene 101%  
Bromobenzene 98.9%

Data Qualifiers

- U Indicates compound was analyzed for, but not detected at the given detection limit.
- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- B Found in associated method blank.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.

ORGANICS ANALYSIS DATA SHEET  
 BETX by Method SW8021BMod



Lab Sample ID: EN15LCS  
 LIMS ID: 02-8726  
 Matrix: Product

QC Report No: EN15-Landau Associates  
 Project: Cornwall Ave. Landfill  
 001020.220

Data Release Authorized: *KS*  
 Reported: 07/11/02

LCS/LCSDUPLICATE ANALYSIS

Date Analyzed: 07/02/02

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% REC	% RPD
Lab Control Sample				
Benzene	23.5	25.0	94.0%	
Toluene	23.8	25.0	95.2%	
Ethylbenzene	24.4	25.0	97.6%	
m,p-Xylene	48.0	50.0	96.0%	
o-Xylene	24.0	25.0	96.0%	
Lab Control Duplicate				
Benzene	24.8	25.0	99.2%	5.4%
Toluene	25.2	25.0	101%	5.7%
Ethylbenzene	26.1	25.0	104%	6.7%
m,p-Xylene	50.6	50.0	101%	5.3%
o-Xylene	25.1	25.0	100%	4.5%

BETX SURROGATE REC	LCS	LCSD
Trifluorotoluene	97.3%	98.9%
Bromobenzene	99.1%	101%

Values reported in parts per billion (ug/L)


ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD



Sample No: TP-13

Lab Sample ID: EN15A  
LIMS ID: 02-8726  
Matrix: Product

QC Report No: EN15-Landau Associates  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 06/26/02  
Date Received: 07/01/02

Data Release Authorized   
Reported: 07/18/02

Date extracted: 07/03/02  
Date analyzed: 07/04/02

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Sample Amount: 2.00 g-as-rec  
Final Ext Vol: 20 mL

Reported in Total ug/kg as received (ppb)

<u>CAS Number</u>	<u>Analyte</u>	<u>Value</u>
12674-11-2	Aroclor 1016	1,000 U
53469-21-9	Aroclor 1242	1,000 U
12672-29-6	Aroclor 1248	1,000 U
11097-69-1	Aroclor 1254	1,000 U
11096-82-5	Aroclor 1260	1,000 U
11104-28-2	Aroclor 1221	2,000 U
11141-16-5	Aroclor 1232	1,000 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 12.8%  
Tetrachlorometaxylene 99.2%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

TOTAL DIESEL RANGE HYDROCARBONS  
WA TPHd Range C12 to C24 by GC/FID



Lab Sample ID: EN15LCS      QC Report No: EN15-Landau Associates  
LIMS ID: 02-8726            Project: Cornwall Ave. Landfill  
Matrix: Product              001020.220

Data Release Authorized *DR*  
Reported: 07/18/02

LABORATORY CONTROL SAMPLE RECOVERY REPORT  
Analyzed: 07/09/02

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY	RPD
Diesel Range Hydrocarbons	126000	150000	84.0%	
Diesel Range Hydrocarbons	127000	150000	84.7%	0.8%

Values reported in ppm (mg/kg) as received.

TPHD SURROGATE RECOVERY SUMMARY

Matrix: Product

QC Report No: EN15-Landau Associates  
Project: Cornwall Ave. Landfill  
001020.220

Client ID	O-TER	TOT OUT
070302MBS	81.3%	0
070302LCS	70.6%	0
070302LCSD	69.4%	0
TP-13	56.8%	0
TP-13 DL	50.0%	0

LCS/MB LIMITS      QC LIMITS

(O-TER) = o-Terphenyl

(61-112)

(34-113)

Prep Method: DL

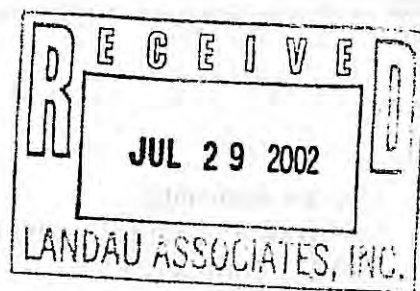
Log Number Range: 02-8726 to 02-8726



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

July 29, 2002

Ms. Shannon Dunn  
Landau Associates, Inc.  
130 2<sup>nd</sup> Avenue South  
Edmonds, WA 98020



**RE: Client Project: Cornwall Ave. Landfill; 001020.220**  
**ARI Job No: EN82**

Dear Shannon,

Please find enclosed original chain of custody (COC) and analytical results for the project referenced above. Analytical Resources, Inc. (ARI) accepted three water samples on July 11, 2002. The samples were received in good condition and there were no discrepancies between the COC and containers' labels.

The samples were analyzed for PCBs referencing US EPA method 8082, diesel and motor oil range hydrocarbons referencing WDOE method NWTPH-Dx with acid/si cleanup, total and dissolved metals referencing US EPA methods 6010B and 7421, and general chemistry parameters as referenced specifically on the reports.

In the NWTPH-Dx analysis, the leading continuing calibration (C-Cal) showed motor oil above the QC limit. None of the samples showed any detections in the analysis, so no elevation of sample values could have occurred. No corrective action was necessary.

The conventional lab supervisor noted that sample S-1 tested positive for sulfide interference in the total cyanide analysis. The sample was treated to remove the interference, but still showed interference in the analysis. The client was consulted and the sample was re-analyzed at a five times dilution, yielding a reporting limit of .025 mg/L. A matrix spike was performed on the sample for this analysis and showed a low recovery of 68.9%. The conventional lab supervisor also noted that this was most likely due to the high level of sulfide interference. Recovery of cyanide in the laboratory control sample (LCS) for this analysis was good and no further corrective action was taken.





**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

**Landau Associates**  
**Cornwall Ave. Landfill; 001020.220**  
**ARI Job Number: EN82**  
**Page 2**

No further analytical complications were noted. A copy of this report and all associated data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

A handwritten signature in cursive script that reads "Mary Lou Fox".

Mary Lou Fox  
Project Manager  
206-695-6211  
marylou@arilabs.com

MLF/mlf  
Enclosure  
cc: File EN82

- Seattle (Edmonds) (425) 778-0907
- Tacoma (253) 926-2493
- Spokane (509) 327-9737
- Portland (Lake Oswego) (503) 443-6010



Landau Associates

# Chain-of-Custody Record

Project Name Conual Ave Landfill Project No. 001020220  
 Project Location/Event Bellingham, WA  
 Sampler's Name Ken Reich, Mike Joyce  
 Project Contact Shannon Dunn  
 Send Results To Shannon Dunn

Sample I.D.	Date	Time	Matrix	No. of Containers
S-1	7/10/02	1135	420	11
S-2	6	1210	6	12
S-3	6	1310	6	12

Testing Parameters

Parameter	S-1	S-2	S-3
NRTR-1x	X	X	X
PRB's (802-162)	X	X	X
TOTAL COLIFORM (57)	X	X	X
TOTAL + BISSOLVANT	X	X	X
TOC (415.1)	X	X	X
TOTAL CYANIDE (3)	X	X	X
AMMONIA (350.1)	X	X	X
TSS (160.2)	X	X	X
TURBIDITY (180.1)	X	X	X

Turnaround Time

- Standard
- Accelerated

Observations/Comments  
 METALS FOR S-1 IS UNPRESERVED.  
 PORTION OF SAMPLE NEEDS TO BE  
 FILTERED (0.45 um). TOTAL  
 DISSOLVED NEEDS TO BE  
 PRESERVED

\* METALS = Cu, Pb, Zn  
 A = ARCHIVE

Special Shipment/Handling or Storage Requirements

Relinquished by  
 Signature [Signature]  
 Printed Name SHANNON DUNN  
 Company LAI  
 Date 7-11-02 Time 8:45

Received by  
 Signature [Signature]  
 Printed Name Deborah Johnson  
 Company ARL  
 Date 7/11/02 Time 8:45

Relinquished by  
 Signature \_\_\_\_\_  
 Printed Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_


Received by  
 Signature \_\_\_\_\_  
 Printed Name \_\_\_\_\_  
 Company \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Sample No: S-1

Lab Sample ID: EN82A  
LIMS ID: 02-8999  
Matrix: Water

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/10/02  
Date Received: 07/11/02

Data Release Authorized   
Reported: 07/22/02

Date extracted: 07/15/02  
Date analyzed: 07/16/02 15:41  
Instrument ID: ECD1  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisol Cleanup: No  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	0.077 Y
53469-21-9	Aroclor 1242	0.050 U
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.19 Y
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 91.5%  
Tetrachlorometaxylene 66.0%

Data Qualifiers


- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration,  
but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Sample No: S-2

Lab Sample ID: EN82B  
LIMS ID: 02-9000  
Matrix: Water

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/10/02  
Date Received: 07/11/02

Data Release Authorized:   
Reported: 07/22/02

Date extracted: 07/15/02  
Date analyzed: 07/16/02 16:09  
Instrument ID: ECD1  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	0.082 Y
53469-21-9	Aroclor 1242	0.050 U
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.20 Y
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 90.0%  
Tetrachlorometaxylene 67.0%

Data Qualifiers


- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Sample No: S-3

Lab Sample ID: EN82C  
LIMS ID: 02-9001  
Matrix: Water

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/10/02  
Date Received: 07/11/02

Data Release Authorized:   
Reported: 07/22/02

Date extracted: 07/15/02  
Date analyzed: 07/16/02 16:37  
Instrument ID: ECD1  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisol Cleanup: No  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.050 U
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.062 Y

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 89.5%  
Tetrachlorometaxylene 64.0%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.


INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: Method Blank

Lab Sample ID: EN82MB  
LIMS ID: 02-8999  
Matrix: Water

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Date Sampled: NA  
Date Received: NA

Data Release Authorized:   
Reported: 07/18/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	07/15/02	6010B	07/17/02	7440-50-8	Copper	0.002	0.002 U
3020A	07/15/02	7421	07/17/02	7439-92-1	Lead	0.001	0.001 U
3010A	07/15/02	6010B	07/17/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: S-1

Lab Sample ID: EN82A

QC Report No: EN82-Landau Associates, Inc.

LIMS ID: 02-8999

Project: Cornwall Ave. Landfill

Matrix: Water

001020.220

Date Sampled: 07/10/02

Date Received: 07/11/02

Data Release Authorized

Reported: 07/18/02



Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	07/15/02	6010B	07/17/02	7440-50-8	Copper	0.002	0.002 U
3020A	07/15/02	7421	07/17/02	7439-92-1	Lead	0.001	0.001 U
3010A	07/15/02	6010B	07/17/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit



INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: S-2

Lab Sample ID: EN82B  
LIMS ID: 02-9000  
Matrix: Water

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Date Sampled: 07/10/02  
Date Received: 07/11/02

Data Release Authorized:  
Reported: 07/18/02



Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	07/15/02	6010B	07/17/02	7440-50-8	Copper	0.002	0.002 U
3020A	07/15/02	7421	07/17/02	7439-92-1	Lead	0.001	0.001 U
3010A	07/15/02	6010B	07/17/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit




INORGANICS ANALYSIS DATA SHEET  
TOTAL METALS

Sample No: S-3

Lab Sample ID: EN82C  
LIMS ID: 02-9001  
Matrix: Water

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/10/02  
Date Received: 07/11/02

Data Release Authorized:   
Reported: 07/18/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
3010A	07/15/02	6010B	07/17/02	7440-50-8	Copper	0.002	0.002 U
3020A	07/15/02	7421	07/17/02	7439-92-1	Lead	0.001	0.001 U
3010A	07/15/02	6010B	07/17/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit


INORGANIC ANALYSIS DATA SHEET  
DISSOLVED METALS

Sample No: Method Blank

Lab Sample ID: EN82MB  
LIMS ID: 02-9002  
Matrix: Water

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Date Sampled: NA  
Date Received: NA

Data Release Authorized:   
Reported: 07/18/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	07/15/02	6010B	07/15/02	7440-50-8	Copper	0.002	0.002 U
7000A	07/15/02	7421	07/15/02	7439-92-1	Lead	0.001	0.001 U
6010B	07/15/02	6010B	07/15/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit


**INORGANIC ANALYSIS DATA SHEET  
DISSOLVED METALS**

Sample No: Method Blank

Lab Sample ID: EN82MB  
LIMS ID: 02-9003  
Matrix: Water

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Date Sampled: NA  
Date Received: NA

Data Release Authorized:   
Reported: 07/18/02

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	07/15/02	6010B	07/15/02	7440-50-8	Copper	0.002	0.002 U
7000A	07/15/02	7421	07/15/02	7439-92-1	Lead	0.001	0.001 U
6010B	07/15/02	6010B	07/15/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit

INORGANIC ANALYSIS DATA SHEET  
DISSOLVED METALS

Sample No: S-1

Lab Sample ID: EN82D  
LIMS ID: 02-9002  
Matrix: Water

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/10/02  
Date Received: 07/11/02

Data Release Authorized  
Reported: 07/18/02



Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	07/15/02	6010B	07/15/02	7440-50-8	Copper	0.002	0.002 U
7000A	07/15/02	7421	07/15/02	7439-92-1	Lead	0.002	0.002 U
6010B	07/15/02	6010B	07/15/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL


RL Reporting Limit

INORGANIC ANALYSIS DATA SHEET  
DISSOLVED METALS

Sample No: S-2

Lab Sample ID: EN82E  
LIMS ID: 02-9003  
Matrix: Water

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/10/02  
Date Received: 07/11/02

Data Release Authorized  
Reported: 07/18/02 

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	07/15/02	6010B	07/15/02	7440-50-8	Copper	0.002	0.002 U
7000A	07/15/02	7421	07/15/02	7439-92-1	Lead	0.002	0.002 U
6010B	07/15/02	6010B	07/15/02	7440-66-6	Zinc	0.006	0.008

U Analyte undetected at given RL  
RL Reporting Limit

Final Report  
Laboratory Analysis of Conventional Parameters

Sample No: S-2

Lab Sample ID: EN82B                      QC Report No: EN82-Landau Associates, Inc.  
LIMS ID: 02-9000                          Project: Cornwall Ave. Landfill  
Matrix: Water                                      001020.220  
Date Sampled: 07/10/02  
Data Release Authorized: *AMP*              Date Received: 07/11/02  
Reported: 07/25/02    Amy S. Phillips

Analyte	Analysis			Units	Result
	Date & Batch	Method	RL		
Total Suspended Solids	07/12/02 07122#1	EPA 160.2	1.0	mg/L	5.0
Turbidity	07/11/02 07112#1	EPA 180.1	0.05	NTU	12
Total Cyanide	07/22/02 07222#1	EPA 335.2	0.005	mg/L	< 0.005 U
N-Ammonia	07/22/02 07222#2	EPA 350.1M	0.25	mg-N/L	6.4
Total Organic Carbon	07/16/02 07162#1	EPA 415.1	1.5	mg/L	3.4
Fecal Coliform	07/11/02 07112#1	SM 9222 D	1	CFU/100 mL	< 1 U

Fecal Coliform analysis performed by membrane filtration technique.

RL    Analytical reporting limit  
U    Undetected at reported detection limit

Report for EN82 received 07/11/02

Final Report  
Laboratory Analysis of Conventional Parameters

Sample No: S-3

Lab Sample ID: EN82C

QC Report No: EN82-Landau Associates, Inc.

LIMS ID: 02-9001

Project: Cornwall Ave. Landfill

Matrix: Water

001020.220

Date Sampled: 07/10/02

Data Release Authorized: *amp*

Date Received: 07/11/02

Reported: 07/25/02 Amy S. Phillips

Analyte	Analysis			Units	Result
	Date & Batch	Method	RL		
Total Suspended Solids	07/12/02 07122#1	EPA 160.2	1.0	mg/L	4.2
Turbidity	07/11/02 07112#1	EPA 180.1	0.05	NTU	26
Total Cyanide	07/22/02 07222#1	EPA 335.2	0.005	mg/L	0.008
N-Ammonia	07/22/02 07222#2	EPA 350.1M	0.20	mg-N/L	1.3
Total Organic Carbon	07/16/02 07162#1	EPA 415.1	1.5	mg/L	2.1
Fecal Coliform	07/11/02 07112#1	SM 9222 D	1	CFU/100 mL	< 1 U

Fecal Coliform analysis performed by membrane filtration technique.

RL Analytical reporting limit

U Undetected at reported detection limit

Report for EN82 received 07/11/02


INORGANIC ANALYSIS DATA SHEET  
DISSOLVED METALS

Sample No: S-3

Lab Sample ID: EN82F  
LIMS ID: 02-9004  
Matrix: Water

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Date Sampled: 07/10/02  
Date Received: 07/11/02

Data Release Authorized  
Reported: 07/18/02 

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/L
6010B	07/15/02	6010B	07/15/02	7440-50-8	Copper	0.002	0.002 U
7000A	07/15/02	7421	07/15/02	7439-92-1	Lead	0.002	0.002 U
6010B	07/15/02	6010B	07/15/02	7440-66-6	Zinc	0.006	0.006 U

U Analyte undetected at given RL

RL Reporting Limit





QA Report - Laboratory Control Samples

QC Report No: EN82-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220

Date Received: NA

Data Release Authorized: *AMP*  
Reported: 07/25/02 Amy S. Phillips

LABORATORY CONTROL SAMPLES  
CONVENTIONALS

Constituent	Units	Measured Value	True Value	Recovery
Laboratory Control Sample				
Turbidity	NTU	17.3	17.4	99.4%
Date analyzed: 07/11/02 Batch ID: 07112#1				

QA Report - Standard Reference Material Analysis

QC Report No: EN82-Landau Associates, Inc.

Project: Cornwall Ave. Landfill

001020.220

Date Received: NA

Data Release Authorized: *art*

Reported: 07/25/02 Amy S. Phillips

STANDARD REFERENCE MATERIAL ANALYSIS  
CONVENTIONALS

Constituent	Units	Value	True Value	Recovery
<b>ERA #05032</b>				
Total Cyanide	mg/L	0.155	0.150	103%
Date analyzed: 07/23/02 Batch ID: 07232#1				
<b>SPEX #20-22AS</b>				
N-Ammonia	mg-N/L	0.832	0.800	104%
Date analyzed: 07/22/02 Batch ID: 07222#2				
<b>ERA #0206-02-02</b>				
Total Organic Carbon	mg/L	20.0	20.0	100%
Date analyzed: 07/16/02 Batch ID: 07162#1				
<b>ERA #05032</b>				
Total Cyanide	mg/L	0.162	0.150	108%
Date analyzed: 07/22/02 Batch ID: 07222#1				

QA Report - Replicate Analysis

Matrix: Water  
 QC Report No: EN82-Landau Associates, Inc.  
 Project: Cornwall Ave. Landfill  
 001020.220  
 Date Received: 07/11/02  
 Data Release Authorized: *AMP*  
 Reported: 07/25/02 Amy S. Phillips

DUPLICATE ANALYSIS RESULTS  
CONVENTIONALS

Constituent	Units	Sample Value	Duplicate Value	RPD
ARI ID: 02-8999, EN82 A Client Sample ID: S-1				
Turbidity	NTU	3.4	3.6	5.7%
Total Cyanide	mg/L	< 0.025 U	< 0.025 U	NA
N-Ammonia	mg-N/L	8.3	8.2	1.2%
Total Organic Carbon	mg/L	5.8	5.4	7.1%
ARI ID: 02-9000, EN82 B Client Sample ID: S-2				
Total Cyanide	mg/L	< 0.005 U	< 0.005 U	NA



**Analytical Resources, Incorporated**  
Analytical Chemists and Consultants

August 1, 2002

AUG - 2 2002

Ms. Shannon Dunn  
Landau Associates, Inc.  
130 2<sup>nd</sup> Avenue South  
Edmonds, WA 98020

**RE: Client Project: Cornwall Ave. Landfill; 001020.220**  
**ARI Job No: EO60**

Dear Shannon,

Please find enclosed original chain of custody (COC) and analytical results for the project referenced above. Analytical Resources, Inc. (ARI) accepted ten water samples and a trip blank on July 19, 2002. The samples were received in good condition and there were no discrepancies between the COC and containers' labels. Ken Reid (Landau Associates, Inc.) contacted ARI regarding fecal coliform analyses being requested on the COC, but no fecal coliform analyses being needed.

The samples were analyzed for BTEX referencing US EPA method 8021Bmod, PCBs referencing US EPA method 8082, and diesel and motor oil range hydrocarbons referencing WDOE method NWTPH-Dx with acid/si cleanup.

Recoveries of the tetrachlorometaxylene surrogate were slightly above the QC limit in the PCB analysis of sample MW-9 and the PCB method blank. Because recoveries of the decachlorobiphenyl surrogate were good in these analyses, no corrective action was necessary.

No further analytical complications were noted. A copy of this report and all associated data will remain on file with ARI. If you have any questions or require additional information, please contact me at your convenience.

Respectfully,

ANALYTICAL RESOURCES, INC.

Mary Lou Fox  
Project Manager  
206-695-6211  
marylou@arilabs.com

MLF/mlf  
Enclosure  
cc: File EO60

- Seattle (Edmonds) (425) 778-0907
- Tacoma (253) 926-2493
- Spokane (509) 327-9737
- Portland (Lake Oswego) (503) 443-6010



Landau Associates  
02-9449 02-9459

# Chain-of-Custody Record

Project Name Cosmo II Ave Landfill Project No. 020220  
 Project Location/Event Bellevue Hwy W  
 Sampler's Name Ken Heid  
 Project Contact Sharon Davis  
 Send Results To 1111

Ed 60

Date 7/17/02  
 Page 1 of 1

Sample I.D.	Date	Time	Matrix	No. of Containers	Observations/Comments	Turnaround Time
MW-1	7/17/02	1135	Water	8		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Accelerated
2	7/16/02	1430		3		
3	7/16/02	1335		8		
4	7/17/02	1100		3		
5	7/16/02	1300		3		
6	7/16/02	1030		5		
7	7/17/02	900		8		
8	7/16/02	1235		8		
9	7/17/02	1300		8		
10	7/17/02	955		8		
MW-1 MS/MSD	7/17/02	1135	Water	12		

Testing Parameters

PLB'S (602-101)  
 MWTK-DK (602-101)  
 BTEX (602-101)  
 Lead (602-101)  
 Van (602-101)

Special Shipment/Handling or Storage Requirements on ice Method of Shipment Express

Relinquished by	Received by
Signature <u>[Signature]</u> Printed Name <u>Ken Heid</u> Company <u>Landau Associates</u> Date <u>7/17/02</u> Time <u>1800</u>	Signature <u>[Signature]</u> Printed Name <u>Deborah Johnson</u> Company <u>ARC</u> Date <u>7/19/02</u> Time <u>1615</u>
Signature _____ Printed Name _____ Company _____ Date _____ Time _____	Signature _____ Printed Name _____ Company _____ Date _____ Time _____

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD



Sample No: MW-1

Lab Sample ID: EO60A  
LIMS ID: 02-9449  
Matrix: Water

QC Report No: EO60-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/17/02  
Date Received: 07/19/02

Data Release Authorized: *pk*  
Reported: 07/29/02

Date extracted: 07/22/02  
Date analyzed: 07/23/02 22:30  
Instrument ID: ECD4  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

<u>CAS Number</u>	<u>Analyte</u>	<u>Value</u>
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.050 U
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 99.0%  
Tetrachlorometaxylene 73.0%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



**ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD**

Sample No: MW-1

**MATRIX SPIKE**

Lab Sample ID: EO60AMS  
LIMS ID: 02-9449  
Matrix: Water

QC Report No: EO60-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/17/02  
Date Received: 07/19/02

Data Release Authorized: *pk*  
Reported: 07/29/02

Date extracted: 07/22/02  
Date analyzed: 07/23/02 23:05  
Instrument ID: ECD4  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	---
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	97.0%
Tetrachlorometaxylene	77.5%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD



Sample No: MW-1

MATRIX SPIKE DUP

Lab Sample ID: EO60AMSD  
LIMS ID: 02-9449  
Matrix: Water

QC Report No: EO60-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/17/02  
Date Received: 07/19/02

Data Release Authorized: *pk*  
Reported: 07/29/02

Date extracted: 07/22/02  
Date analyzed: 07/23/02 23:39  
Instrument ID: ECD4  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

<u>CAS Number</u>	<u>Analyte</u>	<u>Value</u>
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	---
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 94.0%  
Tetrachlorometaxylene 75.0%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Sample No: MW-2

Lab Sample ID: EO60B  
LIMS ID: 02-9450  
Matrix: Water

QC Report No: EO60-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/16/02  
Date Received: 07/19/02

Data Release Authorized: *ML*  
Reported: 07/29/02

Date extracted: 07/22/02  
Date analyzed: 07/23/02 20:10  
Instrument ID: ECD4  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.12 Y
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl	73.0%
Tetrachlorometaxylene	75.0%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD



Sample No: MW-3

Lab Sample ID: EO60C  
LIMS ID: 02-9451  
Matrix: Water

QC Report No: EO60-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/16/02  
Date Received: 07/19/02

Data Release Authorized: *MC*  
Reported: 07/29/02

Date extracted: 07/22/02  
Date analyzed: 07/24/02 00:14  
Instrument ID: ECD4  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

<u>CAS Number</u>	<u>Analyte</u>	<u>Value</u>
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.16 Y
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl NR  
Tetrachlorometaxylene 83.0%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Sample No: MW-4

Lab Sample ID: EO60D  
LIMS ID: 02-9452  
Matrix: Water

QC Report No: EO60-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/17/02  
Date Received: 07/19/02

Data Release Authorized: *pk*  
Reported: 07/29/02

Date extracted: 07/22/02  
Date analyzed: 07/24/02 00:49  
Instrument ID: ECD4  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.050 U
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 78.5%  
Tetrachlorometaxylene 69.5%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD



Sample No: MW-5

Lab Sample ID: EO60E  
LIMS ID: 02-9453  
Matrix: Water

QC Report No: EO60-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/16/02  
Date Received: 07/19/02

Data Release Authorized: *pk*  
Reported: 07/29/02

Date extracted: 07/22/02  
Date analyzed: 07/24/02 01:24  
Instrument ID: ECD4  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

<u>CAS Number</u>	<u>Analyte</u>	<u>Value</u>
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.050 U
12672-29-6	Aroclor 1248	0.13 Y
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 84.0%  
Tetrachlorometaxylene NR

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD



Sample No: MW-7

Lab Sample ID: E060G  
LIMS ID: 02-9455  
Matrix: Water

QC Report No: E060-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/17/02  
Date Received: 07/19/02

Data Release Authorized: *mk*  
Reported: 07/29/02

Date extracted: 07/22/02  
Date analyzed: 07/24/02 01:59  
Instrument ID: ECD4  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.050 U
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.053
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 99.5%  
Tetrachlorometaxylene 79.0%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD



Sample No: MW-8

Lab Sample ID: EO60H  
LIMS ID: 02-9456  
Matrix: Water

QC Report No: EO60-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/16/02  
Date Received: 07/19/02

Data Release Authorized: *nk*  
Reported: 07/29/02

Date extracted: 07/22/02  
Date analyzed: 07/24/02 02:34  
Instrument ID: ECD4  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

<u>CAS Number</u>	<u>Analyte</u>	<u>Value</u>
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.12 Y
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl NR  
Tetrachlorometaxylene 68.5%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD

Sample No: MW-9

Lab Sample ID: E060I  
LIMS ID: 02-9457  
Matrix: Water

QC Report No: E060-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/17/02  
Date Received: 07/19/02

Data Release Authorized: *pk*  
Reported: 07/29/02

Date extracted: 07/22/02  
Date analyzed: 07/24/02 03:09  
Instrument ID: ECD4  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.050 U
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 99.5%  
Tetrachlorometaxylene 93.5%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



ORGANICS ANALYSIS DATA SHEET  
PCB by GC/ECD



Sample No: MW-10

Lab Sample ID: EO60J  
LIMS ID: 02-9458  
Matrix: Water

QC Report No: EO60-Landau Associates, Inc.  
Project: Cornwall Ave. Landfill  
001020.220  
Date Sampled: 07/17/02  
Date Received: 07/19/02

Data Release Authorized: *pk*  
Reported: 07/29/02

Date extracted: 07/22/02  
Date analyzed: 07/24/02 03:43  
Instrument ID: ECD4  
Sample Amount: 1000 mL  
Final Ext Vol: 0.50 mL

GPC Cleanup: No  
Florisil Cleanup: No  
Acid Cleanup: Yes  
Sulfur Cleanup: Yes  
Conc/Dilution Factor: 1:1

Reported in Total ug/L

<u>CAS Number</u>	<u>Analyte</u>	<u>Value</u>
12674-11-2	Aroclor 1016	0.050 U
53469-21-9	Aroclor 1242	0.080 Y
12672-29-6	Aroclor 1248	0.050 U
11097-69-1	Aroclor 1254	0.050 U
11096-82-5	Aroclor 1260	0.050 U
11104-28-2	Aroclor 1221	0.10 U
11141-16-5	Aroclor 1232	0.050 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 74.0%  
Tetrachlorometaxylene 59.0%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
- E Indicates a value above the linear range of the detector.  
Dilution Required
- S Indicates no value reported due to saturation of the detector.
- D Indicates the surrogate was diluted out.
- U Indicates compound was analyzed for, but not detected at the given detection limit.
- B Found in associated method blank
- NA Indicates compound was not analyzed.
- NR Indicates no recovery due to interferences.
- Y Indicates a raised reporting limit due to matrix interferences.  
The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.

Avocet Environmental Testing  
1500 North State Street, Suite 200  
Bellingham, WA 98225  
(360) 734-9033



**Client**

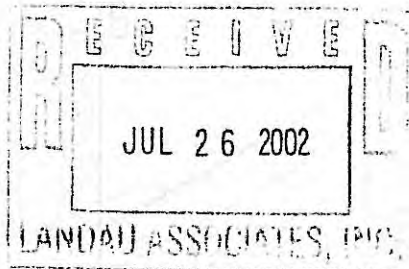
Contact Name  
Chain of Custody

**Landau Associates**

Ken Reid  
3170

Date Sampled  
Date Received  
Date Analyzed  
Date Reported

07/16/02  
07/16/02  
07/16/02  
07/19/02



**Project**

Matrix  
Analyst

**Cornwall Avenue Landfill**

Surface Water  
MA

Sample Identification	Log Number	Test Performed	Method	Sample Result	Units
MW-2	05788541	Fecal Coliform	sm9222D	14	fecal coliform/100ml
MW-3	05788542	Fecal Coliform	sm9222D	14	fecal coliform/100ml
MW-5	05788543	Fecal Coliform	sm9222D	19,000	fecal coliform/100ml
MW-8	05788544	Fecal Coliform	sm9222D	<2	fecal coliform/100ml

< = Less Than

  
\_\_\_\_\_  
Laboratory Supervisor



Avocet Environmental Testing  
1500 North State Street, Suite 200  
Bellingham, WA 98225  
(360) 734-9033




**Client**  
Contact Name: Ken Reid  
Chain of Custody: NA

Date Sampled: 07/17/02  
Date Received: 07/17/02  
Date Analyzed: 07/17/02  
Date Reported: 07/19/02

**Project**  
Matrix: Surface Water  
Analyst: CB

Sample Identification	Log Number	Test Performed	Method	Sample Result	Units
MW-1	05788577	Fecal Coliform	sm9222D	<1	fecal coliform/100ml
MW-4	05788578	Fecal Coliform	sm9222D	820	fecal coliform/100ml
MW-7	05788579	Fecal Coliform	sm9222D	<1	fecal coliform/100ml
MW-9	05788580	Fecal Coliform	sm9222D	1	fecal coliform/100ml
MW-10	05788581	Fecal Coliform	sm9222D	41	fecal coliform/100ml

< = Less Than

  
\_\_\_\_\_  
Laboratory Supervisor

- Seattle (Edmonds) (425) 778-0907
- Tacoma (253) 926-2493
- Spokane (509) 327-9737
- Portland (Lake Oswego) (503) 443-6010



# Chain-of-Custody Record

Date 7/17/02  
Page 1 of 1

Project Name Corvus II Are. Lewis Hill Project No. 001070220  
 Project Location/Event Bellingham, WA  
 Sampler's Name Ken Reid  
 Project Contact Sharon Dunn  
 Send Results To Sharon Dunn

## Testing Parameters

Sample I.D.	Date	Time	Matrix	No. of Containers	Observations/Comments	Turnaround Time
MW-1	7/17/02	1135	water	1	05700577	<input checked="" type="checkbox"/> Standard
MW-4		1100		1	0576	<input type="checkbox"/> Accelerated
MW-7		900		1	0576	<input type="checkbox"/>
MW-9		1300		1	0580	
MW-10		955		1	0581	

Special Shipment/Handling or Storage Requirements on ice

Relinquished by	Received by	Relinquished by	Received by
Signature <u>Ken Reid</u>	Signature <u>Ken Reid</u>	Signature	Signature
Printed Name <u>Ken Reid</u>	Printed Name <u>Ken Reid</u>	Printed Name	Printed Name
Company <u>Landau</u>	Company	Company	Company
Date <u>7/17/02</u> Time <u>1330</u>	Date <u>7/17/02</u> Time <u>1330</u>	Date	Date

Method of Shipment



**TO:** Larry Beard, Project Manager, Landau Associates, Inc.

**FROM:** Shannon Dunn, Landau Associates, Inc.

**DATE:** August 21, 2002

**RE:** **CORNWALL AVENUE LANDFILL  
SUPPLEMENTAL REMEDIAL INVESTIGATION  
LABORATORY DATA QUALITY EVALUATION**

This memorandum provides the results of a data quality evaluation of 10 groundwater, 6 seep samples, 1 product, and 7 sediment samples collected between June 10 and July 17, 2002. A data quality evaluation was performed for analysis of:

- Total and dissolved metals by U.S. Environmental Protection Agency (EPA) methods 6010 and 7000 series
- Polychlorinated biphenyls (PCBs) by EPA method 8082
- Bis(2-ethylhexyl)phthalate (BEP) by EPA method 8270
- Total organic carbon (TOC) by Plumb and by EPA method 415.1
- Diesel and motor oil range total petroleum hydrocarbon (TPH) by NWTPH-Dx
- Total suspended solids (TSS) by EPA method 160.2
- Turbidity by EPA method 180.1
- Total cyanide by EPA method 335.2
- Ammonia by EPA method 350.1M
- Fecal Coliform by SM9222D
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA method 8021B
- Polycyclic aromatic hydrocarbons (PAHs) by EPA method 8270
- Total solids by EPA method 160.3

The analyses were performed by Analytical Resources, Inc., (ARI) located in Seattle, Washington, except for some of the fecal coliform analyses were performed by Avocet Environmental Testing (Avocet) of Bellingham, Washington. This data quality evaluation covers ARI data packages EL51, EN15, EN82, and EO60 and Avocet data packages 3170. This data quality evaluation was

performed in accordance with the quality assurance procedures described in Appendix A of the *Draft Work Plan Supplemental Remedial Investigation Cornwall Avenue Landfill, Bellingham, Washington* (Landau Associates 2002), and with applicable portions of the EPA *Contract Laboratory Program National Functional Guidelines for Organic and Inorganic Data Review* (1994a,b).

The evaluation considered the following items:

- Chain-of custody records
- Holding times
- Laboratory and method blank results
- Field blank results
- Surrogate recoveries
- Laboratory matrix spikes and matrix spike duplicates (MS/MSD) (including the laboratory control samples)
- MS/MSD and laboratory duplicate relative percent difference (RPD)
- Field duplicate RPDs
- Quantitation limits
- Conclusions and completeness.

Data validation qualifiers were added to the sample results based on the evaluation of the data quality. The absence of a data quality qualifier indicates that the data are acceptable without qualification. Data validation qualifiers are summarized in Table 1.

#### **CHAIN-OF-CUSTODY RECORDS**

Chain-of-custody records accompanied each data package. The laboratory received all the samples in good condition and all analyses requested were performed.

#### **HOLDING TIMES**

For all the samples, the time between sample collection, extraction, and analysis was determined to be within EPA and method-specified holding times. No qualification of the data was required.

#### **LABORATORY AND METHOD BLANKS**

Method blanks were analyzed with each batch of samples and for each analysis. No contamination was detected in any of the method blanks. No qualification of the data was necessary.

## **FIELD BLANKS**

One field blank, a trip blank, was analyzed with the groundwater samples. No contamination was detected in the trip blank. No qualification of the data was required.

## **SURROGATE SPIKE RECOVERIES**

Surrogate spikes were run for BEP, PAHs, PCBs, diesel and motor oil TPH, and BTEX. All of the surrogate recoveries were within laboratory control limits with the following exceptions:

- The percent recoveries of the surrogates associated with the diesel and motor oil range TPH analysis of the diluted sample TP-13 were below the laboratory control limits as a result of sample dilution. No qualifiers were assigned as TPH surrogate recoveries in the original sample were within control limits.
- There was no calculated recovery of the tetrachloro-m-xylene surrogate in sample MW-5 and of the decachlorobiphenyl surrogate in samples MW-3 and MW-8 for the PCB analysis as a result of matrix interference. No qualifiers were assigned as the remaining surrogate recoveries in these samples were within laboratory control limits.
- The tetrachloro-m-xylene surrogate recovery for PCB analysis in sample MW-9 was above laboratory control limits. No qualifiers were assigned as the remaining surrogate recovery was within laboratory control limits.

## **LABORATORY CONTROL SAMPLE (BLANK SPIKE) RESULTS**

Laboratory control samples were performed for all analyses except total solids, TSS, and fecal coliform. All recoveries were within the specified control limits. No qualification of the data was necessary.

## **MATRIX SPIKE/ MATRIX SPIKE DUPLICATE SAMPLES**

Matrix spike and matrix spike duplicate (MS/MSD) samples were performed with each organic analysis and an MS was performed with each inorganic analysis for the following analyses: all sediment analyses except for total solids; total cyanide, ammonia, and TOC for the seep samples; and BTEX, PCBs, and diesel and motor oil range TPH for the groundwater samples. All of the MS/MSDs were performed on project samples except for BEP, PCBs, and total metals MS/MSDs for sediment samples. Recoveries for the MS/MSDs were within the current laboratory control limits, except as indicated in Table 1 and as discussed below:

- MS recoveries for total cyanide in the seep sample were below laboratory control limits. Sample S-1 sampled July 10, 2002, on was qualified as estimated (UJ).



## RELATIVE PERCENT DIFFERENCES

Laboratory duplicate and MS/MSD RPDs were within the current laboratory control limits. No qualification of the data was required.

## FIELD DUPLICATES

One field duplicate sediment sample was collected and analyzed for. Field duplicate RPDs were within project control limits (50%), except as indicated in Table 1 and as discussed below:

- Field duplicate RPD for Aroclor 1254 was above project control limits. Sediment samples SRI-SED-2 and SRI-SED-9 was qualified as estimated (J) for Aroclor 1254.

## REPORTING LIMITS

Laboratory reporting limits were within project specified limits with the following exceptions:

- Reporting limits for PCBs were above project specified reporting limits in some samples
- Lead, silver, and zinc reporting limits were above project specified reporting limits in some samples
- Total cyanide reporting limits were above project specified reporting limits in one seep sample
- Fecal coliform reporting limits were above project specified reporting limits in one groundwater sample

## OVERALL DATA QUALITY AND COMPLETENESS

Data precision was evaluated through laboratory duplicates, matrix spike duplicates, and field duplicates. Data accuracy was evaluated through laboratory control samples, surrogate spikes, and matrix spikes. Based on this data quality evaluation, all of the data were determined to be acceptable and no data was rejected. The completeness for this data is 100 percent.

## REFERENCES

EPA. 1994a. *Contract Laboratory Program National Functional Guidelines for Organic Data Review*. U.S. Environmental Protection Agency.

EPA. 1994b. *Contract Laboratory Program National Functional Guidelines for Inorganic Data Review*. U.S. Environmental Protection Agency.

Landau Associates. 2002. *Draft Work Plan Supplemental Remedial Investigation Cornwall Avenue Landfill, Bellingham, Washington*. May 13.

Plumb, R.H., JR. 1981. *Procedure for Handling and Chemical Analysis of Sediment and Water Samples*. Technical Report EPA/CE-81-1. U.S. Environmental Protection Agency and U.S. Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.

## **2008 Sediment Investigation Data**

**APPENDIX E-1  
2008 SEDIMENT INVESTIGATION DATA**

**Cornwall Landfill SPI Image Analysis - Preliminary Results (09/23/08)**

Station (CW)	Date	Time	Muni Waste	Wood Debris	Comments
1A	9/16/2008	9:41	No	No	Eelgrass, no obvious debris
1B	9/16/2008	9:42	No	No	Eelgrass, no obvious debris
1C	9/16/2008	9:43	No	No	Eelgrass, no obvious debris
2A	9/16/2008	9:52	No	No	Eelgrass, no obvious debris
2B	9/16/2008	9:53	No	No	Eelgrass, no obvious debris
2C	9/16/2008	9:55	No	No	Eelgrass, no obvious debris
3A	9/16/2008	10:00	No	No	Eelgrass, no obvious debris
3B	9/16/2008	10:01	No	No	Eelgrass, no obvious debris
3C	9/16/2008	10:01	No	No	Eelgrass, no obvious debris
4A	9/16/2008	10:05	No	No	Sparse eelgrass, no obvious debris
4B	9/16/2008	10:06	No	No	Sparse eelgrass, no obvious debris
4C	9/16/2008	10:07	No	No	Sparse eelgrass, no obvious debris
5A	9/16/2008	10:11	No	10%	Small wood particles and fibers in upper 2 cm, indistinct below
5B	9/16/2008	10:11	No	5%	Small wood particles mixed with depth
5C	9/16/2008	10:12	No	10%	25% wood particles in upper 4 cm, 5 % wood particles below
6A	9/16/2008	10:16	No	3%	fine organic/wood particles in upper 5 cm
6B	9/16/2008	10:17	No	5%	fine wood/organic particles in upper 6 cm
6C	9/16/2008	10:18	No	No	methane gas bubble, no obvious debris
7A	9/16/2008	10:21	No	No	fine organics, no obvious debris
7B	9/16/2008	10:22	No	No	fine organics, no obvious debris
7C	9/16/2008	10:22	No	No	fine organics, no obvious debris
8A	9/16/2008	10:27	No	No	partial overpenetration, no obvious debris
8B	9/16/2008	10:27	No	No	overpenetration, no obvious debris
8C	9/16/2008	10:27	No	No	partial overpenetration, no obvious debris
9A	9/16/2008	10:33	No	No	no obvious debris, fine organic particles in upper 3 cm
9B	9/16/2008	10:34	No	No	no obvious debris, fine organic particles in upper 3 cm
9C	9/16/2008	10:35	No	No	no obvious debris
10A	9/16/2008	10:59	No	3%	small wood pieces on surface
10B	9/16/2008	11:00	No	3%	possible small woody debris on surface
10C	9/16/2008	11:00	No	No	organic material on surface, no obvious debris
11A	9/16/2008	11:04	No	No	small wood chips on surface?
11B	9/16/2008	11:04	No	No	no obvious debris
11C	9/16/2008	11:05	No	No	no obvious debris
12A	9/16/2008	11:08	No	No	small wood chips on surface?
12B	9/16/2008	11:08	No	3%	wood pieces upper 2 cm
12C	9/16/2008	11:09	No	No	methane gas bubble, no obvious debris
13A	9/16/2008	11:12	No	No	no obvious debris, possible small wood particles on surface
13B	9/16/2008	11:12	No	No	no obvious debris
13C	9/16/2008	11:13	No	No	no obvious debris
14A	9/16/2008	11:17	No	No	no obvious debris
14B	9/16/2008	11:18	No	No	no obvious debris
14C	9/16/2008	11:18	No	No	no obvious debris
15A	9/16/2008	11:23	No	No	no obvious debris
15B	9/16/2008	11:23	No	No	no obvious debris, polychaetes at depth
15C	9/16/2008	11:24	No	No	no obvious debris, polychaete at depth
16A	9/16/2008	11:29	No	No	no obvious debris
16B	9/16/2008	11:30	No	No	no obvious debris, pull out
16C	9/16/2008	11:31	No	No	no obvious debris
8D	9/16/2008	11:33	No	No	no obvious debris, fine organic particles in upper 3 cm
8E	9/16/2008	11:34	No	No	no obvious debris
8F	9/16/2008	11:35	No	No	no obvious debris
17A	9/16/2008	11:42	No	No	no obvious debris
17B	9/16/2008	11:42	No	2%	fine wood particles in upper 6 cm, brittle star
17C	9/16/2008	11:43	No	No	no obvious debris
18A	9/16/2008	11:46	No	No	no obvious debris
18B	9/16/2008	11:47	No	No	no obvious debris
18C	9/16/2008	11:48	No	No	no obvious debris
19A	9/16/2008	11:51	No	No	no obvious debris
19B	9/16/2008	11:52	No	No	no obvious debris
19C	9/16/2008	11:53	No	No	no obvious debris, void
20A	9/16/2008	11:56	No	No	no obvious debris
20B	9/16/2008	11:56	No	No	no obvious debris
20C	9/16/2008	11:57	No	No	no obvious debris, spionid polychaetes
21A	9/16/2008	12:01	No	No	no obvious debris
21B	9/16/2008	12:02	No	No	no obvious debris
21C	9/16/2008	12:03	No	No	no obvious debris
22A	9/16/2008	13:14	No	No	no obvious debris
22B	9/16/2008	13:15	No	No	no obvious debris
22C	9/16/2008	13:15	No	No	no obvious debris
23A	9/16/2008	13:20	No	No	no obvious debris
23B	9/16/2008	13:21	No	No	no obvious debris
23C	9/16/2008	13:22	No	No	no obvious debris
24A	9/16/2008	13:25	No	5%	wood piece on surface
24B	9/16/2008	13:25	No	No	rocky, shells, no obvious debris
24C	9/16/2008	13:26	No	No	shells, rock, silt, no obvious debris
25A	9/16/2008	13:30	No	No	sculpin, rocky/shell bottom, no obvious debris
25B	9/16/2008	13:31	No	No	low pen, kelp
25C	9/16/2008	13:31	No	No	kelp stock or wire?
26A	9/16/2008	13:37	No	No	rocky, silt, no obvious debris
26B	9/16/2008	13:38	No	No	rocks, shells, silt, no obvious debris
26C	9/16/2008	13:39	No	3%	wood piece in rocks, shells silt
27A	9/16/2008	13:45	No	No	no obvious debris
27B	9/16/2008	13:45	No	20-25%	large wood piece on surface
27C	9/16/2008	13:46	No	No	no obvious debris

**APPENDIX E-1  
2008 SEDIMENT INVESTIGATION DATA**

**Cornwall Landfill SPI Image Analysis - Preliminary Results (09/23/08)**

Station (CW)	Date	Time	Muni Waste	Wood Debris	Comments
28A	9/16/2008	13:48	No	No	no obvious debris
28B	9/16/2008	13:49	No	No	no obvious debris
28C	9/16/2008	13:50	No	No	no obvious debris
29A	9/16/2008	13:52	No	No	no obvious debris
29B	9/16/2008	13:53	No	No	no obvious debris
29C	9/16/2008	13:54	No	No	no obvious debris
30A	9/16/2008	13:56	No	No	possible wood piece on surface?
30B	9/16/2008	13:57	No	No	no obvious debris
30C	9/16/2008	13:58	No	No	no obvious debris
31A	9/16/2008	14:01	No	No	under pen, no obvious debris
31B	9/16/2008	14:02	No	No	no obvious debris
31C	9/16/2008	14:02	No	No	no obvious debris
32A	9/16/2008	14:06	No	No	no obvious debris
32B	9/16/2008	14:07	No	No	no obvious debris
32C	9/16/2008	14:07	No	No	no obvious debris
33A	9/16/2008	14:34	No	No	no obvious debris, void
33B	9/16/2008	14:35	No	No	no obvious debris
33C	9/16/2008	14:36	No	No	no obvious debris
34A	9/16/2008	14:39	No	No	no obvious debris
34B	9/16/2008	14:40	No	No	no obvious debris
34C	9/16/2008	14:40	No	No	no obvious debris
35A	9/16/2008	14:44	No	No	no obvious debris, sed layering
35B	9/16/2008	14:44	No	No	no obvious debris
35C	9/16/2008	14:45	No	No	no obvious debris
36A	9/16/2008	14:48	No	No	no obvious debris
36B	9/16/2008	14:49	No	No	no obvious debris
36C	9/16/2008	14:50	No	No	no obvious debris
37A	9/16/2008	14:55	No	No	no obvious debris
37B	9/16/2008	14:55	No	No	no obvious debris
37C	9/16/2008	14:56	No	No	no obvious debris
38A	9/16/2008	14:59	No	No	no obvious debris
38B	9/16/2008	15:00	No	No	no obvious debris
38C	9/16/2008	15:01	No	No	no obvious debris, methane bubbles
39A	9/16/2008	15:06	No	No	no obvious debris
39B	9/16/2008	15:07	No	No	no obvious debris
39C	9/16/2008	15:07	No	No	no obvious debris
40A	9/16/2008	15:12	No	No	no obvious debris
40B	9/16/2008	15:12	No	No	no obvious debris
40C	9/16/2008	15:13	No	No	no obvious debris, polychaete
41A	9/16/2008	15:26	No	No	rocky, no obvious debris
41B	9/16/2008	15:26	No	No	rocky, no obvious debris
41C	9/16/2008	15:27	No	No	rocky, no obvious debris
42A	9/16/2008	15:31	No	No	rocky, no obvious debris
42B	9/16/2008	15:32	No	No	rocky, no obvious debris, sea star
42C	9/16/2008	15:32	No	No	rocky, no obvious debris
43A	9/16/2008	15:37	No	No	Eelgrass, no obvious debris
43B	9/16/2008	15:38	No	No	rocky, no obvious debris
43C	9/16/2008	15:38	No	No	rocky, no obvious debris
44A	9/16/2008	15:42	No	No	rocky, no obvious debris
44B	9/16/2008	15:43	No	No	rocky, no obvious debris
44C	9/16/2008	15:43	No	No	rocky, no obvious debris
45A	9/16/2008	15:46	No	No	shells and rock on silt, methane bubbles
45B	9/16/2008	15:47	--	--	pull out
45C	9/16/2008	15:47	No	2%	possible small wood piece in upper sed column
46A	9/16/2008	15:49	No	No	shells, rock, and silt, no obvious debris
46B	9/16/2008	15:50	No	No	shells, rock, and silt, no obvious debris
46C	9/16/2008	15:51	No	No	shells, rock, and silt, no obvious debris
47A	9/16/2008	15:57	No	1%	wood piece on surface
47B	9/16/2008	15:58	No	2%	wood piece on surface
47C	9/16/2008	15:59	No	No	no obvious debris
48A	9/16/2008	16:01	No	No	no obvious debris
48B	9/16/2008	16:02	No	No	no obvious debris
48C	9/16/2008	16:03	No	No	no obvious debris
49A	9/16/2008	16:08	No	No	no obvious debris
49B	9/16/2008	16:09	No	No	no obvious debris, methane bubble
49C	9/16/2008	16:09	No	No	no obvious debris
50A	9/16/2008	16:13	No	5%	wood piece on surface
50B	9/16/2008	16:14	No	No	no obvious debris
50C	9/16/2008	16:14	No	No	no obvious debris
51A	9/16/2008	16:18	No	No	no obvious debris
51B	9/16/2008	16:18	No	No	no obvious debris
51C	9/16/2008	16:19	No	No	no obvious debris
52A	9/16/2008	16:22	No	No	no obvious debris
52B	9/16/2008	16:23	No	No	no obvious debris, polychaetes at depth
52C	9/16/2008	16:23	No	No	no obvious debris
53A	9/16/2008	16:36	No	No	no obvious debris
53B	9/16/2008	16:37	No	No	no obvious debris
53C	9/16/2008	16:38	No	No	no obvious debris
54A	9/16/2008	16:41	No	No	no obvious debris, pull out
54B	9/16/2008	16:41	No	No	no obvious debris
54C	9/16/2008	16:42	No	No	no obvious debris
55A	9/16/2008	16:46	No	10%	wood piece on surface?
55B	9/16/2008	16:47	--	--	no pen
55C	9/16/2008	16:48	--	--	no pen



**APPENDIX E-1  
2008 SEDIMENT INVESTIGATION DATA**

**Cornwall Landfill SPI Image Analysis - Preliminary Results (09/23/08)**

Station (CW)	Date	Time	Muni Waste	Wood Debris	Comments
56A	9/17/2008	8:28	--	--	no pen
56B	9/17/2008	8:30	No	No	no obvious debris
56C	9/17/2008	8:31	No	No	no obvious debris
57A	9/17/2008	8:37	No	No	no obvious debris
57B	9/17/2008	8:38	No	No	no obvious debris, void
57C	9/17/2008	8:38	--	--	no pen
58A	9/17/2008	8:43	No	No	no obvious debris
58B	9/17/2008	8:44	No	No	no obvious debris
58C	9/17/2008	8:45	No	No	no obvious debris
59A	9/17/2008	8:48	No	No	no obvious debris
59B	9/17/2008	8:49	No	No	no obvious debris
59C	9/17/2008	8:49	No	No	no obvious debris
60A	9/17/2008	8:54	No	No	no obvious debris
60B	9/17/2008	8:55	No	No	no obvious debris
60C	9/17/2008	8:55	No	No	no obvious debris
61A	9/17/2008	9:01	No	No	no obvious debris
61B	9/17/2008	9:01	No	No	no obvious debris
61C	9/17/2008	9:02	No	No	no obvious debris
62A	9/17/2008	9:05	No	2-3%	possible wood particles on surface
62B	9/17/2008	9:06	No	No	possible wood particles on surface
62C	9/17/2008	9:07	No	2-3%	wood particles on surface
63A	9/17/2008	9:11	No	10-15%	wood pieces in surface sediment
63B	9/17/2008	9:12	No	No	possible wood or shell particles
63C	9/17/2008	9:12	No	No	shell particles
64A	9/17/2008	9:16	--	--	under pen
64B	9/17/2008	9:17	No	No	no obvious debris
64C	9/17/2008	9:18	--	--	disturbed
65A	9/17/2008	9:23	No	No	no obvious debris
65B	9/17/2008	9:24	No	No	no obvious debris
65C	9/17/2008	9:25	No	No	
66A	9/17/2008	9:29	No	No	wood piece or kelp draw down?
66B	9/17/2008	9:30	--	--	no pen
66C	9/17/2008	9:31	No	5%	wood piece on surface?
67A	9/17/2008	9:36	No	No	no obvious debris
67B	9/17/2008	9:36	No	No	no obvious debris
67C	9/17/2008	9:37	No	3%	wood piece on surface?
68A	9/17/2008	9:41	No	No	no obvious debris, compact bottom & no pen
68B	9/17/2008	9:41	--	--	no pen
68C	9/17/2008	9:42	--	--	no pen
69A	9/17/2008	9:48	7-10%	No	piece of glass
69B	9/17/2008	9:49	No	No	no obvious debris
69C	9/17/2008	9:50	No	No	no obvious debris, rocks and shells on surface
70A	9/17/2008	9:54	No	No	rocks and shells in sand/silt, no obvious debris
70B	9/17/2008	9:54	No	No	rocks and shells in sand/silt, no obvious debris
70C	9/17/2008	9:55	No	No	rocks and shells in sand/silt, no obvious debris
71A	9/17/2008	10:01	No	No	rocks and shell hash, low pen, no obvious debris
71B	9/17/2008	10:02	No	No	rocks and shell hash, low pen, no obvious debris
71C	9/17/2008	10:02	No	No	rocks and shell hash, low pen, no obvious debris
72A	9/17/2008	10:37	No	5%	possible fine wood particles upper 5 cm
72B	9/17/2008	10:38	No	5%	possible fine wood particles upper 5 cm
72C	9/17/2008	10:38	--	--	possible wood particles on surface, under pen
73A	9/17/2008	10:42	No	No	no obvious debris
73B	9/17/2008	10:43	--	--	no pen
73C	9/17/2008	10:43	No	No	no obvious debris
74A	9/17/2008	10:47	No	No	no obvious debris
74B	9/17/2008	10:48	No	No	no obvious debris
74C	9/17/2008	10:48	No	3%	possible fine wood particles upper 3 cm
75A	9/17/2008	10:53	No	No	rocks and shells on silt, no obvious debris
75B	9/17/2008	10:54	No	No	rocks and shells on silt, no obvious debris
75C	9/17/2008	10:54	No	No	rocks and shells on silt, no obvious debris
76A	9/17/2008	10:59	No	No	rocks and shells on silt, no obvious debris
76B	9/17/2008	10:59	No	No	rocks and shells on silt, no obvious debris
76C	9/17/2008	11:00	No	No	rocks and shells on silt, no obvious debris
77A	9/17/2008	11:03	No	3%	small wood pieces on surface
77B	9/17/2008	11:04	No	3%	small wood pieces on surface
77C	9/17/2008	11:05	No	20-25%	wood pieces on surface
78A	9/17/2008	11:10	No	2%	small wood pieces on surface
78B	9/17/2008	11:11	No	No	no obvious debris
78C	9/17/2008	11:11	No	No	no obvious debris, brittle star
79A	9/17/2008	11:17	No	No	no obvious debris
79B	9/17/2008	11:18	No	No	no obvious debris
79C	9/17/2008	11:19	No	No	no obvious debris
80A	9/17/2008	11:22	No	No	no obvious debris
80B	9/17/2008	11:23	No	No	no obvious debris
80C	9/17/2008	11:23	No	No	no obvious debris, polychaete
81A	9/17/2008	11:26	No	No	no obvious debris, small void?
81B	9/17/2008	11:27	No	No	no obvious debris
81C	9/17/2008	11:28	No	No	no obvious debris
82A	9/17/2008	11:30	5%	No	neck of glass bottle?
82B	9/17/2008	11:31	No	No	no obvious debris
82C	9/17/2008	11:31	No	No	no obvious debris
83A	9/17/2008	11:34	No	No	Eelgrass, no obvious debris
83B	9/17/2008	11:35	No	No	Eelgrass, no obvious debris
83C	9/17/2008	11:36	No	No	Eelgrass, no obvious debris

**APPENDIX E-1  
2008 SEDIMENT INVESTIGATION DATA**

**Cornwall Landfill SPI Image Analysis - Preliminary Results (09/23/08)**

Station (CW)	Date	Time	Muni Waste	Wood Debris	Comments
84A	9/17/2008	12:49	No	5-7%	wood pieces on surface
84B	9/17/2008	12:50	5-7%	No	seastar on neck of bottle
84C	9/17/2008	12:51	No	No	no obvious debris, shell on surface
85A	9/17/2008	12:54	No	10%	very low pen, wood pieces on surface
85B	9/17/2008	12:55	No	10%	wood pieces, also in farfield?, low pen
85C	9/17/2008	12:55	--	--	under pen
86A	9/17/2008	13:00	10-15%	3%	bottle glass piece, small wood pieces on surface
86B	9/17/2008	13:01	No	No	no obvious debris, disturbed
86C	9/17/2008	13:02	No	5%	stick?
87A	9/17/2008	13:05	No	No	no obvious debris
87B	9/17/2008	13:05	No	No	no obvious debris
87C	9/17/2008	13:06	No	No	no obvious debris
88A	9/17/2008	13:09	No	No	no obvious debris
88B	9/17/2008	13:10	No	No	no obvious debris
88C	9/17/2008	13:11	No	No	no obvious debris
89A	9/17/2008	13:14	No	No	no obvious debris
89B	9/17/2008	13:15	No	No	under pen
89C	9/17/2008	13:15	No	No	no obvious debris
90A	9/17/2008	13:21	--	--	no pen
90B	9/17/2008	13:21	No	No	low pen
90C	9/17/2008	13:22	No	No	low pen
91A	9/17/2008	13:30	No	No	no obvious debris
91B	9/17/2008	13:31	No	No	no obvious debris
91C	9/17/2008	13:32	No	No	no obvious debris
92A	9/17/2008	13:36	No	No	possible wood in farfield, no obvious debris
92B	9/17/2008	13:37	No	No	no obvious debris
92C	9/17/2008	13:37	No	No	no obvious debris
93A	9/17/2008	13:40	--	--	no pen, disturbed
93B	9/17/2008	13:41	No	No	hard bottom, no pen
93C	9/17/2008	13:41	--	--	no pen, disturbed
94A	9/17/2008	13:44	No	No	no obvious debris, polychaete
94B	9/17/2008	13:45	No	No	no obvious debris, polychaetes at depth
94C	9/17/2008	13:46	No	No	no obvious debris
95A	9/17/2008	14:20	No	No	no obvious debris
95B	9/17/2008	14:20	No	No	no obvious debris
95C	9/17/2008	14:21	No	No	no obvious debris
96A	9/17/2008	14:24	No	No	no obvious debris
96B	9/17/2008	14:24	No	No	no obvious debris
96C	9/17/2008	14:25	No	No	no obvious debris
97A	9/17/2008	14:29	No	No	no obvious debris
97B	9/17/2008	14:30	No	No	no obvious debris
97C	9/17/2008	14:30	No	No	no obvious debris
98A	9/17/2008	14:35	No	No	no obvious debris
98B	9/17/2008	14:36	No	No	no obvious debris
98C	9/17/2008	14:36	No	No	no obvious debris, polychaete
99A	9/17/2008	14:39	No	No	no obvious debris
99B	9/17/2008	14:40	No	No	no obvious debris
99C	9/17/2008	14:41	No	2%	possible wood piece on surface?
100A	9/17/2008	14:46	No	3-5%	small wood pieces on surface, methane bubble
100B	9/17/2008	14:47	No	2-3%	small wood pieces on surface, methane bubble
100C	9/17/2008	14:48	No	1-2%	possible wood pieces on surface?
101A	9/17/2008	14:51	No	No	no obvious debris
101B	9/17/2008	14:52	No	No	no obvious debris, methane bubbles
101C	9/17/2008	14:52	No	No	no obvious debris
102A	9/17/2008	15:00	No	No	no obvious debris
102B	9/17/2008	15:01	No	No	no obvious debris
102C	9/17/2008	15:02	No	No	no obvious debris
103A	9/17/2008	15:05	No	No	no obvious debris
103B	9/17/2008	15:06	No	No	no obvious debris, void, polychaete
103C	9/17/2008	15:06	No	No	possible wood or plastic piece on surface?
104A	9/17/2008	15:11	No	No	Eelgrass, no obvious debris
104B	9/17/2008	15:12	No	3-5%	possible fine wood particles in upper 3 cm?
104C	9/17/2008	15:13	No	1-2%	possible fine wood particles in upper 2 cm?
105A	9/17/2008	15:17	No	3-5%	possible fine wood particles in upper 3 cm?
105B	9/17/2008	15:18	No	5%	wood piece and particles in upper 3 cm
105C	9/17/2008	15:19	No	No	no obvious debris
106A	9/17/2008	15:23	No	5%	fine wood particles in upper 8 cm?
106B	9/17/2008	15:24	No	No	disturbed, no obvious debris
106C	9/17/2008	15:25	No	No	disturbed, no obvious debris
107A	9/17/2008	15:30	No	No	Eelgrass, no obvious debris
107B	9/17/2008	15:31	No	No	Eelgrass, no obvious debris
107C	9/17/2008	15:31	No	No	Eelgrass, no obvious debris
108A	9/17/2008	15:35	No	No	Eelgrass, no obvious debris
108B	9/17/2008	15:36	No	No	Eelgrass, no obvious debris
108C	9/17/2008	15:37	No	10-15%	fine wood particles in upper 8 cm, eelgrass
109A	9/17/2008	15:40	No	No	Eelgrass, no obvious debris
109B	9/17/2008	15:41	No	No	Eelgrass, no obvious debris
109C	9/17/2008	15:41	No	No	Eelgrass, no obvious debris
110A	9/18/2008	7:31	No	No	no pen, algae
110B	9/18/2008	7:31	No	No	no pen, algae
110C	9/18/2008	7:32	No	No	low pen, brick piece? Rocks
111A	9/18/2008	7:36	No	No	no pen, algae
111B	9/18/2008	7:37	No	No	no pen, algae
111C	9/18/2008	7:38	No	No	no pen, rocks

**APPENDIX E-1  
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**Cornwall Landfill SPI Image Analysis - Preliminary Results (09/23/08)**

Station (CW)	Date	Time	Muni Waste	Wood Debris	Comments
112A	9/18/2008	7:41	No	No	shell hash in sand, no obvious debris
112B	9/18/2008	7:42	No	No	shell hash in sand, no obvious debris
112C	9/18/2008	7:42	No	No	shell hash in sand, no obvious debris
113A	9/18/2008	7:45	No	No	no obvious debris
113B	9/18/2008	7:46	No	No	no obvious debris
113C	9/18/2008	7:46	No	No	no obvious debris
114A	9/18/2008	7:52	No	No	shell on sandy silt, no obvious debris
114B	9/18/2008	7:53	No	10%	possible wood debris upper right surface
114C	9/18/2008	7:53	No	No	shell on sandy silt, no obvious debris
115A	9/18/2008	7:56	No	No	no pen, algae
115B	9/18/2008	7:57	No	No	hard sand bottom, small shell particles, algae
115C	9/18/2008	7:58	No	No	hard sand bottom, small shell particles
116A	9/18/2008	8:05	No	5%	stick in farfield?
116B	9/18/2008	8:06	No	No	sandy hard bottom, eelgrass fronds
116C	9/18/2008	8:06	No	No	sandy hard bottom, shell particles
117A	9/18/2008	8:12	No	No	sandy hard bottom, low pen
117B	9/18/2008	8:12	No	No	sandy hard bottom, shell particles
117C	9/18/2008	8:13	No	No	sandy hard bottom, low pen
118A	9/18/2008	8:16	No	No	algae on hard bottom, no pen
118B	9/18/2008	8:17	No	No	sandy hard bottom, no pen
118C	9/18/2008	8:18	No	No	sandy hard bottom, eelgrass fronds in farfield?
119A	9/18/2008	8:31	No	No	rocky & sandy bottom, no pen
119B	9/18/2008	8:31	No	No	rocky & sandy bottom, no pen
119C	9/18/2008	8:32	No	No	rocky & sandy bottom, no pen, seastar
120A	9/18/2008	8:44	No	No	sparse eelgrass on sandy bottom, no obvious debris
120B	9/18/2008	8:45	No	No	sparse eelgrass on sandy bottom, no obvious debris
120C	9/18/2008	8:45	No	No	sparse eelgrass on sandy bottom, no obvious debris
121A	9/18/2008	8:49	No	No	eelgrass on sandy bottom
121B	9/18/2008	8:50	No	No	eelgrass on sandy bottom
121C	9/18/2008	8:51	No	No	eelgrass on sandy bottom, crab
122A	9/18/2008	8:54	No	No	Eelgrass, no obvious debris
122B	9/18/2008	8:54	No	No	Eelgrass, no obvious debris
122C	9/18/2008	8:55	No	No	Eelgrass, no obvious debris
123A	9/18/2008	8:58	No	No	Eelgrass, no obvious debris
123B	9/18/2008	8:58	No	No	Eelgrass, no obvious debris
123C	9/18/2008	8:59	No	No	Eelgrass, no obvious debris
124A	9/18/2008	9:03	No	No	Eelgrass, no obvious debris
124B	9/18/2008	9:04	No	No	Eelgrass, no obvious debris
124C	9/18/2008	9:04	No	3-5%	possible fine wood particles in upper 2 cm?
125A	9/18/2008	9:11	No	No	rocky bottom, no pen
125B	9/18/2008	9:12	No	No	rocky bottom, no pen
125C	9/18/2008	9:12	No	No	rocky bottom, no pen
126A	9/18/2008	9:17	No	No	rocky bottom, no pen
126B	9/18/2008	9:18	No	No	rocky bottom, no pen
126C	9/18/2008	9:19	No	No	rocky bottom, no pen
127A	9/18/2008	9:25	No	No	eelgrass, low pen
127B	9/18/2008	9:25	No	No	eelgrass, low pen, deceased shiner perch?
127C	9/18/2008	9:26	No	No	eelgrass, low pen
128A	9/18/2008	9:30	No	No	sandy/rocky bottom with fine shell
128B	9/18/2008	9:31	--	--	no pen
128C	9/18/2008	9:31	No	No	sandy/rocky bottom with fine shell
129A	9/18/2008	9:37	No	No	compact sandy bottom, brick piece?
129B	9/18/2008	9:38	No	No	sandy bottom, algae/bryozoan clump
129C	9/18/2008	9:38	No	No	rocks on sandy bottom
130A	9/18/2008	9:56	No	No	Eelgrass, no obvious debris
130B	9/18/2008	9:57	No	No	Eelgrass, no obvious debris
130C	9/18/2008	9:58	No	No	Eelgrass, no obvious debris
131A	9/18/2008	10:09	No	3%	possible fine wood particles in surface
131B	9/18/2008	10:09	No	1-2%	possible fine wood particles in surface
131C	9/18/2008	10:10	No	1-2%	possible fine wood particles in surface
132A	9/18/2008	10:13	No	No	no obvious debris
132B	9/18/2008	10:14	No	No	no obvious debris
132C	9/18/2008	10:15	No	No	no obvious debris
133A	9/18/2008	10:18	No	No	no obvious debris
133B	9/18/2008	10:18	No	No	no obvious debris, polychaete
133C	9/18/2008	10:19	No	No	no obvious debris
134A	9/18/2008	10:22	No	No	no obvious debris
134B	9/18/2008	10:23	No	No	no obvious debris
134C	9/18/2008	10:23	No	No	no obvious debris
135A	9/18/2008	10:33	No	No	no obvious debris
135B	9/18/2008	10:34	No	No	no obvious debris
135C	9/18/2008	10:34	No	No	no obvious debris, spionid polychaete?
136A	9/18/2008	10:38	No	No	no obvious debris
136B	9/18/2008	10:39	No	No	no obvious debris
136C	9/18/2008	10:40	No	No	no obvious debris
137A	9/18/2008	10:44	No	No	no obvious debris, methane bubbles
137B	9/18/2008	10:45	No	No	no obvious debris
137C	9/18/2008	10:46	No	No	no obvious debris
138A	9/18/2008	10:49	No	No	no obvious debris
138B	9/18/2008	10:50	No	No	no obvious debris
138C	9/18/2008	10:51	No	No	no obvious debris

Image for final analysis  
-- Parameter indeterminate



**APPENDIX E-2  
2008 SEDIMENT INVESTIGATION DATA**

**Cornwall Avenue Landfill Mapping - Sediment Coring Observations<sup>1</sup>**

Station	Date	Time	Total Penetration (ft)	Total Recovery (ft)	Refuse? Refuse Thickness (ft)	Description	Percent by Volume <sup>2</sup>	Wood Debris? Wood Thickness (ft)	Percent by Volume <sup>3</sup>	Relative Percent <sup>3</sup> (Bark vs. Chips/Sawdust)	Bore Log Notes	Recent Overlying Sediment Layer (ft) <sup>4</sup>
BLVD-SC-01	9/23/2008	1530	6.0 (refusal)	6.0	No --	refusal likely due to wood debris	--	Yes 5	25-50			1.0
BLVD-SC-02	9/23/2008	1438	9.1 (refusal)	5.4	No --	refusal due to wood debris, also caused compaction	--	Yes 5.4	25-50			0.4
BLVD-SC-03	9/23/2008	1126	11.3	6.6	No --	compaction likely due to wood debris	--	Yes 6.6	>50			0.0
BLVD-SC-04	9/23/2008	1014	11.5	10.2	No --	no native sediment observed	--	Yes 9.7	>50			0.5
BLVD-SC-05	9/22/2008	1630	14.0	14.0	No --	"native" sediments encountered at ~9.5 ft.	--	Yes 9.5	>50			0.0
BLVD-SC-06	9/22/2008	1530	15.0	7.8	No --	"native" sediments encountered at ~6 ft.	--	Yes 4.5	25-50			1.5
BLVD-SC-07	9/24/2008	902	4.0 (refusal)	3.3	No --	refusal due to wood debris	--	Yes 3.3	25-50			0.0
BLVD-SC-08	9/23/2008	1656	16.0	15.0	No --	"native" sediments encountered at ~7 ft.	--	Yes 4.5	25-50			2.5
BLVD-SC-09	9/23/2008	1818	9.7 (refusal)	8.1	No 0*	milk container fragment observed from 1.7-2.5 ft	<5	Yes 3.5	25-50	Both	bark, wood chips, sawdust	0.5
CW-002	9/25/2008	1615	5.7 (refusal)	2.2	No --	refusal caused by wood debris	--	Yes 2.2	>50	>Chips/Dust	bark and wood chips/sawdust	~ 0.5 + eelgrass
CW-003	9/26/2008	1551	6.0 (refusal)	2.7	No --	refusal and pile driving due to wood debris	--	Yes 2.7	>50	>Chips/Dust	sawdust	~ 0.5 + eelgrass
CW-005	9/29/2008	1455	7.1	1.8	Yes 0*	single piece of plastic at 1 ft, pile drive due to wood debris	<5	Yes 1.8	25-50	>Chips/Dust	wood chips, fibers	~ 1
CW-007	9/26/2008	1109	7.0	3.3	Yes 0.4	plastic fragments, rubber band, blue rubber, aluminum foil	<5	Yes 2.3	25-50	>Bark	piece of wood and bark	2.9
CW-008	9/25/2008	1150	7.0	6.3	Yes 1	plastic, tongue depressor, tin foil, sock	<5	Yes 4.3	25-50	>Chips/Dust	wood chips/sawdust and bark (3 inch)	2.0
CW-012	9/25/2008	1031	8.5	6.5	No 0*	single piece of aluminum foil in upper 0.5 ft	<5	Yes 6	>50	Both	wood chips and bark	0.5
CW-014	9/25/2008	1116	7.5	7.5	Yes 3.5	plastic pieces, bags	<5	Yes 4.5	25-50	Both	bark and wood chips	1.5
CW-017	9/29/2008	1010	8.0	3.5	Yes 0*	one shoe lace at 2.5 ft, pile drive due to wood debris	<5	Yes 2	25-50	Both	bark, wood chips/sawdust	1.5
CW-019	9/29/2008	1030	8.0	4.0	No --	pile drive due to wood debris	--	Yes 1.5	25-50	Both	bark, wood chips, sawdust	2.5
CW-025	9/29/2008	1519	refusal	refusal	-- --	glass and fine gravel at bottom may have caused refusal	--	-- --	--	--	--	0.0
CW-026	9/26/2008	1206	6.0 (refusal)	1.7	Yes 1.7	glass and plastic fragments, refusal due to gravel and refuse	<5	Yes 1.7	25-50	>Bark	bark	0.0
CW-028	9/26/2008	1303	7.0	3.7	Yes 0*	one piece of plastic at 1.5 ft	<5	Yes 2.2	25-50	>Bark	large (3-4 inch) piece of bark	1.5
CW-029	9/25/2008	1409	7.0	6.0	Yes 0.5	plastic fragments	<5	Yes 5	25-50	>Chips/Dust	moderate to abundant wood chips/sawdust	3.0
CW-031	9/29/2008	1236	6.7	3.5	No --	--	--	Yes 2	25-50	>Bark	bark, wood sticks	1.0
CW-036	9/29/2008	1307	7.7	5.5	Yes 0*	single piece of plastic (candy wrapper) at 1.8 ft	<5	No --	--	--	--	1.8

**APPENDIX E-2  
2008 SEDIMENT INVESTIGATION DATA**

**Cornwall Avenue Landfill Mapping - Sediment Coring Observations<sup>1</sup>**

Station	Date	Time	Total Penetration (ft)	Total Recovery (ft)	Refuse? Refuse Thickness (ft)	Description	Percent by Volume <sup>2</sup>	Wood Debris? Wood Thickness (ft)	Percent by Volume <sup>3</sup>	Relative Percent <sup>3</sup> (Bark vs. Chips/Sawdust)	Bore Log Notes	Recent Overlying Sediment Layer (ft) <sup>4</sup>		
CW-048	9/26/2008	1319	6.0 (refusal)	3.9	Yes	0.4	plastic bag/fragments, christmas tinsel, detergent bottle cap, refusal due to refuse?	10	Yes	3.5	25-50	>Bark	bark	3.5
CW-049	9/25/2008	1552	7.5	4.8	Yes	2.5	plastic bags, plastic jar bottom	5-10	Yes	2.8	25-50	Both	some bark, wood chips fibers, wood chips, sawdust, piece of bark	2.0
CW-051	9/29/2008	1251	7.8	6.8	No	--	--	--	Yes	1.4	25-50	>Chips/Dust	wood chips, bark, one large wood chip	1.5
CW-053	9/25/2008	1708	6.3	2.8	No	0*	single plastic sheet at 0.8 ft, pile drive due to wood debris	<5	Yes	2	>50	>Chips/Dust	wood chip	0.8
CW-057	9/29/2008	1324	6.5	3.7	No	--	--	--	Yes	2.7	25-50	>Bark	bark	1.0
CW-061	9/25/2008	1800	7.7	5.7	Yes	2	plastic sheet, blue plastic	<5	Yes	3.7	>50	>Chips/Dust	wood chips	2.0
CW-063	9/25/2008	1729	6.5	5.0	No	--	--	--	Yes	3	>50	>Chips/Dust	wood sawdust	1.5
CW-064	9/26/2008	1414	7.6	5.0	No	--	--	--	Yes	5	25-50	>Chips/Dust	thin layer (~2 inches) of fibrous wood	3.0
CW-066	9/26/2008	1354	7.1	2.0	Yes	1	rubber gasket, plastic fragments, wood at bottom caused pile drive	<5	Yes	1	25-50	>Bark	large piece of wood (3-inch)	1.0
CW-067	9/25/2008	1634	7.9	4.8	Yes	1	plastic sheet and fragments	<5	Yes	2	>50	>Chips/Dust	bark and wood chips/sawdust	2.0
CW-068	9/26/2008	1339	8.2	2.6	Yes	0*	piece of linoleum flooring may have cause pile driving	<5	Yes	2.6	25-50	>Bark	bark	2.6
CW-075	9/26/2008	1521	4.8 (refusal)	2.3	Yes	0*	single plastic sheet at 0.7 ft	<5	Yes	2.3	25-50	Both	bark, wood chips, large piece of wood	2.3
CW-077	9/26/2008	1430	7.2	3.0	Yes	1.5	brick and glass frags, plywood piece, pile drive due to debris	5-10	Yes	3	25-50	Both	wood debris	0.0
CW-080	9/26/2008	851	8.5	7.2	No	--	--	--	Yes	4	25-50	>Chips/Dust	bark and wood chips/sawdust	3.0
CW-082	9/26/2008	1037	5.9 (refusal)	2.9	Yes	1.4	plastic bags, aluminum foil, refusal caused by wood debris	<5	Yes	1.4	25-50	>Chips/Dust	wood chips	1.5
CW-084	9/26/2008	1128	7.0	4.2	Yes	1.2	bread clip, newspaper, glass fragments	<5	Yes	3.7	25-50	>Chips/Dust	wood chips/sawdust, small bark	0.5
CW-087	9/25/2008	1343	4.5 (refusal)	2.3	Yes	0*	refusal caused by refuse, glass and porcelain frags, plastic	<5	Yes	2.3	<25	Both	debris	2.3
CW-089	9/29/2008	1146	6.1	2.5	No	--	pile drive due to wood debris	--	Yes	2	25-50	>Chips/Dust	wood chips, fibers, sawdust	0.5
CW-091	9/25/2008	1313	7.5	5.9	Yes	2	cigarette pack, paper, plastic	<5	Yes	2.5	25-50	Both	wood chips and bark	0.5
CW-093	9/29/2008	1125	7.5	5.4	Yes	0.5	small piece of leather, glass fragment	<5	Yes	2	25-50	Both	wood debris	2.5
CW-108	9/29/2008	1434	6.8	2.0	No	--	pile drive due to wood debris	--	Yes	2	>50	>Chips/Dust	sawdust/wood chips, large 3-4 inch wood piece	~ 0.5 + eelgrass
CW-113	9/26/2008	1501	6.0	3.6	Yes	0*	one small piece of plastic at 3 ft	<5	Yes	3.6	25-50	>Bark	bark (3-inch)	3.0
CW-117	9/29/2008	1538	4.0	4.0	No	--	--	--	Yes	2.5	>50	>Chips/Dust	wood chips and sawdust	< 0.5
CW-120	9/26/2008	1539	2.0 (refusal)	1.3	No	--	refusal due to wood debris	--	Yes	1.3	>50	>Chips/Dust	wood chips and sawdust	~ 0.5 + eelgrass
CW-124	9/29/2008	1503	6.2	3.8	Yes	0*	piece of fabric/textile at 3.8 ft, pile drive due to wood debris	<5	Yes	3.8	25-50	Both	--	2.0
CW-132	9/29/2008	1404	6.5	2.5	Yes	0*	single piece of plastic sheet, pile drive due to wood debris	<5	Yes	2.5	25-50	>Chips/Dust	wood chips, sawdust, fibers	1.5
CW-134	9/29/2008	1339	8.5	6.5	No	--	--	--	Yes	0.7	25-50	>Chips/Dust	fibers, wood chips	2.7

APPENDIX E-2  
2008 SEDIMENT INVESTIGATION DATA

Cornwall Avenue Landfill Mapping - Sediment Coring Observations<sup>1</sup>

Station	Date	Time	Total Penetration (ft)	Total Recovery (ft)	Refuse? Refuse Thickness (ft)	Description	Percent by Volume <sup>2</sup>	Wood Debris? Wood Thickness (ft)	Percent by Volume <sup>3</sup>	Relative Percent <sup>3</sup> (Bark vs. Chips/Sawdust)	Bore Log Notes	Recent Overlying Sediment Layer (ft) <sup>4</sup>
CW-136	9/29/2008	1046	7.5	5.7	Yes 0*	small piece of plastic at 4 ft	<5	Yes 4	25-50	>Bark	primarily bark fibers, wood chips, sawdust,	1.7
CW-139	9/29/2008	1107	7.5	5.6	Yes 2	plastic frags, aluminum foil	<5	Yes 3.6	25-50	>Chips/Dust	large piece of bark (3-inches)	2.0
RGH-SC-01	8/26/2008	1654	6.0	4.5	Yes 0.5	glass fragments on surface, brick debris at 2.5 ft	<5	Yes <1	<25	>Chips/Dust	chips, sawdust, 2-inch wood chip	<0.5
RGH-SC-02	8/26/2008	1802	6.0	5.2	Yes 3	brick, glass, wire fragments on surface, brick and glass fragments at 2.25 ft to 5.2 ft	10	Yes 2.25	25-50	>Chips/Dust	scattered wood fiber on surface, 3-inch wood chips from 3 to 5.25 ft	0.5
RGH-SC-03	8/27/2008	1212	6.2	5.5	No --	brick fragments on surface	--	Yes 3	>50	>Chips/Dust	abundant wood sticks (0.5 to 4 inch long) at surface, wood chips from 2.8 ft to 5.5 ft	1.8
RGH-SC-04	8/27/2008	1149	6.0	5.7	No --	--	--	Yes 5	>50	>Chips/Dust	wood pieces (0.5 to 2 inch) from 0.7 to 2.2 ft, wood chip layers at 2.5 ft and 5.1 ft,	0.7
RGH-SC-05	8/27/2008	1127	6.0	4.5	No --	--	--	Yes 4	>50	>Chips/Dust	abundant wood pieces to 5.7 ft wood fragments 0.5 to 1.5 ft, abundant wood chips from 3 to 4.5 ft	0.5
RGH-SC-06	8/27/2008	1017	6.0	5.3	No --	--	--	Yes 3.5	>50	>Chips/Dust	root/wood fragments from surface to 2.75 ft, wood chip layers (1 to 3 cm thick) at 2.75 and 3.25 ft, wood chip layers	0.9
RGH-SC-07	9/24/2008	1403	6.8	4.9	Yes 0*	5 inch piece black plastic at 6.8'	<5	Yes 6.5	25-50	>Chips/Dust	increase to 5.25 ft wood chips, sawdust	0.5
RGH-SC-08	9/24/2008	1639	5.5	4.8	Yes 0*	plastic syringe at 5.5 ft	<5	Yes 3.5	>50	>Chips/Dust	wood chips, sawdust, fibers	2.0
RGH-SC-09	9/24/2008	1601	5.5	4.3	No --	--	--	Yes 3.5	25-50	>Chips/Dust	wood pieces (0.5 to 4 inch), increasing amounts with depth	2.0

Notes:

0\* - single piece or fragment of refuse observed in core

<sup>1</sup> Observations are based on recovered sediment depth (not penetration depth)


<sup>2</sup> Percent by volume - visual estimate of refuse volume in sediment thickness (<5% is limit of observation)

<sup>3</sup> Percent volume is an estimate based on field observations. Highly organic sediments (PT) contain >50% wood debris.

Bold (>50%) indicates primarily wood debris, with little sediment. Organic silts and clays (OL) contain 25-50% wood debris.

<sup>4</sup> Recent sediments at some stations contain organic material including wood debris but generally less than observed with increasing sediment depth.

 Municipal refuse present with < 1.0 foot of recent overlying sediment

 Greater than 1.0 foot accumulated wood containing > 50% sawdust/wood chips with < 1.0 foot of recent overlying sediment

# Cost Estimates

**TABLE F-1**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 1 – UPLAND SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 1:** Containment with Low Permeability Cap, Shoreline Stabilization, and Deep Subtidal Sediment MNR  
**Scope of Work:** Construct low-permeability cap in the Upland Site Unit; integrate stormwater and erosion control and LFG control; shoreline stabilization; and monitored natural recovery of subtidal sediments.

<b>Capital Cost Item - Upland Site Unit</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Cost</b>	<b>Notes</b>	
<b>Direct Capital Costs -</b>						
<u>Construction of low permeability soil cap over Upland Site Unit</u>						
Mobilization/Demobilization	LS	1	\$20,000	\$20,000	1,2	
Temporary Erosion and Sedimentation Controls	LS	1	\$15,000	\$15,000	1,3	
Import fill for site grading/preparation	c.y.	27,500	\$18	\$495,000	4	
Place, grade, and compact imported fill	c.y.	27,500	\$9	\$247,500	1,4	
LFG control layer installing pipe, welding, testing)	l.f.	7,350	\$16	\$117,600	1,5	
LFG control layer - granular fill	c.y.	8,400	\$25	\$210,000	6	
Place, grade, and compact low permeability layer	c.y.	47,500	\$9.00	\$427,500	7	
Separation / Protection Layer	s.y.	50,610	\$1.30	\$65,793	8	
Import fill for drainage and topsoil layers	c.y.	33,700	\$18	\$606,600	9	
Estim Placement and grading of drainage and topsoil layers OSWER 9355.0-75, July 2000	c.y.	33,700	\$9	\$303,300	1,9	
Hydroseeding capped area	ac	10	\$4,000	\$41,829	1	
Groundwater and LFG monitoring assumes 20 hrs. x \$90 for sample collection; \$500 per groundwater sample for analyses; \$100 per sample for data validation and management; \$300 for LFG VOC analysis, \$100 for LFG analyzer rental; and other related costs at \$500 per sampling event. Reporting costs assumed at \$3,500 per quarter (years 1 and 2).						
Stormwater management system (incl. BNSF drainage)	LS	1	\$100,000	\$100,000	1	
Passive vents for LFG system	LS	1	\$25,000	\$25,000	1	
Installation of 8 groundwater monitoring wells	LS	1	\$16,000	\$16,000	10	
Deed restrictions (institutional controls)	LS	1	\$5,000	\$5,000	1	
<b>Subtotal for Direct Capital Costs</b>				<b>\$2,700,000</b>		
<b>Capital Indirect Costs -</b>						
Pre-Design Investigation/Evaluation	LS	1		\$50,000	1	
Remedial Design	%	12		\$324,000	11,14	
Project Management	%	6		\$162,000	12,14	
Construction Management	%	8		\$216,000	13,14	
Construction Completion Report	LS	1		\$40,000	1	
Permitting and Regulatory Compliance	%	3		\$81,000	1	
Ecology Oversight	%	2		\$54,000	1	
Estimate of Taxes	%	9		\$243,000		
<b>Subtotal for Capital Indirect Costs</b>				<b>\$1,170,000</b>		
<b>Subtotal for Capital Direct and Indirect Costs</b>				<b>\$3,870,000</b>		
<b>Contingency for Capital Direct and Indirect Costs</b>				<b>\$967,500</b>		
<b>Total for Direct and Indirect Capital Costs</b>				<b>\$4,837,500</b>		
<b>Operation and Maintenance - Upland Site Unit</b>						
<u>Groundwater and LFG Compliance Monitoring and Reporting</u>						
Years 1 to 2 - Water Quality and LFG Monitoring (Quarterly)	Ea.	4	\$12,700	\$50,800	\$97,204	15,16
Years 3 to 5 - Water Quality and LFG Monitoring (Semi-annually)	Ea.	2	\$12,950	\$25,900	\$69,765	15,16
<b>Subtotal for Operation and Maintenance Costs</b>				<b>\$166,969</b>		
<b>Contingency on Operation and Maintenance Costs</b>				<b>\$42,000</b>		
<b>Total for Operation and Maintenance Costs</b>				<b>\$208,969</b>		
<b>PRESENT WORTH OF ALTERNATIVE 1 - Upland Site Unit</b>				<b>\$5,050,000</b>		

**TABLE F-1**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 1 – UPLAND SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 1:**        **Containment with Low Permeability Cap, Shoreline Stabilization, and Deep Subtidal Sediment MNR**  
**Scope of Work:**    Construct low-permeability cap in the Upland Site Unit; integrate stormwater and erosion control and LFG control; shoreline stabilization; and monitored natural recovery of subtidal sediments.

**Notes**

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- 1 Cost estimates based on professional judgment and experience on other similar projects.
- 2 Includes work plans/submittals, temporary fencing, temporary facilities.
- 3 Dust control, street sweeping, erosion control measures
- 4 Based on creating 1.5% slope over 85% of Upland Site Area. [Assume 15% coverage by buildings/pavement (535,900 sf x 0.85 = 455,515 sf)] Assumed excess stabilized sediment is available after creating 2 ft cap, which provides an additional 13,750 CY to achieve desired slope. Assumed imported structural fill from clean borrow required for grade not achieved with the stabilized sediment.
- 5 Assumed perforated 2" HDPE SDR-11 on 75-ft centers under cap
- 6 Assumed granular fill material with a thickness of 6-inches under cap area (455,520 sf)
- 7 Assumed approximately 47,500 c.y. of stabilized sediment will be graded and compacted across 85% of the Upland Site Unit (455,520 sf)
- 8 Assumed non-woven geotextile, installed cost; throughout cap area (455,520 sf / 9 = 50610 CY)
- 9 Assumes 1 ft drainage layer, 1 ft topsoil over 455,520 sf area
- 10 Assumed installation occurs during shoreline stabilization; assumed \$2,000 in labor and materials per well
- 11 Remedial Design includes preparation of construction plans and specifications, preparation of engineer's estimate of probable cost, and bidding support
- 12 Project management includes bid/contract administration, cost and performance reporting, planning and coordination.
- 13 Construction management includes submittal review, change order review, design modifications, construction schedule tracking.
- 14 Estimated cost based on: A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, EPA 540-R-00-002, OSWER 9355.0-75, July 2000
- 15 Groundwater monitoring - 8 samples + 2 QA/QC per event; monitoring on quarterly basis for 2 years, semi-annually for 3 years, annually for 5 years. Groundwater and LFG monitoring assumes 20 hrs. x \$90 for sample collection; \$500 per groundwater sample for analyses; \$100 per sample for data validation and management; \$300 for LFG VOC analysis, \$100 for LFG analyzer rental; and other related costs at \$500 per sampling event. Reporting costs assumed at \$3,500 per quarter (years 1 and 2), and \$7,500 per annum (years 3 through 5).
- 16 Present Worth Values calculated assuming a 3 percent discount rate.

**TABLE F-2**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 1 – MARINE SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 1: Containment with Low Permeability Cap, Shoreline Stabilization, and Deep Subtidal Sediment MNF**  
**Scope of Work:** Construct low-permeability cap in the Upland Site Unit; integrate stormwater and erosion control and LFG control; shoreline stabilization; and monitored natural recovery of subtidal sediments.

<b>Capital Cost Item - Marine Site Unit</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Cost</b>	<b>Notes</b>	
<b>Direct Capital Costs -</b>						
<u>Construction of shoreline stabilization</u>						
Mobilization/Demobilization	LS	1	\$20,000	\$20,000	1,2	
Erosion and Sedimentation Controls	LS	1	\$15,000	\$15,000	1,3	
Select removal and disposal of refuse along shoreline	c.y.	1,000	\$96	\$96,125	4	
Placement of 3 ft of gravel/riprap for shoreline stabilization	c.y.	30,800	\$38	\$1,170,400	5	
Placement of 6 inches of gravel (fish habitat) over riprap	c.y.	5,100	\$25	\$127,500	5	
<b>Subtotal for Direct Capital Costs</b>				<b>\$1,430,000</b>		
<b>Capital Indirect Costs -</b>						
Pre-Design Investigation/Evaluation	LS	1		\$70,000	1	
Remedial Design	%	15		\$214,500	1,6,9	
Project Management	%	6		\$85,800	7,9	
Construction Management	%	8		\$114,400	8,9	
Construction Completion Report	LS	1		\$40,000	1	
Permitting and Regulatory Compliance	%	10		\$143,000	1	
Ecology Oversight	%	2		\$28,600	1	
Estimate of Taxes	%	9		\$128,700		
<b>Subtotal for Capital Indirect Costs</b>				<b>\$825,000</b>		
<b>Subtotal for Capital Direct and Indirect Costs</b>				<b>\$2,255,000</b>		
<b>Contingency for Capital Direct and Indirect Costs</b>				<b>\$563,750</b>		
<b>Total for Direct and Indirect Capital Costs</b>				<b>\$2,818,750</b>		
<b>Operation and Maintenance - Marine Site Unit</b>	<b>Unit</b>	<b>Qty. (Yearly)</b>	<b>Unit Cost</b>	<b>Annual Cost</b>	<b>Present Worth</b>	<b>Notes</b>
<u>Natural Recovery Compliance Monitoring and Reporting</u>						
Years 1 to 10 - Sediment Sampling (Yr 1, 5,10)	Ea.	1	\$22,400	\$22,400	\$82,689	10,13
<u>Bathymetric Survey of Subtidal MNR (same schedule as monitoring)</u>						
Survey and letter report	Ea.	1	\$8,000	\$8,000	\$29,532	11,13
<u>Annual Inspection of Shoreline Stabilization</u>						
Inspection and letter report	Ea.	1	\$1,500	\$1,500	\$29,401	12,13
<u>Maintenance of Shoreline Stabilization</u>						
5 Year Repair / Replenishment						
Design/Coordination/Permitting	LS	1	\$5,000	\$5,000		
Track excavator with operator	hrs.	16	\$100	\$1,600		
Miscellaneous materials/expenses	LS	1	\$1,000	\$1,000		
Years 5,10,15,20 - Sand / gravel (300 CY per event)	Ea.	1	\$7,500	\$7,500		
	Sum	1		\$15,100	\$42,314	13
<b>Subtotal for Operation and Maintenance Costs</b>				<b>\$183,936</b>		
<b>Contingency on Operation and Maintenance Costs</b>				<b>\$46,000</b>		
<b>Total for Operation and Maintenance Costs</b>				<b>\$229,936</b>		
<b>PRESENT WORTH OF ALTERNATIVE 1 - Marine Site Unit</b>				<b>\$3,050,000</b>		

**TABLE F-2**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 1 – MARINE SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 1: Containment with Low Permeability Cap, Shoreline Stabilization, and Deep Subtidal Sediment MNR**

**Scope of Work:** Construct low-permeability cap in the Upland Site Unit; integrate stormwater and erosion control and LFG control; shoreline stabilization; and monitored natural recovery of subtidal sediments.

**Notes**

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- 1 Cost estimates based on professional judgment and experience on other similar projects.
- 2 Includes work plans/submittals, temporary fencing, temporary facilities.
- 3 Street sweeping, erosion control measures
- 4 Assumed 1,000 c.y. of material to be excavated, hauled to Everett Intermodal Transfer Station, and disposed at Subtitle D facility
- 5 Assumes 3 ft of riprap and 0.5 ft of gravel over 276,946 sf of area for shoreline stabilization system
- 6 Remedial Design includes preparation of construction plans and specifications, preparation of engineer's estimate of probable cost, and bidding support
- 7 Project management includes bid/contract administration, cost and performance reporting, planning and coordination.
- 8 Construction management includes submittal review, change order review, design modifications, construction schedule tracking.
- 9 Estimated cost based on: A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, EPA 540-R-00-002, OSWER 9355.0-75, July 2000
- 10 Monitoring sediment accumulation / recovery from 10 shallow sediment cores; plus 12 surface sediment samples collected for PCB analysis.
- 11 Assume bathymetry survey on same frequency as sediment monitoring.
- 12 Inspection assumes 6-hour travel/field effort and 4-hour report effort at \$140/hr.
- 13 Present Worth Values calculated assuming a 3 percent discount rate.



**TABLE F-3**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 2 – UPLAND SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 2: Containment with Low Permeability Cap with Liner, Shoreline Stabilization with Sand Filter, Sediment Cap, and MNF**  
**Scope of Work:** Construct low-permeability soil cap in the Upland Site Unit with stabilized fine-grained sediments and scrim-reinforced liner; integrate stormwater and erosion control and LFG control; construct shoreline stabilization with shoreline sand filter; install thin-layer sand cap in the subtidal area; implement monitored natural recovery for subtidal sediment in areas not capped.

<b>Capital Cost Item - Upland Site Unit</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Cost</b>	<b>Notes</b>	
<b>Direct Capital Costs -</b>						
<u>Construction of low permeability soil cap over Upland Site Unit</u>						
Mobilization/Demobilization	LS	1	\$20,000	\$20,000	1,2	
Temporary Erosion and Sedimentation Controls	LS	1	\$15,000	\$15,000	1,3	
Import fill for site grading/preparation	c.y.	27,500	\$18	\$495,000	4	
Place, grade, and compact imported fill	c.y.	27,500	\$9	\$247,500	1,4	
LFG control layer installing pipe, welding, testing)	l.f.	7,350	\$16	\$117,600	1,5	
LFG control layer - granular fill	c.y.	8,400	\$25	\$210,000	6	
Place, grade, and compact low permeability layer	c.y.	47,500	\$9.00	\$427,500	7	
Separation / Protection Layer (Scrim Reinforced Liner)	s.y.	50,610	\$3.33	\$168,531	8	
Import fill for drainage and topsoil layers	c.y.	33,700	\$18	\$606,600	9	
Placement and grading of drainage and topsoil layers	c.y.	33,700	\$9	\$303,300	1,9	
Hydroseeding capped area	ac	10	\$4,000	\$41,829	1	
<u>Other Components of Cleanup Action Alternative</u>						
Import and placement of sand for shoreline sand filter	c.y.	10,300	\$26	\$267,800	17	
Stormwater management system (incl. BNSF drainage)	LS	1	\$100,000	\$100,000	1	
Passive vents for LFG system	LS	1	\$25,000	\$25,000	1	
Installation of 8 groundwater monitoring wells	LS	1	\$16,000	\$16,000	10	
Deed restrictions (institutional controls)	LS	1	\$5,000	\$5,000	1	
<b>Subtotal for Direct Capital Costs</b>				<b>\$3,070,000</b>		
<b>Capital Indirect Costs -</b>						
Pre-Design Investigation/Evaluation	LS	1		\$75,000	1	
Remedial Design	%	12		\$368,400	11,14	
Project Management	%	6		\$184,200	12,14	
Construction Management	%	8		\$245,600	13,14	
Construction Completion Report	LS	1		\$40,000	1	
Permitting and Regulatory Compliance	%	3		\$92,100	1	
Ecology Oversight	%	2		\$61,400	1	
Estimate of Taxes	%	9		\$276,300		
<b>Subtotal for Capital Indirect Costs</b>				<b>\$1,343,000</b>		
<b>Subtotal for Capital Direct and Indirect Costs</b>				<b>\$4,413,000</b>		
<b>Contingency for Capital Direct and Indirect Costs</b>				<b>\$1,103,250</b>		
<b>Total for Direct and Indirect Capital Costs</b>				<b>\$5,516,250</b>		
<b>Operation and Maintenance - Upland Site Unit</b>	<b>Unit</b>	<b>Qty. (Yearly)</b>	<b>Unit Cost</b>	<b>Annual Cost</b>	<b>Present Worth</b>	<b>Notes</b>
<u>Groundwater and LFG Compliance Monitoring and Reporting</u>						
Years 1 to 2 - Water Quality and LFG Monitoring (Quarterly)	Ea.	4	\$12,700	\$50,800	\$97,204	15,16
Years 3 to 5 - Water Quality and LFG Monitoring (Semi-annually)	Ea.	2	\$12,950	\$25,900	\$69,765	15,16
<b>Subtotal for Operation and Maintenance Costs</b>				<b>\$166,969</b>		
<b>Contingency on Operation and Maintenance Costs</b>				<b>\$42,000</b>		
<b>Total for Operation and Maintenance Costs</b>				<b>\$208,969</b>		
<b>PRESENT WORTH OF ALTERNATIVE 2 - Upland Site Unit</b>				<b>\$5,730,000</b>		

**TABLE F-3**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 2 – UPLAND SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 2: Containment with Low Permeability Cap with Liner, Shoreline Stabilization with Sand Filter, Sediment Cap, and MNR**  
**Scope of Work:** Construct low-permeability soil cap in the Upland Site Unit with stabilized fine-grained sediments and scrim-reinforced liner; integrate stormwater and erosion control and LFG control; construct shoreline stabilization with shoreline sand filter; install thin-layer sand cap in the subtidal area; implement monitored natural recovery for subtidal sediment in areas not capped.

**Notes**

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- 1 Cost estimates based on professional judgment and experience on other similar projects.
- 2 Includes work plans/submittals, temporary fencing, temporary facilities.
- 3 Dust control, street sweeping, erosion control measures
- 4 Based on creating 1.5% slope over 85% of Upland Site Area. [Assume 15% coverage by buildings/pavement (535,900 sf x 0.85 = 455,515 sf)]  
 Assumed excess stabilized sediment is available after creating 2 ft cap, which provides an additional 13,750 CY to achieve desired slope.  
 Assumed imported structural fill from clean borrow required for grade not achieved with the stabilized sediment.
- 5 Assumed perforated 2" HDPE SDR-11 on 75-ft centers under cap
- 6 Assumed granular fill material with a thickness of 6-inches under cap area (455,520 sf)
- 7 Assumed approximately 47,500 c.y. of stabilized sediment will be graded and compacted across 85% of the Upland Site Unit (455,520 sf)
- 8 Assumed 20-mil scrim reinforced liner, installed cost; throughout cap area (455,520 sf / 9 = 50610 CY)
- 9 Assumed 1 ft drainage layer, 1 ft topsoil over 455,520 sf area
- 10 Assumed installation occurs during shoreline stabilization; assumed \$2,000 in labor and materials per well
- 11 Remedial Design includes preparation of construction plans and specifications, preparation of engineer's estimate of probable cost, and bidding support
- 12 Project management includes bid/contract administration, cost and performance reporting, planning and coordination.
- 13 Construction management includes submittal review, change order review, design modifications, construction schedule tracking.
- 14 Estimated cost based on: A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, EPA 540-R-00-002, OSWER 9355.0-75, July 2000
- 15 Groundwater monitoring - 8 samples + 2 QA/QC per event; monitoring on quarterly basis for 2 years, semi-annually for 3 years, annually for 5 years.  
 Groundwater and LFG monitoring assumes 20 hrs. x \$90 for sample collection; \$500 per groundwater sample for analyses;  
 \$100 per sample for data validation and management; \$300 for LFG VOC analysis, \$100 for LFG analyzer rental;  
 and other related costs at \$500 per sampling event. Reporting costs assumed at \$3,500 per quarter (years 1 and 2),  
 and \$7,500 per annum (years 3 through 5).
- 16 Present Worth Values calculated assuming a 3 percent discount rate.
- 17 Assumed 1 ft of sand placed over 276,950 sf of area beneath the shoreline stabilization system

**TABLE F-4**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 2 - MARINE SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 2:** Containment with Low Permeability Cap with Liner, Shoreline Stabilization with Sand Filter, Sediment Cap, and MNF  
**Scope of Work:** Construct low-permeability soil cap in the Upland Site Unit with stabilized fine-grained sediments and scrim-reinforced liner; integrate stormwater and erosion control and LFG control; construct shoreline stabilization with shoreline sand filter; install thin-layer sand cap in the subtidal area; implement monitored natural recovery for subtidal sediment in areas not capped.

<b>Capital Cost Item - Marine Site Unit</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Cost</b>	<b>Notes</b>	
<b>Direct Capital Costs -</b>						
<u>Construction of shoreline stabilization</u>						
Mobilization/Demobilization	LS	1	\$20,000	\$20,000	1,2	
Erosion and Sedimentation Controls	LS	1	\$15,000	\$15,000	1,3	
Select removal and disposal of refuse along shoreline	c.y.	1,000	\$96	\$96,125	4	
Placement of 3 ft of gravel/riprap for shoreline stabilization	c.y.	30,800	\$38	\$1,170,400	5	
Placement of 6 inches of gravel (fish habitat) over riprap	c.y.	5,100	\$25	\$127,500	5	
<u>Construction of thin layer subtidal sediment cap</u>						
Placement of thin layer sand cap	c.y.	5,100	\$35	\$178,500	6	
<b>Subtotal for Direct Capital Costs</b>				<b>\$1,610,000</b>		
<b>Capital Indirect Costs -</b>						
Pre-Design Investigation/Evaluation	LS	1		\$70,000	1	
Remedial Design	%	15		\$241,500	6,9	
Project Management	%	6		\$96,600	7,9	
Construction Management	%	8		\$128,800	8,9	
Construction Completion Report	LS	1		\$40,000	1	
Permitting and Regulatory Compliance	%	10		\$161,000	1	
Ecology Oversight	%	2		\$32,200	1	
Estimate of Taxes	%	9		\$144,900		
<b>Subtotal for Capital Indirect Costs</b>				<b>\$915,000</b>		
<b>Subtotal for Capital Direct and Indirect Costs</b>				<b>\$2,525,000</b>		
<b>Contingency for Capital Direct and Indirect Costs</b>				<b>\$631,250</b>		
<b>Total for Direct and Indirect Capital Costs</b>				<b>\$3,156,250</b>		
<b>Operation and Maintenance - Marine Site Unit</b>	<b>Unit</b>	<b>Qty. (Yearly)</b>	<b>Unit Cost</b>	<b>Annual Cost</b>	<b>Present Worth</b>	<b>Notes</b>
<u>Natural Recovery Compliance Monitoring and Reporting</u>						
Years 1 to 10 - Sediment Sampling (Yr 1, 5,10)	Ea.	1	\$22,400	\$22,400	\$82,689	10,13
<u>Bathymetric Survey of Subtidal MNR (same schedule as monitoring)</u>						
Survey and letter report	Ea.	1	\$8,000	\$8,000	\$29,532	11,13
<u>Annual Inspection of Shoreline Stabilizator</u>						
Inspection and letter report	Ea.	1	\$1,500	\$1,500	\$29,401	12,13
<u>Maintenance of Shoreline Stabilization</u>						
5 Year Repair / Replenishment						
Design/Coordination/Permitting	LS	1	\$5,000	\$5,000		
Track excavator with operator	hrs.	16	\$100	\$1,600		
Miscellaneous materials/expenses	LS	1	\$1,000	\$1,000		
Years 5,10 - Sand / gravel (300 CY per event)	Ea.	1	\$7,500	\$7,500		
	Ea.	1		\$15,100	\$24,261	13
<b>Subtotal for Operation and Maintenance Costs</b>				<b>\$165,883</b>		
<b>Contingency on Operation and Maintenance Costs</b>				<b>\$41,000</b>		
<b>Total for Operation and Maintenance Costs</b>				<b>\$206,883</b>		
<b>PRESENT WORTH OF ALTERNATIVE 2 - Marine Site Unit</b>				<b>\$3,360,000</b>		

**TABLE F-4**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 2 - MARINE SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

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**Alternative 2: Containment with Low Permeability Cap with Liner, Shoreline Stabilization with Sand Filter, Sediment Cap, and MNR**  
**Scope of Work:** Construct low-permeability soil cap in the Upland Site Unit with stabilized fine-grained sediments and scrim-reinforced liner; integrate stormwater and erosion control and LFG control; construct shoreline stabilization with shoreline sand filter; install thin-layer sand cap in the subtidal area; implement monitored natural recovery for subtidal sediment in areas not capped.

**Notes**

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- 1 Cost estimates based on professional judgment and experience on other similar projects.
- 2 Includes work plans/submittals, temporary fencing, temporary facilities.
- 3 Street sweeping, erosion control measures
- 4 Assumed 1,000 c.y. of material to be excavated, hauled to Everett Intermodal Transfer Station, and disposed at Subtitle D facility
- 5 Assumes 3 ft of riprap and 0.5 ft of gravel over 276,946 sf of area for shoreline stabilization system
- 6 Assumed sediment capping area of 229,000 sf capped with 6 inches of sand (plus 20% additional for placement difficulty)
- 7 Project management includes bid/contract administration, cost and performance reporting, planning and coordination.
- 8 Construction management includes submittal review, change order review, design modifications, construction schedule tracking.
- 9 Estimated cost based on: A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, EPA 540-R-00-002, OSWER 9355.0-75, July 2000
- 10 Monitoring sediment accumulation / recovery from 10 shallow sediment cores; plus 12 surface sediment samples collected for PCB analysis.
- 11 Assume bathymetry survey on same frequency as sediment monitoring.
- 12 Inspection assumes 6-hour travel/field effort and 4-hour report effort at \$140/hr.
- 13 Present Worth Values calculated assuming a 3 percent discount rate.

TABLE F-5  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 3 – UPLAND SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 3: Two-Layer Upland Cap, Upgradient Groundwater Diversion Barrier System, Shoreline Stabilization with Sand Filter, Engineered Sediment Cap and Monitored Natural Recovery**

**Scope of Work:** Construct two-layer low-permeability cap (FML and soil) in the Upland Site Unit; integrate stormwater and erosion control and LFG control; construct upgradient groundwater diversion barrier system; construct shoreline stabilization with shoreline sand filter; install engineered sediment cap in the subtidal area; implement monitored natural recovery for subtidal sediment in areas not capped.

<b>Capital Cost Item - Upland Site Unit</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Cost</b>	<b>Notes</b>
<b>Direct Capital Costs -</b>					
<u>Construction of low permeability soil cap over Upland Site Unit</u>					
Mobilization/Demobilization	LS	1	\$20,000	\$20,000	1,2
Temporary Erosion and Sedimentation Controls	LS	1	\$15,000	\$15,000	1,3
Import fill for site grading/preparation	c.y.	27,500	\$18	\$495,000	4
Place, grade, and compact imported fill	c.y.	27,500	\$9	\$247,500	1,4
LFG control layer installing pipe, welding, testing)	l.f.	7,350	\$16	\$117,600	1,5
LFG control layer - granular fill	c.y.	8,400	\$25	\$210,000	6
Place, grade, and compact low permeability layer	c.y.	47,500	\$9.00	\$427,500	7
Installation of FML Layer	s.y.	50,610	\$8.20	\$415,002	8
Import fill for drainage and topsoil layers	c.y.	33,700	\$18	\$606,600	9
Placement and grading of drainage and topsoil layers	c.y.	33,700	\$9	\$303,300	1,9
Hydroseeding capped area	ac	10	\$4,000	\$41,829	1
<u>Other Components of Cleanup Action Alternative</u>					
Import and placement of sand for shoreline sand filter	c.y.	10,300	\$26	\$267,800	24
Stormwater management system (incl. BNSF drainage)	LS	1	\$100,000	\$100,000	1
Passive vents for LFG system	LS	1	\$25,000	\$25,000	1
Installation of 8 groundwater monitoring wells	LS	1	\$16,000	\$16,000	10
Deed restrictions (institutional controls)	LS	1	\$5,000	\$5,000	1
<u>Construction of Groundwater Diversion Structure</u>					
Installation of sheetpile cutoff wall	s.f.	10,200	\$40.00	\$408,000	11
Installation of upgradient groundwater interception trench	l.f.	1,350	\$70	\$94,500	11
Installation of oil/water separator	l.s.	1	\$10,000	\$10,000	12
Installation of sampling/access vaults	l.s.	3	\$2,500	\$7,500	13
Installation of outfall/tide gate	l.s.	1	\$10,000	\$10,000	1
<b>Subtotal for Direct Capital Costs</b>				<b>\$3,840,000</b>	
<b>Capital Indirect Costs -</b>					
Pre-Design Investigation/Evaluation	LS	1		\$50,000	1
Pre-Design Investigation/Evaluation	LS	1		\$50,000	1
Remedial Design	%	10		\$384,000	14,17
Project Management	%	5		\$192,000	15,17
Construction Management	%	6		\$230,400	16,17
Construction Completion Report	LS	1		\$40,000	1
Permitting and Regulatory Compliance	%	3		\$115,200	1
Ecology Oversight	%	2		\$76,800	1
Estimate of Taxes	%	9		\$345,600	
<b>Subtotal for Capital Indirect Costs</b>				<b>\$1,484,000</b>	
<b>Subtotal for Capital Direct and Indirect Costs</b>				<b>\$5,324,000</b>	
<b>Contingency for Capital Direct and Indirect Costs</b>				<b>\$1,331,000</b>	
<b>Total for Direct and Indirect Capital Costs</b>				<b>\$6,655,000</b>	
<b>Operation and Maintenance - Upland Site Unit</b>					
<u>Annual Inspection and cleaning of oil/water separator</u>					
Inspection/cleaning	ea.	1	\$1,000	\$1,000	\$14,877 18,20,23
<u>Groundwater and LFG Compliance Monitoring and Reporting</u>					
Years 1 to 2 - Water Quality and LFG Monitoring (Quarterly)	Ea.	4	\$12,700	\$50,800	\$97,204 19,21,22,23
Years 3 to 5 - Water Quality and LFG Monitoring (Semi-annually)	Ea.	2	\$12,950	\$25,900	\$69,765 19,21,22,23
<b>Subtotal for Operation and Maintenance Costs</b>				<b>\$166,969</b>	
<b>Contingency on Operation and Maintenance Costs</b>				<b>\$42,000</b>	
<b>Total for Operation and Maintenance Costs</b>				<b>\$208,969</b>	
<b>PRESENT WORTH OF ALTERNATIVE 3 - Upland Site Unit</b>				<b>\$6,860,000</b>	

**TABLE F-5**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 3 – UPLAND SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 3: Two-Layer Upland Cap, Upgradient Groundwater Diversion Barrier System, Shoreline Stabilization with Sand Filter, Engineered Sediment Cap and Monitored Natural Recovery**

**Scope of Work:** Construct two-layer low-permeability cap (FML and soil) in the Upland Site Unit; integrate stormwater and erosion control and LFG control; construct upgradient groundwater diversion barrier system; construct shoreline stabilization with shoreline sand filter; install engineered sediment cap in the subtidal area; implement monitored natural recovery for subtidal sediment in areas not capped.

**Notes**

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- 1 Cost estimates based on professional judgment and experience on other similar projects.
- 2 Includes work plans/submittals, temporary fencing, temporary facilities.
- 3 Dust control, street sweeping, erosion control measures
- 4 Based on creating 1.5% slope over 85% of Upland Site Area. [Assume 15% coverage by buildings/pavement (535,900 sf x 0.85 = 455,515 sf)] Assumed excess stabilized sediment is available after creating 2 ft cap, which provides an additional 13,750 CY to achieve desired slope. Assumed imported structural fill from clean borrow required for grade not achieved with the stabilized sediment.
- 5 Assumed perforated 2" HDPE SDR-11 on 75-ft centers under cap
- 6 Assumed granular fill material with a thickness of 6-inches under cap area (455,520 sf)
- 7 Assumed approximately 47,500 c.y. of stabilized sediment will be graded and compacted across 85% of the Upland Site Unit (455,520 sf)
- 8 Assumed 60-mil HDPE liner, installed cost; throughout cap area (455,520 sf / 9 = 50610 CY)
- 9 Costs hydroseeding Upland Site Unit for short-term stabilization pending Site development
- 11 Assumed installation occurs during shoreline stabilization; assumed \$2,000 in labor and materials per well
- 12 Assumed trench and steel sheetpile wall extend to bedrock, estimated to be 12 ft BGS, for an 850-ft alignment.
- 13 Assumes the installation of a 25-gpm coalescing plate oil/water separator.
- 14 Assumes the installation or access vaults at both ends of the interception trench and at the center to provide access for sampling and
- 15 maintenance of the interception trench.
- 16 Remedial Design includes preparation of construction plans and specifications, preparation of engineer's estimate of probable cost, and bidding support
- 17 Project management includes bid/contract administration, cost and performance reporting, planning and coordination.
- 18 Construction management includes submittal review, change order review, design modifications, construction schedule tracking.
- 19 Estimated cost based on: A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, EPA 540-R-00-002, OSWER 9355.0-75, July 2000
- 20 Assumes annual inspection of oil/water separator for 20 years
- 21 Groundwater monitoring - 8 samples + 2 QA/QC per event; monitoring on quarterly basis for 2 years, semi-annually for 3 years, annually for 5 years.
- 22 Groundwater and LFG monitoring assumes 20 hrs. x \$90 for sample collection; \$500 per groundwater sample for analyses; \$100 per sample for data validation and management; 300 for LFG VOC analysis, \$100 for LFG analyzer rental; and other related costs at \$500 per sampling event. Reporting costs assumed at \$3,500 per quarter (years 1 and 2), and \$7,500 per annum (years 3 through 5).
- 23 Present Worth Values calculated assuming a 3 percent discount rate.
- 24 Assumed 1 ft of sand placed over 276,950 sf of area beneath the shoreline stabilization system

**TABLE F-6**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 3 – MARINE SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 3: Two-Layer Upland Cap, Upgradient Groundwater Interception, Shoreline Stabilization with Sand Filter, Engineered Sediment Cap and Monitored Natural Recovery**

**Scope of Work:** Construct two-layer low-permeability cap (FML and soil) in the Upland Site Unit; integrate stormwater and erosion control and LFG control; construct upgradient groundwater interception/diversion system; construct shoreline stabilization with shoreline sand filter; install engineered sediment cap in the subtidal area; implement monitored natural recovery for subtidal sediment in areas not capped.

<b>Capital Cost Item - Marine Site Unit</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Cost</b>	<b>Notes</b>	
<b>Direct Capital Costs -</b>						
<u>Construction of shoreline stabilization</u>						
Mobilization/Demobilization	LS	1	\$20,000	\$20,000	1,2	
Erosion and Sedimentation Controls	LS	1	\$15,000	\$15,000	1,3	
Select removal and disposal of refuse along shoreline	c.y.	1,000	\$96	\$96,125	4	
Placement of 3 ft of gravel/riprap for shoreline stabilization	c.y.	30,800	\$38	\$1,170,400	5	
Placement of 6 inches of gravel (fish habitat) over riprap	c.y.	5,100	\$25	\$127,500	5	
<u>Construction of engineered subtidal sediment cap</u>						
Placement of engineered sand cap	c.y.	12,700	\$35	\$444,500	1	
<b>Subtotal for Direct Capital Costs</b>				<b>\$1,870,000</b>		
<b>Capital Indirect Costs -</b>						
Pre-Design Investigation/Evaluation	LS	1		\$70,000	1	
Remedial Design	%	15		\$280,500	6,9	
Project Management	%	6		\$112,200	7,9	
Construction Management	%	8		\$149,600	8,9	
Construction Completion Report	LS	1		\$18,700	1	
Permitting and Regulatory Compliance	%	10		\$187,000	1	
Ecology Oversight	%	2		\$37,400	1	
Estimate of Taxes	%	9		\$168,300		
<b>Subtotal for Capital Indirect Costs</b>				<b>\$1,023,700</b>		
<b>Subtotal for Capital Direct and Indirect Costs</b>				<b>\$2,893,700</b>		
<b>Contingency for Capital Direct and Indirect Costs</b>	%	25		<b>\$723,425</b>		
<b>Total for Direct and Indirect Capital Costs</b>				<b>\$3,617,125</b>		
<b>Operation and Maintenance - Marine Site Unit</b>	<b>Unit</b>	<b>Qty. (Yearly)</b>	<b>Unit Cost</b>	<b>Annual Cost</b>	<b>Present Worth</b>	<b>Notes</b>
<u>Natural Recovery Compliance Monitoring and Reporting</u>						
Years 1 to 10 - Sediment Sampling (Yr 1, 5, 10)	Ea.	1	\$22,400	\$22,400	\$82,689	9,12
<u>Bathymetric Survey of Subtidal MNR (same schedule as monitoring)</u>						
Survey and letter report	Ea.	1	\$8,000	\$8,000	\$29,532	10,12
<u>Annual Inspection of Shoreline Stabilization</u>						
Inspection and letter report	Ea.	1	\$1,500	\$1,500	\$29,401	11,12
<u>Maintenance of Shoreline Stabilization</u>						
5 Year Repair / Replenishment						
Track excavator with operator	hrs.	16	\$100	\$1,600		
Miscellaneous materials/expenses	LS	1	\$1,000	\$1,000		
Years 5,10 - Sand / gravel (300 CY per event)	Ea.	1	\$7,500	\$7,500		
<b>Subtotal for Operation and Maintenance Costs</b>				<b>\$159,071</b>		
<b>Contingency on Operation and Maintenance Costs</b>		25%		<b>\$40,000</b>		
<b>Total for Operation and Maintenance Costs</b>				<b>\$199,071</b>		
<b>PRESENT WORTH OF ALTERNATIVE 3 - Marine Site Unit</b>				<b>\$3,820,000</b>		

**TABLE F-6**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 3 – MARINE SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 3: Two-Layer Upland Cap, Upgradient Groundwater Interception, Shoreline Stabilization with Sand Filter, Engineered Sediment Cap and Monitored Natural Recovery**

**Scope of Work:** Construct two-layer low-permeability cap (FML and soil) in the Upland Site Unit; integrate stormwater and erosion control and LFG control; construct upgradient groundwater interception/diversion system; construct shoreline stabilization with shoreline sand filter; install engineered sediment cap in the subtidal area; implement monitored natural recovery for subtidal sediment in areas not capped.

**Notes**

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- 1 Cost estimates based on professional judgment and experience on other similar projects.
- 2 Includes work plans/submittals, temporary fencing, temporary facilities.
- 3 Street sweeping, erosion control measures
- 4 Assumed 1,000 c.y. of material to be excavated, hauled to Everett Intermodal Transfer Station, and disposed at Subtitle D facility
- 5 Remedial Design includes preparation of construction plans and specifications, preparation of engineer's estimate of probable cost, and bidding support
- 6 Project management includes bid/contract administration, cost and performance reporting, planning and coordination.
- 7 Construction management includes submittal review, change order review, design modifications, construction schedule tracking.
- 8 Estimated cost based on: A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, EPA 540-R-00-002, OSWER 9355.0-75, July 2000
- 9 Monitoring sediment accumulation / recovery from 10 shallow sediment cores; plus 12 surface sediment samples collected for PCB analysis.
- 10 Assume bathymetry survey on same frequency as sediment monitoring.
- 11 Inspection assumes 6-hour travel/field effort and 4-hour report effort at \$140/hr.
- 12 Present Worth Values calculated assuming a 3 percent discount rate.
- 13 Assumed 1 ft of sand placed over 276,950 sf of area beneath the shoreline stabilization system



**TABLE F-7  
REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 4 – UPLAND SITE UNIT  
CORNWALL AVENUE LANDFILL SITE  
BELLINGHAM, WASHINGTON**

**Alternative 4: Waste Removal**  
**Scope of Work:** Excavation of existing landfill refuse and wood waste cover materials from Upland and Marine Site Units with disposal at a Subtitle D solid waste landfill facility. Regrading of upland, reconfigure and stabilize the new shoreline.

<b>Capital Cost Item - Upland Site Unit</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Cost</b>	<b>Notes</b>
<b>Direct Capital Costs -</b>					
<u>Excavation of Upland Refuse</u>					
Mobilization/Demobilization	LS	1	\$40,000	\$40,000	1,2
Erosion and Sedimentation Controls	LS	1	\$100,000	\$100,000	1,3
Mass excavation of upland refuse - by tracked excavators	c.y.	430,050	\$12	\$5,160,600	1,4
<u>Disposal of Upland Refuse and Wood Debris</u>					
On-shore handling and loading of waste material	c.y.	430,050	\$2	\$860,100	1
Stabilization, with fly ash of 10 % of excavated materials	c.y.	43,005	\$15	\$645,075	1
Transport (by rail) and Disposal at Rabanco	ton	709,583	\$40	\$28,383,300	1,5
<b>Subtotal for Direct Capital Costs</b>				<b>\$35,190,000</b>	
<b>Capital Indirect Costs -</b>					
Remedial Design	%	6		\$2,111,400	6,9
Project Management	%	4		\$1,407,600	7,9
Construction Management	%	5		\$1,759,500	8,9
Construction Completion Report	LS	1		\$80,000	1
Permitting and Regulatory Compliance	%	2		\$703,800	1
Ecology Oversight	%	1		\$351,900	1
Estimate of Taxes	%	9		\$3,167,100	
<b>Subtotal for Capital Indirect Costs</b>				<b>\$9,581,300</b>	
<b>Subtotal for Capital Direct and Indirect Costs</b>				<b>\$44,771,300</b>	
<b>Contingency for Capital Direct and Indirect Costs</b>				<b>\$8,954,260</b>	
<b>PRESENT WORTH OF ALTERNATIVE 4 - Upland Site Unit</b>				<b>\$53,730,000</b>	

**Notes**

- 1 Cost estimates based on professional judgment and experience on other similar projects.
- 2 Includes work plans/submittals, temporary fencing, temporary facilities.
- 3 Street sweeping, erosion control measures
- 4 Excavation volume based on estimated depth of refuse and wood waste in Upland Site Unit.  
Total Site area = 535,900 sf; Assumed approximately 1/3 of the Site excavated to 30 ft bgs, 1/3 to 20 ft bgs, and 1/3 to 15 bgs  
For consistency in comparison of costs estimates, the export of the fine-grained sediment stored at the site is NOT considered in this total.
- 5 Assumed excavated materials hauled to Everett Intermodal Transfer Station, and disposed at Subtitle D facility
- 6 Remedial Design includes preparation of construction plans and specifications, preparation of engineer's estimate of probable cost, and bidding support
- 7 Project management includes bid/contract administration, cost and performance reporting, planning and coordination.
- 8 Construction management includes submittal review, change order review, design modifications, construction schedule tracking.
- 9 Estimated cost based on: A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, EPA 540-R-00-002, OSWER 9355.0-75, July 2000

**TABLE F-8**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 4 – MARINE SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 4: Waste Removal**

**Scope of Work:** Excavation of existing landfill refuse and wood waste cover materials from Upland and Marina Site Units with disposal at a Subtitle D solid waste landfill facility. Regrading of upland, reconfigure and stabilize the new shoreline.

<b>Capital Cost Item - Marine Site Unit</b>	<b>Unit</b>	<b>Qty.</b>	<b>Unit Cost</b>	<b>Cost</b>	<b>Notes</b>	
<b>Direct Capital Costs -</b>						
<u>Excavation of Marine Refuse</u>						
Mobilization/Demobilization	LS	1	\$40,000	\$40,000	1,2	
Erosion and Sedimentation Controls	LS	1	\$100,000	\$100,000	1,3	
Mass excavation of and dredging of refuse and wood debris	c.y.	148,000	\$16	\$2,368,000	1,4	
<u>Disposal of Marine Refuse and Wood Debris</u>						
On-shore handling and loading of waste material	c.y.	148,000	\$2	\$296,000	1	
Stabilization, with fly ash of 10 % of refuse	c.y.	14,800	\$15	\$222,000	1	
Transport (by rail) and Disposal at Rabanco	ton	244,200	\$40	\$9,768,000	1	
<u>Reconstruction of intertidal and subtidal habitat</u>						
Placement of 1 ft of gravel on intertidal face	c.y.	7,100	\$25	\$177,500	1,5	
Placement of 2 ft of riprap on intertidal face	c.y.	14,200	\$38	\$539,600	1,5	
Placement of 6 inches of gravel (fish habitat) over riprap	c.y.	3,500	\$25	\$87,500	1,5	
Placement of sand to reconstruct subtidal shoreline slopes	c.y.	42,500	\$35	\$1,487,500	1,6	
<b>Subtotal for Direct Capital Costs</b>				<b>\$15,090,000</b>		
<b>Capital Indirect Costs -</b>						
Construction Compliance monitoring	%	1		\$150,900	1	
Remedial Design	%	6		\$905,400	7,11	
Project Management	%	4		\$603,600	8,11	
Construction Management	%	6		\$905,400	9,11	
Construction Completion Report	LS	1		\$40,000	1	
Permitting and Regulatory Compliance	%	2		\$301,800	1	
Ecology Oversight	%	1		\$150,900	1	
Estimate of Taxes	%	9		\$1,358,100		
<b>Subtotal for Capital Indirect Costs</b>				<b>\$4,416,100</b>		
<b>Subtotal for Capital Direct and Indirect Costs</b>				<b>\$19,506,100</b>		
<b>Contingency for Capital Direct and Indirect Costs</b>				<b>\$4,876,525</b>		
<b>Total for Direct and Indirect Capital Costs</b>				<b>\$24,382,625</b>		
<b>Operation and Maintenance - Marine Site Unit</b>	<b>Unit</b>	<b>Qty. (Yearly)</b>	<b>Unit Cost</b>	<b>Annual Cost</b>	<b>Present Worth</b>	<b>Notes</b>
<u>Annual Inspection of Shoreline Stabilization</u>						
Inspection and letter report	Ea.	1	\$1,500	\$1,500	\$22,316	11,12
<u>Maintenance of Shoreline Stabilization</u>						
5 Year Repair / Replenishment						
Track excavator with operator	hrs.	16	\$100	\$1,600		
Miscellaneous materials/expenses	LS	1	\$1,000	\$1,000		
Years 5,10,15,20 - Sand / gravel (300 CY per event)	Ea.	1	\$7,500	\$7,500		
	Ea.	1		\$10,100	\$28,303	12
<b>Subtotal for Operation and Maintenance Costs</b>				<b>\$50,619</b>		
<b>Contingency on Operation and Maintenance Costs</b>				<b>\$13,000</b>		
<b>Total for Operation and Maintenance Costs</b>				<b>\$63,619</b>		
<b>PRESENT WORTH OF ALTERNATIVE 4 - Marine Site Unit</b>				<b>\$24,450,000</b>		

**TABLE F-8**  
**REMEDIAL ACTION COST ESTIMATE – ALTERNATIVE 4 – MARINE SITE UNIT**  
**CORNWALL AVENUE LANDFILL SITE**  
**BELLINGHAM, WASHINGTON**

**Alternative 4: Waste Removal**

**Scope of Work:** Excavation of existing landfill refuse and wood waste cover materials from Upland and Marina Site Units with disposal at a Subtitle D solid waste landfill facility. Regrading of upland, reconfigure and stabilize the new shoreline.

**Notes**

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- 1 Cost estimates based on professional judgment and experience on other similar projects.
- 2 Includes work plans/submittals, temporary fencing, temporary facilities.
- 3 Street sweeping, erosion control measures
- 4 Excavation volume based on the following estimate of refuse and wood waste in Marine Site Unit.  
 Shoreline through the intertidal zone: Area = 184,600 sf; excavation depth decreases from 30 to 5 ft heading away from shore.  
 Shallow subtidal zone: Area = 173,700; dredging depth decreases from 5 to 2 ft heading away from shore.  
 Deep subtidal zone: Area = 148,100; dredging depth decreases from 2 to 0 ft heading away from shore.  
 Assumes subtidal excavation is conducted from a barge-based clamshell; intertidal excavation conducted by land based equipment.
- 5 Assumed the recreated intertidal zone will be approximately 19,000 sf
- 6 Material quantities estimated based on creating 10H:1V slope in intertidal zone and 5H:1V below to base of excavation
- 7 Remedial Design includes preparation of construction plans and specifications, preparation of engineer's estimate of probable cost, and bidding support
- 8 Project management includes bid/contract administration, cost and performance reporting, planning and coordination.
- 9 Construction management includes submittal review, change order review, design modifications, construction schedule tracking.
- 10 Estimated cost based on: A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, EPA 540-R-00-002, OSWER 9355.0-75, July 2000
- 11 Assumes 20 annual inspections; 6-hour travel/field effort and 4-hour report effort at \$140/hr.
- 12 Present Worth Values calculated assuming a 3 percent discount rate.