ARCADIS Design & Consultancy for natural and built assets

Chevron Environmental Management Company

PROGRESS REPORT NO. 122
FIRST SEMI-ANNUAL 2017

Former Unocal Seattle

Marketing Terminal 0724

3001 Elliott Avenue

Seattle, Washington

September 14, 2017

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Former Unocal Seattle Marketing Terminal 0724

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1 INTRODUCTION

On behalf of Chevron Environmental Management Company (Chevron), Arcadis U.S., Inc. (Arcadis) has prepared this report to document the first semi-annual 2017 groundwater sampling results for the former Seattle Marketing Terminal (Unocal 0724) located at 3001 Elliott Avenue in Seattle, Washington. The site and surrounding area are shown in **Figure 1**. This report summarizes the results of the groundwater gauging and sampling events conducted on March 27, 2017 and June 13 through 16, 2017 by Arcadis.

2 BACKGROUND

2.1 Site Description

The site was operated by the Union Oil Company of California (Unocal) as a bulk fuel distribution facility from the early 1900s to approximately 1975. Leaded and unleaded gasoline, diesel, lube oil, motor oils and petroleum-based solvents (non-chlorinated) were stored at the site. In the 1980s, the above-ground site structures were demolished. The site is defined in Order on Consent DE88-N223 and is divided into four contiguous areas: Upper Yard, Elliott Avenue, Lower Yard and the Offsite Area. The Upper Yard consists of the approximate area between Elliott Avenue and Western Avenue to the east and west, and Bay Street and Broad Street to the north and south. The Elliott Avenue area includes the length of Elliott Avenue between Bay Street and Broad Street. The Lower Yard consists of the area between Elliott Avenue and the Burlington Northern Santa Fe (BNSF) railroad tracks to the east and west, and Bay Street and Broad Street to the north and south. The Offsite Area generally comprises the BNSF railroad tracks right-of-way and Alaskan Way between Bay Street and Broad Street. A site map is included as **Figure 2.**

2.2 Site History

Chevron, on behalf of Unocal, is conducting cleanup of the site as required by Order on Consent DE88-N223 and Amendments 1 through 5. The initial Order on Consent was signed by Unocal and the Washington State Department of Ecology (Ecology) in December 1988. In July 1995, Amendment No. 4 was signed and contains cleanup targets and remedial action levels (RALs) for groundwater in the Upper Yard, Elliott Avenue, Lower Yard, and Offsite Area. Cleanup activities conducted by Unocal at the site included: an excavation with onsite treatment and offsite disposal of approximately 50,000 tons of soil from the Upper Yard; light non-aqueous phase liquid (LNAPL) recovery; and groundwater remediation (pump and treat) and excavation and disposal of approximately 45,000 tons of soil from Elliott Avenue and the Offsite Area.

In addition, Unocal excavated approximately 60,000 tons of soil exceeding the total petroleum hydrocarbon (TPH) RAL and removed and treated petroleum-containing groundwater (GeoEngineers, 1998). Petroleum-containing soils were typically excavated to depths of 15 to 20 feet below ground surface. The Lower Yard excavation was backfilled with clean fill material and moderately impacted petroleum-containing soils from the Upper and Lower Yards. The upper 95 percent confidence level of the mean for TPH concentrations remaining in these impacted Lower Yard soils used for backfill was below the RAL of 7,500 milligrams per kilogram (mg/kg) (GeoEngineers, 1998). Several feet of imported rock were placed at the base of the

excavation. According to Unocal, the average TPH concentration in these backfill soils was approximately 1,000 mg/kg (SAM, 1999).

The Upper Yard and Lower Yard properties of the site were sold by Unocal to the Trust for Public Land for the Seattle Art Museum (SAM) in 1999. In 2004, SAM began construction for redevelopment of the property, including the Offsite Area (which is owned by the City of Seattle Parks and Recreation), as the Olympic Sculpture Park (OSP). SAM entered a Pre-Purchaser Agreement with Ecology prior to their purchase of the property. As part of the agreement, SAM submitted remediation design reports to Ecology for the OSP. As provided in a January 17, 2008, letter, Ecology indicated that the terms of the Pre-Purchaser Agreement were satisfied. A Stipulation and Order of Dismissal (No. 99-2-50226-4SEA) was issued on October 31, 2008.

In conjunction with the OSP construction in the Offsite Area, Unocal conducted a “hot spot” excavation from July to October of 2005. The goal of this remedial action was to remove a source area of petroleum hydrocarbons and LNAPL in soil. Approximately 4,435 tons of petroleum-impacted soils were removed during the “hot spot” excavation (GeoEngineers, January 2006). Following the soil removal, the excavation was backfilled and the surface was restored with asphalt pavement.

On October 4, 2009, Arcadis submitted the *Work Plan for LNAPL Mobility Assessment, Natural Attenuation Monitoring and Surfactant Application Pilot Testing* to Ecology (October 2009 Work Plan). The October 2009 Work Plan was prepared in response to a letter from Ecology to Chevron dated June 8, 2009, requesting that Chevron assess the monitoring well network, address options for active remediation in the Offsite Area, conduct several short-term multiphase extraction (MPE) events on monitoring well MW-204 and on wells where LNAPL is observed in the Elliott Avenue Area and the Offsite Area and to further evaluate unfiltered/filtered samples of carcinogenic polycyclic aromatic hydrocarbons (cPAHs). This work plan outlined proposed activities to evaluate the monitoring well network, evaluate remedial alternatives for the site, and discussed the potential risk of cPAH concentrations remaining in groundwater in the Offsite Area. Specific areas addressed included LNAPL located in the Elliott Avenue Area, LNAPL along the railroad tracks and dissolved-phase concentrations in the Offsite Area.

Ecology approved the October 2009 Work Plan, with specific comments, on November 16, 2009. Following meetings with stakeholders and Ecology, Arcadis submitted the *Revised Work Plan for LNAPL Mobility Assessment, Natural Attenuation Monitoring and Surfactant Application Pilot Testing* (January 2010 Revised Work Plan) to Ecology on January 19, 2010, in order to address comments on the October 2009 Work Plan.

On December 8, 2009, Ecology submitted a letter to Chevron approving the cancellation of fourth quarter 2009 groundwater compliance monitoring. In addition, Ecology recommended conducting semi-annual groundwater compliance monitoring for 2010 and quarterly monitoring for visual inspection, measurement and removal (if applicable) at monitoring wells MW-30 and MW-61A-R and recovery wells RW-1 through RW-3 and RW-21. Monitoring well MW-61A-R is a replacement for well MW-61A, which was originally an Upper Yard monitoring well. However, MW-61A-R is located in the Elliott Avenue right-of-way (ROW) and is currently referred to as an Elliott Avenue Area monitoring well.

On March 19, 2010, Ecology approved the January 2010 Revised Work Plan with additional specific comments. Following additional meetings, Arcadis submitted the *Addendum to the Revised Work Plan for LNAPL Mobility Assessment, Natural Attenuation Monitoring and Surfactant Application Pilot Testing* (May

2010 Addendum to the Revised Work Plan) on May 3, 2010, in order to address the additional stakeholder and Ecology comments on the January 2010 Revised Work Plan. On May 18, 2010, Ecology approved the May 2010 Addendum to the Revised Work Plan via electronic mail. Field work to implement the May 2010 Addendum to the Revised Work Plan began in the summer of 2010.

Arcadis submitted the *2010 Summary Report and Risk Evaluation* on February 1, 2011 with the following recommendations and responses from Ecology:

- Continue quarterly gauging and semi-annual groundwater monitoring of wells MW-30, MW-61A-R, RW-3 and RW-21. Ecology concurred; both gauging and groundwater monitoring are ongoing for monitoring wells MW-30 and MW-61A-R. Recovery wells RW-3 and RW-21 were decommissioned with Ecology approval in June 2014 (discussed below).

- Continue semi-annual groundwater monitoring of wells MW-200 through MW-207. Ecology concurred: semi-annual groundwater monitoring is ongoing.

- Remove dissolved lead from the list of site constituents of concern. Dissolved lead has not been detected at the site since November 2007 and monitoring wells in the Offsite Area have at least 12 consecutive monitoring events without a dissolved-lead concentration exceedance. The few concentrations that were detected remained more than two orders of magnitude below the site RAL. Ecology concurred: effective second semi-annual 2011 monitoring event, lead is no longer a constituent of concern.

- Abandon piezometers PZ-61A-R, PZ-203, and PZ-204 in place. Ecology recommended maintaining and gauging piezometers through quarterly gauging during next two semi-annual monitoring events, then to re-evaluate. Piezometers PZ-61A-R, PZ-203, and PZ-204 were decommissioned in June 2014 with the approval of Ecology (discussed below).

- Abandon Trench D extraction wells RW-1, RW-2, RW-5 through RW-13 and RW-15 in place. Ecology recommended maintaining and gauging Trench D extraction wells through quarterly gauging during the next two semi-annual monitoring events, then to re-evaluate. Quarterly gauging of extraction wells RW-1, RW-2, RW-5 through RW-13 and RW-15 for two additional semi-annual monitoring events was fulfilled. The Trench D extraction wells were decommissioned in June 2014, as discussed below.

- The LNAPL occasionally observed in wells RW-3, RW-21 or MW-30 is not mobile. Arcadis does not recommend further remedial operations on these wells unless quarterly gauging activities indicates a change in the volume or type of LNAPL present in the wells compared to historical observations. Ecology concurred and recommended continuing quarterly gauging through two semi-annual monitoring events and then to re-evaluate. Quarterly gauging of RW-3, RW-21 and MW-30 for two semi-annual monitoring events was fulfilled. Recovery wells RW-3 and RW-21 were decommissioned in June 2014 with the approval of Ecology (discussed below).

- Add monitoring well MW-205 to the quarterly gauging program. Ecology concurred: MW-205 was gauged quarterly as part of the quarterly gauging program ending in 2014.

- If LNAPL is observed and is recoverable, submit a sample for chemical testing and possible mobility parameter analysis. Ecology concurred. Recoverable thicknesses of LNAPL were observed in Trench D wells PZ-4.5, PZ-6, PZ-10.5, PZ-11.5, and PZ-13 in February 2014. Samples of the LNAPL were submitted for chemical analysis and in some cases, mobility parameter analysis. The results of these analyses were submitted in the Trench D Recovery System Decommissioning Summary and Recommendation for Replacement Well Installation" (Arcadis July, 2014).

In December 2012, Chevron submitted a revised Draft Amendment to the Order to Ecology. The proposed Amendment, which was prepared with the input of the City of Seattle and the SAM, recommended abandonment of the Trench D recovery wells and piezometers, installation of up to five replacement wells along the Trench D area, and additional groundwater monitoring. At the request of Ecology, Arcadis submitted the "Work Plan for Decommissioning Trench D Recovery System and Three Piezometers Installed in 2010" (Arcadis, May 2013). This work plan describes a scope of work to decommission remaining wells and equipment associated with Trench D, as well as the piezometers installed as part of the 2010 site assessment activities. This work plan was approved by Ecology in email correspondence dated July 29, 2013.

The decommissioning work was conducted in two phases. Phase I was conducted from February 21 to 25, 2014 and included the following activities:

- Prepared the site to allow access for equipment and vehicles.
- Removed the remediation system compound and equipment.
- Attempted to locate missing piezometers and recovery wells.
- Gauged recovery wells and piezometers.
- Received variance approval for well abandonment.

Separate LNAPL sampling events were completed between the two phases of decommissioning work on February 26 and May 5, 2014.

Phase II was conducted from June 9 to 13, 2014 and included the following activities:

- Gauged recovery wells and piezometers.
- Vacuum extraction of fluids from each recovery well and piezometer located along Trench D.
- Decommissioned recovery wells, piezometers, 2-inch lateral remediation system piping, and a 6-foot long by 4-foot wide recovery vault where the piping entered the former remediation system.
- Decommissioned of piezometers installed in 2010 (PZ-61A-R, PZ-203, and PZ-204).
- Disposed of waste materials generated by the above activities.

A report of the Trench D decommissioning activities, LNAPL summary and work plan for the installation of the replacement monitoring wells was submitted under separate cover "Trench D Recovery System Decommissioning Summary and Recommendation for Replacement Well Installation" (Arcadis July, 2014).

At the request of Ecology, Arcadis submitted a work plan for the installation of up to six additional monitoring wells in the Offsite Area. The work plan was approved by Ecology in correspondence dated May 29, 2015. The work plan was implemented in January 2016. A report documenting installation activities was submitted to Ecology on April 29, 2016.

3 GROUNDWATER COMPLIANCE MONITORING

3.1 Historical LNAPL Monitoring Program

During a comprehensive gauging event in September 2007, prior to well abandonment, LNAPL was observed in recovery well RW-21, located on the eastern side of the BNSF railroad tracks. Recovery well RW-21 was part of the Trench C remediation system and does not serve as a compliance well for the Lower Yard. Due to the presence of LNAPL, recovery well RW-21 was gauged on a bi-monthly basis between October 2007 and November 2009. Less than one-tenth of an inch of LNAPL was present in RW-21 in each of the gauging events prior to well redevelopment in December 2007. Due to the viscous nature of the LNAPL, the LNAPL thickness could not be accurately measured using an oil/water interface probe and a disposable bailer was used to confirm the presence of LNAPL. Observations of the interior casing of recovery well RW-21 indicated that a tar-like substance was present inside the well casing. Recovery well RW-21 was re-developed in January 2008 with a surge block and vacuum truck and in October 2008, the polyvinyl chloride (PVC) casing of recovery well RW-21 was cleaned with absorbent pads and re-developed using a vacuum truck.

Recovery wells RW-1 through RW-3 and RW-21 were added to a bi-monthly gauging program in 2007 as discussed with Ecology (November 2, 2007 phone conversation) to monitor for the presence of LNAPL from recovery well RW-21. Following Ecology's approval in November 2009, recovery wells RW-1 through RW-3 and RW-21 were reduced to quarterly gauging. Recovery wells RW-5 through RW-13 and RW-15 were also included in the gauging program during compliance monitoring events. However, recovery wells RW-12 and RW-15 could not be located between 2010 and Trench D abandonment activities in 2015, and are suspected to have been destroyed during maintenance activities along the BNSF ROW.

Field crews had been unable to locate five of the recovery wells, so a site visit was conducted on January 9th, 2013 with the intention of locating the missing wells. RW-6 was rediscovered, but RW-4, RW-12, RW-14 and RW-15 were not located during this visit. Accordingly, these recovery wells were not included in quarterly gauging events.

Recovery wells and associated piezometers in Trench D were decommissioned with the approval of Ecology in June 2014. During the Trench D decommissioning activities, a soil vacuum truck was used to try to locate RW-4 and RW-12, but they could not be found. The locations of RW-14 and RW-15 were surrounded by utilities so the soil vacuum locating activities could not be conducted in that area. The recovery wells and piezometers that were located along Trench D were decommissioned in the first half of 2014.

Quarterly gauging was conducted on March 27 and June 13 through 16, 2017. During both events, monitoring wells MW-30, MW-61A-R, MW-70R, MW-200 through MW-207, MW-209, MW-210, and MW-211 were gauged to determine the presence of LNAPL. Globules of LNAPL was observed on the oil-water interface probe in MW-30 during the March 2017 event. Measurable LNAPL was observed in MW-30 and MW-61A-R during the June 2017 event. No LNAPL was observed in any of the remaining wells during both gauging events. During the March 2017 event, gauging activities were conducted just after low tide, and water levels were within the screened intervals for all wells gauged during this event. During the June 2017 event, gauging activities were conducted at low tide to ensure that groundwater levels were within the monitoring well screen intervals. Monitoring well history is summarized in **Table 1** and gauging is summarized in **Table 2**.

3.2 First Semi-Annual 2017 Groundwater Monitoring

3.2.1 First Quarter 2017 Groundwater Monitoring

On March 27, 2017 Arcadis conducted a comprehensive groundwater gauging and sampling event at the site. During the comprehensive gauging event, monitoring wells MW-30, MW-61A-R, MW-70R, MW-200 through MW-207, MW-209, MW-210, and MW-211 were gauged with an oil/water interface probe to determine depth to water and LNAPL thickness. LNAPL globules were observed on the interface probe after gauging MW-30 during the March event. Gauging is summarized in **Table 2.**

Monitoring wells MW-70R, MW-209, MW-210, and MW-211 were purged and sampled with a peristaltic pump in general accordance with the procedures outlined in *Low-Flow Groundwater Purging and Sampling Procedures for Monitoring Wells* (Arcadis, 2009). This standard operating procedure (SOP) is included in **Appendix A.** Note that at the request of site stakeholders, tubing placement deviated from specifications in the SOP; tubing was placed within 6-inches of the groundwater surface in each monitoring well. Groundwater levels were conducted from each well prior to purging to assure the tubing was placed correctly. New, disposable Teflon-lined polyethylene tubing was used for sampling. Water quality parameters including temperature, pH, electrical conductivity, dissolved oxygen and oxidation/reduction potential were measured approximately every three minutes using an In-Situ® Troll 9500 low-flow groundwater sampling system and were recorded on the field data sheets included in **Appendix B**.

Samples were collected in clean, laboratory-supplied containers with appropriate preservatives and were stored in iced coolers. Samples were then shipped via overnight delivery, under chain-of-custody procedures, to Eurofins Lancaster Laboratories in Lancaster, Pennsylvania. Groundwater samples from the March 2017 event were analyzed for the following:

- Total petroleum hydrocarbons as gasoline (TPH-G) by Northwest Method NWTPH-Gx extended range;
- Total petroleum hydrocarbons as diesel and heavy oil (TPH-D and TPH-O) by Northwest Method NWTPH-Dx extended range with silica gel cleanup;

- Benzene, toluene, ethylbenzene, and total xylenes (BTEX) by United States Environmental Protection Agency (USEPA) Method 8021B; and

- Benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, and indeno(1,2,3-c,d)pyrene collectively referred to as carcinogenic polycyclic aromatic hydrocarbons (cPAHs) by USEPA Method 8270C SIM.

3.2.2 Second Quarter 2017 Groundwater Monitoring

On June 13 through 16, 2017, Arcadis conducted a comprehensive groundwater gauging and sampling event at the site. During the comprehensive gauging event, monitoring wells MW-30, MW-61A-R, MW-70R, MW-200 through MW-207, MW-209, MW-210, and MW-211 were gauged with an oil/water interface probe to determine depth to water and LNAPL thickness. LNAPL was observed in monitoring wells MW-30 and MW-61A-R during the June event, at thicknesses of 0.01 foot and 0.89 foot, respectively. Gauging is summarized in **Table 2.**

Monitoring wells MW-70R, MW-200 through MW-207, MW-209, MW-210, and MW-211 were purged and sampled with a peristaltic pump in general accordance with the procedures outlined in *Low-Flow Groundwater Purging and Sampling Procedures for Monitoring Wells* (Arcadis, 2009). The SOP is included in **Appendix A.** Consistent with prior events, the tubing intake was placed within 6-inches of the groundwater surface in each monitoring well. Groundwater levels were conducted from each well prior to purging to assure the tubing was placed correctly. New, disposable Teflon-lined polyethylene tubing was used for sampling. Water quality parameters including temperature, pH, electrical conductivity, dissolved oxygen and oxidation/reduction potential were measured approximately every three minutes using an In-Situ® Troll 9500 low-flow groundwater sampling system and were recorded on the field data sheets included in **Appendix B**. Due to the presence of LNAPL in MW-30 and MW-61A-R, these wells were not sampled during the June event.

Samples were collected in clean, laboratory-supplied containers with appropriate preservatives and were stored in iced coolers. Samples were then shipped via overnight delivery, under chain-of-custody procedures, to Eurofins Lancaster Laboratories in Lancaster, Pennsylvania. Groundwater samples from the June 2017 event were analyzed for the following:

- TPH-G by Northwest Method NWTPH-Gx extended range;

- TPH-D and TPH-O by Northwest Method NWTPH-Dx extended range with silica gel cleanup;

- BTEX by USEPA Method 8021B; and

- cPAHs by USEPA Method 8270C SIM

3.2.3 Groundwater Monitoring Results

Depths to groundwater measured during the first quarter 2017 groundwater monitoring event ranged from 8.04 feet below top of casing (btoc) in monitoring well MW-211 to 19.89 feet btoc in monitoring well MW-205.

Groundwater elevations ranged from 3.56 feet above mean sea level in monitoring well MW-206 to 11.82 feet above mean sea level in monitoring well MW-61A-R. Depths to groundwater measured during the second quarter 2017 groundwater monitoring event ranged from 8.90 feet btoc in monitoring well MW-200 to 22.33 feet btoc in monitoring well MW-205. Groundwater elevations ranged from 3.56 feet above sea level in monitoring well MW-206 to 8.60 feet above sea level in monitoring well MW-61A-R. These measurements indicate groundwater is generally flowing in a southwesterly direction, towards Elliott Bay, and are consistent with historical data. Groundwater gauging was conducted just after low tide during the March 2017 event and at low tide during the June 2017 event. During both the March 2017 and June 2017 gauging events, water levels were within screened intervals for all wells. Current groundwater elevations are included in **Table 2** and historical groundwater elevations are presented in **Appendix C**. Groundwater elevations and contours from the first quarter sampling event are shown on **Figure 3a** and groundwater elevations and contours from the second quarter sampling event are shown on **Figure 3b.**

During the first quarter 2017 event, groundwater analytical results indicate that no exceedances of the applicable BTEX, TPH-G, TPH-D, TPH-O or cPAH RALs were detected in the samples collected from monitoring wells MW-70R, MW-209, MW-210 and MW-211.

During the second quarter 2017 groundwater sampling event, analytical results indicate that no exceedances of the applicable BTEX, TPH-G, TPH-D, TPH-O or cPAH RALs were detected in the samples collected from monitoring wells MW-70R, MW-200, MW-201, MW-202, MW-203, MW-205, MW-206, MW-207 and MW-211. TPH-G was detected at 1.2 mg/L in the sample collected from MW-204, at 1.3 mg/L in the sample collected from MW-209, and at 1.2 mg/L in the sample collected from MW-210 (vs RAL of 1 mg/L). Benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, and indeno(1,2,3-c,d)pyrene was detected at 0.075 micrograms per liter (µg/L), 0.042 µg/L, 0.044 µg/L, 0.13 µg/L, and 0.034 µg/L, respectively, in the sample collected from MW-210.

Historical trends graphs for MW-30, MW-70R, MW-200 through MW-207, and MW-209 through MW-211 are provided in **Appendix D**. Analytical results for TPH-G, TPH-D, TPH-O, and BTEX, are summarized in **Table 3** and **on Figure 4**; results for cPAHs are summarized in **Table 3** and **on Figure 5**. Historical analytical results are presented in **Appendix C**.

As of the June 2017 event, five monitoring wells (MW-200, MW-202, MW-203, MW-205, and MW-206) have met a minimum of twelve consecutive sampling events in compliance with the RALs established for the site. A summary of groundwater compliance as of the June 2017 event is included in **Table 4.**

3.2.4 Laboratory Data Verification Results

A trip blank sample for BTEX and GRO analysis was submitted with the groundwater samples for each of the first and second quarter 2017 sampling events. Analyte concentrations did not exceed their respective method detection limits (MDLs) in the trip blanks.

Duplicate samples were collected during both the first and second quarter 2017 sampling event and were submitted to the laboratory for quality assurance purposes. During the first quarter 2017 sampling event, the duplicate sample was collected from monitoring well MW-210. During the second quarter 2017 sampling

event, duplicate samples were taken from monitoring wells MW-206 and MW-211. The duplicate samples were submitted for the same analyses as the parent samples. The duplicate analytical results were comparable to the parent samples collected from MW-206, MW-210, and MW-211.

All coolers were received in good condition within temperature requirements. The laboratory report and chain of custodies are provided in **Appendix E**.

4 REMEDIAL ACTIVITIES

4.1 Upper Yard and Elliott Avenue LNAPL Removal

Monitoring well MW-61A-R was re-developed on September 3, 2008 using a disposable bailer and a vacuum truck to remove sediment and LNAPL which may have accumulated in the well and/or sand pack. Approximately ten well volumes of groundwater and residual LNAPL were removed. The re-development water and recovered LNAPL were collected in the vacuum truck and transported to an approved facility for recycling. The amount of LNAPL recovered was not quantified. Mobile multi-phase extraction (MPE) was initiated in August 2009 in monitoring wells MW-30 and MW-61A-R. Observations made during MPE operations indicate that short term MPE does not influence the groundwater table and subsurface vapor flow. MPE was determined to be an ineffective method to address the remaining LNAPL and dissolved-phase impacts at the site due to the minimal remaining hydrocarbon impacts at the site and associated low MPE mass removal rate.

To assess persistent measurable LNAPL observed during groundwater monitoring, a surfactant-enhanced LNAPL recovery pilot test was performed on monitoring well MW-61A-R in July 2010. Approximately 200 gallons of surfactant were injected into MW-61-A-R. The surfactant solution was allowed to remain in the formation for approximately 24 hours and then approximately 900 gallons of fluids were extracted. Monitoring was completed weekly for the first month after extraction. After weekly monitoring was completed, monthly monitoring was initiated and quarterly monitoring is ongoing. A complete summary of the surfactant-enhanced LNAPL recovery pilot test was submitted in the *2010 Summary Report and Risk Evaluation* on February 1, 2011.

Monitoring wells MW-61A-R and MW-30 were gauged during the March 2017 and June 2017 gauging and sampling events with an oil/water interface probe to determine if LNAPL was present. LNAPL globules were found on the probe in monitoring well MW-30 during the March 2017 gauging and sampling event. LNAPL was measured in monitoring wells MW-30 and MW-61A-R during the June 2017 event. Due to the presence of LNAPL in monitoring wells MW-30 and MW-61A-R, they were not sampled during the June 2017 event.

4.2 Lower Yard LNAPL Recovery

LNAPL was observed in recovery well RW-21 during the September 2013 groundwater monitoring event (visually observed on oil/water interface probe, a measurable thickness was not present). This recovery well, as well as the downgradient Trench D recovery wells (RW-1 through RW-3), were included in the quarterly gauging program. Manual LNAPL recovery from RW-21 had been unsuccessful due to the highly-viscous nature of the LNAPL. LNAPL has not been observed in recovery wells RW-1 and RW-2 since the gauging program was implemented, and has not been observed in RW-3 since the first semi-annual

groundwater monitoring event of 2013. Wells RW-1, RW-2 and RW-21 were decommissioned in 2014 during the Trench D decommissioning activities.

4.3 Offsite Area Remediation System

A groundwater extraction system was installed in the offsite area in 1989. The system included 24 extraction wells located along the BNSF right-of-way. In November and December 2006, the underground piping was severely damaged during the construction of the OSP, rendering the system inoperable.

From 1989 to November 2006, approximately 29,244,966 gallons of water and 4,809 gallons of LNAPL were recovered and treated by the groundwater extraction system. The extraction system last recovered LNAPL in fourth quarter 2004; no LNAPL was recovered during the last two years of operation. The associated Trench D recovery wells were gauged semi-annually until they were decommissioned in June 2014. The oil water separator was rehabilitated in May 2010 for use in disposal of purge water generated from routine groundwater sampling events and for well redevelopment and hydraulic conductivity testing approved by Ecology. The oil water separator was decommissioned during the June 2014 Trench D decommissioning activities and the King County Major Discharge Authorization Number 529-04 was discontinued.

Throughout the third and fourth quarter of 2011, monitoring well MW-205 was gauged on a bi-weekly (every other week) basis. During these events, no LNAPL or sheen was observed. Gauging was reduced to quarterly as of the first semi-annual 2012 reporting period at this location and continued on a quarterly basis through 2013. No LNAPL was observed in MW-205 during the March 2017 and June 2017 gauging and groundwater monitoring activities.

5 CONCLUSIONS

Gauging and groundwater monitoring was conducted on March 27, 2017 and June 13 through 16, 2017. During the first quarter sampling event, there were no exceedances of BTEX, TPH-D, TPH-O, or cPAH RALs in samples MW-70R, MW-209, MW-210 and MW-211. During the second quarter 2017 sampling event, there were no exceedances of BTEX, TPH-G, TPH-D, TPH-O, or cPAH RALs in samples collected from MW-70R, MW-200, MW-201, MW-202, MW-203, MW-205, MW-206, MW-207 and MW-211. There were exceedances of the TPH-G RAL in the samples collected from monitoring wells MW-204, MW-209, and MW-210. Analytical results are summarized in **Table 3**, **Figure 4**, and **Figure 5**. Historical analytical results are presented in **Appendix C**. LNAPL was found in monitoring well MW-30 during the March 2017 and June 2017 gauging and sampling events. LNAPL was also found in monitoring well MW-61A-R during the June 2017 gauging and sampling event and therefore was not sampled.

As of the June 2017 event, five monitoring wells (MW-200, MW-202, MW-203, MW-205, and MW-206,) have met a minimum of twelve consecutive sampling events in compliance with the RALs established for the site. Monitoring well MW-201 has met fourteen consecutive sampling events in compliance with the petroleum hydrocarbon constituent RALs. MW-70R and MW-211 have met six consecutive sampling events in compliance with the RALs established for the site. A summary of groundwater compliance as of the June 2017 event is included in **Table 4**.

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TABLES

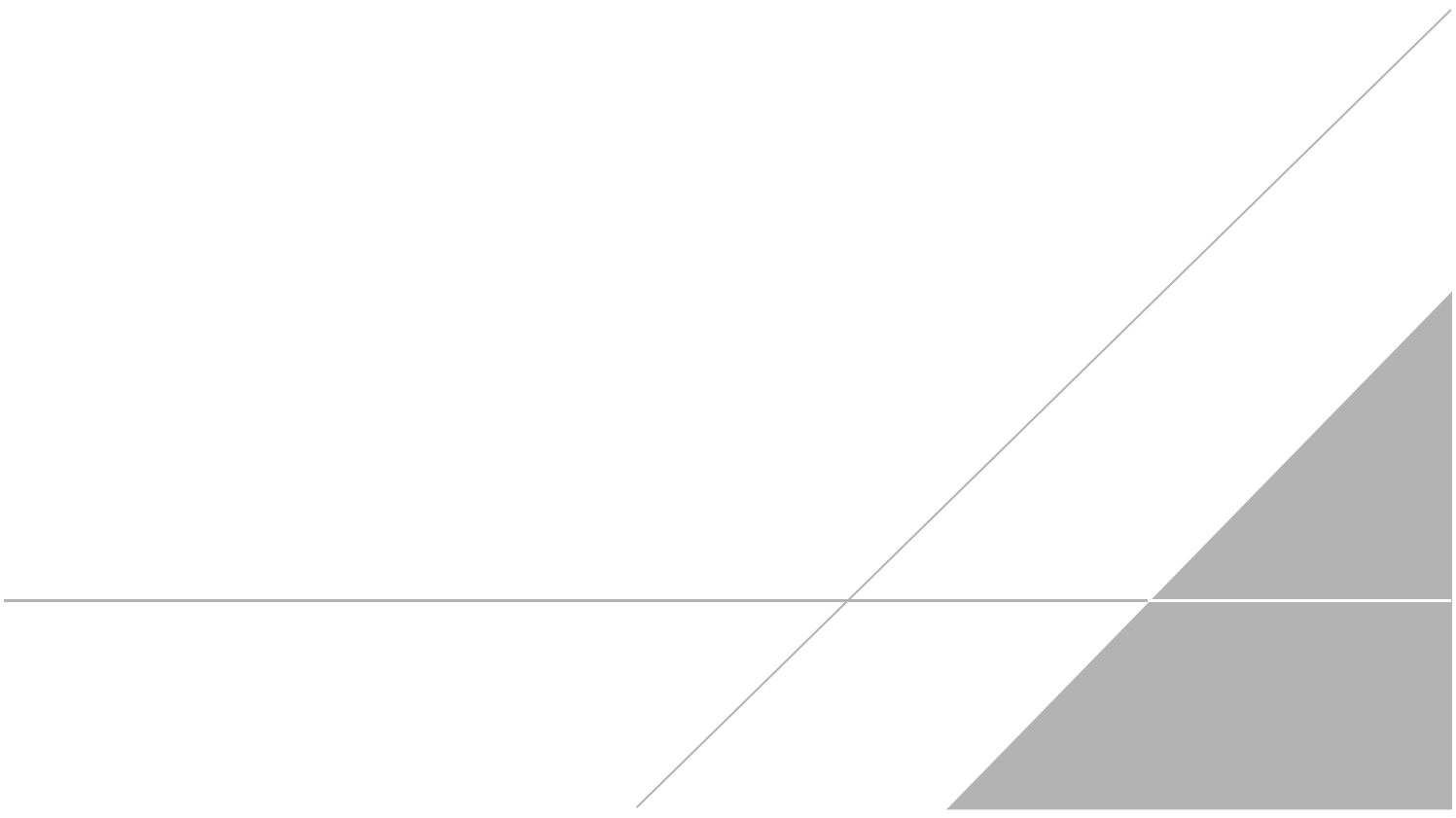


Table 1

Monitoring Well History
Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well ID	Installation Date	Compliance Parameters	Compliance/Removal Date
Upper Yard			
MW-37	06/1990	**LNAPL-TPH - BTEX (MW-61A-R)**	12/1995
MW-38	06/1990		1992
MW-39	06/1990		1992
MW-40	06/1990		1992
MW-58	09/1995		01/2004
MW-61	1995		1997
MW-61A	01/1998		01/2004
MW-61A-R	**03/2006**		**LNAPL**
MW-62	1995		1997
MW-62A	01/1998		01/2004
MW-63	1995		1997
MW-63A	01/1998		01/2004
MW-64	1995		01/2004
Elliott Avenue			
MW-30	**1989**	**LNAPL - TPH - BTEX (MW-30)**	**LNAPL**
MW-31	1989		12/2003
MW-32	1989		04/1991
MW-59	03/1998		*no data*
MW-65	03/1998		ABANDONED 12/07
MW-66	03/1998		ABANDONED 12/07
MW-69	*no data*		*no data*
Lower Yard			
MW-1	*no data*	**No wells in Lower Yard currently sampled for compliance parameters**	1998
MW-2	*no data*		1998
MW-18	*no data*		1998
MW-22	*no data*		1998
MW-23	*no data*		1998
MW-33	*no data*		1998
MW-34	*no data*		1998
MW-35	*no data*		1998
MW-49	*no data*		1998
MW-50	*no data*		1998
MW-51	*no data*		1998
MW-53	*no data*		1998
MW-54	*no data*		1998
MW-55	*no data*		1998
MW-56	*no data*		1998

Table 1

Monitoring Well History
Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well ID	Installation Date	Compliance Parameters	Compliance/Removal Date
Lower Yard (continued)			
MW-57	*no data*	**No wells in Lower Yard currently sampled for compliance parameters**	1998
MW-60	*no data*		1998
MW-81	09/1998		06/2002
MW-82	09/1998		06/2002
MW-83	09/1998		06/2002
MW-84	09/1998		06/2002
MW-85	09/1998		06/2002
MW-86	09/1998		06/2002
Offsite Area			
MW-8	01/1989	**LNAPL - TPH - BTEX - PAHs Dissolved Lead (MW-70R)**	10/2005
MW-9	*no data*		07/2005
MW-10	01/1989		10/2005
MW-20	01/1989		10/2005
MW-25	01/1989		10/2005
MW-26	01/1989		10/2005
MW-27	01/1989		damaged 2006
MW-27R	12/2006		ABANDONED 12/07
MW-34	10/1989		*no data*
MW-35	10/1989		*no data*
MW-36	10/1989		07/2005
MW-41	10/1990		12/2002
MW-42	10/1990		12/1991
MW-43	10/1990		12/1991
MW-44	*no data*		*no data*
MW-52	06/1998		10/2005
MW-67	03/1998		10/2005
MW-68	03/1998		07/2005
MW-69	03/1998		*no data*
MW-70	03/1998		10/2005
MW-70R	**09/2016**		**sampled**
MW-71	03/1998		10/2005
MW-72	03/1998		07/2005
MW-76	03/1998		10/2005

Table 1

Monitoring Well History
Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well ID	Installation Date	Compliance Parameters	Compliance/Removal Date
Offsite Area- Amendment No. 4 Point of Compliance monitoring wells			
MW-200	**10/2006**	**LNAPL - TPH - BTEX PAHs (MW-200 to MW-207, MW-209 to MW-211)**	**sampled**
MW-201	**10/2006**		**sampled**
MW-202	**10/2006**		**sampled**
MW-203	**10/2006**		**sampled**
MW-204	**10/2006**		**sampled**
MW-205	**10/2006**		**sampled**
MW-206	**10/2006**		**sampled**
MW-207	**10/2006**		**sampled**
MW-209	**09/2016**		**sampled**
MW-210	**09/2016**		**sampled**
MW-211	**09/2016**		**sampled**

Notes:

LNAPL = Light non-aqueous phase liquid
TPH = Total petroleum hydrocarbons
BTEX = Benzene, Toluene, Ethylbenzene and Xylenes (Total)
PAHs = Polycyclic Aromatic Hydrocarbons
Items in bold represent compliance wells sampled in the most recent sampling event.

Table 2
Summary of Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
MW-30	03/27/2017 [6]	13:13	10.71	--	--	10.14	15.85
	06/16/17	9:46	13.39	13.38	0.01	7.46	15.85
MW-61A-R	03/27/17	13:22	10.62	--	--	11.82	--
	06/16/17	9:41	13.84	14.73	0.89	8.60	--
MW-200	03/27/17	12:55	8.58	--	--	5.78	9.36
	06/16/17	8:44	8.90	--	--	5.46	9.36
MW-201	03/27/17	12:52	9.25	--	--	5.61	9.86
	06/16/17	8:42	9.55	--	--	5.31	9.86
MW-202	03/27/17	12:56	9.44	--	--	5.14	6.78
	06/16/17	8:47	9.43	--	--	5.15	6.78
MW-203	03/27/17	12:50	12.41	--	--	5.14	7.05
	06/16/17	8:38	12.31	--	--	5.24	7.05
MW-204	03/27/17	12:45	17.99	--	--	5.94	6.58
	06/16/17	8:27	18.39	--	--	5.54	6.58
MW-205	03/27/17	12:40	19.89	--	--	8.00	9.89
	06/16/17	8:22	22.33	--	--	5.56	9.89
MW-206	03/27/17	12:58	11.59	--	--	3.56	4.15
	06/16/17	8:50	11.59	--	--	3.56	4.15
MW-207	03/27/17	13:00	11.49	--	--	3.91	5.90
	06/16/17	8:53	10.25	--	--	5.15	5.90
MW-209	03/27/17	12:35	8.46	--	--	7.07	12.53
	06/16/17	9:26	9.59	--	--	5.94	12.53
MW-210	03/27/17	12:30	8.61	--	--	6.52	12.13
	06/16/17	9:24	8.94	--	--	6.19	12.13
MW-211	03/27/17	12:25	8.04	--	--	6.98	12.02
	06/16/17	9:20	9.55	--	--	5.47	12.02
MW-70R	03/27/17	13:05	11.41	--	--	4.20	11.61
	06/16/17	8:59	10.42	--	--	5.19	11.61

Notes:
[1]Well casing elevations listed in feet above mean sea level. Approximate monitoring well locations are shown in Figure 2.
[2]Below top of casing.
[3]Light non-aqueous phase liquid
[4]Elevation referenced to city of Seattle datum.
[5]Top of well screen elevation data from historic records.
[6] LNAPL indicated in field notes, measurement not taken
Bolded data are for the current reporting period.
"--" = not measured or not obtainable

Table 3
Summary of Groundwater Analytical Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

		Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)Pyrene	Naphthalene	Gasoline (C7-C12 Petroleum Hydrocarbons)	Diesel (C12-C24 DRO w/Si Gel)	Heavy Oil (C24-C40 w/Si Gel)	Benzene	Ethylbenzene	Toluene	Xylene (total)
Remedial Action Levels		0.03	0.03	0.03	0.03	0.03	0.03	0.03	NE	1	10	15	40	1,400	14,300	4,400
Location	Sample Date	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(mg/L)	(mg/L)	(mg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-200	06/13/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	**0.340**	**0.080**	<0.067	**2.0**	**0.6**	<0.5	<1.5
MW-201	06/13/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	**0.350**	**0.260**	**0.350**	**1.3**	<0.5	**0.9**	<1.5
MW-202	06/13/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	<0.050	<0.028	<0.066	<0.5	<0.5	<0.5	<1.5
MW-203	06/13/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	<0.050	<0.029	<0.067	<0.5	<0.5	<0.5	<1.5
MW-204	06/13/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	**1.200**	**0.170**	<0.067	**0.7**	<0.5	**1.1**	**2.3**
MW-205	06/13/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	**0.280**	<0.029	<0.067	<0.5	<0.5	<0.5	<1.5
MW-206	06/13/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	<0.050	<0.029	<0.067	<0.5	<0.5	<0.5	<1.5
DUP	06/13/2017	--	--	--	--	--	--	--	--	<0.050	<0.030	<0.069	<0.5	<0.5	<0.5	<1.5
MW-207	06/13/2017	**0.020**	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	**0.071**	**0.031**	<0.067	<0.5	<0.5	<0.5	<1.5
MW-209	03/27/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	**0.920**	**0.190**	<0.068	**1.5**	**1.5**	**1.4**	**3.3**
	06/16/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	**1.300**	**0.730**	**0.230**	**1.1**	<0.5	**0.8**	**2.4**
MW-210	03/27/2017	**0.016**	<0.010	**0.011**	<0.010	**0.020**	<0.010	<0.010	--	**0.220**	**1.500**	**0.320**	<0.5	<0.5	<0.5	<1.5
DUP	03/27/2017	<0.010	<0.010	<0.010	<0.010	**0.012**	<0.010	<0.010	--	**0.160**	**0.200**	<0.066	<0.5	<0.5	<0.5	<1.5
	06/16/2017	**0.075**	**0.042**	**0.044**	**0.020**	**0.13**	**0.017**	**0.034**	--	**1.200**	**2.800**	**0.550**	<0.5	**0.6**	**0.5**	**2.6**
MW-211	03/27/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	<0.050	**0.061**	<0.067	<0.5	<0.5	<0.5	<1.5
	06/16/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	**0.130**	**0.081**	<0.066	<0.5	<0.5	<0.5	<1.5
DUP	06/16/2017	--	--	--	--	--	--	--	--	**0.130**	**0.072**	<0.067	<0.5	<0.5	<0.5	<1.5
MW-70-R	03/27/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	<0.050	<0.029	<0.067	<0.5	<0.5	<0.5	<1.5
	06/13/2017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	<0.050	<0.029	<0.068	<0.5	<0.5	<0.5	<1.5

Notes:
Shaded concentrations are greater than corresponding Remedial Action Levels
-- = Not analyzed
<0.50 = Not detected at or above the remedial action level
µg/L = Micrograms per liter
mg/L = Miligrams per liter
DUP = duplicate
NE = Not Established

Table 4
Summary of Groundwater Compliance as of First Semi-Annual 2017

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well	Petroleum Constituents and Sheen (BTEX, Gasoline-range, Diesel-range)		cPAHs		Lead	
	Current Sampling Interval	Consecutive Sampling Events in Compliance[1]	Current Sampling Interval	Consecutive Sampling Events in Compliance[1]	Current Sampling Interval	Consecutive Sampling Events in Compliance[1]
Upper Yard						
MW-61A-R	semi-annually	0	none	N/A	none	N/A
Elliott Avenue						
MW-30	semi-annually	0	none	1 [11]	none	N/A
Offsite Area- Amendment No. 4 Point of Compliance monitoring wells						
MW-70R	quarterly	6	quarterly	6	none	N/A
MW-200	semi-annually	15 [7]	semi-annually[2]	26 [4,5,8]	none	13
MW-201	semi-annually	14 [7]	semi-annually[2]	2	none	13
MW-202	semi-annually	26	semi-annually[2]	22 [3, 4, 10]	none	13
MW-203	semi-annually	26	semi-annually[2]	26 [4,8]	none	13
MW-204	semi-annually	0	semi-annually[2]	26 [4,8,10]	none	13
MW-205	semi-annually	12	semi-annually[2]	12 [4,8]	none	13
MW-206	semi-annually	26	semi-annually[2]	26 [4,6,8]	none	13
MW-207	semi-annually	26	semi-annually[2]	2	none	13
MW-209	quarterly	0	quarterly	6	none	N/A
MW-210	quarterly	0	quarterly	0	none	N/A
MW-211	quarterly	6	quarterly	6	none	N/A

Notes:

[1] "Consecutive events" are number of consecutive sampling events prior to and including the current reporting period that are in compliance with the groundwater remediation action levels. Events prior to 3/97 are not counted. Refer to progress reports for results.

[2]Quarterly sampling beginning June 2007. Semi-annual sampling beginning 2010.

[3]Field-Filtered sample below RAL.

[4]Field-Filtered and Un-Filtered samples below RAL

[5]9/3/08 laboratory reporting limit above RAL

[6]Confirmation samples indicate erroneous 9/4/08 field-filtered data

[7]Sheen noted on groundwater during well redevelopment in August 2010

[8]First Semi-Annual 2011 laboratory reporting limit above RAL

[9]First Semi-Annual 2012 laboratory reporting limit above RAL

[10]Second Semi-Annual 2012 laboratory reporting limit above RAL

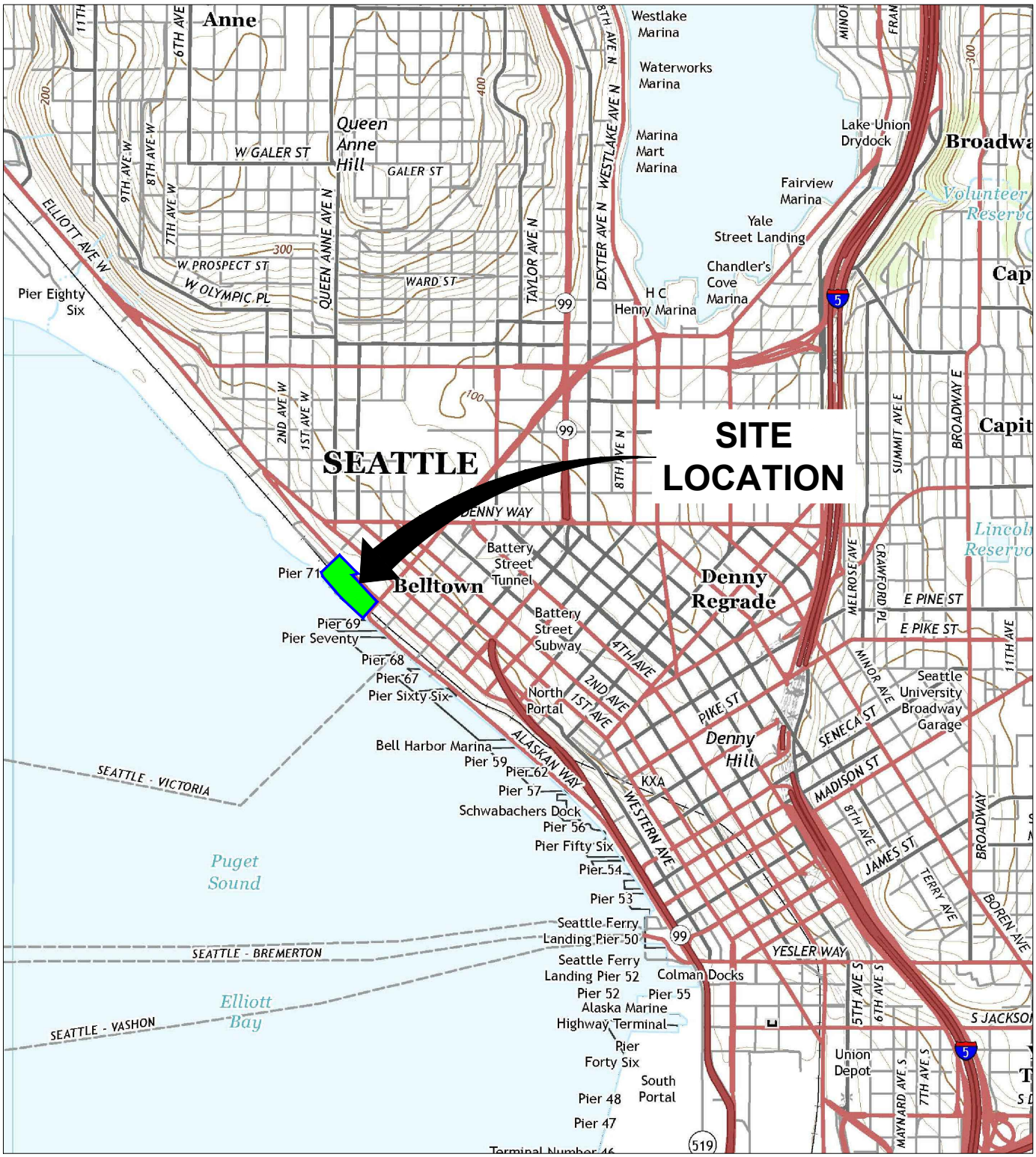
[11]MW-30 analyzed for cPAHs only during the First Semi-Annual 2013 sampling event

BTEX = benzene, toluene, ethylbenzene, xylenes

cPAHs = carcinogenic polycyclic aromatic hydrocarbons

N/A = not applicable

FIGURES



REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., SEATTLE SOUTH AND SEATTLE NORTH, WASHINGTON, 2014.

N

0 2000' 4000'

Approximate Scale: 1 in. = 2000 ft.

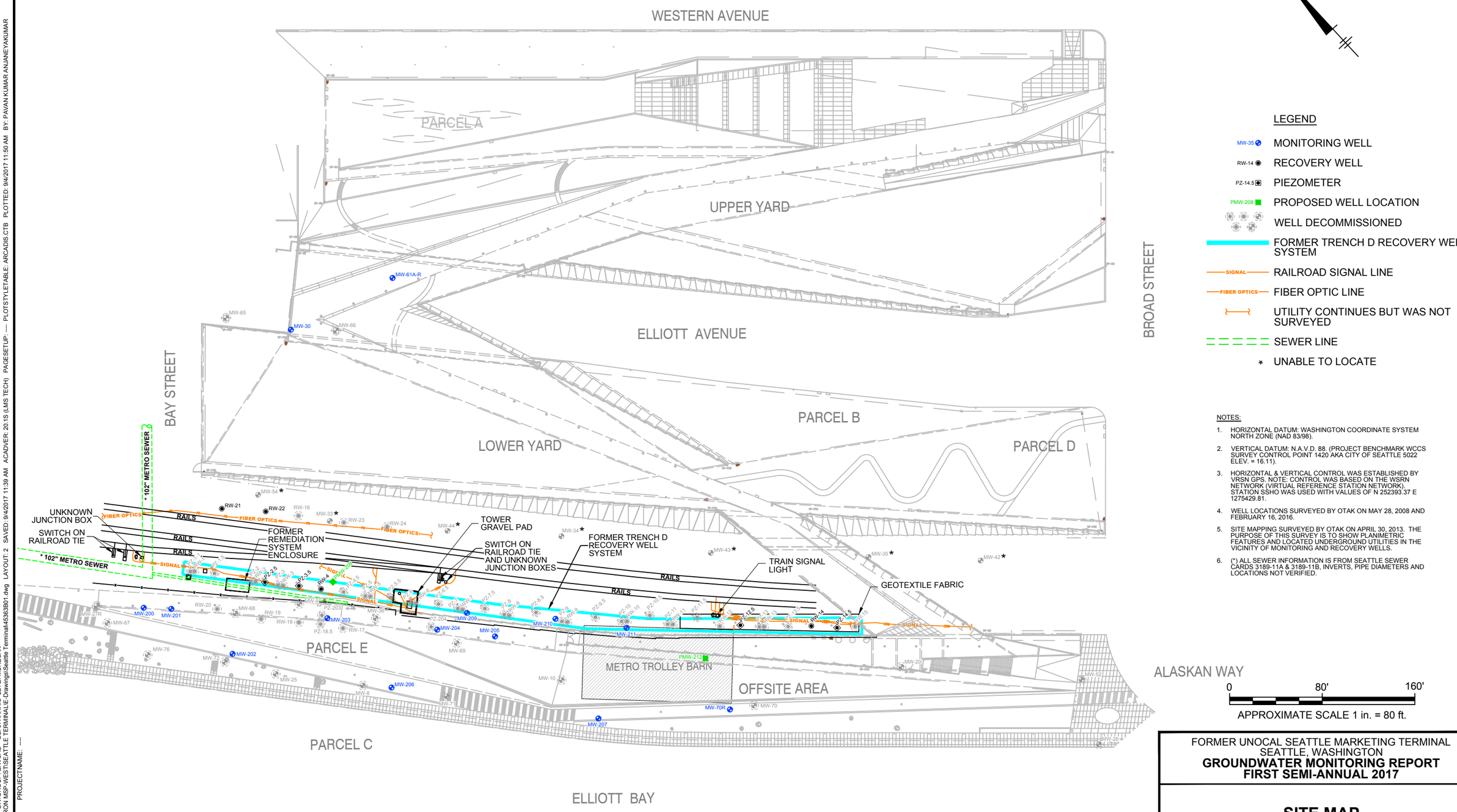
WASHINGTON

FORMER UNOCAL SEATTLE MARKETING TERMINAL
SEATTLE, WASHINGTON
GROUNDWATER MONITORING REPORT
FIRST SEMI-ANNUAL 2017

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1



N

LEGEND

- MW-35 — MONITORING WELL
- RW-14 — RECOVERY WELL
- PZ-14.5 — PIEZOMETER
- PMW-208 — PROPOSED WELL LOCATION
- WELL DECOMMISSIONED
- FORMER TRENCH D RECOVERY WELL SYSTEM
- SIGNAL — RAILROAD SIGNAL LINE
- FIBER OPTICS — FIBER OPTIC LINE
- UTILITY CONTINUES BUT WAS NOT SURVEYED
- SEWER LINE
- * UNABLE TO LOCATE

NOTES:

1. HORIZONTAL DATUM: WASHINGTON COORDINATE SYSTEM NORTH ZONE (NAD 83/98).
2. VERTICAL DATUM: N.A.V.D. 88. (PROJECT BENCHMARK WCCS SURVEY CONTROL POINT 1420 AKA CITY OF SEATTLE 5022 ELEV. = 16.11).
3. HORIZONTAL & VERTICAL CONTROL WAS ESTABLISHED BY VRSN GPS. NOTE: CONTROL WAS BASED ON THE WSRN NETWORK (VIRTUAL REFERENCE STATION NETWORK), STATION SSHO WAS USED WITH VALUES OF N 252393.37 E 1275429.81.
4. WELL LOCATIONS SURVEYED BY OTAK ON MAY 28, 2008 AND FEBRUARY 16, 2016.
5. SITE MAPPING SURVEYED BY OTAK ON APRIL 30, 2013. THE PURPOSE OF THIS SURVEY IS TO SHOW PLANIMETRIC FEATURES AND LOCATED UNDERGROUND UTILITIES IN THE VICINITY OF MONITORING AND RECOVERY WELLS.
6. (*) ALL SEWER INFORMATION IS FROM SEATTLE SEWER CARDS 3189-11A & 3189-11B, INVERTS, PIPE DIAMETERS AND LOCATIONS NOT VERIFIED.

0 80' 160'

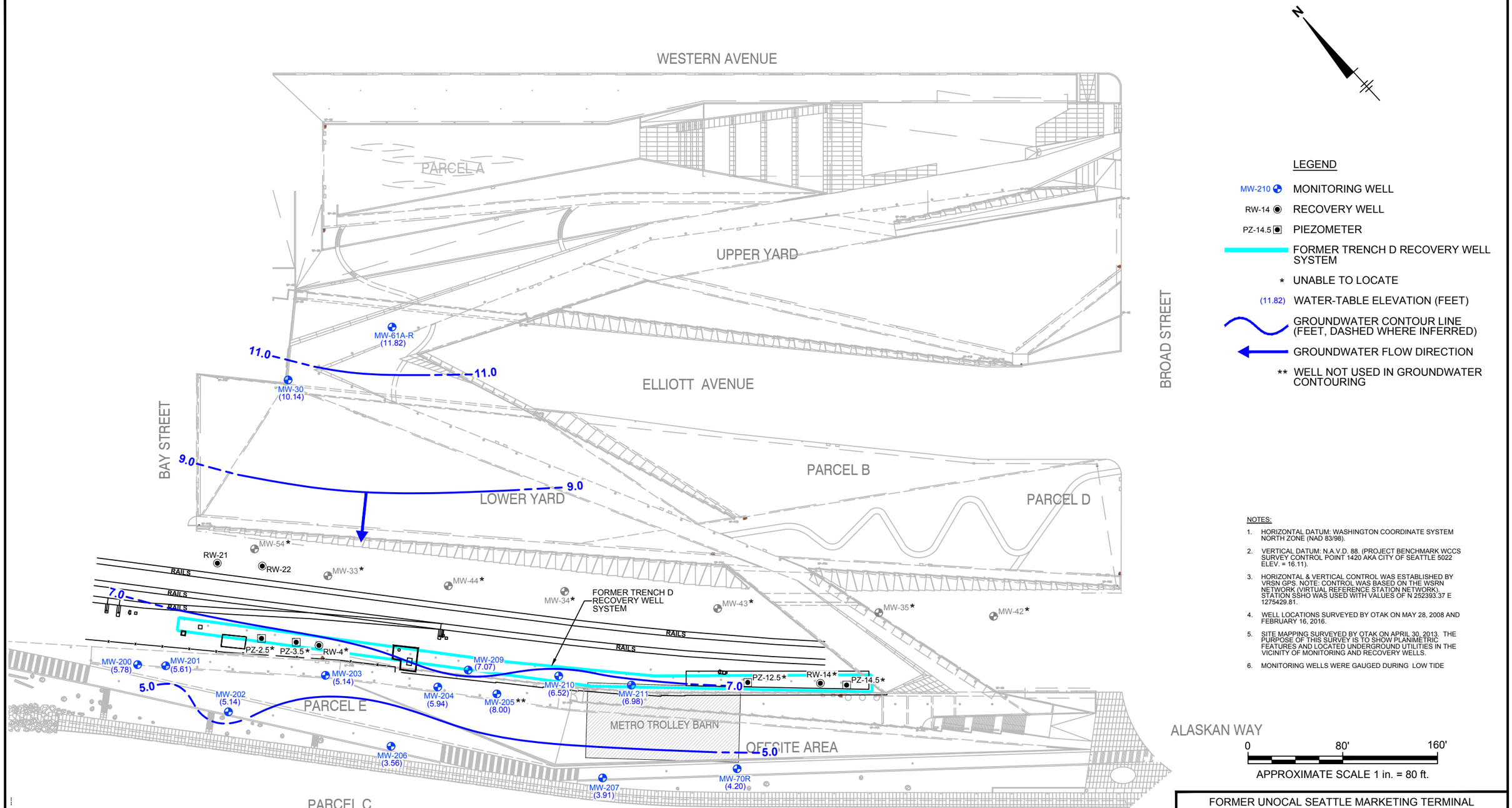
APPROXIMATE SCALE 1 in. = 80 ft.

FORMER UNOCAL SEATTLE MARKETING TERMINAL
SEATTLE, WASHINGTON
GROUNDWATER MONITORING REPORT
FIRST SEMI-ANNUAL 2017

SITE MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2



NOTES:

1. HORIZONTAL DATUM: WASHINGTON COORDINATE SYSTEM NORTH ZONE (NAD 83/98).
2. VERTICAL DATUM: N.A.V.D. 88. (PROJECT BENCHMARK WCCS SURVEY CONTROL POINT 1420 AKA CITY OF SEATTLE 5022 ELEV. = 16.11).
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6. MONITORING WELLS WERE GAUGED DURING LOW TIDE

FORMER UNOCAL SEATTLE MARKETING TERMINAL
SEATTLE, WASHINGTON
GROUNDWATER MONITORING REPORT
FIRST SEMI-ANNUAL 2017

GROUNDWATER ELEVATIONS MARCH 27, 2017

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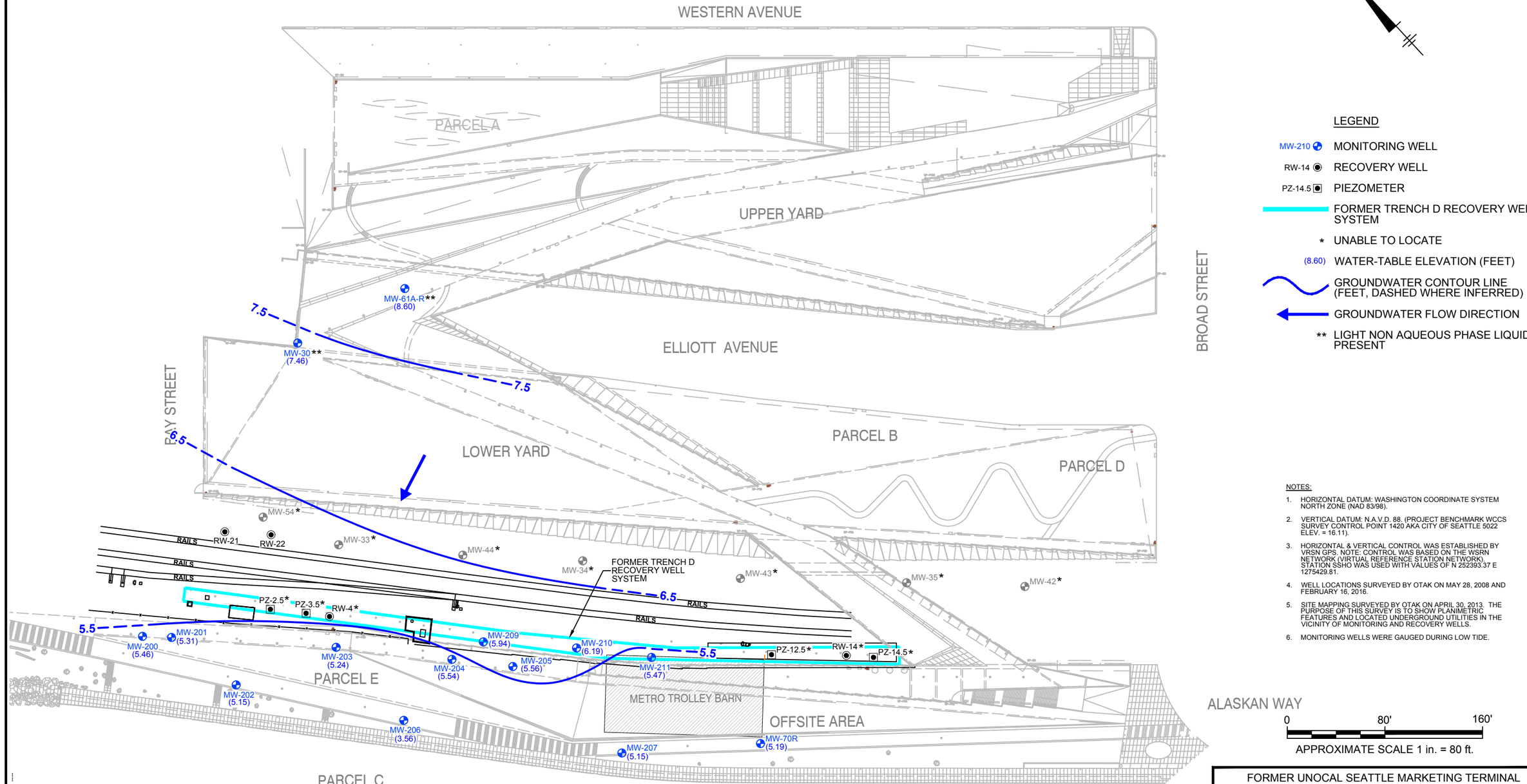
FIGURE
3a



LEGEND

- MW-210 — MONITORING WELL
- RW-14 — RECOVERY WELL
- PZ-14.5 — PIEZOMETER
- FORMER TRENCH D RECOVERY WELL SYSTEM
- * — UNABLE TO LOCATE
- (8.60) — WATER-TABLE ELEVATION (FEET)
- GROUNDWATER CONTOUR LINE (FEET, DASHED WHERE INFERRED)
- GROUNDWATER FLOW DIRECTION
- ** — LIGHT NON AQUEOUS PHASE LIQUID PRESENT

NOTES:

1. HORIZONTAL DATUM: WASHINGTON COORDINATE SYSTEM NORTH ZONE (NAD 83/98).
2. VERTICAL DATUM: N.A.V.D. 88. (PROJECT BENCHMARK WCCS SURVEY CONTROL POINT 1420 AKA CITY OF SEATTLE 5022 ELEV. = 16.11).
3. HORIZONTAL & VERTICAL CONTROL WAS ESTABLISHED BY VRSN GPS. NOTE: CONTROL WAS BASED ON THE WSRN NETWORK (VIRTUAL REFERENCE STATION NETWORK). STATION SSHO WAS USED WITH VALUES OF N 252393.37 E 1275429.81.
4. WELL LOCATIONS SURVEYED BY OTAK ON MAY 28, 2008 AND FEBRUARY 16, 2016.
5. SITE MAPPING SURVEYED BY OTAK ON APRIL 30, 2013. THE PURPOSE OF THIS SURVEY IS TO SHOW PLANIMETRIC FEATURES AND LOCATED UNDERGROUND UTILITIES IN THE VICINITY OF MONITORING AND RECOVERY WELLS.
6. MONITORING WELLS WERE GAUGED DURING LOW TIDE.

0 80' 160'

APPROXIMATE SCALE 1 in. = 80 ft.

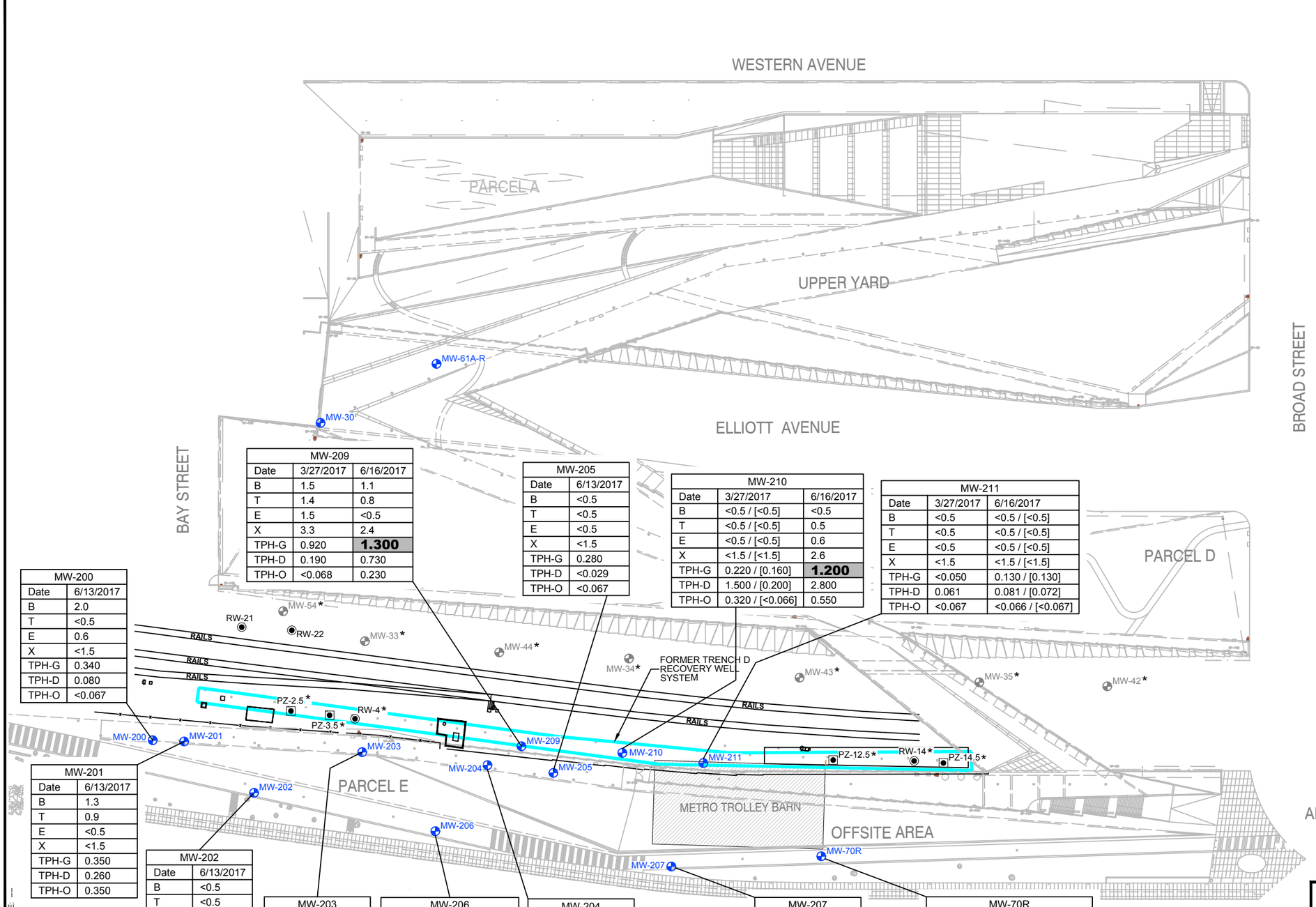
FORMER UNOCAL SEATTLE MARKETING TERMINAL
SEATTLE, WASHINGTON
GROUNDWATER MONITORING REPORT
FIRST SEMI-ANNUAL 2017

GROUNDWATER ELEVATIONS JUNE 16, 2017

ARCADIS Design & Consultancy for natural and built assets

FIGURE **3b**

CITY: SAN RAFAEL, CA DIV/GROUP: ENV/CAD DB: J. HARRIS LD: E. MURESAN
E:\PROJECTS\01. CHEVRON MSP-WEST\SEATTLE TERMINAL\E-Drawings\Seattle Terminal\45383\W02.dwg LAYOUT: 3B SAVED: 8/16/2017 10:43 AM ACADVER: 20.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 9/4/2017 11:27 AM BY: PAVAN KUMAR ANJANEYAKUMAR
XREFS: IMAGES: PROJECTNAME: ----
MK_Page_4.jpg



MW-209		
Date	3/27/2017	6/16/2017
B	1.5	1.1
T	1.4	0.8
E	1.5	<0.5
X	3.3	2.4
TPH-G	0.920	**1.300**
TPH-D	0.190	0.730
TPH-O	<0.068	0.230

MW-205	
Date	6/13/2017
B	<0.5
T	<0.5
E	<0.5
X	<1.5
TPH-G	0.280
TPH-D	<0.029
TPH-O	<0.067

MW-210		
Date	3/27/2017	6/16/2017
B	<0.5 / [<0.5]	<0.5
T	<0.5 / [<0.5]	0.5
E	<0.5 / [<0.5]	0.6
X	<1.5 / [<1.5]	2.6
TPH-G	0.220 / [0.160]	**1.200**
TPH-D	1.500 / [0.200]	2.800
TPH-O	0.320 / [<0.066]	0.550

MW-211		
Date	3/27/2017	6/16/2017
B	<0.5	<0.5 / [<0.5]
T	<0.5	<0.5 / [<0.5]
E	<0.5	<0.5 / [<0.5]
X	<1.5	<1.5 / [<1.5]
TPH-G	<0.050	0.130 / [0.130]
TPH-D	0.061	0.081 / [0.072]
TPH-O	<0.067	<0.066 / [<0.067]

MW-200	
Date	6/13/2017
B	2.0
T	<0.5
E	0.6
X	<1.5
TPH-G	0.340
TPH-D	0.080
TPH-O	<0.067

MW-201	
Date	6/13/2017
B	1.3
T	0.9
E	<0.5
X	<1.5
TPH-G	0.350
TPH-D	0.260
TPH-O	0.350

MW-202	
Date	6/13/2017
B	<0.5
T	<0.5
E	<0.5
X	<1.5
TPH-G	<0.050
TPH-D	<0.028
TPH-O	<0.066

MW-203	
Date	6/13/2017
B	<0.5
T	<0.5
E	<0.5
X	<1.5
TPH-G	<0.050
TPH-D	<0.029
TPH-O	<0.067

MW-206	
Date	6/13/2017
B	<0.5 / [<0.5]
T	<0.5 / [<0.5]
E	<0.5 / [<0.5]
X	<1.5 / [<1.5]
TPH-G	<0.050 / [<0.050]
TPH-D	<0.029 / [<0.030]
TPH-O	<0.067 / [<0.069]

MW-204	
Date	6/13/2017
B	0.7
T	1.1
E	<0.5
X	2.3
TPH-G	**1.200**
TPH-D	0.170
TPH-O	<0.067

MW-207	
Date	6/13/2017
B	<0.5
T	<0.5
E	<0.5
X	<1.5
TPH-G	0.071
TPH-D	0.031
TPH-O	<0.067

MW-70R		
Date	3/27/2017	6/13/2017
B	<0.5	<0.5
T	<0.5	<0.5
E	<0.5	<0.5
X	<1.5	<1.5
TPH-G	<0.050	<0.050
TPH-D	<0.029	<0.029
TPH-O	<0.067	<0.068

LEGEND

- MW-210 ⊕ MONITORING WELL
- RW-14 ◉ RECOVERY WELL
- PZ-14.5 ▣ PIEZOMETER
- FORMER TRENCH D RECOVERY WELL SYSTEM
- * UNABLE TO LOCATE

SAMPLE LOCATION	
DATE	SAMPLE DATE
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
TPH-G	TPH GASOLINE
TPH-D	TPH DIESEL
TPH-O	TPH HEAVY OIL

BTEX RESULTS REPORTED IN MICROGRAMS PER LITER (µg/L). TPH-G, TPH-D, AND TPH-O RESULTS REPORTED IN MILLIGRAMS PER LITER (mg/L).

BOLDED RESULTS ARE GREATER THAN SITE REMEDIAL ACTION LEVELS (RALs)

TPH = TOTAL PETROLEUM HYDROCARBON

<1.50 / [<1.50] = DUPLICATE SAMPLE

NOTES:

1. HORIZONTAL DATUM: WASHINGTON COORDINATE SYSTEM NORTH ZONE (NAD 83/98).
2. VERTICAL DATUM: N.A.V.D. 88. (PROJECT BENCHMARK WCCS SURVEY CONTROL POINT 1420 AKA CITY OF SEATTLE 5022 ELEV. = 16.11).
3. HORIZONTAL & VERTICAL CONTROL WAS ESTABLISHED BY VRSN GPS. NOTE: CONTROL WAS BASED ON THE WSRN NETWORK (VIRTUAL REFERENCE STATION NETWORK). STATION SSHO WAS USED WITH VALUES OF N 252393.37 E 1275429.81.
4. WELL LOCATIONS SURVEYED BY OTAK ON MAY 28, 2008 AND FEBRUARY 16, 2016.
5. SITE MAPPING SURVEYED BY OTAK ON APRIL 30, 2013. THE PURPOSE OF THIS SURVEY IS TO SHOW PLANIMETRIC FEATURES AND LOCATED UNDERGROUND UTILITIES IN THE VICINITY OF MONITORING AND RECOVERY WELLS.

0 80' 160'

APPROXIMATE SCALE 1 in. = 80 ft.

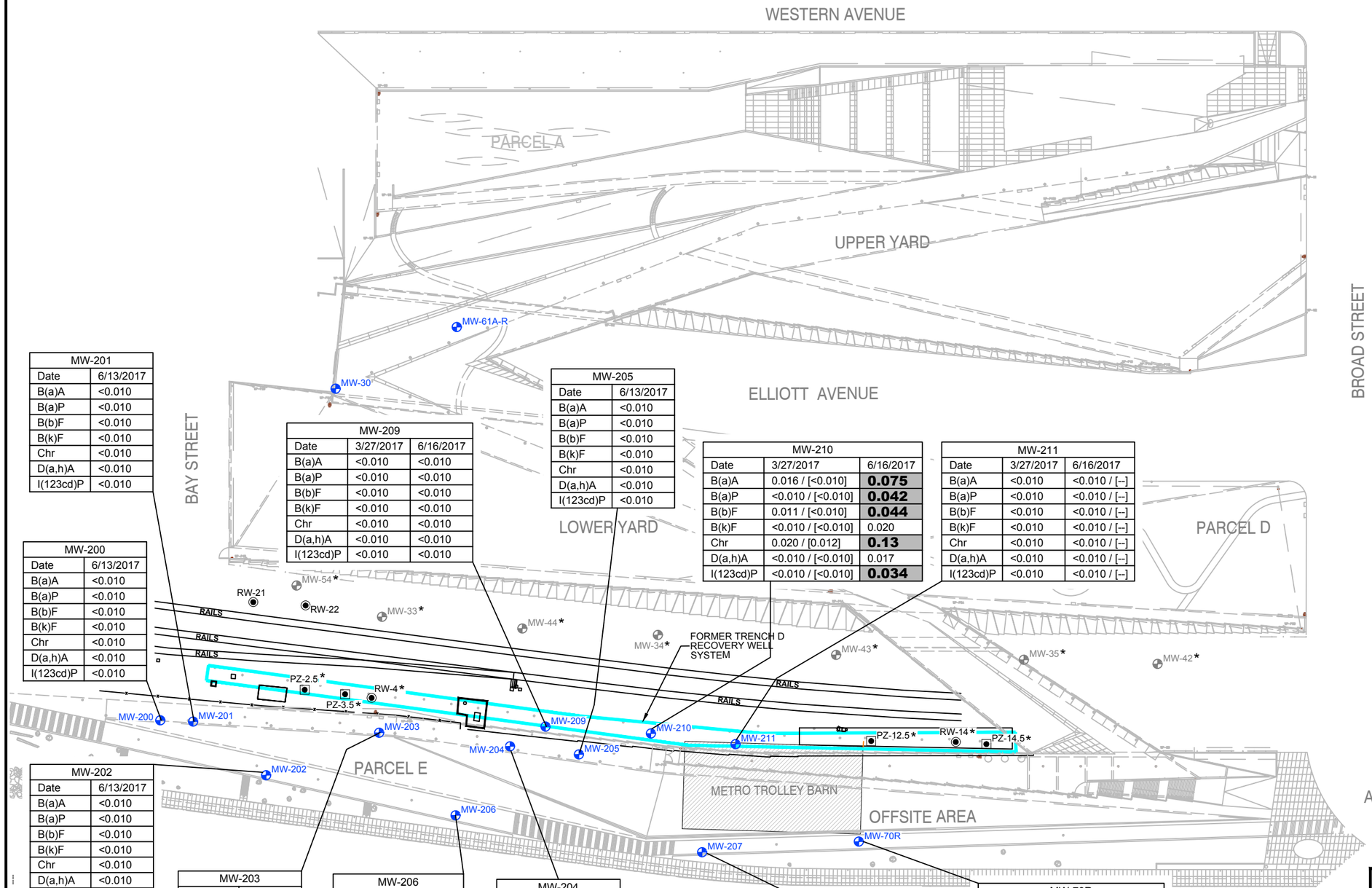
FORMER UNOCAL SEATTLE MARKETING TERMINAL
SEATTLE, WASHINGTON
GROUNDWATER MONITORING REPORT
FIRST SEMI-ANNUAL 2017

GROUNDWATER ANALYTICAL SUMMARY MAP MARCH 27, 2017 AND JUNE 13 AND 16, 2017

ARCADIS Design & Consultancy for natural and built assets

FIGURE 4

CITY: SAN RAFAEL, CA DIV/GROUP: ENVCAD DB: J. HARRIS
E:\PROJECTS\01. CHEVRON MSP-WEST\SEATTLE TERMINAL\E-Drawings\Seattle Terminal\45363C01.dwg LAYOUT: 4 SAVED: 8/16/2017 10:47 AM ACADVER: 20.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 9/4/2017 11:30 AM BY: PAVAN KUMAR ANJANEYAKUMAR
XREFS: IMAGES: PROJECTNAME: ----



MW-201	
Date	6/13/2017
B(a)A	<0.010
B(a)P	<0.010
B(b)F	<0.010
B(k)F	<0.010
Chr	<0.010
D(a,h)A	<0.010
I(123cd)P	<0.010

MW-200	
Date	6/13/2017
B(a)A	<0.010
B(a)P	<0.010
B(b)F	<0.010
B(k)F	<0.010
Chr	<0.010
D(a,h)A	<0.010
I(123cd)P	<0.010

MW-202	
Date	6/13/2017
B(a)A	<0.010
B(a)P	<0.010
B(b)F	<0.010
B(k)F	<0.010
Chr	<0.010
D(a,h)A	<0.010
I(123cd)P	<0.010

MW-209		
Date	3/27/2017	6/16/2017
B(a)A	<0.010	<0.010
B(a)P	<0.010	<0.010
B(b)F	<0.010	<0.010
B(k)F	<0.010	<0.010
Chr	<0.010	<0.010
D(a,h)A	<0.010	<0.010
I(123cd)P	<0.010	<0.010

MW-205	
Date	6/13/2017
B(a)A	<0.010
B(a)P	<0.010
B(b)F	<0.010
B(k)F	<0.010
Chr	<0.010
D(a,h)A	<0.010
I(123cd)P	<0.010

MW-210		
Date	3/27/2017	6/16/2017
B(a)A	0.016 / [<0.010]	**0.075**
B(a)P	<0.010 / [<0.010]	**0.042**
B(b)F	0.011 / [<0.010]	**0.044**
B(k)F	<0.010 / [<0.010]	0.020
Chr	0.020 / [0.012]	**0.13**
D(a,h)A	<0.010 / [<0.010]	0.017
I(123cd)P	<0.010 / [<0.010]	**0.034**

MW-211		
Date	3/27/2017	6/16/2017
B(a)A	<0.010	<0.010 / [--]
B(a)P	<0.010	<0.010 / [--]
B(b)F	<0.010	<0.010 / [--]
B(k)F	<0.010	<0.010 / [--]
Chr	<0.010	<0.010 / [--]
D(a,h)A	<0.010	<0.010 / [--]
I(123cd)P	<0.010	<0.010 / [--]

MW-203	
Date	6/13/2017
B(a)A	<0.010
B(a)P	<0.010
B(b)F	<0.010
B(k)F	<0.010
Chr	<0.010
D(a,h)A	<0.010
I(123cd)P	<0.010

MW-206	
Date	6/13/2017
B(a)A	<0.010 / [--]
B(a)P	<0.010 / [--]
B(b)F	<0.010 / [--]
B(k)F	<0.010 / [--]
Chr	<0.010 / [--]
D(a,h)A	<0.010 / [--]
I(123cd)P	<0.010 / [--]

MW-204	
Date	6/13/2017
B(a)A	<0.010
B(a)P	<0.010
B(b)F	<0.010
B(k)F	<0.010
Chr	<0.010
D(a,h)A	<0.010
I(123cd)P	<0.010

MW-207	
Date	6/13/2017
B(a)A	0.020
B(a)P	<0.010
B(b)F	<0.010
B(k)F	<0.010
Chr	<0.010
D(a,h)A	<0.010
I(123cd)P	<0.010

MW-70R		
Date	3/27/2017	6/16/2017
B(a)A	<0.010	<0.010
B(a)P	<0.010	<0.010
B(b)F	<0.010	<0.010
B(k)F	<0.010	<0.010
Chr	<0.010	<0.010
D(a,h)A	<0.010	<0.010
I(123cd)P	<0.010	<0.010

LEGEND

- MW-210 — MONITORING WELL
- RW-14 — RECOVERY WELL
- PZ-14.5 — PIEZOMETER
- FORMER TRENCH D RECOVERY WELL SYSTEM
- * UNABLE TO LOCATE

SAMPLE LOCATION	
DATE	SAMPLE DATE
B(a)A	Benzo(a)anthracene
B(a)P	Benzo(a)pyrene
B(b)F	Benzo(b)fluoranthene
B(k)F	Benzo(k)fluoranthene
Chr	Chrysene
D(a,h)A	Dibenzo(a,h)anthracene
I(123cd)P	Indeno(1,2,3-cd)pyrene

RESULTS REPORTED IN MICROGRAMS PER LITER (µg/L)

BOLDED RESULTS ARE GREATER THAN SITE REMEDIAL ACTION LEVELS (RALs)

<0.010 / [<0.010] = DUPLICATE SAMPLE

cPAH = CARCINOGENIC POLYNUCLEAR AROMATIC HYDROCARBONS

-- = NOT APPLICABLE / NOT AVAILABLE

NOTES:

1. HORIZONTAL DATUM: WASHINGTON COORDINATE SYSTEM NORTH ZONE (NAD 83/98).
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ALASKAN WAY

0 80' 160'

APPROXIMATE SCALE 1 in. = 80 ft.

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GROUNDWATER cPAH DATA MARCH 27, 2017 AND JUNE 13 AND 16, 2017

ARCADIS Design & Consultancy for natural and built assets

FIGURE 5

CITY: SAN RAFAEL, CA DIVGROUP: ENVCAD DB: J. HARRIS
E:\PROJECTS\01_CHEVRON MSP-WEST\SEATTLE TERMINAL\E-Drawings\Seattle Terminal\45363C02.dwg LAYOUT: 5 SAVED: 7/19/2017 2:05 PM ACADVER: 20.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 9/4/2017 11:32 AM BY: PAVAN KUMAR
XREFS: IMAGES: PROJECTNAME: ---
AN/ANEYAKUMAR

APPENDIX A

Standard Operating Procedure

ARCADIS

Appendix A

Standard Operating Procedure

ARCADIS
Infrastructure, environment, facilities

Imagine the result

Low-Flow Groundwater Purging and Sampling Procedures for Monitoring Wells

Rev. #: 3

Rev Date: March 9, 2009

Approval Signatures

Prepared by:  Date: 3/9/2009

Reviewed by:  Date: 3/9/2009

(Technical Expert)

I. Scope and Application

Groundwater samples will be collected from monitoring wells to evaluate groundwater quality. The protocol presented in this standard operating procedure (SOP) describes the procedures to be used to purge monitoring wells and collect groundwater samples. This protocol has been developed in accordance with the United States Environmental Protection Agency (USEPA) Region I Low Stress (Low Flow) Purging and Sampling Procedures for the Collection of Groundwater Samples from Monitoring Wells (USEPA SOP No. GW0001; July 30, 1996). Both filtered and unfiltered groundwater samples may be collected using this low-flow sampling method. Filtered samples will be obtained using a 0.45-micron disposable filter. No wells will be sampled until well development has been performed in accordance with the procedures presented in the SOP titled Monitoring Well Development, unless that well has been sampled or developed within the prior 1-year time period. Groundwater samples will not be collected within 1 week following well development.

II. Personnel Qualifications

ARCADIS personnel directing, supervising, or leading groundwater sample collection activities should have a minimum of 2 years of previous groundwater sampling experience. ARCADIS personnel providing assistance to groundwater sample collection and associated activities should have a minimum of 6 months of related experience or an advanced degree in environmental sciences, engineering, hydrogeology, or geology.

The supervisor of the groundwater sampling team will have at least 1 year of previous supervised groundwater sampling experience.

Prior to mobilizing to the field, the groundwater sampling team should review and be thoroughly familiar with relevant site-specific documents including but not limited to the site work plan, field sampling plan, QAPP, HASP, and historical information. Additionally, the groundwater sampling team should review and be thoroughly familiar with documentation provided by equipment manufacturers for all equipment that will be used in the field prior to mobilization.

III. Equipment List

Specific to this activity, the following materials (or equivalent) will be available:

- Health and safety equipment (as required in the site Health and Safety Plan [HASP]).

- Site Plan, well construction records, prior groundwater sampling records (if available).
- Sampling pump, which may consist of one or more of the following:
  - submersible pump (e.g., Grundfos Redi-Flo 2);
  - peristaltic pump (e.g., ISCO Model 150); and/or
  - bladder pump (e.g., Marschalk System 1, QED Well Wizard, etc.).
- Appropriate controller and power source for pump:
  - Submersible and peristaltic pumps require electric power from either a generator or a deep cell battery.
  - Submersible pumps such as Grundfos require a pump controller to run the pump
  - Bladder pumps require a pump controller and a gas source (e.g., air compressor or compressed N_2 or CO_2 gas cylinders).
- Teflon® tubing or Teflon®-lined polyethylene tubing of an appropriate size for the pump being used. For peristaltic pumps, dedicated Tygon® tubing (or other type as specified by the manufacturer) will also be used through the pump apparatus.
- Water-level probe (e.g., Solinist Model 101).
- Water-quality (temperature/pH/specific conductivity/ORP/turbidity/dissolved oxygen) meter and flow-through measurement cell. Several brands may be used, including:
  - YSI 6-Series Multi-Parameter Instrument;
  - Hydrolab Series 3 or Series 4a Multiprobe and Display; and/or
  - Horiba U-10 or U-22 Water Quality Monitoring System.
- Supplemental turbidity meter (e.g., Horiba U-10, Hach 2100P, LaMotte 2020). Turbidity measurements collected with multi-parameter meters have been shown to sometimes be unreliable due to fouling of the optic lens of the

turbidity meter within the flow-through cell. A supplemental turbidity meter will be used to verify turbidity data during purging if such fouling is suspected. Note that industry improvements may eliminate the need for these supplemental measurements in the future.

- Appropriate water sample containers (supplied by the laboratory).
- Appropriate blanks (trip blank supplied by the laboratory).
- 0.45-micron disposable filters (if field filtering is required).
- Large glass mixing container (if sampling with a bailer).
- Teflon® stirring rod (if sampling with a bailer).
- Cleaning equipment.
- Groundwater sampling log (attached) or bound field logbook.

Note that in the future, the client may acquire different makes/models of some of this equipment if the listed makes/models are no longer available, or as a result of general upgrades or additional equipment acquisitions. In the event that the client uses a different make/model of the equipment listed, the client will use an equivalent type of equipment (e.g., pumps, flow-through analytical cells) and note the specific make/model of the equipment used during a sampling event on the groundwater sampling log. In addition, should the client desire to change to a markedly different sampling methodology (e.g., discrete interval samplers, passive diffusion bags, or a yet to be developed technique), the client will submit a proposed SOP for the new methodology for USEPA approval prior to implementing such a change.

The maintenance requirements for the above equipment generally involve decontamination or periodic cleaning, battery charging, and proper storage, as specified by the manufacturer. For operational difficulties, the equipment will be serviced by a qualified technician.

IV. Cautions

If heavy precipitation occurs and no cover over the sampling area and monitoring well can be erected, sampling must be discontinued until adequate cover is provided. Rain water could contaminate groundwater samples.

Do not use permanent marker or felt-tip pens for labels on sample container or sample coolers – use indelible ink. The permanent markers could introduce volatile constituents into the samples.

It may be necessary to field filter some parameters (e.g., metals) prior to collection, depending on preservation, analytical method, and project quality objectives.

Store and/or stage empty and full sample containers and coolers out of direct sunlight.

To mitigate potential cross-contamination, groundwater samples are to be collected in a pre-determined order from least impacted to impacted based on previous analytical data. If no analytical data are available, samples are collected in order of upgradient, then furthest downgradient to source area locations.

Be careful not to over-tighten lids with Teflon liners or septa (e.g., 40 mL vials). Over-tightening can cause the glass to shatter or impair the integrity of the Teflon seal.

V. Health and Safety Considerations

Use caution and appropriate cut resistant gloves when tightening lids to 40 mL vials. These vials can break while tightening and can lacerate hand. Amber vials (thinner glass) are more prone to breakage.

If thunder or lighting is present, discontinue sampling and take cover until 30 minutes have passed after the last occurrence of thunder or lighting.

Use caution when removing well caps as well may be under pressure, cap can dislodge forcefully and cause injury.

Use caution when opening protective casing on stickup wells as wasps frequently nest inside the tops of the covers. Also watch for fire ant mounds near well pads when sampling in the south or western U.S.

VI. Procedure

Groundwater will be purged from the wells using an appropriate pump. Peristaltic pumps will initially be used to purge and sample all wells when applicable. If the depth to water is below the sampling range of a peristaltic pump (approximately 25 feet), submersible pumps or bladder pumps will be used provided the well is constructed with a casing diameter greater than or equal to 2 inches (the minimum well diameter capable of accommodating such pumps). Bladder pumps are preferred over peristaltic and submersible pumps if sampling of VOCs is required to prevent volatilization. For

smaller diameter wells where the depth to water is below the sampling range of a peristaltic pump, alternative sampling methods (i.e., bailing or small diameter bladder pumps) will be used to purge and sample the groundwater. Purge water will be collected and containerized.

1. Calibrate field instruments according to manufacturer procedures for calibration.

2. Measure initial depth to groundwater prior to placement of pumps.

3. Prepare and install pump in well: For submersible and non-dedicated bladder pumps, decontaminate pump according to site decontamination procedures. Non-dedicated bladder pumps will require a new Teflon® bladder and attachment of an air line, sample discharge line, and safety cable prior to placement in the well. Attach the air line tubing to the air port on the top of the bladder pump. Attach the sample discharge tubing to the water port on the top of the bladder pump. Care should be taken not to reverse the air and discharge tubing lines during bladder pump set-up as this could result in bladder failure or rupture. Attach and secure a safety cable to the eyebolt on the top of bladder pump (if present, depending on pump model used). Slowly lower pump, safety cable, tubing, and electrical lines into the well to a depth corresponding to the approximate center of the saturated screen section of the well. Take care to avoid twisting and tangling of safety cable, tubing, and electrical lines while lowering pump into well; twisted and tangled lines could result in the pump becoming stuck in the well casing. Also, make sure to keep tubing and lines from touching the ground or other surfaces while introducing them into the well as this could lead to well contamination. If a peristaltic pump is being used, slowly lower the sampling tubing into the well to a depth corresponding to the approximate center of the saturated screen section of the well. The pump intake or sampling tube must be kept at least 2 feet above the bottom of the well to prevent mobilization of any sediment present in the bottom of the well.

4. Connect the pump to other equipment. If using a bladder pump, the discharge water line should be connected to the bottom inlet port on the flow-through cell connected to the water quality meter. Connect the air line to the pump controller output port. The pump controller should then be connected to a supply line from an air compressor or compressed gas cylinder using an appropriate regulator and air hose. Take care to tighten the regulator connector onto the gas cylinder (if used) to prevent leaks. Teflon tape may be used on the threads of the cylinder to provide a tighter seal. Once the air compressor or gas cylinder is connected to the pump controller, turn on the compressor or open the valve on the cylinder to begin the gas flow. Turn on the pump controller if an on/off switch

is present and verify that all batteries are charged and fully operating before beginning to pump.

5. Measure the water level again with the pump in the well before starting the pump. Start pumping the well at 200 to 500 milliliters (mL) per minute (or at lower site-specific rate if specified). The pump rate should be adjusted to cause little or no water level drawdown in the well (less than 0.3 feet below the initial static depth to water measurement) and the water level should stabilize. The water level should be monitored every 3 to 5 minutes (or as appropriate, lower flow rates may require longer time between readings) during pumping if the well diameter is of sufficient size to allow such monitoring. Care should be taken not to break pump suction or cause entrainment of air in the sample. Record pumping rate adjustments and depths to water. If necessary, pumping rates should be reduced to the minimum capabilities of the pump to avoid pumping the well dry and/or to stabilize indicator parameters. A steady flow rate should be maintained to the extent practicable. Groundwater sampling records from previous sampling events (if available) should be reviewed prior to mobilization to estimate the optimum pumping rate and anticipated drawdown for the well in order to more efficiently reach a stabilized pumping condition.

   If the recharge rate of the well is very low, alternative purging techniques should be used, which will vary based on the well construction and screen position. For wells screened across the water table, the well should be pumped dry and sampling should commence as soon as the volume in the well has recovered sufficiently to permit collection of samples. For wells screened entirely below the water table, the well should be pumped until a stabilized level (which may be below the maximum displacement goal of 0.3 feet) can be maintained and monitoring for stabilization of field indicator parameters can commence. If a lower stabilization level cannot be maintained, the well should be pumped until the drawdown is at a level slightly higher than the bentonite seal above the well screen. Sampling should commence after one well volume has been removed and the well has recovered sufficiently to permit collection of samples.

   During purging, monitor the field indicator parameters (e.g., turbidity, temperature, specific conductance, pH, etc.) every 3 to 5 minutes (or as appropriate). Field indicator parameters will be measured using a flow-through analytical cell or a clean container such as a glass beaker. Record field indicator parameters on the groundwater sampling log. The well is considered stabilized and ready for sample collection when turbidity values remain within 10% (or within 1 NTU if the turbidity reading is less than 10 NTU), the specific conductance and temperature values remain within 3%, and pH remains within 0.1 units for three consecutive readings collected at 3- to 5-minute intervals (or

other appropriate interval, alternate stabilization goals may exist in different geographic regions, consult the site-specific Work Plan for stabilization criteria). If the field indicator parameters do not stabilize within 1 hour of the start of purging, but the groundwater turbidity is below the goal of 50 NTU and the values for all other parameters are within 10%, the well can be sampled. If the parameters have stabilized but the turbidity is not in the range of the 50 NTU goal, the pump flow rate should be decreased to a minimum rate of 100 mL/min to reduce turbidity levels as low as possible. If dissolved oxygen values are not within acceptable range for the temperature of groundwater (Attachment 1), then check for and remove air bubbles on probe or in tubing. If the dissolved oxygen value is 0.00 or less, then the meter should be serviced and re-calibrated.

During extreme weather conditions, stabilization of field indicator parameters may be difficult to obtain. Modifications to the sampling procedures to alleviate these conditions (e.g., measuring the water temperature in the well adjacent to the pump intake) will be documented in the field notes. If other field conditions exist that preclude stabilization of certain parameters, an explanation of why the parameters did not stabilize will also be documented in the field logbook.

6. Complete the sample label and cover the label with clear packing tape to secure the label onto the container.

7. After the indicator parameters have stabilized, collect groundwater samples by diverting flow out of the unfiltered discharge tubing into the appropriate labeled sample container. If a flow-through analytical cell is being used to measure field parameters, the flow-through cell should be disconnected after stabilization of the field indicator parameters and prior to groundwater sample collection. Under no circumstances should analytical samples be collected from the discharge of the flow-through cell. When the container is full, tightly screw on the cap. Samples should be collected in the following order: VOCs, TOC, SVOCs, metals and cyanide, and others (or other order as defined in the site-specific Work Plan).

8. If sampling for total and filtered metals and/or PCBs, a filtered and unfiltered sample will be collected. Install an in-line, disposable 0.45-micron particle filter on the discharge tubing after the appropriate unfiltered groundwater sample has been collected. Continue to run the pump until an initial volume of “flush” water has been run through the filter in accordance with the manufacturer’s directions (generally 100 to 300 mL). Collect filtered groundwater sample by diverting flow out of the filter into the appropriately labeled sample container. When the container is full, tightly screw on the cap.

9. Secure with packing material and store at 4°C in an insulated transport container provided by the laboratory.

10. Record on the groundwater sampling log or bound field logbook the time sampling procedures were completed, any pertinent observations of the sample (e.g., physical appearance, and the presence or lack of odors or sheens), and the values of the stabilized field indicator parameters as measured during the final reading during purging (Attachment 2 – Example Sampling Log).

11. Turn off the pump and air compressor or close the gas cylinder valve if using a bladder pump set-up. Slowly remove the pump, tubing, lines, and safety cable from the well. Do not allow the tubing or lines to touch the ground or any other surfaces which could contaminate them. .

12. If tubing is to be dedicated to a well, it should be folded to a length that will allow the well to be capped and also facilitate retrieval of the tubing during later sampling events. A length of rope or string should be used to tie the tubing to the well cap. Alternatively, if tubing and safety line are to be saved and reused for sampling the well at a later date they may be coiled neatly and placed in a clean plastic bag that is clearly labeled with the well ID. Make sure the bag is tightly sealed before placing it in storage.

13. Secure the well and properly dispose of personal protective equipment (PPE) and disposable equipment.

14. Complete the procedures for packaging, shipping, and handling with associated chain-of-custody.

15. Complete decontamination procedures for flow-through analytical cell and submersible or bladder pump, as appropriate.

16. At the end of the day, perform calibration check of field instruments.

If it is not technically feasible to use the low-flow sampling method, purging and sampling of monitoring wells may be conducted using the bailer method as outlined below:

1. Don appropriate PPE (as required by the HASP).

2. Place plastic sheeting around the well.

3. Clean sampling equipment.

4. Open the well cover while standing upwind of the well. Remove well cap and place on the plastic sheeting. Insert PID probe approximately 4 to 6 inches into the casing or the well headspace and cover with gloved hand. Record the PID reading in the field log. If the well headspace reading is less than 5 PID units, proceed; if the headspace reading is greater than 5 PID units, screen the air within the breathing zone. If the breathing zone reading is less than 5 PID units, proceed. If the PID reading in the breathing zone is above 5 PID units, move upwind from well for 5 minutes to allow the volatiles to dissipate. Repeat the breathing zone test. If the reading is still above 5 PID units, don appropriate respiratory protection in accordance with the requirements of the HASP. Record all PID readings. For wells that are part of the regular weekly monitoring program and prior PID measurements have not resulted in a breathing zone reading above 5 PID units, PID measurements will be taken monthly.

5. Measure the depth to water and determine depth of well by examining drilling log data or by direct measurement. Calculate the volume of water in the well (in gallons) by using the length of the water column (in feet), multiplying by 0.163 for a 2-inch well or by 0.653 for a 4-inch well. For other well diameters, use the formula:

   Volume (in gallons) = • TIMES well radius (in feet) squared TIMES length of water column (in feet) TIMES 7.481 (gallons per cubic foot)

6. Measure a length of rope or twine at least 10 feet greater than the total depth of the well. Secure one end of the rope to the well casing and secure the other end to the bailer. Test the knots and make sure the rope will not loosen. Check bailers so that all parts are intact and will not be lost in the well.

7. Lower bailer into well and remove one well volume of water. Contain all water in appropriate containers.

8. Monitor the field indicator parameters (e.g., turbidity, temperature, specific conductance, and pH). Measure field indicator parameters using a clean container such as a glass beaker or sampling cups provided with the instrument. Record field indicator parameters on the groundwater sampling log.

9. Repeat Steps 7 and 8 until three or four well volumes have been removed. Examine the field indicator parameter data to determine if the parameters have stabilized. The well is considered stabilized and ready for sample collection when turbidity values remain within 10% (or within 1 NTU if the turbidity reading is less than 10 NTU), the specific conductance and temperature values remain

within 3%, and pH remains within ±0.1 units for three consecutive readings collected once per well volume removed.

10. If the field indicator parameters have not stabilized, remove a maximum of five well volumes prior to sample collection. Alternatively, five well volumes may be removed without measuring the field indicator parameters.

11. If the recharge rate of the well is very low, wells screened across the water table may be bailed dry and sampling should commence as soon as the volume in the well has recovered sufficiently to permit collection of samples. For wells screened entirely below the water table, the well should only be bailed down to a level slightly higher than the bentonite seal above the well screen. The well should not be bailed completely dry, to maintain the integrity of the seal. Sampling should commence as soon as the well volume has recovered sufficiently to permit sample collection.

12. Following purging, allow water level in well to recharge to a sufficient level to permit sample collection.

13. Complete the sample label and cover the label with clear packing tape to secure the label onto the container.

14. Slowly lower the bailer into the screened portion of the well and carefully retrieve a filled bailer from the well causing minimal disturbance to the water and any sediment in the well.

15. The sample collection order (as appropriate) will be as follows:

    a. VOCs;

    b TOC;

    c. SVOCs;

    d. metals and cyanide; and

    e. others.

16. When sampling for volatiles, collect water samples directly from the bailer into 40-mL vials with Teflon®-lined septa.

17. For other analytical samples, remove the cap from the large glass mixing container and slowly empty the bailer into the large glass mixing container. The sample for dissolved metals and/or filtered PCBs should either be placed directly from the bailer into a pressure filter apparatus or pumped directly from the bailer with a peristaltic pump, through an in-line filter, into the pre-preserved sample bottle.

18. Continue collecting samples until the mixing container contains a sufficient volume for all laboratory samples.

19. Mix the entire sample volume with the Teflon® stirring rod and transfer the appropriate volume into the laboratory jar(s). Secure the sample jar cap(s) tightly.

20. If sampling for total and filtered metals and/or PCBs, a filtered and unfiltered sample will be collected. Sample filtration for the filtered sample will be performed in the field using a peristaltic pump prior to preservation. Install new medical-grade silicone tubing in the pump head. Place new Teflon® tubing into the sample mixing container and attach to the intake side of pump tubing. Attach (clamp) a new 0.45-micron filter (note the filter flow direction). Turn the pump on and dispense the filtered liquid directly into the laboratory sample bottles.

21. Secure with packing material and store at 4°C in an insulated transport container provided by the laboratory.

22. After sample containers have been filled, remove one additional volume of groundwater. Measure the pH, temperature, turbidity, and conductivity. Record on the groundwater sampling log or bound field logbook the time sampling procedures were completed, any pertinent observations of the sample (e.g., physical appearance, and the presence or lack of odors or sheens), and the values of the field indicator parameters.

23. Remove bailer from well, secure well, and properly dispose of PPE and disposable equipment.

24. If a bailer is to be dedicated to a well, it should be secured inside the well above the water table, if possible. Dedicated bailers should be tied to the well cap so that inadvertent loss of the bailer will not occur when the well is opened.

25. Complete the procedures for packaging, shipping, and handling with associated chain-of-custody.

VII. Waste Management

Materials generated during groundwater sampling activities, including disposable equipment, will be placed in appropriate containers. Containerized waste will be disposed of by the client consistent with the procedures identified in the HASP.

VIII. Data Recording and Management

Initial field logs and chain-of-custody records will be transmitted to the ARCADIS PM at the end of each day unless otherwise directed by the PM. The groundwater team leader retains copies of the groundwater sampling logs.

IX. Quality Assurance

In addition to the quality control samples to be collected in accordance with this SOP, the following quality control procedures should be observed in the field:

- Collect samples from monitoring wells in order of increasing concentration, to the extent known based on review of historical site information if available.
- Equipment blanks should include the pump and tubing (if using disposable tubing) or the pump only (if using tubing dedicated to each well).
- Collect equipment blanks after wells with higher concentrations (if known) have been sampled.
- Operate all monitoring instrumentation in accordance with manufacturer's instructions and calibration procedures. Calibrate instruments at the beginning of each day and verify the calibration at the end of each day. Record all calibration activities in the field notebook.
- Clean all groundwater sampling equipment prior to use in the first well and after each subsequent well using procedures for equipment decontamination.

X. References

United States Environmental Protection Agency (USEPA). 1986. RCRA Groundwater Monitoring Technical Enforcement Guidance Document (September 1986).

USEPA Region II. 1998. *Ground Water Sampling Procedure Low Stress (Low Flow) Purging and Sampling*.

USEPA. 1991. Handbook Groundwater, Volume II Methodology, Office of Research and Development, Washington, DC. USEPN62S, /6-90/016b (July, 1991).

U.S. Geological Survey (USGS). 1977. National Handbook of Recommended Methods for Water-Data Acquisition: USGS Office of Water Data Coordination. Reston, Virginia.

Attachment 1

Groundwater Sampling Log

ARCADIS
Infrastructure, environment, facilities

Low-Flow Groundwater Sampling Log

Project _____

Project Number _____ **Site Location** _____ **Well ID** _____

Date _____ **Sampled By** _____

Sampling Time _____ **Recorded By** _____

Weather _____ **Coded Replicate No.** _____

Instrument Identification

Water Quality Meter(s) _____ **Serial #** _____

Casing Material _____ **Purge Method** _____

Casing Diameter _____ **Screen Interval (ft bmp)** **Top** _____ **Bottom** _____

Sounded Depth (ft bmp) _____ **Pump Intake Depth (ft bmp)** _____ _____

Depth to Water (ft bmp) _____ **Purge Time** **Start** _____ **Finish** _____

Field Parameter Measurements During Purging

Time	Minutes Elasped	Flow Rate (mL/min)	Volume Purged	Temp (°C)	pH (s.u.)	Conductivity (umhos or mS/cm) 1)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Depth to Water (ft bmp)

Collected Sample Condition **Color**_____ **Odor**_____ **Appearance**_____

Parameter	Container	No.	Preservative

PID Reading _____

Comments _____

1) Circle one unit type

Attachment 2

Oxygen Solubility in Fresh Water

Temperature (degrees C)	**Dissolved Oxygen** (mg/L)
0	14.6
1	14.19
2	13.81
3	13.44
4	13.09
5	12.75
6	12.43
7	12.12
8	11.83
9	11.55
10	11.27
11	11.01
12	10.76
13	10.52
14	10.29
15	10.07
16	9.85
17	9.65
18	9.45
19	9.26
20	9.07
21	8.9
22	8.72
23	8.56
24	8.4
25	8.24
26	8.09
27	7.95
28	7.81
29	7.67
30	7.54
31	7.41
32	7.28
33	7.16
34	7.05
35	6.93

Reference: Vesilind, P.A., *Introduction to Environmental Engineering*, PWS Publishing Company, Boston, 468 pages (1996).

APPENDIX B

Field Data Sheets

ARCADIS

Troll 9000 | **Low-Flow System**
06/13/17 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	RB	Pump Model/Type	Geopump II
Company Name	ARCADIS	Tubing Type	Tygon 0.25" OD
Project Name	2Q17 Seattle Terminal Groundwater Monitoring	Tubing Diameter	0.17 [in]
Site Name	Former Unocal Seattle Marketing Terminal	Tubing Length	13 [ft]
		Pump placement from TOC	0.25 [ft]

Well Information:		**Pumping information:**	
Well Id	MW-70R	Final pumping rate	150 [mL/min]
Well diameter	2 [in]	Flowcell volume	658.02 [mL]
Well total depth	19 [ft]	Calculated Sample Rate	264 [sec]
Depth to top of screen	4 [ft]	Sample rate	180 [sec]
Screen length	180 [in]	Stabilized drawdown	2 [in]
Depth to Water	11.35 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
	12:31:48	16.37	6.86	20861.35	1.90	1.64	567.64
	12:34:54	16.62	6.86	20770.82	1.60	1.61	592.62
Last 5 Readings	12:38:02	16.99	6.87	20555.19	1.63	1.63	608.69
	12:41:08	17.03	6.87	20286.39	1.52	1.70	625.79
	12:41:59	17.08	6.87	20238.90	1.74	1.72	630.24
	12:38:02	0.38	0.00	-215.62	0.03	0.02	16.07
Variance in last 3 readings	12:41:08	0.04	0.00	-268.80	-0.11	0.07	17.10
	12:41:59	0.05	0.00	-47.48	0.22	0.02	4.45

Notes: MW-70R sampled @ 1240
Final DTW = 11.67 ft btoc
Final DO = 1.70 mg/l

Sample collected from top 6 inches of water column.

ARCADIS

Troll 9000 | **Low-Flow System**
06/13/17 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	EK	Pump Model/Type	Geopump II
Company Name	ARCADIS	Tubing Type	Tygon 0.25" OD
Project Name	2Q17 Seattle Terminal Groundwater Monitoring	Tubing Diameter	0.17 [in]
Site Name	Former Unocal Seattle Marketing Terminal	Tubing Length	10 [ft]
		Pump placement from TOC	0.5 [ft]

Well Information:		**Pumping information:**	
Well Id	MW-200	Final pumping rate	150 [mL/min]
Well diameter	2 [in]	Flowcell volume	644.63 [mL]
Well total depth	24.11 [ft]	Calculated Sample Rate	258 [sec]
Depth to top of screen	4.5 [ft]	Sample rate	180 [sec]
Screen length	240 [in]	Stabilized drawdown	2.5 [in]
Depth to Water	8.66 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
Last 5 Readings	11:46:53	15.09	7.04	1285.51	1.82	0.05	-134.25
	11:50:00	15.13	7.04	1318.05	1.82	0.05	-135.14
	11:53:06	15.13	7.04	1346.18	1.41	0.04	-137.24
	11:56:13	15.18	7.04	1367.98	1.17	0.04	-139.03
	11:59:18	15.21	7.04	1381.49	1.55	0.04	-140.65
Variance in last 3 readings	11:53:06	-0.01	0.00	28.13	-0.42	-0.01	-2.09
	11:56:13	0.05	0.00	21.81	-0.24	0.00	-1.79
	11:59:18	0.03	0.00	13.50	0.38	0.00	-1.62

Notes: MW-200 sampled @ 1200
Final DO = 0.04 mg/L
Final DTW = 8.93 ft bgs

DO not stabilized after 45 min. final DO =0.04

ARCADIS

Troll 9000 | **Low-Flow System**
06/13/17 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	RB	Pump Model/Type	Geopump II
Company Name	ARCADIS	Tubing Type	Tygon 0.25" OD
Project Name	2Q17 Seattle Terminal Groundwater Monitoring	Tubing Diameter	0.17 [in]
Site Name	Former Unocal Seattle Marketing Terminal	Tubing Length	11 [ft]
		Pump placement from TOC	0.5 [ft]

Well Information:		**Pumping information:**	
Well Id	MW-201	Final pumping rate	150 [mL/min]
Well diameter	2 [in]	Flowcell volume	649.1 [mL]
Well total depth	20 [ft]	Calculated Sample Rate	260 [sec]
Depth to top of screen	5.2 [ft]	Sample rate	180 [sec]
Screen length	180 [in]	Stabilized drawdown	0.5 [in]
Depth to Water	9.05 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
Last 5 Readings	10:51:27	14.81	6.79	748.03	22.52	0.05	-0.76
	10:54:33	14.87	6.79	761.48	22.31	0.05	0.05
	10:57:40	14.89	6.78	775.50	25.38	0.05	0.65
	11:00:45	14.93	6.78	787.97	25.47	0.05	1.88
	11:03:52	14.99	6.78	797.36	26.04	0.04	2.18
Variance in last 3 readings	10:57:40	0.02	0.00	14.02	3.08	0.00	0.60
	11:00:45	0.04	0.00	12.47	0.08	-0.01	1.24
	11:03:52	0.06	0.00	9.39	0.57	-0.01	0.30

Notes:

MW-201 sampled @ 1105
Final RDO = 0.04 mg/L
Final DTW = 9.25 ft btoc

RDO and ORP did not stabilize after 45 minutes.

ARCADIS

Troll 9000 | **Low-Flow System**
06/13/17 | **ISI Low-Flow Log**

Project Information:

Operator Name	RV
Company Name	ARCADIS
Project Name	2Q17 Seattle Terminal Groundwater Monitoring
Site Name	Former Unocal Seattle Marketing Terminal

Pump Information:

Pump Model/Type	Geopump II
Tubing Type	Tygon 0.25" OD
Tubing Diameter	0.17 [in]
Tubing Length	12.5 [ft]
Pump placement from TOC	1.5 [ft]

Well Information:

Well Id	MW-202
Well diameter	2 [in]
Well total depth	27.37 [ft]
Depth to top of screen	7 [ft]
Screen length	240 [in]
Depth to Water	10.83 [ft]

Pumping information:

Final pumping rate	150 [mL/min]
Flowcell volume	655.79 [mL]
Calculated Sample Rate	263 [sec]
Sample rate	180 [sec]
Stabilized drawdown	1 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
Last 5 Readings	15:40:50	15.06	6.97	22254.58	0.80	0.14	391.35
	15:43:57	14.98	6.97	22185.32	0.72	0.12	392.55
	15:47:04	14.96	6.97	22142.48	0.69	0.11	394.61
	15:50:10	14.90	6.97	22115.06	0.69	0.10	393.80
	15:53:16	14.92	6.97	22083.70	1.56	0.09	392.69
Variance in last 3 readings	15:47:04	-0.02	0.00	-42.84	-0.03	-0.02	2.06
	15:50:10	-0.06	0.00	-27.42	0.00	-0.01	-0.81
	15:53:16	0.02	0.00	-31.35	0.87	-0.01	-1.11

Notes: MW-202 sampled @ 1555
Final RDO = 0.09 mg/L
Final DTW = 10.98 ft btoc

RDO did not stabilize after 45 minutes.

ARCADIS

Troll 9000 | **Low-Flow System**
06/13/17 | **ISI Low-Flow Log**

Project Information:

Operator Name	EK
Company Name	ARCADIS
Project Name	2Q17 Seattle Terminal Groundwater Monitoring
Site Name	Former Unocal Seattle Marketing Terminal

Pump Information:

Pump Model/Type	Geopump II
Tubing Type	Tygon 0.25" OD
Tubing Diameter	0.17 [in]
Tubing Length	12 [ft]
Pump placement from TOC	0.5 [ft]

Well Information:

Well Id	MW-203
Well diameter	2 [in]
Well total depth	25 [ft]
Depth to top of screen	9.5 [ft]
Screen length	180 [in]
Depth to Water	11.66 [ft]

Pumping information:

Final pumping rate	150 [mL/min]
Flowcell volume	653.56 [mL]
Calculated Sample Rate	262 [sec]
Sample rate	180 [sec]
Stabilized drawdown	2 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
Last 5 Readings	10:35:44	16.27	7.14	5057.99	5.56	0.18	-131.08
	10:38:51	16.27	7.14	4933.13	3.88	0.17	-131.07
	10:41:58	16.27	7.14	4810.65	2.99	0.16	-131.50
	10:45:04	16.26	7.14	4710.59	2.37	0.15	-133.04
	10:48:11	16.25	7.14	4641.28	2.01	0.14	-134.53
Variance in last 3 readings	10:41:58	0.00	0.00	-122.49	-0.89	-0.01	-0.42
	10:45:04	-0.01	0.00	-100.06	-0.62	-0.01	-1.54
	10:48:11	-0.01	0.00	-69.31	-0.36	-0.01	-1.49

Notes: MW-203 sampled @ 1050
Final DO = 0.14 mg/L
Final DTW = 11.98 ft btoc

ARCADIS

Troll 9000 | **Low-Flow System**
06/13/17 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	RB	Pump Model/Type	Geopump II
Company Name	ARCADIS	Tubing Type	Tygon 0.25" OD
Project Name	2Q17 Seattle Terminal Groundwater Monitoring	Tubing Diameter	0.17 [in]
Site Name	Former Unocal Seattle Marketing Terminal	Tubing Length	20 [ft]
		Pump placement from TOC	1.5 [ft]

Well Information:		**Pumping information:**	
Well Id	MW-204	Final pumping rate	150 [mL/min]
Well diameter	2 [in]	Flowcell volume	689.27 [mL]
Well total depth	30.95 [ft]	Calculated Sample Rate	276 [sec]
Depth to top of screen	16 [ft]	Sample rate	180 [sec]
Screen length	180 [in]	Stabilized drawdown	1 [in]
Depth to Water	17.7 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
Last 5 Readings	9:16:50	12.74	6.72	429.02	0.35	0.22	-7.22
	9:19:56	12.74	6.73	428.70	0.42	0.20	-7.99
	9:23:02	12.73	6.74	428.74	0.33	0.19	-7.77
	9:26:09	12.73	6.75	428.35	0.31	0.18	-8.42
	9:29:16	12.73	6.75	428.35	0.51	0.17	-8.72
Variance in last 3 readings	9:23:02	-0.01	0.01	0.03	-0.09	-0.01	0.21
	9:26:09	0.00	0.01	-0.39	-0.02	-0.01	-0.64
	9:29:16	0.00	0.01	0.00	0.20	-0.01	-0.30

Notes: MW-204 sampled @ 0930
Final FDO = 0.17 mg/L
Final DTW = 17.80 ft btoc

ARCADIS

Troll 9000 | **Low-Flow System**
06/13/17 | **ISI Low-Flow Log**

Project Information:

Operator Name	EK
Company Name	ARCADIS
Project Name	2Q17 Seattle Terminal Groundwater Monitoring
Site Name	Former Unocal Seattle Marketing Terminal

Pump Information:

Pump Model/Type	Geopump II
Tubing Type	Tygon 0.25" OD
Tubing Diameter	0.17 [in]
Tubing Length	24 [ft]
Pump placement from TOC	0.5 [ft]

Well Information:

Well Id	MW-205
Well diameter	2 [in]
Well total depth	36.36 [ft]
Depth to top of screen	17 [ft]
Screen length	240 [in]
Depth to Water	21.6 [ft]

Pumping information:

Final pumping rate	150 [mL/min]
Flowcell volume	707.12 [mL]
Calculated Sample Rate	283 [sec]
Sample rate	180 [sec]
Stabilized drawdown	2 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
Last 5 Readings	9:09:19	13.09	7.03	675.52	65.22	0.06	-124.27
	9:12:26	13.13	7.04	675.03	68.72	0.06	-126.83
	9:15:33	13.18	7.05	674.76	61.52	0.06	-128.80
	9:18:39	13.20	7.06	674.64	59.86	0.06	-131.53
	9:21:45	13.23	7.07	674.51	56.06	0.06	-134.78
Variance in last 3 readings	9:15:33	0.04	0.01	-0.27	-7.21	0.00	-1.96
	9:18:39	0.02	0.01	-0.12	-1.65	0.00	-2.73
	9:21:45	0.04	0.02	-0.13	-3.81	0.00	-3.25

Notes: mw-205 sampled at 0920
final D.O =0.06 mg/L
final DTW=21.80

ARCADIS

Troll 9000 | **Low-Flow System**
06/13/17 | **ISI Low-Flow Log**

Project Information:

Operator Name	RB
Company Name	ARCADIS
Project Name	2Q17 Seattle Terminal Groundwater Monitoring
Site Name	Former Unocal Seattle Marketing Terminal

Pump Information:

Pump Model/Type	Geopump II
Tubing Type	Tygon 0.25" OD
Tubing Diameter	0.17 [in]
Tubing Length	14 [ft]
Pump placement from TOC	1.5 [ft]

Well Information:

Well Id	MW-206
Well diameter	2 [in]
Well total depth	24.5 [ft]
Depth to top of screen	9.5 [ft]
Screen length	180 [in]
Depth to Water	12.95 [ft]

Pumping information:

Final pumping rate	150 [mL/min]
Flowcell volume	662.49 [mL]
Calculated Sample Rate	265 [sec]
Sample rate	180 [sec]
Stabilized drawdown	0.25 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
Last 5 Readings	14:14:51	15.39	6.90	31115.31	0.24	1.27	124.04
	14:17:57	15.49	6.90	31042.98	0.35	1.27	128.83
	14:21:04	15.26	6.88	31209.21	0.14	1.24	131.09
	14:24:09	15.25	6.88	31217.13	0.27	1.21	138.02
	14:27:16	15.41	6.87	31101.60	0.23	1.21	147.01
Variance in last 3 readings	14:21:04	-0.23	-0.01	166.23	-0.22	-0.04	2.26
	14:24:09	-0.01	0.00	7.92	0.13	-0.03	6.93
	14:27:16	0.16	-0.01	-115.53	-0.04	-0.01	8.98

Notes: MW-206 sampled at 1430
final DTW=13.04 ft btoc
final RDO=1.21 mg/L

BD-1 collected from this location.

ARCADIS

Troll 9000 | **Low-Flow System**
06/13/17 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	EK	Pump Model/Type	Geopump II
Company Name	ARCADIS	Tubing Type	Tygon 0.25" OD
Project Name	2Q17 Seattle Terminal Groundwater Monitoring	Tubing Diameter	0.17 [in]
Site Name	Former Unocal Seattle Marketing Terminal	Tubing Length	13.6 [ft]
		Pump placement from TOC	0.5 [ft]

Well Information:		**Pumping information:**	
Well Id	MW-207	Final pumping rate	150 [mL/min]
Well diameter	2 [in]	Flowcell volume	660.7 [mL]
Well total depth	23 [ft]	Calculated Sample Rate	265 [sec]
Depth to top of screen	8 [ft]	Sample rate	180 [sec]
Screen length	180 [in]	Stabilized drawdown	1 [in]
Depth to Water	13.03 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
Last 5 Readings	14:36:58	15.75	6.99	10651.32	0.07	0.09	-291.19
	14:40:05	15.74	6.99	10357.57	0.02	0.08	-295.89
	14:43:11	15.74	7.00	10011.55	-0.02	0.06	-299.01
	14:46:18	15.65	7.00	9795.74	-0.04	0.06	-302.22
	14:49:23	15.64	7.00	9534.81	-0.05	0.05	-309.70
Variance in last 3 readings	14:43:11	0.00	0.00	-346.02	-0.05	-0.01	-3.12
	14:46:18	-0.08	0.00	-215.81	-0.02	-0.01	-3.20
	14:49:23	-0.02	0.00	-260.93	-0.01	-0.01	-7.48

Notes: MW-207 sampled @ 1455
Final DO = 0.05 mg/L
Final DTW = 13.32 ft btoc

DO not stable after 45 min, final DO=0.05

ARCADIS

Troll 9000 | **Low-Flow System**
06/16/17 | **ISI Low-Flow Log**

Project Information:

Operator Name	EK
Company Name	ARCADIS
Project Name	2Q17 Seattle Terminal Groundwater Monitoring
Site Name	Former Unocal Seattle Marketing Terminal

Pump Information:

Pump Model/Type	Geopump II
Tubing Type	Tygon 0.25" OD
Tubing Diameter	0.17 [in]
Tubing Length	10.8 [ft]
Pump placement from TOC	0.5 [ft]

Well Information:

Well Id	MW-209
Well diameter	2 [in]
Well total depth	18 [ft]
Depth to top of screen	3 [ft]
Screen length	180 [in]
Depth to Water	9.5 [ft]

Pumping information:

Final pumping rate	150 [mL/min]
Flowcell volume	648.21 [mL]
Calculated Sample Rate	260 [sec]
Sample rate	180 [sec]
Stabilized drawdown	0.9 [in]

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
Last 5 Readings	11:54:14	13.99	6.79	293.06	27.05	52.50	-113.32
	11:57:22	13.67	6.80	289.78	6.97	52.50	-117.44
	12:00:28	13.84	6.81	284.51	6.45	52.50	-120.91
	12:03:34	13.90	6.81	280.51	5.82	52.50	-123.87
	12:06:40	13.79	6.82	275.82	8.32	52.50	-126.23
Variance in last 3 readings	12:00:28	0.17	0.01	-5.27	-0.51	0.00	-3.48
	12:03:34	0.06	0.00	-3.99	-0.63	0.00	-2.96
	12:06:40	-0.11	0.00	-4.70	2.50	0.00	-2.36

Notes: MW-209 sampled @ 1210
Final DTW = 9.65 ft btoc
Final DO = sensor not working correctly

ARCADIS

Troll 9000 **Low-Flow System**
06/16/17 **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	EK	Pump Model/Type	Geopump II
Company Name	ARCADIS	Tubing Type	Tygon 0.25" OD
Project Name	2Q17 Seattle Terminal Groundwater Monitoring	Tubing Diameter	0.17 [in]
Site Name	Former Unocal Seattle Marketing Terminal	Tubing Length	9.5 [ft]
		Pump placement from TOC	0.5 [ft]

Well Information:		**Pumping information:**	
Well Id	MW-210	Final pumping rate	150 [mL/min]
Well diameter	2 [in]	Flowcell volume	642.4 [mL]
Well total depth	18 [ft]	Calculated Sample Rate	257 [sec]
Depth to top of screen	3 [ft]	Sample rate	180 [sec]
Screen length	180 [in]	Stabilized drawdown	8.5 [in]
Depth to Water	8.95 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
Last 5 Readings	10:48:22	13.98	6.44	273.91	1081.87	52.50	-143.26
	10:51:29	14.21	6.44	275.04	1456.00	52.50	-148.18
	10:54:35	14.05	6.45	271.51	39.67	52.50	-156.95
	10:57:42	14.16	6.45	270.38	117.12	52.50	-168.96
	11:00:49	13.86	6.45	270.93	174.86	52.50	-172.34
Variance in last 3 readings	10:54:35	-0.16	0.00	-3.52	-1416.32	0.00	-8.76
	10:57:42	0.11	0.00	-1.14	77.45	0.00	-12.01
	11:00:49	-0.30	0.00	0.56	57.73	0.00	-3.38

Notes: MW-210 sampled @ 1100
Final DTW = 12.18 ft btoc
Final DO = nit working correctly

ARCADIS

Troll 9000 | **Low-Flow System**
06/16/17 | **ISI Low-Flow Log**

Project Information:		**Pump Information:**	
Operator Name	EK	Pump Model/Type	Geopump II
Company Name	ARCADIS	Tubing Type	Tygon 0.25" OD
Project Name	2Q17 Seattle Terminal Groundwater Monitoring	Tubing Diameter	0.17 [in]
Site Name	Former Unocal Seattle Marketing Terminal	Tubing Length	10 [ft]
		Pump placement from TOC	0.5 [ft]

Well Information:		**Pumping information:**	
Well Id	MW-211	Final pumping rate	175 [mL/min]
Well diameter	2 [in]	Flowcell volume	644.63 [mL]
Well total depth	18 [ft]	Calculated Sample Rate	222 [sec]
Depth to top of screen	3 [ft]	Sample rate	180 [sec]
Screen length	180 [in]	Stabilized drawdown	1 [in]
Depth to Water	9.05 [ft]		

Low-Flow Sampling Stabilization Summary

	Time	Temp [C]	pH [pH]	Cond [µS/cm @25C]	Turb [NTU]	RDO [mg/L]	ORP [mV]
Stabilization Settings			+/-0.1	+/-1	+/-1	+/-1	+/-10
			+/-10 %	+/-10 %	+/-10 %	+/-15 %	+/-15 %
Last 5 Readings	10:41:04	15.38	7.42	587.95	1.63	52.50	-331.23
	10:44:10	15.53	7.42	580.38	0.95	52.50	-342.69
	10:47:17	15.22	7.42	579.74	1.65	52.50	-343.98
	10:50:23	15.02	7.42	582.00	1.04	52.50	-344.66
	10:53:29	15.09	7.41	580.13	0.53	52.50	-345.13
Variance in last 3 readings	10:47:17	-0.32	0.00	-0.64	0.69	0.00	-1.28
	10:50:23	-0.20	0.00	2.26	-0.61	0.00	-0.69
	10:53:29	0.08	0.00	-1.87	-0.51	0.00	-0.47

Notes: MW-211 sampled @ 1050
Final DTW = 9.02 ft btoc
Final DOnot working corretly

Sample collected from top 6 inches of water column. BD-2 collected

3-27-2017 1Q17 GWM Event

E. Krueger
R. Bouchiba

Weather: 45°F, cloudy, low tide @ 1140

0700 ANA onsite, fill out PTW, calibrate equipment, don PPE, conduct tailgate meeting review HASP, JSAs, & SOW

0730 No flagger - set up on MW-70R & call BNSF flagger. Flagger has not left Tacoma, will sample MW-70R first and dig out ramp wells for gauging round (to begin @ 1040)

0830 Sample MW-70R

0845 Locate the wells in the gravel path and bike path

0930 BNSF flagger onsite, conduct H&S meeting

1050 Sample MW-209

1100 Sample MW-210 (DUP-1 collected)

1150 Sample MW-211

1225 Begin gauging round - see below

Air Mount	
0800	0.0
0900	0.1
1000	0.0
1100	0.0
1200	0.0
1300	0.0
~~1400~~	
~~1500~~	

Well	PID	DTW	DTP (if applicable)	Time	Notes
MW-30	0.6	10.71	NAPL ON PROBE (unmeasurable)	1313	0/3 bolts
MW-61AR	65.0	10.62	—	1322	0/2 bolts, strong HCCO
MW-70R	0.0	11.41	—	1305	1/3 bolts (water in vault)
MW-200	0.5	8.58	—	1255	no bolts
MW-201	0.0	9.25	—	1252	no bolts
MW-202	0.0	9.44	—	1256	1/3 bolts (water in vault) (shrimps)
MW-203	0.0	12.41	—	1250	no bolts (water in vault)
MW-204	0.0	17.99	—	1245	no bolts
MW-205	0.0	19.89	—	1240	no bolts (water in vault)
MW-206	0.0	11.59	—	1258	1/3 bolts (water in vaults)
MW-207	0.0	11.49	—	1300	2/3 bolts
MW-209	0.1	8.46	—	1235	3/3 bolts (water in vault)
MW-210	14.2	8.61	—	1230	3/3 bolts
MW-211	0.0	8.04	—	1225	2/3 bolts

3-27-17 1Q17 GWM Event E. Krueger R. Brauchla

1325 End gauging round

1330 Begin to decon/ pack up the field van

1345 ANA offsite

1600 Drop coolers off at UPS
NO one was at Emerald, the 20 gal drum w/ purge water brought back to ANA office and stored in the field room. Chuck from Emerald will pick it up tomorrow (3/28/17)

1700 PTW closed out

Methodology: Samples were collected via LFP techniques using dedicated polyethyene tubing, a peristaltic pump, and a troll 700 multimeter w/ RuggedReader data logger. All wells were gauged using an oil/water interface probe at low tide. All samples were collected using Lancaster Labs bottleware and stored on ice.

Drum Inventory: During sampling activites ~ 10 gallons of purged groundwater was generated and stored in 1 25 gallon steel drum (~~3/17~~ 3/27/17). Drum will be picked up from ANA seattle office on 3/28/17 by Emerald.

Erin Krueger 3/27/2017

6-13-17 2017 GWM

E. Krueger
R. Brauchla

weather: 60°F, overcast

Time	PID
0700	0.0
0800	0.0
0900	0.1
1000	0.0
1100	0.0
1200	0.0
1300	0.0
1400	0.0
1500	0.0
1600	0.0

0710 ANA onsite, don PPE, fill out PTW, review HASP, JSAs & todays SOW. calibrate equipment

0730 R. Andresen onsite, conduct tailgate meeting

0820 Begin Sampling round

0850 R. Andresen offsite

0920 Sample ~~MW-5~~ MW-205

0930 Sample MW-204

1050 Sample MW-203

1105 Sample MW-201 (NAPL observed on tubing when removed, dark, sticky, not of measurable thickness)

1200 Sample MW-200

1240 Sample MW-70R

1430 Sample MW-206 & collect BD-1

1455 Sample MW-207

1555 Sample MW-202

1600 Finish samplings for the day, decon equip and pack up van

1630 ANA offsite

Eric Krueger 6/13/17

~~2017~~ 6/14/17 2017 GWM

E. Krueger
R. Brauchla

weather:
60°F, overcast

0645 E. Krueger gets a call from BNSF. The flagger assigned for us can't make it to the site today due to a family emergency. Talk w/ R. Andresen and we decide to finish samplins the wells on Elliot until further notice from BNSF.

0715 Arcadis arrives on site to continue sampling, calibrate PID, Water Parameter Meters, prep bottle ware, don PID, H&S Tailgate

0750 MW-61A-R not sampled - NAPL in well - DTP=13.66 Ft btoc DTW=13.83 Ft btoc (NAPL verified via peri pump & tubing) S. Miles Notified

0800 MW-30 not sampled - NAPL in well - DTP=13.38ft btoc DTW not determined (NAPL adhered to oil-water interface probe tip) S. Miles notified

0845 Arcadis off site

Air Log

Time:	PID
0700	0.0
0800	0.3

Eric Krueger 6/14/17

6/16/17 — 2Q17 GWM — E. Krueger, J. Little

0700 ANA onsite, don PPE, calibrate equipment, review HASP, JSAs and todays SOW — weather: 70°F, sunny

0800 BNSF flagger onsite, conduct H&S tailgate meeting w/ BNSF

0815 Begin Gauging Round

Well ID	PID	DTW	DTP (NAPL on Probe)	Time	Notes
MW-30	1.7	13.39	13.38	0946	4", 0/3 bolts
MW-61AR	160.0	13.84	14.73	0941	2", 1/3 bolts
MW-70R	0.0	10.42	—	0859	2", 1/3 bolts
MW-200	0.0	8.90	—	0844	Buried, 2"
MW-201	0.0	9.55	—	0842	Buried, 2"
MW-202	0.0	9.43	—	0847	2", 1/3 bolts
MW-203	0.2	12.31	—	0838	Buried, 2"
MW-204	0.1	18.39	—	0827	Buried, 2"
MW-205	7.2	22.33	—	0822	Buried, 2", water
MW-206	0.1	11.59	—	0850	2", 1/3 bolts
MW-207	0.0	10.25	—	0853	2", 3/3 bolts, shrip
MW-209	1.2	9.59	—	0926	2", 3/3 bolts, water
MW-210	3.4	8.94	—	0924	2", 3/3 bolts
MW-211	4.3	9.55	—	0920	2", 2/3 bolts

0955 Gauging round complete
1015 Begin sampling round

1050 Sample MW-211 and collect BD-2

1100 Sample MW-210

1210 Sample MW-209

1215 - Put sock in MW-61AR ≃ 11ft bgs and MW-30 ≃ 12ft bgs per Patricia Andrason's request.

1230 Finish sampling, start to decon equip and demob

6/16/17 2017 E. Krueger
J. Little

1330 ANA offsite

1545 Drop off 2 drums of purge water waste at Emerald Services

1615 Drop off sample coolers (5 total) at UPS

1700 close out the PTW

Methodology: Samples were collected using low-flow techniques w/ dedicated polyethane tubing, a peristaltic pump, and a TROLL 700 Multimeter w/ Russed Reader Data Logger. All wells were gauged using a 100' oil/water interface probe during low tide, to ensure no wells had a submerged screen. ~~Wells were purged~~ After the gauging round, poly tubing was placed in each well such that the intake depth was six inches below the water level. wells were purged at a rate of 150-300 mL/min, until paramcters were stabilized or 45 minutes if paramcters didn't stabilize. All samples were collected in Lancaster bottleware and immeditely stored on ice. At the end of the day, coolers were packed w/ fresh ice and sent to Lancaster Labs via next day air.

Samples were collected from all wells except MW-30 & MW-61A-R, these wells contained LNAPL. Each sample was analyzed for GRO, DRO/HO, BTEX, and cPAHs/Naphthalenes.

Drum Inventory: During sampling activites, ~40 gallons of purged groundwater was produced. and stored in 2 25-gallon steel drums. On 6/16/2017, both drums were delievered to Emerald Services in Seattle for disposal.

APPENDIX C

Historical Groundwater Analytical Results

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
MW-27	12/11/02	13:20	9.38	NR	NR	-9.38	--
(6.18)	03/20/03	10:31	11.09	NR	NR	-4.91	--
	07/03/03	9:02	12.10	NR	NR	-5.92	--
	09/18/03	11:27	10.58	NR	NR	-4.40	--
	12/02/03	10:56	9.50	NR	NR	-3.32	--
	03/09/04	10:37	11.83	NR	NR	-5.65	--
	06/03/04	10:09	12.32	NR	NR	-6.14	--
	09/03/04	10:35	10.63	NR	NR	-4.45	--
	12/06/04	10:30	9.41	NR	NR	-3.23	--
	03/04/05	10:33	9.05	NR	NR	-2.87	--
	06/03/05	--	13.05	NR	NR	-6.87	--
	09/01/05	8:00	10.29	NR	NR	-4.11	--
	12/01/05	9:45	9.28	NR	NR	-3.10	--
	03/02/06	9:00	9.29	NR	NR	-3.11	--
	06/06/06	Well Damaged During Construction Activities					
MW-27R[6]	03/07/07	9:35	8.25	--	--	-3.88	--
(4.37)	09/26/07	7:59	9.19	--	--	-4.82	--
	11/26/07	14:55	7.56	--	--	-3.19	--
	12/03/07	Well Abandoned					
MW-30	12/11/02	14:10	15.23	NR	NR	5.62	--
(11.29)	03/20/03	13:00	12.59	NR	NR	8.26	--
	07/03/03	11:18	14.30	NR	NR	6.55	--
	09/18/03	10:36	14.70	NR	NR	6.15	--
	12/02/03	11:23	12.20	NR	NR	8.65	--
	03/09/04	10:58	13.81	NR	NR	7.04	--
	06/03/04	11:44	14.60	NR	NR	6.25	--
	09/03/04	13:42	9.85	NR	NR	11.00	--
	12/06/04	9:37	15.27	NR	NR	5.58	--
	03/04/05	14:08	14.33	NR	NR	6.52	--
	06/03/05	--	14.47	NR	NR	6.38	--
	09/01/05	10:05	15.05	NR	NR	5.80	--
	12/01/05	11:23	11.98	NR	NR	8.87	--
	03/02/06	11:28	14.53	NR	NR	6.32	--
	06/06/06	8:20	14.16	NR	NR	6.69	--
	09/15/06	--	14.10	NR	NR	6.75	--
	03/07/07	8:55	13.74	Sheen	--	7.11	--
	06/07/07	8:43	13.87	--	--	6.98	--
	07/10/07	9:45	14.21	--	--	6.64	--
	07/25/07	11:35	13.94	--	--	6.91	--
	08/22/07	9:35	14.15	--	--	6.70	--
	09/06/07	9:50	14.25	--	--	6.60	--
	09/26/07	9:30	14.52	--	--	6.33	--
	10/11/07	7:55	14.22	--	--	6.63	--
	11/01/07	9:50	14.29	--	--	6.56	--
	11/16/07	15:25	13.85	--	--	7.00	--
	11/26/07	13:40	13.90	--	--	6.95	--
	12/19/07	9:30	12.59	--	--	8.26	--
	01/03/08	8:30	12.60	--	--	8.25	--
	01/17/08	8:48	12.53	--	--	8.32	--
	01/30/08	9:30	13.10	Sheen	--	7.75	--
	02/12/08	9:28	13.39	Sheen	--	7.46	--
	03/03/08	9:31	13.80	--	--	7.05	--
	03/17/08	9:29	13.99	--	--	6.86	--
	04/01/08	9:13	13.78	--	--	7.07	--
	04/14/08	9:14	13.97	--	--	6.88	--
	04/28/08	9:56	14.18	--	--	6.67	--
(20.85)[8]	05/13/08	9:24	14.46	--	--	6.39	--
	05/27/08	13:40	14.33	--	--	6.52	--
	06/10/08	10:25	14.08	--	--	6.77	--
	06/24/08	9:46	14.35	--	--	6.50	--
	07/07/08	9:50	14.13	--	--	6.72	--
	07/22/08	9:29	14.19	Sheen	--	6.66	--
	08/12/08	9:58	14.05	--	--	6.80	--
	09/03/08	--	14.03	--	--	6.82	--
	09/26/08	--	14.16	--	--	6.69	--
	10/17/08	9:15	14.35	--	--	6.50	--
	10/29/08	8:43	14.49	--	--	6.36	--
	11/12/08	10:46	13.03	--	--	7.82	--
	12/03/08	12:46	13.75	--	--	7.10	--
	01/06/09	9:36	12.68	--	--	8.17	--
	01/20/09	12:46	12.98	--	--	7.87	--
	02/03/09	9:39	13.79	--	--	7.06	--
	02/17/09	11:15	13.75	--	--	7.10	--
	03/12/09	12:09	13.79	--	--	7.06	--
	03/25/09	8:46	13.70	--	--	7.15	--
	04/08/09	10:16	13.30	--	--	7.55	--
	04/30/09	10:09	12.98	--	--	7.87	--
	05/12/09	10:10	12.72	12.70	0.02	8.13	--
	05/26/09	14:27	13.20	--	--	7.65	--
	06/09/09	9:41	13.91	--	--	6.94	--
	06/25/09	9:43	13.49	--	--	7.36	--
	07/07/09	9:35	13.75	Sheen	--	7.10	--
	07/13/09	8:09	14.23	--	--	6.62	--
	08/05/09	6:45	13.96	Sheen	--	6.89	--
	08/06/09	9:26	13.99	--	--	6.86	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
MW-30 (continued)	08/20/09	8:41	14.18	--	--	6.67	--
	09/10/09	10:11	14.15	--	--	6.70	--
	09/23/09	9:33	14.07	Sheen	--	6.78	--
	10/08/09	9:49	14.21	--	--	6.64	--
	10/19/09	9:20	14.13	--	--	6.72	--
	11/12/09	9:33	12.43	--	--	8.42	--
	03/24/10	9:48	12.98	Sheen	--	7.87	--
	04/13/10	10:31	12.98	Sheen	--	7.87	--
	05/26/10	9:15	13.36	Sheen	--	7.49	--
	07/28/10	14:40	14.11	--	--	6.74	--
	08/05/10	11:49	14.10	--	--	6.75	--
	08/13/10	10:10	13.90	--	--	6.95	--
	08/18/10	8:36	13.92	--	--	6.93	--
	09/21/10	10:29	13.30	--	--	7.55	--
	10/11/10	11:01	13.40	--	--	7.45	--
	11/19/10	14:54	12.41	--	--	8.44	--
	03/04/11	9:44	12.54	Sheen	--	8.31	--
	04/25/11	10:50	12.80	Sheen	--	8.05	--
	09/21/11	9:32	13.55	--	--	7.30	--
	11/21/11	11:00	13.74	--	--	7.11	--
	02/20/12	8:59	13.16	--	--	7.69	--
	04/17/12	11:55	12.90	Sheen	--	7.95	--
	10/10/12	12:10	14.41	--	--	6.44	--
	12/24/12	11:40	13.00	--	--	7.85	--
	01/08/13	14:20	11.88	--	--	8.97	--
	04/30/13	10:55	13.34	--	--	7.51	--
	09/19/13	9:54	13.74	--	--	7.11	--
	11/22/13	9:15	14.61	--	--	6.24	--
	06/23/14	10:27	14.04	--	--	6.81	--
	09/10/14	9:10	14.82	--	--	6.03	--
	12/15/14	13:27	11.38	--	--	9.47	--
	06/17/15	11:25	13.90	--	--	6.95	--
	12/09/15	10:39	10.00	--	--	10.85	--
	02/16/16	9:20	10.89	--	--	9.96	--
	06/13/16	8:40	13.79	LNAPL	--	7.06	--
	09/22/16	13:13	14.35	--	--	6.50	--
	01/12/17	12:44	--	LNAPL	--	--	--
	03/27/17	**13:13**	**10.71**	**LNAPL**	**--**	**10.14**	**15.85**
	06/16/17	**9:46**	**13.39**	**13.38**	**--**	**7.46**	**15.85**
MW-34	12/11/02	13:45	9.45	NR	NR	-4.12	--
(5.33)	03/20/03	11:43	6.99	NR	NR	-1.66	--
	07/03/03	8:29	9.02	NR	NR	-3.69	--
	09/18/03	9:55	9.57	NR	NR	-4.24	--
	12/02/03	11:45	7.00	NR	NR	-1.67	--
	03/09/04	12:15	8.42	NR	NR	-3.09	--
	06/03/04	11:25	8.95	NR	NR	-3.62	--
	09/03/04	13:53	8.63	NR	NR	-3.30	--
	12/06/04	9:45	9.48	NR	NR	-4.15	--
	03/04/05	13:55	8.87	NR	NR	-3.54	--
	06/03/05	--	9.08	NR	NR	-3.75	--
	09/01/05	9:08	9.38	NR	NR	-4.05	--
	12/01/05	10:49	6.72	NR	NR	-1.39	--
	03/02/06	10:50	9.25	NR	NR	-3.92	--
	06/06/06	9:20	8.82	NR	NR	-3.49	--
	09/15/06	--	8.66	NR	NR	-3.33	--
	03/07/07	--	--	NR	NR	--	--
	02/13/08	Well Possibly Removed During Previous Excavation Activities					
MW-35	12/11/02	13:35	9.29	NR	NR	-4.18	--
(5.11)	03/20/03	11:42	7.65	NR	NR	-2.54	--
	07/03/03	--	--	NR	NR	--	--
	09/18/03	--	--	NR	NR	--	--
	12/02/03	--	--	NR	NR	--	--
	03/09/04	--	--	NR	NR	--	--
	06/03/04	--	--	NR	NR	--	--
	09/03/04	--	--	NR	NR	--	--
	12/06/04	--	--	NR	NR	--	--
	03/04/05	--	--	NR	NR	--	--
	06/03/05	--	--	NR	NR	--	--
	09/01/05	--	--	NR	NR	--	--
	12/01/05	--	--	NR	NR	--	--
	03/02/06	--	--	NR	NR	--	--
	06/06/06	--	--	NR	NR	--	--
	09/15/06	--	--	NR	NR	--	--
	03/07/07	--	--	NR	NR	--	--
	02/13/08	Well Possibly Removed During Previous Excavation Activities					
MW-42	12/11/02	13:30	9.38	NR	NR	-4.18	--
(5.20)	03/20/03	11:50	7.86	NR	NR	-2.66	--
	07/03/03	8:11	9.44	NR	NR	-4.24	--
	09/18/03	10:21	10.92	NR	NR	-5.72	--
	12/02/03	11:36	9.14	NR	NR	-3.94	--
	03/09/04	10:09	8.58	NR	NR	-3.38	--
	06/03/04	11:10	9.19	NR	NR	-3.99	--
	09/03/04	14:01	9.02	NR	NR	-3.82	--
	12/06/04	9:48	9.43	NR	NR	-4.23	--
	03/04/05	13:56	8.99	NR	NR	-3.79	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
MW-42 Continued	06/03/05	--	9.24	NR	NR	-4.04	--
	09/01/05	9:00	9.55	NR	NR	-4.35	--
	12/01/05	10:54	8.91	NR	NR	-3.71	--
	03/02/06	10:45	9.25	NR	NR	-4.05	--
	06/06/06	9:28	8.93	NR	NR	-3.73	--
	09/15/06	--	8.87	NR	NR	-3.67	--
	03/07/07	--	--	NR	NR	--	--
	02/13/08	Well Possibly Removed During Previous Excavation Activities					
MW-43	12/11/02	13:40	9.06	NR	NR	-4.12	--
(4.94)	03/20/03	11:30	7.10	NR	NR	-2.16	--
	07/03/03	8:15	8.86	NR	NR	-3.92	--
	09/18/03	--	--	NR	NR	--	--
	12/02/03	--	--	NR	NR	--	--
	03/09/04	--	--	NR	NR	--	--
	06/03/04	--	--	NR	NR	--	--
	09/03/04	--	--	NR	NR	--	--
	12/06/04	--	--	NR	NR	--	--
	03/04/05	--	--	NR	NR	--	--
	06/03/05	--	--	NR	NR	--	--
	09/01/05	--	--	NR	NR	--	--
	12/01/05	--	--	NR	NR	--	--
	03/02/06	--	--	NR	NR	--	--
	06/06/06	--	--	NR	NR	--	--
	09/15/06	--	--	NR	NR	--	--
	03/07/07	--	--	NR	NR	--	--
	02/13/08	Well Possibly Removed During Previous Excavation Activities					
MW-44	12/11/02	--	--	NR	NR	--	--
(5.46)	03/20/03	--	--	NR	NR	--	--
	07/03/03	--	--	NR	NR	--	--
	09/18/03	--	--	NR	NR	--	--
	12/02/03	--	--	NR	NR	--	--
	03/09/04	--	--	NR	NR	--	--
	06/03/04	--	--	NR	NR	--	--
	09/03/04	--	--	NR	NR	--	--
	12/06/04	--	--	NR	NR	--	--
	03/04/05	--	--	NR	NR	--	--
	06/03/05	--	--	NR	NR	--	--
	09/01/05	--	--	NR	NR	--	--
	12/01/05	--	--	NR	NR	--	--
	03/02/06	--	--	NR	NR	--	--
	06/06/06	--	--	NR	NR	--	--
	09/15/06	--	--	NR	NR	--	--
	03/07/07	--	--	NR	NR	--	--
MW-61A-R[6]	03/02/06	--	15.15[8]	NR	NR	7.28	1.91
(13.35)	06/06/06	8:00	14.96	NR	NR	7.48	--
	09/15/06	--	14.26	NR	NR	8.18	--
	03/07/07	8:44	14.04	--	NR	8.40	--
	06/07/07	9:15	14.36	--	NR	8.08	--
	07/10/07	9:50	14.84	--	NR	7.60	--
	07/25/07	11:40	14.55	--	NR	7.89	--
	08/22/07	9:40	14.72	--	NR	7.72	--
	09/06/07	9:55	14.90	--	NR	7.54	--
	09/26/07	9:16	15.09	--	NR	7.35	--
	10/11/07	8:00	14.82	--	NR	7.62	--
	11/01/07	9:55	14.81	--	NR	7.63	--
	11/16/07	15:30	14.59	--	NR	7.85	--
	11/26/07	13:48	14.40	--	NR	8.04	--
	12/19/07	9:35	13.83	--	NR	8.61	--
	01/03/08	8:41	12.93	--	NR	9.51	--
	01/17/08	9:00	12.76	--	NR	9.68	--
	02/12/08	9:24	13.65	--	NR	8.79	--
	03/03/08	9:24	14.14	--	NR	8.30	--
	03/17/08	9:23	14.49	--	NR	7.95	--
	04/01/08	9:10	14.22	14.21	0.01	8.22	--
	04/14/08	9:06	14.41	14.39	0.02	8.03	--
	04/28/08	9:36	14.70	14.64	0.06	7.74	--
(22.44)[8]	05/13/08	9:29	14.88	--	--	7.56	11.00
	05/27/08	13:53	14.93	Sheen	--	7.51	--
	06/10/08	10:20	14.73	--	--	7.71	--
	06/24/08	9:41	14.92	--	--	7.52	--
	07/07/08	9:56	14.70	--	--	7.74	--
	07/22/08	9:34	14.72	14.70	0.02	7.72	--
	08/12/08	9:50	14.75	14.68	0.07	7.69	--
	09/03/08	--	15.58	15.56	0.02	6.86	--
	09/26/08	--	14.89	14.79	0.10	7.55	--
	10/17/08	9:03	15.12	14.92	0.20	7.32	--
	10/29/08	8:50	15.21	15.00	0.21	7.23	--
	11/12/08	10:51	13.95	13.81	0.14	8.49	--
	12/03/08	12:52	14.25	14.19	0.06	8.19	--
	01/06/09	9:40	13.12	12.99	0.13	9.32	--
	01/20/09	12:50	13.06	13.01	0.05	9.38	--
	02/03/09	9:43	14.40	13.88	0.52	8.04	--
	02/17/09	11:20	14.30	13.80	0.50	8.14	--
	03/12/09	12:16	14.20	14.05	0.15	8.24	--
	03/25/09	8:50	14.01	13.91	0.10	8.43	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
MW-61A-R (continued)	04/08/09	10:21	13.81	13.71	0.10	8.63	--
	04/30/09	10:12	14.14	13.95	0.19	8.30	--
	05/12/09	10:51	13.66	13.64	0.02	8.78	--
	05/26/09	14:15	13.74	--	--	8.70	--
	06/09/09	9:46	13.40	--	--	9.04	--
	06/25/09	9:47	14.14	13.94	0.20	8.30	--
	07/07/09	9:40	14.18	14.15	0.03	8.26	--
	07/13/09	8:14	14.88	14.87	0.01	7.56	--
	08/05/09	6:45	14.68	14.39	0.29	7.76	--
	08/06/09	9:29	14.64	14.62	0.02	7.80	--
	08/20/09	8:51	14.85	14.84	0.01	7.59	--
	09/10/09	10:15	14.84	14.78	0.06	7.60	--
	09/23/09	9:37	14.89	14.81	0.08	7.55	--
	10/08/09	9:39	15.01	14.94	0.07	7.43	--
	10/19/09	9:05	14.98	14.91	0.07	7.46	--
	11/12/09	9:36	12.85	12.80	0.05	9.59	--
	03/24/10	9:54	13.20	12.95	0.25	9.24	--
	04/13/10	10:37	13.06	12.95	0.11	9.38	--
	05/26/10	9:06	13.91	13.76	0.15	8.53	--
	07/28/10	14:56	14.78	--	--	7.66	--
	08/05/10	11:28	14.79	--	--	7.65	--
	08/13/10	9:38	13.62	--	--	8.82	--
	08/13/10	10:37	13.61	--	--	8.83	--
	08/13/10	10:42	13.61	--	--	8.83	--
	08/13/10	15:42	13.64	--	--	8.80	--
	08/18/10	8:55	14.70	--	--	7.74	--
	09/21/10	10:42	15.35	--	--	7.09	--
	10/11/10	11:20	14.35	14.31	0.04	8.09	--
	11/19/10	15:25	13.30	13.19	0.11	9.14	--
	03/04/11	10:04	12.80	12.63	0.17	9.64	--
	04/25/11	11:20	12.70	Sheen[10]	--	9.74	--
	09/21/11	9:45	14.65	14.10	0.55	7.79	--
	11/21/11	11:05	14.82	14.26	0.56	7.62	--
	02/20/12	9:15	13.55	13.15	0.40	8.89	--
	04/17/12	12:10	13.18	12.79	0.39	9.26	--
	10/10/12	12:25	14.80	14.39	0.41	7.64	--
	12/24/12	11:28	12.61	12.20	0.41	9.83	--
	01/08/13	14:30	11.84	11.74	0.10	10.60	--
	04/30/13	11:10	13.59	13.35	0.24	8.85	--
	09/19/13	9:48	14.45	14.40	0.05	7.99	--
	11/22/13	9:25	15.28	15.22	0.06	7.16	--
	06/23/14	10:36	14.60	--	--	7.84	--
	06/24/14	--	14.80	14.61	0.19	7.64	--
	09/10/14	9:30	14.92	--		7.52	
	12/15/14	13:35	11.71	--		10.73	
	12/16/14	15:25	11.90	11.81	0.01	10.54	--
	06/17/15	11:15	14.79	14.78	0.01	7.65	--
	12/09/15	10:45	10.99	10.98	0.01	11.45	--
	02/16/16	9:15	11.08	--	--	11.36	
	06/13/16	8:30	14.40	--	--	8.04	--
	09/22/16	13:21	15.00	--	--	7.44	--
	01/12/17	13:09	12.26	--	--	10.18	--
	03/27/17	**13:22**	**10.62**	**--**	**--**	**11.82**	**--**
	06/16/17	**9:41**	**13.84**	**14.73**	**0.89**	**8.60**	**--**
PZ-7.5	04/30/13	9:45	7.18	--	--	UK	--
	09/15/13	8:46	7.19	--	--	UK	--
	11/22/13	9:27	8.03	--	--	UK	--
	06/11/14			Well Decommissioned			
PZ-9.5	04/30/13	9:53	9.00	--	--	UK	--
	09/15/13	8:52	9.86	--	--	UK	--
	11/22/13	9:37	9.86	--	--	UK	--
	06/10/14			Well Decommissioned			
PZ-61A-R[11]	09/21/10	10:36	14.05	--	--	UK	--
	09/28/09	8:50	14.04	--	--	UK	--
	10/11/10	11:12	14.18	--	--	UK	--
	03/04/11	9:55	12.46	--	--	UK	--
	04/25/11	11:30	13.05	0.27	12.78	UK	--
	09/21/11	9:40	14.18	14.17	0.01	UK	--
	11/21/11	11:10	14.34	--	--	UK	--
	02/20/12	9:10	13.28	13.18	0.10	UK	--
	04/17/12	12:05	12.84	--	--	UK	--
	10/10/12	12:30	14.89	--	--	UK	--
	12/24/12	11:31	12.66	--	--	UK	--
	01/08/13	14:31	11.73	--	--	UK	--
	04/30/13	11:05	13.38	--	--	UK	--
	09/19/13	9:51	14.10	--	--	UK	--
	11/22/13	9:30	15.01	--	--	UK	--
	06/12/14			Well Decommissioned			
PZ-203[11]	09/21/10	11:24	13.29	--	--	UK	--
	04/25/11	13:50	11.80	--	--	UK	--
	09/21/11	10:29	13.67	--	--	UK	--
	11/21/11	10:24	12.60	--	--	UK	--
	02/20/12			UNABLE TO LOCATE			
	04/17/12	12:25	13.00	--	--	UK	--
	10/10/12			UNABLE TO LOCATE			

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
PZ-203[11] Continued	12/24/12	10:39	14.52	--	--	UK	--
	01/08/13	15:25	10.13	--	--	UK	--
	04/30/13	10:26	11.53	--	--	UK	--
	09/19/13	9:27	12.30	--	--	UK	--
	11/22/13	10:10	12.03	--	--	UK	--
	06/12/14	Well Decommissioned					
PZ-204[11]	09/21/10	11:32	19.02	--	--	UK	--
	04/25/11	14:05	17.67	--	--	UK	--
	09/21/11	10:18	19.34	--	--	UK	--
	11/21/11	10:30	18.71	--	--	UK	--
	02/20/12	UNABLE TO LOCATE					
	04/17/12	11:35	18.23	--	--	UK	--
	10/10/12	UNABLE TO LOCATE					
	12/24/12	10:21	16.65	--	--	UK	--
	01/08/13	15:15	16.82	--	--	UK	--
	04/30/13	10:34	17.75	--	--	UK	--
	09/19/13	9:21	18.40	--	--	UK	--
	11/22/13	9:55	18.80	--	--	UK	--
	06/12/14	Well Decommissioned					
MW-65	12/11/02	14:03	14.69	NR	NR	-3.86	--
(10.83)	03/20/03	10:44	10.09	NR	NR	0.74	--
	07/03/03	11:12	13.85	NR	NR	-3.02	--
	09/18/03	10:40	14.15	NR	NR	-3.32	--
	12/02/03	11:14	12.38	NR	NR	-1.55	--
	03/09/04	10:50	13.63	NR	NR	-2.80	--
	06/03/04	11:42	14.24	NR	NR	-3.41	--
	09/03/04	14:08	13.77	NR	NR	-2.94	--
	12/06/04	9:32	14.59	NR	NR	-3.76	--
	03/04/05	14:04	14.06	NR	NR	-3.23	--
	06/03/05	--	14.14	NR	NR	-3.31	--
	09/01/05	9:55	14.67	NR	NR	-3.84	--
	12/01/05	11:19	12.05	NR	NR	-1.22	--
	03/02/06	11:12	14.28	NR	NR	-3.45	--
	06/06/06	8:26	13.83	NR	NR	-3.00	--
	09/15/06	--	13.90	NR	NR	-3.07	--
	03/07/07	8:51	13.63	--	--	-2.80	--
	06/07/07	8:30	13.69	--	--	-2.86	--
	09/26/07	9:27	14.29	--	--	-3.46	--
	11/26/07	10:00	13.62	--	--	-2.79	--
	12/03/07	Well Decommissioned					
MW-66	12/11/02	14:15	15.36	NR	NR	-3.74	--
(11.62)	03/20/03	13:04	12.21	NR	NR	-0.59	--
	07/03/03	11:22	14.73	NR	NR	-3.11	--
	09/18/03	10:34	15.25	NR	NR	-3.63	--
	12/02/03	11:27	11.99	NR	NR	-0.37	--
	03/09/04	11:02	13.67	NR	NR	-2.05	--
	06/03/04	11:45	14.78	NR	NR	-3.16	--
	09/03/04	14:12	14.16	NR	NR	-2.54	--
	12/06/04	9:39	15.22	NR	NR	-3.60	--
	03/04/05	14:01	14.54	NR	NR	-2.92	--
	06/03/05	--	14.69	NR	NR	-3.07	--
	09/01/05	10:10	15.31	NR	NR	-3.69	--
	12/01/05	11:26	11.78	NR	NR	-0.16	--
	03/02/06	11:20	14.77	NR	NR	-3.15	--
	06/06/06	8:15	14.35	NR	NR	-2.73	--
	09/15/06	--	14.39	NR	NR	-2.77	--
	03/07/07	9:00	14.11	--	--	-2.49	--
	09/26/07	9:36	14.97	--	--	-3.35	--
	11/26/07	13:42	14.23	--	--	-2.61	--
	12/03/07	Well Decommissioned					
MW-200[6]	03/07/07	9:45	8.88	--	--	5.48	-0.22
(4.78)	06/07/07	15:53	9.26	--	--	5.10	--
	07/06/07	10:00	9.76	--	--	4.60	--
	09/26/07	8:08	9.43	--	--	4.93	--
	11/26/07	14:48	8.54	--	--	5.82	--
	02/13/08	11:15	8.57	--	--	5.79	--
(14.36)[8]	05/13/08	10:16	10.02	--	--	4.34	9.36
	09/03/08	--	9.56	--	--	4.80	--
	12/03/08	12:10	9.11	--	--	5.25	--
	02/17/09	10:43	8.28	--	--	6.08	--
	05/12/09	12:02	8.95	--	--	5.41	--
	05/26/09	13:54	9.40	--	--	4.96	--
	09/10/09	10:39	9.74	--	--	4.62	--
	04/13/10	11:21	9.23	--	--	5.13	--
	06/16/10	10:05	9.10	--	--	5.26	--
	08/12/10	9:45	8.92	Sheen	--	5.44	--
	09/14/10	1:48	9.31	--	--	5.05	--
	09/14/10	1:53	9.31	--	--	5.05	--
	09/15/10	15:03	9.34	--	--	5.02	--
	09/15/10	15:05	9.33	--	--	5.03	--
	09/15/10	15:10	9.31	--	--	5.05	--
	09/15/10	15:15	9.29	--	--	5.07	--
	09/15/10	15:20	9.28	--	--	5.08	--
	09/15/10	15:25	9.26	--	--	5.10	--
	09/15/10	15:35	9.38	--	--	4.98	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
MW-200 (continued)	09/15/10	15:39	9.49	--	--	4.87	--
	09/15/10	15:45	9.58	--	--	4.78	--
	09/15/10	15:50	9.66	--	--	4.70	--
	09/15/10	15:55	9.70	--	--	4.66	--
	09/15/10	16:00	9.74	--	--	4.62	--
	09/15/10	16:05	9.76	--	--	4.60	--
	09/15/10	16:10	9.79	--	--	4.57	--
	09/15/10	16:16	9.82	--	--	4.54	--
	09/15/10	16:28	9.80	--	--	4.56	--
	09/15/10		9.69	--	--	4.67	--
	09/15/10	16:36	9.56	--	--	4.80	--
	09/15/10	16:40	9.50	--	--	4.86	--
	09/15/10	16:46	9.43	--	--	4.93	--
	09/15/10	16:55	9.35	--	--	5.01	--
	09/15/10	17:05	9.27	--	--	5.09	--
	09/15/10	17:20	9.21	--	--	5.15	--
	09/15/10	17:29	9.20	--	--	5.16	--
	09/21/10	11:14	9.50	--	--	4.86	--
	09/22/10	11:00	9.40	--	--	4.96	--
	04/26/11	10:45	9.30	--	--	5.06	--
	09/21/11	10:45	10.15	--	--	4.21	--
	11/21/11			Unable to Gauge due to rain fillup of well			
	02/20/12			UNABLE TO LOCATE			
	04/17/12	14:00	9.78	--	--	4.58	--
	10/10/12	11:35	10.35	--	--	4.01	--
	12/24/12	10:54	7.94	--	--	6.42	--
	01/08/13	15:40	7.83	--	--	6.53	--
	04/30/13	10:21	8.62	--	--	5.74	--
	09/19/13	9:33	9.40	--	--	4.96	--
	11/22/13	10:30	9.82	--	--	4.54	--
	06/23/14	9:52	9.61	--	--	4.75	--
	12/15/14	12:59	8.00	--	--	6.36	--
	06/17/15	10:25	8.51	--	--	5.85	--
	12/09/15	10:08	5.89	--	--	8.47	--
	01/15/16	16:47	8.16	--	--	6.20	--
	02/16/16	8:40	8.25	--	--	6.11	--
	06/13/16	9:10	9.75	--	--	4.61	--
	09/22/16	12:42	9.20	--	--	5.16	--
	01/12/17	11:15	8.06	--	--	6.30	--
	03/27/17	**12:55**	**8.58**	**--**	**--**	**5.78**	**9.36**
	06/16/17	**8:44**	**8.90**	**--**	**--**	**5.46**	**9.36**
MW-201[6]	03/07/07	9:55	9.41	Sheen	--	4.95	0.28
(5.28)	06/07/07	16:35	9.79	--	--	4.57	--
	07/06/07	11:00	10.27	--	--	4.59	--
	09/26/07	8:20	9.97	--	--	4.89	--
	11/27/07	14:38	9.04	--	--	5.82	--
	02/12/08	10:24	9.65	--	--	5.21	--
(14.86)[8]	05/13/08	10:24	10.34	--	--	4.52	9.86
	09/03/08	--	10.08	--	--	4.78	--
	12/03/08	12:17	9.66	--	--	5.20	--
	02/17/09	10:37	8.82	--	--	6.04	--
	05/12/09	12:13	9.52	--	--	5.34	--
	05/26/09	13:50	9.90	--	--	4.96	--
	08/11/09	9:02	10.31	--	--	4.55	--
	08/28/09	14:50	10.21	--	--	4.65	--
	09/10/09	10:42	10.29	--	--	4.57	--
	04/13/10	11:17	9.75	--	--	5.11	--
	08/11/10	14:45	10.68	Sheen	--	4.18	--
	09/14/10	13:55	9.89	--	--	4.97	--
	09/14/10	14:00	9.89	--	--	4.97	--
	09/14/10	15:05	10.04	--	--	4.82	--
	09/14/10	15:07	10.02	--	--	4.84	--
	09/14/10	15:19	9.92	--	--	4.94	--
	09/14/10	15:26	9.89	--	--	4.97	--
	09/14/10	15:36	9.86	--	--	5.00	--
	09/17/10	18:14	9.59	--	--	5.27	--
	09/17/10	20:07	9.36	--	--	5.50	--
	09/21/10	11:18	10.06	--	--	4.80	--
	04/25/11	13:15	9.22	--	--	5.64	--
(14.86)[8]	09/21/11	10:40	10.81	--	--	4.05	--
	11/21/11	10:15	10.17	--	--	4.69	--
	02/20/12	11:20	9.68	--	--	5.18	--
	04/17/12	11:20	10.11	--	--	4.75	--
	10/10/12	11:45	10.91	--	--	3.95	--
	12/24/12	10:47	8.35	--	--	6.51	--
	01/08/13	15:35	8.35	--	--	6.51	--
	04/30/13	10:23	9.14	--	--	5.72	--
	09/19/13	9:30	9.90	--	--	4.96	--
	11/22/13	10:20	10.27	--	--	4.59	--
	06/23/14	9:56	10.14	--	--	4.72	--
	12/15/14	12:51	8.60	--	--	6.26	--
	06/17/15	10:20	8.99	--	--	5.87	--
	12/09/15	10:14	6.59	--	--	8.27	--
	01/15/16	16:56	8.85	--	--	6.01	--
	02/16/16	8:35	8.91	--	--	5.95	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
MW-201 (continued)	06/13/16	9:15	10.39	--	--	4.47	--
	09/22/16	12:45	9.86	--	--	5.00	--
	01/12/17	11:37	9.72	--	--	5.14	--
	03/27/17	**12:52**	**9.25**	**--**	**--**	**5.61**	**9.86**
	06/16/17	**8:42**	**9.55**	**--**	**--**	**5.31**	**9.86**
MW-202[6]	03/07/07	9:25	8.79	--	--	6.07	-2.74
(5.01)	06/07/07	14:53	9.52	--	--	5.34	--
	07/06/07	10:05	10.16	--	--	4.42	--
	09/26/07	7:48	9.59	--	--	4.99	--
	11/26/07	15:16	8.43	--	--	6.15	--
	02/12/08	10:26	8.59	--	--	5.99	--
(14.58)[8]	05/13/08	10:06	10.20	--	--	4.38	6.83
	09/03/08	--	9.61	--	--	4.97	--
	12/03/08	11:55	8.86	--	--	5.72	--
	02/17/09	10:32	8.15	--	--	6.43	--
	05/12/09	11:58	9.77	--	--	4.81	--
	05/26/09	13:56	10.84	--	--	3.74	--
	08/11/09	9:25	9.96	--	--	4.62	--
	08/28/09	14:29	9.85	--	--	4.73	--
	09/10/09	10:58	9.90	--	--	4.68	--
	04/13/10	11:23	10.17	--	--	4.41	--
	06/16/10	9:58	8.95	--	--	5.63	--
	08/11/10	11:45	10.00	--	--	4.58	--
	08/16/10	14:40	8.46	--	--	6.12	--
	08/16/10	14:43	8.46	--	--	6.12	--
	08/16/10	14:45	9.01	--	--	5.57	--
	08/16/10	14:57	9.02	--	--	5.56	--
	08/16/10	14:48	9.06	--	--	5.52	--
	08/16/10	14:49	9.13	--	--	5.45	--
	08/16/10	14:50	9.14	--	--	5.44	--
	08/16/10	14:51	9.13	--	--	5.45	--
	08/16/10	14:56	9.19	--	--	5.39	--
	08/16/10	14:56	8.75	--	--	5.83	--
	08/16/10	14:57	8.60	--	--	5.98	--
	08/16/10	14:57	8.59	--	--	5.99	--
	08/16/10	14:58	8.53	--	--	6.05	--
	08/18/10	9:12	11.12	--	--	3.46	--
	09/17/10	14:32	18.86	--	--	-4.28	--
	09/17/10	16:18	9.18	--	--	5.40	--
	09/17/10	17:52	8.83	--	--	5.75	--
	09/21/10	11:10	10.55	--	--	4.03	--
	09/22/10	9:30	9.66	--	--	4.92	--
	04/25/11	14:40	9.32	--	--	5.26	--
	09/21/11	10:47	10.90	--	--	3.68	--
	11/21/11	9:56	10.03	--	--	4.55	--
	02/20/12	11:29	9.61	--	--	4.97	--
	04/17/12	11:00	10.30	--	--	4.28	--
	10/10/12	11:50	11.00	--	--	3.58	--
	12/24/12	11:00	7.85	--	--	6.73	--
	01/08/13	15:45	7.59	--	--	6.99	--
	04/30/13	10:18	8.75	--	--	5.83	--
	09/19/13	9:36	10.12	--	--	4.46	--
	11/22/13	10:40	7.00	--	--	7.58	--
	06/23/14	9:45	10.65	--	--	3.93	--
	12/15/14	13:06	7.41	--	--	7.17	--
	06/17/15	10:35	8.84	--	--	5.74	--
	12/09/15	10:00	6.61	--	--	7.97	--
	01/15/16	16:32	9.06	--	--	5.52	--
	02/16/16	8:45	8.37	--	--	6.21	--
	06/13/16	9:05	10.65	--	--	3.93	--
	09/22/16	12:38	9.21	--	--	5.37	--
	01/12/17	10:32	8.32	--	--	6.26	--
	03/27/17	**12:56**	**9.44**	**--**	**--**	**5.14**	**6.78**
	06/16/17	**8:47**	**9.43**	**--**	**--**	**5.15**	**6.78**
MW-203[6]	03/07/07	--	11.86	--	--	2.72	-2.52
(7.98)	06/07/07	13:54	12.45	--	--	2.13	--
	07/06/07	11:01	13.07	--	--	4.48	--
	09/26/07	8:30	12.69	--	--	4.86	--
	11/26/07	14:33	11.56	--	--	5.99	--
	02/12/08	10:05	12.29	--	--	5.26	--
(17.55)[8]	05/13/08	10:32	13.56	--	--	3.99	7.05
	09/03/08	--	13.40	--	--	4.15	--
	12/03/08	12:26	11.76	--	--	5.79	--
	02/17/09	10:47	11.00	--	--	6.55	--
	05/12/09	12:21	12.81	--	--	4.74	--
	05/26/09	13:45	13.51	--	--	4.04	--
	08/28/09	15:14	12.67	--	--	4.88	--
	09/10/09	10:45	12.99	--	--	4.56	--
	04/13/10	11:12	12.92	--	--	4.63	--
	07/21/10	16:30	12.59	--	--	4.96	--
	08/11/10	11:12	11.68	--	--	5.87	--
	08/11/10	11:28	11.89	--	--	5.66	--
	08/11/10	11:29	11.84	--	--	5.71	--
	08/13/10	16:15	13.10	--	--	4.45	--
	08/16/10	7:12	13.96	--	--	3.59	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
MW-203 Continued	08/16/10	7:13	13.96	--	--	3.59	--
	09/02/10	14:45	12.76	--	--	4.79	--
	09/02/10	14:55	12.71	--	--	4.84	--
	09/02/10	15:10	12.31	--	--	5.24	--
	09/02/10	15:33	12.56	--	--	4.99	--
	09/15/10	6:47	14.20	--	--	3.35	--
	09/16/10	15:55	12.02	--	--	5.53	--
	09/16/10	16:00	12.01	--	--	5.54	--
	09/16/10	16:11	11.95	--	--	5.60	--
	09/16/10	16:20	11.90	--	--	5.65	--
	09/21/10	11:28	13.54	--	--	4.01	--
	04/25/11	13:45	12.06	--	--	5.49	--
	09/21/11	14:26	12.68	--	--	4.87	--
	11/21/11	10:21	11.69	--	--	5.86	--
	02/20/12	11:14	12.25	--	--	5.30	--
	04/17/12	13:45	13.39	--	--	4.16	--
	10/10/12	11:20	14.18	--	--	3.37	--
	12/24/12	10:35	9.67	--	--	7.88	--
	01/08/13	15:30	10.34	--	--	7.21	--
	04/30/13	10:28	11.76	--	--	5.79	--
	09/19/13	9:39	12.81	--	--	4.74	--
	11/22/13	10:05	12.48	--	--	5.07	--
	06/23/14	10:04	13.68	--	--	3.87	--
	12/15/14	12:46	10.46	--	--	7.09	--
	06/17/15	10:15	11.94	--	--	5.61	--
	12/09/15	10:19	9.63	--	--	7.92	--
	01/15/16	16:16	11.89	--	--	5.66	--
	02/16/16	8:30	11.48	--	--	6.07	--
	06/13/16	9:20	13.62	--	--	3.93	--
	09/22/16	12:50	12.01	--	--	5.54	--
	01/12/17	11:50	11.40	--	--	6.15	--
	03/27/17	**12:50**	**12.41**	**--**	**--**	**5.14**	**7.05**
	06/16/17	**8:38**	**12.31**	**--**	**--**	**5.24**	**7.05**
MW-204[6]	03/07/07	10:15	18.12	--	--	-0.57	-2.87
(14.38)	06/07/07	14:50	18.52	--	--	-0.97	--
	07/06/07	11:40	19.03	--	--	4.90	--
	09/26/07	8:37	18.85	--	--	5.08	--
	11/26/07	14:29	17.78	--	--	6.15	--
	02/12/08	10:03	18.00	--	--	5.93	--
(23.93)[8]	05/13/08	10:38	19.43	--	--	4.50	6.68
	09/03/08	--	18.76	--	--	5.17	--
	10/01/08	10:25	18.40	--	--	5.53	--
	10/17/08	9:29	18.72	--	--	5.21	--
	12/03/08	12:31	18.06	--	--	5.87	--
	02/17/09	10:54	17.42	--	--	6.51	--
	05/12/09	12:41	19.81	--	--	4.12	--
	05/26/09	13:41	19.20	--	--	4.73	--
	07/13/09	8:18	19.82	--	--	4.11	--
	08/04/09	--	18.88	--	--	5.05	--
	08/06/09	9:36	18.33	--	--	5.60	--
	08/20/09	9:02	18.21	--	--	5.72	--
	09/10/09	10:47	19.02	--	--	4.91	--
	04/13/10	10:59	18.71	--	--	5.22	--
	06/16/10	10:15	18.06	--	--	5.87	--
	08/11/10	16:16	18.65	--	--	5.28	--
	08/12/10	12:31	18.11	--	--	5.82	--
	08/12/10	12:34	18.12	--	--	5.81	--
	08/12/10	16:13	18.95	--	--	4.98	--
	08/12/10	16:15	18.94	--	--	4.99	--
	08/12/10	16:17	18.90	--	--	5.03	--
	08/13/10	16:25	18.79	--	--	5.14	--
	08/14/10	7:17	19.70	--	--	4.23	--
	08/14/10	7:18	19.70	--	--	4.23	--
	09/02/10	14:33	18.93	--	--	5.00	--
	09/02/10	14:35	18.93	--	--	5.00	--
	09/02/10	14:39	18.93	--	--	5.00	--
	09/02/10	15:37	18.73	--	--	5.20	--
	09/02/10	17:35	18.57	--	--	5.36	--
	09/14/10	11:58	18.91	--	--	5.02	--
	09/14/10	12:37	18.70	--	--	5.23	--
	09/14/10	12:46	18.65	--	--	5.28	--
	09/16/10	7:10	19.67	--	--	4.26	--
	09/16/10	7:12	19.67	--	--	4.26	--
	09/16/10	7:13	19.67	--	--	4.26	--
	09/16/10	7:14	19.68	--	--	4.25	--
	09/16/10	7:15	19.68	--	--	4.25	--
	09/16/10	7:17	19.69	--	--	4.24	--
	09/16/10	7:19	19.69	--	--	4.24	--
	09/16/10	7:21	19.70	--	--	4.23	--
	09/16/10	7:23	19.70	--	--	4.23	--
	09/16/10	7:25	19.71	--	--	4.22	--
	09/16/10	7:27	19.72	--	--	4.21	--
	09/16/10	7:29	19.72	--	--	4.21	--
	09/16/10	7:30	19.75	--	--	4.18	--
	09/17/10	14:30	18.93	--	--	5.00	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
MW-204 Continued	09/17/10	16:20	18.47	--	--	5.46	--
	09/17/10	19:57	18.26	--	--	5.67	--
	09/21/10	11:35	19.18	--	--	4.75	--
	04/25/11	14:15	18.07	--	--	5.86	--
	09/21/11	10:22	19.62	--	--	4.31	--
	11/21/11	10:30	18.71	--	--	5.22	--
	02/20/12	10:53	17.99	--	--	5.94	--
	04/17/12	13:25	19.03	--	--	4.90	--
	10/10/12	11:10	19.87	--	--	4.06	--
	12/24/12	10:16	16.73	--	--	7.20	--
	01/08/13	15:20	16.69	--	--	7.24	--
	04/30/13	10:40	17.97	--	--	5.96	--
	09/19/13	9:18	18.63	--	--	5.30	--
	11/22/13	9:50	18.95	--	--	4.98	--
	06/23/14	10:13	19.51	--	--	4.42	--
	12/15/14	12:37	16.71	--	--	7.22	--
	06/17/15	10:10	18.20	--	--	5.73	
	12/09/15	10:24	15.49	--	--	8.44	--
	01/15/16	15:44	17.59	--	--	6.34	--
	02/16/16	8:20	17.31	--	--	6.62	--
	06/13/16	9:25	19.42	--	--	4.51	--
	09/22/16	12:53	18.41	--	--	5.52	--
	01/12/17	12:09	17.43	--	--	6.50	--
	03/27/17	**12:45**	**17.99**	**--**	**--**	**5.94**	**6.58**
	06/16/17	**8:27**	**18.39**	**--**	**--**	**5.54**	**6.58**
MW-205[6]	03/07/07	10:30	22.20	Sheen	--	1.73	0.43
(18.43)	06/07/07	15:45	22.45	--	--	1.48	--
	07/06/07	11:47	22.93	--	--	4.96	--
	09/26/07	8:46	22.83	--	--	5.06	--
	11/26/07	14:23	21.76	--	--	6.13	--
	02/12/08	10:01	21.78	--	--	6.11	--
(27.89)[8]	05/13/08	10:43	23.38	--	--	4.51	9.89
	09/03/08	--	22.68	--	--	5.21	--
	12/03/08	12:36	22.01	--	--	5.88	--
	02/17/09	10:59	21.40	--	--	6.49	--
	05/12/09	12:47	22.73	--	--	5.16	--
	05/26/09	13:36	23.06	--	--	4.83	--
	08/04/09	--	22.84	--	--	5.05	--
	08/28/09	15:34	22.71	--	--	5.18	--
	09/10/09	10:46	23.01	--	--	4.88	--
	04/13/10	11:07	22.62	--	--	5.27	--
	08/13/10	8:45	22.31	--	--	5.58	--
	08/16/10	14:18	21.50	--	--	6.39	--
	08/16/10	12:22	21.75	--	--	6.14	--
	09/14/10	11:59	22.66	--	--	5.23	--
	09/16/10	9:24	24.00	--	--	3.89	--
	09/16/10	9:25	24.00	--	--	3.89	--
	09/16/10	9:28	24.00	--	--	3.89	--
	09/16/10	15:05	22.42	--	--	5.47	--
	09/17/10	13:43	23.12	--	--	4.77	--
	09/17/10	13:48	23.11	--	--	4.78	--
	09/17/10	13:55	23.05	--	--	4.84	--
	09/17/10	14:00	23.05	--	--	4.84	--
	09/17/10	14:04	23.02	--	--	4.87	--
	09/17/10	14:09	23.03	--	--	4.86	--
	09/17/10	14:19	22.96	--	--	4.93	--
	09/17/10	14:26	22.92	--	--	4.97	--
	09/21/10	11:40	23.15	--	--	4.74	--
	09/28/10	8:15	23.05	Sheen[9]		4.84	
	10/11/10	10:48	21.89	--	--	6.00	--
	11/19/10	16:51	22.81	--	--	5.08	--
	03/04/11	10:32	21.98	--	--	5.91	--
	04/25/11	14:20	22.04	--	--	5.85	--
	04/26/11	13:40	--	LNAPL	--	--	--
	05/12/11	7:49	22.68	--	--	5.21	--
	06/03/11	11:33	22.70	--	--	5.19	--
	06/09/11	14:48	22.66	Sheen	--	5.23	--
	09/21/11	10:13	23.60	--	--	4.29	--
	09/30/11	13:50	22.26	--	--	5.63	--
	10/06/11	14:35	22.31	--	--	5.58	--
	10/14/11	6:15	22.61	--	--	5.28	--
	10/21/11	6:30	22.40	--	--	5.49	--
	10/28/11	13:40	22.53	--	--	5.36	--
	11/04/11	13:05	22.42	--	--	5.47	--
	11/10/11	14:35	22.18	--	--	5.71	--
	11/21/11	10:43	22.76	--	--	5.13	--
	02/20/12	11:10	22.32	--	--	5.57	--
	04/17/12	11:45	23.03	--	--	4.86	--
	10/10/12	11:00	23.80	--	--	4.09	--
	12/24/12	10:10	20.73	--	--	7.16	--
	01/08/13	15:00	20.73	--	--	7.16	--
	04/30/13	10:45	21.91	--	--	5.98	--
	09/19/13	9:15	22.33	--	--	5.56	--
	11/22/13	9:40	22.69	--	--	5.20	--
	06/23/14	10:17	23.50	--	--	4.39	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
MW-205 (continued)	12/15/14	12:30	20.78	--	--	7.11	--
	06/17/15	10:05	22.22	--	--	5.67	--
	12/09/15	10:27	19.51	--	--	8.38	--
	01/15/16	16:10	21.56	--	--	6.33	--
	02/16/16	8:10	21.28	--	--	6.61	--
	06/13/16	9:30	23.37	--	--	4.52	--
	09/22/16	12:58	22.31	--	--	5.58	--
	01/12/17	12:29	21.34	--	--	6.55	--
	03/27/17	**12:40**	**19.89**	**--**	**--**	**8.00**	**9.89**
	06/16/17	**8:22**	**22.33**	**--**	**--**	**5.56**	**9.89**
MW-206[6]	03/07/07	9:15	9.15	--	--	18.74	-5.41
(5.59)	06/07/07	13:26	10.24	--	--	17.65	--
	07/06/07	9:22	10.84	--	--	4.31	--
	09/26/07	7:35	10.21	--	--	4.94	--
	11/26/07	15:08	8.47	--	--	6.68	--
	02/12/08	10:28	8.69	--	--	6.46	--
	05/13/08	9:59	11.80	--	--	3.35	4.15
	09/03/08	--	9.91	--	--	5.24	--
	10/01/08	9:30	9.21	--	--	5.94	--
	12/03/08	11:51	8.78	--	--	6.37	--
	02/17/09	10:29	8.28	--	--	6.87	--
	05/12/09	11:47	11.83	--	--	3.32	--
	05/26/09	13:59	13.30	--	--	1.85	--
	08/11/09	9:38	10.02	--	--	5.13	--
	08/28/09	14:07	9.78	--	--	5.37	--
	09/10/09	11:14	9.81	--	--	5.34	--
	04/13/10	11:27	12.60	--	--	2.55	--
	08/11/10	17:30	13.10	--	--	2.05	--
	08/16/10	11:52	9.70	--	--	5.45	--
	08/16/10	12:26	8.60	--	--	6.55	--
	08/18/10	9:07	13.10	--	--	2.05	--
	09/17/10	16:12	8.69	--	--	6.46	--
	09/17/10	17:55	10.03	--	--	5.12	--
	09/21/10	11:07	12.65	--	--	2.50	--
	09/22/10	9:20	11.09	--	--	4.06	--
	04/25/11	14:50	10.84	--	--	4.31	--
	09/21/11	10:52	11.00	--	--	4.15	--
	11/21/11	9:50	10.20	--	--	4.95	--
	02/20/12	11:32	11.31	--	--	3.84	--
	04/17/12	10:55	12.45	--	--	2.70	--
	10/10/12	12:00	10.65	--	--	4.50	--
	12/24/12	11:10	8.45	--	--	6.70	--
	01/08/13	15:48	8.47	--	--	6.68	--
	04/30/13	10:15	9.64	--	--	5.51	--
	09/19/13	9:42	12.46	--	--	2.69	--
	11/22/13	10:50	9.22	--	--	5.93	--
	06/23/14	9:41	13.04	--	--	2.11	--
	12/15/14	13:13	7.09	--	--	8.06	--
	06/17/15	10:45	10.67	--	--	4.48	--
	12/09/15	9:54	7.86	--	--	7.29	--
	02/16/16	8:50	8.51	--	--	6.64	--
	06/13/16	9:00	12.46	--	--	2.69	--
	09/22/16	12:34	8.90	--	--	6.25	--
	01/12/17	10:24	9.45	--	--	5.70	--
	03/27/17	**12:58**	**11.59**	**--**	**--**	**3.56**	**4.15**
	06/16/17	**8:50**	**11.59**	**--**	**--**	**3.56**	**4.15**
MW-207[6]	03/07/07	10:40	10.64	--	--	4.51	-3.68
(5.82)	06/07/07	17:10	10.53	--	--	4.62	--
	07/06/07	9:10	11.20	--	--	4.20	--
	09/26/07	7:25	10.30	--	--	5.10	--
	11/26/07	15:03	8.84	--	--	6.56	--
	02/12/08	10:31	8.90	--	--	6.50	--
(15.40)[8]	05/13/08	9:53	12.07	--	--	3.33	5.90
	09/03/08	--	10.14	--	--	5.26	--
	10/01/08	8:10	9.51	--	--	5.89	--
	12/03/08	11:46	9.05	--	--	6.35	--
	02/17/09	10:25	8.40	--	--	7.00	--
	05/12/09	11:43	11.70	--	--	3.70	--
	05/26/09	14:03	13.52	--	--	1.88	--
	08/11/09	9:46	10.41	--	--	4.99	--
	08/28/09	13:45	10.35	--	--	5.05	--
	09/10/09	11:25	10.20	--	--	5.20	--
	04/13/10	11:30	12.43	--	--	2.97	--
	06/16/10	9:54	9.70	--	--	5.70	--
	08/13/10	13:30	12.52	--	--	2.88	--
	08/16/10	11:22	10.35	--	--	5.05	--
	08/16/10	11:25	10.32	--	--	5.08	--
	08/16/10	11:28	10.32	--	--	5.08	--
	08/16/10	11:31	10.29	--	--	5.11	--
	08/16/10	11:33	10.26	--	--	5.14	--
	08/16/10	11:37	10.25	--	--	5.15	--
	08/16/10	11:50	9.70	--	--	5.70	--
	09/21/10	11:02	12.55	--	--	2.85	--
	04/25/11	14:55	10.83	--	--	4.57	--
	09/21/11	10:55	11.45	--	--	3.95	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
MW-207 (continued)	11/21/11	9:45	10.08	--	--	5.32	--
	02/20/12	11:36	11.25	--	--	4.15	--
	04/17/12	10:45	12.30	--	--	3.10	--
	10/10/12	12:05	11.19	--	--	4.21	--
	12/24/12	11:15	8.73	--	--	6.67	--
	01/08/13	15:52	8.42	--	--	6.98	--
	04/30/13	10:10	9.59	--	--	5.81	--
	09/19/13	9:45	12.23	--	--	3.17	--
	11/22/13	11:00	8.98	--	--	6.42	--
	06/23/14	9:01	12.88	--	--	2.52	--
	12/15/14	13:18	7.45	--	--	7.95	--
	06/17/15	10:55	10.24	--	--	5.16	--
	12/09/15	9:45	7.82	--	--	7.58	--
	01/15/16	15:38	10.63	--	--	4.77	--
	02/16/16	8:55	8.94	--	--	6.46	--
	06/13/16	8:55	12.48	--	--	2.92	--
	09/22/16	12:27	9.36	--	--	6.04	--
	01/12/17	10:11	9.24	--	--	6.16	--
	03/27/17	**13:00**	**11.49**	**--**	**--**	**3.91**	**5.90**
	06/16/17	**8:53**	**10.25**	**--**	**--**	**5.15**	**5.90**
MW-209	02/16/16	9:45	8.26	--	--	7.27	--
	06/13/16	9:50	10.31	--	--	5.22	--
	09/22/16	12:12	10.21	--	--	5.32	--
	01/12/17	11:51	8.01	--	--	7.52	--
	03/27/17	**12:35**	**8.46**	**--**	**--**	**7.07**	**12.53**
	06/16/17	**9:26**	**9.59**	**--**	**--**	**5.94**	**12.53**
MW-210	02/16/16	9:50	7.52	--	--	7.61	--
	06/13/16	9:45	9.59	--	--	5.54	--
	09/22/16	12:08	9.71	--	--	5.42	--
	01/12/17	11:56	8.31	--	--	6.82	--
	03/27/17	**12:30**	**8.61**	**--**	**--**	**6.52**	**12.13**
	06/16/17	**9:24**	**8.94**	**--**	**--**	**6.19**	**12.13**
MW-211	02/16/16	9:55	7.91	--	--	7.11	--
	06/13/16	9:40	9.79	--	--	5.23	--
	09/22/16	12:05	9.77	--	--	5.25	--
	01/12/17	11:59	8.18	--	--	6.84	--
	03/27/17	**12:25**	**8.04**	**--**	**--**	**6.98**	**12.02**
	06/16/17	**9:20**	**9.55**	**--**	**--**	**5.47**	**12.02**
MW-70R	02/16/16	9:05	9.14	--	--	6.47	--
	06/13/16	8:50	12.41	--	--	3.20	--
	09/22/16	12:30	9.69	--	--	5.92	--
	01/12/17	9:48	9.25	--	--	6.36	--
	03/27/17	**13:05**	**11.41**	**--**	**--**	**4.20**	**11.61**
	06/16/17	**8:59**	**10.42**	**--**	**--**	**5.19**	**11.61**
RW-1	09/13/07	--	9.12	--	--	6.28	--
(4.65)	11/01/07	10:45	9.60	--	--	5.80	--
	11/26/07	11:57	8.43	--	--	5.77	--
	12/07/07	11:55	7.00	--	--	7.20	--
	12/19/07	9:25	7.75	--	--	6.45	--
	01/03/08	9:05	7.78	--	--	6.42	--
	01/30/07	8:34	8.22	--	--	5.98	--
	02/12/08	9:00	8.55	--	--	5.65	--
	03/03/08	8:58	8.88	--	--	5.32	--
	03/17/08	8:52	8.80	--	--	5.40	--
	04/01/08	8:49	8.79	--	--	5.41	--
	04/14/08	8:51	8.85	--	--	5.35	--
	04/28/08	9:01	8.90	--	--	5.30	--
	05/13/08	9:10	9.25	--	--	4.95	--
	05/27/08	10:25	9.05	--	--	5.15	--
	06/10/08	10:36	8.88	--	--	5.32	--
	06/24/08	9:15	8.98	--	--	5.22	--
	07/07/08	9:26	8.65	--	--	5.55	--
	07/22/08	9:15	8.88	--	--	5.32	--
	08/12/08	9:23	8.86	--	--	5.34	--
	09/03/08	--	9.13	--	--	5.07	--
	10/17/08	8:29	6.33	--	--	7.87	--
	10/29/08	8:17	9.23	--	--	4.97	--
	11/12/08	9:09	7.63	--	--	6.57	--
	12/03/08	11:25	9.82	--	--	4.38	--
	01/06/09	9:15	7.86	--	--	6.34	--
	01/20/09	12:20	8.34	--	--	5.86	--
	02/03/09	9:08	8.89	--	--	5.31	--
	02/17/09	9:06	8.41	--	--	5.79	--
	03/12/09	11:18	8.75	--	--	5.45	--
	03/25/09	9:05	8.62	--	--	5.58	--
	04/08/09	9:14	8.58	--	--	5.62	--
	04/30/09	9:20	8.55	--	--	5.65	--
	05/12/09	9:21	7.98	--	--	6.22	--
	05/26/09	13:19	8.24	--	--	5.96	--
	06/09/09	9:09	8.00	--	--	6.20	--
	06/25/09	9:19	8.08	--	--	6.12	--
	07/07/09	9:13	8.34	--	--	5.86	--
	09/10/09	9:52	8.98	--	--	5.22	--
	09/23/09	9:09	8.98	--	--	5.22	--
	10/08/09	9:24	9.01	--	--	5.19	--

Appendix C
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Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
RW-1 (continued)	10/19/09	9:36	8.60	--	--	5.60	--
	11/12/09	9:10	7.75	--	--	6.45	--
	03/24/10	9:24	8.39	--	--	5.81	--
	04/13/10	10:15	8.29	--	--	5.91	--
	05/24/10	10:14	8.38	--	--	5.82	--
	09/21/10	9:59	8.00	--	--	6.20	--
	11/19/10	16:25	7.98	--	--	6.22	--
	03/04/11	9:12	7.96	--	--	6.24	--
	04/25/11	9:10	8.25	--	--	5.95	--
	09/21/11	8:30	8.94	--	--	5.26	--
	11/21/11	8:30	8.67	--	--	5.53	--
	02/20/12	9:55	8.41	--	--	5.79	--
	04/17/12	9:22	8.40	--	--	5.80	--
	10/10/12	9:40	9.41	--	--	4.79	--
	12/24/12	UNABLE TO ACCESS					
	01/08/13	13:40	7.54	--	--	6.66	--
	04/30/13	9:20	8.31	--	--	5.89	--
	09/15/13	8:25	6.30	--	--	7.90	--
	11/22/13	8:00	9.04	--	--	5.16	--
	02/25/14	12:00	7.80	--	--	6.50	--
	05/05/14	8:45	7.30	--	--	7.00	--
	06/12/14	Well Decommissioned					
RW-2 (4.47) (14.3)[8]	04/28/08	9:10	9.98	--	--	4.32	--
	05/13/08	9:08	8.29	--	--	6.01	--
	05/27/08	10:23	9.12	--	--	5.18	--
	06/10/08	10:38	9.00	--	--	5.30	--
	06/24/08	9:19	9.12	--	--	5.18	--
	07/07/08	9:30	8.86	--	--	5.44	--
	07/22/08	9:19	9.03	--	--	5.27	--
	08/12/08	9:27	8.78	--	--	5.52	--
	09/03/08	--	9.23	--	--	5.07	--
	10/17/08	8:35	6.34	--	--	7.96	--
	10/29/08	8:21	9.37	--	--	4.93	--
	11/12/08	9:13	6.32	--	--	7.98	--
	12/03/08	11:23	8.92	--	--	5.38	--
	01/06/09	9:18	6.84	--	--	7.46	--
	01/20/09	12:23	8.40	--	--	5.90	--
	02/03/09	9:13	9.08	--	--	5.22	--
	02/17/09	9:09	8.55	--	--	5.75	--
	03/12/09	11:21	8.91	--	--	5.39	--
	03/25/09	9:07	8.50	--	--	5.80	--
	04/08/09	9:18	8.68	--	--	5.62	--
	04/30/09	9:24	8.70	--	--	5.60	--
	05/12/09	9:15	8.15	--	--	6.15	--
	05/26/09	13:17	8.31	--	--	5.99	--
	06/09/09	9:13	8.21	--	--	6.09	--
	06/25/09	9:22	8.28	--	--	6.02	--
	07/07/09	9:17	8.49	--	--	5.81	--
	09/10/09	9:50	9.11	--	--	5.19	--
	09/23/09	9:12	9.10	--	--	5.20	--
	10/08/09	9:27	9.24	--	--	5.06	--
	10/19/09	9:40	8.72	--	--	5.58	--
	11/12/09	9:12	7.16	--	--	7.14	--
	03/24/10	9:28	8.42	--	--	5.88	--
	04/13/10	10:12	8.35	--	--	5.95	--
	05/24/10	10:16	8.46	--	--	5.84	--
	08/16/10	7:40	7.87	--	--	6.43	--
	08/16/10	7:42	7.87	--	--	6.43	--
	09/02/10	10:14	9.24	--	--	5.06	--
	09/02/10	10:42	9.25	--	--	5.05	--
	09/02/10	11:45	9.32	--	--	4.98	--
	09/02/10	11:46	9.32	--	--	4.98	--
	09/02/10	11:47	9.32	--	--	4.98	--
	09/02/10	11:48	9.32	--	--	4.98	--
	09/02/10	11:49	9.32	--	--	4.98	--
	09/02/10	11:55	9.33	--	--	4.97	--
	09/02/10	12:00	9.33	--	--	4.97	--
	09/02/10	12:05	9.33	--	--	4.97	--
	09/02/10	12:10	9.33	--	--	4.97	--
	09/02/10	12:15	9.34	--	--	4.96	--
	09/02/10	12:20	9.34	--	--	4.96	--
	09/02/10	12:25	9.34	--	--	4.96	--
	09/02/10	12:42	9.35	--	--	4.95	--
	09/02/10	13:00	9.36	--	--	4.94	--
	09/02/10	13:32	9.36	--	--	4.94	--
	09/03/10	9:12	9.52	--	--	4.78	--
	09/03/10	10:26	9.48	--	--	4.82	--
	09/03/10	10:54	9.55	--	--	4.75	--
	09/03/10	11:08	9.54	--	--	4.76	--
	09/21/10	9:57	8.10	--	--	6.20	--
	11/19/10	16:24	7.62	--	--	6.68	--
	03/04/11	9:16	7.80	--	--	6.50	--
	04/25/11	9:15	8.20	--	--	6.10	--
	09/21/11	8:33	8.39	--	--	5.91	--
	11/21/11	8:36	8.82	--	--	5.48	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
RW-2 (continued)	02/20/12	9:57	8.53	--	--	5.77	--
	04/17/12	9:25	8.38	--	--	5.92	--
	10/10/12	9:50	9.26	--	--	5.04	--
	12/24/12			UNABLE TO ACCESS			
	01/08/13	13:42	7.40	--	--	6.90	--
	04/30/13	9:25	8.35	--	--	5.95	--
	09/15/13	8:28	8.32	--	--	5.98	--
	11/22/13	8:05	9.22	--	--	5.08	--
	02/25/14	11:52	7.54	--	--	6.76	
	05/05/14	08:55	7.00	--	--	7.30	
	06/12/14			Well Decommissioned			
RW-3	09/13/07	--	9.45	--	--	4.85	--
(4.70)	11/01/07	10:52	10.00	--	--	4.30	--
	11/26/07	12:00	8.60	--	--	5.70	--
	12/07/07	11:50	7.10	--	--	7.20	--
	12/19/07	9:20	7.63	--	--	6.67	--
	01/03/08	9:07	7.49	--	--	6.81	--
	01/30/08	8:38	8.44	--	--	5.86	--
	02/12/08	9:30	8.84	--	--	5.46	--
	03/03/08	9:02	9.11	--	--	5.19	--
	03/17/08	8:58	8.91	--	--	5.39	--
	04/01/08	8:43	9.01	--	--	5.29	--
	04/14/08	8:44	9.16	--	--	5.14	--
	04/28/08	9:16	9.10	--	--	5.20	--
(14.3)[8]	05/13/08	9:03	9.53	--	--	4.77	--
	05/27/08	10:20	9.36	--	--	4.94	--
	06/10/08	10:41	9.34	Sheen	--	4.96	--
	06/24/08	9:23	9.34	--	--	4.96	--
	07/07/08	9:34	9.04	--	--	5.26	--
	07/22/08	9:22	9.21	--	--	5.09	--
	08/12/08	9:30	9.21	--	--	5.09	--
	09/03/08	--	9.51	--	--	4.79	--
	10/17/08	8:39	9.60	--	--	4.70	--
	10/29/08	8:26	9.53	--	--	4.77	--
	11/12/08	9:17	7.10	--	--	7.20	--
	12/03/08	11:19	8.04	--	--	6.26	--
	01/06/09	9:21	7.69	--	--	6.61	--
(14.3)[8]	01/20/09	12:26	8.58	--	--	5.72	--
	02/03/09	9:17	9.22	Sheen	--	5.08	--
	02/17/09	9:11	8.69	--	--	5.61	--
	03/12/09	11:24	9.08	--	--	5.22	--
	03/25/09	9:09	8.91	8.90	0.01	5.39	--
	04/08/09	9:20	8.83	8.82	0.01	5.47	--
	04/30/09	9:25	8.90	Sheen	--	5.40	--
	05/12/09	9:26	8.45	Sheen	--	5.85	--
	05/26/09	14:38	9.09	--	--	5.21	--
	06/09/09	9:16	8.40	--	--	5.90	--
	06/25/09	9:23	8.35	--	--	5.95	--
	07/07/09	9:21	8.62	--	--	5.68	--
	08/20/09	8:26	8.60	Sheen	--	5.70	--
	08/28/09	16:00	9.76	--	--	4.54	--
	09/10/09	9:47	9.54	--	--	4.76	--
	09/23/09	9:16	9.41	Sheen	--	4.89	--
	10/08/09	9:30	9.46	--	--	4.84	--
	10/19/09	9:45	9.13	--	--	5.17	--
	11/12/09	9:15	8.36	--	--	5.94	--
	03/24/10	9:31	8.60	Sheen	--	5.70	--
	04/13/10	10:09	8.58	--	--	5.72	--
	05/24/10	10:18	8.82	--	--	5.48	--
	08/16/10	7:40	8.40	--	--	5.90	--
	08/16/10	7:50	8.36	--	--	5.94	--
	09/02/10	10:13	9.81	--	--	4.49	--
	09/02/10	10:40	9.79	--	--	4.51	--
	09/21/10	9:55	8.58	--	--	5.72	--
	11/19/10	16:32	7.73	--	--	6.57	--
	03/04/11	9:19	7.92	--	--	6.38	--
	04/25/11	9:30	8.43	--	--	5.87	--
	09/21/11	8:37	8.39	--	--	5.91	--
	11/21/11	8:43	9.00	--	--	5.30	--
	02/20/12	10:00	8.60	--	--	5.70	--
	04/17/12	9:30	8.58	--	--	5.72	--
	10/10/12	9:55	9.67	--	--	4.63	--
	12/24/12			UNABLE TO ACCESS			
	01/08/13	13:43	7.46	--	--	6.84	--
	04/30/13	9:28	8.49	LNAPL on probe	--	5.81	--
	09/15/13	8:31	8.65	--	--	5.65	--
	11/22/13	8:10	9.55	--	--	4.75	--
	02/25/14	11:15	7.67			6.63	
	05/05/14	8:04	7.50			6.80	
	06/12/14			Well Decommissioned			
RW-4				UNABLE TO LOCATE			
RW-5	09/13/07	--	8.6	--	--	5.70	--
(13.9)[8]	11/01/07	11:00	9.4	--	--	4.50	--
	11/26/07	12:05	7.89	--	--	6.01	--
	12/07/07	11:45	6.4	--	--	7.50	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
RW-5 (continued)	12/19/07	9:15	2.2	--	--	11.70	--
	05/13/08	9:01	8.72	--	--	5.18	--
	09/03/08	--	8.74	--	--	5.16	--
	12/03/08	11:16	8.45	--	--	5.45	--
	02/17/09	9:14	7.77	Sheen	--	6.13	--
	05/12/09	9:12	7.48	--	--	6.42	--
	05/26/09	13:15	7.94	--	--	5.96	--
	09/10/09	9:44	8.95	--	--	4.95	--
	04/13/10	10:07	7.75	--	--	6.15	--
	09/21/10	9:52	7.82	--	--	6.08	--
	04/25/11			UNABLE TO LOCATE			
	09/21/11	8:48	8.52	--	--	5.38	--
	11/21/11	8:49	8.52	--	--	5.38	--
	02/20/12	10:02	7.85	--	--	6.05	--
	04/17/12	9:35	7.82	--	--	6.08	--
	10/10/12	10:02	9.00	--	--	4.90	
	12/24/12			UNABLE TO ACCESS			
	01/08/13	13:44	6.90	--	--	7.00	--
	04/30/13	9:35	7.75	--	--	6.15	--
	09/15/13	8:34	8.00	--	--	5.90	--
	11/22/13	8:15	9.20	--	--	4.70	--
	02/25/14	11:35	7.43	--	--	6.47	--
	05/05/14	09:27	7.23	--	--	6.67	--
	06/11/14			Well Decommissioned			
RW-6	05/13/08[7]	8:58	8.35	--	--	5.55	--
(13.9)[8]	09/03/08	--	8.14	--	--	5.76	--
	12/03/08	11:13	7.95	--	--	5.95	--
	02/17/09	9:17	7.80	--	--	6.10	--
	05/12/09	9:10	7.57	--	--	6.33	--
	05/26/09	13:12	7.65	--	--	6.25	--
	09/10/09	9:43	7.90	--	--	6.00	--
	04/13/10	10:05	7.42	--	--	6.48	--
	09/21/10	9:50	6.74	--	--	7.16	--
	04/25/11			UNABLE TO LOCATE			
	09/21/11			UNABLE TO LOCATE			
	11/21/11			UNABLE TO LOCATE			
	02/20/12			UNABLE TO LOCATE			
	04/17/12			UNABLE TO LOCATE			
	10/10/12			UNABLE TO LOCATE			
	12/24/12			UNABLE TO ACCESS			
	01/08/13	13:45	6.87	--	--	7.03	--
	04/30/13	9:40	7.60	--	--	6.30	--
	09/15/13	8:40	7.73	--	--	6.17	--
	11/22/13	8:20	8.02	--	--	5.88	--
	02/25/14	11:25	6.98	--	--	7.22	--
	05/05/14	09:36	7.02	--	--	7.18	--
	06/11/14			Well Decommissioned			
RW-7	09/13/07	--	8.75	--	--	5.45	--
(14.2)[8]	11/01/07	11:20	9.3	--	--	4.90	--
	11/26/07	12:07	8.1	--	--	6.10	--
	12/07/07	11:40	6.45	--	--	7.75	--
	12/07/07	9:10	6.4	--	--	7.80	--
	05/13/08	8:43	8.80	--	--	5.40	--
	09/03/08	--	8.84	--	--	5.36	--
	12/03/08	11:11	8.60	--	--	5.60	--
	02/17/09	9:20	8.95	--	--	5.25	--
	05/12/09	9:08	7.41	--	--	6.79	--
	05/26/09	13:10	7.81	--	--	6.39	--
	08/04/09	--	8.18	--	--	6.02	--
	09/10/09	9:40	8.83	--	--	5.37	--
	04/13/10	10:03	7.78	--	--	6.42	--
	09/21/10	9:47	7.88	--	--	6.32	--
	04/25/11	9:40	7.62	--	--	6.58	--
	09/21/11	8:51	8.49	--	--	5.71	--
	11/21/11	8:56	4.62	--	--	9.58	--
	02/20/12	10:04	7.92	--	--	6.28	--
	04/17/12	9:40	7.87	--	--	6.33	--
	10/10/12	10:07	8.99	--	--	5.21	--
	12/24/12			UNABLE TO ACCESS			
	01/08/13	13:46	6.24	--	--	7.96	--
	04/30/13	9:43	7.92	--	--	6.28	--
	09/15/13	8:40	8.08	--	--	6.12	--
	11/22/13	8:25	8.95	--	--	5.25	--
	02/25/14	11:15	7.40	--	--	6.50	--
	05/05/14	09:46	7.40	--	--	6.50	--
	06/11/14			Well Decommissioned			
RW-8	09/13/07	--	8.75	--	--	5.15	--
(13.9)[8]	11/01/07	11:25	8.9	--	--	5.00	--
	11/26/07	12:09	7.9	--	--	6.00	--
	12/07/07	11:35	6.07	--	--	7.83	--
	12/19/07	9:05	7.18	--	--	6.72	--
	05/13/08	8:39	8.59	--	--	5.31	--
	09/03/08	--	8.53	--	--	5.37	--
	12/03/08	11:09	8.20	--	--	5.70	--
	02/17/09	9:24	7.70	--	--	6.20	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
RW-8 (continued)	05/12/09	9:05	7.41	--	--	6.49	--
	05/26/09	13:07	7.59	--	--	6.31	--
	09/10/09	9:38	8.61	--	--	5.29	--
	04/13/10	10:00	7.39	--	--	6.51	--
	09/21/10	9:43	7.58	--	--	6.32	--
	04/25/11	9:45	7.21	--	--	6.69	--
	09/21/11	8:53	8.15	--	--	5.75	--
	11/21/11	9:03	8.24	--	--	5.66	--
	02/20/12	10:05	7.55	--	--	6.35	--
	04/17/12	9:45	7.56	--	--	6.34	--
	10/10/12	10:10	8.61	--	--	5.29	--
	12/24/12	UNABLE TO ACCESS					
	01/08/13	13:54	6.65	--	--	7.25	--
	04/30/13	9:48	7.52	--	--	6.38	--
	09/15/13	8:43	7.71	--	--	6.19	--
	11/22/13	8:30	8.55	--	--	5.35	--
	02/25/14	11:00	7.00	--	--	7.10	--
	05/05/14	10:04	7.11	--	--	6.99	--
	06/11/14	Well Decommissioned					
RW-9 (14.1)[8]	09/13/07	--	8.45	--	--	5.65	--
	11/01/07	11:30	7.4	--	--	6.70	--
	11/26/07	12:11	7.44	--	--	6.66	--
	12/07/07	11:32	5.55	--	--	8.55	--
	12/19/07	9:00	6.15	--	--	7.95	--
	05/13/08	8:33	8.61	--	--	5.49	--
	09/03/08	--	7.38	--	--	6.72	--
	12/03/08	11:06	6.95	--	--	7.15	--
	02/17/09	9:27	6.80	--	--	7.30	--
	05/12/09	9:03	7.22	--	--	6.88	--
	05/26/09	13:04	10.06	--	--	4.04	--
	09/10/09	9:34	7.47	--	--	6.63	--
	04/13/10	9:57	8.28	--	--	5.82	--
	09/21/10	9:40	8.47	--	--	5.63	--
	04/25/11	9:50	7.29	--	--	6.81	--
	09/21/11	8:54	8.20	--	--	5.90	--
	11/21/11	9:08	7.68	--	--	6.42	--
	02/20/12	10:07	7.78	--	--	6.32	--
	04/17/12	9:50	8.02	--	--	6.08	--
	10/10/12	10:15	8.35	--	--	5.75	--
	12/24/12	UNABLE TO ACCESS					
	01/08/13	13:55	5.55	--	--	8.55	--
	04/30/13	9:51	7.02	--	--	7.08	--
	09/15/13	8:49	8.88	--	--	5.22	--
	11/22/13	8:35	7.06	--	--	7.04	--
	02/25/14	10:50	6.28	--	--	8.02	--
	05/05/14	10:18	6.70	--	--	7.60	--
	06/10/14	Well Decommissioned					
RW-10 (14.3)[8]	09/13/07	--	8.9	--	--	5.40	--
	11/01/07	11:40	8.7	--	--	5.60	--
	11/26/07	12:12	7.89	--	--	6.41	--
	12/07/07	11:29	6.26	--	--	8.04	--
	12/19/07	8:55	7.25	--	--	7.05	--
	05/13/08	8:31	8.86	--	--	5.44	--
	09/03/08	--	8.41	--	--	5.89	--
	12/03/08	11:03	7.87	--	--	6.43	--
	02/17/09	9:28	7.90	--	--	6.40	--
	05/12/09	9:01	7.47	--	--	6.83	--
	05/26/09	13:02	8.95	--	--	5.35	--
	09/10/09	9:32	8.58	--	--	5.72	--
	04/13/10	9:55	7.80	--	--	6.50	--
	09/21/10	9:38	8.12	--	--	6.18	--
	04/25/11	9:51	6.70	--	--	7.60	--
	09/21/11	8:56	8.76	--	--	5.54	--
	11/21/11	9:14	8.42	--	--	5.88	--
	02/20/12	10:10	7.75	--	--	6.55	--
	04/17/12	9:53	7.90	--	--	6.40	--
	10/10/12	10:18	9.09	--	--	5.21	--
	12/24/12	UNABLE TO ACCESS					
	01/08/13	13:59	6.32	--	--	7.98	
	04/30/13	9:51	7.46	--	--	6.84	--
	09/15/13	8:55	8.66	--	--	5.64	--
	11/22/13	8:40	8.22	--	--	6.08	--
	02/25/14	10:38	7.07	--	--	7.03	--
	05/05/14	10:33	7.22	--	--	6.88	--
	06/10/14	Well Decommissioned					
RW-11 (14.1)[8]	12/07/07	11:14	6.5	--	--	7.60	--
	12/19/07	8:50	7.6	--	--	6.50	--
	05/13/08	8:28	8.86	--	--	5.24	--
	09/03/08	--	8.79	--	--	5.31	--
	12/03/08	11:01	8.26	--	--	5.84	--
	02/17/09	9:31	7.80	--	--	6.30	--
	05/12/09	8:59	7.64	--	--	6.46	--
	05/26/09	12:59	8.33	--	--	5.77	--
	09/10/09	9:29	8.61	--	--	5.49	--
	04/13/10	9:53	7.85	--	--	6.25	--

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
RW-11 (continued)	09/21/10	9:35	7.98	--	--	6.12	--
	04/25/11	9:55	7.46	--	--	6.64	--
	09/21/11	8:57	8.77	--	--	5.33	--
	11/21/11	9:20	8.52	--	--	5.58	--
	02/20/12	10:11	7.92	--	--	6.18	--
	04/17/12	10:00	7.90	--	--	6.20	--
	10/10/12	10:21	9.12	--	--	4.98	--
	12/24/12	UNABLE TO ACCESS					
	01/08/13	14:00	6.74	--	--	7.36	--
	04/30/13	9:54	7.73	--	--	6.37	--
	09/15/13	8:58	8.50	--	--	5.60	--
	11/22/13	8:45	8.90	--	--	5.20	--
	02/25/14	10:30	7.40	--	--	6.70	--
	05/05/14	10:45	7.51	--	--	6.59	--
	06/10/14	Well Decommissioned					
RW-12 (14.0)[8]	12/07/07	11:08	6.78	--	--	7.32	--
	12/19/07	8:40	7.88	--	--	6.22	--
	05/13/08	8:25	8.97	--	--	5.03	--
	09/03/08	--	9.02	--	--	4.98	--
	12/03/08	10:48	8.56	--	--	5.44	--
	02/17/09	9:33	7.85	--	--	6.15	--
	05/12/09	8:56	7.76	--	--	6.24	--
	05/26/09	12:55	8.37	--	--	5.63	--
	09/10/09	9:27	9.22	--	--	4.78	--
	04/13/10	9:50	7.93	--	--	6.07	--
	09/21/10	UNABLE TO LOCATE					
	04/25/11	UNABLE TO LOCATE					
	09/21/11	UNABLE TO LOCATE					
	11/21/11	UNABLE TO LOCATE					
	02/20/12	UNABLE TO LOCATE					
	04/17/12	UNABLE TO LOCATE					
	10/10/12	UNABLE TO LOCATE					
	12/24/12	UNABLE TO ACCESS					
	01/08/13	UNABLE TO LOCATE					
	04/30/13	UNABLE TO LOCATE					
	09/15/13	UNABLE TO LOCATE					
	11/22/13	UNABLE TO LOCATE					
	06/09/14	UNABLE TO LOCATE DURING FINAL DECOMMISSIONING ACTIVITIES					
RW-13 (14.1)[8]	12/07/07	11:05	6.83	--	--	7.27	--
	12/19/07	8:35	7.5	--	--	6.60	--
	05/13/08	8:22	9.01	--	--	5.09	--
	09/03/08	--	9.05	--	--	5.05	--
	12/03/08	10:45	8.64	--	--	5.46	--
	02/17/09	9:36	8.22	--	--	5.88	--
	05/12/09	8:53	7.85	--	--	6.25	--
	05/26/09	12:53	8.48	--	--	5.62	--
	09/10/09	9:22	8.89	--	--	5.21	--
	04/13/10	9:47	8.01	--	--	6.09	--
	09/21/10	9:30	8.15	--	--	5.95	--
	04/25/11	10:00	7.51	--	--	6.59	--
	09/21/11	9:00	8.99	--	--	5.11	--
	11/21/11	9:27	8.56	--	--	5.54	--
	02/20/12	10:13	8.24	--	--	5.86	--
	04/17/12	10:04	8.21	--	--	5.89	--
	10/10/12	10:25	9.47	--	--	4.63	--
	12/24/12	UNABLE TO ACCESS					
	01/08/13	14:02	7.07	--	--	7.03	--
	04/30/13	9:56	7.96	--	--	6.14	--
	09/15/13	9:01	8.68	--	--	5.42	--
	11/22/13	8:50	9.25	--	--	4.85	--
	02/25/14	10:00	8.16	--	--	5.94	--
	05/05/14	11:00	7.65	--	--	6.45	--
	06/10/14	Well Decommissioned					
RW-14		UNABLE TO LOCATE					
RW-15 (13.9)[8]	09/13/07	--	8.83	--	--	5.27	--
	11/01/07	11:50	9	--	--	4.90	--
	11/26/07	12:18	8.4	--	--	5.50	--
	12/07/07	10:56	6.55	--	--	7.35	--
	12/19/07	8:25	6.31	--	--	7.59	--
	05/13/08	8:17	8.97	--	--	4.93	--
	09/03/08	--	8.52	--	--	5.38	--
	12/03/08	10:40	8.31	--	--	5.59	--
	02/17/09	9:44	8.24	--	--	5.66	--
	05/12/09	8:50	8.19	--	--	5.71	--
	05/26/09	12:48	8.25	--	--	5.65	--
	09/10/09	9:20	5.52	--	--	8.38	--
	04/13/10	9:45	7.88	--	--	6.02	--
	09/21/10	UNABLE TO LOCATE					
	04/25/11	UNABLE TO LOCATE					
	09/21/11	UNABLE TO LOCATE					
	11/21/11	UNABLE TO LOCATE					
	2/20/12	UNABLE TO LOCATE					
	04/17/12	UNABLE TO LOCATE					
	10/10/12	UNABLE TO LOCATE					
	12/24/12	UNABLE TO LOCATE					

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)
RW-15 (continued)	01/08/13	UNABLE TO LOCATE					
	04/30/13	UNABLE TO LOCATE					
	09/15/13	UNABLE TO LOCATE					
	11/22/13	UNABLE TO LOCATE					
	06/09/14	UNABLE TO LOCATE DURING FINAL DECOMMISSIONING ACTIVITIES					
RW-21	09/13/07	--	9.85	Sheen	--	5.45	--
(5.87)	11/01/07	10:35	9.90	7.90	2.00	7.00	--
	11/26/07	12:23	--	Sheen	--	--	--
	12/07/07	9:40	6.90	Sheen	--	8.40	--
	12/19/07	--	7.79	--	--	7.51	--
	01/03/07	9:25	7.88	--	--	7.42	--
	01/30/07	8:44	8.67	--	--	6.63	--
	02/12/08	9:11	8.80	--	--	6.50	--
	03/03/08	9:10	9.25	--	--	6.05	--
	03/17/08	9:07	9.21	--	--	6.09	--
	04/01/08	9:05	9.09	--	--	6.21	--
	04/14/08	8:55	9.32	--	--	5.98	--
	04/28/08	9:24	9.33	--	--	5.97	--
	05/13/08	UNABLE TO ACCESS					
(15.3)[8]	05/27/08	11:20	9.45	--	--	5.85	--
	06/10/08	10:45	9.21	--	--	6.09	--
	06/24/08	9:29	9.49	--	--	5.81	--
	07/07/08	9:39	9.19	--	--	6.11	--
	07/22/08	9:00	9.38	--	--	5.92	--
	08/12/08	9:36	9.35	--	--	5.95	--
	09/03/08	--	9.36	Sheen	--	5.94	--
	10/08/08	8:30	9.72	Sheen	--	5.58	--
	10/17/08	8:41	9.50	--	--	5.80	--
	10/29/08	8:31	9.58	--	--	5.72	--
	11/12/08	9:27	7.83	--	--	7.47	--
	12/03/08	10:10	9.22	9.20	0.02	6.10	--
	01/06/09	9:26	7.89	Sheen	--	7.41	--
	01/20/09	12:29	8.56	8.55	0.01	6.75	--
	02/03/09	9:24	9.20	Sheen	--	6.10	--
	02/17/09	9:50	9.05	Sheen	--	6.25	--
	03/12/09	11:31	9.16	Sheen	--	6.14	--
	03/25/09	9:24	9.01	Sheen	--	6.29	--
	04/08/09	9:57	8.91	8.90	0.01	6.40	--
	04/30/09	9:49	8.88	Sheen	--	6.42	--
	05/12/09	9:43	8.45	8.44	0.01	6.86	--
	05/26/09	14:48	8.82	--	--	6.48	--
	06/09/09	9:26	8.64	--	--	6.66	--
	06/25/09	9:29	8.68	--	--	6.62	--
	07/07/09	9:26	8.95	Sheen	--	6.35	--
	07/13/09	8:05	9.45	--	--	5.85	--
	08/05/09	6:45	8.96	Sheen	--	6.34	--
	08/06/09	9:18	9.06	--	--	6.24	--
	08/20/09	8:34	9.15	--	--	6.15	--
	09/10/09	9:57	9.28	--	--	6.02	--
	09/23/09	9:21	9.25	Sheen	--	6.05	--
	10/08/09	9:16	9.31	Sheen	--	5.99	--
	10/19/09	9:50	9.23	Sheen	--	6.07	--
	11/12/09	9:19	7.82	Sheen	--	7.48	--
	03/24/10	9:37	8.62	Sheen	--	6.68	--
	04/13/10	10:19	8.61	Sheen	--	6.69	--
	05/26/10	9:32	8.73	Sheen	--	6.57	--
	09/21/10	10:05	8.46	Sheen	--	6.84	--
	11/19/10	16:01	9.21	Sheen	--	6.09	--
	03/04/11	9:31	8.18	Sheen	--	7.12	--
	04/25/11	8:50	8.50	8.49	0.01	6.81	--
	09/21/11	9:18	9.20	LNAPL on probe	--	6.10	--
	11/21/11	9:34	9.03	--	--	6.27	--
	02/20/12	10:23	8.76	LNAPL on probe	--	6.54	--
	04/17/12	10:10	8.65	--	--	6.65	--
	10/10/12	9:20	9.70	LNAPL on probe	--	5.60	--
	12/24/12	UNABLE TO ACCESS					
	01/08/13	UNABLE TO ACCESS					
	04/30/13	10:00	8.74	Tar on probe	--	6.56	
	09/19/13	10:10	9.43	Tar on probe	--	5.87	--
	11/22/13	8:55	10.23	--	--	5.07	--
	06/12/14	Well Decommissioned					

Notes:
[1]Well casing elevations listed in feet above mean sea level. Approximate monitoring well locations are shown in Figure 2.
"--" = not measured or not obtainable
[2]Below top of casing.
[3]Light non-aqueous phase liquid
[4]Elevation referenced to city of Seattle datum.
[5]Top of well screen elevation data from historic records.
[6]TOC elevations for wells MW-200 to 207, MW-27R, and MW-61A-R were surveyed using an arbitrary datum point, 9.65 feet lower than the datum from the upper well survey.
[7]Depth to water was measured with pump in well.
[8]Survey by OTAK 5/27/08.
[9] Groundwater elevation recorded prior to pump testing at the site. Sheen observed on extracted groundwater during hydraulic conductivity testing on well MW-205.
[10] LNAPL indicated in field notes, measurement not taken
[11] TOC elevations for wells PZ-61A-R, PZ-203, and PZ-204 unknown.
NR = Not reported.

Appendix C
Summary of Historical Groundwater Elevation Data

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number[1] (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater[2] (feet)	Depth to LNAPL[3] (feet)	LNAPL Thickness[3] (feet)	Groundwater Elevation[4] (feet)	Top of Well Screen Elevation[5] (feet)

UK = TOC elevations unknown.

Bolded data are for the current reporting period.

Appendix C
Historical Summary of Groundwater Analytical Data
Total Petroleum Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well[1]	Date Sampled	LNAPL[2]	BTEX (EPA Method 8020 or 8021B) (µg/L)				TPH (EPA Method 418.1) (mg/L)	NWTPH-Gx (mg/L)	NWTPH-D Extended[3] (mg/L)		Dissolved Lead (EPA 6000/7000 Series Method) (µg/L)
			B	T	E	X		Gasoline C_7 - C_{12}	Diesel C_{12} - C_{24}	Heavy Oil >C_{24}	
Upper Yard RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Upper Yard											
MW-37	06/01/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	10/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	01/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<2
	09/15/95	ND	<0.50	<0.50	<0.50	<1.0	--	<1.0	<1.0	<0.75	--
	12/14/95	ND	<0.50	<0.50	<0.50	<1.0	--	<0.05	<0.27	<0.75	--
MW-38	06/01/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	10/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	01/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<2
MW-39	01/17/91	--	<0.5	0.5	0.6	2.2	--	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	--
MW-40	06/01/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	10/16/90	--	<0.5	1.0	0.6	<0.5	<1	--	--	--	<5
	01/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	--
MW-61A	03/13/98	ND	<0.500	<0.500	<0.500	<1.00	--	0.956	2.14	<0.750	--
	06/18/98	ND	<2.50	<2.50	<2.50	<5.00	--	1.01	3.49	<0.750	
	09/03/98	ND	<0.500	<0.500	<0.500	<0.500	--	0.396	1.85	<0.750	<1.00
	12/15/98	Sheen	<2.50	<2.50	2.82	12.8	--	10.2	146/73.0	<30.8/<15.8	--
Duplicate	12/15/98	Sheen	<2.50	<2.50	<2.50	5.81	--	2.93	32.3/14.6	<3.75/<0.750	--
	03/23/99	Sheen	<0.500	<0.500	2.56	13.8	--	4.34	39.7/32.7	<8.25/<3.75	--
Duplicate	03/23/99	Sheen	<2.50	<2.50	<2.50	<5.00	--	1.56	52.8/42.1	<8.25/<8.25	--
	07/01/99	ND	<0.500	<0.500	<0.900	<3.70	--	1.38[4]	4.43/2.08	<0.750/<0.750	<1.00
Duplicate	07/01/99	ND	<1.00	<1.00	<1.40	<5.60	--	1.30[4]	4.45/3.08	<0.750/<0.750	--
	09/29/99	Sheen	<0.500	<5.00	<5.00	<1.00	--	2.16[5]	7.57/4.04	<0.750/<0.750	--
Duplicate	09/29/99	Sheen	<0.500	<0.500	<5.00	<10.0	--	2.80[5]	19.7/21.1	0.758/<1.57	--
	12/16/99	Sheen	<0.500	<5.00	<3.50	<17.00	--	7.61	33.4/30.1	<15.8/<8.25	--
Duplicate	01/04/00[6]	Sheen	<0.500	<5.00	<5.00	<4.15	--	1.40	12.1/8.29	<1.34/<1.34	--
	03/21/00	ND	<0.500	<0.500	<0.550	<1.85	--	0.831	13.1[7]	<0.750[7]	--
Duplicate	03/21/00	ND	<0.500	<0.500	<0.720	<3.40	--	1.05	6.36[7]	<0.750[7]	--
	06/22/00[8]	ND	0.779	<0.500	<0.500	2.32	--	1.00	4.23/3.38	<0.750/<0.750	<1.00
Duplicate	06/22/00	ND	0.880	<0.500	0.591	2.46	--	0.836	5.99/4.13	<0.750/<0.750	--
	09/14/00	ND	<0.500	<0.500	<0.704	<3.11	--	1.36	2.49/1.50	<0.750/<0.750	--
Duplicate	09/14/00	ND	<0.500	<0.500	0.986	<3.21	--	1.00	5.00/3.13	<0.750/<0.750	--
	12/21/00	ND	<0.500	<1.24	<0.500	<3.87	--	1.18	4.62/2.48	<0.750/<0.750	--
Duplicate	12/21/00[9]	ND	<0.500	<0.500	<0.500	<1.00	--	0.721	5.64/3.81	<0.750/<0.750	--
	03/14/01	ND	<0.565	<0.500	<1.38	<4.31	--	0.962	2.55/1.28	<0.750/<0.750	--
Duplicate	03/14/01	ND	<0.500	<0.500	<0.500	<1.12	--	0.498	1.82/0.668	<0.750/<0.750	--
	06/21/01	ND	<0.500	0.855	<0.500	1.14	--	0.773	2.45/1.55	<0.750/<0.750	<1.00
Duplicate	06/21/01	ND	<0.500	<0.500	<0.500	2.61	--	0.676	1.80/1.04	<0.750/<0.750	--
	09/25/01	Sheen	<0.500	<0.500	<0.500	2.62	--	0.839	14.3/11.3	<8.25/<0.750	--
Duplicate	09/25/01	Sheen	<0.500	0.923	0.592	4.22	--	0.918	5.12/4.47	<0.750/<0.750	--
	12/19/01	Sheen	0.825	<2.00	<1.00	<1.50	--	2.54	19.4/14.8[10]	<3.00/<3.00[10]	--
	03/26/02	Sheen	<0.500	<0.500	<0.500	1.24	--	0.414	1.38/0.615	<0.750/<0.750	--
Duplicate	03/26/02	Sheen	<0.500	<0.500	<0.500	1.85	--	0.592	1.99/0.847	<0.750/<0.750	--
Duplicate	06/19/03	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.360	1.43	<0.750	--
	09/18/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.728	<0.750	--
	12/03/03	Sheen	<0.500	<0.500	<0.500	1.22	--	0.604	2.46	<0.750	--
Duplicate	12/03/03	Sheen	<0.500	<0.500	<0.500	1.30	--	0.701	2.35	<0.750	--
MW-61A-R	03/02/06	Sheen/LNAPL	--	--	--	<1.00	--	--	--	--	--
	06/06/06	Sheen	<2.50	<2.50	7.64	7.48	--	3.92	20.6	<3.75	--
	09/15/06	Sheen	396	79.7	26.4	243	--	17.2	200	<142	--
	03/07/07	ND	<0.5	<0.5	0.5	<1.5	--	0.18	0.29	<0.095	--
	06/08/07	ND	<0.500	<2.0[85]	1.500	1.7	--	0.400	0.600	<0.095	<0.037
	09/26/07	ND	<0.5	<0.5	1.4	<1.5	--	0.430	0.770	0.120	--
	11/28/07	ND	<0.5	<0.5	0.9	<1.5	--	0.410	0.340	<0.100	--
Duplicate	11/28/07	ND	<0.5	<0.5	0.9	<1.5	--	0.400	0.670	0.370	--
	02/13/08	ND	<0.500	<0.500	0.980	1.14	--	0.455	0.308	<0.485	--
	05/14/08	ND	<0.500	<0.500	1.24	1.43	--	0.363	0.406	<0.472	--
	09/04/08	Sheen	<0.500	1.16	3.58	1.13	--	0.933	0.380	<0.490	--
	12/03/08	LNAPL	--	--	--	--	--	--	--	--	--
	02/18/09	Sheen	<0.500	<0.500	<0.500	1.32	--	0.490	0.830	<0.481	--
	09/10/09	LNAPL	--	--	--	--	--	--	--	--	--
	04/14/10	LNAPL	--	--	--	--	--	--	--	--	--
	09/23/10	ND	<0.50	<0.50	0.68	<2.0	--	0.76	1.5	<0.26	--
	04/25/11	LNAPL	--	--	--	--	--	--	--	--	--
	09/21/11	LNAPL	--	--	--	--	--	--	--	--	--
	04/18/12	LNAPL	--	--	--	--	--	--	--	--	--
	10/10/12	LNAPL	--	--	--	--	--	--	--	--	--
	04/30/13	LNAPL	--	--	--	--	--	--	--	--	--
	09/19/13	LNAPL	--	--	--	--	--	--	--	--	--
	06/24/14	LNAPL	--	--	--	--	--	--	--	--	--
	12/16/15	LNAPL	--	--	--	--	--	--	--	--	--
	06/17/15	LNAPL	--	--	--	--	--	--	--	--	--
	12/09/15	LNAPL	--	--	--	--	--	--	--	--	--
	06/15/16	ND	<0.5	<0.5	<0.5	<1.5	--	0.220	0.120	<0.067	--
	01/13/17	ND	<0.5	<0.5	0.5	2	--	1.000	0.490	<0.074	--
	06/16/17	**LNAPL**	--	--	--	--	--	--	--	--	--
MW-62A	03/13/98	ND	<0.500	<0.500	<0.500	<1.00	--	0.288	<.0250	<.0750	--
	06/18/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/03/98	ND	<1.00	<0.500	0.901	2.79	--	0.134	<0.250	<0.750	<1.00
	12/14/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/23/99	ND	10.8	<5.00	<5.00	<10.0	--	<0.500	0.371/<0.250	<0.750/<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.311/<0.250	<0.750/<0.750	1.09
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.709/<0.250	<0.750/<0.750	--
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.376/<0.250	<0.750/<0.750	--
	12/21/00[9]	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/14/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	09/25/01	ND	<0.500	<0.500	<0.500	1.57	--	<0.0500	0.373/<0.250	<0.750/<0.250	--
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	<0.250[10]	<0.750[10]	--
	03/26/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.320/<0.250	<0.750/<0.750	<1.00
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.863	<0.750	--
	12/03/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
MW-63A	03/13/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/18/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/03/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/14/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/23/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.389/<0.250	<0.750/<0.750	1.82
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.305/<0.539	<0.750/<1.62	--
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.380/<0.250	<0.750/<0.750	--
	03/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.366/<0.462	<0.750/<1.39	<1.00
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.273/<0.250	<0.750/<0.750	--
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.575/<0.250	<0.750/<0.750	--
	03/14/01	ND	<0.500	0.922	<0.500	1.92	--	<0.0500	<0.250	<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	09/25/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--

Appendix C
Historical Summary of Groundwater Analytical Data
Total Petroleum Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well[1]	Date Sampled	LNAPL[2]	BTEX (EPA Method 8020 or 8021B) (µg/L)				TPH (EPA Method 418.1) (mg/L)	NWTPH-Gx (mg/L)	NWTPH-D Extended[3] (mg/L)		Dissolved Lead (EPA 6000/7000 Series Method) (µg/L)
			B	T	E	X		Gasoline C_7 - C_{12}	Diesel C_{12} - C_{24}	Heavy Oil >C_{24}	
MW-63A Continued	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.468/<0.250[10]	<0.750/<0.750[10]	--
	03/26/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.379/<0.250	<0.750/<0.750	--
	06/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.299/<0.250	<0.750/<0.750	<1.00
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.514	<0.750	--
	12/03/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
Upper Yard RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Upper Yard											
MW-64	06/18/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/03/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/14/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.325/<0.250	<0.750/<0.750	--
	03/23/99	ND	<0.500	<0.500	<0.500	2.42	--	<0.0500	0.354/<0.250	<0.750/<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.319/<0.250	<0.750/<0.750	1.09
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.448/<0.564	<0.750/<0.169	--
	01/04/00[6]	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250/<0.250	<0.750/<0.750	--
	03/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.255[7]	<0.750	--
	06/22/00[8]	ND	<0.500	1.39	0.654	5.39	--	0.0908	0.315/<0.487	<0.750/<1.46	<1.00
	07/25/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.298/<0.250	<0.750/<0.750	--
	03/14/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	09/25/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.263/<0.250[11]	<0.750/<0.750[11]	--
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.372/<0.250[10]	<0.750/<0.750[10]	--
	03/26/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.499/<0.250	<0.750/<0.750	<1.00
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	0.0563	0.38	<0.750	--
	12/03/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.379	<0.750	--
Elliott Avenue RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Elliott Avenue											
MW-30[12]	01/31/89	--	4.0	0.6	<0.5	<0.5	6	<5	--	--	--
	04/27/89	--	5.0	<0.5	0.6	<0.5	0.37	<5	--	--	--
	07/25/89	--	8.0	4.9	17.0	11.1	13	<5	--	--	--
	10/26/89	LNAPL	--	--	--	--	--	--	--	--	--
	01/16/90	LNAPL	--	--	--	--	--	--	--	--	--
	04/16/90	LNAPL	--	--	--	--	--	--	--	--	--
	07/25/90	LNAPL	--	--	--	--	--	--	--	--	--
	09/20/90		--	--	--	--	1	--	--	--	--
	10/16/90	--	<5.0	<5.0	<5.0	<5.0	10	--	--	--	28
	01/17/91	--	<0.5	<0.5	0.6	3.5	24	2	13	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<2
	09/17/91	LNAPL	--	--	--	--	--	--	--	--	--
	12/10/91	LNAPL	--	--	--	--	--	--	--	--	--
	01/29/92	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
	03/13/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.341	<0.750	--
Duplicate	03/13/98	ND	<0.500	<0.500	<0.500	<1.00	--	0.0522	<0.250	<0.750	--
	06/29/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
Duplicate	06/29/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/04/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.575	<0.750	--
Duplicate	09/04/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.416	<0.750	--
	12/15/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.900/0.310	<0.750/<0.750	--
	03/24/99	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.47/0.580	1.38/<0.750	--
	07/01/99	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.526/<0.250	<0.750/<0.750	<1.00
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.12/<0.454	1.19/<1.36	--
	12/15/99	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.0657	2.72/0.679	<1.43/<1.43	--
	03/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.68/0.753	1.35/<0.750	--
	06/21/00	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.0545	0.345/<0.250	<0.750/<0.750	<1.00
	09/14/00	--	--	--	--	--	--	--	--	--	--
	12/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	0.0766	1.17/0.353	<0.750/<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	<1.00	--	0.248	4.85/3.27	6.28/3.25	--
	06/22/01	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.448/<0.250	<0.750/<0.750	--
	09/25/01	Sheen	<0.500	<0.500	<0.500	1.12	--	<0.0500	2.73/1.60	2.20/1.22	--
	12/18/01	Sheen	<0.500	<2.00	<1.00	<1.50	--	<0.100	1.09/<0.250[10]	<0.750/<0.750[10]	--
Duplicate	12/18/01	Sheen	<0.500	<2.00	<1.00	<1.50	--	0.107	1.05/<0.250[10]	<0.750/<0.750[10]	--
	03/27/02	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.0793	1.62/0.536	0.936/<0.750	--
	06/20/02	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.527/<0.250	<0.750/<0.750	--
	09/19/02	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/13/02	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.419	<0.750	--
	06/19/03	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/18/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/03/03	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/09/04	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/03/04	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.544	<0.750	--
Duplicate	06/03/04	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.913	0.765	--
	09/03/04	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.451	<0.750	--
Duplicate	09/03/04	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.33	0.765	--
	12/06/04	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.381	<0.750	--
Duplicate	12/06/04	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.268	<0.750	--
	03/04/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.747	0.898	--
Duplicate	03/04/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.835	0.976	--
	06/03/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.278	<0.750	--
Duplicate	06/03/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/01/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.416	<0.750	--
Duplicate	09/01/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.366	<0.750	--
	12/01/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.359	<0.708	--
Duplicate	12/01/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.438	<0.714	--
	03/02/06	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.236	<0.708	--
Duplicate	03/02/06	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.236	<0.708	--
	06/06/06	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
Duplicate	06/06/06	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/15/06	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.708	--
Duplicate	09/15/06	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.708	--
	03/07/07	Sheen	<0.5	<0.5	<0.5	<1.5	--	<0.048	1.6	0.53	--
	06/08/07	ND	<0.500	<0.500	<0.500	<1.50	--	<0.050	0.800	<0.095	<0.037
	09/26/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.300	<0.095	--
	11/28/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.340	0.120	--
	02/13/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.278	<0.556	--
	05/14/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.236	<0.472	--
	09/04/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.243	<0.485	--
	12/05/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.245	<0.490	--
	02/18/09	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.248	<0.495	--
	05/12/09	LNAPL	--	--	--	--	--	--	--	--	--
	09/10/09	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.250	<0.500	--
	04/14/10	Sheen	<0.50	<0.50	<0.50	<2.0	--	<0.050	<0.13	<0.27	--
	09/23/10	ND	<0.50	<0.50	<0.50	<2.0	--	<0.050	<0.13	<0.25	--
	04/27/11	Sheen	<0.50	<0.50	<0.50	<1.0	--	0.052	--	--	--
	09/22/11	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	<0.12	<0.24	--
	09/22/11	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	0.17[17]	<0.24	--
	04/18/12	Sheen	--	--	--	--	--	--	--	--	--
	10/12/12	ND	<0.50	<0.50	<0.50	<0.50	--	<0.025	0.19	<0.24	--
	04/26/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.069	--
	09/19/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.067	--
	06/24/14	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050 UJ	<0.029	<0.067	--
	12/16/14	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.028	<0.066	--
	06/18/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.5	0.640	--
	12/07/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.120	0.310	--
	06/13/16	LNAPL	--	--	--	--	--	--	--	--	--

Appendix C
Historical Summary of Groundwater Analytical Data
Total Petroleum Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well[1]	Date Sampled	LNAPL[2]	BTEX (EPA Method 8020 or 8021B) (µg/L)				TPH (EPA Method 418.1) (mg/L)	NWTPH-Gx (mg/L)	NWTPH-D Extended[3] (mg/L)		Dissolved Lead (EPA 6000/7000 Series Method) (µg/L)
			B	T	E	X		Gasoline C_7 - C_{12}	Diesel C_{12} - C_{24}	Heavy Oil >C_{24}	
MW-30 (continued)	01/12/17	LNAPL	--	--	--	--	--	--	--	--	--
	03/27/17	**LNAPL**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
	06/16/17	**LNAPL**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Elliott Avenue RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Elliott Avenue (continued)											
MW-31	08/10/89	--	<0.5	1.4	2.1	5.9	4.1	--	--	--	<5
	10/26/89	--	7.1	<0.5	1.0	3.3	5.5	--	--	--	<5
	01/16/90	--	4.2	<0.5	<0.5	<0.5	2.2	--	--	--	<5
	04/16/90	--	5.2	1.5	1.9	4.5	<1	--	--	--	<5
	07/25/90	--	2.0	<0.5	2.2	1.8	6	--	--	--	<5
	10/16/90	--	0.7	<0.5	<0.5	<0.5	<1	--	--	--	<5
	01/17/90	--	1.6	0.6	1.6	4.4	--	2	<1	--	<5
	04/16/91	--	1.8	0.6	1.9	4.5	--	<1	<1	--	<2
	09/17/91	--	--	--	--	--	--	--	--	--	--
	12/10/91	--	--	--	--	--	--	--	--	--	--
	09/14/95	ND	<0.50	<0.50	<0.50	<0.50	--	<0.05	0.54	0.94	--
	12/15/95	ND	<0.50	<0.50	<0.50	<1.0	--	<0.05	0.36	0.78	--
	03/14/96	ND	<0.50	<0.50	<0.50	<1.0	--	<0.05	1.2	0.94	--
	09/11/96	ND	<0.500	<0.500	<0.500	<1.00	--	0.0519	0.864	2.16	--
	03/18/97	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	0.546	<0.750	--
	06/26/97	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.250	<0.750	--
	06/29/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/15/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.320/<0.250	<0.750/<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.269/<0.250	<0.750/<0.750	<1.00
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.723/<0.250	<0.750/<0.750	--
	06/22/00[8]	ND	<0.500	5.05	1.39	15.0	--	0.167	<0.250	<0.750	<1.00
	12/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/22/01	ND	<0.500	<0.500	<0.500	<1.00	--	0.0576	<0.250	<0.750	<1.00
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	1.08/<0.250[10]	<0.750/<0.750[10]	<1.00
	06/20/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.568/<0.250	<0.750/<0.750	<1.00
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.436	1.27	--
	12/03/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
MW-32	08/10/89	--	2.7	2.9	0.8	2.3	1.7	--	--	--	<5
	10/26/89	--	<0.5	1.7	<0.5	0.7	2.1	--	--	--	<5
	01/16/90	--	<0.5	<0.5	<0.5	<0.5	0.76	--	--	--	<5
	04/16/90	--	<0.5	1.0	<0.5	<0.5	<1	--	--	--	<5
	07/25/90	--	<0.5	<0.5	1.1	<0.5	1	--	--	--	<5
	10/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	01/17/91	--	<0.5	<0.5	0.5	1.5	--	<1	<1	--	<5
	04/16/91	--	<0.5	0.6	0.6	1.6	--	<1	<1	--	<2
	09/17/91	--	--	--	--	--	--	--	--	--	--
	12/01/91	--	--	--	--	--	--	--	--	--	--
MW-58	09/15/95	ND	<0.50	<0.50	<0.50	<1.0	--	<1.0	<1.0	<0.75	--
	12/14/95	ND	<0.50	<0.50	<0.50	<1.0	--	<0.05	<0.25	<0.75	--
	03/14/96	ND	<0.50	<0.50	<0.50	<1.0	--	<0.05	<0.25	<0.75	--
	09/11/96	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.250	0.979	--
	12/11/96	ND	--	--	--	--	--	--	--	--	--
	03/18/97	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.372	<0.750	--
	06/25/97	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.250	<0.750	--
	06/30/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/14/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	2.43	--	<0.0500	<0.250	<0.750	<1.00
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	<0.250[10]	<0.750[10]	--
	06/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/03/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
MW-65	03/13/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/29/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	09/04/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/15/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.482/<0.250	<0.750/<0.750	--
	03/24/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.975/<0.250	0.991/<0.750	--
	06/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.750/<0.250	<0.750/<0.750	<1.00
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.683/<0.250	<0.750/<0.750	--
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.418/<0.250	<0.750/<0.750	--
	03/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.816/<0.250	<0.750/<0.750	--
	06/23/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.689/<0.250	<0.750/<0.750	<1.00
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.603/<0.250	<0.750/<0.750	--
	12/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.408/<0.250	<0.750/<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.620/<0.250	<0.750/<0.750	--
	06/22/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.262/<0.250	<0.750/<0.750	<1.00
	09/25/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.584/0.225	<0.750/<0.750	<1.00
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.675/<0.250[10]	0.779/<0.750[10]	<1.00
	03/26/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.749/<0.250	<0.750/<0.750	--
	06/20/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.675/<0.250	<0.750/<0.750	<1.00
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/03/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/07/07	ND	<0.500	<0.500	<0.500	<1.00	--	<0.048	0.730	0.170	--
	06/08/07	ND	<0.500	<0.500	<0.500	<1.50	--	<0.050	0.530	0.250	<0.037
	11/26/07	ND	<0.5	<0.5	0.7	<1.5	--	<0.050	0.470	0.190	--
MW-66	03/13/98	ND	<1.25	<1.25	<1.25	<5.00	--	1.20[5]	3.52	<0.750	--
	06/29/98	ND	<0.500	<0.500	<0.500	1.06	--	0.424	<0.250	<0.750	<1.00
	09/04/98	ND	<0.500	<0.500	<0.500	<2.00	--	0.257	1.27	<0.750	--
	12/15/98	ND	<0.500	<0.500	0.508	2.62	--	0.0387	0.906/<0.250	<0.750/<0.750	--
	03/24/99	ND	<0.500	<0.500	<0.900	<3.00	--	1.05	8.44/5.11	<0.750/<0.750	--
	07/01/99	Sheen	<0.500	<0.500	<0.500	<1.70	--	0.310[4]	1.37/0.596	<0.750/<0.750	<1.00
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	0.216[4]	2.32/1.10	<0.750/<0.750	--
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	0.332	0.659/<0.250	<0.750/<0.750	--
	03/22/00	ND	<0.500	<0.500	<0.500	<3.00	--	0.711	4.31/2.31	<0.750/<0.750	--
	06/23/00[8]	Trace	<0.500	<0.500	<0.500	<1.00	--	0.109	0.439/<0.250	<0.750/<0.750	<1.00
	09/14/00	ND	<0.500	<0.500	<0.500	<2.16	--	0.416	1.601/1.43	<0.750/<0.750	--
	12/22/00	ND	<0.500	<0.500	<0.500	<2.35	--	0.475	1.87/0.819	<0.750/<0.750	--
	03/15/01	ND	<0.570	<0.922	<0.500	<3.91	--	1.16	7.03/5.43	1.01/<0.750	--
	06/22/01	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.130	0.409/<0.250	<0.750/<0.750	--
	09/25/01	Sheen	<0.500	<0.500	<0.500	1.06	--	0.142	4.06/3.14	0.811/<0.750	--
	12/18/01	Sheen	<0.500	<2.00	<1.00	<1.50	--	0.162	0.696/<0.250[10]	<0.750/<0.750[10]	--
	03/27/02	Sheen	<0.500	<0.500	<0.500	1.32	--	0.454	4.41/2.58	1.41/<0.750	--
	06/20/02	ND	<0.500	<0.500	<0.500	<1.00	--	0.052	0.650/<0.250	<0.750/<0.750	--
	09/19/02	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.128	<0.250[11]	<0.750[11]	--
	12/13/02	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.0845	0.688	<0.750	--
	03/21/03	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.114	2.72	<0.750	--
	06/19/03	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.189[5]	0.707	<0.750	--
	09/18/03	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.171	3.73	<0.750	--
	12/03/03	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.0509	1.45	<0.750	--
	03/09/04	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.131	0.446	<0.750	--
	06/03/04	ND	<0.500	<0.500	<0.500	<1.00	--	0.121	0.504	<0.750	--
	09/03/04	ND	<0.500	<0.500	<0.500	1.25	--	0.330	1.03	<0.750	--
	12/06/04	ND	<0.500	<0.500	<0.500	<1.00	--	0.116	0.380	<0.750	--
	03/04/05	ND	<0.500	<0.500	<0.500	1.4	--	0.275	0.577	<0.750	--
	06/03/05	ND	<0.500	<0.500	<0.500	<1.00	--	0.149	0.860	<0.750	--
	09/01/05	ND	<0.500	<0.500	<0.500	<1.00	--	0.119	0.678	<0.750	--
	12/01/05	ND	<0.500	<0.500	<0.500	<1.00	--	0.115	0.885	<0.721	--
	03/02/06	ND	<0.500	<0.500	<0.500	<1.00	--	0.0651	0.381	<0.714	--

Appendix C
Historical Summary of Groundwater Analytical Data
Total Petroleum Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well[1]	Date Sampled	LNAPL[2]	BTEX (EPA Method 8020 or 8021B) (µg/L)				TPH (EPA Method 418.1) (mg/L)	NWTPH-Gx (mg/L)	NWTPH-D Extended[3] (mg/L)		Dissolved Lead (EPA 6000/7000 Series Method) (µg/L)
			B	T	E	X		Gasoline C_7 - C_{12}	Diesel C_{12} - C_{24}	Heavy Oil >C_{24}	
MW-66 (continued)	06/06/06	ND	<0.500	<0.500	<0.500	<1.00	--	0.128	<0.250	<0.750	--
	09/15/06	ND	<0.500	<0.500	<0.500	<1.00	--	0.0778	0.370	<0.708	--
	03/07/07	--	--	--	--	--	--	--	--	--	--
Lower Yard RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Lower Yard											
MW-81	10/06/98	Sheen	<0.700	<0.500	<0.500	<1.50	--	0.136[4]	27.6/14.8	26.5/10.0	--
	12/14/98	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.273	3.62/0.563	1.18/<0.750	--
	03/23/99	Sheen	<0.500	0.646	<0.500	2.28	--	0.0632	3.90/2.17	3.14/1.50	--
	06/29/99	Sheen	<0.500	<0.500	<0.500	<1.60	--	0.418	5.22/3.12	4.62/2.55	<1.00
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	0.566[4]	1.69/0.390	<0.750/<0.750	--
	12/15/99	Sheen	<0.500	<0.500	<0.500	1.15	--	0.0762	2.46/0.366	0.764/<0.750	--
	03/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	0.0817	2.20/0.800	1.28/<0.750	--
	06/22/00[8]	ND	0.536	3.35	2.37	16.2	--	0.234	2.36/0.495	1.29/<0.750	--
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.20/0.347	<0.750/<0.750	--
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	0.585	1.5/0.374	<0.750/<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.16/0.324	<0.750/<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.60/0.751	1.32/<0.750	--
	09/25/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.59/1.11	0.832/<0.750	--
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	1.62/0.323[10]	<0.750/<0.750[10]	--
	03/27/02	ND	<0.500	<0.500	<0.500	<1.00	--	0.0598	1.31/0.324	<0.750/<0.750	--
	06/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.09/<0.250	<0.750/<0.750	--
MW-82	10/06/98	Sheen	<0.500	<0.500	<0.500	<3.50	--	0.311[4]	7.90/5.43	3.93/2.31	--
	12/14/98	ND	<0.500	<0.500	<0.500	<1.00	--	0.0793	0.787/<0.250	<0.750/<0.750	--
	03/23/99	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.757/0.268	<0.750/<0.750	--
	06/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	0.2750	3.92/2.51	2.19/1.29	1.25
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	0.0566	1.48/0.784	<0.750/<0.750	--
	12/15/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.561/<0.250	<0.750/<0.750	--
	03/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.797/0.349	<0.750/<0.750	--
	06/22/00[8]	ND	<0.500	1.72	1.48	13.6	--	0.2580	1.01/0.494	<0.750/<0.750	--
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.907/0.522	<0.750/<0.750	--
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.911/0.386	<0.750/<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.839/0.451	<0.750/<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.03/0.675	0.830/<0.750	--
	09/25/01	ND	<0.500	<0.500	<0.500	1.14	--	<0.0500	0.742/0.288	<0.750/<0.750	--
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.278/<0.250[10]	<0.750/<0.750[10]	--
	03/27/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.517/<0.250	<0.750/<0.750	--
	06/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.513/<0.250	<0.750/<0.750	--
MW-83	10/06/98	ND	<0.500	<0.500	<0.500	<1.00	--	0.0923[4]	2.19/1.31	2.36/1.11	--
	12/14/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.634/<0.250	<0.750/<0.750	--
	03/23/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.413/<0.250	<0.750/<0.750	--
	06/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.729/0.417	0.957/<0.750	<1.00
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.390/<0.250[13]	<0.750/<0.750[13]	--
	12/15/99	ND	<0.500	<0.500	<0.500	1.07	--	<0.0500	0.271/<0.250	<0.750/<0.750	--
	03/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/22/00[8]	ND	<0.500	<0.500	<0.500	3.76	--	0.205	0.302/<0.250	<0.750/<0.750	--
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.316/<0.250	<0.750/<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.268/<0.250	<0.750/<0.750	--
	09/25/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	<0.250[10]	<0.750[10]	--
	03/27/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.299/<0.250	<0.750/<0.750	--
MW-84	10/06/98	ND	<2.00	<1.00	<1.50	<8.00	--	1.09[4]	3.52/1.70	1.03/<0.750	--
	12/14/98	ND	<0.500	<0.500	<0.500	2.33	--	0.241	1.01/0.351	<0.750/<0.750	--
	03/23/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	Note 14	Note 14	--
	04/01/99	ND	--	--	--	--	--	--	0.0259	<0.750	--
	06/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	0.0833	2.17/1.12	1.61/<0.750	<1.00
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	0.0517	0.941/0.338	<0.750/<0.750	--
	12/15/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.692/<0.250	<0.750/<0.750	--
	03/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.859/<0.750	<0.750/<0.750	--
	06/22/00	ND	<0.500	<0.500	<0.500	1.37	--	0.0551	1.39/0.649	0.808/<0.750	--
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.485/<0.250	<0.750/<0.750	--
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.09/0.419	<0.750/<0.750	--
	03/15/01	ND	0.584	<0.500	<0.500	<1.00	--	<0.0500	0.559/<0.250	<0.750/<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.407/<0.250	<0.750/<0.750	--
	09/25/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.324/<0.250	<0.750/<0.750	--
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.965/<0.250[10]	0.926/<0.750[10]	--
	03/27/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.883/<0.250	<0.750/<0.750	--
	06/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.792/<0.250	<0.750/<0.750	--
MW-85	10/06/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.434/<0.250	<0.750/<0.750	--
	12/14/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.451/<0.250	<0.750/<0.750	--
	03/23/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.404/<0.250	<0.750/<0.750	--
	06/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.412/<0.250	<0.750/<0.750	<1.00
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.365/<0.250	<0.750/<0.750	--
	12/16/99	ND	<0.500	0.628	<0.500	<1.00	--	<0.0500	0.350/<0.250	<0.750/<0.750	--
	03/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.350/<0.250	<0.750/<0.750	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.376/<0.250	<0.750/<0.750	--
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.360/<0.250	<0.750/<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	1.57	--	<0.0500	<0.250	<0.750	--
	09/25/01	ND	<0.500	<0.500	<0.500	1.57	--	<0.0500	<0.250	<0.750	--
	12/19/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.600/<0.250[10]	<0.750/<0.750[10]	--
	03/27/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.271/<0.250	<0.750/<0.750	--
	06/20/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.702/<0.250	<0.750/<0.750	--
MW-86	10/06/98	Sheen	<0.800	<0.500	<0.500	<1.00	--	<0.0500	2.28/2.99	2.57/2.92	--
	12/15/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	1.65/<0.250	<0.750/<0.750	--
	03/23/99	Sheen	<0.500	<0.500	<0.500	2.54	--	<0.0500	1.39/<0.250	0.883/<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.926/<0.250	<0.750/<0.750	<1.00
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.481/<0.250	<0.750/<0.750	--
	12/16/99	ND	<0.500	0.574	<0.500	<1.00	--	<0.0500	1.71/<0.250	<0.750/<0.750	--
	03/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.901[7]	<0.750[7]	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.535/<0.250	<0.750/<0.750	--
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.617/<0.250	<0.750/<0.750	--
	12/21/00[9]	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.374/<0.250	<0.750/<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.436/0.250	<0.750/<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.606/0.310	<0.750/<0.750	--
	09/25/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/19/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	1.21/<0.250[10]	<0.750/<0.750[10]	--
	03/27/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.464/<0.250	<0.750/<0.750	--
	06/20/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.629/<0.250	<0.750/<0.750	--
Offsite Area RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Offsite Area											
MW-8	01/31/89	--	0.6	<0.5	<0.5	<0.5	0.21	--	--	--	<25
	04/27/89	--	<0.5	<0.5	<0.5	<0.5	1.1	--	--	--	<5
	07/25/89	--	4.3	2.1	<0.5	<0.5	0.17	--	--	--	18
	10/26/89	--	<0.5	<0.5	<0.5	<0.5	0.94	--	--	--	<5
	01/16/90	--	<0.5	<0.5	<0.5	<0.5	0.35	--	--	--	<5
	04/16/90	--	2.8	<0.5	<0.5	<0.5	<1	--	--	--	<50
	07/25/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<50
	10/16/90	--	<0.5	<0.5	<0.5	<0.5	2	--	--	--	<100
	01/17/91	--	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<20
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	6
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<3.0

Appendix C
Historical Summary of Groundwater Analytical Data
Total Petroleum Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well[1]	Date Sampled	LNAPL[2]	BTEX (EPA Method 8020 or 8021B) (µg/L)				TPH (EPA Method 418.1) (mg/L)	NWTPH-Gx (mg/L)	NWTPH-D Extended[3] (mg/L)		Dissolved Lead (EPA 6000/7000 Series Method) (µg/L)
			B	T	E	X		Gasoline C_7 - C_{12}	Diesel C_{12} - C_{24}	Heavy Oil >C_{24}	
MW-8 Continued	06/25/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/14/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.523/<0.250	<0.750/<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.501/<0.403	<1.21/<1.21	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	0.0558	0.273/<0.249	<0.750/<0.737	--
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.441/<0.245	<0.750/<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/19/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.464/<0.250[10]	<0.750/<0.750[10]	--
	06/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.271/<0.250	<0.750/<0.750	--
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.439	0.762	--
	12/02/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
MW-10	01/31/89	--	<0.5	<0.5	<0.5	<0.5	0.36	--	--	--	<5
	04/27/89	--	<0.5	<0.5	<0.5	<0.5	2.2	--	--	--	<5
	07/25/89	--	<0.5	<0.5	<0.5	<0.5	0.45	--	--	--	<5
	10/26/89	--	<0.5	<0.5	<0.5	<0.5	3.4	--	--	--	<5
	01/16/90	--	<0.5	<0.5	<0.5	<0.5	0.35	--	--	--	<5
	04/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	07/25/90	--	<0.5	<0.5	<0.5	<0.5	6	--	--	--	<5
	10/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	01/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<2
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<3
	06/25/98	ND	<0.500	<0.500	<0.500	<1.00	--	0.0593	<0.250	<0.750	1.24
	12/14/98	ND	<0.500	<0.500	<0.500	1.28	--	0.0715	0.953/<0.250	<0.750/<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.652/<0.250	<0.750/<0.750	--
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	0.076	0.706/<0.475	<1.43/<1.43	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	0.0846	<0.503[13]	<1.51[13]	--
	12/21/00	ND	<0.500	<0.500	<0.500	1.10	--	0.0657	0.555/<0.250	<0.750/<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.301/<0.250	<0.750/<0.750	--
	12/19/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.551/<0.250[10]	<0.750/<0.750[10]	--
	06/19/02	ND	<0.500	<0.500	<0.500	1.43	--	0.0545	0.656/<0.250	<0.750/<0.750	--
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/02/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
MW-20	01/31/89	--	<0.5	<0.5	<0.5	<0.5	1.1	--	--	--	<5
	04/27/89	--	<0.5	<0.5	<0.5	<0.5	1.6	--	--	--	<5
	07/25/89	--	1.0	<0.5	<0.5	<0.5	0.31	--	--	--	<5
	10/26/89	--	0.7	<0.5	<0.5	<0.5	3.2	--	--	--	<5
	01/16/90	--	<0.5	<0.5	<0.5	<0.5	1.4	--	--	--	<5
	04/16/90	--	0.6	<0.5	<0.5	<0.5	<1	--	--	--	<5
	07/25/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	10/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	01/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<2
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<2
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	3.4
	06/25/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/15/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.287/<0.250	<0.750/<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.291/<0.250	<0.750/<0.750	--
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.452/<0.250	<0.750/<0.750	--
	06/22/00	ND	<0.500	<0.500	<0.500	1.67	--	<0.0500	<0.250	<0.750	--
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.569/<0.250	<0.750/<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.277/<0.250	<0.750/<0.750	--
	12/19/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	1.05/<0.250[10]	<0.750/<0.750[10]	--
	06/20/02	ND	6.60	<0.500	<0.500	3.30	--	<0.0500	0.627/<0.250	<0.750/<0.750	--
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/02/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
MW-25	01/31/89	--	<0.5	4.7	<0.5	2.3	3.7	--	--	--	<5
	04/27/89	--	7.2	1.2	1.6	<0.5	0.93	--	--	--	<5
	07/25/89	--	1.4	0.8	<0.5	1.2	3.4	--	--	--	<5
	10/26/89	--	<0.5	<0.5	<0.5	<0.5	7.8	--	--	--	<5
	01/16/90	--	1.3	<0.5	<0.5	<0.5	4.9	--	--	--	<5
	04/16/90	--	6.6	1.4	0.8	2.7	<1	--	--	--	<5
	07/25/90	--	2.5	0.6	0.6	0.8	<1	--	--	--	<5
	10/16/90	--	<0.5	<0.5	<0.5	0.8	<1	--	--	--	<5
	01/17/91	--	1.0	0.7	<0.5	1.4	<1	<1	<1	--	<5
	04/16/91	--	0.9	<0.5	<0.5	<0.5	--	<1	<1	--	<20
	09/19/91	--	<0.5	<0.5	<0.5	0.6	--	<1	<1	--	<20
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<3.0
	03/13/98	ND	<0.500	<0.500	<0.500	<1.00	--	0.160	<0.250	<0.750	--
	06/24/98	ND	<0.500	1.68	<0.500	<1.00	--	0.689	<0.250	<0.750	<1.00
	09/03/98	ND	<0.500	<0.500	<0.500	<1.00	--	0.0716	<0.250	<0.750	--
	12/14/98	ND	<0.500	<0.500	0.795	1.31	--	0.0697	1.26/<0.250	<0.750/<0.750	--
	03/24/99	ND	<0.600	<0.700	<1.00	<2.50	--	0.118	0.969/<0.250	<0.750/<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.719/<0.250	<0.750/<0.750	<20.0
	09/29/99	ND	<0.500	3.52	<0.500	<10.0	--	0.136	1.58/<0.476	<1.43/<1.43	--
	12/16/99	ND	<0.500	<0.500	0.632	1.81	--	0.166	1.31/<0.250	<0.750/<0.750	--
	03/22/00	ND	<0.500	1.94	<0.500	<1.00	--	0.148	1.36/<0.447	<1.34/<1.34	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	0.0876	0.674/<0.250	<0.750/<0.750	<10.0
	09/15/00	ND	<0.500	<0.607	<0.500	<1.28	--	0.716	1.26/<0.250	<0.750/<0.750	--
	12/21/00	ND	<0.500	<0.500	<0.500	1.18	--	0.0991	1.25/<0.250	<0.750/<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	1.75	--	0.0664	1.19/<0.250	<0.750/<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.538/<0.250	<0.750/<0.750	<1.00
	09/25/01	ND	<0.500	<0.500	<0.500	<1.00	--	0.0596	0.864/<0.250	<0.750/<0.750	--
	12/19/01	ND	<0.500	<2.00	<1.00	<1.50	--	0.175	2.22/<0.250[10]	0.852/<0.750[10]	--
	03/26/02	ND	<0.500	<0.500	<0.500	1.39	--	0.12	0.861/<0.250	<0.750/<0.750	--
	06/19/02	ND	<0.500	<0.500	<0.500	1.44	--	0.108	0.706/<0.250	<0.750/<0.750	<1.00
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	0.0578	<0.250	<0.750	--
	12/02/03	ND	<0.500	<0.500	<0.500	<1.00	--	0.110	<0.250	<0.750	--
Offsite Area RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Offsite Area (continued)											
MW-26	01/31/89	--	<0.5	<0.5	<0.5	<0.5	0.64	--	--	--	25
	04/27/89	--	<0.5	<0.5	<0.5	<0.5	0.08	--	--	--	<5
	07/25/89	--	<0.5	<0.5	<0.5	<0.5	1.4	--	--	--	<5
	10/26/89	--	<0.5	<0.5	<0.5	<0.5	0.94	--	--	--	<5
	01/16/90	--	<0.5	<0.5	<0.5	<0.5	1.8	--	--	--	<5
	04/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	07/25/90	--	<0.5	<0.5	<0.5	<0.5	2	--	--	--	<5
	10/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<50
	01/17/91	--	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	--	<50
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<2
	09/19/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<2
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<3.0
	06/30/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/15/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250/<0.250	<0.750/<0.750	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/19/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.445/<0.250[10]	<0.750/<0.750[10]	--
	06/20/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/02/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
MW-27	01/31/89	--	<0.5	1.8	<0.5	<0.5	0.64	--	--	--	<5
	04/27/89	--	<0.5	<0.5	<0.5	<0.5	0.23	--	--	--	<5

Appendix C
Historical Summary of Groundwater Analytical Data
Total Petroleum Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well[1]	Date Sampled	LNAPL[2]	BTEX (EPA Method 8020 or 8021B) (µg/L)				TPH (EPA Method 418.1) (mg/L)	NWTPH-Gx (mg/L)	NWTPH-D Extended[3] (mg/L)		Dissolved Lead (EPA 6000/7000 Series Method) (µg/L)
			B	T	E	X		Gasoline C_7 - C_{12}	Diesel C_{12} - C_{24}	Heavy Oil >C_{24}	
MW-27 Continued	07/25/89	--	1.0	<0.5	<0.5	<0.5	0.68	--	--	--	<5
	10/26/89	--	1.3	0.7	<0.5	0.7	1.1	--	--	--	<5
	01/16/90	--	<0.5	<0.5	<0.5	<0.5	1.3	--	--	--	<5
	04/16/90	--	<0.5	<0.5	<0.5	0.6	<1	--	--	--	<5
	07/25/90	--	<0.5	<0.5	<0.5	<0.5	2	--	--	--	<5
	10/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	01/17/91	--	0.6	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	0.9	--	<1	<1	--	<2
	09/19/91	--	<0.5	<0.5	<0.5	1.1	--	<1	<1	--	4
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<3.0
	03/13/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/24/98	ND	<0.500	2.85	<0.500	<1.00	--	0.188	<0.250	<0.750	<1.00
	09/03/98	ND	<0.800	<0.500	<0.500	<1.00	--	0.0961	0.316	<0.750	--
	12/14/98	ND	<4.00	<0.500	<0.500	1.33	--	0.119	0.485/<0.250	<0.750/<0.750	--
	03/24/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.394/<0.250	<0.750/<0.750	--
	07/01/99	ND	<0.500	<2.20	<0.500	<1.00	--	0.0823	0.394/<0.250	<0.750/<0.750	--
	09/29/99	ND	<0.500	1.87	<0.500	<1.00	--	<0.0500	0.830/<0.323	<0.750/<0.750	--
	12/16/99	ND	<0.500	<0.500	<0.500	1.29	--	0.0925	0.544[15]	<0.750[15]	--
	03/22/00	ND	<0.500	0.874	<0.500	<1.00	--	<0.0500	0.468/<0.250	<0.750/<0.750	--
	06/22/00	ND	0.692	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/15/00	ND	<0.605	<0.500	<0.500	<1.00	--	<0.0500	0.420/<0.250	<0.750/<0.750	--
	12/21/00	ND	1.89	<0.500	<0.500	<1.00	--	0.0727	0.308/<0.250	<0.750/<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.537/<0.250	<0.750/<0.750	--
	06/21/01	Sheen	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.259/<0.250	<0.750/<0.750	--
	09/25/01	ND	0.571	<0.500	<0.500	<1.00	--	<0.0500	1.38/0.547	<0.750/<0.750	--
	12/19/01	Sheen	<0.500	<2.00	<1.00	<1.50	--	<0.100	<0.250[10]	<0.750[10]	--
	03/26/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.257/<0.250	<0.750/<0.750	--
	06/19/02	ND	<0.500	<0.500	<0.500	1.05	--	<0.0500	<0.250	<0.750	--
	09/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/21/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/19/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/18/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.672	<0.750	--
	12/03/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/09/04	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/03/04	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/03/04	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/06/04	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/04/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/03/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/01/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/01/05	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.236	<0.708	--
	03/02/06	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.236	<0.708	--
MW-27R	03/07/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.048	<0.076	<0.094	--
	09/26/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.077	<0.096	<0.47
	11/27/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.080	<0.100	0.091
MW-34	10/26/89	--	1.7	3	<0.5	2.1	0.27	--	--	--	<5
	01/16/90	--	<0.5	<0.5	<0.5	<0.5	0.08	--	--	--	<5
	04/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	07/25/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	10/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	01/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<2
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	3
	12/01/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	3.0
MW-35	10/26/89	--	33	1.1	<0.5	1.4	<0.5	--	--	--	<5
	01/16/90	--	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	<5
	04/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	07/25/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	10/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	01/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	2
	12/01/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	3.3
MW-36	10/26/89	--	330	1.9	2.5	8.0	2	--	--	--	<5
	01/16/90	--	95	3.1	<0.5	9.4	0.39	--	--	--	<5
	04/16/90	--	140	7.8	<0.5	<5.0	3.2	--	--	--	<5
	07/25/90	--	<0.5	<0.5	3.4	17	4	--	--	--	<5
	10/16/90	--	8.0	<0.5	<0.5	4.8	8	--	--	--	<5
	01/17/91	--	1.2	5.6	12	58	6	11	20	--	<5
	04/16/91	--	1.7	6.4	<0.5	4.9	--	<1	<1	--	<2
	09/17/91	--	<0.5	<0.5	1.1	3.2	--	15	29	--	<2
	12/01/91	--	<0.5	<0.5	2.5	6.5	--	<1	<1	--	<3.0
	03/13/98	ND	<0.500	<0.500	<0.500	<1.00	--	0.609	12.5	2.69	--
	06/25/98	ND	<0.500	<0.500	<0.500	<2.50	--	0.345	<0.250	<0.750	<1.00
	09/03/98	ND	<0.800	<0.500	<0.750	<4.00	--	0.499	7.42	1.43	--
	12/14/98	ND	1.24	0.699	0.707	4.12	--	0.536	1.43/<0.250	<0.750/<0.750	--
	03/24/99	ND	1.96	<1.10	<1.40	<3.50	--	0.999	27.1/18.1	5.86/3.39	--
	07/01/99	ND	<0.500	<0.500	<0.500	<2.00	--	0.257[4]	1.28/<0.250	<0.750/<0.750	--
	09/29/99	ND	<0.500	<0.500	<5.00	<10.0	--	0.562[4]	4.63/2.01	0.849/<0.0750	--
	12/16/99	ND	0.813	<1.50	<5.00	<2.00	--	0.344	0.867/<0.250	<0.750/<0.750	--
	03/22/00	ND	<0.500	0.792	<0.500	<3.00	--	0.584	6.42/4.30	1.58/<0.750	--
	06/22/00[8]	ND	5.80	70.0	33.2	240	--	2.17	0.850/<0.250	<0.750/<0.750	--
	09/15/00	Sheen	<0.500	<2.39	<0.704	<5.46	--	0.923	9.25/6.10	1.70/0.927	--
	12/21/00	ND	0.636	<1.12	<0.500	<2.20	--	0.229	1.26/<0.250	<0.750/<0.750	--
	03/15/01	ND	2.00	<1.04	<0.500	<12.5	--	2.19	5.46/4.03	1.40/<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	0.207	0.643/<0.250	<0.750/<0.750	--
	09/25/01	Sheen	1.03	<0.500	<0.500	2.54	--	0.514	8.88/6.64	1.92/<0.750	--
	12/19/01	ND	1.49	<2.00	<1.00	<1.50	--	0.415	1.15/<0.250[10]	<0.750/<0.750[10]	--
Offsite Area RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Offsite Area (continued)											
	03/26/02	ND	1.01	<0.500	<0.500	1.9	--	0.38	1.47/0.794	<0.750/<0.750	--
	06/20/02	ND	0.618	<0.500	<0.500	<1.00	--	0.106	1.01/<0.250	<0.750/<0.750	--
	09/19/02	Sheen	0.914	<0.500	<0.500	1.85	--	0.307	1.39[13]	<0.750[6]	--
	12/13/02	Sheen	<0.500	<0.500	<0.500	1.07	--	0.186	15.5	<0.750	--
	03/21/03	Sheen	0.846	<0.500	<0.500	2.4	--	0.398	3.25	<0.750	--
	6/19/2003[14]	Sheen	0.691	0.508	0.503	2.93	--	0.623[7]	6.09	1.27	--
	09/18/03	Sheen	<0.500	<0.500	<0.500	1.29	--	0.219	4.87	0.943	--
	12/02/03	Sheen	0.538	<0.500	<0.500	1.37	--	0.242	1.97	<0.750	--
MW-41	09/18/90	--	--	--	--	--	2	--	--	--	<5
	10/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5
	01/17/91	--	<0.5	<0.5	1.2	3.9	<1	1	<1	--	<5
	04/16/91	--	3.5	0.9	4.5	1.4	--	<1	<1	--	<2
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	4	--	<2
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<3.0
	06/29/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/15/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/16/99	ND	<0.500	<0.500	<5.00	<1.00	--	<0.0500	<0.250	<0.750	--
	06/22/00[8]	ND	<0.500	6.55	3.97	35.8	--	0.433	<0.250	<0.750	--
	12/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/22/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	<0.250[10]	<0.750[10]	--
	06/20/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
MW-42	10/16/90	--	<0.5	<0.5	<0.5	<0.5	<1	--	--	--	<5

Appendix C
Historical Summary of Groundwater Analytical Data
Total Petroleum Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well[1]	Date Sampled	LNAPL[2]	BTEX (EPA Method 8020 or 8021B) (µg/L)				TPH (EPA Method 418.1) (mg/L)	NWTPH-Gx (mg/L)	NWTPH-D Extended[3] (mg/L)		Dissolved Lead (EPA 6000/7000 Series Method) (µg/L)
			B	T	E	X		Gasoline C_7 - C_{12}	Diesel C_{12} - C_{24}	Heavy Oil >C_{24}	
MW-42 Continued	01/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<2
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	3
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<3.0
MW-43	10/16/90	--	2.9	<0.5	17	5.3	<1	--	--	--	<5
	01/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<5
	04/16/91	--	<0.5	<0.5	0.7	0.6	--	<1	<1	--	<2
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	--	3	9	--	3
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	--	<3.0
MW-52	06/25/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/15/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.522/<0.250	<0.750/<0.750	--
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.250/<0.250	<0.750/<0.750	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.257/<0.250	<0.750/<0.750	--
	06/22/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/19/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.325/<0.250[10]	<0.750/<0.750[10]	--
	06/20/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.289/<0.250	<0.750/<0.750	--
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/02/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
MW-67	03/13/98	ND	<0.500	0.658	1.57	3.37	--	0.237	<0.250	<0.750	--
	06/24/98	ND	<0.500	1.44	<0.500	<1.00	--	0.0597	<0.250	<0.750	<1.00
	09/03/98	ND	<1.00	<0.500	0.913	<1.00	--	0.0661	0.287	<0.750	--
	12/14/98	ND	<0.800	<2.00	2.44	4.87	--	0.432	0.813/0.328	<0.750/<0.750	--
	03/24/99	ND	4.84	<0.500	<0.500	<1.00	--	0.158	0.566/<0.250	<0.750/<0.750	--
	07/01/99	ND	<4.20	<1.00	2.68	4.66	--	0.341	0.833/0.275	<0.750/<0.750	<20.0
	09/29/99	ND	0.554	1.88	0.884	1.55	--	0.239	0.544/<0.250	<0.750/<0.750	--
	12/16/99	ND	<8.20	<1.25	1.9	8.65	--	0.561	0.807/<0.250	<0.750/<0.750	--
	03/22/00	ND	<0.500	1.71	0.533	1.46	--	0.156	0.651/0.292	<0.750/<0.750	--
	06/22/00	ND	4.74	1.02	1.65	4.53	--	0.395	0.951/<0.250	<0.750/<0.750	<10.0
	09/15/00	ND	<3.00	<0.500	<0.520	<1.81	--	0.157	0.607/<0.250	<0.750/<0.750	--
	12/21/00	ND	7.35	<1.38	<2.04	5.73	--	0.413	0.646/<0.250	<0.750/<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.624	<1.77	--	0.165	0.524/<0.250	<0.750/<0.750	--
	06/21/01	ND	<0.500	1.21	2.47	2.61	--	0.403	0.479/<0.250	<0.750/<0.750	<1.00
	09/25/01	ND	3.45	<0.500	1.46	2.10	--	0.230	0.585/0.295	<0.750/<0.750	--
	12/19/01	ND	13.2	<2.00	1.46	2.97	--	1.01	0.760/<0.250[10]	<0.750/<0.750[10]	--
	03/26/02	ND	3.01	<0.500	0.671	1.09	--	0.178	0.672/<0.250	0.839/<0.750	--
	06/19/02	ND	<0.500	<0.500	<0.500	1.21	--	<0.0500	<0.250	<0.750	<1.00
	09/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250[13]	<0.750[13]	--
	12/13/02	ND	<0.500	<0.500	0.751	2.99	--	<0.0500	<0.250	<0.750	--
	03/21/03	ND	<0.500	<0.500	0.751	<1.00	--	<0.0500	0.352	1.44	--
	06/19/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/18/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/03/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
MW-70	06/25/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/15/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.488/<0.250	<0.750/<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<20.0
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.392/<0.250	<0.750/<0.750	--
	06/22/00[8]	ND	<0.500	1.31	0.610	3.83	--	0.0632	<0.250[13]	<0.750[13]	<1.00
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/19/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.372/<0.250[10]	<0.750/<0.750[10]	--
	06/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/02/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/06/04	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
MW-70R	02/16/16	ND	<0.500	<0.500	<0.500	<1.50	--	<0.0500	<0.029	<0.067	--
Duplicate	02/16/16	ND	<0.500	<0.500	<0.500	<1.50	--	<0.0500	<0.029	<0.067	--
	06/14/16	ND	<0.500	<0.500	<0.500	<1.50	--	<0.0500	<0.028	<0.066	--
	09/22/16	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.030	<0.070	--
	01/12/17	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.046	<0.070	--
Duplicate	01/12/17	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.046	<0.070	--
	03/27/17	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**<0.050**	**<0.029**	**<0.067**	**--**
	06/16/17	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**<0.050**	**<0.029**	**<0.068**	**--**
MW-71	06/25/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/14/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	3.77/<0.250	<0.750/<0.750	--
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<20.0
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.430[15]	<0.904[15]	--
	06/22/00[8]	ND	<0.500	0.980	0.522	3.08	--	0.0746	<0.250	<0.750	<1.00
	12/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/21/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/19/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.514/<0.0.250[10]	<0.750/<0.750[10]	--
	06/19/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/02/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
Offsite Area RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Offsite Area (continued)											
MW-72	03/13/98	ND	<11.0	<3.00	<3.00	<11.0	--	1.30	0.369	<0.750	--
	06/24/98	ND	<1.00	<1.00	<0.500	<2.00	--	0.699	0.286	<0.750	<1.00
	09/03/98	ND	<9.38	<2.50	<2.50	<4.50	--	1.03	3.11	1.78	--
	12/14/98	Sheen	5.45	0.644	1.07	1.68	--	0.196	0.847/<0.250	<0.750/<0.750	--
	03/24/98	Sheen	4.69	<0.950	<0.950	<3.30	--	0.269	1.74/0.744	1.42/<0.750	--
	07/01/99	ND	<2.80	<0.900	<0.500	<2.26	--	0.248	1.05/<0.250	<0.750/<0.750	<1.00
	09/29/99	Sheen	5.71	2.71	0.68	5.01	--	0.481	1.86/0.424[13]	1.01/<0.750[13]	--
	12/16/99	Sheen	<7.40	<1.40	<0.500	6.87	--	0.421	0.905/<0.475	<1.43/<1.43	--
	03/22/00	ND	2.88	5.40	0.846	6.42	--	0.596	1.40/0.462	<0.750/<0.750	--
	06/22/00	ND	5.98	1.11	0.599	2.38	--	0.344	1.11/<0.250	<0.750/<0.750	<1.00
	09/15/00	ND	1.47	<1.20	<0.525	<5.42	--	0.547	1.35/0.427	<0.750/<0.750	--
	12/21/00	ND	5.71	<1.00	<0.500	4.46	--	0.422	0.698/<0.250	<0.750/<0.750	--
	03/15/01	ND	1.90	<1.06	<0.791	<3.29	--	0.454	1.47/<0.250	0.752/<0.750	--
	06/21/01	ND	1.08	1.29	<0.500	2.78	--	0.274	0.591/<0.250	<0.750/<0.750	--
	09/25/01	Sheen	7.98	0.679	1.07	3.24	--	0.695	3.37/1.35	1.90/0.942	--
	12/19/01	ND	12.2	<2.00	<1.00	3.21	--	0.835	1.59/0.261[10]	<0.750/<0.750[10]	--
	03/26/02	Sheen	6.4	0.753	<0.500	3.88	--	0.47	1.05/<0.250	<0.750/<0.750	--
	06/19/02	ND	10.3	0.722	1.48	4.60	--	0.697	3.19/<0.250	<0.750/<0.750	--
	09/19/02	Sheen	13.3	0.798	2.29	4.29	--	0.828	0.769[11]	<0.750[11]	--
	12/13/02	Sheen	8.35	0.747	2.27	6.10	--	0.594	4.15	2.94	--
	03/21/03	Sheen	3.2	<0.500	0.909	1.29	--	0.360	0.281	<0.750	--
	06/19/03	Sheen	8.28	0.509	1.79	3.82	--	0.476	1.61	1.25	--
	09/18/03	Sheen	4.54	<0.500	0.931	4.28	--	0.522	1.17	0.775	--
	12/02/03	Sheen	2.26	<0.500	<0.500	2.34	--	0.439	1.20	0.979	--
	03/09/04	Sheen	0.738	<0.500	<0.500	1.31	--	0.133	0.315	<0.750	--
	06/03/04	Sheen	0.656	<0.500	<0.500	<1.00	--	0.195	0.265	<0.750	--
	09/03/04	ND	1.41	<0.500	<0.500	1.72	--	0.294	0.275	<0.750	--
	12/06/04	ND	1.27	<0.500	<0.500	1.47	--	0.238	<0.250	<0.750	--
	03/04/05	ND	1.07	<0.500	<0.500	2.20	--	0.202	0.524	<0.750	--
	06/03/05	ND	1.10	<0.500	<0.500	<1.00	--	0.141	<0.250	<0.750	--
MW-73	03/12/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/29/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	09/03/98	ND	<0.500	<0.500	<0.500	1.30	--	<0.0500	<0.250	<0.750	--
	12/15/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.388/<0.250	<0.750/<0.750	--
	03/24/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.665/<0.250	<0.750/<0.750	--
	06/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.370/<0.250	<0.750/<0.750	<1.00
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.430/<0.250	<0.750/<0.750	--
	12/15/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.830/<0.250	<0.750/<0.750	--
	03/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.559/<0.250	<0.750/<0.750	--

Appendix C
Historical Summary of Groundwater Analytical Data
Total Petroleum Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well[1]	Date Sampled	LNAPL[2]	BTEX (EPA Method 8020 or 8021B) (µg/L)				TPH (EPA Method 418.1) (mg/L)	NWTPH-Gx (mg/L)	NWTPH-D Extended[3] (mg/L)		Dissolved Lead (EPA 6000/7000 Series Method) (µg/L)
			B	T	E	X		Gasoline C_7 - C_{12}	Diesel C_{12} - C_{24}	Heavy Oil >C_{24}	
MW-73 Continued	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	0.0737	0.407/<0.250	<0.750/<0.750	<10.0
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.298/<0.250	<0.750/<0.750	--
	12/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/22/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	09/25/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	0.693/<0.250[10]	<0.750/<0.750[10]	--
	03/26/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.618/<0.250	<0.750/<0.750	--
	06/20/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.287/<0.250	<0.750/<0.750	<1.00
MW-74	03/12/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/29/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	1.93
	09/03/98	ND	<0.500	<0.500	<0.500	1.02	--	<0.0500	0.29	1.07	--
	12/15/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.517/<0.250	<0.750/<0.750	--
	03/24/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.600/<0.250	0.993/<0.750	--
	06/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.251/<0.250	<0.750/<0.750	<1.00
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.462/<0.250	<0.750/<0.750	--
	12/15/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.659/<0.250	<0.750/<0.750	--
	03/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.500/<0.250	0.923/<0.750	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.234	<0.748	<1.00
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.273/<0.250	0.863/<0.750	--
	06/22/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.505/<0.250	<0.750/<0.750	--
	09/25/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	1.06/<0.250[10]	1.11/<0.750[10]	--
	03/26/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.430/<0.250	<0.750/<0.750	--
	06/20/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.305/<0.250	<0.750/<0.750	<1.00
MW-75	03/12/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/29/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	09/03/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/15/98	ND	<0.500	<0.500	<0.500	1.33	--	<0.0500	<0.250	<0.750	--
	03/24/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250/<0.250	<0.750/<0.750	--
	12/15/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.239	<0.744	<1.00
	09/14/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	03/15/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/22/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
	09/25/01	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/18/01	ND	<0.500	<2.00	<1.00	<1.50	--	<0.100	<0.250[10]	<0.750[10]	--
	03/26/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	06/20/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<1.00
MW-76	06/24/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<5.00
	09/03/98	ND	0.962	0.774	0.609	<1.00	--	0.0593	0.361	<0.750	--
	12/14/98	ND	<1.00	<0.500	1.29	<1.00	--	0.0779	0.789/<0.250	<0.750/<0.750	--
	03/24/98	ND	<1.00	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	07/01/99	ND	<1.20	<0.500	1.64	1.31	--	0.0998	0.786/<0.250	<0.750/<0.750	<20.0
	09/29/99	ND	<0.500	0.538	0.583	<1.00	--	0.0577	0.632/<0.250	<0.750/<0.750	--
	12/16/99	ND	0.582	<0.500	0.631	<1.00	--	0.728	0.667/<0.250	<0.750/<0.750	--
	03/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.640/<0.250	<0.750/<0.750	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.259/<0.250	<0.750/<0.750	<1.00
	09/15/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.605/<0.250	<0.750/<0.750	--
	12/21/00	ND	<0.600	<0.500	0.628	<1.00	--	0.784	0.606/<0.250	<0.750/<0.750	--
	03/15/01	ND	0.506	1.35	<0.500	1.22	--	<0.0500	0.278/<0.250	<0.750/<0.750	--
	06/21/01	ND	<0.500	<0.500	0.808	<1.00	--	<0.0500	<0.250	<0.750	--
	09/25/01	ND	0.508	<0.500	0.774	<1.00	--	<0.0500	0.461/0.316	<0.750/<0.750	--
	12/19/01	ND	<0.500	<2.00	<1.00	<1.50	--	0.114	0.549/<0.250	<0.750/<0.750	--
	03/26/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.317/<0.250	<0.750/<0.750	--
	06/19/02	ND	<0.500	<0.500	<0.500	1.11	--	<0.0500	<0.250	<0.750	--
	12/13/02	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/03/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
	12/06/04	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--
Offsite Area RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Offsite Area (continued)											
MW-200	03/08/07	Sheen	2.80	0.5	3.7	4	--	0.39	0.46	<0.095	--
	06/07/07	ND	2.4	0.6	2.1	2.5	--	0.250	0.310	<0.095	<0.037
	09/26/07	ND	1.6	<0.5	0.9	<1.5	--	0.230	0.270	<0.100	<0.047
Duplicate	09/26/07	ND	1.7	<0.5	0.8	<1.5	--	0.230	0.310	0.120	<0.047
	11/28/07	ND	2.0	<0.5	1.2	2.1	--	0.250	0.330	<0.100	0.064
	02/13/08	ND	3.44	<0.500	1.19	1.79	--	0.497	<0.236	<0.472	<1.00
	05/13/08	ND	2.70	<0.500	1.15	2.07	--	0.426	<0.240	<0.481	<1.00
	09/03/08	ND	<0.500	0.883	1.46	<1.00	--	0.337	<0.236	<0.472	<1.00
	12/04/08	ND	3.19	<0.500	0.975	2.01	--	0.427	<0.238	<0.476	<1.00
	02/18/09	ND	2.54	<0.500	0.619	1.14	--	0.355	<0.250	<0.500	<1.00
	05/13/09	ND	3.43	<0.500	1.12	1.91	--	0.513	<0.278	<0.556	<1.00
	09/11/09	ND	<0.500	<0.500	0.52	<1.00	--	0.360	<0.248	<0.495	<2.0
	04/14/10	ND	<0.50	<0.50	0.54	<2.0	--	0.35	0.31	<0.25	<2.0
	09/22/10	ND	<0.50	<0.50	0.56	1.2	--	0.43	0.56	<0.25	<2.0
	04/26/11	ND	6.2	<0.50	0.59	1.5	--	0.39	--	--	<2.0
	04/28/11	ND	--	--	--	--	--	--	0.33	<0.24	--
	09/22/11	ND	6.7[18]	<0.50[18]	0.83[18]	1.9[18]	--	0.27	0.39[17]	<0.24	--
	9/22/11[D]	ND	5.0	<0.50	0.65	1.4	--	0.24	0.37[17]	<0.24	--
	04/18/12	ND	3.7	<0.50	0.73	1.4	--	0.20	0.27[17]	<0.24	--
	10/11/12	ND	<0.50	0.75[21]	<0.50	<0.50	--	0.39	0.30[17,19,20]	<0.24	--
	04/25/13	ND	6.5	<0.5	1.1	2.1	--	0.35	0.120	<0.068	--
	09/19/13	ND	2.3	<0.5	<0.5	<1.5	--	0.11	0.160	<0.068	--
	06/24/14	ND	2.4	<0.5	<0.5	<1.5	--	0.120 J	0.083	<0.067	--
	12/16/14	ND	<6.0	<0.7	1.1	<2.4	--	0.460	0.130	<0.066	--
	06/18/15	ND	<3.0	<0.5	<0.5	<1.5	--	0.092	0.074	<0.066	--
	12/08/15	ND	<0.5	0.5	0.8	<1.5	--	0.460	0.092	<0.067	--
	06/14/16	ND	<0.5	<0.5	0.6	<1.5	--	0.290	0.150	<0.067	--
	01/13/17	ND	4.2	0.5	0.9	2.2	--	0.490	0.140	<0.067	--
	06/13/17	**ND**	**2.0**	**<0.5**	**0.6**	**<1.5**	**--**	**0.340**	**0.080**	**<0.067**	**--**
MW-201	03/08/07	Sheen	0.50	<0.5	<0.5	<1.5	--	0.076	0.51	0.18	--
	06/07/07	ND	0.50	<0.5	<0.5	<1.5	--	0.08	0.53	0.17	0.1
Duplicate	06/07/07	ND	0.60	<0.5	<0.5	<1.5	--	0.069	0.39	0.13	--
	09/27/07	Sheen	<0.5	<0.5	<0.5	<1.5	--	0.076	0.810	0.470	0.080
	11/27/07	ND	0.6	<0.5	<0.5	<1.5	--	0.065	0.390	0.150	0.098
	02/12/08	ND	0.813	<0.500	<0.500	<1.00	--	0.111	<0.243	<0.485	<1.00
	05/14/08	Sheen	0.616	<0.500	<0.500	<1.00	--	0.110	<0.236	<0.472	<1.00
	09/05/08	ND	<0.500	0.517	<0.500	<1.00	--	0.153	<0.238	<0.476	<1.00
	12/05/08	ND	2.24	0.511	<0.500	1.87	--	0.323	<0.248	<0.495	<1.00
	02/17/09	ND	0.552	<0.500	<0.500	<1.00	--	0.0887	<0.263	<0.526	<1.00
	05/13/09	ND	2.42	<0.500	<0.500	1.76	--	0.372	<0.250	<0.500	<1.00
	09/11/09	ND	<0.500	<0.500	<0.500	1.4	--	0.43	<0.248	<0.495	<2.0
	04/14/10	ND	<0.50	<0.50	<0.50	<2.0	--	0.15	0.17	<0.25	<2.0
	09/22/10	ND	<0.50	<0.50	<0.50	1.1	--	0.27	0.47	<0.25	<2.0
	04/26/11	ND	1.6	<0.50	<0.50	<1.0	--	0.18	--	--	<2.0
	09/22/11	ND	3.6	<0.50	<0.50	1.4	--	0.22	0.33[17]	<0.24	--
	04/18/12	ND	1.8	<0.50	<0.50	<1.0	--	0.14	0.29[17]	<0.24	--
	10/11/12	ND	<0.50	0.61[21]	<0.50	0.81	--	0.37	0.28[17,19,20]	<0.24	--
	04/25/13	ND	1.7	0.9	<0.5	<1.5	--	0.14	0.049	<0.067	--
	09/19/13	ND	1.8	<0.5	<0.5	<1.5	--	0.13	0.075	<0.067	--

Appendix C
Historical Summary of Groundwater Analytical Data
Total Petroleum Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well[1]	Date Sampled	LNAPL[2]	BTEX (EPA Method 8020 or 8021B) (µg/L)				TPH (EPA Method 418.1) (mg/L)	NWTPH-Gx (mg/L)	NWTPH-D Extended[3] (mg/L)		Dissolved Lead (EPA 6000/7000 Series Method) (µg/L)
			B	T	E	X		Gasoline C_7 - C_{12}	Diesel C_{12} - C_{24}	Heavy Oil >C_{24}	
MW-201 (continued)	06/23/14	ND	2.2	<0.5	<0.5	<1.5	--	0.210 J	0.068	<0.067	--
	12/16/14	ND	2.4	<0.7	0.6	2.3	--	0.450	0.063	<0.067	--
	06/18/15	ND	<2.0	<0.5	<0.5	<1.5	--	0.130	0.32	0.46	--
	12/08/15	ND	<0.5	<0.5	0.6	1.6	--	0.580	0.062	<0.066	--
Duplicate	12/08/15	ND	<0.5	<0.5	<0.5	<1.5	--	0.500	0.19	0.27	--
	06/14/16	ND	<0.5	<0.5	<0.5	<1.5	--	0.160	0.072	<0.068	--
	01/13/17	ND	2.6	<0.5	0.6	<1.5	--	0.400	0.062	<0.067	--
	06/13/17	**ND**	**1.3**	**0.9**	**<0.5**	**<1.5**	**--**	**0.350**	**0.260**	**0.350**	**--**
MW-202	03/08/07	ND	0.60	<0.5	<0.5	<1.5	--	0.16	0.18	<0.095	--
	06/07/07	ND	<0.5	<2.0[16]	0.9	<1.5	--	0.072	0.150	<0.095	0.19
	09/27/07	ND	<0.5	<0.5	<0.5	<1.5	--	0.110	0.380	0.360	<0.24
	11/26/07	ND	<0.5	<0.5	0.8	<1.5	--	0.100	0.290	0.120	0.37
	02/12/08	ND	<0.500	<0.500	0.751	<1.00	--	0.249	<0.240	<0.481	<1.00
	05/13/08	ND	<0.500	<0.500	0.620	<1.00	--	0.188	<0.236	<0.472	<1.00
	09/04/08	ND	<0.500	<0.500	1.55	<1.00	--	0.135	<0.238	<0.476	<1.00
	12/04/08	ND	<0.500	<0.500	<0.500	1.34	--	0.132	<0.245	<0.490	<1.00
	02/18/09	ND	<0.500	<0.500	0.583	<1.00	--	0.314	<0.245	<0.490	<1.00
	05/13/09	ND	<0.500	<0.500	<0.500	<1.00	--	0.233	<0.243	<0.485	<1.00
	09/11/09	ND	<0.500	<0.500	<0.500	<1.00	--	0.120	<0.245	<0.490	<2.0
	04/14/10	ND	<0.50	<0.50	<0.50	<2.0	--	0.10	<0.12	<0.25	<2.0
	09/22/10	ND	<0.50	<0.50	<0.50	<2.0	--	0.090	<0.12	<0.25	<2.0
	04/27/11	ND	<0.50	<0.50	<0.50	<1.0	--	0.072	--	--	<2.0
	04/28/11	ND	--	--	--	--	--	--	<0.12	<0.24	--
	09/21/11	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	0.18 [17]	<0.24	--
	04/18/12	ND	<0.50	<0.50	<0.50	<1.0	--	0.074	0.24 [17]	<0.24	--
	10/11/12	ND	<0.50	<0.50	<0.50	<0.50	--	0.100	0.19 [17,19,20]	<0.24	--
	04/25/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.031	<0.073	--
	09/19/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.030	<0.069	--
	06/23/14	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050 UJ	<0.029	<0.067	--
	12/16/14	ND	<0.5	<0.5	<0.5	<1.5	--	0.052	<0.028	<0.066	--
	06/18/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.028	<0.066	--
	12/08/15	ND	<0.5	<0.5	<0.5	<1.5	--	0.064	<0.029	<0.068	--
	06/14/16	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.068	--
	01/13/17	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.030	<0.070	--
	06/13/17	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**<0.050**	**<0.028**	**<0.066**	**--**
MW-203	03/08/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.048	0.32	<0.095	--
	06/07/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.0500	0.150	<0.097	0.045
	09/28/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.500	0.400	0.270	<0.047
	11/27/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.290	<0.100	0.058
	02/12/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.240	<0.481	<1.00
Duplicate	02/12/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.236	<0.472	<1.00
	05/14/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.243	<0.485	<1.00
Duplicate	05/14/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	--	--	--
	09/03/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.236	<0.472	<1.00
	12/04/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.240	<0.481	<1.00
	02/17/09	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.236	<0.472	<1.00
	05/13/09	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.243	<0.485	<1.00
	09/11/09	ND	<0.500	<0.500	<1.00	<1.00	--	0.082	<0.248	<0.495	<2.0
	04/14/10	ND	<0.50	<0.50	<0.50	<2.0	--	<0.050	<0.12	<0.25	<2.0
	09/22/10	ND	<0.50	<0.50	<0.50	<2.0	--	0.058	<0.12	<0.24	<2.0
	04/27/11	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	--	--	<2.0
	04/28/11	ND	--	--	--	--	--	--	<0.12	<0.24	--
	09/21/11	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	<0.12	<0.25	--
	04/18/12	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	0.14 [17]	<0.24	--
	10/11/12	ND	<0.50	<0.50	<0.50	<0.50	--	<0.025	0.22 [17,19,20]	<0.24	--
	04/25/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.031	<0.072	--
	09/19/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.068	--
	06/24/14	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050 UJ	<0.029	<0.067	--
Duplicate	06/24/14	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050 UJ	<0.029	<0.067	--
	12/16/14	ND	<0.5	<0.5	<0.5	<1.5	--	0.110	0.032	<0.067	--
	06/18/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.069	--
	12/07/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.030	<0.069	--
	06/15/16	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.047	<0.067	--
Duplicate	06/15/16	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.035	<0.067	--
	01/13/17	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.069	--
	06/13/17	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**<0.050**	**<0.029**	**<0.067**	**--**
Offsite Area RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Offsite Area (continued)											
MW-204	03/08/07	Sheen	1.00	0.9	<0.5	<1.5	--	0.47	0.89	0.14	--
	06/07/07	ND	1.40	1.8	<0.5	2.6	--	0.670	1.400	0.170	<0.037
	09/28/07	ND	0.70	0.9	<0.5	1.6	--	0.640	1.000	0.260	<0.24
	11/27/07	ND	0.9	0.8	0.9	<5.0[16]	--	0.670	0.700	0.160	<0.047
	02/12/08	ND	1.76	1.09	<0.500	2.12	--	0.713	<0.240	<0.481	<1.00
	05/14/08	ND	1.32	1.71	<0.500	4.17	--	0.782	0.310	0.784	<1.00
	09/03/08	ND	4.42	1.06	3.07	1.47	--	1.070	0.384	<0.476	<1.00
	10/01/08	ND	--	--	--	--	--	0.796	--	--	--
	12/04/08	ND	1.45	1.20	1.05	4.22	--	0.869	0.291	<0.495	<1.00
	02/17/09	ND	1.48	1.32	1.82	7.50	--	1.060	0.341	<0.500	<1.00
Duplicate	02/17/09	ND	1.54	1.30	1.81	7.45	--	1.120	0.332	<0.556	<1.00
	05/13/09	ND	1.93	1.55	1.86	4.79	--	1.190	0.593	<0.500	<1.00
Duplicate	05/13/09	ND	1.82	1.58	1.88	7.70	--	1.230	0.553	<0.556	<1.00
	09/11/09	ND	<0.500	1.10	<0.500	1.8	--	1.200	0.396	<0.495	<2.0
Duplicate	09/11/09	ND	<0.500	1.10	<0.500	1.8	--	1.100	0.393	<0.495	<2.0
	04/14/10	ND	1.1	2.1	<0.50	3.6	--	1.5	1.2	0.84	<2.0
Duplicate	04/14/10	ND	1.1	2.1	<0.50	3.7	--	1.5	1.1	<0.25	<2.0
	09/22/10	ND	<0.50	1.5	<0.50	3.2	--	1.3	1.5	<0.25	<2.0
	04/26/11	ND	1.6	1.5	<0.50	3.9	--	0.71	--	--	<2.0
Duplicate	04/26/11	ND	1.9	1.7	<0.50	5.0	--	1.0	--	--	<2.0
	04/28/11	ND	--	--	--	--	--	--	0.69	<0.24	--
Duplicate	04/28/11	ND	--	--	--	--	--	--	0.58	<0.24	--
	09/22/11	ND	1.7	1.6	<0.50	6.1	--	0.92	0.88 [17]	<0.25	--
Duplicate	09/22/11	ND	1.7	1.8	<0.50	6.5	--	0.92	0.65 [17]	<0.24	--
MW-204-NEAR	09/22/11	ND	1.7	1.7	<0.50	6.3	--	0.94	0.91 [17]	<0.25	--
	04/18/12	ND	1.6	1.7	<0.50	4.1	--	0.69	1.2 [17]	0.64 [17]	--
Duplicate	04/18/12[D]	ND	2.0	1.7	<0.50	5.3	--	0.87	1.2 [17]	1.4 [17]	--
MW-204-NEAR	04/18/12	ND	2.0	1.8	<0.50	5.3	--	0.90	1.2 [17]	1.6 [17]	--
Duplicate	04/18/12[D]	ND	2.0	1.8	<0.50	5.3	--	0.90	1.3 [17]	2.8 [17]	--
	10/12/12	ND	<0.50	1.3	<0.50	2.3	--	0.95	0.6 [17,19,20]	<0.24	--
Duplicate	10/12/12	ND	<0.50	1.2	<0.50	2.3	--	0.62	0.62 [17,19,20]	<0.24	--
MW-204-NEAR	10/12/12	ND	<0.50	1.3	<0.50	2.4	--	0.71	0.51 [17,19,20]	<0.24	--
	04/26/13	ND	0.7	2.2	1.6	4.6	--	0.89	0.24	<0.067	--
Duplicate	04/26/13	ND	0.7	2.2	1.7	4.9	--	0.88	0.32	0.077	--
	09/19/13	ND	1.1	1.5	1.1	3.5	--	0.58	0.31	<0.067	--
	06/24/14	ND	1.0	1.4	<0.5	2.6	--	0.600 J	0.24	<0.066	--
	07/25/14	ND	--	--	--	--	--	0.880	--	--	--
Duplicate	07/25/14	ND	--	--	--	--	--	0.90	--	--	--
	12/16/14	ND	0.9	1.5	1.3	<6.0	--	0.990	0.240	<0.066	--
Duplicate	12/16/14	ND	0.9	1.5	1.2	<6.0	--	1.000	0.200	<0.066	--
	06/18/15	ND	<0.5	0.9	0.6	<3.0	--	0.430	0.250	<0.069	--
	12/09/15	ND	1.0	1.6	1.4	3.8	--	1.400	0.190	<0.069	--
	01/15/16	ND	0.9	1.4	<1.2	3.5	--	1.400	0.840	0.4	--
Duplicate	01/15/16	ND	0.9	1.4	<1.1	3.5	--	1.400	0.210	<0.070	--
	06/13/16	ND	<0.5	1.6	1.4	2.9	--	0.890	0.210	<0.067	--
	01/13/17	ND	<0.5	1.4	1.3	3.3	--	1.400	0.260	<0.068	--
	06/13/17	**ND**	**0.7**	**1.1**	**<0.5**	**2.3**	**--**	**1.200**	**0.170**	**<0.067**	**--**
MW-205	03/08/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.048	0.18	<0.095	--

Appendix C
Historical Summary of Groundwater Analytical Data
Total Petroleum Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well[1]	Date Sampled	LNAPL[2]	BTEX (EPA Method 8020 or 8021B) (µg/L)				TPH (EPA Method 418.1) (mg/L)	NWTPH-Gx (mg/L)	NWTPH-D Extended[3] (mg/L)		Dissolved Lead (EPA 6000/7000 Series Method) (µg/L)
			B	T	E	X		Gasoline C_7 - C_{12}	Diesel C_{12} - C_{24}	Heavy Oil >C_{24}	
MW-205 Continued	06/07/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.098	<0.100	<0.037
	09/28/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.081	<0.100	<0.047
	11/27/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.120	0.560	<0.047
	02/12/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.248	0.529	<1.00
	05/14/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.238	<0.476	<1.00
	09/03/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.240	<0.481	<1.00
	12/05/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.236	<0.472	<1.00
	02/17/09	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.248	<0.495	<1.00
	05/13/09	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.245	<0.490	<1.00
	09/11/09	ND	<0.500	<0.500	<0.500	<1.00	--	0.1	<0.248	<0.495	<2.0
	04/14/10	ND	<0.50	<0.50	<0.50	<2.0	--	0.051	<0.12	<0.25	<2.0
	09/22/10	ND	<0.50	<0.50	<0.50	<2.0	--	0.082	0.15	<0.25	<2.0
	04/26/11	LNAPL	--	--	--	--	--	--	--	--	--
	09/22/11	ND	<0.50	<0.50	<0.50	<1.0	--	0.07	<0.12	<0.25	--
MW-205-NEAR	09/22/11	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	<0.12	<0.25	--
	04/18/12	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	0.16 [17]	<0.24	--
Duplicate	04/18/12[D]	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	0.25 [17]	0.44 [17]	--
MW-205-NEAR	04/18/12	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	7.4 [17]	4.8 [17]	--
	10/12/12	ND	<0.50	<0.50	<0.50	<0.50	--	0.027	0.23 [17,19,20]	<0.24	--
Duplicate	10/12/12	ND	<0.50	<0.50	<0.50	<0.50	--	0.035	0.54 [17,19,20]	0.34 [17]	--
MW-205-NEAR	10/12/12	ND	<0.50	<0.50	<0.50	<0.50	--	0.036	0.30 [17,19,20]	<0.24	--
	04/26/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.030	<0.069	--
	09/19/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.067	--
Duplicate	09/19/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.067	--
	06/24/14	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050 UJ	<0.028	<0.066	--
	12/16/14	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.028	<0.066	--
	06/18/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.028	<0.066	--
Duplicate	06/18/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.028	<0.066	--
	12/09/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.031	<0.072	--
	06/13/16	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.05	<0.068	--
	01/13/17	MD	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.089	<0.071	--
	06/13/17	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**0.280**	**<0.029**	**<0.067**	**--**
MW-206	03/08/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.048	<0.075	<0.094	--
	06/07/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.076	<0.095	0.078
	09/27/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.076	<0.095	<0.047
	11/27/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.077	<0.096	<0.24
	02/12/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.236	<0.472	<1.00
	05/13/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.250	<0.505	<1.00
	09/04/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.240	<0.481	<1.00
Duplicate	09/04/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.240	<0.481	<1.00
	12/04/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.236	<0.472	<1.00
Duplicate	12/04/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.236	<0.472	<1.00
	02/18/09	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.278	<0.556	<1.00
	05/12/09	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.278	<0.556	<1.00
	09/11/09	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.248	<0.495	<2.0
	04/13/10	ND	<0.50	<0.50	<0.50	<2.0	--	<0.050	--	--	--
	04/14/10	ND	--	--	--	--	--	--	<0.12	<0.24	<2.0
	09/22/10	ND	<0.50	<0.50	<0.50	<2.0	--	<0.050	<0.12	<0.25	<2.0
	04/27/11	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	--	--	<2.0
	04/28/11	ND	--	--	--	--	--	--	<0.12	<0.24	--
	09/21/11	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	<0.12	<0.24	--
	04/18/12	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	<0.12	<0.24	--
	10/11/12	ND	<0.50	<0.50	<0.50	<0.50	--	<0.025	0.16 [17,19,20]	<0.24	--
	04/25/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.067	--
	09/19/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.069	--
	06/23/14	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050 UJ	<0.029	<0.067	--
	12/16/14	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.028	<0.066	--
	06/17/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.068	--
	12/08/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.067	--
	06/14/16	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.028	<0.066	--
	01/13/17	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.028	<0.066	--
	06/13/17	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**<0.050**	**<0.029**	**<0.067**	**--**
Duplicate	**06/13/17**	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**<0.050**	**<0.030**	**<0.069**	**--**
Offsite Area RALs		*No visible sheen*	*40*	*14,300*	*1,400*	*4,400*	--	*1*	*10*	*15*	*50*
Offsite Area (continued)											
MW-207	03/08/07	ND	<0.5	<0.5	0.9	<1.5	--	<0.048	0.12	<0.095	--
Duplicate	03/08/07	ND	<0.5	<0.5	1.1	<1.5	--	<0.048	0.15	<0.095	--
	06/07/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.05	<0.077	<0.096	0.11
	09/27/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.081	<0.10	<0.47
	11/27/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.076	<0.095	<0.047
	02/12/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.248	<0.495	<1.00
	05/13/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.250	<0.500	<1.00
	09/04/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.238	<0.476	<1.00
	12/03/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.238	<0.476	<1.00
	02/18/09	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.248	<0.495	<1.00
	05/12/09	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.250	<0.500	<1.00
	09/11/09	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.248	<0.495	<2.0
	04/14/10	ND	<0.50	<0.50	<0.50	<2.0	--	<0.050	<0.12	<0.24	<2.0
	09/21/10	ND	<0.50	<0.50	<0.50	<2.0	--	<0.050	<0.12	<0.24	<2.0
Duplicate	09/21/10	ND	<0.50	<0.50	<0.50	<2.0	--	0.092	<0.12	<0.25	<2.0
	04/27/11	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	--	--	<2.0
	04/28/11	ND	--	--	--	--	--	--	<0.12	<0.24	--
	09/21/11	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	<0.12	<0.24	--
	04/18/12	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	<0.12	<0.24	--
	10/11/12	ND	<0.50	<0.50	<0.50	<0.50	--	<0.025	0.15 [17,19,20]	<0.24	--
	04/25/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.068	--
	09/19/13	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.067	--
	06/23/14	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050 UJ	<0.028	<0.066	--
	12/16/14	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.028	<0.066	--
	06/17/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.028	<0.066	--
	12/08/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.028	<0.066	--
	06/14/16	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.068	--
	01/13/17	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.029	<0.067	--
Duplicate	01/13/17	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.130	1.700	--
	06/13/17	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**0.071**	**0.031**	**<0.067**	**--**
MW-209	02/16/16	ND	1.4	1.2	1.3	4.2	--	1.600	0.150	<0.067	--
	06/13/16	ND	1.5	1.3	1.6	3.7	--	0.930	0.200	<0.066	--
	09/22/16	ND	0.9	0.9	<1.1	2.9	--	0.990	0.140	<0.072	--
	01/12/17	ND	1.3	1.3	1.4	3.6	--	1.400	0.140	<0.072	--
	03/27/17	**ND**	**1.5**	**1.4**	**1.5**	**3.3**	**--**	**0.920**	**0.190**	**<0.068**	**--**
	06/16/17	**ND**	**1.1**	**0.8**	**<0.5**	**2.4**	**--**	**1.300**	**0.730**	**0.230**	**--**
MW-210	02/16/16	ND	<0.5	1.1	1.4	4.7	--	2.500	8.600	1.600	--
	06/13/16	ND	<0.5	1.6	<0.5	5.1	--	2.100	3.200	0.510	--
	09/22/16	ND	1.3	1.1	1.3	4.7	--	2.100	2.300	0.390	--
	01/12/17	ND	<0.5	1.1	<0.5	<1.5	--	0.130	0.037	<0.070	--
	03/27/17	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**0.220**	**1.500**	**0.320**	**--**
Duplicate	**03/27/17**	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**0.160**	**0.200**	**<0.066**	**--**
	06/16/17	**ND**	**<0.5**	**0.5**	**0.6**	**2.6**	**--**	**1.200**	**2.800**	**0.550**	**--**
MW-211	02/16/16	ND	<0.5	<0.5	<0.5	<1.5	--	0.210	0.069	<0.067	--
	06/13/16	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.084	<0.068	--
	09/22/16	ND	<0.5	<0.5	<0.5	<1.5	--	0.100	0.062	<0.069	--
	01/12/17	ND	<0.5	<0.5	<0.5	<1.5	--	0.065	0.049	<0.070	--
	03/27/17	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**<0.050**	**0.061**	**<0.067**	**--**
	06/16/17	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**0.130**	**0.081**	**<0.066**	**--**
Duplicate	**06/16/17**	**ND**	**<0.5**	**<0.5**	**<0.5**	**<1.5**	**--**	**0.130**	**0.072**	**<0.067**	**--**

Notes:
[1]Monitoring well locations are shown in Figure 2.

Appendix C
Historical Summary of Groundwater Analytical Data
Total Petroleum Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Monitoring Well[1]	Date Sampled	LNAPL[2]	BTEX (EPA Method 8020 or 8021B) (µg/L)				TPH (EPA Method 418.1) (mg/L)	NWTPH-Gx (mg/L)	NWTPH-D Extended[3] (mg/L)		Dissolved Lead (EPA 6000/7000 Series Method) (µg/L)
			B	T	E	X		Gasoline C_7 - C_{12}	Diesel C_{12} - C_{24}	Heavy Oil >C_{24}	

[2]LNAPL = light nonaqueous phase liquid.
[3]For December 2000 through June 2002, samples were first analyzed without the sulfuric acid/silica gel cleanup procedure (first or only result). If analytes were detected, the sulfuric acid/silica gel cleanup procedure was performed (second result). For September 2002 and after, samples obtained from Upper Yard wells were analyzed without the sulfuric acid/silica gel cleanup procedure, and samples obtained from Elliott Avenue and Offsite Area wells were analyzed with the sulfuric acid/silica gel cleanup procedure.
[4]According to the laboratory, the sample chromatogram does not resemble the gasoline standard.
[5]According to the laboratory, sample contains diesel-range hydrocarbons that extend into the hydrocarbon range quantified as gasoline.
[6]Due to an error in the identification of two sets of samples, (MW-64 and Dup 121699), the results from the sampling date of 01/04/00 were not considered reliable. The 12/26/99 results were not reported by the laboratory and a resampling took place.
[7]Due to an extraction anomaly during the silica gel cleanup procedure, a second analytical result is not available for this sample.
[8]After review of field procedures and historic analytical results, the sample appears to have been cross-contaminated in the field or in the laboratory.
[9]BETX and gasoline-range hydrocarbon analyses were completed outside of the recommended holding time. Results should be qualified as estimated.
[10]Samples were extracted 3 or 4 days after expiration of the recommended holding time.
[11]Results should be considered bias low or estimated due to laboratory QA/QC exception.
[12]MW-30 was not sampled between July 1989 and September 1990 because of the presence of free product.
[13]Due to an extraction anomaly, the surrogate recoveries in the WTPH-D extended analyses were outside the established control limits and the results should be considered a low estimated value, according to the laboratory.
[14]The 03/23/99 data for diesel-range hydrocarbons (20.8/14.6 mg/L) for MW-84 appeared anomalous due to field sample handling or laboratory analytical error. The well was resampled on 04/01/99.
[15]Due to a lab error, the sample extract evaporated before testing and was not analyzed with the silica gel cleanup.
[16]Due to the presence of an interferent near its retention time, the normal reporting limit was not attained for this compound. The presence of or concentration cannot be determined.
[17]The chromatographic response resembles a typical fuel pattern.
[18]Sample was reanalyzed due to a surrogate failure. The surrogates were within QC limits in the reanalysis.
[19]Instrument related QC exceeds the control limits.
[20]Compound was found in the blank and sample.
[21]The %RDP between the primary and confirmation column/detector is 40%. The lower value has been reported.
µg/L = micrograms per liter mg/L = milligrams per liter ND = not detected RAL = remedial action level -- = not tested
Shaded concentrations are greater than corresponding Remedial Action Levels. Bolded data are for the current reporting period.
NEAR = The sample was collected from the top 12 inches of the water column within the respective monitoring well.
[D] = Duplicate of the preceeding sample.
UJ = Non-detect value was analyzed outside of hold time, but lest than two times hold time, concentration is an estimated value.
J = Concnetration is an estimated value and was analyzed outside of hold time, but lest than two times hold time.

Appendix C
Historical Summary of Groundwater Analytical Data
Carcinogenic Polycyclic Aromatic Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

OFFSITE AREA		Carcinogenic PAHs[2,3] (µg/L)								Noncarcinogenic PAHs[2] (µg/L)								
Monitoring Well[1]	Sample Date	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total CPAHs[4]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene[4]	Phenanthrene	Pyrene
RAL		0.03	0.03	0.03	0.03	0.03	0.03	0.03	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW-27	12/13/02	0.0282	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0282	0.398	<0.100	<0.100	<0.100	0.149	<0.100	<0.100	<0.100	<0.100
	06/19/03	0.0639	<0.0100	<0.0100	<0.0100	<0.0100	0.0288	0.0232	0.1159	3.46	<0.100	0.226	<0.100	0.963	0.296	0.188	0.357	0.952
	12/03/03	0.0266	<0.0100	<0.0100	<0.0100	0.0195	<0.0100	<0.0100	0.0461	--	--	--	--	--	--	<0.100	--	--
	06/03/04	0.0357	<0.0100	<0.0100	<0.0100	0.0276	<0.0100	<0.0100	0.0633	2.66	<0.100	0.178	<0.100	0.962	0.348	0.821	0.299	0.826
	12/06/04	0.0286	<0.0100	<0.0100	<0.0100	0.0190	<0.0100	<0.0100	0.0476	1.57	<0.100	<0.100	<0.100	0.269	<0.100	<0.100	<0.100	0.488
	06/03/05	0.0709	0.0127	0.0157	0.0166	0.0440	<0.0100	<0.0100	0.1499	2.01	<0.100	<0.100	<0.100	0.995	<0.100	<0.100	<0.100	1.21
	12/01/05	0.0921	0.0576	0.0649	0.0393	0.0698	<0.0100	0.0444	0.3681	--	--	--	--	--	--	--	--	--
	03/08/07	<0.02	<0.02	<0.02	<0.009	<0.02	<0.02	<0.02	<0.129	--	--	--	--	--	--	--	--	--
MW-27R	09/26/07	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	--	--	--	--	--	--	0.079 [5]	--	--
	11/27/07	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	0.19	--	--
MW-30	04/26/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
MW-67	06/19/03	0.0769	0.0195	<0.0100	<0.0100	0.0278	0.0849	0.0730	0.2821	1.99	<0.100	0.242	<0.100	0.602	0.106	<0.100	0.229	0.549
	12/03/03	0.0284	0.0101	<0.0100	0.0106	0.0337	<0.0100	<0.0100	0.0828	--	--	--	--	--	--	0.133	--	--
	06/03/04	0.0362	<0.0100	<0.0100	0.0132	0.0389	<0.0100	<0.0100	0.0883	1.25	<0.100	0.152	<0.100	0.839	<0.100	<0.100	<0.100	0.763
	12/06/04	0.0273	<0.0100	<0.0100	<0.0100	0.0258	<0.0100	<0.0100	0.0531	0.930	<0.100	<0.100	<0.100	0.342	<0.100	<0.100	<0.100	0.519
	03/04/05	0.0293	0.01	0.01	0.01	0.0221	0.01	0.01	0.0514	0.793	<0.100	0.148	<0.100	0.518	<0.100	<0.100	<0.100	0.511
	06/03/05	0.0323	<0.0100	<0.0100	<0.0100	0.0262	<0.0100	<0.0100	0.0585	0.714	<0.100	<0.100	<0.100	0.816	<0.100	<0.100	<0.100	0.843
MW-70R	02/16/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
Duplicate	02/16/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/14/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	<0.030	--	--
	09/22/16	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	<0.033	--	--
	01/12/17	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	--	--	--
Duplicate	01/12/17	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	--	--	--
	03/27/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
	06/13/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-76	12/13/02	0.0247	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0247	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
	06/19/03	0.0824	0.0262	<0.0100	<0.0100	0.0258	0.0718	0.0589	0.2651	0.484	<0.100	<0.100	<0.100	0.628	<0.100	<0.100	<0.100	0.342
	12/03/03	0.0194	<0.0100	0.0107	<0.0100	0.0172	<0.0100	<0.0100	0.0473	--	--	--	--	--	--	<0.100	--	--
	06/03/04	<0.0100	<0.0100	0.0104	<0.0100	0.0253	<0.0100	<0.0100	0.0357	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
	12/06/04	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
	06/03/05	0.0725	0.0528	0.0448	0.0452	0.0797	0.0142	0.0267	0.3359	<0.100	<0.100	<0.100	<0.100	0.482	<0.100	<0.100	<0.100	0.369
MW-200	06/07/07	<1	<1	<1	<1	<1	<1	<1	<7	22	<1	<1	<1	<1	6	31	1	<1
	07/06/07	0.01	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	0.01	20	<0.30	0.51	<0.0095	0.7	5	24	0.93	0.46
	09/26/07	0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	0.011	--	--	--	--	--	--	24 [5]	--	--
Duplicate	9/26/07[D]	0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	0.011	--	--	--	--	--	--	22 [5]	--	--
	11/28/07	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012	--	--	--	--	--	--	31	--	--
	02/13/08	0.0126	<0.00990	<0.00990	<0.00990	0.0137	<0.00990	<0.00990	0.0263	--	--	--	--	--	--	--	--	--
	05/13/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Filtered	05/13/08	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	--	--	--	--	--	--	--	--	--
	09/03/08	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
Filtered	09/03/08	<0.0476	<0.0476	<0.0476	<0.0476	<0.0476	<0.0476	<0.0476	<0.0476	--	--	--	--	--	--	--	--	--
	12/04/08	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
Filtered	12/04/08	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	--	--	--	--	--	--	--	--	--
	02/18/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Filtered	02/18/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	05/13/09	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	--	--	--	--	--	--	--	--	--
Filtered	05/13/09	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	--	--	--	--	--	--	--	--	--
	09/11/09	<0.0111	<0.0220	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0220	--	--	--	--	--	--	--	--	--
Filtered	09/11/09	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	--	--	--	--	--	--	--	--	--
	04/14/10	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	--	--	--	--	--	--	--	--	--
Filtered	04/14/10	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	--	--	--	--	--	--	--	--	--
	09/22/10	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	--	--	--	--	--	--	--	--	--
Filtered	09/22/10	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	--	--	--	--	--	--	--	--	--
	04/26/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	17	0.26	0.77	<0.094	1.3	5.5	13	4.7	0.88
Filtered	04/26/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	13	0.22	0.24	<0.094	<0.094	3.1	11	1.5	<0.094
Original	9/22/11 [9]	<0.0094	<0.019	<0.0094	<0.0094	<0.0094	<0.0094	<0.0094	<0.19	2.5	0.26	0.16	<0.0094	0.043	2.5	0.70	1.1	0.039
Original Duplicate	9/22/11[D]	0.010	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	0.010	19	0.19	1.1	<0.0099	1.4	6.6	8.50	4.7	1.0
Re-Analysis	9/22/11[7]	<0.0094	<0.019	<0.0094	<0.0094	<0.0094	<0.0094	<0.0094	<0.019	2.6	0.25	0.16	<0.0094	0.045	2.6	0.80	1.3	0.042
Original Filtered	9/22/11[9]	<0.0094	<0.019	<0.0094	<0.0094	<0.0094	<0.0094	<0.0094	<0.019	12	0.12	0.57	<0.0094	0.69	2.8	6.60	2.5	0.52
Duplicate Filtered	9/22/11[D]	<0.0098	<0.020	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.020	14	0.15	0.57	<0.0098	0.74	3.6	7.00	3.0	0.56
Re-Analysis Filtered	9/22/11[7]	<0.0094	<0.019	<0.0094	<0.0094	<0.0094	<0.0094	<0.0094	<0.019	15	0.16	0.61	<0.0094	0.76	4.0	6.80	3.5	0.57
	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	24 [DL]	0.28	0.94	<0.019	1.4	7.8	18 [DL]	5.4	1.0
Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	5.5	0.054	0.046	<0.019	<0.019	0.085	10 [DL]	0.036	<0.019
	10/11/12	0.01	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	0.01	23	0.23	0.92	<0.0095	1.00	4.4	8.6	4.4	0.73
Filtered	10/11/12	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	14	0.093	0.07	<0.0095	<0.0095	0.73	5.5	0.0099	<0.0095
	04/25/13	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	--	--	--	--	--	--	--	--	--
	09/19/13	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	--	--	--	--	--	--	--	--	--
	06/24/14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--

Appendix C
Historical Summary of Groundwater Analytical Data
Carcinogenic Polycyclic Aromatic Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

OFFSITE AREA		Carcinogenic PAHs[2,3] (µg/L)								Noncarcinogenic PAHs[2] (µg/L)								
Monitoring Well[1]	Sample Date	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total CPAHs[4]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene[4]	Phenanthrene	Pyrene
RAL		0.03	0.03	0.03	0.03	0.03	0.03	0.03	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW-200 Continued	12/16/14	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	--	--	--	--	--	--	--	--	--
	06/18/15	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	12/08/15	0.017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.017	--	--	--	--	--	--	--	--	--
	06/14/15	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	--	--	--	--	--	--	8.36	--	--
	01/13/17	0.012	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.008	--	--	--	--	--	--	--	--	--
	06/13/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-201	06/07/07	<1	<1	<1	<1	<1	<1	<1	<1	6	<1	<1	<1	<1	2	1	<1	<1
	07/06/07	0.027	0.014	0.017	<0.0096	0.02	<0.0096	<0.0096	0.078	6.7	<0.10	0.52	<0.0096	0.83	2	2.6	0.3	0.72
	09/27/07	0.018	<0.011	<0.011	<0.011	0.027	<0.011	<0.011	0.045	--	--	--	--	--	--	2.3[5]	--	--
	11/27/07	0.016	<0.0095	<0.0095	<0.0095	0.023	<0.0095	<0.0095	0.039	--	--	--	--	--	--	0.99	--	--
	02/12/08	0.0179	0.0584	<0.0490	<0.0490	0.0210	<0.00980	<0.00980	0.0973	--	--	--	--	--	--	--	--	--
	05/14/08	0.051	<0.0472	<0.0472	<0.0472	0.0756	<0.0472	<0.0472	0.1266	--	--	--	--	--	--	--	--	--
Filtered	05/14/08	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	--	--	--	--	--	--	--	--	--
	09/05/08	0.0243	<0.00962	<0.00962	<0.00962	0.0175	<0.00962	<0.00962	0.0418	--	--	--	--	--	--	--	--	--
Filtered	09/05/08	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	--	--	--	--	--	--	--	--	--
	12/05/08	0.0247	<0.00980	<0.00980	<0.00980	0.0268	<0.00980	<0.00980	0.0515	--	--	--	--	--	--	--	--	--
Filtered	12/05/08	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	--	--	--	--	--	--	--	--	--
	02/17/09	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
Filtered	02/17/09	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	--	--	--	--	--	--	--	--	--
	05/13/09	0.0129	<0.0100	<0.0100	<0.0100	0.0191	<0.0100	<0.0100	0.0320	--	--	--	--	--	--	--	--	--
Filtered	05/13/09	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	--	--	--	--	--	--	--	--	--
	09/11/09	0.021	<0.0200	<0.0100	<0.0100	0.025	<0.0100	<0.0100	0.0460	--	--	--	--	--	--	--	--	--
Filtered	09/11/09	<0.0100	<0.0220	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0220	--	--	--	--	--	--	--	--	--
	04/14/10	0.014	<0.020	<0.0099	<0.0099	0.019	<0.0099	<0.0099	0.033	--	--	--	--	--	--	--	--	--
Filtered	04/14/10	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	--	--	--	--	--	--	--	--	--
	09/22/10	0.026	<0.020	<0.0099	<0.0099	0.030	<0.0099	<0.0099	0.056	--	--	--	--	--	--	--	--	--
Filtered	09/22/10	<0.0098	<0.020	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.020	--	--	--	--	--	--	--	--	--
	04/26/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	7.3	0.10	0.41	<0.094	1.2	1.2	0.25	0.50	0.97
Filtered	04/26/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	5.5	0.12	<0.094	<0.094	<0.094	0.59	0.22	<0.094	<0.094
Original	9/22/11[8,9]	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	8.3	0.10	0.80	<0.094	1.5	1.8	0.40	0.94	1.3
Original Filtered	9/22/11[9]	0.014	<0.019	<0.0094	<0.0094	0.014	<0.0094	<0.0094	0.028	6.3	0.077	0.37	<0.0094	0.63	1.1	0.33	0.55	0.52
Re-Analysis Filtered	9/22/11[7]	0.017	<0.019	<0.0094	<0.0094	0.017	<0.0094	<0.0094	0.032	7.9	0.072	0.47	<0.0094	0.82	1.3	0.48	0.74	0.66
	04/18/12	0.025	<0.0096	<0.019	<0.019	0.021	<0.019	<0.019	0.046	8.2	0.11	0.44	<0.019	1.1	1.3	0.2	0.51	0.85
Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	1.4	0.022	0.054	<0.019	<0.019	<0.019	0.098	<0.019	<0.019
	10/11/12	0.029	<0.019	<0.0095	<0.0095	0.027	<0.0095	<0.0095	0.056	9.7	0.11	0.6	<0.0095	1.1	0.92	0.27	0.53	1.0
Filtered	10/11/12	<0.019	<0.038	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	3.9	0.043	0.12	<0.019	<0.019	0.12	0.19	<0.019	<.019
	04/25/13	0.022	<0.010	<0.010	<0.010	0.026	<0.010	<0.010	0.048	--	--	--	--	--	--	--	--	--
	09/19/13	0.02	<0.010	<0.010	<0.010	0.027	<0.010	<0.010	0.047	--	--	--	--	--	--	--	--	--
	06/23/14	0.032	<0.010	<0.010	<0.010	0.034	<0.010	<0.010	0.066	--	--	--	--	--	--	--	--	--
	12/16/14	0.016	<0.010	<0.010	<0.010	0.021	<0.010	<0.010	0.037	--	--	--	--	--	--	--	--	--
	06/18/15	0.034	0.025	0.029	<0.010	0.029	<0.010	0.023	0.140	--	--	--	--	--	--	--	--	--
	12/08/15	0.029	0.011	0.013	<0.010	0.030	<0.010	0.011	0.094	--	--	--	--	--	--	--	--	--
Duplicate	12/08/15	0.022	<0.010	<0.010	<0.010	0.022	<0.010	<0.010	0.044	--	--	--	--	--	--	--	--	--
	06/14/16	0.030	<0.010	0.014	<0.010	0.032	<0.010	<0.010	0.076	--	--	--	--	--	--	0.863	--	--
	01/13/17	0.017	<0.010	<0.010	<0.010	0.017	<0.010	<0.010	0.009	--	--	--	--	--	--	--	--	--
	06/13/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-202	06/07/07	<1	<1	<1	<1	<1	<1	<1	<7	2	<1	<1	<1	1	<1	<1	2	1
	07/06/07	0.05	0.014	0.016	<0.0097	0.049	<0.0097	<0.0097	0.129	0.27	<0.025	0.22	<0.0097	0.66	0.073	0.27	0.15	0.53
	09/27/07	0.042	<0.010	<0.010	<0.010	0.040	<0.010	<0.010	0.082	--	--	--	--	--	--	0.18[5]	--	--
	11/26/07	0.043	<0.010	<0.010	<0.010	0.036	<0.010	<0.010	0.079	--	--	--	--	--	--	<0.010	--	--
Filtered	11/26/07	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	0.057	--	--
	02/12/08	0.0457	<0.00990	<0.00990	0.0184	0.0444	<0.00990	<0.00990	0.1085	--	--	--	--	--	--	--	--	--
Filtered	02/12/08	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	--	--	--	--	--	--	--	--	--
	05/13/08	0.0406	<0.00943	0.0116	0.0149	0.0432	<0.00943	<0.00943	0.1103	--	--	--	--	--	--	--	--	--
Filtered	05/13/08	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	--	--	--	--	--	--	--	--	--
	09/04/08	0.0502	<0.00962	<0.00962	<0.00962	0.0482	<0.00962	<0.00962	0.0984	--	--	--	--	--	--	--	--	--
Filtered	09/04/08	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	--	--	--	--	--	--	--	--	--
	12/04/08	0.0286	<0.0100	<0.0100	<0.0100	0.0308	<0.0100	<0.0100	0.0594	--	--	--	--	--	--	--	--	--
Filtered	12/04/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	02/18/09	0.0181	<0.00980	<0.00980	<0.00980	0.0222	<0.00980	<0.00980	0.0403	--	--	--	--	--	--	--	--	--
Filtered	02/18/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	05/13/09	0.0146	<0.00943	<0.00943	<0.00943	0.0160	<0.00943	<0.00943	0.0306	--	--	--	--	--	--	--	--	--
Filtered	05/13/09	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	--	--	--	--	--	--	--	--	--
	09/11/09	0.0490	<0.0200	0.0110	<0.0100	0.0470	<0.0100	<0.0100	0.1070	--	--	--	--	--	--	--	--	--
Filtered	09/11/09	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200	--	--	--	--	--	--	--	--	--
	04/14/10	0.013	<0.020	<0.0099	<0.0099	0.013	<0.0099	<0.0099	0.026	--	--	--	--	--	--	--	--	--
Filtered	04/14/10	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	--	--	--	--	--	--	--	--	--
	09/22/10	0.041	<0.020	0.012	<0.010	0.043	<0.010	<0.010	0.096	--	--	--	--	--	--	--	--	--

Appendix C
Historical Summary of Groundwater Analytical Data
Carcinogenic Polycyclic Aromatic Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

OFFSITE AREA		Carcinogenic PAHs[2,3] (µg/L)								Noncarcinogenic PAHs[2] (µg/L)								
Monitoring Well[1]	Sample Date	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total CPAHs[4]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene[4]	Phenanthrene	Pyrene
RAL		**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
MW-202 (continued) Filtered	09/22/10	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	--	--	--	--	--	--	--	--	--
	04/27/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	4.8	<0.094	<0.094	<0.094	0.55	0.36	2.9	<0.094	0.42
Filtered	04/27/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	3.6	<0.094	<0.094	<0.094	<0.094	0.19	2.6	<0.094	<0.094
	9/21/11 [8,9]	0.015	<0.019	<0.0094	<0.0094	0.013	<0.0094	<0.0094	0.028	0.35	<0.0094	0.021	<0.0094	0.17	0.019	0.16	0.013	0.19
	9/21/11 [9]	<0.0094	<0.019	<0.0094	<0.0094	<0.0094	<0.0094	<0.0094	<0.019	0.28	<0.0094	0.0094	<0.0094	0.059	0.016	0.13	<0.0094	0.065
Re-Analysis Filtered	9/21/11 [7]	<0.0094	<0.019	<0.0094	<0.0094	<0.0094	<0.0094	<0.0094	<0.019	0.35	<0.0094	0.031	<0.0094	0.13	0.026	0.12	0.016	0.14
	04/18/12	0.029	<0.0096	<0.019	<0.019	0.031	<0.019	<0.019	0.06	6.5	0.058	0.051	<0.019	0.54	0.24	1.8	0.11	0.43
	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	0.40	<0.019	<0.019	<0.019	<0.019	<0.019	0.76	<0.019	<0.019
	10/11/12	0.027	<0.019	<0.0095	<0.0095	0.02	<0.0095	<0.0095	0.02	0.82	0.011	0.068	<0.0095	0.23	0.032	0.075	0.016	0.26
Filtered	10/11/12	<0.019	<0.038	<0.019	<0.019	<0.019	<0.019	<0.019	<0.039	0.07	<0.019	<0.019	<0.019	<0.019	<0.019	0.03	<0.019	<0.019
Filtered	10/11/12	<0.019	<0.038	<0.019	<0.019	<0.019	<0.019	<0.019	<0.039	0.07	<0.019	<0.019	<0.019	<0.019	<0.019	0.03	<0.019	<0.019
	04/25/13	0.019	<0.010	<0.010	<0.010	0.017	<0.010	<0.010	0.036	--	--	--	--	--	--	--	--	--
	09/19/13	0.025	<0.010	<0.010	<0.010	0.026	<0.010	<0.010	0.051	--	--	--	--	--	--	--	--	--
	12/16/14	0.018	<0.010	<0.010	<0.010	0.014	<0.010	<0.010	0.032	--	--	--	--	--	--	--	--	--
	06/18/15	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.013	--	--	--	--	--	--	--	--	--
	12/08/15	0.025	<0.011	<0.011	<0.011	0.023	<0.011	<0.011	0.048	--	--	--	--	--	--	--	--	--
	06/14/16	0.014	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	0.014	--	--	--	--	--	--	0.98	--	--
	01/13/17	0.023	<0.011	<0.011	<0.011	0.017	<0.011	<0.011	0.023	--	--	--	--	--	--	--	--	--
	06/13/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-203	06/07/07	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	07/06/07	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	0.62	<0.0096	0.12	<0.0096	0.16	0.047	0.052	0.013	0.11
	09/28/07	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.07	--	--	--	--	--	--	0.13	--	--
	11/27/07	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	<0.010	--	--
	02/12/08	0.0127	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	0.0127	--	--	--	--	--	--	--	--	--
Duplicate	02/12/08	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	--	--	--	--	--	--	--	--	--
	05/14/08	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	--	--	--	--	--	--	--	--	--
Filtered	05/14/08	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	--	--	--	--	--	--	--	--	--
	09/03/08	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	--	--	--	--	--	--	--	--	--
Filtered	09/03/08	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	--	--	--	--	--	--	--	--	--
	12/04/08	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	--	--	--	--	--	--	--	--	--
Filtered	12/04/08	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	--	--	--	--	--	--	--	--	--
	02/17/09	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
Filtered	02/17/09	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
	05/13/09	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
Filtered	05/13/09	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
	09/11/09	<0.0110	<0.0220	<0.0110	<0.0110	<0.0110	<0.0110	<0.0110	<0.0220	--	--	--	--	--	--	--	--	--
Filtered	09/11/09	<0.0110	<0.0220	<0.0110	<0.0110	<0.0110	<0.0110	<0.0110	<0.0220	--	--	--	--	--	--	--	--	--
	04/14/10	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	--	--	--	--	--	--	--	--	--
Filtered	04/14/10	<0.0097	<0.019	<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	<0.019	--	--	--	--	--	--	--	--	--
	09/22/10	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	--	--	--	--	--	--	--	--	--
Filtered	09/22/10	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	04/27/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	0.44	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094
Filtered	04/27/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	0.45	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094
	9/21/11 [9]	<0.0098	<0.020	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.020	0.34	<0.0098	0.012	<0.0098	0.039	0.0098	0.011	<0.0098	0.079
Re-Analysis	9/21/11[7]	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	0.51	<0.010	0.022	<0.010	0.047	0.017	0.02	<0.010	0.10
Filtered	9/21/11 [9]	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	0.34	<0.010	0.011	<0.010	0.023	0.011	0.016	<0.010	0.043
Re-Analysis Filtered	9/21/11[7]	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	0.31	<0.0095	0.017	<0.0095	0.020	0.013	0.0095	<0.0095	0.039
	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	0.42	<0.019	0.028	<0.019	0.042	<0.019	<0.019	<0.019	0.076
Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
	10/11/12	<0.0095	<0.020	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.020	0.23	<0.0098	0.035	<0.0098	0.041	0.011	0.013	0.01	0.10
Filtered	10/11/12	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	0.056	<0.0095	0.019	<0.0095	<0.0095	<0.0095	0.028	<0.0095	<0.0095
	04/25/13	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	--	--	--
	09/19/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/24/14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
Duplicate	06/24/14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	12/16/14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/18/15	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	12/07/15	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/15/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	0.128	--	--
Duplicate	06/15/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	0.099	--	--
	01/13/17	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	--	--	--
	06/13/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-204	06/07/07	<1	<1	<1	<1	<1	<1	<1	<7	5	<1	<1	<1	<1	3	<1	<1	<1
	07/06/07	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	3.3	<0.30	0.19	<0.0095	0.06	2.7	0.45	1.1	0.061
Duplicate	7/6/2007[D]	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	3.3	<0.30	0.18	<0.0096	0.058	2.7	0.44	1	0.064
	09/28/07	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	--	--	--	--	--	--	0.84	--	--
	11/27/07	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	<0.010	--	--
	02/12/08	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	--	--	--	--	--	--	--	--	--

Appendix C
Historical Summary of Groundwater Analytical Data
Carcinogenic Polycyclic Aromatic Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

OFFSITE AREA		Carcinogenic PAHs[2,3] (µg/L)								Noncarcinogenic PAHs[2] (µg/L)								
Monitoring Well[1]	Sample Date	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total CPAHs[4]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene[4]	Phenanthrene	Pyrene
RAL		0.03	0.03	0.03	0.03	0.03	0.03	0.03	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
MW-204 (continued)	05/14/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Filtered	05/14/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	09/03/08	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	--	--	--	--	--	--	--	--	--
Filtered	09/03/08	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	--	--	--	--	--	--	--	--	--
	12/04/08	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	--	--	--	--	--	--	--	--	--
Filtered	12/04/08	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
	02/17/09	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	--	--	--	--	--	--	--	--	--
Duplicate	02/17/09	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	--	--	--	--	--	--	--	--	--
Filtered	02/17/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Duplicate	02/17/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	05/13/09	<0.0100	<0.0100	<0.0100	<0.0100	0.0193	<0.0100	<0.0100	0.0193	--	--	--	--	--	--	--	--	--
Duplicate	05/13/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Filtered	05/13/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Duplicate	05/13/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	09/11/09	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200	--	--	--	--	--	--	--	--	--
Duplicate	09/11/09	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200	--	--	--	--	--	--	--	--	--
Filtered	09/11/09	<0.0110	<0.0220	<0.0110	<0.0110	<0.0110	<0.0110	<0.0110	<0.0220	--	--	--	--	--	--	--	--	--
Duplicate	09/11/09	<0.0096	<0.0190	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0190	--	--	--	--	--	--	--	--	--
	04/14/10	<0.0097	<0.019	<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	<0.019	--	--	--	--	--	--	--	--	--
Duplicate	04/14/10	<0.0099	<0.020	<0.0099	<0.0099	0.0099	<0.0099	<0.0099	0.0099	--	--	--	--	--	--	--	--	--
Filtered	04/14/10	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	--	--	--	--	--	--	--	--	--
Duplicate	04/14/10	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	--	--	--	--	--	--	--	--	--
	09/22/10	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	--	--	--	--	--	--	--	--	--
Filtered	09/22/10	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	--	--	--	--	--	--	--	--	--
	04/26/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	2.6	0.33	0.13	<0.094	<0.094	2.7	1.2	1.1	<0.094
Duplicate	04/26/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	2.5	0.30	0.14	<0.094	<0.094	2.6	1.3	1.0	<0.094
Filtered	04/26/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	2.6	0.28	<0.094	<0.094	<0.094	2.0	1.1	0.43	<0.094
Duplicate	04/26/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	2.1	0.23	0.094	<0.094	<0.094	1.7	1.1	0.53	<0.094
Original	9/22/11 [9]	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	1.7	0.14	0.16	<0.010	0.039	1.6	0.63	1.0	0.034
Duplicate	9/22/11 [D]	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	2.3	0.15	0.13	<0.010	0.058	2.2	0.68	0.59	0.054
Re-Analysis	9/22/11 [7]	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	2.4	0.19	0.13	<0.010	0.041	2.1	0.61	0.83	0.042
Filtered	9/22/11 [9]	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	1.8	0.14	0.067	<0.010	0.018	1.4	0.52	0.72	0.014
Duplicate Filtered	9/22/11[D]	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	2.1	0.17	0.079	<0.010	<0.010	1.6	0.65	0.75	<0.010
Re-Analysis Filtered	9/22/11 [7]	<0.0098	<0.020	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.020	1.6	0.13	0.073	<0.0098	0.015	1.4	0.36	0.54	0.012
NEAR	9/22/11 [9]	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	21	0.21	0.98	<0.010	1.3	4.7	9.6	4.1	0.94
NEAR Re-Analysis	9/22/11 [7]	<0.0096	<0.019	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.019	18	0.21	0.83	<0.0096	1.2	6.0	5.7	4.6	0.89
NEAR Filtered	09/22/11	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	1.7	0.14	0.076	<0.010	0.018	1.3	0.53	0.68	0.013
	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	3.3	0.37	0.21	<0.019	0.05	3.2	0.34	1.1	0.032
Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	2.8	0.19	0.10	<0.019	1.2	<0.019	0.28	<0.019	<0.019
Duplicate	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	3.8	0.41	0.19	<0.019	0.047	3.6	0.37	1.2	0.037
Duplicate Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	0.82	0.032	0.071	<0.019	<0.019	0.019	0.16	<0.019	<0.019
NEAR	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	3.3	0.36	0.19	<0.019	0.048	3.0	0.33	1.1	0.03
NEAR Duplicate	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	3.2	0.35	0.18	<0.019	0.045	2.9	0.31	1.2	0.037
NEAR Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	3.2	0.30	0.085	<0.019	<0.019	1.7	0.76	0.023	<0.019
NEAR Duplicate Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	0.91	0.053	0.084	<0.019	<0.019	0.14	0.21	<0.019	<0.019
	10/12/12	<0.095	<0.19	<0.095	<0.095	<0.095	<0.095	<0.095	<0.019	2.5	0.29	0.23	<0.095	<0.095	2.4	0.94	1.1	<0.095
Filtered	10/12/12	<0.095	<0.19	<0.095	<0.095	<0.095	<0.095	<0.095	<0.019	0.98	0.11	<0.095	<0.095	<0.095	0.34	0.57	<0.095	<0.095
Duplicate	10/12/12	<0.095	<0.19	<0.095	<0.095	<0.095	<0.095	<0.095	<0.019	2.5	0.29	0.21	<0.095	<0.095	2.2	0.89	1.0	<0.095
Duplicate Filtered	10/12/12	<0.095	<0.19	<0.095	<0.095	<0.095	<0.095	<0.095	<0.019	2.2	0.24	<0.095	<0.095	<0.095	1.7	1.0	0.17	<0.095
NEAR	10/12/12	<0.095	<0.19	<0.095	<0.095	<0.095	<0.095	<0.095	<0.019	2.0	0.23	0.21	<0.095	<0.095	1.9	0.76	1.0	<0.095
NEAR Filtered	10/12/12	<0.095	<0.19	<0.095	<0.095	<0.095	<0.095	<0.095	<0.019	0.98	0.1	0.097	<0.095	<0.095	0.33	0.63	<0.095	<0.095
	04/26/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
Duplicate	04/26/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	09/19/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/24/14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	12/16/14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
Duplicate	12/16/14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/18/15	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	--	--	--
	12/09/15	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	01/15/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
Duplicate	01/15/16	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	<0.012	--	--	--	--	--	--	--	--	--
	06/13/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	0.15	--	--
	01/13/17	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	--	--	--
	06/13/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-205	06/07/07	<1	<1	<1	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1
	07/06/07	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	3.4	0.022	<0.0096	<0.0096	<0.0096	<0.0096	0.041	<0.0096	0.01
	09/28/07	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	0.050	--	--
	11/27/07	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	0.022	--	--

Appendix C
Historical Summary of Groundwater Analytical Data
Carcinogenic Polycyclic Aromatic Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

OFFSITE AREA		Carcinogenic PAHs[2,3] (µg/L)								Noncarcinogenic PAHs[2] (µg/L)								
Monitoring Well[1]	Sample Date	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total CPAHs[4]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene[4]	Phenanthrene	Pyrene
RAL		**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
MW-205 (Continued)	02/12/08	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	--	--	--	--	--	--	--	--	--
	05/14/08	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	--	--	--	--	--	--	--	--	--
Filtered	05/14/08	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	--	--	--	--	--	--	--	--	--
	09/03/08	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
Filtered	09/03/08	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
	12/05/08	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
Filtered	12/05/08	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
	02/17/09	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
Filtered	02/17/09	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
	05/13/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Filtered	05/13/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	09/11/09	<0.0110	<0.0220	<0.0110	<0.0110	<0.0110	<0.0110	<0.0110	<0.0220	--	--	--	--	--	--	--	--	--
Filtered	09/11/09	<0.0110	<0.0220	<0.0110	<0.0110	<0.0110	<0.0110	<0.0110	<0.0220	--	--	--	--	--	--	--	--	--
	04/14/10	<0.013	<0.026	<0.013	<0.013	<0.013	<0.013	<0.013	<0.026	--	--	--	--	--	--	--	--	--
Filtered	04/14/10	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	--	--	--	--	--	--	--	--	--
	09/22/10	<0.0094	<0.019	<0.0094	<0.0094	<0.0094	<0.0094	<0.0094	<0.019	--	--	--	--	--	--	--	--	--
Filtered	09/22/10	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	--	--	--	--	--	--	--	--	--
	04/26/11									LNAPL								
Filtered	04/26/11									LNAPL								
	09/22/11	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	1.6	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	0.016	<0.0099	0.015
Filtered	09/22/11	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	1.1	<0.010	<0.010	<0.010	<0.010	<0.010	0.011	<0.010	<0.010
NEAR	09/22/11	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	1.5	<0.010	<0.010	<0.010	<0.010	<0.010	0.015	<0.010	0.011
NEAR Filtered	09/22/11	<0.0098	<0.020	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.020	1.4	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	0.015	<0.0098	<0.0098
	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	1.6	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	0.16	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
Duplicate	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	1.9	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
Duplicate Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	0.32	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
NEAR	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	1.6	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
NEAR Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	0.8	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
	10/12/12	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	1.6	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	0.015	0.0095	<0.0095
Filtered	10/12/12	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	0.22	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	0.013	0.0095	<0.0095
Duplicate	10/12/12	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	1.5	0.015	0.011	<0.0095	<0.0095	0.014	0.017	<0.0095	0.0099
Duplicate Filtered	10/12/12	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	0.12	<0.0095	<0.0095	<00.095	<0.0095	<0.0095	0.016	<0.0095	<0.0095
NEAR	10/12/12	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	1.6	0.017	0.012	<0.0095	<0.0095	0.017	0.016	0.018	0.012
NEAR Filtered	10/12/12	<0.019	<0.038	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	0.12	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
	04/26/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	09/19/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
Duplicate	09/19/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/24/14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	12/16/14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/18/15	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
Duplicate	06/18/15	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	12/09/15	<0.010	0.012	0.011	<0.010	<0.010	<0.010	0.022	0.045	--	--	--	--	--	--	--	--	--
	06/13/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	<0.031	--	--
	01/13/17	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	--	--	--
	06/13/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-206	06/07/07	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	07/06/07	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	1.9	<0.0096	0.069	<0.0096	0.087	0.14	0.19	0.51	0.036
	09/27/07	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	0.063 [5]	--	--
	11/27/07	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	0.031	--	--
	02/12/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	05/13/08	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
Filtered	05/13/08	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
	09/04/08	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
Duplicate[6]	09/04/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Filtered	09/04/08	0.0132	<0.00952	<0.00952	0.0107	0.0134	0.0638	0.0125	0.1136	--	--	--	--	--	--	--	--	--
Duplicate	09/04/08	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	--	--	--	--	--	--	--	--	--
	10/01/08	<0.0102	<0.0102	<0.0102	<0.0102	<0.0102	<0.0102	<0.0102	<0.0102	--	--	--	--	--	--	--	--	--
Filtered	10/01/08	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	--	--	--	--	--	--	--	--	--
	12/04/08	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	--	--	--	--	--	--	--	--	--
Filtered	12/04/08	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
Duplicate	12/04/08	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	--	--	--	--	--	--	--	--	--
Filtered	12/04/08	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	--	--	--	--	--	--	--	--	--
	02/18/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Filtered	02/18/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	05/12/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Filtered	05/12/09	<0.0125	<0.0125	<0.0125	<0.0125	<0.0125	<0.0125	<0.0125	<0.0125	--	--	--	--	--	--	--	--	--
	09/11/09	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200	--	--	--	--	--	--	--	--	--

Appendix C
Historical Summary of Groundwater Analytical Data
Carcinogenic Polycyclic Aromatic Hydrocarbons

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

OFFSITE AREA		Carcinogenic PAHs[2,3] (µg/L)								Noncarcinogenic PAHs[2] (µg/L)								
Monitoring Well[1]	Sample Date	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total CPAHs[4]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene[4]	Phenanthrene	Pyrene
RAL		**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
MW-206 (Continued) Filtered	09/11/09	<0.0110	<0.0220	<0.0110	<0.0110	<0.0110	<0.0110	<0.0110	<0.0220	--	--	--	--	--	--	--	--	--
	04/14/10	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	--	--	--	--	--	--	--	--	--
Filtered	04/14/10	<0.0098	<0.020	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.020	--	--	--	--	--	--	--	--	--
	09/22/10	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	--	--	--	--	--	--	--	--	--
Filtered	09/22/10	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	--	--	--	--	--	--	--	--	--
	04/27/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	0.14	<0.094	<0.094	<0.094	0.21	<0.094	<0.094	<0.094	0.15
Filtered	04/27/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	0.12	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094	<0.094
	09/21/11	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	0.014	<0.010	<0.010	<0.010	0.063	<0.010	0.049	<0.010	0.046
Filtered	09/21/11	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	0.047	<0.010	<0.010	<0.010	0.011	<0.010	0.054	<0.010	0.01
	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	0.18	<0.019	0.042	<0.019	0.31	<0.019	0.022	<0.019	0.19
Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019	<0.019
	10/11/12	0.011	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	0.011	0.21	<0.0095	0.066	<0.0095	0.37	0.018	0.0098	0.014	0.29
	10/11/12	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	0.018	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	0.011	<0.0095	<0.0095
	04/25/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	09/19/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/23/14	<0.010	<0.010	0.014	<0.010	<0.010	<0.010	0.013	0.027	--	--	--	--	--	--	--	--	--
	12/16/14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/17/15	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	12/08/15	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/14/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	<0.031	--	--
	01/13/17	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	--	--	--
	06/13/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-207	06/07/07	<1	<1	<1	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1
	07/06/07	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	0.31	<1	0.01	<0.0096	0.017	0.033	0.014	0.064	<0.0096
	09/27/07	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	<0.010	--	--
	11/27/07	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	<0.010	--	--
	02/12/08	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
	05/13/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Filtered	05/13/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	09/04/08	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
Filtered	09/04/08	<0.00952	<0.00952	0.0303	0.0256	<0.00952	<0.00952	<0.00952	0.0559	--	--	--	--	--	--	--	--	--
	10/01/08	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
Duplicate	10/01/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Filtered	10/01/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
Duplicate	10/01/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	12/03/08	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	--	--	--	--	--	--	--	--	--
Filtered	12/03/08	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	<0.00943	--	--	--	--	--	--	--	--	--
	02/18/09	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
Filtered	02/18/09	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	--
	05/12/09	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	--	--	--	--	--	--	--	--	--
Filtered	05/12/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	--
	09/11/09	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200	--	--	--	--	--	--	--	--	--
Filtered	09/11/09	<0.0110	<0.0220	<0.0110	<0.0110	<0.0110	<0.0110	<0.0110	<0.0220	--	--	--	--	--	--	--	--	--
	04/14/10	<0.0097	<0.019	<0.0097	<0.0097	<0.0097	<0.0097	<0.0097	<0.019	--	--	--	--	--	--	--	--	--
Filtered	04/14/10	<0.0094	<0.019	<0.0094	<0.0094	<0.0094	<0.0094	<0.0094	<0.019	--	--	--	--	--	--	--	--	--
	09/21/10	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	--	--	--	--	--	--	--	--	--
Duplicate	09/21/10	<0.0096	<0.019	<0.0096	<0.0096	<0.0096	<0.0096	<0.0096	<0.019	--	--	--	--	--	--	--	--	--
Filtered	09/21/10	<0.0094	<0.019	<0.0094	<0.0094	<0.0094	<0.0094	<0.0094	<0.019	--	--	--	--	--	--	--	--	--
Duplicate	09/21/10	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	--	--	--	--	--	--	--	--	--
	04/27/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	3.2	<0.094	0.10	<0.094	0.44	1.1	0.17	0.32	0.31
Filtered	04/27/11	<0.094	<0.19	<0.094	<0.094	<0.094	<0.094	<0.094	<0.19	2.6	<0.094	<0.094	<0.094	<0.094	0.53	0.22	<0.094	<0.094
	09/21/11	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	0.57	<0.0099	0.031	<0.0099	0.22	0.085	0.035	0.016	0.23
Filtered	09/21/11	<0.0098	<0.020	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.020	0.35	<0.0098	0.012	<0.0098	0.047	0.045	0.019	<0.0098	0.042
	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	0.84	0.019	0.040	<0.019	0.19	0.074	0.23	0.021	0.17
Filtered	04/18/12	<0.019	<0.0096	<0.019	<0.019	<0.019	<0.019	<0.019	<0.038	0.93	0.021	0.047	<0.019	0.21	0.080	0.23	0.025	0.19
	10/11/12	0.017	<0.019	<0.0095	<0.0095	0.0097	<0.0095	<0.0095	0.0267	0.74	0.013	0.094	<0.0095	0.23	0.12	0.068	0.031	0.34
Filtered	10/11/12	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	0.18	<0.0095	0.029	<0.0095	<0.0095	<0.0095	0.033	0.017	<0.0095
	04/25/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	09/19/13	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/23/14	0.019	<0.010	<0.010	<0.010	0.011	<0.010	<0.010	0.03	--	--	--	--	--	--	--	--	--
	12/16/14	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/17/15	0.030	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.030	--	--	--	--	--	--	--	--	--
	12/08/15	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/14/16	1.0	0.98	1.0	0.84	0.85	0.95	0.93	6.55	--	--	--	--	--	--	3.49	--	--
	01/13/17	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
Duplicate	01/13/17	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/13/17	**0.020**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**0.009**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-209	02/16/16	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	--	--	--

Appendix C
Historical Summary of Groundwater Analytical Data
Carcinogenic Polycyclic Aromatic Hydrocarbons

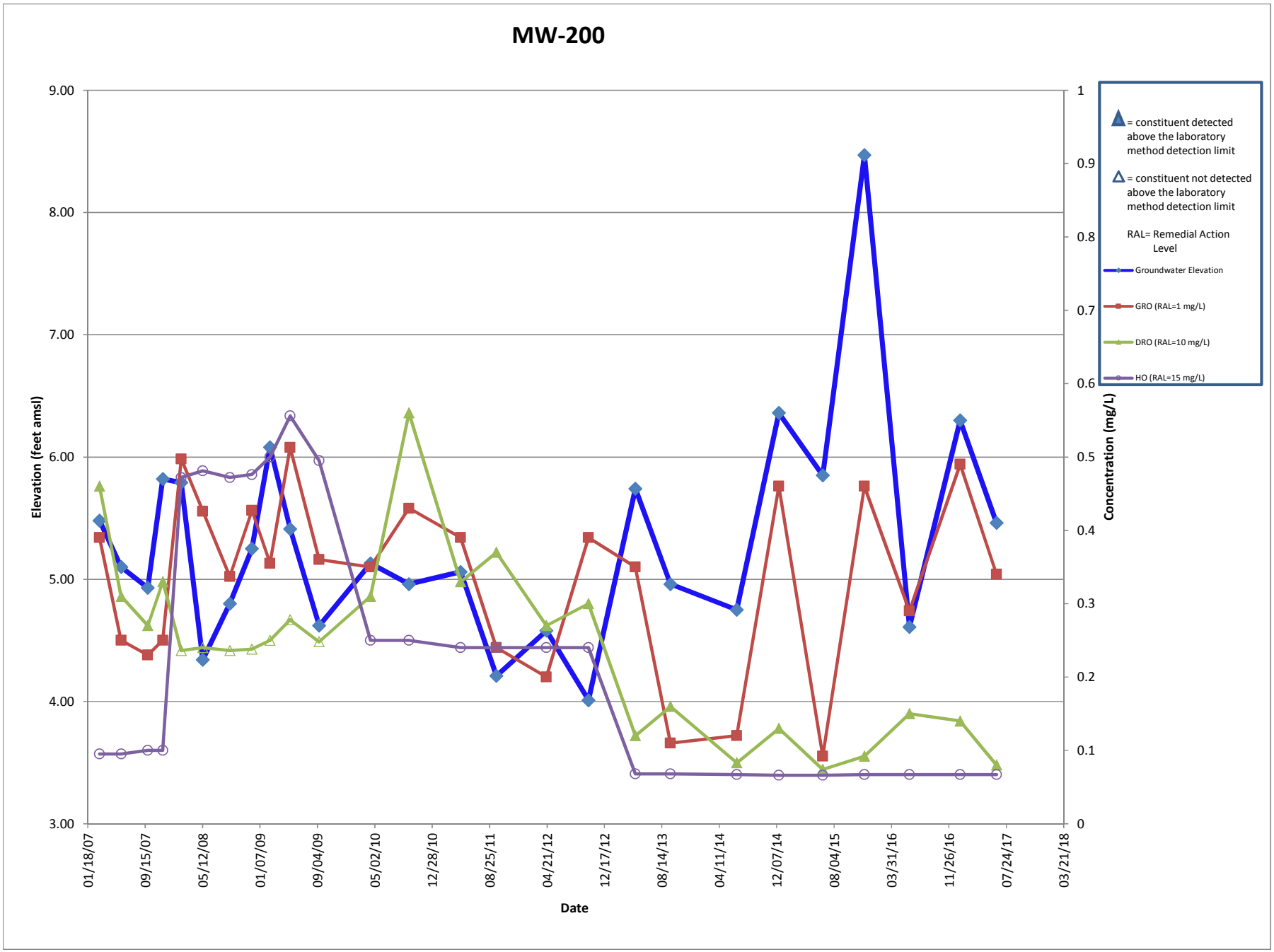
Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

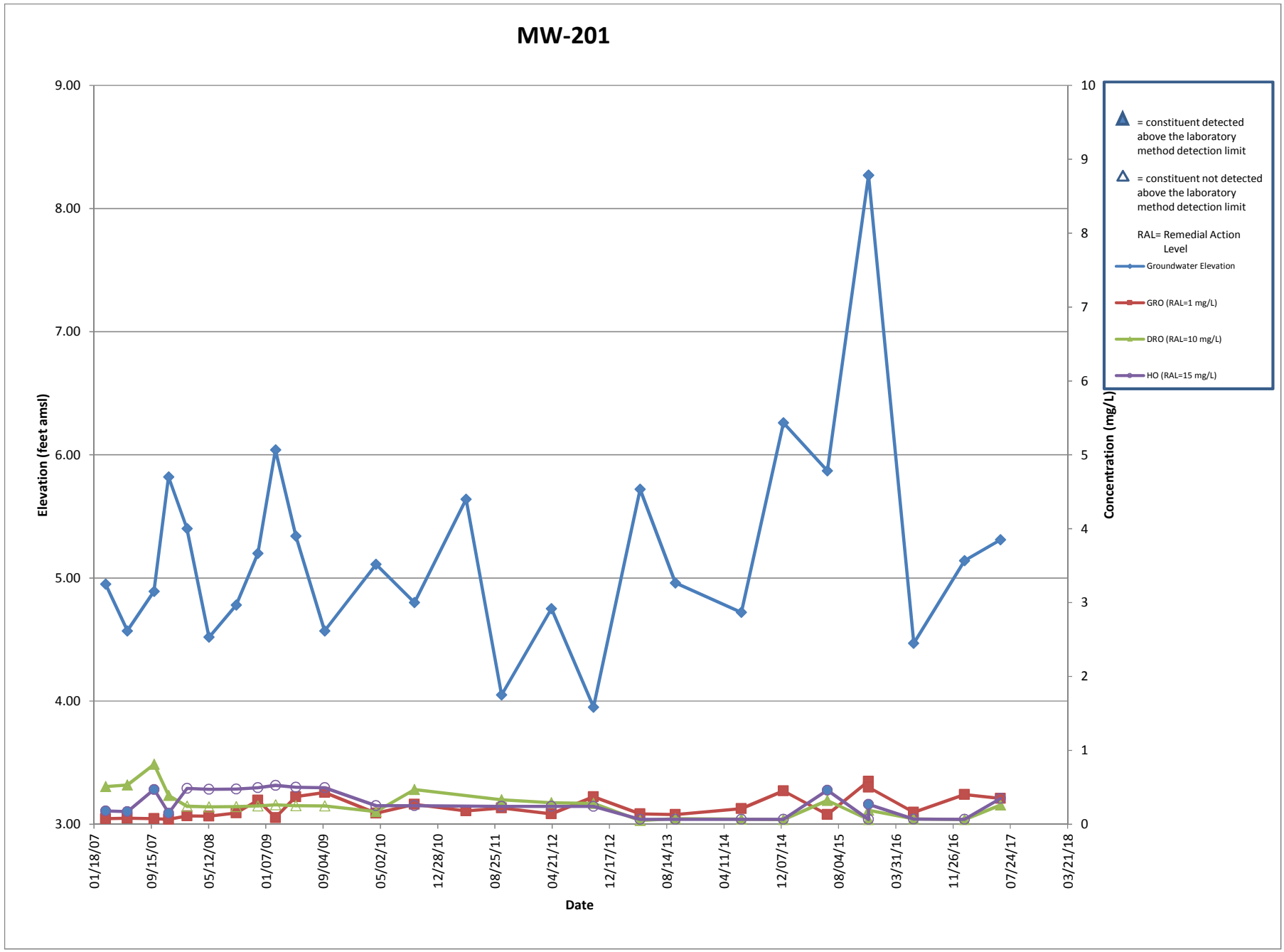
OFFSITE AREA		Carcinogenic PAHs[2,3] (µg/L)								Noncarcinogenic PAHs[2] (µg/L)								
Monitoring Well[1]	Sample Date	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total CPAHs[4]	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene[4]	Phenanthrene	Pyrene
RAL		**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**0.03**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**
MW-209 (continued)	06/13/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	0.21	--	--
	09/22/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	<0.030	--	--
	01/12/17	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	--	--	--
	03/27/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
	06/13/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-210	02/16/16	0.100	0.042	0.050	0.016	0.170	0.012	0.021	0.411	--	--	--	--	--	--	--	--	--
	06/13/16	0.110	0.056	0.073	0.027	0.210	0.015	0.024	0.515	--	--	--	--	--	--	<0.031	--	--
	09/22/16	0.016	0.014	0.016	<0.012	0.029	<0.012	<0.012	0.019	--	--	--	--	--	--	<0.037	--	--
	01/12/17	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	03/27/17	**0.016**	**<0.010**	**0.011**	**<0.010**	**0.020**	**<0.010**	**<0.010**	**0.009**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
Duplicate	**03/27/17**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**0.012**	**<0.010**	**<0.010**	**0.008**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
	06/16/17	**0.075**	**0.042**	**0.044**	**0.020**	**0.13**	**0.017**	**0.034**	**0.06**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
MW-211	02/16/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	06/13/16	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	<0.031	--	--
	09/22/16	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	--	<0.033	--	--
	01/12/17	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	--	--	--	--	--	--	--	--	--
	03/27/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
	06/16/17	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**<0.010**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

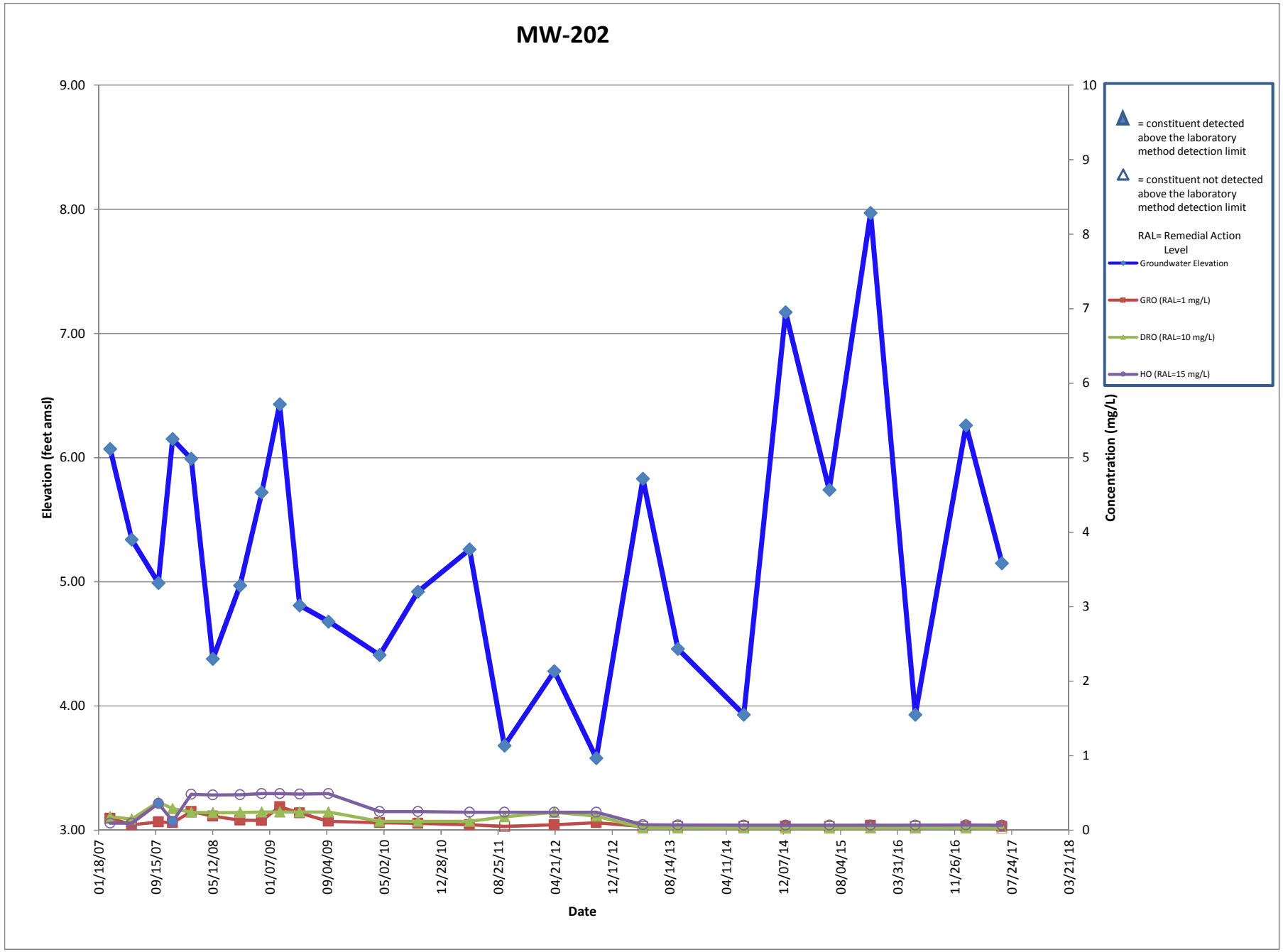
Notes:
[1]Monitoring well locations are shown on Figure 2.
[2]Analyses by EPA Method 8310 or 8270 (SIM).
[3]WAC 173-340-200 (MTCA).
[4]Numeric sum of detected concentrations. Where no compounds were detected, this figure is equal to the highest reporting limit for an individual compound.
[5]Napthalene detected in the method blank, these data are from the initial extraction of the sample.
[6]Sample was extracted past the holding time.
[7]Sample was re-prepared outside of preparation holding time. Results have been flaged as "H" in the laboratory report.
[8]There was insufficient sample to perform a re-extraction or re-analysis, therefore, the data have been reported.
[9]LCS or LCSD exceeds the control limits/RPD of the LCS exceeds the control limits.
[D]Duplicate of the preceding sample.
RAL = Remedial Action Level per Amendments No. 4 and No. 5 to Order on Consent; applicable for Offsite Area only.
There is no cPAH RAL for groundwater in the Upper Yard, Lower Yard or Elliott Avenue.
µg/L = micrograms per liter
NE = not established
"--" not sampled
cPAHs = carcinogenic polycyclic aromatic hydrocarbons.
PAHs = polynuclear aromatic hydrocarbons.
LNAPL = light nonaqueous phase liquid
Laboratory analyses by TestAmerica of Tacoma, Washington and Lancaster Laboratories of Lancaster, Pennsylvania.
Bolded data are for the current reporting period.
Shading indicates concentration greater than the RAL.
NEAR = The sample was collected from the top of the water column within the respective monitoring well.
DL, RA, RE, IN = Indicates a Dilution, Reanalysis, Re-extraction, or additional Intial metals/anion analysis of the sample.

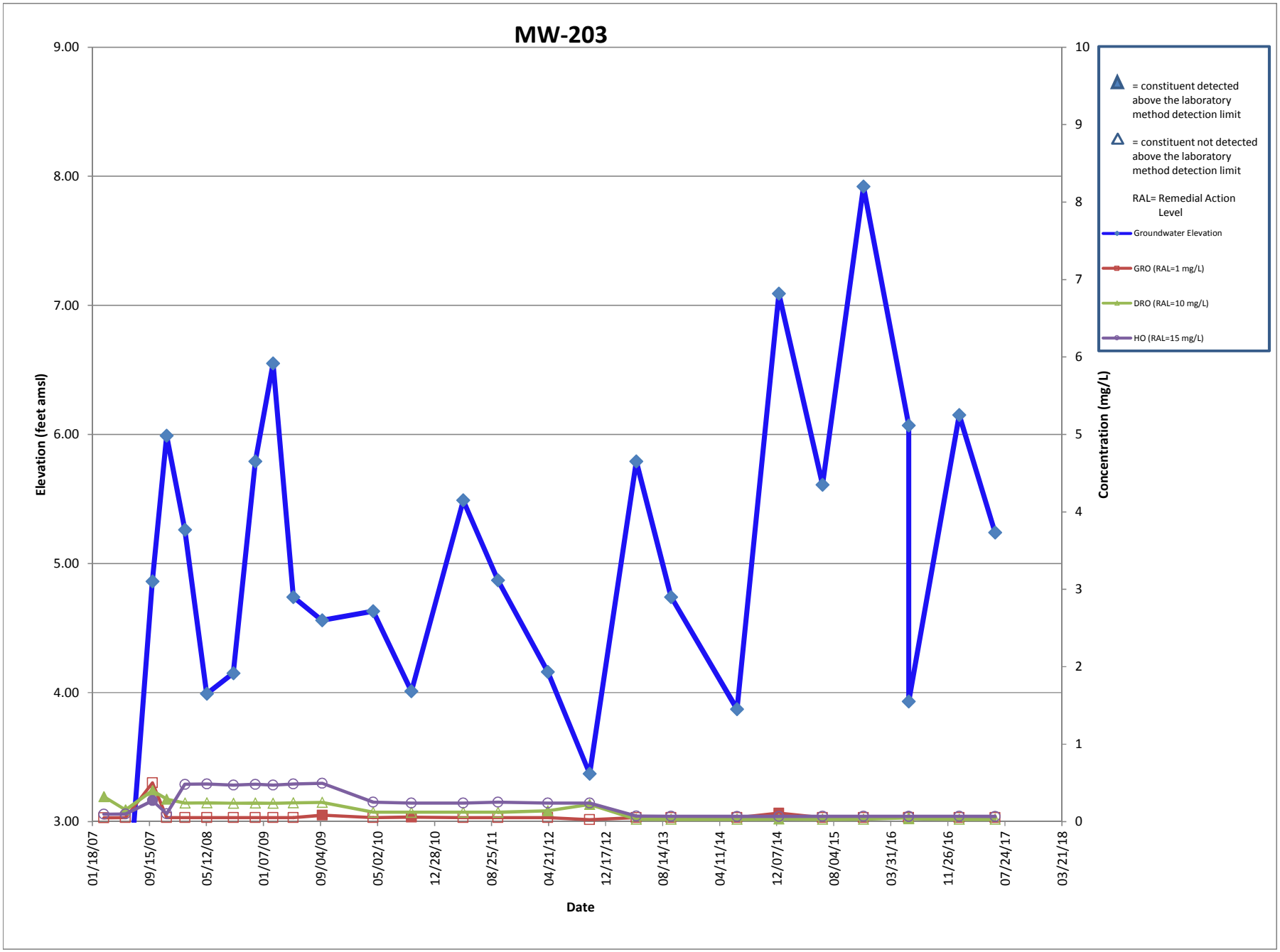
APPENDIX D

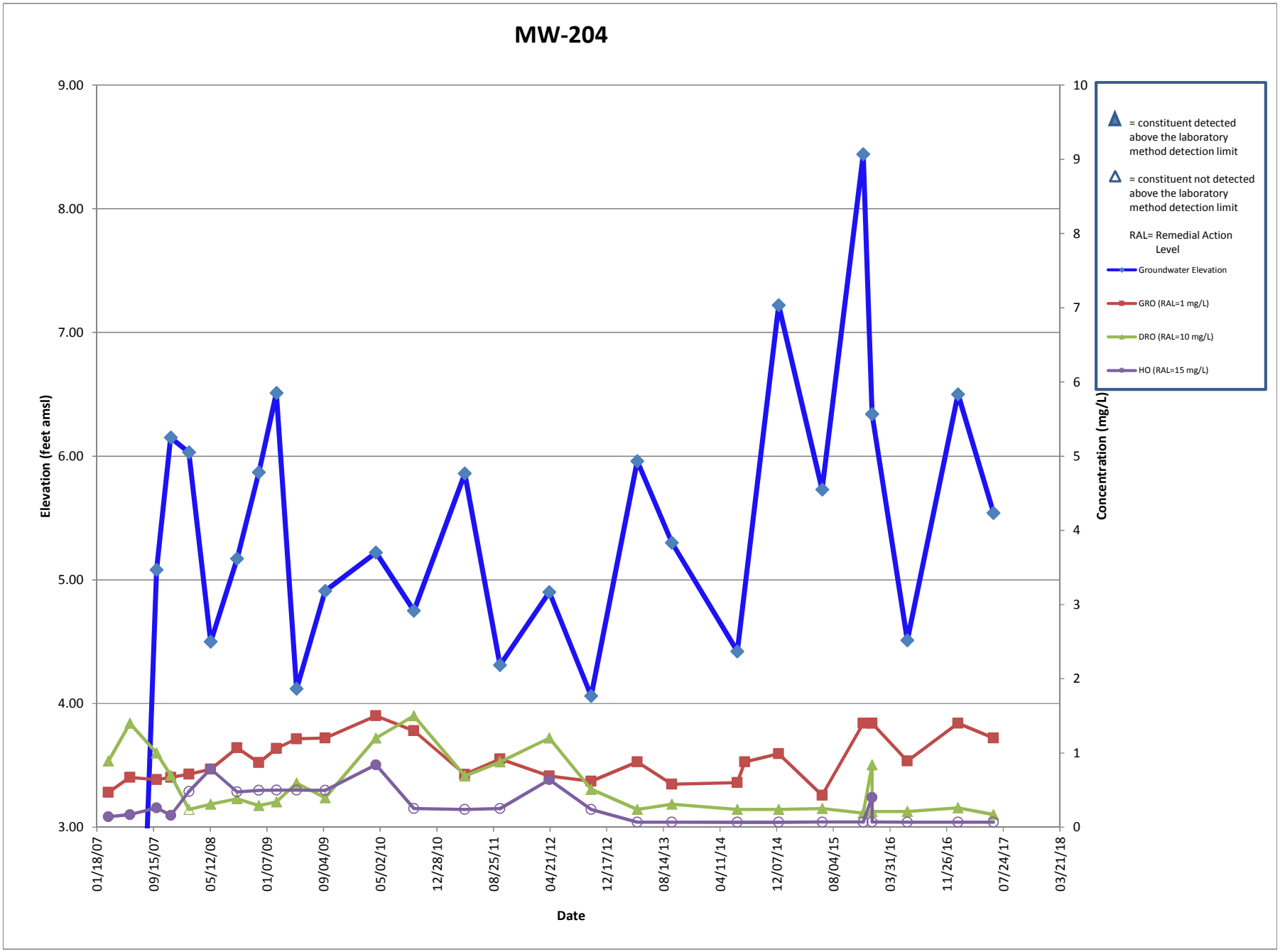
Historical Trend Graphs

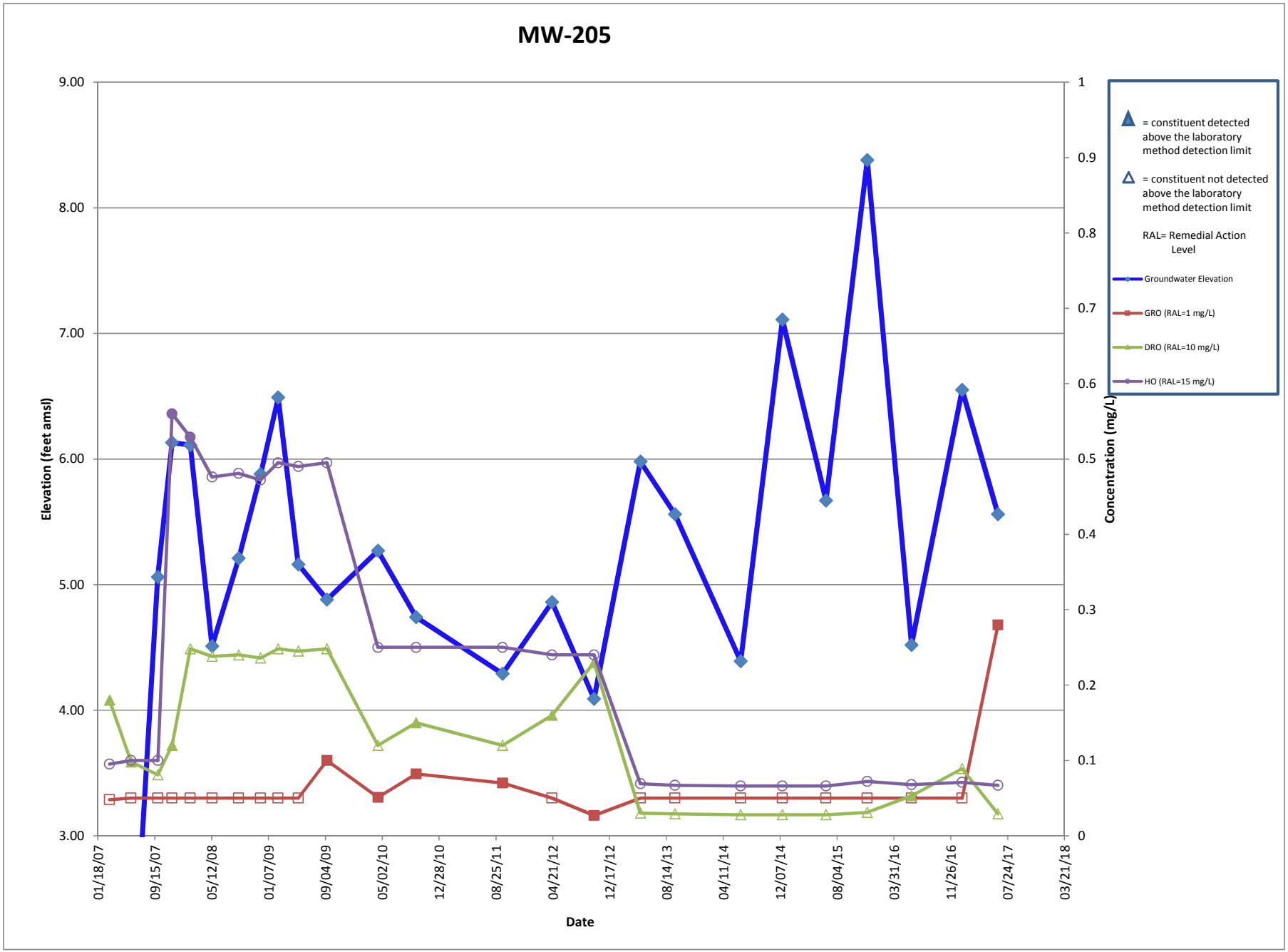

MW-200
Elevation (feet amsl)
Concentration (mg/L)
Date
9.00
8.00
7.00
6.00
5.00
4.00
3.00
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
01/18/07
09/15/07
05/12/08
01/07/09
09/04/09
05/02/10
12/28/10
08/25/11
04/21/12
12/17/12
08/14/13
04/11/14
12/07/14
08/04/15
03/31/16
11/26/16
07/24/17
03/21/18
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)

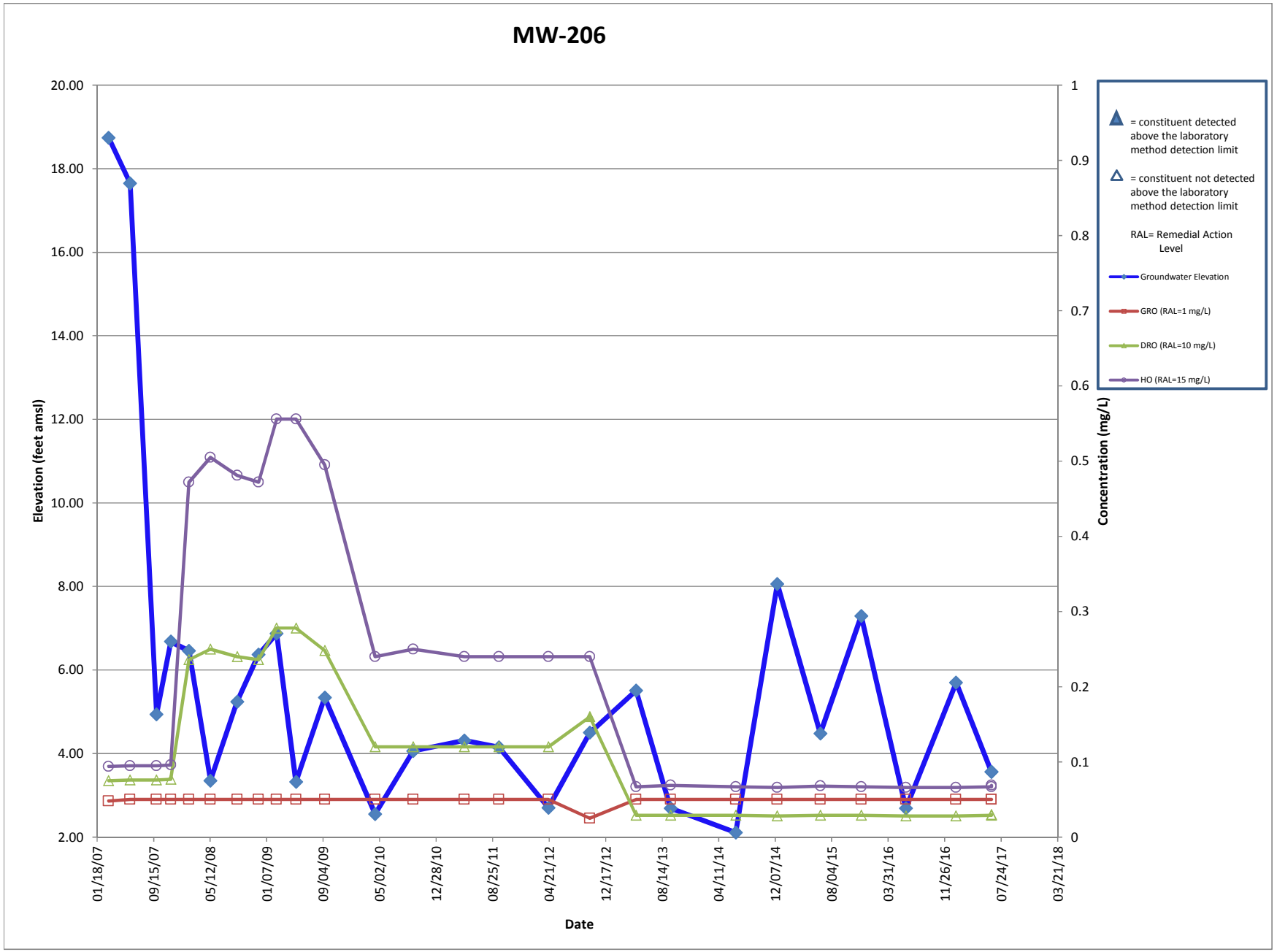

MW-201
9.00
8.00
7.00
6.00
5.00
4.00
3.00
Elevation (feet amsl)
10
9
8
7
6
5
4
3
2
1
0
Concentration (mg/L)
01/18/07
09/15/07
05/12/08
01/07/09
09/04/09
05/02/10
12/28/10
08/25/11
04/21/12
12/17/12
08/14/13
04/11/14
12/07/14
08/04/15
03/31/16
11/26/16
07/24/17
03/21/18
Date
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)

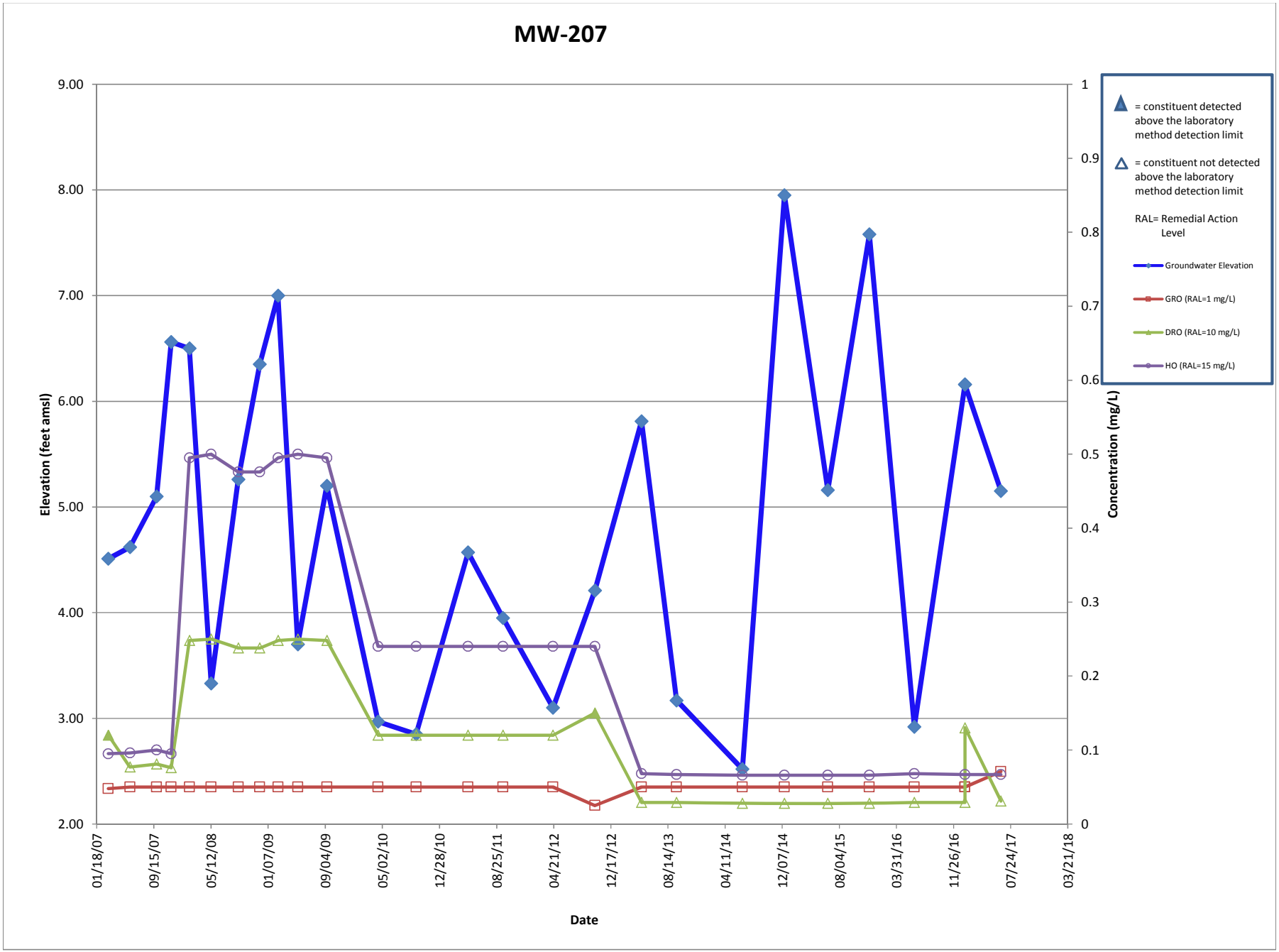

MW-202
9.00
8.00
7.00
6.00
5.00
4.00
3.00
Elevation (feet amsl)
10
9
8
7
6
5
4
3
2
1
0
Concentration (mg/L)
01/18/07
09/15/07
05/12/08
01/07/09
09/04/09
05/02/10
12/28/10
08/25/11
04/21/12
12/17/12
08/14/13
04/11/14
12/07/14
08/04/15
03/31/16
11/26/16
07/24/17
03/21/18
Date
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)

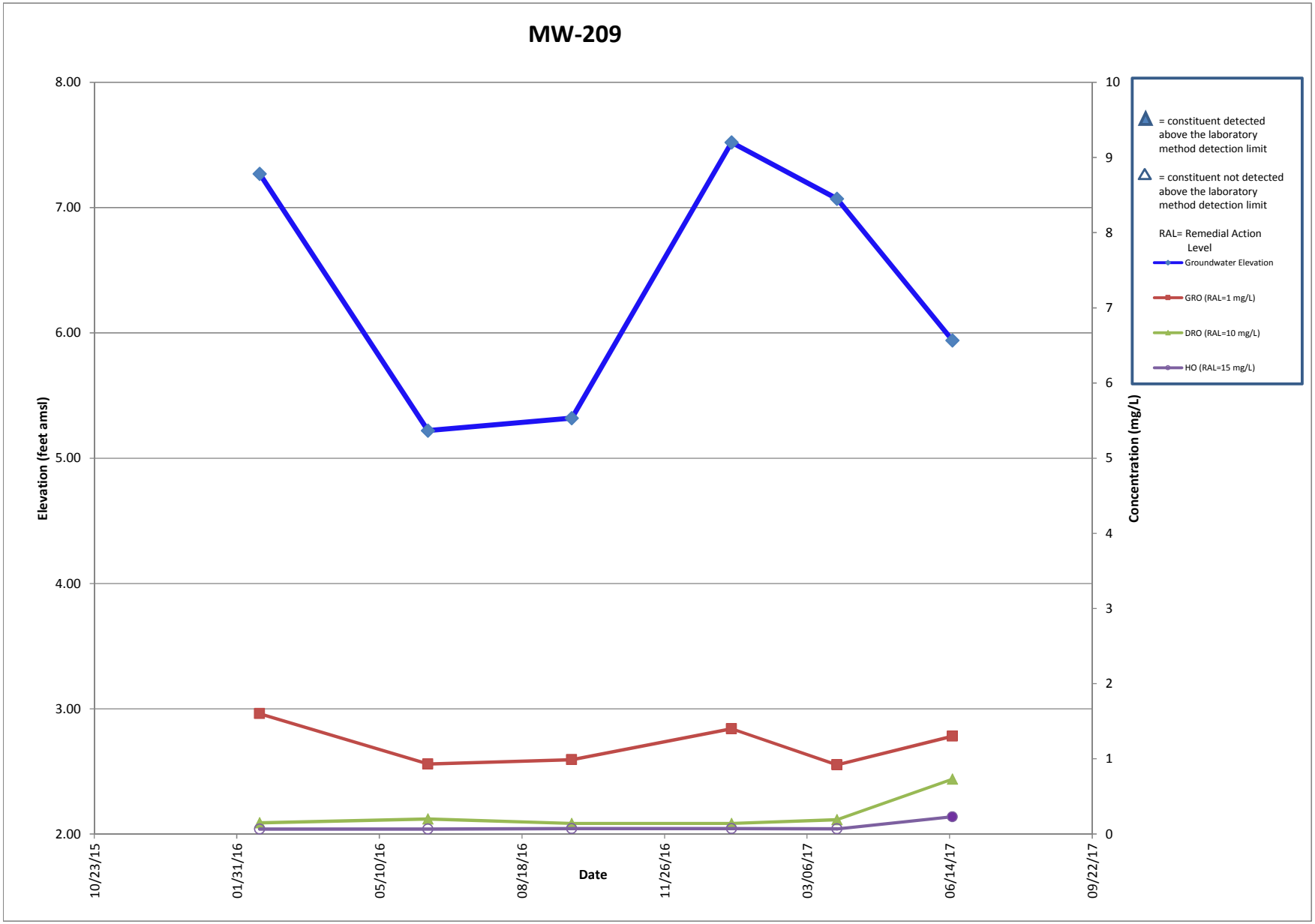

MW-203
9.00
8.00
7.00
6.00
5.00
4.00
3.00
Elevation (feet amsl)
10
9
8
7
6
5
4
3
2
1
0
Concentration (mg/L)
01/18/07
09/15/07
05/12/08
01/07/09
09/04/09
05/02/10
12/28/10
08/25/11
04/21/12
12/17/12
08/14/13
04/11/14
12/07/14
08/04/15
03/31/16
11/26/16
07/24/17
03/21/18
Date
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)

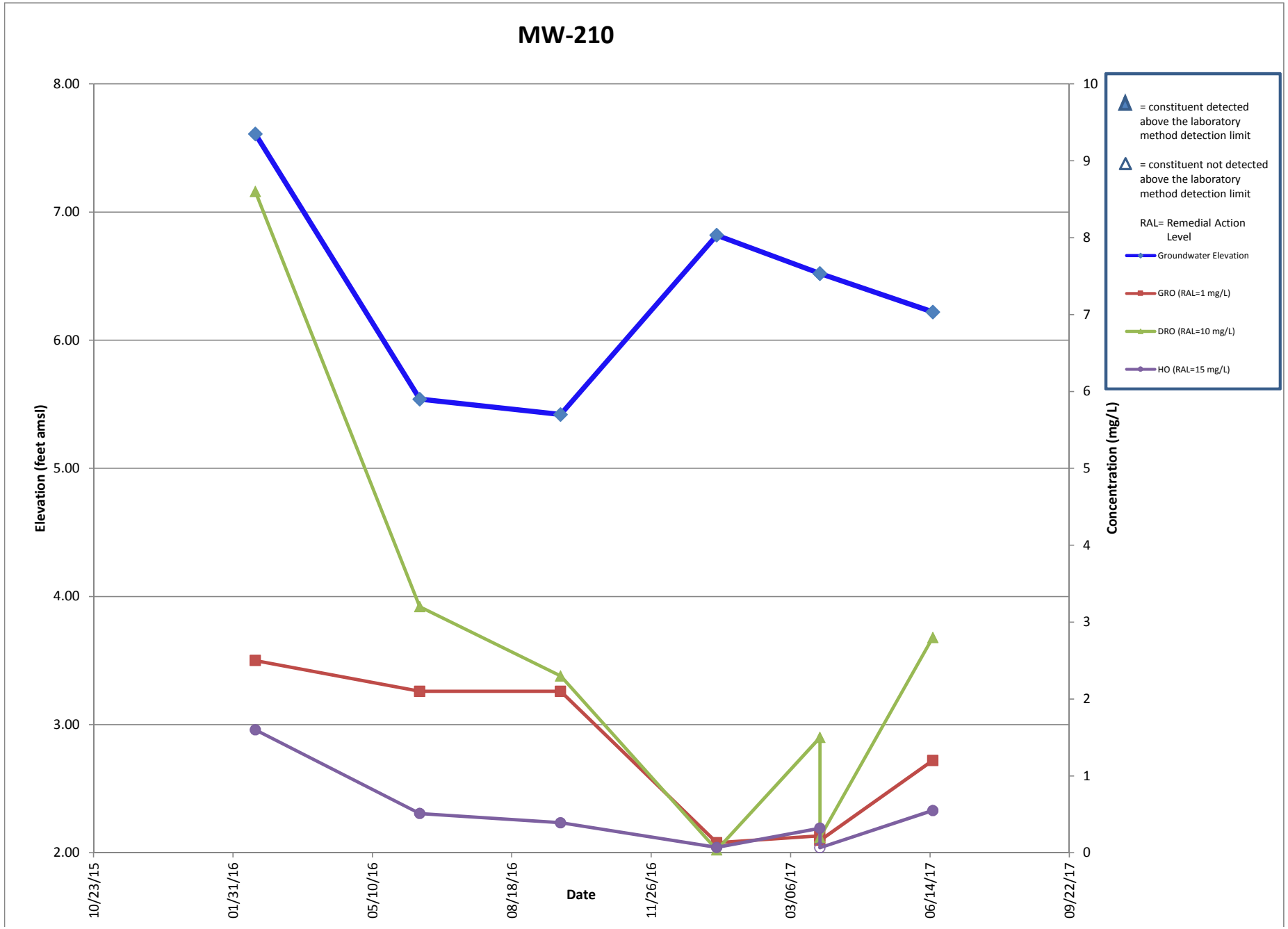

MW-204
9.00
8.00
7.00
6.00
5.00
4.00
3.00
Elevation (feet amsl)
10
9
8
7
6
5
4
3
2
1
0
Concentration (mg/L)
01/18/07
09/15/07
05/12/08
01/07/09
09/04/09
05/02/10
12/28/10
08/25/11
04/21/12
12/17/12
08/14/13
04/11/14
12/07/14
08/04/15
03/31/16
11/26/16
07/24/17
03/21/18
Date
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)

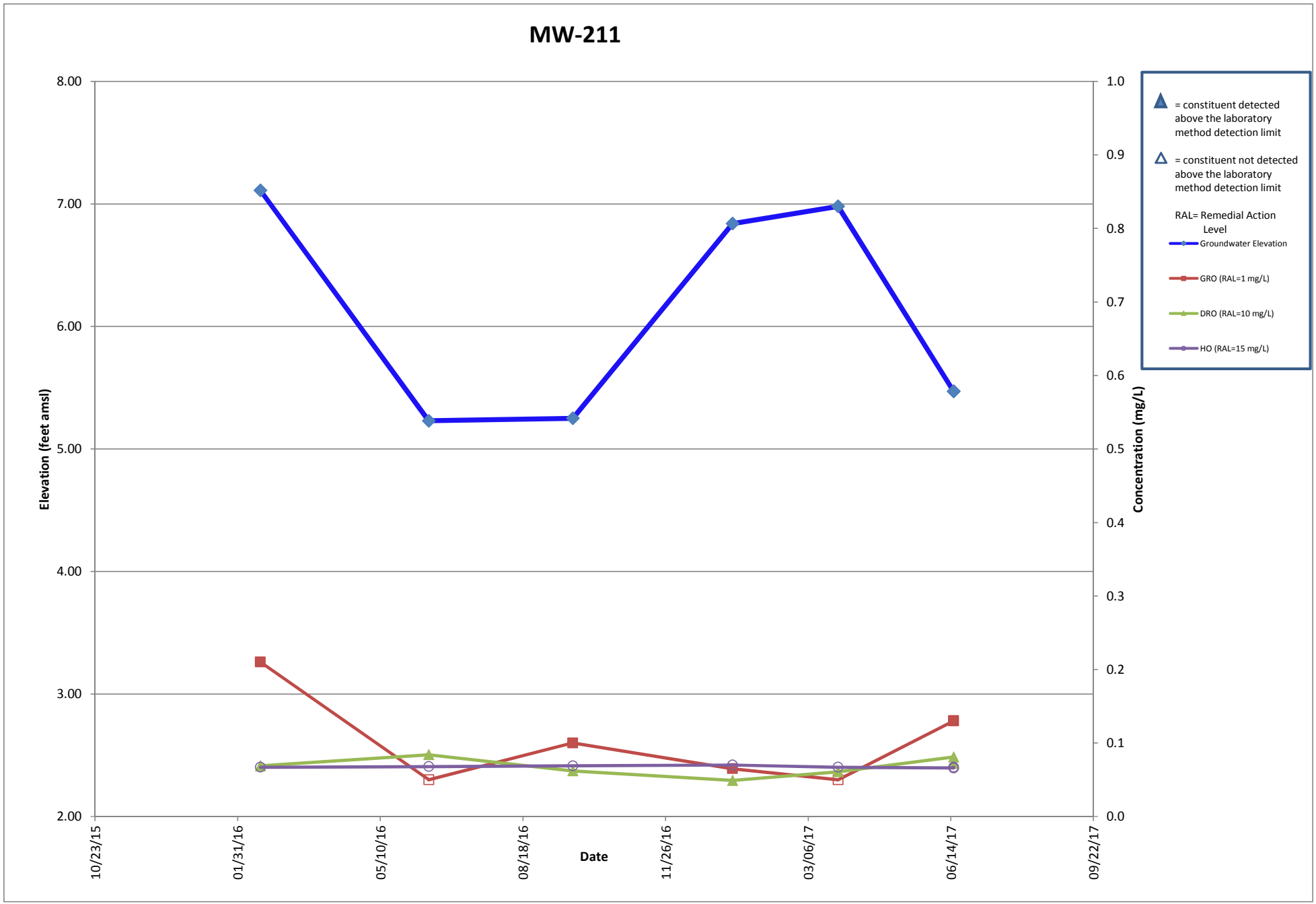

MW-205
9.00
8.00
7.00
6.00
5.00
4.00
3.00
Elevation (feet amsl)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
Concentration (mg/L)
01/18/07
09/15/07
05/12/08
01/07/09
09/04/09
05/02/10
12/28/10
08/25/11
04/21/12
12/17/12
08/14/13
04/11/14
12/07/14
08/04/15
03/31/16
11/26/16
07/24/17
03/21/18
Date
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)

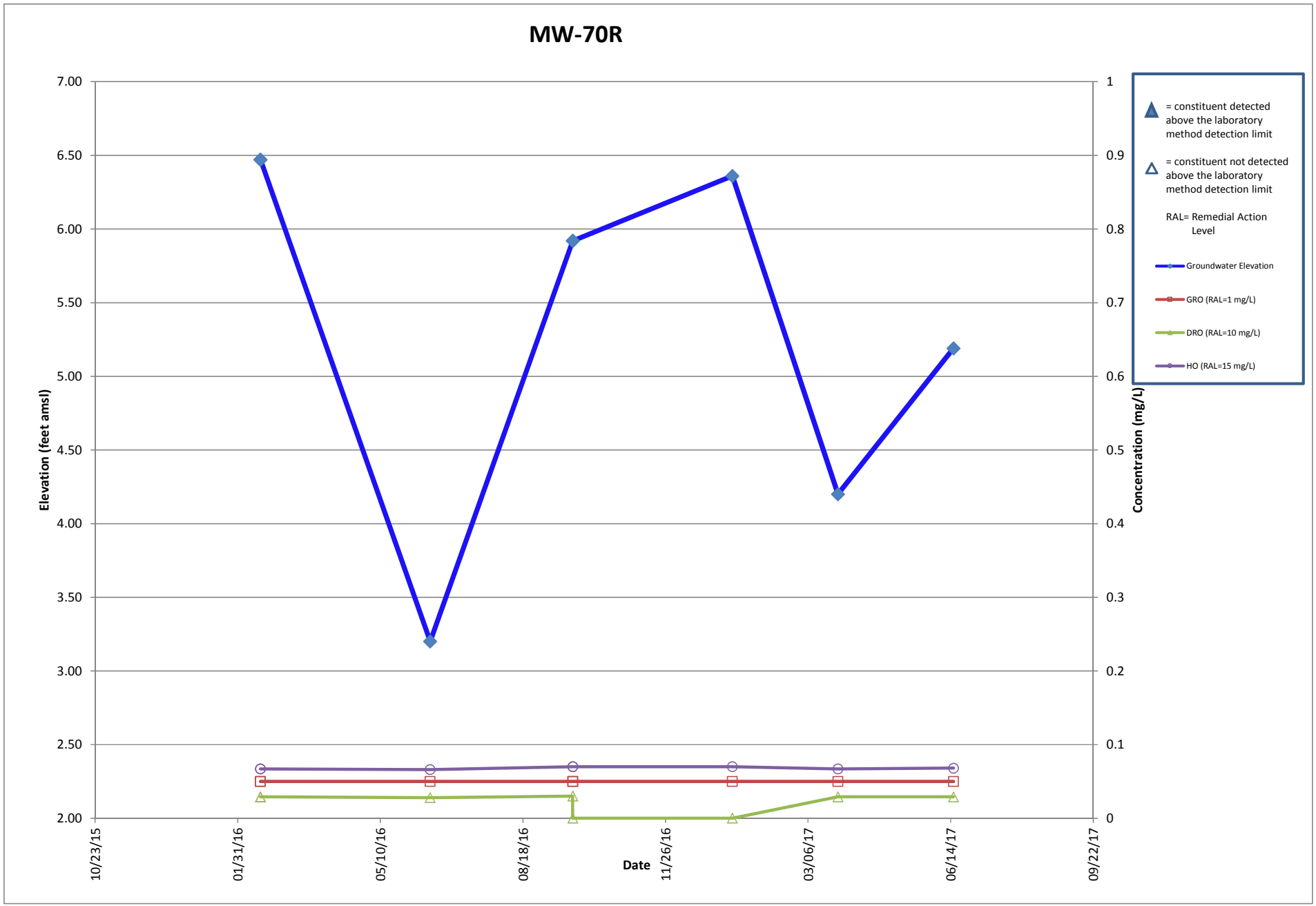

MW-206
Elevation (feet amsl)
Concentration (mg/L)
Date
20.00
18.00
16.00
14.00
12.00
10.00
8.00
6.00
4.00
2.00
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
01/18/07
09/15/07
05/12/08
01/07/09
09/04/09
05/02/10
12/28/10
08/25/11
04/21/12
12/17/12
08/14/13
04/11/14
12/07/14
08/04/15
03/31/16
11/26/16
07/24/17
03/21/18
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)

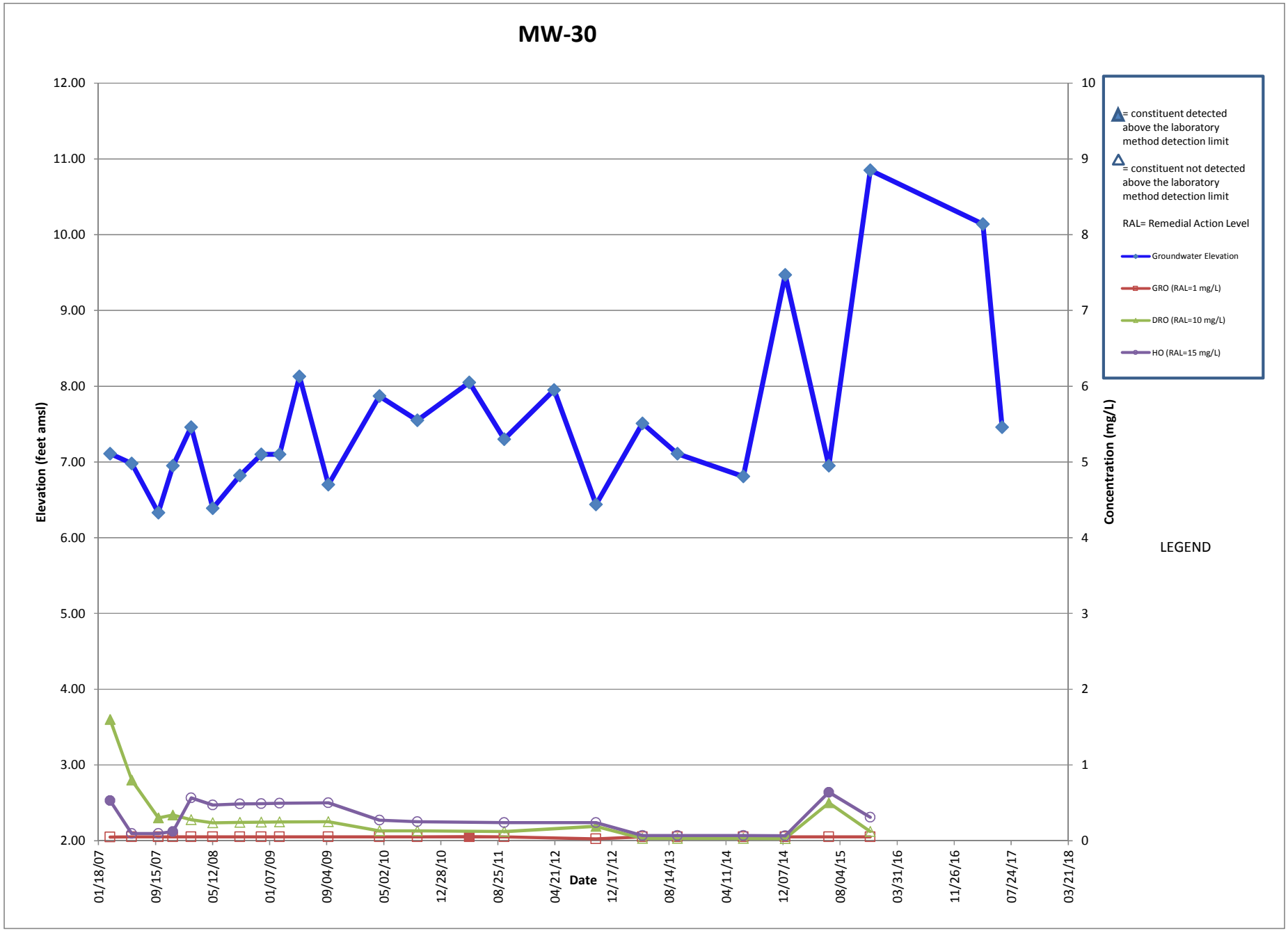

MW-207
Elevation (feet amsl)
Concentration (mg/L)
Date
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
01/18/07
09/15/07
05/12/08
01/07/09
09/04/09
05/02/10
12/28/10
08/25/11
04/21/12
12/17/12
08/14/13
04/11/14
12/07/14
08/04/15
03/31/16
11/26/16
07/24/17
03/21/18
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)


MW-209
8.00
7.00
6.00
5.00
4.00
3.00
2.00
Elevation (feet amsl)
10
9
8
7
6
5
4
3
2
1
0
Concentration (mg/L)
10/23/15
01/31/16
05/10/16
08/18/16
11/26/16
03/06/17
06/14/17
09/22/17
Date
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)


MW-210
8.00
7.00
6.00
5.00
4.00
3.00
2.00
Elevation (feet amsl)
10
9
8
7
6
5
4
3
2
1
0
Concentration (mg/L)
10/23/15
01/31/16
05/10/16
08/18/16
11/26/16
03/06/17
06/14/17
09/22/17
Date
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)


MW-211
8.00
7.00
6.00
5.00
4.00
3.00
2.00
Elevation (feet amsl)
1.0
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
Concentration (mg/L)
10/23/15
01/31/16
05/10/16
08/18/16
11/26/16
03/06/17
06/14/17
09/22/17
Date
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)


MW-70R
Elevation (feet amsl)
Concentration (mg/L)
Date
7.00
6.50
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
10/23/15
01/31/16
05/10/16
08/18/16
11/26/16
03/06/17
06/14/17
09/22/17
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)


MW-30
Elevation (feet amsl)
Concentration (mg/L)
Date
12.00
11.00
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
10
9
8
7
6
5
4
3
2
1
0
01/18/07
09/15/07
05/12/08
01/07/09
09/04/09
05/02/10
12/28/10
08/25/11
04/21/12
12/17/12
08/14/13
04/11/14
12/07/14
08/04/15
03/31/16
11/26/16
07/24/17
03/21/18
= constituent detected above the laboratory method detection limit
= constituent not detected above the laboratory method detection limit
RAL= Remedial Action Level
Groundwater Elevation
GRO (RAL=1 mg/L)
DRO (RAL=10 mg/L)
HO (RAL=15 mg/L)
LEGEND

ATTACHMENT E

Laboratory Report and Chain of Custody Forms

eurofins | Lancaster Laboratories Environmental

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Analysis Report

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

Report Date: April 06, 2017

Project: Seattle Terminal

Submittal Date: 03/28/2017
Group Number: 1781842
PO Number: 0015190024
Release Number: JOLITZ
State of Sample Origin: WA

Client Sample Description	Lancaster Labs (LL) #
MW-70R-W-170327 NA Groundwater	8906307
MW-209-W-170327 NA Groundwater	8906308
MW-210-W-170327 NA Groundwater	8906309
MW-211-W-170327 NA Groundwater	8906310
DUP-1-WD-170327 NA Groundwater	8906311
Trip_Blank-T-170327 NA Water	8906312

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	ARCADIS U.S., Inc.	Attn: Sam Miles
Electronic Copy To	Arcadis	Attn: Rebecca Andresen

Respectfully Submitted,

Elisabeth A. Knisley
Project Manager

(717) 556-7262

Sample Description: MW-70R-W-170327 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8906307
LL Group # 1781842
Account # 11964

Project Name: Seattle Terminal

Collected: 03/27/2017 08:30 by RB

Submitted: 03/28/2017 09:55
Reported: 04/06/2017 13:22

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

EL70R

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17087WAP026	03/31/2017 15:25	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17087WAP026	03/29/2017 08:00	Osvaldo Sanchez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17094A94A	04/04/2017 22:10	Jeremy C Giffin	1
02102	Method 8021 Water Master	SW-846 8021B	1	17094A94A	04/04/2017 22:10	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	17094A94A	04/04/2017 22:10	Jeremy C Giffin	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	170900005A	04/04/2017 22:20	Thomas C Wildermuth	1

Sample Description: MW-70R-W-170327 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8906307
LL Group # 1781842
Account # 11964

Project Name: Seattle Terminal

Collected: 03/27/2017 08:30 by RB

Submitted: 03/28/2017 09:55
Reported: 04/06/2017 13:22

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

EL70R

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	170900005A	03/31/2017 23:45	Nicholas W Shroyer	1

Sample Description: MW-209-W-170327 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8906308
LL Group # 1781842
Account # 11964

Project Name: Seattle Terminal

Collected: 03/27/2017 10:50 by RB

Submitted: 03/28/2017 09:55
Reported: 04/06/2017 13:22

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

EL209

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	920	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	1.5	0.5	1
02102	Ethylbenzene	100-41-4	1.5	0.5	1
02102	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	1
02102	Toluene	108-88-3	1.4	0.5	1
02102	Total Xylenes	1330-20-7	3.3	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	190	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	68	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17087WAP026	03/31/2017 15:54	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17087WAP026	03/29/2017 08:00	Osvaldo Sanchez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17094A94A	04/04/2017 22:36	Jeremy C Giffin	1
02102	Method 8021 Water Master	SW-846 8021B	1	17094A94A	04/04/2017 22:36	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	17094A94A	04/04/2017 22:36	Jeremy C Giffin	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	170900005A	04/04/2017 22:42	Thomas C Wildermuth	1

Sample Description: MW-209-W-170327 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8906308
LL Group # 1781842
Account # 11964

Project Name: Seattle Terminal

Collected: 03/27/2017 10:50 by RB

Submitted: 03/28/2017 09:55
Reported: 04/06/2017 13:22

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

EL209

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	170900005A	03/31/2017 23:45	Nicholas W Shroyer	1

Sample Description: MW-210-W-170327 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8906309
LL Group # 1781842
Account # 11964

Project Name: Seattle Terminal

Collected: 03/27/2017 11:00 by RB

Submitted: 03/28/2017 09:55
Reported: 04/06/2017 13:22

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

EL210

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	0.016	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	0.011	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	0.020	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	220	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	1,500	28	1
12005	HRO C24-C40 w/Si Gel	n.a.	320	66	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17087WAP026	03/31/2017 16:24	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17087WAP026	03/29/2017 08:00	Osvaldo Sanchez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17094A94A	04/04/2017 23:05	Jeremy C Giffin	1
02102	Method 8021 Water Master	SW-846 8021B	1	17094A94A	04/04/2017 23:05	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	17094A94A	04/04/2017 23:05	Jeremy C Giffin	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	170900005A	04/04/2017 23:47	Thomas C Wildermuth	1

Sample Description: **MW-210-W-170327 NA Groundwater**
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8906309
LL Group # 1781842
Account # 11964

Project Name: Seattle Terminal

Collected: 03/27/2017 11:00 by RB

Submitted: 03/28/2017 09:55
Reported: 04/06/2017 13:22

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

EL210

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	170900005A	03/31/2017 23:45	Nicholas W Shroyer	1

Sample Description: MW-211-W-170327 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8906310
LL Group # 1781842
Account # 11964

Project Name: Seattle Terminal

Collected: 03/27/2017 11:50 by RB

Submitted: 03/28/2017 09:55
Reported: 04/06/2017 13:22

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

EL211

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	61	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17087WAP026	03/31/2017 16:54	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17087WAP026	03/29/2017 08:00	Osvaldo Sanchez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17094A94A	04/04/2017 23:31	Jeremy C Giffin	1
02102	Method 8021 Water Master	SW-846 8021B	1	17094A94A	04/04/2017 23:31	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	17094A94A	04/04/2017 23:31	Jeremy C Giffin	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	170900005A	04/04/2017 23:04	Thomas C Wildermuth	1

Sample Description: MW-211-W-170327 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8906310
LL Group # 1781842
Account # 11964

Project Name: Seattle Terminal

Collected: 03/27/2017 11:50 by RB

Submitted: 03/28/2017 09:55
Reported: 04/06/2017 13:22

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

EL211

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	170900005A	03/31/2017 23:45	Nicholas W Shroyer	1

Sample Description: DUP-1-WD-170327 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8906311
LL Group # 1781842
Account # 11964

Project Name: Seattle Terminal

Collected: 03/27/2017 by RB

Submitted: 03/28/2017 09:55
Reported: 04/06/2017 13:22

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

ELFD1

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	0.012	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	160	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	200	28	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	66	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17087WAP026	03/31/2017 17:23	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17087WAP026	03/29/2017 08:00	Osvaldo Sanchez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17094A94A	04/04/2017 23:57	Jeremy C Giffin	1
02102	Method 8021 Water Master	SW-846 8021B	1	17094A94A	04/04/2017 23:57	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	17094A94A	04/04/2017 23:57	Jeremy C Giffin	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	170900005A	04/04/2017 23:25	Thomas C Wildermuth	1

Sample Description: DUP-1-WD-170327 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8906311
LL Group # 1781842
Account # 11964

Project Name: Seattle Terminal

Collected: 03/27/2017 by RB

Submitted: 03/28/2017 09:55
Reported: 04/06/2017 13:22

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

ELFD1

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	170900005A	03/31/2017 23:45	Nicholas W Shroyer	1

Sample Description: Trip_Blank-T-170327 NA Water
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8906312
LL Group # 1781842
Account # 11964

Project Name: Seattle Terminal

Collected: 03/27/2017

Submitted: 03/28/2017 09:55
Reported: 04/06/2017 13:22

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

ELTRB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Methyl tert-Butyl Ether	1634-04-4	N.D.	2.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17094A94A	04/04/2017 21:45	Jeremy C Giffin	1
02102	Method 8021 Water Master	SW-846 8021B	1	17094A94A	04/04/2017 21:45	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	17094A94A	04/04/2017 21:45	Jeremy C Giffin	1

Quality Control Summary

Client Name: Chevron Environmental Mgmt Co
Group Number: 1781842
Reported: 04/06/2017 13:22

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: 17087WAP026	Sample number(s): 8906307-8906311	
Benzo(a)anthracene	N.D.	0.010
Benzo(a)pyrene	N.D.	0.010
Benzo(b)fluoranthene	N.D.	0.010
Benzo(k)fluoranthene	N.D.	0.010
Chrysene	N.D.	0.010
Dibenz(a,h)anthracene	N.D.	0.010
Indeno(1,2,3-cd)pyrene	N.D.	0.010
Batch number: 17094A94A	Sample number(s): 8906307-8906312	
Benzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
Methyl tert-Butyl Ether	N.D.	0.3
NWTPH-Gx water C7-C12	N.D.	50
Toluene	N.D.	0.2
Total Xylenes	N.D.	0.2
Batch number: 170900005A	Sample number(s): 8906307-8906311	
DRO C12-C24 w/Si Gel	N.D.	30
HRO C24-C40 w/Si Gel	N.D.	70

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Batch number: 17087WAP026	Sample number(s): 8906307-8906311								
Benzo(a)anthracene	1.00	0.984	1.00	0.956	98	96	75-119	3	30
Benzo(a)pyrene	1.00	0.930	1.00	0.872	93	87	75-115	6	30
Benzo(b)fluoranthene	1.00	0.977	1.00	0.913	98	91	75-120	7	30
Benzo(k)fluoranthene	1.00	0.964	1.00	0.892	96	89	71-118	8	30
Chrysene	1.00	0.934	1.00	0.888	93	89	73-111	5	30
Dibenz(a,h)anthracene	1.00	0.949	1.00	0.892	95	89	57-125	6	30
Indeno(1,2,3-cd)pyrene	1.00	0.931	1.00	0.871	93	87	58-122	7	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 17094A94A	Sample number(s): 8906307-8906312								
Benzene	20	20.4	20	20.36	102	102	80-120	0	30

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Chevron Environmental Mgmt Co
Reported: 04/06/2017 13:22

Group Number: 1781842

LCS/LCSD (continued)

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Ethylbenzene	20.1	20.18	20.1	20.18	100	100	80-120	0	30
Methyl tert-Butyl Ether	20	20.89	20	20.71	104	104	80-132	1	30
NWTPH-Gx water C7-C12	1100	1169.58	1100	1152.62	106	105	79-120	1	30
Toluene	20.2	20.56	20.2	20.61	102	102	80-120	0	30
Total Xylenes	60.2	61.78	60.2	62.26	103	103	80-120	1	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 170900005A	Sample number(s): 8906307-8906311								
DRO C12-C24 w/Si Gel	1600	1140.76	1600	1084.46	71	68	32-117	5	20

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: SIM SVOAs 8270C MINI
Batch number: 17087WAP026

	Fluoranthene-d10	Benzo(a)pyrene-d12	1-Methylnaphthalene-d10
8906307	81	74	71
8906308	83	79	74
8906309	76	58	68
8906310	77	70	67
8906311	80	66	70
Blank	80	80	69
LCS	88	91	83
LCSD	77	86	77
Limits:	42-136	26-137	22-129

Analysis Name: Method 8021 Water Master
Batch number: 17094A94A

	Trifluorotoluene-P	Trifluorotoluene-F
8906307	88	81
8906308	86	94
8906309	85	80
8906310	87	74
8906311	86	78
8906312	87	80
Blank	88	81
LCS	87	86
LCSD	86	84
Limits:	51-120	63-135

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Chevron Environmental Mgmt Co
Group Number: 1781842
Reported: 04/06/2017 13:22

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: NWTPH-Dx water w/ 10g Si Gel
Batch number: 170900005A

	Orthoterphenyl
8906307	87
8906308	92
8906309	69
8906310	91
8906311	76
Blank	95
LCS	97
LCSD	94
Limits:	50-150

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Chevron Northwest Region Analysis Request/Chain of Custody

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For Lancaster Laboratories use only. Acct. # 11964 Group # 1781845 Sample # 8906307-12

Instructions on reverse side correspond with circled numbers.

1 Client Information

Facility # Union Oil Company Seattle Marketing Terminal WBS NWENV-PMC00140080Z

Site Address 3001 Elliot AVE, Seattle, WA 98121

Chevron PM Kim Jolitz Lead Consultant

Consultant/Office Arcadis/ 1100 Olive way, suite 800, Seattle, WA 98101

Consultant Project Mgr. Rebbeca Anderson

Consultant Phone # 206.726.4720

Sampler Ryan Brauchla (RB)

4 Matrix

Soil ☐ Sediment ☐ Water ☒ Ground ☐ Potable ☐ NPDES ☐ Surface ☐ Oil ☐ Air ☐

3 Grab ☐ Composite ☐

5 Analyses Requested

Total Number of Containers

BTEX + MTBE ☐ 8021 ☒ 8260 ☐ Naphth

8260 full scan

Oxygenates ____

NWTPH GX

NWTPH DX ☐ Silica Gel Cleanup ☒

Lead Total ☐ Diss. ☐ Method ____

WAVPH ☐ WAEPH ☐

cPAHs by EPA 8270 SIM

2 Sample Identification	Collected Date	Collected Time	Grab	Composite	Total Containers	BTEX + MTBE 8021	8260 full scan	Oxygenates	NWTPH GX	NWTPH DX	Lead	WAVPH	cPAHs by EPA 8270 SIM
MW-70R	3/27/17	0830			7	X			X	X			X
MW-209	3/27/17	1050			7	X			X	X			X
MW-210	3/27/17	1100			7	X			X	X			X
MW-211	3/27/17	1150			7	X			X	X			X
DUP-1	3/27/17	—			7	X			X	X			X
Trip Blank	—	—			2	X							

SCR #: ____

- ☐ Results in Dry Weight
- ☐ J value reporting needed
- ☐ Must meet lowest detection limits possible for 8260 compounds
- ☐ 8021 MTBE Confirmation
- ☐ Confirm MTBE + Naphthalene
- ☐ Confirm highest hit by 8260
- ☐ Confirm all hits by 8260
- ☐ Run ____ oxy's on highest hit
- ☐ Run ____ oxy's on all hits

6 Remarks

7 Turnaround Time Requested (TAT) (please circle)

Standard | 5 day | 4 day | 72 hour | 48 hour | 24 hour

8 Data Package Options (please circle if required)

Type I - Full | Type VI (Raw Data)

Relinquished by	Date	Time	Received by	Date	Time
Eric Krueger	3/27/17	1600	~~FedEx~~ UPS	3/27/17	1600
Relinquished by	Date	Time	Received by	Date	Time
Relinquished by Commerical Carrier: UPS ____ FedEx ✓ Other ____			Received by	Date 3/28/17	Time 9:55
Temperature Upon Receipt 15/1.4 °C			Custody Seals Intact?	Yes	No

9

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Sample Administration Receipt Documentation Log

Doc Log ID: 179153

Group Number(s): 1781842

Client: UNIION OIL COMPANY

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	03/28/2017 9:55
Number of Packages:	2	Number of Projects:	1

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	N/A
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCL
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Wendy Wakeley (1669) at 12:24 on 03/28/2017

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT146	1.5	DT	Wet	Y	Bagged	N
2	DT146	1.4	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
T 717-656-2300
F 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mg**	milligram(s)
C	degrees Celsius	**mL**	milliliter(s)
cfu	colony forming units	**MPN**	Most Probable Number
CP Units	cobalt-chloroplatinate units	**N.D.**	none detected
F	degrees Fahrenheit	**ng**	nanogram(s)
g	gram(s)	**NTU**	nephelometric turbidity units
IU	International Units	**pg/L**	picogram/liter
kg	kilogram(s)	**RL**	Reporting Limit
L	liter(s)	**TNTC**	Too Numerous To Count
lb.	pound(s)	**µg**	microgram(s)
m3	cubic meter(s)	**µL**	microliter(s)
meq	milliequivalents	**umhos/cm**	micromhos/cm

< less than

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…
W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental
2425 New Holland Pike
Lancaster, PA 17601

Prepared for:

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

Report Date: July 06, 2017

Project: Seattle Terminal

Submittal Date: 06/17/2017
Group Number: 1814817
PO Number: 0015247975
Release Number: JOLITZ
State of Sample Origin: WA

Client Sample Description	Lancaster Labs (LL) #
MW-70R-W-170613 NA Groundwater	9055733
MW-200-W-170613 NA Groundwater	9055734
MW-201-W-170613 NA Groundwater	9055735
MW-202-W-170613 NA Groundwater	9055736
MW-203-W-170613 NA Groundwater	9055737
MW-204-W-170613 NA Groundwater	9055738
MW-205-W-170613 NA Groundwater	9055739
MW-206-W-170613 NA Groundwater	9055740
MW-207-W-170613 NA Groundwater	9055741
BD-1-WD-170613 NA Groundwater	9055742
MW-2011-W-170616 NA Groundwater	9055743
MW-210-W-170616 NA Groundwater	9055744
MW-209-W-170616 NA Groundwater	9055745
BD-2-WD-170616 NA Groundwater	9055746
TripBlank-T-170613 NA Water	9055747

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/ . To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	ARCADIS U.S., Inc.	Attn: Sam Miles
Electronic Copy To	Arcadis	Attn: Rebecca Andresen

Respectfully Submitted,

Elisabeth A. Knisley
Project Manager

(717) 556-7262

Sample Description: MW-70R-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055733
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 12:40 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE70R

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	68	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAC026	06/22/2017 02:39	Edward C Monborne	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAC026	06/19/2017 16:30	Christine Gleim	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 13:39	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 13:39	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 13:39	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171770007A	06/29/2017 21:14	Amy Lehr	1

Sample Description: **MW-70R-W-170613 NA Groundwater**
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055733
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 12:40 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE70R

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171770007A	06/26/2017 23:15	Karen L Beyer	1

Sample Description: MW-200-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055734
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 12:00 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE200

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	340	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	2.0	0.5	1
02102	Ethylbenzene	100-41-4	0.6	0.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	80	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAC026	06/22/2017 03:06	Edward C Monborne	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAC026	06/19/2017 16:30	Christine Gleim	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 14:07	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 14:07	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 14:07	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171770007A	06/29/2017 21:36	Amy Lehr	1

Sample Description: **MW-200-W-170613 NA Groundwater**
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055734
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 12:00 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE200

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171770007A	06/26/2017 23:15	Karen L Beyer	1

Sample Description: MW-201-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055735
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 11:05 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE201

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	350	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	1.3	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	0.9	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	260	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	350	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAC026	06/22/2017 03:34	Edward C Monborne	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAC026	06/19/2017 16:30	Christine Gleim	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 14:35	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 14:35	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 14:35	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171770007A	06/30/2017 00:30	Amy Lehr	1

Sample Description: MW-201-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055735
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 11:05 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE201

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171770007A	06/26/2017 23:15	Karen L Beyer	1

Sample Description: MW-202-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055736
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 15:55 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE202

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	28	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	66	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAC026	06/23/2017 22:49	Edward C Monborne	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAC026	06/19/2017 16:30	Christine Gleim	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 15:03	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 15:03	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 15:03	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171770007A	06/29/2017 21:58	Amy Lehr	1

Sample Description: **MW-202-W-170613 NA Groundwater**
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055736
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 15:55 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE202

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171770007A	06/26/2017 23:15	Karen L Beyer	1

Sample Description: MW-203-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055737
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 10:50 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE203

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAC026	06/23/2017 23:17	Edward C Monborne	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAC026	06/19/2017 16:30	Christine Gleim	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 15:31	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 15:31	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 15:31	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171770007A	06/29/2017 22:20	Amy Lehr	1

Sample Description: **MW-203-W-170613 NA Groundwater**
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055737
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 10:50 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE203

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171770007A	06/26/2017 23:15	Karen L Beyer	1

Sample Description: MW-204-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055738
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 09:30 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE204

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	1,200	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	0.7	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	1.1	0.5	1
02102	Total Xylenes	1330-20-7	2.3	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	170	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAC026	06/23/2017 23:45	Edward C Monborne	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAC026	06/19/2017 16:30	Christine Gleim	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 15:59	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 15:59	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 15:59	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171770007A	06/29/2017 22:41	Amy Lehr	1

Sample Description: **MW-204-W-170613 NA Groundwater**
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055738
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 09:30 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE204

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171770007A	06/26/2017 23:15	Karen L Beyer	1

Sample Description: MW-205-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055739
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 09:20 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE205

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	280	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAC026	06/24/2017 00:12	Edward C Monborne	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAC026	06/19/2017 16:30	Christine Gleim	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 16:26	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 16:26	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 16:26	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171770007A	06/29/2017 23:03	Amy Lehr	1

Sample Description: MW-205-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055739
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 09:20 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE205

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171770007A	06/26/2017 23:15	Karen L Beyer	1

Sample Description: MW-206-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055740
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 14:30 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE206

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAC026	06/24/2017 00:40	Edward C Monborne	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAC026	06/19/2017 16:30	Christine Gleim	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 16:54	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 16:54	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 16:54	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171770007A	06/29/2017 23:25	Amy Lehr	1

Sample Description: MW-206-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055740
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 14:30 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE206

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171770007A	06/26/2017 23:15	Karen L Beyer	1

Sample Description: MW-207-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055741
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 14:55 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE207

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	0.020	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	71	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	31	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAC026	06/24/2017 01:08	Edward C Monborne	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAC026	06/19/2017 16:30	Christine Gleim	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17177A53A	06/26/2017 11:30	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 18:18	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 18:18	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	17177A53A	06/26/2017 11:30	Marie D Beamenderfer	1

Sample Description: MW-207-W-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055741
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 14:55 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE207

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171770007A	06/29/2017 23:47	Amy Lehr	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171770007A	06/26/2017 23:15	Karen L Beyer	1

Sample Description: BD-1-WD-170613 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055742
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SEBD1

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	30	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	69	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 18:45	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 18:45	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 18:45	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171770007A	06/30/2017 00:08	Amy Lehr	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171770007A	06/26/2017 23:15	Karen L Beyer	1

Sample Description: MW-2011-W-170616 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055743
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/16/2017 10:50 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

S2011

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	130	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	81	28	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	66	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAH026	06/28/2017 14:06	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAH026	06/19/2017 18:50	Kate E Lutte	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 19:13	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 19:13	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 19:13	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171790030A	07/05/2017 19:01	Thomas C Wildermuth	1

Sample Description: MW-2011-W-170616 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055743
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/16/2017 10:50 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

S2011

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171790030A	06/29/2017 09:00	Bradley W VanLeuven	1

Sample Description: MW-210-W-170616 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055744
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/16/2017 11:00 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE210

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	0.075	0.010	1
14243	Benzo(a)pyrene	50-32-8	0.042	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	0.044	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	0.020	0.010	1
14243	Chrysene	218-01-9	0.13	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	0.017	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	0.034	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	1,200	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	0.6	0.5	1
02102	Toluene	108-88-3	0.5	0.5	1
02102	Total Xylenes	1330-20-7	2.6	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	2,800	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	550	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAH026	06/28/2017 14:32	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAH026	06/19/2017 18:50	Kate E Lutte	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 19:41	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 19:41	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 19:41	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171790030A	07/05/2017 23:45	Thomas C Wildermuth	1

Sample Description: MW-210-W-170616 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055744
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/16/2017 11:00 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE210

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171790030A	06/29/2017 09:00	Bradley W VanLeuven	1

Sample Description: MW-209-W-170616 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055745
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/16/2017 12:10 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE209

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles	**SW-846 8270C SIM**		**ug/l**	**ug/l**	
14243	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
14243	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
14243	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
14243	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
14243	Chrysene	218-01-9	N.D.	0.010	1
14243	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
14243	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.010	1
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	1,300	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	1.1	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	0.8	0.5	1
02102	Total Xylenes	1330-20-7	2.4	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	730	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	230	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
14243	SIM SVOAs 8270C MINI	SW-846 8270C SIM	1	17170WAH026	06/28/2017 14:58	Holly B Ziegler	1
10466	BNA Water Extraction SIM	SW-846 3510C	1	17170WAH026	06/19/2017 18:50	Kate E Lutte	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 20:09	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 20:09	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 20:09	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171790030A	07/05/2017 19:23	Thomas C Wildermuth	1

Sample Description: MW-209-W-170616 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055745
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/16/2017 12:10 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SE209

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171790030A	06/29/2017 09:00	Bradley W VanLeuven	1

Sample Description: BD-2-WD-170616 NA Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055746
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/16/2017 by EK

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SEBD2

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	130	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum Hydrocarbons w/Si	**ECY 97-602 NWTPH-Dx modified**		**ug/l**	**ug/l**	
12005	DRO C12-C24 w/Si Gel	n.a.	72	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1

The reverse surrogate, capric acid, is present at <1%.

Sample Comments

State of Washington Lab Certification No. C457
Carcinogenic PAHs have been reported for this sample

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 20:37	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 20:37	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 20:37	Marie D Beamenderfer	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	171790030A	07/05/2017 19:44	Thomas C Wildermuth	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	171790030A	06/29/2017 09:00	Bradley W VanLeuven	1

Sample Description: TripBlank-T-170613 NA Water
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 9055747
LL Group # 1814817
Account # 11964

Project Name: Seattle Terminal

Collected: 06/13/2017

Submitted: 06/17/2017 09:25
Reported: 07/06/2017 15:03

Chevron Environmental Mgmt Co
BR1 X5139C
6101 Bollinger Canyon Road
San Ramon CA 94583

SEATB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Volatiles	**ECY 97-602 NWTPH-Gx**		**ug/l**	**ug/l**	
08274	NWTPH-Gx water C7-C12	n.a.	N.D.	50	1
GC Volatiles	**SW-846 8021B**		**ug/l**	**ug/l**	
02102	Benzene	71-43-2	N.D.	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	0.5	1
02102	Toluene	108-88-3	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1

Sample Comments

State of Washington Lab Certification No. C457

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	17174A53A	06/23/2017 12:43	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	17174A53A	06/23/2017 12:43	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	17174A53A	06/23/2017 12:43	Marie D Beamenderfer	1

Quality Control Summary

Client Name: Chevron Environmental Mgmt Co
Group Number: 1814817
Reported: 07/06/2017 15:03

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: 17170WAC026	Sample number(s): 9055733-9055741	
Benzo(a)anthracene	N.D.	0.010
Benzo(a)pyrene	N.D.	0.010
Benzo(b)fluoranthene	N.D.	0.010
Benzo(k)fluoranthene	N.D.	0.010
Chrysene	N.D.	0.010
Dibenz(a,h)anthracene	N.D.	0.010
Indeno(1,2,3-cd)pyrene	N.D.	0.010
Batch number: 17170WAH026	Sample number(s): 9055743-9055745	
Benzo(a)anthracene	N.D.	0.010
Benzo(a)pyrene	N.D.	0.010
Benzo(b)fluoranthene	N.D.	0.010
Benzo(k)fluoranthene	N.D.	0.010
Chrysene	N.D.	0.010
Dibenz(a,h)anthracene	N.D.	0.010
Indeno(1,2,3-cd)pyrene	N.D.	0.010
Batch number: 17174A53A	Sample number(s): 9055733-9055747	
Benzene	N.D.	0.2
Ethylbenzene	N.D.	0.2
NWTPH-Gx water C7-C12	N.D.	50
Toluene	N.D.	0.2
Total Xylenes	N.D.	0.2
Batch number: 17177A53A	Sample number(s): 9055741	
NWTPH-Gx water C7-C12	N.D.	50
Batch number: 171770007A	Sample number(s): 9055733-9055742	
DRO C12-C24 w/Si Gel	N.D.	30
HRO C24-C40 w/Si Gel	N.D.	70
Batch number: 171790030A	Sample number(s): 9055743-9055746	
DRO C12-C24 w/Si Gel	N.D.	30
HRO C24-C40 w/Si Gel	N.D.	70

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Chevron Environmental Mgmt Co
Reported: 07/06/2017 15:03

Group Number: 1814817

LCS/LCSD

Analysis Name	LCS Spike Added	LCS Conc	LCSD Spike Added	LCSD Conc	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
	ug/l	ug/l	ug/l	ug/l					
Batch number: 17170WAC026	Sample number(s): 9055733-9055741								
Benzo(a)anthracene	1.00	0.835	1.00	0.885	84	88	75-119	6	30
Benzo(a)pyrene	1.00	0.907	1.00	0.940	91	94	75-115	4	30
Benzo(b)fluoranthene	1.00	0.923	1.00	1.02	92	102	75-120	10	30
Benzo(k)fluoranthene	1.00	0.966	1.00	1.04	97	104	71-118	7	30
Chrysene	1.00	0.862	1.00	0.922	86	92	73-111	7	30
Dibenz(a,h)anthracene	1.00	0.744	1.00	0.772	74	77	57-125	4	30
Indeno(1,2,3-cd)pyrene	1.00	0.730	1.00	0.773	73	77	58-122	6	30
Batch number: 17170WAH026	Sample number(s): 9055743-9055745								
Benzo(a)anthracene	1.00	0.857	1.00	0.926	86	93	75-119	8	30
Benzo(a)pyrene	1.00	0.935	1.00	1.02	93	102	75-115	9	30
Benzo(b)fluoranthene	1.00	1.01	1.00	1.06	101	106	75-120	4	30
Benzo(k)fluoranthene	1.00	0.964	1.00	1.08	96	108	71-118	11	30
Chrysene	1.00	0.842	1.00	0.892	84	89	73-111	6	30
Dibenz(a,h)anthracene	1.00	0.962	1.00	1.05	96	105	57-125	9	30
Indeno(1,2,3-cd)pyrene	1.00	0.956	1.00	1.03	96	103	58-122	8	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 17174A53A	Sample number(s): 9055733-9055747								
Benzene	20	20.37	20	19.44	102	97	80-120	5	30
Ethylbenzene	20.1	20.35	20.1	19.37	101	96	80-120	5	30
NWTPH-Gx water C7-C12	1100	1090.18	1100	1081.87	99	98	79-120	1	30
Toluene	20.2	20.36	20.2	19.43	101	96	80-120	5	30
Total Xylenes	60.2	62.38	60.2	59.28	104	98	80-120	5	30
Batch number: 17177A53A	Sample number(s): 9055741								
NWTPH-Gx water C7-C12	1100	1065.84	1100	1034.92	97	94	79-120	3	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 171770007A	Sample number(s): 9055733-9055742								
DRO C12-C24 w/Si Gel	1600	830.8	1600	898.7	52	56	32-117	8	20
Batch number: 171790030A	Sample number(s): 9055743-9055746								
DRO C12-C24 w/Si Gel	1600	1119.65	1600	993.48	70	62	32-117	12	20

*- Outside of specification
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(2) The unspiked result was more than four times the spike added.
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Quality Control Summary

Client Name: Chevron Environmental Mgmt Co
Group Number: 1814817
Reported: 07/06/2017 15:03

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: SIM SVOAs 8270C MINI
Batch number: 17170WAC026

	Fluoranthene-d10	Benzo(a)pyrene-d12	1-Methylnaphthalene-d10
9055733	74	67	77
9055734	69	84	71
9055735	83	73	84
9055736	84	57	84
9055737	72	88	75
9055738	77	66	73
9055739	70	76	74
9055740	87	64	82
9055741	90	87	61
Blank	80	90	75
LCS	76	91	77
LCSD	82	95	82
Limits:	42-136	26-137	22-129

Analysis Name: SIM SVOAs 8270C MINI
Batch number: 17170WAH026

	Fluoranthene-d10	Benzo(a)pyrene-d12	1-Methylnaphthalene-d10
9055743	85	74	97
9055744	85	79	117
9055745	70	74	88
Blank	90	95	95
LCS	86	94	93
LCSD	93	101	106
Limits:	42-136	26-137	22-129

Analysis Name: Method 8021 Water Master
Batch number: 17174A53A

	Trifluorotoluene-P	Trifluorotoluene-F
9055733	97	120
9055734	97	95
9055735	102	106
9055736	97	91
9055737	98	91
9055738	85	98
9055739	97	87
9055740	98	122
9055741	96	
9055742	97	124
9055743	97	89
9055744	88	100
9055745	90	110
9055746	96	87

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Chevron Environmental Mgmt Co
Group Number: 1814817
Reported: 07/06/2017 15:03

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: Method 8021 Water Master
Batch number: 17174A53A

	Trifluorotoluene-P	Trifluorotoluene-F
9055747	98	97
Blank	97	113
LCS	96	99
LCSD	97	103
Limits:	51-120	63-135

Analysis Name: NWTPH-Gx water C7-C12
Batch number: 17177A53A

	Trifluorotoluene-F
9055741	93
Blank	110
LCS	108
LCSD	106
Limits:	63-135

Analysis Name: NWTPH-Dx water w/ 10g Si Gel
Batch number: 171770007A

	Orthoterphenyl
9055733	73
9055734	65
9055735	81
9055736	70
9055737	79
9055738	76
9055739	81
9055740	64
9055741	66
9055742	77
Blank	61
LCS	71
LCSD	75
Limits:	50-150

Analysis Name: NWTPH-Dx water w/ 10g Si Gel
Batch number: 171790030A

	Orthoterphenyl
9055743	95
9055744	55
9055745	96
9055746	95
Blank	84
LCS	92

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Quality Control Summary

Client Name: Chevron Environmental Mgmt Co
Group Number: 1814817
Reported: 07/06/2017 15:03

Surrogate Quality Control (continued)

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: NWTPH-Dx water w/ 10g Si Gel
Batch number: 171790030A

	Orthoterphenyl
LCSD	83
Limits:	50-150

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.
P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

Chevron Northwest Region Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # 11964 For Eurofins Lancaster Laboratories Environmental use only Group # 1814817 Sample # 9055733-47

Instructions on reverse side correspond with circled numbers.

1 Client Information

Facility # / WBS: Union Oil Company Seattle Marketing Terminal NWENW-PMC0014082

Site Address: 3001 Elliot Ave, Seattle, WA Arcadis

Chevron PM: Kim Jolitz Lead Consultant:

Consultant/Office: Arcadis/1100 olive way, suite 800, Seattle, WA 98101

Consultant Project Mgr.: Rebecca Andresen

Consultant Phone #: 206-726-4720

Sampler: Eric Krueger (EK)

2 Sample Identification

Sample Identification	Collected Date	Collected Time	3 Grab	3 Composite	4 Matrix: Soil	Water: Sediment	Water: Potable	Water: Ground	Water: NPDES	Water: Surface	Oil	Air	Total Number of Containers	5 Analyses Requested: BTEX + MTBE 8021	8260	Naphth	8260 full scan	Oxygenates	NWTPH-Gx	NWTPH-Dx with Silica Gel Cleanup	NWTPH-Dx without Silica Gel Cleanup	WA VPH	WA EPH	Lead	Total	Diss.	Method	cPAHs by EPA 8270 SIM
MW-70R	6/13/17	1240						X					7	X					X	X								X
MW-200	6/13/17	1200						X					7	X					X	X								X
MW-201	6/13/17	1105						X					7	X					X	X								X
MW-202	6/13/17	1555						X					7	X					X	X								X
MW-203	6/13/17	1050						X					7	X					X	X								X
MW-204	6/13/17	0930						X					7	X					X	X								X
MW-205	6/13/17	0920						X					7	X					X	X								X
MW-206	6/13/17	1430						X					7	X					X	X								X
MW-207	6/13/17	1455						X					7	X					X	X								X
BD-1	6/13/17	—						X					5	X					X	X								X
MW-201	6/16/17	1050						X					7	X					X	X								X
MW-210	6/16/17	1100						X					7	X					X	X								X
MW-209	6/16/17	1210						X					7	X					X	X								X

SCR #:

- ☐ Results in Dry Weight
- ☐ J value reporting needed
- ☐ Must meet lowest detection limits possible for 8260 compounds
- ☐ 8021 MTBE Confirmation
- ☐ Confirm MTBE + Naphthalene
- ☐ Confirm highest hit by 8260
- ☐ Confirm all hits by 8260
- ☐ Run _____ oxy's on highest hit
- ☐ Run _____ oxy's on all hits

6 Remarks

7 Turnaround Time Requested (TAT) (please circle)

(Standard) 5 day 4 day

72 hour 48 hour 24 hour

8 Data Package (circle if required)

Type I - Full

(Type VI (Raw Data))

EDD (circle if required)

CVX-RTBU-FI_05 (default)

Other: _____

Relinquished by	Date	Time	Received by	Date	Time
[signature]	6/16/17	1500	UPS		

9

Relinquished by Commercial Carrier: UPS X FedEx ____ Other ____

Received by [signature] Date 6/17/17 Time 925

Temperature Upon Receipt 16-6.0 °C

Custody Seals Intact? (Yes) No

Eurofins Lancaster Laboratories Environmental, LLC • 2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300

7051 0913

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be given to the SeaTac Courier. The pink copy should be retained by the client.

Chevron Northwest Region Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories

Acct. # 11964 Group # 1814817 For Lancaster Laboratories use only Sample # 9055733-47

Instructions on reverse side correspond with circled numbers.

1 Client Information

Facility # WBS: Union Oil Company Seattle Marketing Terminal NWENV-PMC0014032

Site Address: 3001 Elliot Ave, Seattle, WA

Lead Consultant: Arcadis

Chevron PM: Kim Jolitz

Consultant/Office: 1100 Olive Way, Suite 800, Seattle, WA 98101

Consultant Project Mgr.: Rebecca Andresen

Consultant Phone #: 206.726.4720

Sampler: Eric Krueger

2 Sample Identification

Sample Identification	Collected Date	Collected Time	3 Grab	Composite	4 Matrix: Soil	Sediment	Water: Potable	Ground	Surface	NPDES	Oil	Air	Total Number of Containers	5 Analyses Requested: BTEX + MTBE	8021	8260	Naphth	8260 full scan	Oxygenates	NWTPH GX	NWTPH DX	Silica Gel Cleanup	Lead	Total	Diss.	Method	WAVPH	WAEPH
BD-2	6/16/17	----						X			5			X						X	X							
Trip Blank	---	---						X			2			X						X								

SCR #:

- ☐ Results in Dry Weight
- ☐ J value reporting needed
- ☐ Must meet lowest detection limits possible for 8260 compounds
- ☐ 8021 MTBE Confirmation
- ☐ Confirm MTBE + Naphthalene
- ☐ Confirm highest hit by 8260
- ☐ Confirm all hits by 8260
- ☐ Run _____ oxy's on highest hit
- ☐ Run _____ oxy's on all hits

6 Remarks

7 Turnaround Time Requested (TAT) (please circle)

Standard | 5 day | 4 day | 72 hour | 48 hour | 24 hour

8 Data Package Options (please circle if required)

Type I - Full | Type VI (Raw Data)

Relinquished by	Date	Time	Received by	Date	Time
Eric Krueger	6/16/17	1500	UPS		
Relinquished by	Date	Time	Received by	Date	Time

Relinquished by Commerical Carrier: UPS X FedEx ____ Other ____

Received by: Date 6/17/17 Time 925

Temperature Upon Receipt 1.6-6.0°C

Custody Seals Intact? Yes No

9

eurofins | Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID: 186651

Group Number(s): 1814817

Client: Arcadis

Delivery and Receipt Information

Delivery Method:	UPS	Arrival Timestamp:	06/17/2017 9:25
Number of Packages:	5	Number of Projects:	1
State/Province of Origin:	WA		

Arrival Condition Summary

Shipping Container Sealed:	Yes	Sample IDs on COC match Containers:	Yes
Custody Seal Present:	Yes	Sample Date/Times match COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥ 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:	2
Paperwork Enclosed:	Yes	Trip Blank Type:	HCl
Samples Intact:	Yes	Air Quality Samples Present:	No
Missing Samples:	No		
Extra Samples:	No		
Discrepancy in Container Qty on COC:	No		

Unpacked by Simon Nies (25112) at 12:36 on 06/17/2017

Samples Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle) IR = Infrared (Surface Temp) All Temperatures in °C.

Cooler #	Thermometer ID	Corrected Temp	Therm. Type	Ice Type	Ice Present?	Ice Container	Elevated Temp?
1	DT146	6.0	DT	Wet	Y	Bagged	N
2	DT42-01	1.6	DT	Wet	Y	Bagged	N
3	DT42-01	3.9	DT	Wet	Y	Bagged	N
4	DT42-01	3.7	DT	Wet	Y	Bagged	N
5	DT146	3.7	DT	Wet	Y	Bagged	N

2425 New Holland Pike
Lancaster, PA 17605-2425
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F | 717-656-2681
www.LancasterLabs.com

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL	Below Minimum Quantitation Level	**mg**	milligram(s)
C	degrees Celsius	**mL**	milliliter(s)
cfu	colony forming units	**MPN**	Most Probable Number
CP Units	cobalt-chloroplatinate units	**N.D.**	none detected
F	degrees Fahrenheit	**ng**	nanogram(s)
g	gram(s)	**NTU**	nephelometric turbidity units
IU	International Units	**pg/L**	picogram/liter
kg	kilogram(s)	**RL**	Reporting Limit
L	liter(s)	**TNTC**	Too Numerous To Count
lb.	pound(s)	**µg**	microgram(s)
m3	cubic meter(s)	**µL**	microliter(s)
meq	milliequivalents	**umhos/cm**	micromhos/cm

< less than

> greater than

ppm parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.

ppb parts per billion

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

C - Result confirmed by reanalysis
E - Concentration exceeds the calibration range
J (or G, I, X) - estimated value ≥ the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
P - Concentration difference between the primary and confirmation column >40%. The lower result is reported.
U - Analyte was not detected at the value indicated
V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference…
W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods.
Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as “analyze immediately” are not performed within 15 minutes.

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