

Chevron Environmental Management Company

PROGRESS REPORT NO. 119
SECOND SEMI-ANNUAL 2015

Former Unocal Seattle
Marketing Terminal 0724
3001 Elliott Avenue
Seattle, Washington

March 3, 2016

Progress Report No. 119
Second Semi-Annual 2015



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PROGRESS REPORT NO. 119 SECOND SEMI- ANNUAL 2015

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 second semi-annual 2015 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 event conducted on December 7-9, 2015 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 corresponding comments:

- 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).

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- Add monitoring well MW-205 to the quarterly gauging program. Ecology concurred: MW-205 was gauged quarterly through 2013.
- 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 light nonaqueous phase liquid (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.
- Decommissioning of 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.

- Decommissioning of piezometers installed in 2010 (PZ-61A-R, PZ-203, and PZ-204).
- Waste management.

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 separate report documenting installation activities will be submitted to Ecology in the second quarter of 2016.

3 GROUNDWATER COMPLIANCE MONITORING

3.1 Historical NAPL 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 September 23, 2015. During this event, monitoring wells MW-30 and MW-61A-R were gauged to determine the presence of LNAPL. No LNAPL was observed during the September gauging event. Remaining wells were also gauged as part of the second semi-annual groundwater monitoring event in December 2015. Gauging activities were conducted at low tide to ensure that groundwater levels were within the monitoring well screen intervals. LNAPL was observed in monitoring MW-61A-R during the December gauging event. Monitoring well history is summarized in **Table 1** and gauging history is summarized in **Table 2**.

3.2 Second Semi-Annual 2015 Groundwater Monitoring

3.2.1 Groundwater Monitoring

From December 7-9, 2015, Arcadis conducted a comprehensive groundwater gauging and sampling event at the site. During the December 2015 event, it was noted that the pedestrian pathway had been resurfaced and monitoring wells MW-204 and MW-205, which are located in the pedestrian pathway, were found to be buried beneath what appeared to be controlled density fill (CDF). Monitoring well MW-204 was covered with approximately 2.5-inches of CDF, and monitoring well MW-205 was covered with approximately 5-inches of CDF. The well monuments and J-plug caps were found to be intact beneath the CDF. Ecology was notified by email correspondence dated December 11, 2015.

Due to difficulties locating monitoring wells MW-204 and MW-205, the comprehensive gauging event for site wells was conducted on December 9, after these wells had been located. During the comprehensive gauging event, monitoring wells MW-30, MW-61A-R, and MW-200 through MW-207 were gauged with an oil/water interface probe to determine depth to water and LNAPL thickness. Gauging history is summarized in **Table 2**.

Monitoring wells MW-30, and MW-200 through MW-207 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**. Monitoring well MW-61A-R was not sampled due to the presence of LNAPL.

Samples were collected in clean, laboratory-supplied containers with appropriate preservatives and were stored in iced coolers. Samples were then delivered via UPS, under chain-of-custody procedures, to

Eurofins Lancaster Laboratories in Lancaster, Pennsylvania. Groundwater samples from the December 2015 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 (MW-30 was not analyzed for cPAHs).

3.2.2 Groundwater Monitoring Results

Depths to groundwater measured during the December 2015 groundwater monitoring event ranged from 5.89 feet below top of casing (btoc) in monitoring well MW-200 to 15.49 feet btoc in monitoring well MW-204. Groundwater elevations ranged from 7.29 feet above mean sea level in monitoring well MW-206 to 11.45 feet above mean sea level in monitoring well MW-61A-R. These measurements indicate groundwater is flowing in a southwesterly direction, towards Elliott Bay, and are consistent with historical data. Groundwater gauging was conducted during low tide. Historical and current groundwater elevations are included in **Table 2**. Groundwater elevations and contours from the December 2015 sampling event are shown on **Figure 3**.

Analytical results indicate that no exceedances of the applicable BTEX, TPH-G, TPH-D, TPH-O or cPAH RALs were detected during the December 2015 sampling event, with the exception of MW-204, which had an exceedance for TPH-G at 1.400 mg/L. On January 15, 2016, MW-204 was resampled to confirm this exceedance. TPH-G was once again detected at 1.4 mg/L in MW-204 (vs. standard of 1.0 mg/l). Monitoring well MW-204 has not had a TPH-G exceedance since September 2010 (more than five years prior to this event). Historical trends graphs for MW-30 and MW-200 through MW-207 are provided in **Appendix C**. Analytical results for TPH-G, TPH-D, TPH-O, and BTEX, are summarized in **Table 3** and **Figure 4**; results for cPAHs are summarized in **Table 4** and **Figure 5**.

As of the December 2015 event, six monitoring wells (MW-200, MW-202, MW-203, MW-205, MW-206, and MW-207) have met a minimum of nine consecutive sampling events in compliance with the RALs established for the site. A summary of groundwater compliance as of the December 2015 event is included in **Table 5**.

3.2.3 Laboratory Data Verification Results

A trip blank sample was submitted with the groundwater samples from the December 2015 sampling event for BTEX and GRO analysis. Analyte concentrations did not exceed their respective method detection limits (MDLs) in the trip blanks.

A duplicate sample was collected during the December 2015 sampling events and in the January 2016 resample event in the field and submitted to the laboratory for quality assurance purposes. The duplicate samples were collected from monitoring wells MW-201 for the December event and MW-204 for the January 2016 event, both were labeled DUP-1. The samples were submitted for the same analyses as the parent samples. The duplicate analytical results were comparable to those of the primary sample.

All coolers were received in good condition within temperature requirements. The laboratory report case narrative reported no issues of note. The laboratory report and chain of custodies are provided in **Appendix D**.

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 measureable 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-61A-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 September 2015 gauging event and the December 2015 gauging and sampling event with an oil/water interface probe to determine if LNAPL was present. LNAPL was measured in monitoring well MW-61A-R at a thickness of 0.01 foot during the December 2015 gauging and sampling event.

4.2 Lower Yard NAPL 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 December 2015 groundwater monitoring activities.

5 CONCLUSIONS

During the second half of 2015 and prior to the December 2015 sampling event, a resurfacing of the pedestrian pathway where MW-204 and MW-205 are located was conducted. These wells were found to be covered with 2.5-inches and 5-inches of CDF, respectively.

Groundwater monitoring was conducted from December 7-9, 2015. There were no exceedances of BTEX, TPH-D, TPH-O, or cPAH RALs in the samples from the December 2015 sampling event. There was one exceedance of the TPH-G RAL in MW-204 from the December 2015 sampling event and January 2016 resampling event. Analytical results are summarized in **Table 3**, **Table 4**, **Figure 4**, and **Figure 5**.

During the December 2015 groundwater monitoring event LNAPL was measured in monitoring well MW-61A-R.

As of the December 2015 event, six monitoring wells (MW-200, MW-202, MW-203, MW-205, MW-206, and MW-207) have met a minimum of nine consecutive sampling events in compliance with the RALs established for the site. Monitoring well MW-201 has met eleven consecutive sampling events in compliance with the petroleum hydrocarbon constituent RALs, but has only met the compliance with the cPAH RALs for one consecutive sampling event established for the site. A summary of groundwater compliance as of the December 2015 event is included in **Table 5**.

In December 2012, Chevron submitted a revised Draft Amendment of the Order to Ecology. This Amendment recommends abandonment of Trench D recovery wells and piezometers, installation of up to five replacement wells in the Trench D area, and continued groundwater monitoring. In correspondence dated February 4, 2015, Ecology requested a stakeholder conference call to discuss a work plan for additional remediation and a new legal agreement for the Site. In May 2015, Chevron submitted a work plan detailing additional well installation activities agreed upon by all stakeholders in the Former Trench D and Offsite Areas. The well installation activities laid out in this work plan were completed in the first quarter of 2016. A separate report detailing these well installation activities will be submitted to Ecology in the second quarter of 2016.

6 REFERENCES

Arcadis. 2009. Low-Flow Groundwater Purging and Sampling Procedures for Monitoring Wells. March 9.

Arcadis. 2013. Work Plan for Decommissioning Trench D Recovery System and Three Piezometers Installed in 2010. May 31.

Arcadis. 2014. Trench D Recovery System Decommissioning Summary and Recommendation for Replacement Well Installation. July.

Arcadis. 2015. Work Plan for Additional Well Installation in Former Trench D Area and Offsite Area, Former Unocal Seattle Marketing Terminal. May.

GeoEngineers, 1998. Final Cleanup Report – Lower Yard, Unocal Former Seattle Marketing Terminal Property. September 23.

Seattle Art Museum (SAM). 1999. Draft Cleanup Action Plan, Former Unocal Seattle Marketing Property. October 6. Numbered Heading Level 2

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)	sampled
MW-31	1989		12/2003
MW-32	1989		04/1991
MW-59	03/1998		<i>no data</i>
MW-65	03/1998		ABANDONED 12/07
MW-66	03/1998		ABANDONED 12/07
MW-69	<i>no data</i>		<i>no data</i>
Lower Yard			
MW-1	<i>no data</i>	No wells in Lower Yard currently sampled for compliance parameters	1998
MW-2	<i>no data</i>		1998
MW-18	<i>no data</i>		1998
MW-22	<i>no data</i>		1998
MW-23	<i>no data</i>		1998
MW-33	<i>no data</i>		1998
MW-34	<i>no data</i>		1998
MW-35	<i>no data</i>		1998
MW-49	<i>no data</i>		1998
MW-50	<i>no data</i>		1998
MW-51	<i>no data</i>		1998
MW-53	<i>no data</i>		1998
MW-54	<i>no data</i>		1998
MW-55	<i>no data</i>		1998
MW-56	<i>no data</i>		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	<i>no data</i>	No wells in Lower Yard currently sampled for compliance parameters	1998
MW-60	<i>no data</i>		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 (Discontinued in 2011)	10/2005
MW-9	<i>no data</i>		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		<i>no data</i>
MW-35	10/1989		<i>no data</i>
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	<i>no data</i>		<i>no data</i>
MW-52	06/1998		10/2005
MW-67	03/1998		10/2005
MW-68	03/1998		07/2005
MW-69	03/1998		<i>no data</i>
MW-70	03/1998		10/2005
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)	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

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 (continued)	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	--	
09/23/15	13:15	13.82	--	--	7.03	--	
12/09/15	10:39	10.00	--	--	10.85	--	
MW-34 (5.33)	12/11/02	13:45	9.45	NR	NR	-4.12	--
	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 (5.11)	12/11/02	13:35	9.29	NR	NR	-4.18	--
	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 (5.20)	12/11/02	13:30	9.38	NR	NR	-4.18	--
	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	--
	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 (4.94)	12/11/02	13:40	9.06	NR	NR	-4.12	--
	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	--	--

**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-43 Continued	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	--	--	NR	NR	--	--	
	Well Possibly Removed During Previous Excavation Activities							
MW-44 (5.46)	12/11/02	--	--	NR	NR	--	--	
	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 ⁵ (13.35)	03/02/06	--	15.15 ⁶	NR	NR	7.28	1.91	
	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	14.31	--	NR	8.13	--	
	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	13.54	--	NR	8.90	--	
	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	--		
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	--		

**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-61A-R (continued)	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	--	
	09/23/15	13:00	14.60	--	--	7.84	--	
	12/09/15	10:45	10.99	10.98	0.01	11.45	--	
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				
	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 (10.83)		12/11/02	14:03	14.69	NR	NR	-3.86	--
	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	--	

**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-65 continued	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	--	
					Well Decommissioned			
	MW-66 (11.62)	12/11/02	14:15	15.36	NR	NR	-3.74	--
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	--		
				Well Decommissioned				
MW-200 ⁶ (4.78) (14.36) ⁸	03/07/07	9:45	8.88	--	--	5.48	-0.22	
	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	8.59	--	--	5.77	--	
	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	--	
	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	--	

**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-200 (continued)	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	--	
MW-201 ⁶ (5.28)	03/07/07	9:55	9.41	Sheen	--	4.95	0.28	
	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	--	
	01/09/08	14:38	9.09	--	--	5.77	--	
	02/12/08	10:24	9.46	--	--	5.40	--	
	(14.86) ⁸	05/13/08	10:24	10.56	--	--	4.30	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	--	
	(14.86) ⁸	04/25/11	13:15	9.22	--	--	5.64	--
	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	--		
MW-202 ⁶ (5.01)	03/07/07	9:25	8.79	--	--	6.07	-2.74	
	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	10.61	--	--	3.97	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	--		

**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-202 (continued)	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	--	
MW-203 ⁵ (7.98)	03/07/07	--	11.86	--	--	2.72	-2.52	
	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	11.59	--	--	5.96	--	
	(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	--
		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	--	
MW-204 ⁶ (14.38)	03/07/07	10:15	18.12	--	--	-0.57	-2.87	
	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	17.85	--	--	6.08	--	
	(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	--	

**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-204 Continued	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	--
	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	--	
MW-205 ⁵ (18.43) (27.89) ⁸	03/07/07	10:30	22.20	Sheen	--	1.73	0.43
	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	--
	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	--	

**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-205 Continued	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	--	
	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	--	
MW-206 ⁶ (5.59)	03/07/07	9:15	9.15	--	--	18.74	-5.41	
	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	--	
	(15.15) ⁸	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	--	
MW-207 ⁶ (5.82)	03/07/07	10:40	10.64	--	--	4.51	-3.68	
	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	--
		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	--

**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-207 Continued	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	--	
RW-1 (4.65)	09/13/07	--	9.12	--	--	6.28	--
	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	--
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	--	

**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)	
RW-2 Continued	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	--	
	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 (4.70)	09/13/07	--	9.45	--	--	4.85	--
		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	--	
(14.3) ⁸		01/06/09	9:21	7.69	--	--	6.61	--
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	--		

**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)	
RW-3 Continued	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 (13.9) ⁸	09/13/07	--	8.6	--	--	5.70	--
		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	--
		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 (13.9) ⁸		05/13/08 ⁷	8:58	8.35	--	--	5.55	--
		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	--		

**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)	
RW-10 Continued	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	--	
	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	--		

**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)
RW-13 Continued	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			
	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 (5.87)	09/13/07	--	9.85	Sheen	--	5.45	--
	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			
	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	--	

**Table 2
Summary of Groundwater Elevation Data**

Former Unocal Seattle Marketing Terminal
3001 Elliott Avenue
Seattle, Washington

Well Number¹ (Well Casing Elevation)	Date Measured	Time Measured (hr:min)	Depth to Groundwater² (feet)	Depth to LNAPL³ (feet)	LNAPL Thickness³ (feet)	Groundwater Elevation⁴ (feet)	Top of Well Screen Elevation⁵ (feet)
RW-21 Continued	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:

¹Well casing elevations listed in feet above mean sea level. Approximate monitoring well locations are shown in Figure 2.

"--" = not measured or not obtainable

²Below top of casing.

³Light non-aqueous phase liquid

⁴Elevation referenced to city of Seattle datum.

⁵Top of well screen elevation data from historic records.

⁶TOC 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.

⁷Depth to water was measured with pump in well.

⁸Survey by OTAK 5/27/08.

⁹Groundwater elevation recorded prior to pump testing at the site. Sheen observed on extracted groundwater during hydraulic conductivity testing on well MW-205.

¹⁰LNAPL indicated in field notes, measurement not taken

¹¹ TOC elevations for wells PZ-61A-R, PZ-203, and PZ-204 unknown.

NR = Not reported.

UK = TOC elevations unknown.

Bolded data are for the current reporting period.

**Table 3
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	7	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	<1	<1	--	--	<5	
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	<1	--	--	<2	
	09/15/95	ND	<0.50	<0.50	<0.50	<1.0	--	<1.0	7.57/0.04	<1.0	<0.75	--	--	
12/14/95	ND	<0.50	<0.50	<0.50	<1.0	--	<0.05	<0.27	<0.75	<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	<1	--	--	<5	
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	<1	--	--	<2	
MW-39	01/17/91	--	<0.5	0.5	0.6	2.2	--	<1	<1	<1	--	--	<5	
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	<1	--	--	<5	
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	<1	--	--	<5	
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	<1	--	--	<5	
MW-61A	03/13/98	ND	<0.500	<0.500	<0.500	<1.00	--	0.956	2.14	2.14	<0.750	--	--	
	06/18/98	ND	<2.50	<2.50	<2.50	<5.00	--	1.01	3.49	3.49	<0.750	--	--	
	09/03/98	ND	<0.500	<0.500	<0.500	<0.500	--	0.396	1.85	1.85	<0.750	--	<1.00	
	12/15/98	Sheen	<2.50	<2.50	2.82	12.8	--	10.2	146/73.0	<30.6/15.8	<0.750	--	--	
	12/15/98	Sheen	<2.50	<2.50	2.50	5.81	--	2.93	32.3/14.6	<3.75/0.750	<0.750	--	--	
	03/23/99	Sheen	<0.500	<0.500	2.56	13.8	--	4.34	39.7/32.7	<8.25/3.75	<0.750	--	--	
	03/23/99	Sheen	<2.50	<2.50	<2.50	<5.00	--	1.56	52.8/42.1	<8.25/8.25	<0.750	--	--	
	07/01/99	ND	<0.500	<0.500	<0.900	<3.70	--	1.38 ⁷	4.43/2.08	<0.750/0.750	<0.750	--	<1.00	
	07/01/99	ND	<1.00	<1.00	<1.40	<5.80	--	1.30 ⁷	4.45/3.08	<0.750/0.750	<0.750	--	<1.00	
	09/29/99	Sheen	<0.500	<5.00	<5.00	<1.00	--	2.16 ⁸	7.57/4.04	<0.750/0.750	<0.750	--	--	
	09/29/99	Sheen	<0.500	<0.500	<5.00	<10.0	--	2.80 ⁸	19.72/1.1	0.758/1.57	<0.750	--	--	
	12/16/99	Sheen	<0.500	<5.00	<3.50	<17.00	--	7.61	33.4/30.1	<15.8/8.25	<0.750	--	--	
	01/04/00 ⁹	Sheen	<0.500	<5.00	<5.00	<4.15	--	1.40	12.1/8.29	<1.34/1.34	<0.750	--	--	
	03/21/00	ND	<0.500	<0.500	<0.550	<1.85	--	0.831	13.1 ⁷	<0.750 ⁷	<0.750	--	--	
	03/21/00	ND	<0.500	<0.500	<0.720	<3.40	--	1.05	6.36 ⁷	<0.750 ⁷	<0.750	--	--	
	06/22/00 ⁹	ND	0.779	<0.500	<0.500	2.32	--	1.00	4.23/3.38	<0.750/0.750	<0.750	--	<1.00	
	06/22/00	ND	0.888	<0.500	0.591	2.86	--	0.936	5.99/4.13	<0.750/0.750	<0.750	--	<1.00	
	09/14/00	ND	<0.500	<0.500	<0.704	<3.11	--	1.36	2.49/1.50	<0.750/0.750	<0.750	--	--	
	09/14/00	ND	<0.500	<0.500	0.986	<3.21	--	1.00	5.00/3.13	<0.750/0.750	<0.750	--	--	
	12/21/00	ND	<0.500	<1.24	<0.500	<3.87	--	1.18	4.62/2.48	<0.750/0.750	<0.750	--	--	
12/21/00 ⁹	ND	<0.500	<0.500	<0.500	<1.00	--	0.721	5.64/3.81	<0.750/0.750	<0.750	--	--		
03/14/01	ND	<0.565	<0.500	<1.38	<4.31	--	0.962	2.55/1.28	<0.750/0.750	<0.750	--	--		
03/14/01	ND	<0.500	<0.500	<0.500	<1.12	--	0.498	1.82/0.668	<0.750/0.750	<0.750	--	--		
06/21/01	ND	<0.500	0.855	<0.500	1.14	--	0.773	2.45/1.55	<0.750/0.750	<0.750	--	<1.00		
06/21/01	ND	<0.500	<0.500	<0.500	2.61	--	0.676	1.80/1.04	<0.750/0.750	<0.750	--	<1.00		
09/25/01	Sheen	<0.500	<0.500	<0.500	2.62	--	0.839	14.3/11.3	<8.25/0.750	<0.750	--	--		
09/25/01	Sheen	<0.500	0.923	0.592	4.22	--	0.918	5.12/4.47	<0.750/0.750	<0.750	--	--		
12/19/01	Sheen	0.825	<2.00	<1.00	<1.50	--	2.54	19.4/14.8 ⁸	<3.00/3.00 ¹⁰	<0.750	--	--		
03/26/02	Sheen	<0.500	<0.500	<0.500	1.24	--	0.414	1.38/0.615	<0.750/0.750	<0.750	--	--		
03/26/02	Sheen	<0.500	<0.500	<0.500	1.85	--	0.592	1.99/0.847	<0.750/0.750	<0.750	--	--		
06/19/03	Sheen	<0.500	<0.500	<0.500	<1.00	--	0.360	1.43	<0.750	<0.750	--	--		
09/18/03	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.728	<0.750	<0.750	--	--		
12/03/03	Sheen	<0.500	<0.500	<0.500	1.22	--	0.604	2.46	<0.750	<0.750	--	--		
12/03/03	Sheen	<0.500	<0.500	<0.500	1.30	--	0.701	2.35	<0.750	<0.750	--	--		
MW-61A-R			Sheen/LNAPL				<1.00	--	--	--	--	--	--	
Duplicate	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 ⁸	1.500	1.7	--	0.400	0.600	<0.095	<0.095	--	<0.037	
	09/26/07	ND	<0.5	<0.5	1.4	<1.5	--	0.430	0.770	0.120	<0.100	--	--	
	11/28/07	ND	<0.5	<0.5	0.9	<1.5	--	0.410	0.340	<0.100	<0.100	--	--	
	11/28/07	ND	<0.5	<0.5	0.9	<1.5	--	0.400	0.670	0.670	<0.670	--	--	
	02/13/08	ND	<0.500	<0.500	0.980	1.14	--	0.455	0.308	<0.485	<0.485	--	--	
	05/14/08	ND	<0.500	<0.500	1.24	1.43	--	0.363	0.406	<0.472	<0.472	--	--	
	09/04/08	Sheen	<0.500	1.16	3.58	1.13	--	0.933	0.380	<0.490	<0.490	--	--	
	12/03/08	LNAPL	--	--	--	--	--	--	--	--	--	--	--	
	02/18/09	Sheen	<0.500	<0.500	<0.500	1.32	--	0.490	0.830	<0.481	<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	<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	--	--	--	--	--	--	--	--	--	--	--		
MW-62A	03/13/98	ND	<0.500	<0.500	<0.500	<1.00	--	0.288	<0.0250	<0.0750	--	--	--	
	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	<0.750	--	<1.00	
	12/14/98	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<0.750	--	--	
	03/23/99	ND	10.8	<5.00	<5.00	<10.0	--	<0.500	0.371/0.250	<0.750/0.750	<0.750	--	--	
	07/01/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.311/0.250	<0.750/0.750	<0.750	--	1.09	
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	0.708/0.250	<0.750/0.750	<0.750	--	--	
	12/16/99	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<0.750	--	--	
	03/21/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<0.750	--	--	
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	<0.0500	<0.250	<0.750	<0.750	--		

Table 3
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-64 Continued	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 ⁹	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	<0.750/0.250 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		<i>No visible sheen</i>	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	Product	--	--	--	--	--	--	--	--	--	
	01/16/90	Product	--	--	--	--	--	--	--	--	--	
	04/16/90	Product	--	--	--	--	--	--	--	--	--	
	07/25/90	Product	--	--	--	--	--	--	--	--	--	
	09/29/90	--	--	--	--	--	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	--	--	<2		
09/17/91	Product	--	--	--	--	--	--	--	--	--		
12/10/91	Product	--	--	--	--	--	--	--	--	--		
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	--		
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		
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	--		
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	<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	Sheen	<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	--		
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	--	0.0783	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	--		
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	--		
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	--		
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	--		
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	--		
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	--		
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	--		
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	--		
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	--		
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	--		
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				

Table 3
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		
			40	14,300	1,400	4,400		7	10	15	50	
Elliott Avenue RALS		No visible sheen										
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	2.2	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 ⁹	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	1.09/<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	0.975/<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 ⁹	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	<0.500	<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 ⁹	1.370/5.96	<0.750/<0.750	<1.00	
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	--	0.216 ⁹	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 ⁹	Trace	<0.500	<0.500	<0.500	<1.00	--	0.109	0.439/<0.250	<0.750/<0.750	<1.00	

Table 3
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					
Lower Yard RALS			No visible sheen				40	14,300	1,400	4,400	--	1	10	15	50
MW-81	10/06/98	Sheen	<0.700	<0.500	<0.500	<0.500	<1.50	0.136 ⁴	27.8/14.8	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	--					
	09/29/99	ND	<0.500	<0.500	<0.500	<1.00	0.566 ⁵	1.69/0.390	<0.750/<0.750	<1.00					
	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 ⁶	ND	0.536	3.35	2.37	16.2	0.234	2.36/0.495	1.23/<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	7.9/0.543	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 ⁶	ND	<0.500	1.72	1.48	13.6	0.2590	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	0.13/<0.250	<0.750/<0.750	--					
MW-83	10/06/98	ND	<0.500	<0.500	<0.500	<1.00	0.0923 ⁷	2.19/1.31	2.38/1.11	--					
	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 ⁶	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 ⁸	3.52/1.70	1.03/<0.750	--					
	12/14/98	ND	<0.500	<0.500	<0.500	2.53	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	--					

**Table 3
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		
Offsite Area RALS		No visible sheen	40	14,300	1,400	4,400	--	7	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	<1	--	<20	
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	--	6	
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	--	<3.0	
	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	--	<0.0500	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	<1	--	<5	
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	--	<5	
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	--	<2	
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	<1	<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	<1.00	--	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	--	<0.5	<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	<1	--	<5	
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	--	<2	
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	<1	<1	<1	--	<2	
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	<1	<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	<1	<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	<10.00	--	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	<0.807	<0.500							

Table 3
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		
											40	
Offsite Area RALs		No visible sheen										
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	<1	--	<2
	09/19/91	--	<0.5	<0.5	<0.5	<0.5	<1	--	<1	<1	--	<2
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	<1	--	<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	<0.750	--	--
	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
	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	<1	--	<2
	04/16/91	--	<0.5	<0.5	<0.5	0.9	<1	--	<1	<1	--	<2
	09/19/91	--	<0.5	<0.5	<0.5	1.1	<1	--	<1	<1	--	4
	12/10/91	--	<0.5	<0.5	<0.5	<0.5	<1	--	<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	--	0.0623	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	1.380/547	<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	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	<1	--	<2
	09/17/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	<1	--	3
	12/01/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<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	<1	--	--	--	--	<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	<1	--	<5
	04/16/91	--	<0.5	<0.5	<0.5	<0.5	--	<1	<1	<1	--	<5

Table 3
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		
Offsite Area RALS		No visible sheen	40	14,300	1,400	4,400	--	7	10	15	50	
Offsite Area (continued)												
MW-36 (continued)	03/26/02	ND	1.01	<0.500	<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 ⁸	--	
	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	--	
	12/22/03	Sheen	0.538	<0.500	<0.500	1.37	--	0.242	1.97	<0.750	--	
MW-41	09/16/90	--	<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	<0.500	<1.00	--	<0.0500	<0.250	<0.750	--	
	06/22/00 ⁹	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	<1.00	--	<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	<1	<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	
	12/10/91	--	<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	<1.00	--	<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	0.780/<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 ⁹	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-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 ⁹	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								

Table 3
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	
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	<11.0	<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 ¹¹	1.01/<0.750 ¹¹	--
	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	1.400/462	<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	--	0.417	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	--
	06/22/00	ND	<0.500	<0.500	<0.500	<1.00	--	0.0737	0.407/<0.250	<0.750/<0.750	<1.00
	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	1.07	<0.750	--
	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	0.800/<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	0.950/<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	--				

Table 3
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		
Offsite Area RALS		No visible sheen	40	14,300	1,400	4,400	--	7	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	--	
Duplicate	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	
	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	--	0.59	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	--	
	02/22/11 ¹⁰	ND	5.0	<0.50	0.85	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	--	0.330	0.074	<0.066	--		
12/08/15	ND	<0.5	0.5	0.8	<1.5	--	0.460	0.092	<0.067	--		
MW-201	03/08/07	Sheen	0.50	<0.5	<0.5	<1.5	--	0.076	0.51	0.18	--	
Duplicate	06/07/07	ND	0.50	<0.5	<0.5	<1.5	--	0.08	0.53	0.17	0.1	
	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	ND	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	--	<0.50	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	--	
	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	0.066	<0.066	--	
12/08/15	ND	<0.5	<0.5	<0.5	<1.5	--	0.500	0.190	0.270	--		
MW-202	03/08/07	ND	0.60	<0.5	<0.5	<1.5	--	0.16	0.18	<0.095	--	
Duplicate	06/07/07	ND	<0.5	<0.5	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	
	09/22/11	ND	<0.50	<0.50	<0.50	<1.0	--	<0.050	0.19 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	<0.066	--	
12/08/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.048	0.32	<0.095	--		
MW-203	03/08/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.0500	0.150	<0.097	0.045	
Duplicate	06/07/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.500	0.400	0.270	<0.047	
	09/28/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	0.290	<0.100	0.058	
	11/27/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.240	<0.481	<1.00	
	02/12/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.240	<0.481	<1.00	
	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	
	09/04/08	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	--	
	0											

Table 3
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		
Offsite Area RALS		No visible sheen	40	14,300	1,400	4,400	--	7	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	0.900	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	0.94	<2.0	
Duplicate	04/14/10	ND	1.1	2.1	<0.50	3.7	--	1.5	1.1	1.1	<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 ²	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 ²	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	0.7	4.6	--	1.6	0.89	0.24	<0.07	
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	--	
Duplicate	07/25/14	ND	--	--	--	--	--	0.880	--	--	--	
	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	--	0.450	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	0.390	--	
Duplicate	01/15/16	ND	0.9	1.4	<1.1	3.5	--	1.400	0.210	<0.070	--	
MW-205	03/08/07	ND	<0.5	<0.5	<0.5	<1.5	--	<0.048	0.18	<0.095	--	
	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	<0.200	0.560	<1.00	
	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 ²	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	<1.0	--	0.027	0.23 ^{17,19,20}	<0.24	--	
Duplicate	10/12/12	ND	<0.50	<0.50	<0.50	<1.0	--	0.035	0.54 ^{17,19,20}	0.34 ¹⁷	--	
MW-205-NEAR	10/12/12	ND	<0.50	<0.50	<0.50	<1.0	--	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	--	
Duplicate	09/19/13	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	<0.067	--	
	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	--	
Duplicate	06/18/15	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	--	
	12/09/15	ND	<0.5	<0.5	<0.5	<1.5	--	<0.050	<0.031	<0.072	--	
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	
Duplicate	09/04/08	ND	<0.500	<0.500	<0.500	<1.00	--	<0.050	<0.240	<0.481	<1.00	
	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	--	

Table 3
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	
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	--

Notes:

- ¹Monitoring well locations are shown in Figure 2.
 - ²LNAPL = light nonaqueous phase liquid.
 - ³For 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.
 - ⁴According to the laboratory, the sample chromatogram does not resemble the gasoline standard.
 - ⁵According to the laboratory, sample contains diesel-range hydrocarbons that extend into the hydrocarbon range quantified as gasoline.
 - ⁶Due 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.
 - ⁷Due to an extraction anomaly during the silica gel cleanup procedure, a second analytical result is not available for this sample.
 - ⁸After review of field procedures and historic analytical results, the sample appears to have been cross-contaminated in the field or in the laboratory.
 - ⁹BTEX and gasoline-range hydrocarbon analyses were completed outside of the recommended holding time. Results should be qualified as estimated.
 - ¹⁰Samples were extracted 3 or 4 days after expiration of the recommended holding time.
 - ¹¹Results should be considered bias low or estimated due to laboratory QA/QC exception.
 - ¹²MW-30 was not sampled between July 1989 and September 1990 because of the presence of free product.
 - ¹³Due 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.
 - ¹⁴The 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.
 - ¹⁵Due to a lab error, the sample extract evaporated before testing and was not analyzed with the silica gel cleanup.
 - ¹⁶Due 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.
 - ¹⁷The chromatographic response resembles a typical fuel pattern.
 - ¹⁸Sample was reanalyzed due to a surrogate failure. The surrogates were within QC limits in the reanalysis.
 - ¹⁹Instrument related QC exceeds the control limits.
 - ²⁰Compound was found in the blank and sample.
 - ²¹The %RDP between the primary and confirmation column/detector is 40%. The lower value has been reported.
 - ²²µg/L = micrograms per liter mg/L = milligrams per liter ND = not detected
- 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 preceding sample.
^{UJ} = Non-detect value was analyzed outside of hold time, but less than two times hold time, concentration is an estimated value.
^J = Concentration is an estimated value and was analyzed outside of hold time, but less than two times hold time.

Table 4
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	Phenanthrene	Pyrene
		0.03	0.03	0.03	0.03	0.03	0.03	0.03	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
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	0.149	<0.100	<0.100	<0.100	<0.100	<0.100
	06/19/03	0.0639	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	0.0288	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	<0.129	--	--	--	--	--	--	--	--	--	--
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	0.0258	<0.0100	<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-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	6	31	1	<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	--	--	--	--	--	--	--	--	--
(Field-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	--	--	--	--	--	--	--	--	--
(Field-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	--	--	--	--	--	--	--	--	--
(Field-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	--	--	--	--	--	--	--	--	--
(Field-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	--	--	--	--	--	--	--	--	--
(Field-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	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	--	--	--	--	--	--	--	--	--
(Field-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	--	--	--	--	--	--	--	--	--
(Field-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	--	--	--	--	--	--	--	--	--
(Field-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	<0.19	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	<0.19	12	0.12	0.57	<0.0094	0.69	2.8	6.60	2.5	0.52
(Filtered) (Duplicate)	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	<0.19	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											

**Table 4
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	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-201 Continued	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	--	--	--	--	--	--	--	--	--	
	(Field-Filtered)	05/14/08	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/05/08	0.0243	<0.00962	<0.00962	<0.00962	0.0175	<0.00962	<0.00962	0.0418	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/05/08	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	<0.00962	--	--	--	--	--	--	--	--	
	(Field-Filtered)	12/05/08	0.0247	<0.00980	<0.00980	<0.00980	0.0268	<0.00980	<0.00980	0.0515	--	--	--	--	--	--	--	--	
	(Field-Filtered)	12/05/08	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	--	--	--	--	--	--	--	--	
	(Field-Filtered)	02/17/09	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	<0.00990	--	--	--	--	--	--	--	--	
	(Field-Filtered)	02/17/09	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	<0.0105	--	--	--	--	--	--	--	--	
	(Field-Filtered)	05/13/09	0.0129	<0.0100	<0.0100	<0.0100	0.0191	<0.0100	<0.0100	0.0320	--	--	--	--	--	--	--	--	
	(Field-Filtered)	05/13/09	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	<0.0111	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/11/09	0.021	<0.0200	<0.0100	<0.0100	0.025	<0.0100	<0.0100	0.0460	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/11/09	<0.0100	<0.0220	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0220	--	--	--	--	--	--	--	--	
	(Field-Filtered)	04/14/10	0.014	<0.020	<0.0099	<0.0099	0.019	<0.0099	<0.0099	0.033	--	--	--	--	--	--	--	--	
	(Field-Filtered)	04/14/10	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/22/10	0.026	<0.020	<0.0099	<0.0099	0.030	<0.0099	<0.0099	0.056	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/22/10	<0.0098	<0.020	<0.0098	<0.0098	<0.0098	<0.0098	<0.0098	<0.020	--	--	--	--	--	--	--	--	
	(Filtered)	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
	(Filtered)	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
	(Filtered)	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	<0.019
	(Filtered)	04/25/13	0.022	<0.010	<0.010	<0.010	0.026	<0.010	<0.010	0.048	--	--	--	--	--	--	--	--	--
	(Filtered)	09/19/13	0.02	<0.010	<0.010	<0.010	0.027	<0.010	<0.010	0.047	--	--	--	--	--	--	--	--	--
(Filtered)	06/23/14	0.032	<0.010	<0.010	<0.010	0.034	<0.010	<0.010	0.066	--	--	--	--	--	--	--	--	--	
(Filtered)	12/16/14	0.016	<0.010	<0.010	<0.010	0.021	<0.010	<0.010	0.037	--	--	--	--	--	--	--	--	--	
(Filtered)	06/18/15	0.034	0.025	0.029	<0.010	0.029	<0.010	0.023	0.140	--	--	--	--	--	--	--	--	--	
(Filtered)	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	--	--	--	--	--	--	--	--	--	
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	
	(Field-Filtered)	09/27/07	0.042	<0.010	<0.010	<0.010	0.040	<0.010	<0.010	0.082	--	--	--	--	--	0.18 ⁵	--	--	
	(Field-Filtered)	11/26/07	0.043	<0.010	<0.010	<0.010	0.036	<0.010	<0.010	0.079	--	--	--	--	--	<0.010	--	--	
	(Field-Filtered)	11/26/07	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	<0.011	--	--	--	--	--	0.057	--	--	
	(Field-Filtered)	02/12/08	0.0457	<0.00990	<0.00990	0.0184	0.0444	<0.00990	<0.00990	0.1085	--	--	--	--	--	--	--	--	
	(Field-Filtered)	02/12/08	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	<0.00980	--	--	--	--	--	--	--	--	
	(Field-Filtered)	05/13/08	0.0406	<0.00943	0.0116	0.0149	0.0432	<0.00943	<0.00943	0.1103	--	--	--	--	--	--	--	--	
	(Field-Filtered)	05/13/08	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	<0.0101	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/04/08	0.0502	<0.00962	<0.00962	<0.00962	0.0482	<0.00962	<0.00962	0.0984	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/04/08	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	<0.00971	--	--	--	--	--	--	--	--	
	(Field-Filtered)	12/04/08	0.0286	<0.0100	<0.0100	<0.0100	0.0308	<0.0100	<0.0100	0.0594	--	--	--	--	--	--	--	--	
	(Field-Filtered)	12/04/08	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	
	(Field-Filtered)	02/18/09	0.0181	<0.00980	<0.00980	<0.00980	0.0222	<0.00980	<0.00980	0.0403	--	--	--	--	--	--	--	--	
	(Field-Filtered)	02/18/09	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	--	--	--	--	--	--	--	--	
	(Field-Filtered)	05/13/09	0.0146	<0.00943	<0.00943	<0.00943	0.0160	<0.00943	<0.00943	0.0306	--	--	--	--	--	--	--	--	
	(Field-Filtered)	05/13/09	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/11/09	0.0490	<0.0200	0.0110	<0.0100	0.0470	<0.0100	<0.0100	0.1070	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/11/09	<0.0100	<0.0200	<0.0100	<0.0100	<0.0100	<0.0100	<0.0100	<0.0200	--	--	--	--	--	--	--	--	
	(Field-Filtered)	04/14/10	0.013	<0.020	<0.0099	<0.0099	0.013	<0.0099	<0.0099	0.026	--	--	--	--	--	--	--	--	
	(Field-Filtered)	04/14/10	<0.0099	<0.020	<0.0099	<0.0099	<0.0099	<0.0099	<0.0099	<0.020	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/22/10	0.041	<0.020	0.012	<0.010	0.043	<0.010	<0.010	0.096	--	--	--	--	--	--	--	--	
	(Field-Filtered)	09/22/10	<0.0095	<0.019	<0.0095	<0.0095	<0.0095	<0.0095	<0.0095	<0.019	--	--	--	--	--	--	--	--	
	(Filtered)	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
	(Filtered)	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
	(Filtered)	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</					

Table 4
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	Dibenz(a,h)anthracene	Indeno(1,2,3-cd)pyrene	Total cPAHs ⁴	Acenaphthene	Acenaphthylene	Anthracene	Benzo(g,h,i)perylene	Fluoranthene	Fluorene	Naphthalene	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-207 (continued)	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	-	-	-	-	-	-	-	-	-
(Field-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	-	-	-	-	-	-	-	-	-
(Field-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	-	-	-	-	-	-	-	-	-
(Field-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	-	-	-	-	-	-	-	-	-
(Field-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	-	-	-	-	-	-	-	-	-
(Field-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	-	-	-	-	-	-	-	-	-
(Field-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	-	-	-	-	-	-	-	-	-
(Field-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	-	-	-	-	-	-	-	-	-
(Field-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	-	-	-	-	-	-	-	-	-
(Field-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	0.011	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	-	-	-	-	-	-	-	-	-

Notes:

¹Monitoring well locations are shown on Figure 2.
²Analyses by EPA Method 8310 or 8270 (SIM).
³WAC 173-340-200 (MTCA).
⁴Numeric sum of detected concentrations of cPAHs. Where no cPAH compounds were detected, this figure is equal to the highest reporting limit for an individual compound.
⁵Naphthalene detected in the method blank, these data are from the initial extraction of the sample.
⁶Sample was extracted past the holding time.
⁷Sample was re-prepared outside of preparation holding time. Results have been flagged as "H" in the laboratory report.
⁸There was insufficient sample to perform a re-extraction or re-analysis, therefore, the data have been reported.
⁹LCS or LCSD exceeds the control limits/RPD of the LCS exceeds the control limits.
¹⁰Duplicate 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 Initial metals/anion analysis of the sample.

Table 5
Summary of Groundwater Compliance as of Second Semi-Annual 2015

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	7	none	N/A	none	N/A
Offsite Area- Amendment No. 4 Point of Compliance monitoring wells						
MW-200	semi-annually	12 ⁷	semi-annually ²	23 ^{4,5,8}	none	13
MW-201	semi-annually	11 ⁷	semi-annually ²	1 ^{3,8}	none	13
MW-202	semi-annually	23	semi-annually ²	19 ^{3,4,10}	none	13
MW-203	semi-annually	23	semi-annually ²	23 ^{4,8}	none	13
MW-204	semi-annually	0	semi-annually ²	23 ^{4,8,10}	none	13
MW-205	semi-annually	9	semi-annually ²	9 ^{4,8}	none	13
MW-206	semi-annually	23	semi-annually ²	23 ^{4,6,8}	none	13
MW-207	semi-annually	23	semi-annually ²	23 ^{4,6,8}	none	13

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.

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

³Field-Filtered sample below RAL.

⁴Field-Filtered and Un-Filtered samples below RAL

⁵9/3/08 laboratory reporting limit above RAL

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

⁷Sheen noted on groundwater during well redevelopment in August 2010

⁸First Semi-Annual 2011 laboratory reporting limit above RAL

⁹First Semi-Annual 2012 laboratory reporting limit above RAL

¹⁰Second Semi-Annual 2012 laboratory reporting limit above RAL

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

BTEX = benzene, toluene, ethylbenzene, xylenes

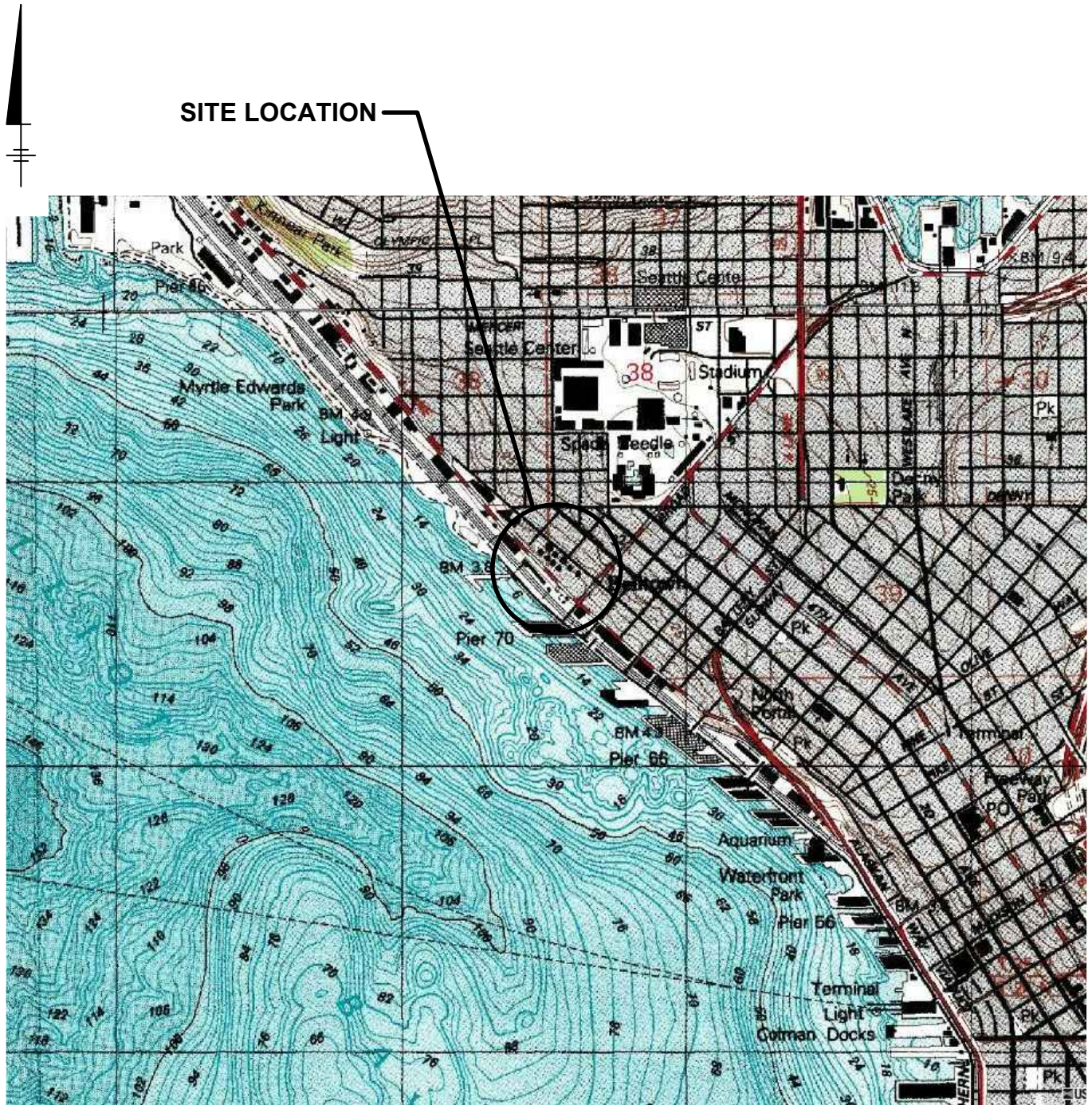
cPAHs = carcinogenic polycyclic aromatic hydrocarbons

N/A = not applicable

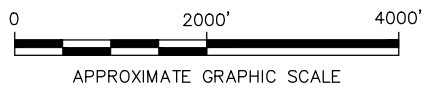
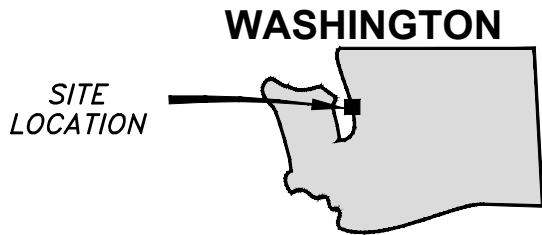
FIGURES



CITY:(Reqd) DIV:(GROUP):(Reqd) DB:(Reqd) LD:(Opt) PC:(Opt) PM:(Reqd) TM:(Opt) LYR:(Opt)ONL=OFF=REF-
 G:\ENV\CAD\TAMPACT\B046363 Seattle Terminal\0008\0005\2015 GMR\B046363\01.dwg LAYOUT: 1 SAVED: 1/12/2016 10:17 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: PLTFULL.CTB PLOTTED: 2/10/2016 2:05 PM BY: RICHARDS, JIM
 XREFS: IMAGES: PROJECTNAME: --- SSEATTLE1.jpg



SOURCE: TOPOGRAPHIC IMAGE DOWNLOADED FROM MICROSOFT TERRASERVER, MAP DATE 7/1/83, (www.terraserver-usa.com)

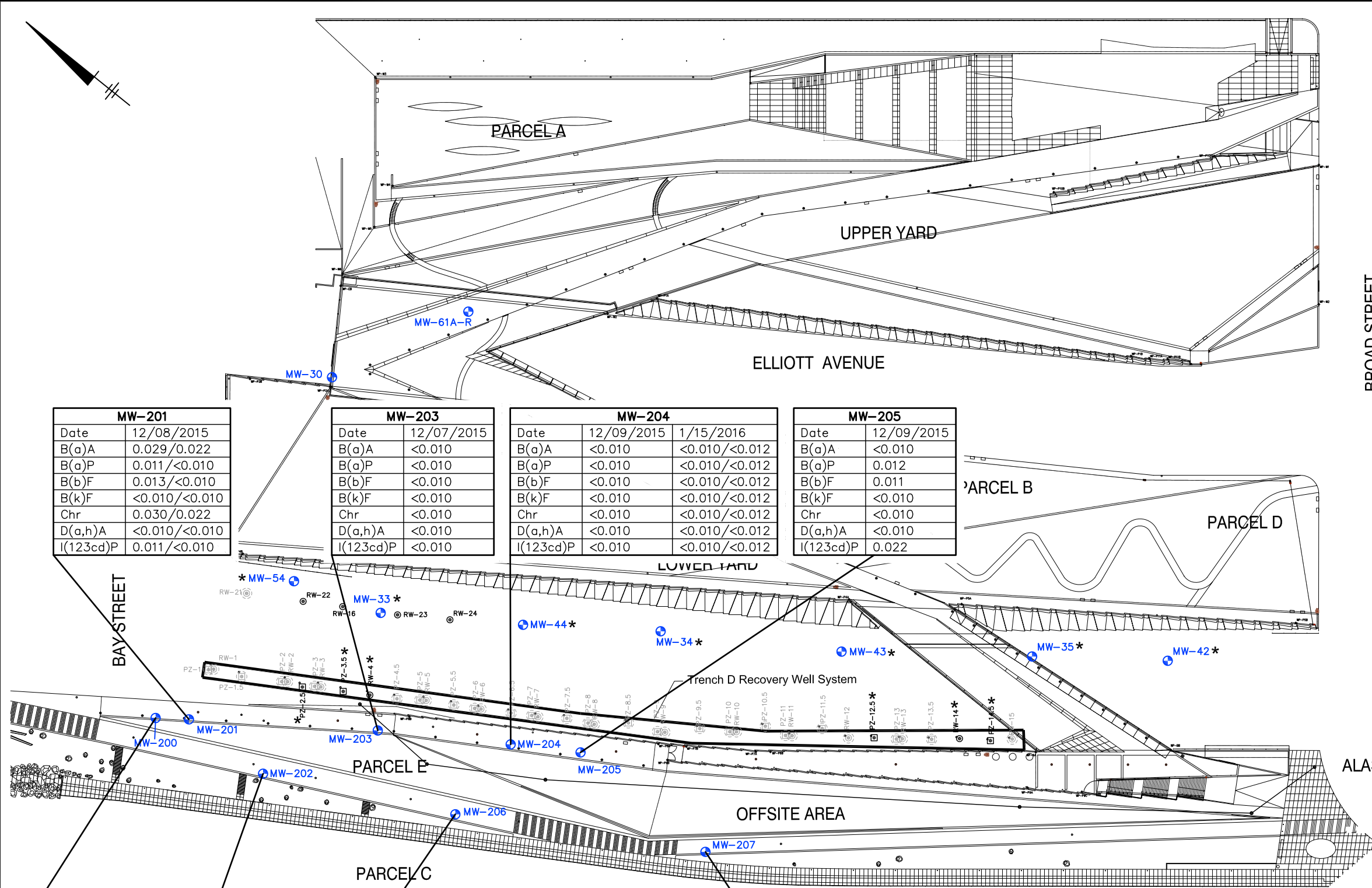


FORMER UNOCAL SEATTLE MARKETING TERMINAL
 SEATTLE, WASHINGTON
GROUNDWATER MONITORING REPORT
SECOND SEMI-ANNUAL 2015

SITE LOCATION MAP

 <p>ARCADIS Design & Consultancy for natural and built assets</p>	<p>FIGURE 1</p>
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CITY: SYRACUSE DIV/GRP: 141 DB: JAR GMS LD(OH) PIC: J. VOGELY PM: R. ANDRESEN TM: R. ANDRESEN LVR: ONE OFF-REF
 G:\ENVCAD1\TAMPACT\B00045363 Seattle Terminal\0005\25A2015 GMR\B0045363 C02.dwg LAYOUT: 5 SAVED: 2/24/2016 11:16 AM ACADVER: 19.13 (LMS TECH) PAGES: 10 PLOTSTYLE: PLT\FULL.CTB PLOTTED: 2/24/2016 11:16 AM BY: RICHARDS, JIM
 XREFS: IMAGES: PROJECTNAME:



MW-201	
Date	12/08/2015
B(a)A	0.029/0.022
B(a)P	0.011/<0.010
B(b)F	0.013/<0.010
B(k)F	<0.010/<0.010
Chr	0.030/0.022
D(a,h)A	<0.010/<0.010
I(123cd)P	0.011/<0.010

MW-203	
Date	12/07/2015
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	12/09/2015
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-205	
Date	12/09/2015
B(a)A	<0.010
B(a)P	0.012
B(b)F	0.011
B(k)F	<0.010
Chr	<0.010
D(a,h)A	<0.010
I(123cd)P	0.022

MW-200	
Date	12/08/2015
B(a)A	0.017
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	12/08/2015
B(a)A	0.025
B(a)P	<0.011
B(b)F	<0.011
B(k)F	<0.011
Chr	0.023
D(a,h)A	<0.011
I(123cd)P	<0.011

MW-206	
Date	12/08/2015
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	12/08/2015
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

Legend

- MONITORING WELL
- RECOVERY WELL
- PIEZOMETER
- WELL DECOMMISSIONED
- * UNABLE TO LOCATE

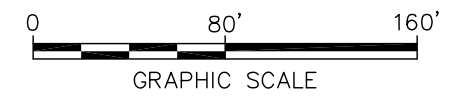
SAMPLE LOCATION	
DATE	SAMPLE DATE
B(a)A	Benzo(a)anthracene
B(a)P	Benzo(a)pyrene
B(b)F	Benzo(b)fluoranthene
B(k)F	Benzo(k)fluoranthene
Chr	Chrysene
D(a,h)A	Dibenzo(a,h)anthracene
I(123cd)P	Indeno(1,2,3-cd)pyrene

RESULTS REPORTED IN MICROGRAMS PER LITER (µg/L)

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

<0.0100/<0.0101 = DUPLICATE SAMPLE

cPAH = CARCINOGENIC POLYNUCLEAR AROMATIC HYDROCARBONS



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GROUNDWATER MONITORING REPORT
SECOND SEMI-ANNUAL 2015

GROUNDWATER cPAH DATA -
DECEMBER 7-9, 2015

SOURCE: Base map provided by 'ASPECT CONSULTING', 179 Madrone Lane North, Bainbridge Island, WA (206) 780-9370. Map date February 2007, drawn full scale. Base map updated 5 /27/08 OTAK Survey.

APPENDIX A

Standard Operating Procedure



Appendix A


Standard Operating Procedure

**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 N₂ or CO₂ 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., Solinst 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 lightning is present, discontinue sampling and take cover until 30 minutes have passed after the last occurrence of thunder or lightning.

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:

$$\text{Volume (in gallons)} = \bullet \text{ TIMES well radius (in feet) squared TIMES length of water column (in feet) TIMES 7.481 (gallons per cubic foot)}$$
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

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



12-7-2015

ZSA2015 Gauge & GWM Event

R. Brauchla / A. Pink

0700 → RB/AP arrive on site, conduct tailgate meeting, don PPE, calibrate PID, review Chevron OE tenants, call S. Mills to approve permit

0750 → Begin gauging round: MW-207, MW-206, & MW-202 were gauged between 0750 & 0815 (within 20 minutes of low-tide (0757))

Air Monitoring Log
 0800: 0.0 ppm
 0900: 0.0 ppm
 1000: 0.0 ppm
 1100: 0.0 ppm
 1200: 0.0 ppm
 1300: 0.0 ppm
 1400: 0.0 ppm
 1500: 0.0 ppm
 1600: 0.0 ppm

Well:	DTP:	DTW:	PID:	Comments:
MW-207	—	8.96	0.1	- removed 3 bolts - water in well box
MW-206	—	9.01	0.1	- 1 bolt, water in well box
MW-202	—	7.85	13.1	- 1 bolt, water in well box
MW-200	—	7.47	1.3	- well shrimps in well - buried under gravel patch - water in well box with gravel
MW-201	—	8.08	0.5	- different cap than other wells
0838 → MW-203	—	10.89	0.2	0/2 bolts - water in well vault

0845 → STOP WORK - MW-204 & MW-205 were found to be buried in hand packed sediment - return to vehicle for digging tools

0930 → Sam Miles on site - we show him the hard-packed dirt & possibly concrete? mix*, he helps try to uncover the wells but to no avail - we (RB/AP) will continue on - sample MW-200 & 201, check for product at MW-30 & MW-61A-R, ship samples and take away waste

* CDF?

1020 → Calibrate TROLLS

1100 → Attempt to sample MW-200 & MW-201 but rainwater fills the well boxes faster than they can be purged - continue on to MW-203

1300 → Sample MW-203

1350 → MW-61A-R	11.78'	11.80'	393.3	1/2 bolts - sock in well
1410 → MW-30	—	11.14'	0.0	0/2 bolts - sock in well

12-7-2015

2 SA 15 GWM Event

R. Brauchla/A. Pink

1450 → Sample MW-203

1515 → Pack up coolers - ship waste

1600 → Leave site

1650 → Arrive at Emerald Services - everyone gone for the day

1715 → Drop off samples at UPS

[Handwritten signature]

12-7-2015

12-8-2015

2 SA 15 GWM Event

R. Brauchla/A. Pink

0700 → Arrive on site, perform daily H&S permit, weather conditions marginal - potential for rain out today; calibrate equipment, review chevron tenants, set up sample carts

Air Monitoring Log

0700	-0.0 ppm
0800	-0.0 ppm
0900	-0.1 ppm
1000	-0.1 ppm
1100	-0.2 ppm
1200	-0.3 ppm
1300	-0.2 ppm
1400	-0.2 ppm
1500	-0.3 ppm

0900 → AP samples MW-207

0930 - RB samples MW-206

1100 - AP samples MW-202

1130 - RB samples MW-201 & DUP-1

1310 - RB + AP sample MW-200

Note: while QCing bottles, it was noticed that 6 of the VOA's were of the wrong type (no HCl preservative). Correct bottles were located and samples returned to MW-200 & MW-201 to fill VOA's.

1500 - leave site: decon TROLLS & pumps, pack field vehicle

12-8-15 2 SA15 GWM Event R. Brauchle/A. Pink

1545 - arrive at Emerald Services, sign over purge water drum

1630 - arrive back at office, put samples in fridge for over night storage

Allen Pink

12-8-15

12-9-2015 2 SA15 GWM Event R. Brauchle/A. Pink

0820 → ARCADIS arrives on site, perform daily tailgate safety meeting, fill out permit-to-work, call to notify sam miles of our plans

Air Monitoring Log
 0900 - 0.0 ppm
 1000 - 0.1 ppm
 1100 - 0.1 ppm
 1200 - 0.0 ppm
 1300 - 0.0 ppm

Note: Per instructions from Sam Miles & Rebecca Anderson, we need to verify that MW-204 & MW-205 are notayer at their known locations. We rented a metal detector and checked the locations - the detector showed iron at 4"-6" bgs so we continued clearing the locations with hand tools MW-204 had a ring of plastic around it and the lid was located ~2.5" bgs beneath the CDF. MW-205 had a plastic case over it and the lid was located at 5" bgs beneath the CDF

0940 → Begin new gauging round

TIME	WELL	DTP	DTW	PID	COMMENTS
0945	MW-207	—	7.82'	0.2 ppm	3/3 bolts; water in well box
0954	MW-206	—	7.86'	0.1 ppm	1/3 bolts; water in well box
1000	MW-202	—	6.61'	7.2 ppm	1/3 bolts; water in well box; WELL SHRIMP
1008	MW-200	—	5.89'	15.5 ppm	no bolts; buried; water in well box
1014	MW-201	—	6.59'	8.3 ppm	no bolts
1019	MW-203	—	9.63'	0.1 ppm	no bolts; water in well box
1024	MW-204	—	15.49'	8.5 ppm	no bolts; BURIED in CDF; water in well box
1027	MW-205	—	19.51'	0.1 ppm	no bolts; BURIED in CDF; water in well box
1039	MW-30	—	10.00'	0.2 ppm	no bolts; sock; tarry residue
1045	MW-GIA-R	10.98'	10.99'	285.9 ppm	1/2 bolts; sock; tarry residue - shown

Rite in the Rain

12-9-2015

2 SA 15 GWM Event

R. Brauchle
Alex Pink

- 1050 - prepare equipment for sampling of MW-204 & 205
- 1205 - RB samples MW-205
- 1230 - AP samples MW-204
- 1330 - pack equipment, fill out paperwork, contact Sam Miles, leave site
- 1415 - Drop off waste water at Emerald Services
- 1500 - Return to office, unpack field vehicle, and pack sample coolers to ship
- 1530 - RB leaves office to ship sample coolers

Methodology: Samples were collected using low-flow methods using a Geotech portable peristaltic pump, dedicated one-time use poly tubing, and a TROLL 700 multimeter connected to a Rugged Reader. Wells were purged at a rate between 150 - 350 mL/min until parameters stabilized or 45 minutes had passed (as per S. Miles direction). When one of these conditions had been met, the TROLL multimeter was disconnected and the water was collected in bottles. All wells were sampled for GRO by NWTPH-Gx, DRO (with Chevron silica gel cleanup) by NWTPH-Dx, BTEX by 8021, and PAHs by SIM, with the exception of MW-30, which was not sampled for PAHs. One duplicate sample was collected from MW-201, and trip blanks were provided to be analyzed for GRO and BTEX. Samples were packed in coolers with ice and shipped to Lancaster Laboratories by UPS.

Note on Well Access: MW-204 & MW-205 were covered with pavement by the property owner during path maintenance. In order to access these wells, a metal detector was used to confirm the well box locations, and hand tools were used to chip away pavement until the wells could be opened.

Drum Inventory: Two 20-gallon drums of purged groundwater were generated during the sampling event. These drums were signed off at Emerald Services for disposal, and were not stored on-site. There are currently no drums in storage on site.

12/9/15

Alex Pink



Smith System® Five Keys (Forward Driving)

1. **Aim High in Steering**® - Avoid Collisions by seeing, evaluating, and acting upon all information available.
2. **Get the Big Picture**® - Fewer mistakes are made when you have the complete traffic picture.
3. **Keep Your Eyes Moving**® - Proper scanning techniques separate safe drivers from people who make costly errors.
4. **Leave Yourself an Out**® - All that separates drivers from a collision is space. Use it to your advantage. This also applies to parking—to ensure safe and easy exit in case of emergency, choose pull through spaces or back into parking spaces when possible.
5. **Make Sure They See You**® - Seek eye contact and use your warning devices at the same time

Smith System® Five Keys (Backing-Up Driving)

AVOID BACKING WHENEVER POSSIBLE - But When It's Unavoidable:

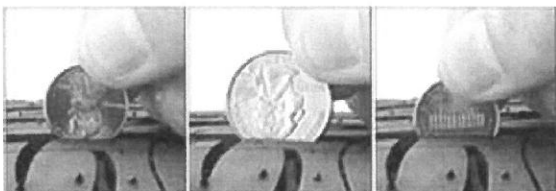
1. Check The Backing Area First
2. Back Slowly And Carefully – Use A Spotter If Necessary
3. Remain Aware Of The Blind Areas
4. Look Front, Sides, And Rear As You Back
5. Back No Further Than You Must

PRE-TRIP VEHICLE INSPECTION CHECKLIST

Date: 12-7-2015 Beginning Mileage: 29845 Ending Mileage: 29861
 Unit: Mercury Mariner Rental Van Operator: R. Bravchala

NR = Needs Repair

CHECK BEFORE OPERATING	OK	NR	COMMENTS
Driver's License on Hand	✓		
ARCADIS Insurance Card in Vehicle	✓		
Back-up Alarm Operational (if installed)			N/A
Tires (tread, pressure, cracking)	✓		
Taillights Operational	✓		
Turn Signals Operational	✓		
Brake Lights Operational	✓		
Back-Up Lights Operational	✓		
Headlights Operational	✓		
Parking Lights Operational	✓		
Mirrors Adjusted to Minimize Blind Spots	✓		
Under the Vehicle (nothing hanging or leaking)	✓		
Windshield Wipers and Fluid all Functional	✓		
Heavy Items Secured Down Low or in Trunk	✓		
Doors are Fully Closed and Locked	✓		
Seat Adjusted, Head Restraint to Match Height of Head	✓		
Driver and All Passengers Must Fasten Safety Belt	✓		
Scan the Gauges to Make Sure Everything is Normal	✓		
Adjust the Vents, Windows, and Heater or Air Conditioner for Comfort	✓		
Review Driving JSA	✓		
Driver is Mentally and Physically Prepared to Drive	✓		
DOT Materials of Trade are Properly Stowed (ie. Compressed gas)	✓		
Perform a Driving-Related Safety Moment (record in comments)	✓		Darkness - back slowly & carefully



2/32" remaining 4/32" remaining 6/32" remaining

Tread guide: If a tread gauge is not available coins may be used to determine remaining tread. 2/32" is the minimum by law in most states (top of Lincoln's head on penny), 4/32" is minimum recommended for wet surfaces (top of Washington's head on quarter), 6/32" is minimum recommended for snowy surfaces (top of Lincoln Memorial on penny). Our vehicle tires must be replaced if the tread depth is less than 6/32"



GENERAL PERMIT TO WORK /TAILGATE MEETING – Chevron

(PRINT AS 11"x17" – FRONT & BACK – DO NOT ALLOW TWO PAGES)

Version 05.08.2015
 Permit ID: _____
 (Facility #) _____ Year _____ Month _____ Day _____
 Example: 1239770-11-12-05 - Section not required - for filing only

Project Name: Seattle Terminal
 Project Location (Address): 3001 Elliot Avenue, Seattle WA Chevron Facility #: BO04830007
 Chevron Project Manager: Kim Jolitz Total # of Companies at Site: 1

Valid Dates: (1 day): 12-7-15 Person Conducting Meeting: Ryan Brauchla

Modifications to this form may not be made unless approved by the ARCADIS-Chevron Principal in Charge (PIC) – Kathleen Abbott; the Client Team OE Manager, Aaron Svitana or the MSW OE Leader, Greg Mason. This Permit is intended to be completed in the field by a qualified and predetermined Permit Approver. The individual completing this permit should communicate each section to field staff during the daily safety meeting. It is intended to serve as a tool for identifying and mitigating hazards that affect every worker on site. Solicit input from persons attending the safety meeting during permit completion. Resolve all "NO" responses prior to starting work.

1a.	What TASKS for ARCADIS and ARCADIS subcontractors does this Permit include? Every TASK identified below must be accompanied by a JSA (or be included in a broader JSA). Examples: Vacuum excavation, utility marking, monitoring well development	Level of Traffic Control (1 – 4)	List Company Responsible
A.	Gauge Wells	1	ARCADIS
B.	Sample Wells	1	ARCADIS
C.	Pack & Ship Coolers	1	ARCADIS
D.	Manange IDW	1	ARCADIS
E.			
F.			
G.			
H.			

1b. Where on the property will the work take place? (this becomes the Reporting Boundary): around each well

1c. Will work conducted in multiple work zones or by multiple crews have the potential to impact each other? If so, is there a plan to address communication between work zones/companies? Check all that apply (must check at least 1)

All participate in Tailgate Meeting Written Communication Plan Detailed in JSA
 Other: N/A

2a. Have necessary work permits (local, state and/or federal) been obtained (including those for subcontractors)? Permits posted as per requirements specified by authority having jurisdiction? Yes No N/A

2b. If CONFINED SPACE activities are to be conducted has the CONFINED SPACE portion of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2c. If EXCAVATING / TRENCHING deeper than 5 feet, or <5 feet when people are working in the excavation/trench, or potential for a cave-in/ oxygen deficient /hazardous atmosphere, has the applicable HIGH RISK WORK PERMIT been completed? Yes No N/A

2d. If DRILLING/ABANDONING/EXCAVATING/TRENCHING within 5 feet of a buried pressurized line (e.g. Gas, Steam, Water), within 5 feet of a buried active product line or active electric line, within 7 feet of a the pad surrounding Underground Storage Tanks (USTs), has the applicable HIGH RISK WORK PERMIT been completed? Yes No N/A

2e. If OVERHEAD CLEARANCE of equipment (such as pulling unit, mast truck, backhoe or excavator) <15 feet from active overhead electrical line or pole supporting an electric line, has the applicable HIGH RISK WORK PERMIT been completed? Yes No N/A

2f. If HOTWORK activities are to be conducted has the HOTWORK and FIRE MONITOR ACTIVITY LOG portions of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2g. If LOCK OUT / TAG OUT (LO/TO) activities, other than routine maintenance, are to be conducted has the LO/TO portion of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2h. If DIVING activities are to be conducted has the DIVING portion of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2i. If WORKING AT an ELEVATION over 6 feet (or 4 feet in California) has the WORKING AT ELEVATION portion of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2j. If BOATING or WORKING NEAR OPEN WATER or DREDGING has the applicable portion of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2k. If DEMOLITION, REMOVAL OF PIPELINES AND BURIED STRUCTURES work activities are to be conducted has the EXCAVATION / TRENCHING / DRILLING / OVERHEAD CLEARANCE and DEMOLITION, REMOVAL OF PIPELINES AND BURIED STRUCTURES portions of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2l. If RIGGING/LIFTING work activities are to be conducted has the LIFTING and RIGGING portions of the HIGH RISK WORK PERMIT been completed? Yes No N/A

3. Will prejob paperwork completed by ARCADIS and/or Subcontractors be inspected prior to commencing work? This may include JMPs, Vehicle Inspections, Equipment Inspections, etc. Yes No N/A

4. + Who is the designated SHSO for today? Name: Ryan Brauchla

5. + Does everyone know the location, directions, and name of the nearest hospital? Harborview Medical Center Yes No N/A

6. + Has a plan been established to ensure emergency responders can easily locate or be escorted to the work site? Yes No N/A

7. + Will traffic control comply with Chevron and ARCADIS requirements? (See Back Page for Chevron Requirements) Yes No N/A

8. + Where is the nearest working phone located (non-cell phone) Location: SAM

9. + Where is the location of the primary first aid kit (to include portable eyewash & CPR shield)? Location: field vehicle

10. + Where is the location of the primary fire extinguisher? Location: field vehicle

11. + Have signals or alarms (stop work, sheltering, evacuation, etc.) been communicated to everyone on site? Without conflicts with other work activity? Yes No N/A

12. + Are weather conditions acceptable or have associated risks been mitigated? Are hydrating fluids (not caffeine) available to workers? Shade? Shelter within reasonable distance? Yes No N/A

13. + Document last inspection date of primary fire extinguisher and expiration of primary first aid kit contents: Extinguisher - 12-2-2015 First Aid Kit - 6-2016

14. + Are SDS for ALL chemicals being used at site (oils, detergents, preservatives, etc.) included in HASP? Have crews using these chemicals read the SDS? Are they readily available for quick review or to hand off to EMS personnel? Yes No N/A

15a. Air Monitoring: Air monitoring required by HASP for this scope of work? (If yes, then complete 15 b - d) Yes N/A

15b. Air Monitoring: Proper calibration gas available to support daily/pre-work calibration of monitoring equipment? Calibration log available? Yes No N/A

15c. Air Monitoring: Will air monitoring be performed by individual trained on the use of the equipment? Yes No N/A

15d. Air Monitoring: Breathing zone data must be recorded per HASP requirements. Where will data be recorded? Monitoring Log Field Book Other:

16. HASP: Have all sections of the Health & Safety Plan (HASP) applying to today's tasks been reviewed? Yes No N/A

17. HASP: Have all visitors and workers completed the HASP written test? Have all tests been graded? Deficiencies reviewed? HASP signed? Yes No N/A

18. Has Chevron's hand safety policy, including fixed open blade knife prohibition; Stop Work Authority been discussed and highlighted during the health and safety meeting? Yes No N/A

19. Have Operational Excellence Tenets been discussed and highlighted during the daily health and safety meeting? (See Back Page for Reference) Yes No N/A

20. Electrical: GFI protection on equipment to be used? Yes No N/A

21. Electrical: Is there a plan to inspect electric cords prior to use? Electrical testing equipment rated for the electric service? Yes No N/A

22. Electrical: If working in live panels, are workers trained on NFPA 70E? ARCADIS Energized Electrical Work Permit completed? Yes No N/A

23. Equipment Operation: Are above-ground utilities identified and clearly visible by equipment operators? Underground utilities marked? Width of utility considered when marked? Yes No N/A

24. Equipment Operation: Rotating equipment shielded and guarded and pinch points identified and marked? Prohibition on loose clothing, jewelry, hair hooded/drawingstring clothing discussed? Yes No N/A

25. Equipment Operation: Has AN equipment inspection checklist been completed for all equipment being used today? Note: Checklists may vary by office, subcontractor and equipment Yes No N/A

26. Equipment Operation or Ground Disturbance: Has the ARCADIS underground/overhead utilities checklist been completed? Yes No N/A

27. Ground Disturbance: For any subsurface work, has/will the Ground Disturbance /Well Abandonment Checklist process be followed? Stop work and call PM if unsure. Yes No N/A

28. Have shut-off switches/valves been located (as required by scope work) and communicated to relevant crew members? N/A Electric Gas Water Other

29. Traffic: Are proper traffic and/or fire control measures in-place? Traffic Fire Prevention N/A

30. Traffic: Have modifications to safety procedures or documentation (i.e. JMP, TCP) been made and communicated to onsite personnel? Yes No N/A

31. Traffic: For work in the Right of Way on Public Roadway has an ARCADIS employee with Engineering Judgment approved the traffic control plan (TCP)? Yes No N/A

32. Traffic: Do workers understand they are not allowed to alter the flow of traffic on a public roadway without a written and approved plan? Some states also require flagger training. Yes No N/A

33. Waste: Has ARCADIS obtained Delegation of Authority (DOA) approval if signing waste manifest on behalf of Chevron? If YES, does DOA understand copy of manifest is to be sent to Chevron Waste Tracking Desk? Yes No N/A

34. Waste: Is waste currently on site? If so, what is the status of the disposal process: CIRCLE ONE of the FOLLOWING: 1. Characterization or Sample collection / 2. Profile / 3. Scheduled pickup / 4. OTHER: Yes No N/A

35. Waste: Will only clean drums be used for waste storage? Has the plan to prevent concrete from coming in contact with any wastewater been communicated to team? Yes No N/A

36. Are personnel qualified to perform work at site? Training records verified and available onsite for review? Yes No N/A

37. Are appropriate tools on-site to complete tasks safely and appropriately? Discussed in JSAs? Yes No N/A

38. Do workers understand locally fabricated equipment, such as field repairs not to original condition or equipment modified or used outside of original intent is prohibited? Yes No N/A

39. Level of PPE required for each task specified to workers (Level C, Level D, etc.)? PPE specifics discussed and documented in JSAs and PPE Assessment? Level D Yes No N/A

40. Has all PPE being utilized at the site been stored in a clean location? Has PPE been inspected before use? (Entire team should evaluate his/her safety glasses, hard hats, vests, etc.) Yes No

41. Motor vehicle precautions discussed? Maintain a minimum of 3 feet from objects; always use spotter when available; forward motion always preferred; set parking brake, no idling. Yes No N/A

42. Have sections of the "Preventing Serious Injury and Fatalities – Field Guide" been reviewed for relevant scope(s) of work? All affected workers included in discussion? Yes No

Special Safety Concerns For Today

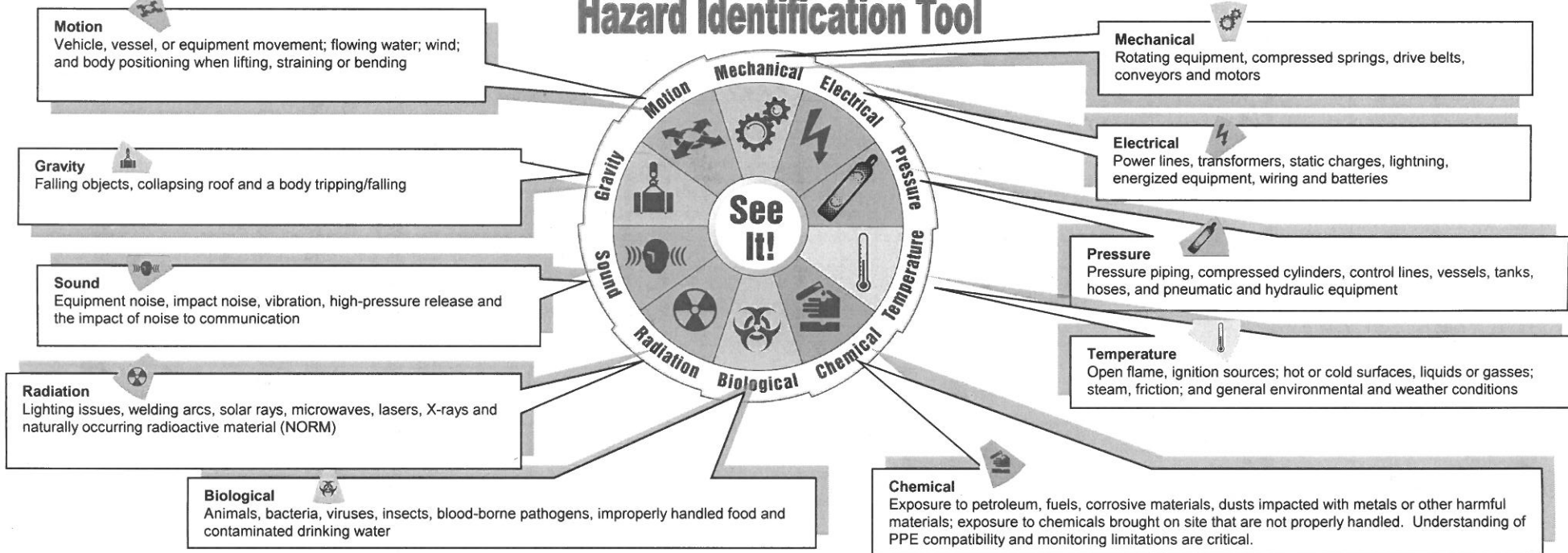
Personnel wishing to volunteer information relating to allergies/ailments/illnesses AND whether s/he is wearing contact lenses:

Last Name:	Note:	Last Name:	Note:
Last Name:	Note:	Last Name:	Note:

Short Service Employee List (requires prior Chevron PM approval – no more than 1 SSE if < 5 Workers on Site)

<u>Alex Pink</u>

Incident Free Operations! Hazard Identification Tool



Permit Approval

"I have assessed the risks posed by work activities planned for today and steps to mitigate those risks (e.g. HASP, JSA, PTW, tailgate meeting, coordination with other parties on site, etc.) have been completed to the best of our ability. Issues identified on the front page of this permit have been corrected. Work is safe to proceed. If site conditions change, **Stop Work Authority** will be used to assess work conditions."

Permit Approver: Sam Miles Date (12/7/15) Time 0730

The Approver is a qualified, trained and selected individual that makes certain site conditions are such, either by visual confirmation or utilizing a Verifier, that work is safe to proceed in accordance with the Permit to Work Procedure.

Permit Conditions Verifier: Sam Miles Time Work Approved to Proceed: 0730

The Verifier is a qualified, trained and selected individual (same as Approver) that makes certain site conditions are such, by confirmation AT THE WORK SITE, that work is safe to proceed in accordance with the Permit to Work Procedure. The Verifier also makes certain the Permit to Work form is complete prior to beginning work.

Permit Close Out

46. Has there been a look back at the end of the day for JSA review?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
47. If waste was generated on site are the drums labeled?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
48. Is the property owner agreeable to the waste storage location? Are the drums in an preferred area in relation to security (to minimize view from the public)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Permit Closed and ARCADIS PM Notified: Date (12/7/15) Time 1550

Permit Acknowledgement

EVERYONE has STOP WORK AUTHORITY

Name (PRINT)	Company	Prior to Shift Meeting Time	Mid Shift Meeting Time (if applicable)	Signature	Time Out	Time In	Time Out
1. Ryan Brauchla	ARCADIS	0730	1330	<i>Ryan Brauchla</i>	1550		
2. Alex Pink	Arcadis	0730	1330	<i>Alex Pink</i>	1550		
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							

Level	Image	Description	Usage
Level I		Min. of 4 delineators, with max. space of 4 feet between delineators. Use buddy system and vehicle with flashers as necessary.	Used in no to low traffic volume conditions for routine tasks of very short duration (< 10 minutes) where worker can stay aware of traffic in the vicinity.
Level II		Barrier tape on delineators with flags and the use of field vehicles (with flashing yellow light or vehicle hazard lights) and/or other lane control devices. Metal barricades may be used in conjunction with tape. Use buddy system when the worker cannot give undivided attention to oncoming traffic hazards.	Used when worker cannot stay alert of traffic; tasks take longer than 10 minutes but level III workspace protection is not required
Level III		Plastic Security Fencing and/or Type 2 or 3 barricades. A flashing yellow light on the vehicle may be used for additional visibility. Be cognizant of blocking of pump islands and any other dealer concerns.	Used when high task loads are present to distract attention from traffic including noise from tools and heavy equipments; when work is conducted at low daylight or nighttime; when access to site from a public right-of-way is to be closed (use appropriate warning signage).
Level IV		Requires review by ARCADIS staff with Engineering Judgment. DOT approved signage and traffic protection devices as presented in TCP approved by staff with Engineering Judgment (EJ). State/local traffic control requirements may apply. Often requires oversight by a licensed traffic controller.	Used when traffic control is required in the public right-of-way.

CHEVRON OE TENETS OF OPERATION

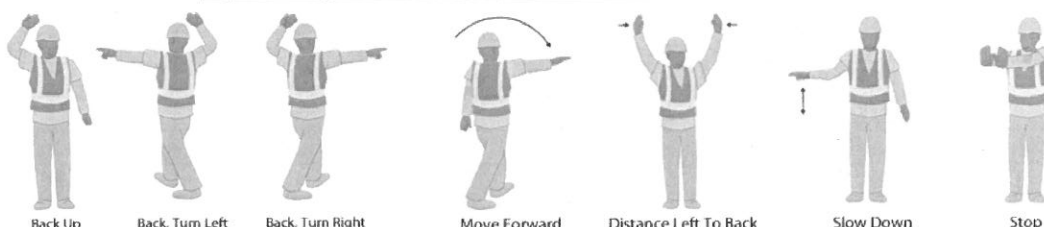
1. Always operate within design and environmental limits.
2. Always operate in a safe and controlled condition.
3. Always ensure safety devices are in place and functioning.
4. Always perform safe work practices and procedures.
5. Always meet or exceed customers' requirements.
6. Always maintain integrity of dedicated systems.
7. Always comply with all applicable rules and regulations.
8. Always address abnormal conditions.
9. Always follow written procedures for high-risk or unusual situations.
10. Always involve the right people in decisions that affect procedures and equipment.

To keep health & safety on TRACK, before every task, STOP and...

T R A C K

- Think through the task
- Recognize the hazards
- Assess the risks
- Control the hazards
- Keep health & safety first in all things

Standard Spotter Communication





GENERAL PERMIT TO WORK /TAILGATE MEETING – Chevron

(PRINT AS 11"x17" – FRONT & BACK – DO NOT ALLOW TWO PAGES)

Version 05.08.2015
 Permit ID: _____
 (Facility #) _____ Year _____ Month _____ Day _____
 Example: 1239770 – 11 – 12 – 05 : Section not required – for filing only

Project Name: Seattle Terminal
 Project Location (Address): 3001 Elliott Ave., Seattle, WA Chevron Facility #: BDD 4563.0007
 Chevron Project Manager: Kim Jolitz Total # of Companies at Site: 1

Valid Dates: (1 day): 12-8-15 Person Conducting Meeting: Ryan Brauchla

Modifications to this form may not be made unless approved by the ARCADIS-Chevron Principal in Charge (PIC) – Kathleen Abbott; the Client Team OE Manager, Aaron Svitana or the MSW OE Leader, Greg Mason. This Permit is intended to be completed in the field by a qualified and predetermined Permit Approver. The individual completing this permit should communicate each section to field staff during the daily safety meeting. It is intended to serve as a tool for identifying and mitigating hazards that affect every worker on site. Solicit input from persons attending the safety meeting during permit completion. Resolve all "NO" responses prior to starting work.

1a. What TASKS for ARCADIS and ARCADIS subcontractors does this Permit include? Every TASK identified below must be accompanied by a JSA (or be included in a broader JSA). Examples: Vacuum excavation, utility marking, monitoring well development	Level of Traffic Control (1 – 4)	List Company Responsible
A. <u>Sampling Wells</u>	<u>1</u>	<u>ARCADIS</u>
B. <u>Packing & Shipping Coolers</u>	<u>1</u>	<u>ARCADIS</u>
C. <u>Managing IDW</u>	<u>1</u>	<u>ARCADIS</u>
D.		
E.		
F.		
G.		
H.		

1b. Where on the property will the work take place? (this becomes the Reporting Boundary): around each well

1c. Will work conducted in multiple work zones or by multiple crews have the potential to impact each other? If so, is there a plan to address communication between work zones/companies? Check all that apply (must check at least 1)

All participate in Tailgate Meeting Written Communication Plan Detailed in JSA
 Other:
 N/A

2a. Have necessary work permits (local, state and/or federal) been obtained (including those for subcontractors)? Permits posted as per requirements specified by authority having jurisdiction? Yes No N/A

2b. If CONFINED SPACE activities are to be conducted has the CONFINED SPACE portion of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2c. If EXCAVATING / TRENCHING deeper than 5 feet, or <5 feet when people are working in the excavation/trench, or potential for a cave-in/ oxygen deficient /hazardous atmosphere, has the applicable HIGH RISK WORK PERMIT been completed? Yes No N/A

2d. If DRILLING/ABANDONING/EXCAVATING/TRENCHING within 5 feet of a buried pressurized line (e.g. Gas, Steam, Water), within 5 feet of a buried active product line or active electric line, within 7 feet of a the pad surrounding Underground Storage Tanks (USTs), has the applicable HIGH RISK WORK PERMIT been completed? Yes No N/A

2e. If OVERHEAD CLEARANCE of equipment (such as pulling unit, mast truck, backhoe or excavator) <15 feet from active overhead electrical line or pole supporting an electric line, has the applicable HIGH RISK WORK PERMIT been completed? Yes No N/A

2f. If HOTWORK activities are to be conducted has the HOTWORK and FIRE MONITOR ACTIVITY LOG portions of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2g. If LOCK OUT / TAG OUT (LO/TO) activities, other than routine maintenance, are to be conducted has the LO/TO portion of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2h. If DIVING activities are to be conducted has the DIVING portion of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2i. If WORKING AT an ELEVATION over 6 feet (or 4 feet in California) has the WORKING AT ELEVATION portion of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2j. If BOATING or WORKING NEAR OPEN WATER or DREDGING has the applicable portion of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2k. If DEMOLITION, REMOVAL OF PIPELINES AND BURIED STRUCTURES work activities are to be conducted has the EXCAVATION / TRENCHING / DRILLING / OVERHEAD CLEARANCE and DEMOLITION, REMOVAL OF PIPELINES AND BURIED STRUCTURES portions of the HIGH RISK WORK PERMIT been completed? Yes No N/A

2l. If RIGGING/LIFTING work activities are to be conducted has the LIFTING and RIGGING portions of the HIGH RISK WORK PERMIT been completed? Yes No N/A

3. Will prejob paperwork completed by ARCADIS and/or Subcontractors be inspected prior to commencing work? This may include JMPs, Vehicle Inspections, Equipment Inspections, etc. Yes No N/A

4. + Who is the designated SHSO for today? Name: Ryan Brauchla

5. + Does everyone know the location, directions, and name of the nearest hospital? Yes No N/A

6. + Has a plan been established to ensure emergency responders can easily locate or be escorted to the work site? Yes No N/A

7. + Will traffic control comply with Chevron and ARCADIS requirements? (See Back Page for Chevron Requirements) Yes No N/A

8. + Where is the nearest working phone located (non-cell phone) Location: SAM Building

9. + Where is the location of the primary first aid kit (to include portable eyewash & CPR shield)? Location: field vehicle

10. + Where is the location of the primary fire extinguisher? Location: field vehicle

11. + Have signals or alarms (stop work, sheltering, evacuation, etc.) been communicated to everyone on site? Without conflicts with other work activity? Yes No N/A

12. + Are weather conditions acceptable or have associated risks been mitigated? Are hydrating fluids (not caffeine) available to workers? Shade? Shelter within reasonable distance? Yes No N/A

13. + Document last inspection date of primary fire extinguisher and expiration of primary first aid kit contents: Extinguisher - 12-2-2015 First Aid Kit - 6-2016

14. + Are SDS for ALL chemicals being used at site (oils, detergents, preservatives, etc.) included in HASP? Have crews using these chemicals read the SDS? Are they readily available for quick review or to hand off to EMS personnel? Yes No N/A

15a. Air Monitoring: Air monitoring required by HASP for this scope of work? (If yes, then complete 15 b - d) Yes N/A

15b. Air Monitoring: Proper calibration gas available to support daily/pre-work calibration of monitoring equipment? Calibration log available? Yes No N/A

15c. Air Monitoring: Will air monitoring be performed by individual trained on the use of the equipment? Yes No N/A

15d. Air Monitoring: Breathing zone data must be recorded per HASP requirements. Where will data be recorded? Monitoring Log Field Book Other:

16. HASP: Have all sections of the Health & Safety Plan (HASP) applying to today's tasks been reviewed? Yes No N/A

17. HASP: Have all visitors and workers completed the HASP written test? Have all tests been graded? Deficiencies reviewed? HASP signed? Yes No N/A

18. Has Chevron's hand safety policy, including fixed open blade knife prohibition; Stop Work Authority been discussed and highlighted during the health and safety meeting? Yes No N/A

19. Have Operational Excellence Tenets been discussed and highlighted during the daily health and safety meeting? (See Back Page for Reference) Yes No N/A

20. Electrical: GFI protection on equipment to be used? Yes No N/A

21. Electrical: Is there a plan to inspect electric cords prior to use? Electrical testing equipment rated for the electric service? Yes No N/A

22. Electrical: If working in live panels, are workers trained on NFPA 70E? ARCADIS Energized Electrical Work Permit completed? Yes No N/A

23. Equipment Operation: Are above-ground utilities identified and clearly visible by equipment operators? Underground utilities marked? Width of utility considered when marked? Yes No N/A

24. Equipment Operation: Rotating equipment shielded and guarded and pinch points identified and marked? Prohibition on loose clothing, jewelry, hair hooded/drawstring clothing discussed? Yes No N/A

25. Equipment Operation: Has AN equipment inspection checklist been completed for all equipment being used today? Note: Checklists may vary by office, subcontractor and equipment Yes No N/A

26. Equipment Operation or Ground Disturbance: Has the ARCADIS underground/overhead utilities checklist been completed? Yes No N/A

27. Ground Disturbance: For any subsurface work, has/will the Ground Disturbance /Well Abandonment Checklist process be followed? Stop work and call PM if unsure. Yes No N/A

28. Have shut-off switches/valves been located (as required by scope work) and communicated to relevant crew members? N/A Electric Gas Water Other

29. Traffic: Are proper traffic and/or fire control measures in-place? Traffic Fire Prevention N/A

30. Traffic: Have modifications to safety procedures or documentation (i.e. JMP, TCP) been made and communicated to onsite personnel? Yes No N/A

31. Traffic: For work in the Right of Way on Public Roadway has an ARCADIS employee with Engineering Judgment approved the traffic control plan (TCP)? Yes No N/A

32. Traffic: Do workers understand they are not allowed to alter the flow of traffic on a public roadway without a written and approved plan? Some states also require flagger training. Yes No N/A

33. Waste: Has ARCADIS obtained Delegation of Authority (DOA) approval if signing waste manifest on behalf of Chevron? If YES, does DOA understand copy of manifest is to be sent to Chevron Waste Tracking Desk? Yes No N/A

34. Waste: Is waste currently on site? If so, what is the status of the disposal process: CIRCLE ONE of the FOLLOWING: 1. Characterization or Sample collection / 2. Profile / 3. Scheduled pickup / 4. OTHER: Yes No N/A

35. Waste: Will only clean drums be used for waste storage? Has the plan to prevent concrete from coming in contact with any wastewater been communicated to team? Yes No N/A

36. Are personnel qualified to perform work at site? Training records verified and available onsite for review? Yes No N/A

37. Are appropriate tools on-site to complete tasks safely and appropriately? Discussed in JSAs? Yes No N/A

38. Do workers understand locally fabricated equipment, such as field repairs not to original condition or equipment modified or used outside of original intent is prohibited? Yes No N/A

39. Level of PPE required for each task specified to workers (Level C, Level D, etc.)? PPE specifics discussed and documented in JSAs and PPE Assessment? Level D Yes No N/A

40. Has all PPE being utilized at the site been stored in a clean location? Has PPE been inspected before use? (Entire team should evaluate his/her safety glasses, hard hats, vests, etc.) Yes No

41. Motor vehicle precautions discussed? Maintain a minimum of 3 feet from objects; always use spotter when available; forward motion always preferred; set parking brake, no idling. Yes No N/A

42. Have sections of the "Preventing Serious Injury and Fatalities – Field Guide" been reviewed for relevant scope(s) of work? All affected workers included in discussion? Yes No

weather conditions marginal, possibility of rain-out

Special Safety Concerns for Today

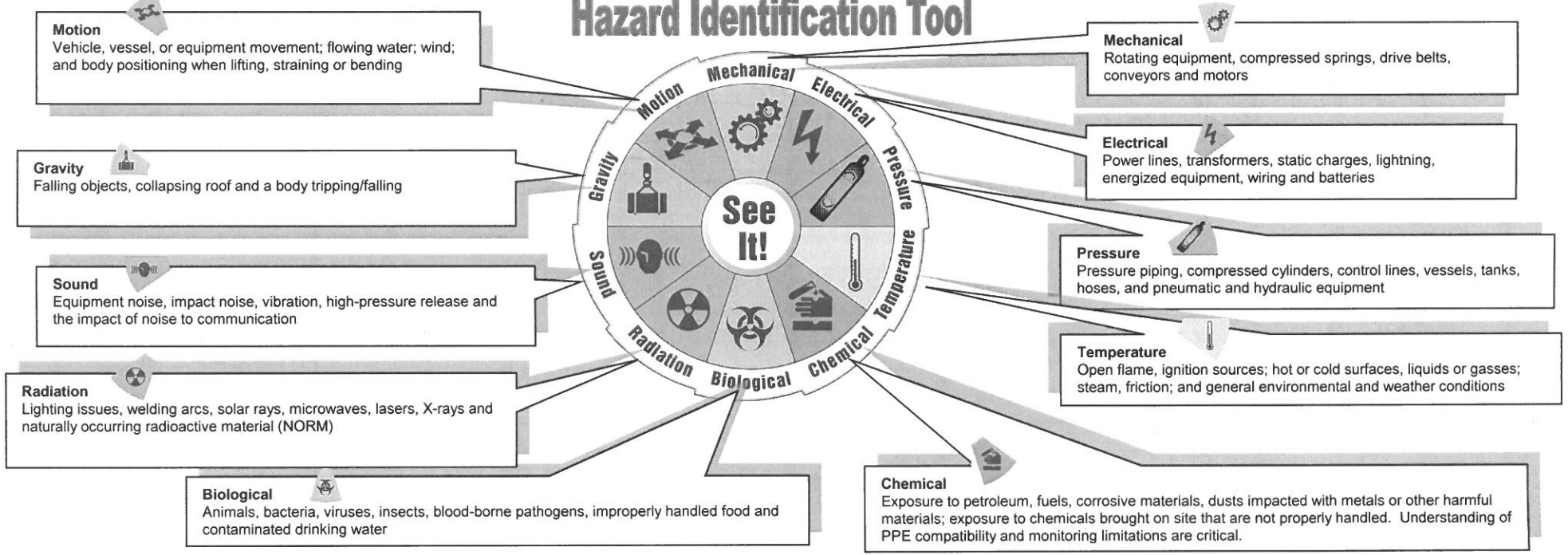
Personnel wishing to volunteer information relating to allergies/ailments/illnesses AND whether s/he is wearing contact lenses:

Last Name: _____	Note: _____	Last Name: _____	Note: _____
Last Name: _____	Note: _____	Last Name: _____	Note: _____

Short Service Employee List (requires prior Chevron PM approval – no more than 1 SSE if < 5 Workers on Site)

<u>Alex Pink</u>

Incident Free Operations! Hazard Identification Tool



Permit Approval

"I have assessed the risks posed by work activities planned for today and steps to mitigate those risks (e.g. HASP, JSA, PTW, tailgate meeting, coordination with other parties on site, etc.) have been completed to the best of our ability. Issues identified on the front page of this permit have been corrected. Work is safe to proceed. If site conditions change, **Stop Work Authority** will be used to assess work conditions."

Permit Approver: Sam Miles Date (12/8/15) Time 0700

The Approver is a qualified, trained and selected individual that makes certain site conditions are such, either by visual confirmation or utilizing a Verifier, that work is safe to proceed in accordance with the Permit to Work Procedure.

Permit Conditions Verifier: Sam Miles Time Work Approved to Proceed: 0700

The Verifier is a qualified, trained and selected individual (same as Approver) that makes certain site conditions are such, by confirmation AT THE WORK SITE, that work is safe to proceed in accordance with the Permit to Work Procedure. The Verifier also makes certain the Permit to Work form is complete prior to beginning work.

Permit Close Out

46.	Has there been a look back at the end of the day for JSA review?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
47.	If waste was generated on site are the drums labeled?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
48.	Is the property owner agreeable to the waste storage location? Are the drums in an preferred area in relation to security (to minimize view from the public)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A

Permit Closed and ARCADIS PM Notified: Date (12/8/15) Time 1530

Permit Acknowledgement

EVERYONE has STOP WORK AUTHORITY

Name (PRINT)	Company	Prior to Shift Meeting Time	Mid Shift Meeting Time (if applicable)	Signature	Time Out	Time In	Time Out
1. Alex Piek	ARCADIS	0700		<i>Alex Piek</i>			
2. Ryan Brauchle	ARCADIS	0700		<i>Ryan Brauchle</i>			
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							

Level	Image	Description	Usage
Level I		Min. of 4 delineators, with max. space of 4 feet between delineators. Use buddy system and vehicle with flashers as necessary.	Used in no to low traffic volume conditions for routine tasks of very short duration (< 10 minutes) where worker can stay aware of traffic in the vicinity.
Level II		Barrier tape on delineators with flags and the use of field vehicles (with flashing yellow light or vehicle hazard lights) and/or other lane control devices. Metal barricades may be used in conjunction with tape. Use buddy system when the worker cannot give undivided attention to oncoming traffic hazards.	Used when worker cannot stay alert of traffic; tasks take longer than 10 minutes but level III workspace protection is not required
Level III		Plastic Security Fencing and/or Type 2 or 3 barricades. A flashing yellow light on the vehicle may be used for additional visibility. Be cognizant of blocking of pump islands and any other dealer concerns.	Used when high task loads are present to distract attention from traffic including noise from tools and heavy equipments; when work is conducted at low daylight or nighttime; when access to site from a public right-of-way is to be closed (use appropriate warning signage).
Level IV		Requires review by ARCADIS staff with Engineering Judgment DOT approved signage and traffic protection devices as presented in TCP approved by staff with Engineering Judgment (EJ). State/local traffic control requirements may apply. Often requires oversight by a licensed traffic controller.	Used when traffic control is required in the public right-of-way.

CHEVRON OE TENETS OF OPERATION

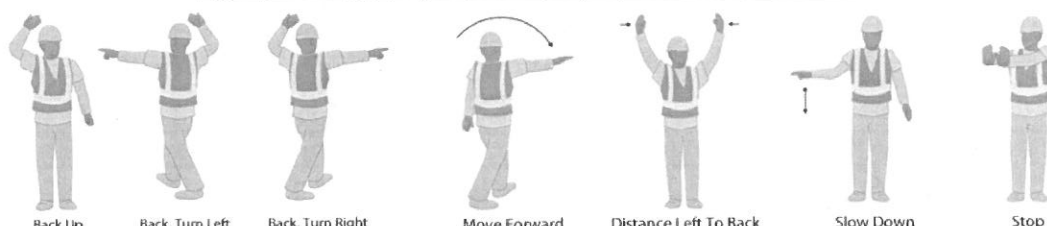
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5. Always meet or exceed customers' requirements.
6. Always maintain integrity of dedicated systems.
7. Always comply with all applicable rules and regulations.
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9. Always follow written procedures for high-risk or unusual situations.
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GENERAL PERMIT TO WORK /TAILGATE MEETING – Chevron

(PRINT AS 11"x17" – FRONT & BACK – DO NOT ALLOW TWO PAGES)

Version 05.08.2015
 Permit ID: _____
 (Facility #) _____ Year _____ Month _____ Day _____
 Example: 1239770 – 11 – 12 – 05 : Section not required – for filing only

Project Name: Seattle Terminal
 Project Location (Address): 3001 Elliott Ave., Seattle, WA Chevron Facility #: B004563.0007
 Chevron Project Manager: Kim Jolitz Total # of Companies at Site: 1
 Valid Dates: (1 day): 12/9/15 Person Conducting Meeting: Alex Pink

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1a.	What TASKS for ARCADIS and ARCADIS subcontractors does this Permit include? Every TASK identified below must be accompanied by a JSA (or be included in a broader JSA). Examples: Vacuum excavation, utility marking, monitoring well development	Level of Traffic Control (1 – 4)	List Company Responsible
A.	<u>Gauging wells</u>	<u>1</u>	<u>ARCADIS</u>
B.	<u>Sampling wells</u>	<u>1</u>	<u>ARCADIS</u>
C.	<u>pack + ship coolers</u>	<u>1</u>	<u>ARCADIS</u>
D.	<u>manage IDW</u>	<u>1</u>	<u>ARCADIS</u>
E.			
F.			
G.			
H.			
1b.	Where on the property will the work take place? (this becomes the Reporting Boundary): <u>around each well</u>		
1c.	Will work conducted in multiple work zones or by multiple crews have the potential to impact each other? If so, is there a plan to address communication between work zones/companies? Check all that apply (must check at least 1)	<input type="checkbox"/> All participate in Tailgate Meeting <input type="checkbox"/> Written Communication Plan <input type="checkbox"/> Detailed in JSA <input type="checkbox"/> Other: <input checked="" type="checkbox"/> N/A	
2a.	Have necessary work permits (local, state and/or federal) been obtained (including those for subcontractors)? Permits posted as per requirements specified by authority having jurisdiction?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
2b.	If CONFINED SPACE activities are to be conducted has the CONFINED SPACE portion of the HIGH RISK WORK PERMIT been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
2c.	If EXCAVATING / TRENCHING deeper than 5 feet, or <5 feet when people are working in the excavation/trench, or potential for a cave-in/ oxygen deficient /hazardous atmosphere, has the applicable HIGH RISK WORK PERMIT been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
2d.	If DRILLING/ABANDONING/EXCAVATING/TRENCHING within 5 feet of a buried pressurized line (e.g. Gas, Steam, Water), within 5 feet of a buried active product line or active electric line, within 7 feet of a the pad surrounding Underground Storage Tanks (USTs), has the applicable HIGH RISK WORK PERMIT been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
2e.	If OVERHEAD CLEARANCE of equipment (such as pulling unit, mast truck, backhoe or excavator) <15 feet from active overhead electrical line or pole supporting an electric line, has the applicable HIGH RISK WORK PERMIT been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
2f.	If HOTWORK activities are to be conducted has the HOTWORK and FIRE MONITOR ACTIVITY LOG portions of the HIGH RISK WORK PERMIT been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
2g.	If LOCK OUT / TAG OUT (LO/TO) activities, other than routine maintenance, are to be conducted has the LO/TO portion of the HIGH RISK WORK PERMIT been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
2h.	If DIVING activities are to be conducted has the DIVING portion of the HIGH RISK WORK PERMIT been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
2i.	If WORKING AT an ELEVATION over 6 feet (or 4 feet in California) has the WORKING AT ELEVATION portion of the HIGH RISK WORK PERMIT been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
2j.	If BOATING or WORKING NEAR OPEN WATER or DREDGING has the applicable portion of the HIGH RISK WORK PERMIT been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
2k.	If DEMOLITION, REMOVAL OF PIPELINES AND BURIED STRUCTURES work activities are to be conducted has the EXCAVATION / TRENCHING / DRILLING / OVERHEAD CLEARANCE and DEMOLITION, REMOVAL OF PIPELINES AND BURIED STRUCTURES portions of the HIGH RISK WORK PERMIT been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
2l.	If RIGGING/LIFTING work activities are to be conducted has the LIFTING and RIGGING portions of the HIGH RISK WORK PERMIT been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
3.	Will prejob paperwork completed by ARCADIS and/or Subcontractors be inspected prior to commencing work? This may include JMPs, Vehicle Inspections, Equipment Inspections, etc.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
4.	+ Who is the designated SHSO for today?	Name: <u>Ryan Brauchla</u>	
5.	+ Does everyone know the location, directions, and name of the nearest hospital?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
6.	+ Has a plan been established to ensure emergency responders can easily locate or be escorted to the work site?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
7.	+ Will traffic control comply with Chevron and ARCADIS requirements? (See Back Page for Chevron Requirements)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
8.	+ Where is the nearest working phone located (non-cell phone)	Location: <u>SAM building</u>	
9.	+ Where is the location of the primary first aid kit (to include portable eyewash & CPR shield)?	Location: <u>Field vehicle</u>	
10.	+ Where is the location of the primary fire extinguisher?	Location: <u>Field vehicle</u>	
11.	+ Have signals or alarms (stop work, sheltering, evacuation, etc.) been communicated to everyone on site? Without conflicts with other work activity?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
12.	+ Are weather conditions acceptable or have associated risks been mitigated? Are hydrating fluids (not caffeine) available to workers? Shade? Shelter within reasonable distance?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
13.	+ Document last inspection date of primary fire extinguisher and expiration of primary first aid kit contents:	Extinguisher - <u>12-2-2015</u>	First Aid Kit - <u>6-2016</u>
14.	+ Are SDS for ALL chemicals being used at site (oils, detergents, preservatives, etc.) included in HASP? Have crews using these chemicals read the SDS? Are they readily available for quick review or to hand off to EMS personnel?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
15a.	Air Monitoring: Air monitoring required by HASP for this scope of work? (If yes, then complete 15 b - d)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> N/A	
15b.	Air Monitoring: Proper calibration gas available to support daily/pre-work calibration of monitoring equipment? Calibration log available?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
15c.	Air Monitoring: Will air monitoring be performed by individual trained on the use of the equipment?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
15d.	Air Monitoring: Breathing zone data must be recorded per HASP requirements. Where will data be recorded?	<input type="checkbox"/> Monitoring Log <input checked="" type="checkbox"/> Field Book <input type="checkbox"/> Other:	
16.	HASP: Have all sections of the Health & Safety Plan (HASP) applying to today's tasks been reviewed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
17.	HASP: Have all visitors and workers completed the HASP written test? Have all tests been graded? Deficiencies reviewed? HASP signed?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
18.	Has Chevron's hand safety policy, including fixed open blade knife prohibition; Stop Work Authority been discussed and highlighted during the health and safety meeting?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
19.	Have Operational Excellence Tenets been discussed and highlighted during the daily health and safety meeting? (See Back Page for Reference)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
20.	Electrical: GFI protection on equipment to be used?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
21.	Electrical: Is there a plan to inspect electric cords prior to use? Electrical testing equipment rated for the electric service?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
22.	Electrical: If working in live panels, are workers trained on NFPA 70E? ARCADIS Energized Electrical Work Permit completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
23.	Equipment Operation: Are above-ground utilities identified and clearly visible by equipment operators? Underground utilities marked? Width of utility considered when marked?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
24.	Equipment Operation: Rotating equipment shielded and guarded and pinch points identified and marked? Prohibition on loose clothing, jewelry, hair hooded/drawstring clothing discussed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
25.	Equipment Operation: Has AN equipment inspection checklist been completed for all equipment being used today? Note: Checklists may vary by office, subcontractor and equipment	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
26.	Equipment Operation or Ground Disturbance: Has the ARCADIS underground/overhead utilities checklist been completed?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
27.	Ground Disturbance: For any subsurface work, has/will the Ground Disturbance /Well Abandonment Checklist process be followed? Stop work and call PM if unsure.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
28.	Have shut-off switches/valves been located (as required by scope work) and communicated to relevant crew members?	<input checked="" type="checkbox"/> N/A <input type="checkbox"/> Electric <input type="checkbox"/> Gas <input type="checkbox"/> Water <input type="checkbox"/> Other	
29.	Traffic: Are proper traffic and/or fire control measures in-place?	<input checked="" type="checkbox"/> Traffic <input type="checkbox"/> Fire Prevention <input type="checkbox"/> N/A	
30.	Traffic: Have modifications to safety procedures or documentation (i.e. JMP, TCP) been made and communicated to onsite personnel?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
31.	Traffic: For work in the Right of Way on Public Roadway has an ARCADIS employee with Engineering Judgment approved the traffic control plan (TCP)?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
32.	Traffic: Do workers understand they are not allowed to alter the flow of traffic on a public roadway without a written and approved plan? Some states also require flagger training.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
33.	Waste: Has ARCADIS obtained Delegation of Authority (DOA) approval if signing waste manifest on behalf of Chevron? If YES, does DOA understand copy of manifest is to be sent to Chevron Waste Tracking Desk?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
34.	Waste: Is waste currently on site? If so, what is the status of the disposal process: CIRCLE ONE of the FOLLOWING: 1. Characterization or Sample collection / 2. Profile / 3. Scheduled pickup / 4. OTHER:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
35.	Waste: Will only clean drums be used for waste storage? Has the plan to prevent concrete from coming in contact with any wastewater been communicated to team?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
36.	Are personnel qualified to perform work at site? Training records verified and available onsite for review?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
37.	Are appropriate tools on-site to complete tasks safely and appropriately? Discussed in JSAs?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
38.	Do workers understand locally fabricated equipment, such as field repairs not to original condition or equipment modified or used outside of original intent is prohibited?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
39.	Level of PPE required for each task specified to workers (Level C, Level D, etc.)? PPE specifics discussed and documented in JSAs and PPE Assessment?	<u>Level D</u> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
40.	Has all PPE being utilized at the site been stored in a clean location? Has PPE been inspected before use? (Entire team should evaluate his/her safety glasses, hard hats, vests, etc.)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
41.	Motor vehicle precautions discussed? Maintain a minimum of 3 feet from objects; always use spotter when available; forward motion always preferred; set parking brake, no idling.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
42.	Have sections of the "Preventing Serious Injury and Fatalities – Field Guide" been reviewed for relevant scope(s) of work? All affected workers included in discussion?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

Special Safety Concerns For Today

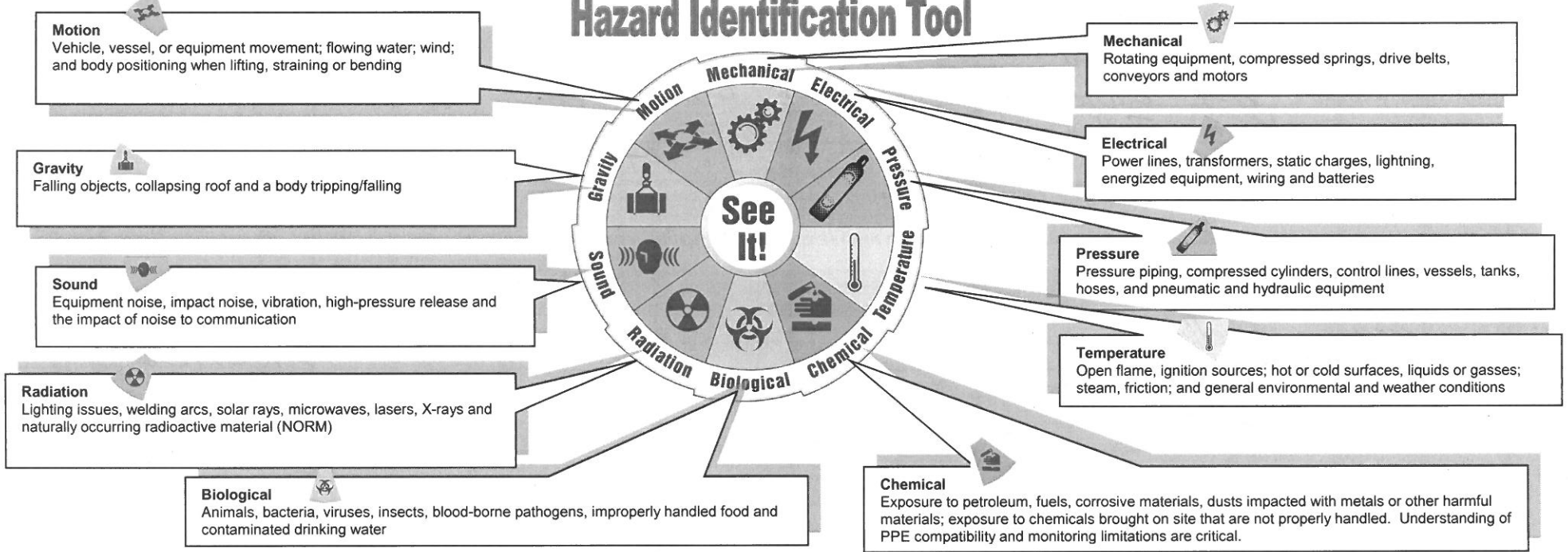
Personnel wishing to volunteer information relating to allergies/ailments/illnesses AND whether s/he is wearing contact lenses:

Last Name:	Note:	Last Name:	Note:
Last Name:	Note:	Last Name:	Note:

Short Service Employee List (requires prior Chevron PM approval – no more than 1 SSE if < 5 Workers on Site)

<u>Alex Pink</u>

Incident Free Operations! Hazard Identification Tool



Permit Approval

"I have assessed the risks posed by work activities planned for today and steps to mitigate those risks (e.g. HASP, JSA, PTW, tailgate meeting, coordination with other parties on site, etc.) have been completed to the best of our ability. Issues identified on the front page of this permit have been corrected. Work is safe to proceed. If site conditions change, **Stop Work Authority** will be used to assess work conditions."

Permit Approver: Sam Miles Date (12/9/15) Time 0830

The Approver is a qualified, trained and selected individual that makes certain site conditions are such, either by visual confirmation or utilizing a Verifier, that work is safe to proceed in accordance with the Permit to Work Procedure.

Permit Conditions Verifier: Sam Miles Time Work Approved to Proceed: 0830

The Verifier is a qualified, trained and selected individual (same as Approver) that makes certain site conditions are such, by confirmation AT THE WORK SITE, that work is safe to proceed in accordance with the Permit to Work Procedure. The Verifier also makes certain the Permit to Work form is complete prior to beginning work.

Permit Close Out

46.	Has there been a look back at the end of the day for JSA review?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
47.	If waste was generated on site are the drums labeled?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
48.	Is the property owner agreeable to the waste storage location? Are the drums in an preferred area in relation to security (to minimize view from the public)	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A

Permit Closed and ARCADIS PM Notified: Date (12/9/15) Time 1330

No Drums on site

Permit Acknowledgement

EVERYONE has STOP WORK AUTHORITY

Name (PRINT)	Company	Prior to Shift Meeting Time	Mid Shift Meeting Time (if applicable)	Signature	Time Out	Time In	Time Out
1. Alex Pink	ARCADIS	0830		<i>Alex Pink</i>			
2. Ryan Brauchla	ARCADIS	0830		<i>Ryan Brauchla</i>			
3.							
4.							
5.							
6.							
7.							
8.							
9.							
10.							
11.							
12.							

Level	Description	Usage
Level I	Min. of 4 delineators, with max. space of 4 feet between delineators. Use buddy system and vehicle with flashers as necessary.	Used in no to low traffic volume conditions for routine tasks of very short duration (< 10 minutes) where worker can stay aware of traffic in the vicinity.
Level II	Barrier tape on delineators with flags and the use of field vehicles (with flashing yellow light or vehicle hazard lights) and/or other lane control devices. Metal barricades may be used in conjunction with tape. Use buddy system when the worker cannot give undivided attention to oncoming traffic hazards.	Used when worker cannot stay alert of traffic; tasks take longer than 10 minutes but level III workspace protection is not required
Level III	Plastic Security Fencing and/or Type 2 or 3 barricades. A flashing yellow light on the vehicle may be used for additional visibility. Be cognizant of blocking of pump islands and any other dealer concerns.	Used when high task loads are present to distract attention from traffic including noise from tools and heavy equipments; when work is conducted at low daylight or nighttime; when access to site from a public right-of-way is to be closed (use appropriate warning signage).
Level IV	Requires review by ARCADIS staff with Engineering Judgment DOT approved signage and traffic protection devices as presented in TCP approved by staff with Engineering Judgment (EJ). State/local traffic control requirements may apply. Often requires oversight by a licensed traffic controller.	Used when traffic control is required in the public right-of-way.

CHEVRON OE TENETS OF OPERATION

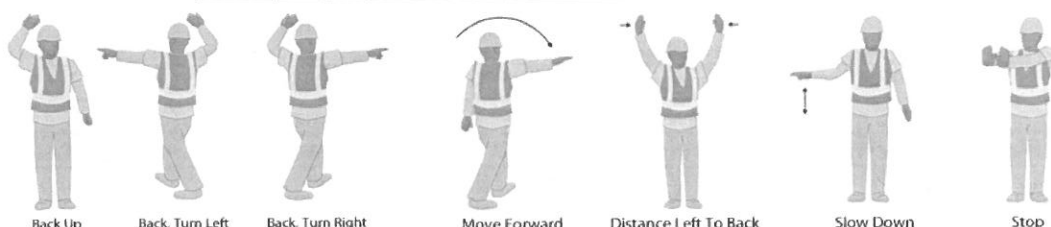
1. Always operate within design and environmental limits.
2. Always operate in a safe and controlled condition.
3. Always ensure safety devices are in place and functioning.
4. Always perform safe work practices and procedures.
5. Always meet or exceed customers' requirements.
6. Always maintain integrity of dedicated systems.
7. Always comply with all applicable rules and regulations.
8. Always address abnormal conditions.
9. Always follow written procedures for high-risk or unusual situations.
10. Always involve the right people in decisions that affect procedures and equipment.

To keep health & safety on TRACK, before every task, STOP and...

T R A C K

- Think through the task
- Recognize the hazards
- Assess the risks
- Control the hazards
- Keep health & safety first in all things

Standard Spotter Communication





7343 E. MARGINAL WAY SOUTH
 SEATTLE, WASHINGTON 98108
 PH. (206) 832-3000
 FAX (206) 832-3030
 24 HOUR EMERGENCY PHONE: 1-888-832-3008

63515

BILL OF LADING AND GALLONAGE TICKET

SHIPPER/GENERATOR <i>union oil company Seattle Mktg Terminal</i>		CONTACT	JOB # <i>720296</i>		
ADDRESS <i>3001 Elliot Avenue</i>		PHONE#	LOAD #		
CITY, STATE, ZIP <i>Seattle, WA</i>			DATE <i>12-8-2015</i>		
CARRIER <i>ARCADIS</i>		PHONE#	DOCUMENT #		
CONSIGNEE <i>EFS for FRS</i>		CONTACT	TRUCK #		
ADDRESS <i>1500 Airport Way S</i>		PHONE#	PRODUCT TYPE		
CITY, STATE, ZIP <i>Seattle, WA</i>			EST. GALLONS		
HM	ITEM #	U.S. DOT DESCRIPTION	#	TYPE	QTY.
	A	<i>Non-hazardous liquid (purged groundwater)</i>	<i>1</i>	<i>DM</i>	<i>20 gal</i>
	B				
	C				
	D				

A. WPQ # *500707* DISP. CODE: _____ C. WPQ # _____ DISP. CODE: _____
 B. WPQ # _____ DISP. CODE: _____ D. WPQ # _____ DISP. CODE: _____

DISPOSAL

DUMP DELAY TIME _____
 WASH OUT: YES () NO () TIME IN _____ TIME OUT _____
 E. WATER _____ GALLONS LOCATION _____ TEST _____ DISP. CODE _____
 F. SOLIDS _____ GALLONS LOCATION _____ TEST _____ DISP. CODE _____
 _____ % SUSPENDED SOLIDS BY CENTRIFUGE + _____ GALS SEDIMENT
 G. OIL/DIESEL/GAS _____ GALLONS LOCATION _____ TEST _____ DISP. CODE _____
 HOC'S _____ PCB'S _____ B.S.&W. _____ API _____ LAB: Y / N

Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway, vessel and rail according to applicable international and national government regulations and this material is not regulated as a hazardous waste in accordance with WAC 173-303, 40 CFR, Part 261 or 40 CFR Part 761.

Samuel Miles on behalf of Chevron
 X _____ SHIPPER (PRINT NAME) DATE: *12-8-15*
 X *CRAIG J BOWEN* SIGNATURE DATE: *12-8-15*
 X _____ CARRIER - DRIVER 1 (PRINT NAME) DATE: _____
 X _____ CARRIER - DRIVER 2 (PRINT NAME) DATE: _____
 X _____ CONSIGNEE (PRINT NAME) DATE: _____
 X _____ SIGNATURE DATE: _____
 X _____ SIGNATURE DATE: _____

CUSTOMER



7343 E. MARGINAL WAY SOUTH
 SEATTLE, WASHINGTON 98108
 PH. (206) 832-3000
 FAX (206) 832-3030
 24 HOUR EMERGENCY PHONE: 1-888-832-3008

63510

BILL OF LADING AND GALLONAGE TICKET

SHIPPER/GENERATOR <i>Union Oil Co. Seattle Mktg. Terminal</i>		CONTACT	JOB # <i>72023</i>		
ADDRESS <i>3001 Elliott Ave.</i>		PHONE#	LOAD #		
CITY, STATE, ZIP <i>Seattle, WA</i>			DATE <i>12-9-15</i>		
CARRIER <i>ARCADIS</i>		PHONE#	DOCUMENT #		
CONSIGNEE <i>EFS For FRS</i>		CONTACT	TRUCK #		
ADDRESS <i>1500 Airport Way South</i>		PHONE#	PRODUCT TYPE		
CITY, STATE, ZIP <i>Seattle, WA</i>			EST. GALLONS		
HM	ITEM #	U.S. DOT DESCRIPTION	#	TYPE	QTY.
	A	<i>Non-hazardous liquid ← pumped g/water</i>	<i>1</i>	<i>DM</i>	<i>20 gal</i>
	B				
	C				
	D				

A. WPQ # *G 00707* DISP. CODE: _____ C. WPQ # _____ DISP. CODE: _____
 B. WPQ # _____ DISP. CODE: _____ D. WPQ # _____ DISP. CODE: _____

DISPOSAL

DUMP DELAY TIME _____
 WASH OUT: YES () NO () TIME IN _____ TIME OUT _____
 E. WATER _____ GALLONS LOCATION _____ TEST _____ DISP. CODE _____
 F. SOLIDS _____ GALLONS LOCATION _____ TEST _____ DISP. CODE _____
 _____ % SUSPENDED SOLIDS BY CENTRIFUGE + _____ GALS SEDIMENT
 G. OIL/DIESEL/GAS _____ GALLONS LOCATION _____ TEST _____ DISP. CODE _____
 HOC'S _____ PCB'S _____ B.S.&W. _____ API _____ LAB: Y / N

Shipper's Certification: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by highway, vessel and rail according to applicable international and national government regulations and this material is not regulated as a hazardous waste in accordance with WAC 173-303, 40 CFR. Part 261 or 40 CFR Part 761.

Samuel Miles on
 Behalf of chevron EMC X _____ DATE: *12-9-15*
 SHIPPER (PRINT NAME) SIGNATURE
 X *Jeremy Campbell* X _____ DATE: *12-9-15*
 CARRIER - DRIVER 1 (PRINT NAME) SIGNATURE
 X _____ X _____ DATE: _____
 CARRIER - DRIVER 2 (PRINT NAME) SIGNATURE
 X _____ X _____ DATE: _____
 CONSIGNEE (PRINT NAME) SIGNATURE

CUSTOMER

Chevron Northwest Region Analysis Request/Chain of Custody



Lancaster Laboratories

Acct # _____

Group # _____

For Lancaster Laboratories use only
 Instructions on reverse side correspond with circled numbers.

Sample # _____

SCR #: 159455

Client Information

Facility # Seattle Terminal 1 WBS NWENV PM6001400802
 Site Address 3001 Elliott Ave., Seattle, WA
 Chevron PM Kim Tolitz Lead Consultant ARCADIS
 Consultant/Office ARCADIS-Seattle
 Consultant Project Mgr. Rebecca Andersen
 Consultant Phone # 206-325-5254
 Sampler Ryan Brauchka / Alex Pink

Matrix

Sediment Ground
 Water Potable NPDES Surface
 Oil Air

Analyses Requested

Total Number of Containers
 BTEX + MTBE 8021 8260 Naphth
 8260 full scan
 _____ Oxygenates
 NWT PH GX
 NWT PH DX Silica Gel Cleanup
 Lead Total Diss. Method _____
 WAVPH WAEPH
CPAHs by 8270 SIM

- 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

Remarks

Sample Identification

Sample Identification	Collected		Grab	Composite	Soil	Water	Oil	Total Number of Containers	BTEX + MTBE	8260 full scan	Oxygenates	NWT PH GX	NWT PH DX	Lead	WAVPH	WAEPH	8021	8260
	Date	Time																
MW-200	12/3/15	1310	X					X										
MW-201	12/8/15	1130																
MW-202	12/8/15	1100																
MW-204	12/9/15	1230																
MW-205	12/9/15	1205																
MW-206	12/8/15	0930																
MW-207	12/8/15	0900																
DUP-1	12/8/15	1130																
Twp Blank																		

Turnaround Time Requested (TAT) (please circle)

Standard 5 day 4 day
 72 hour 48 hour 24 hour

Relinquished by

Ryan Brauchka

Date

12/4/15

Time

1600

Received by

UPS

Date

12/9/15

Time

1600

Data Package Options (please circle if required)

Type I - Full Type VI (Raw Data)

Relinquished by Commercial Carrier:

UPS FedEx Other

Received by

UPS

Date

12/9/15

Time

1600

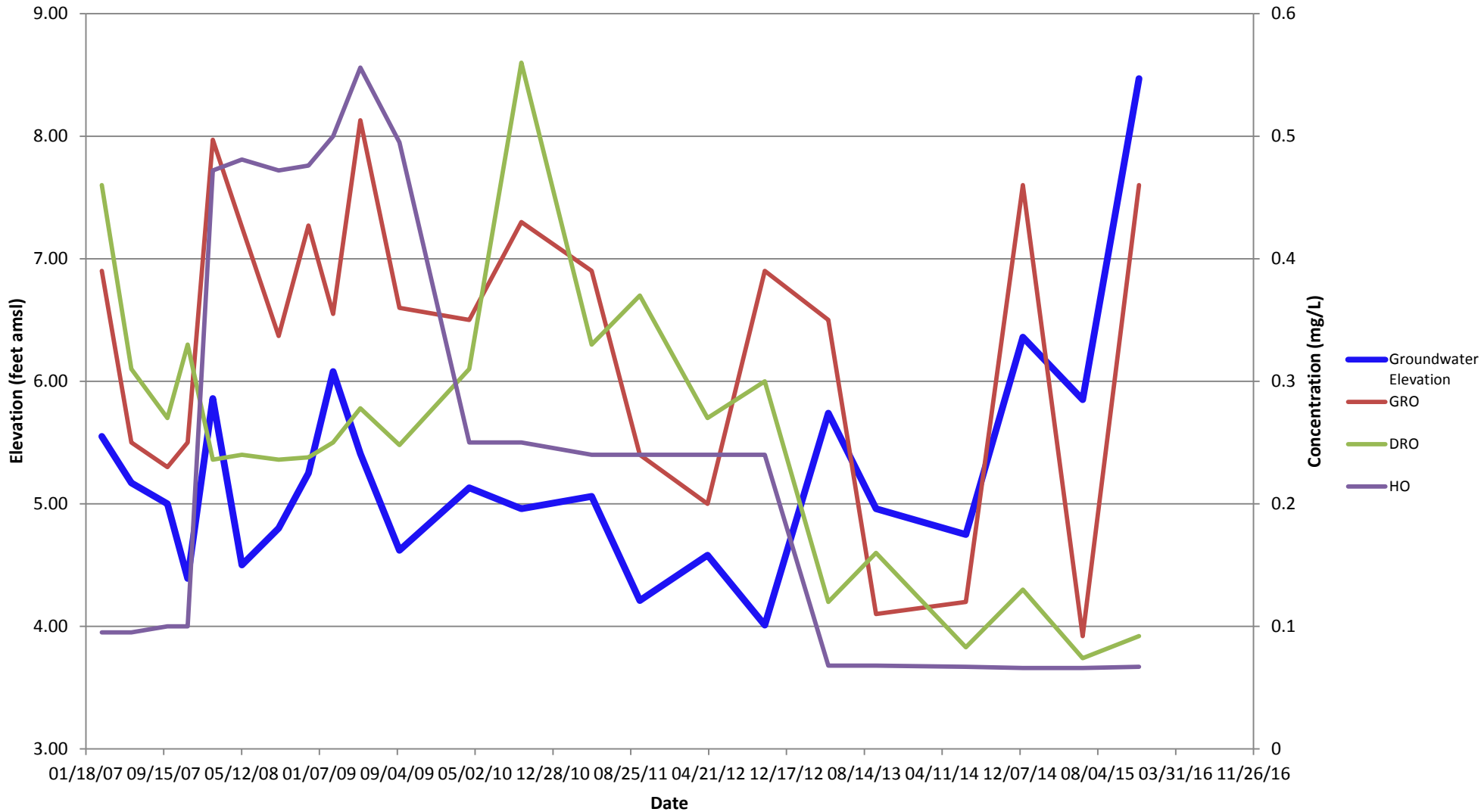
Yes No

APPENDIX C

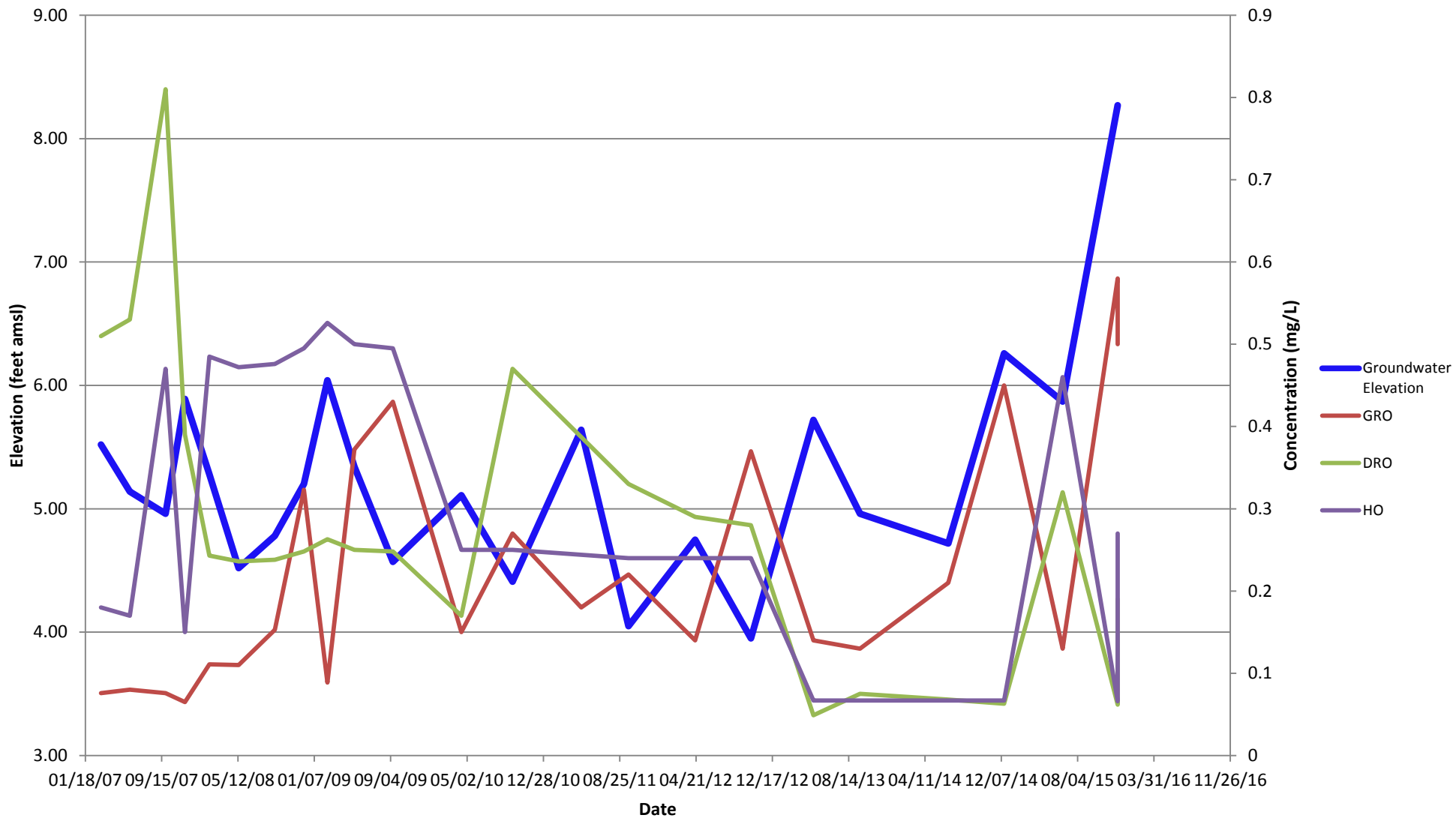
Historical Trends Graphs



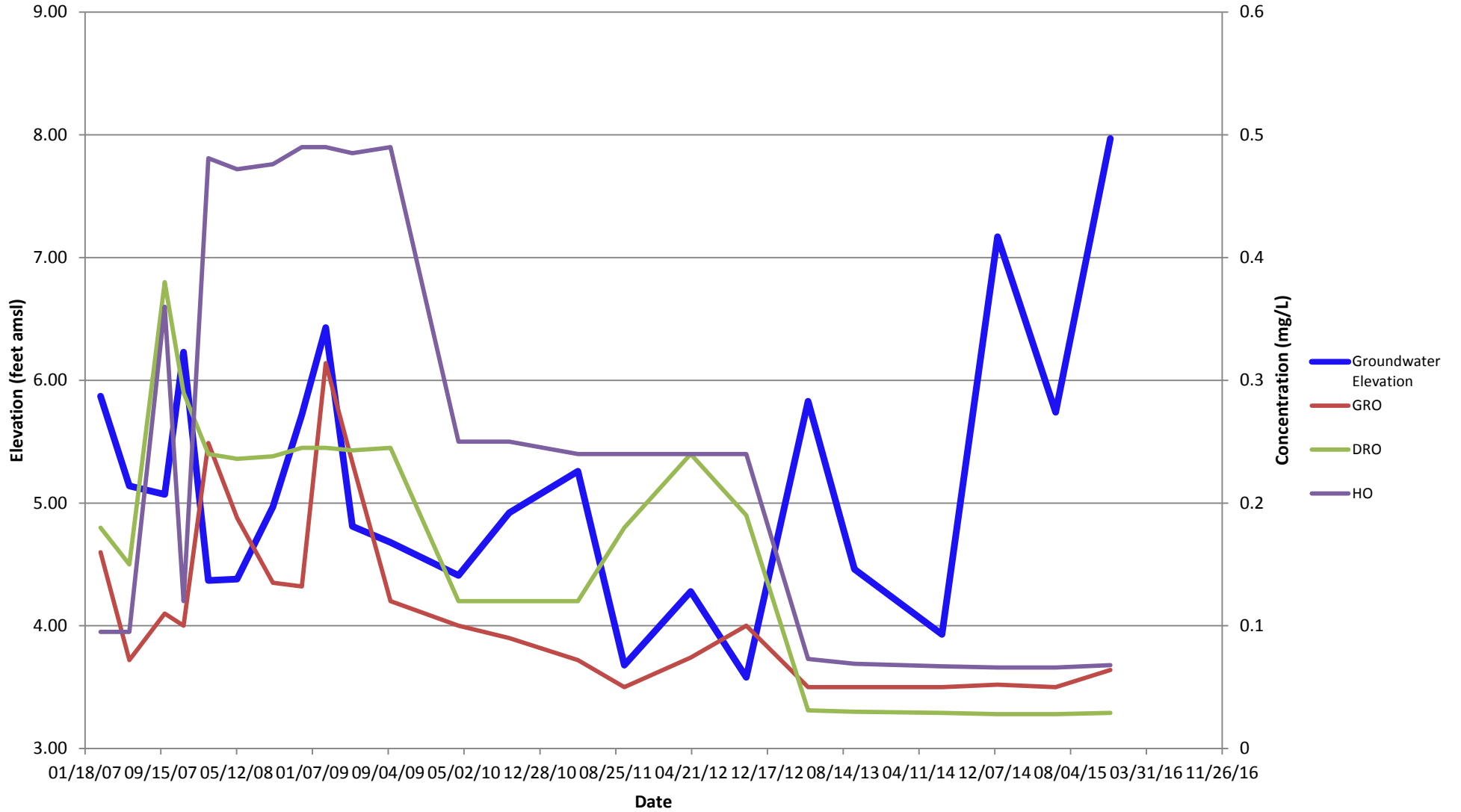
MW-200



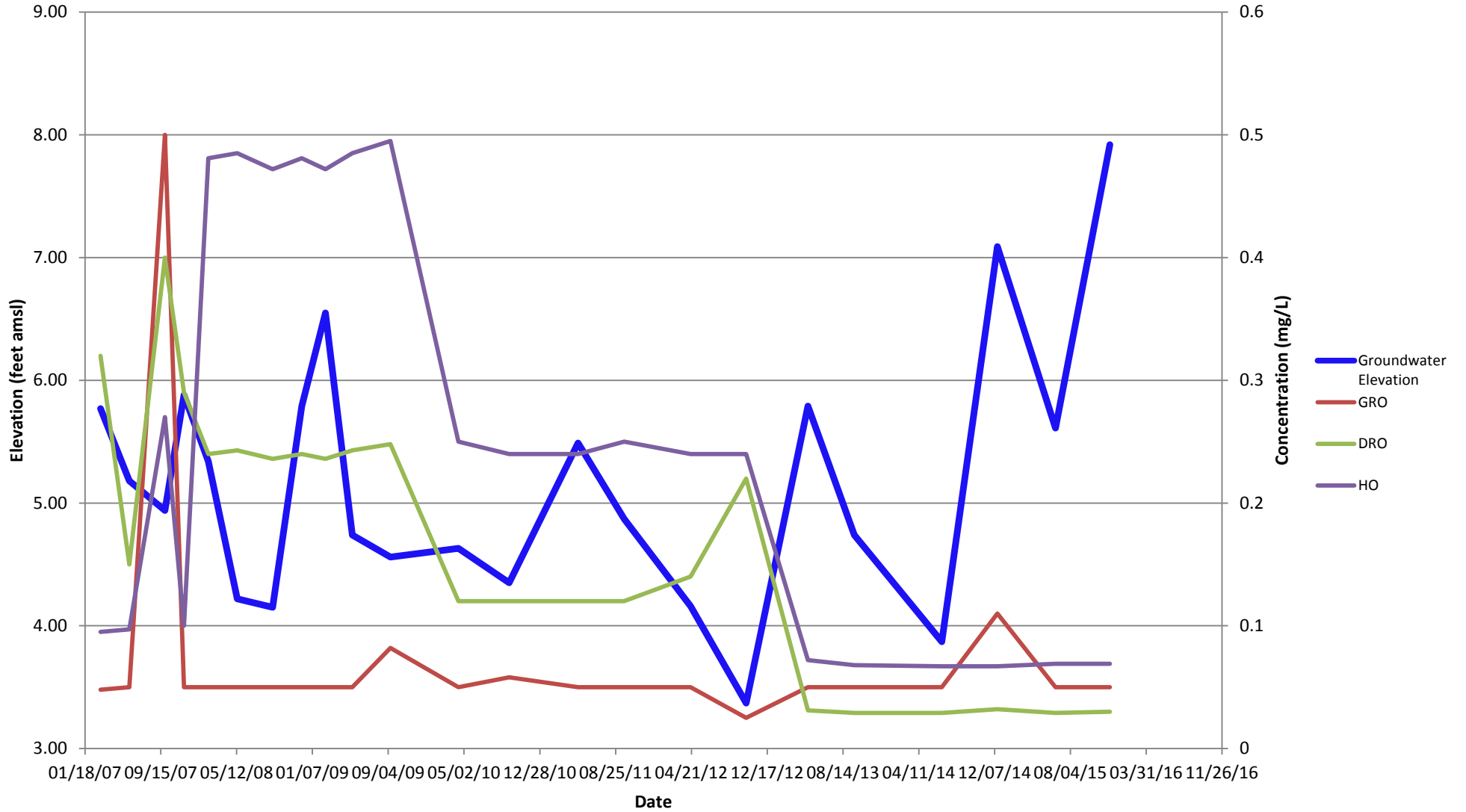
MW-201



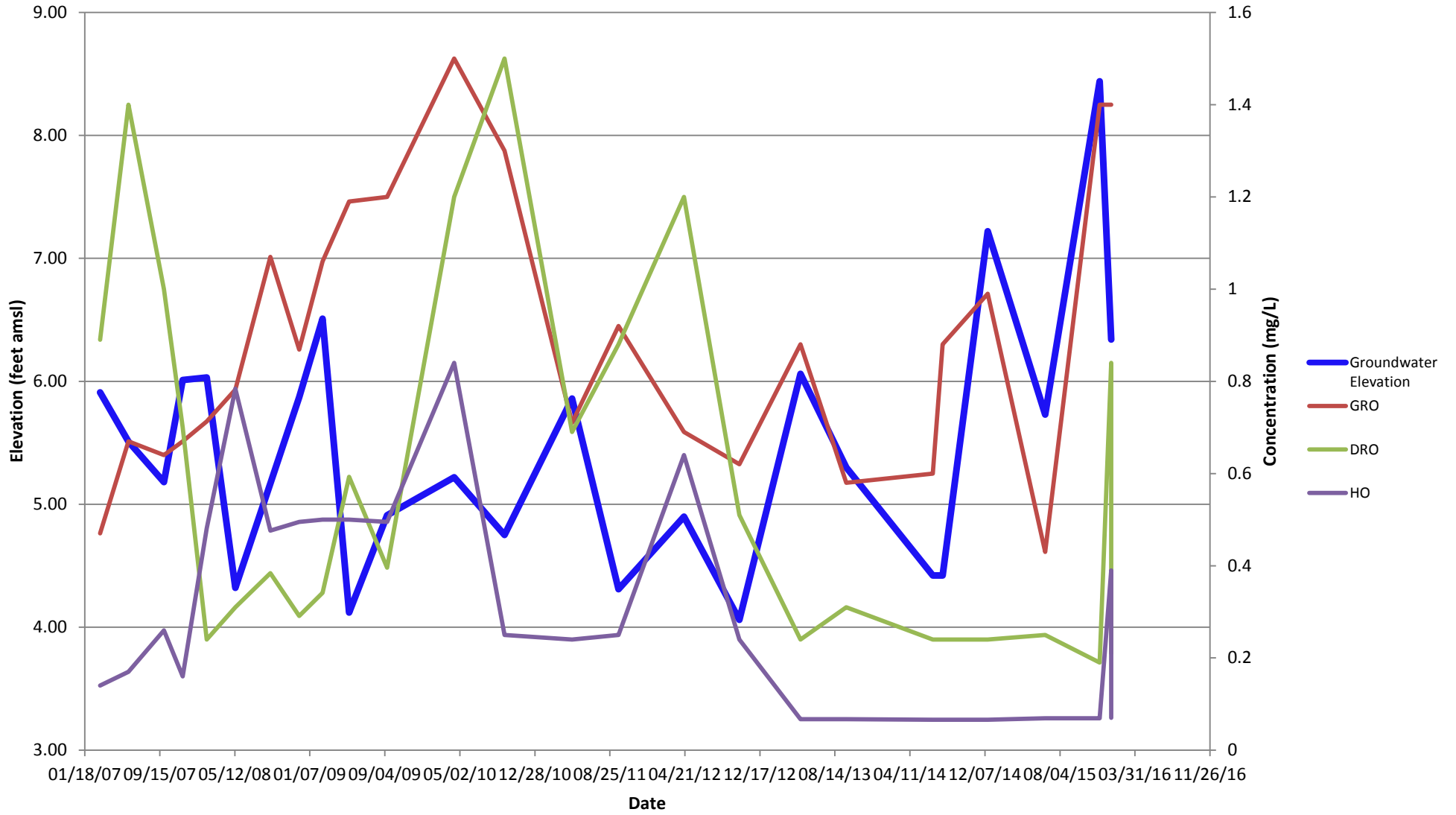
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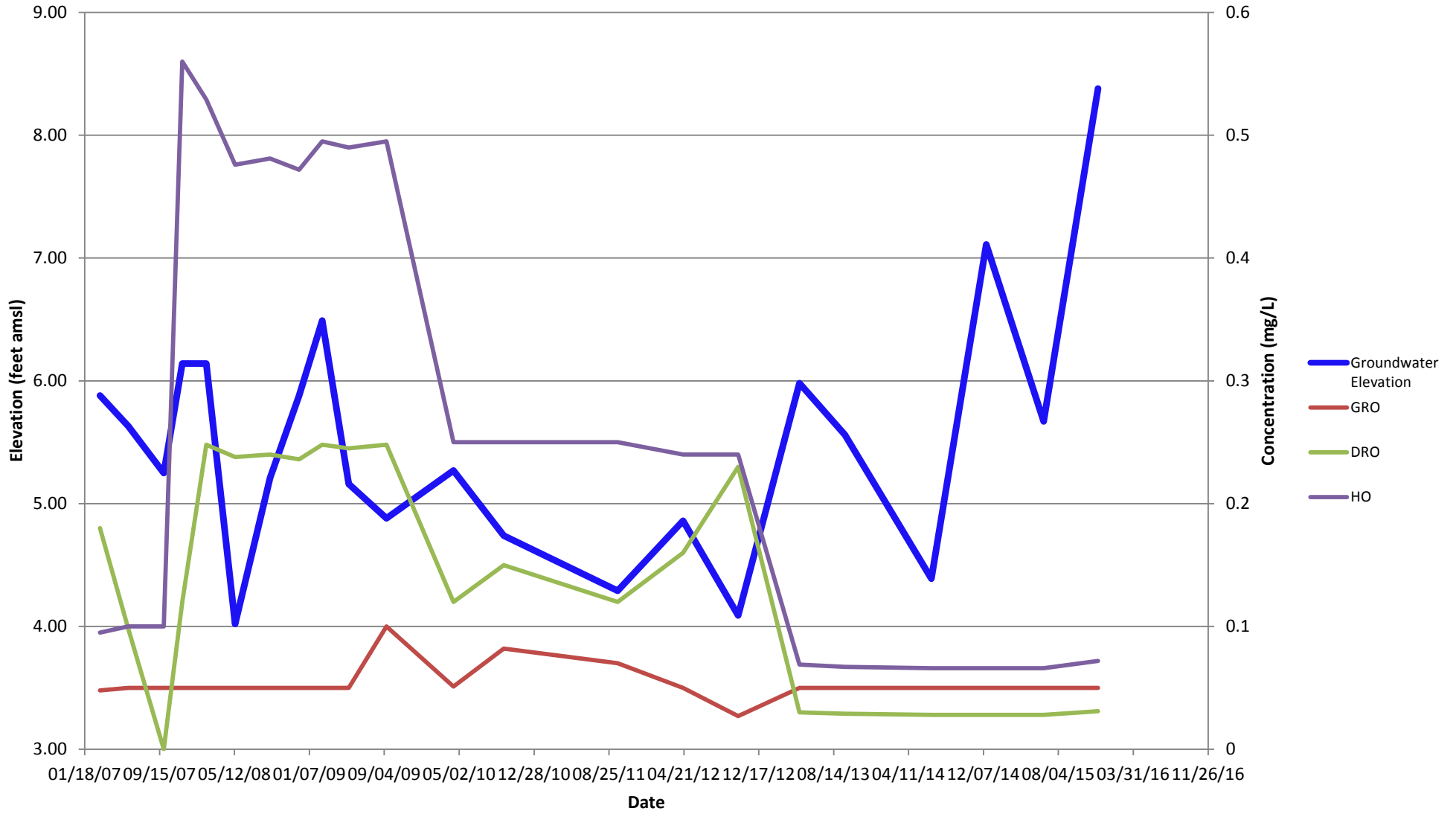
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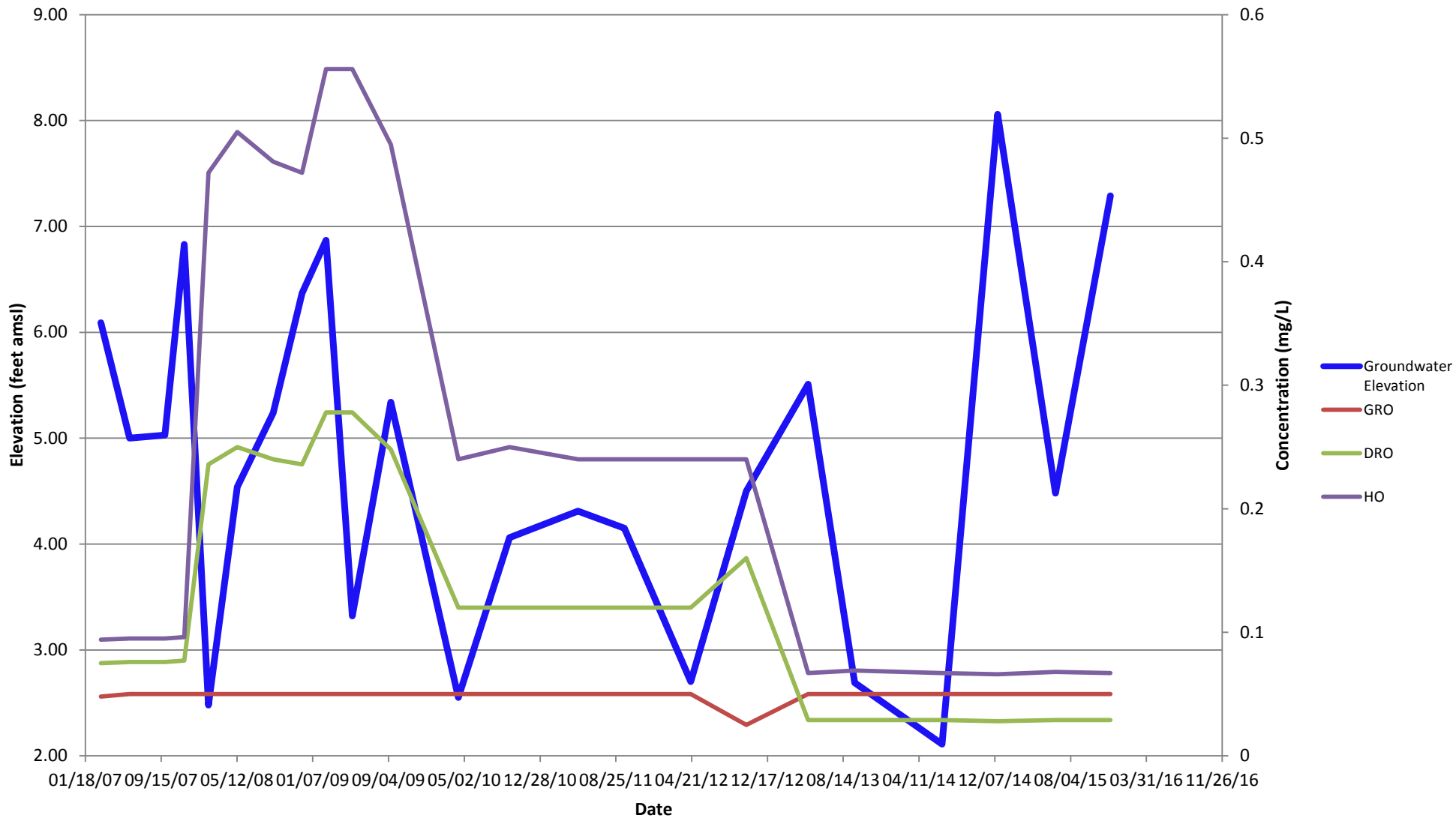
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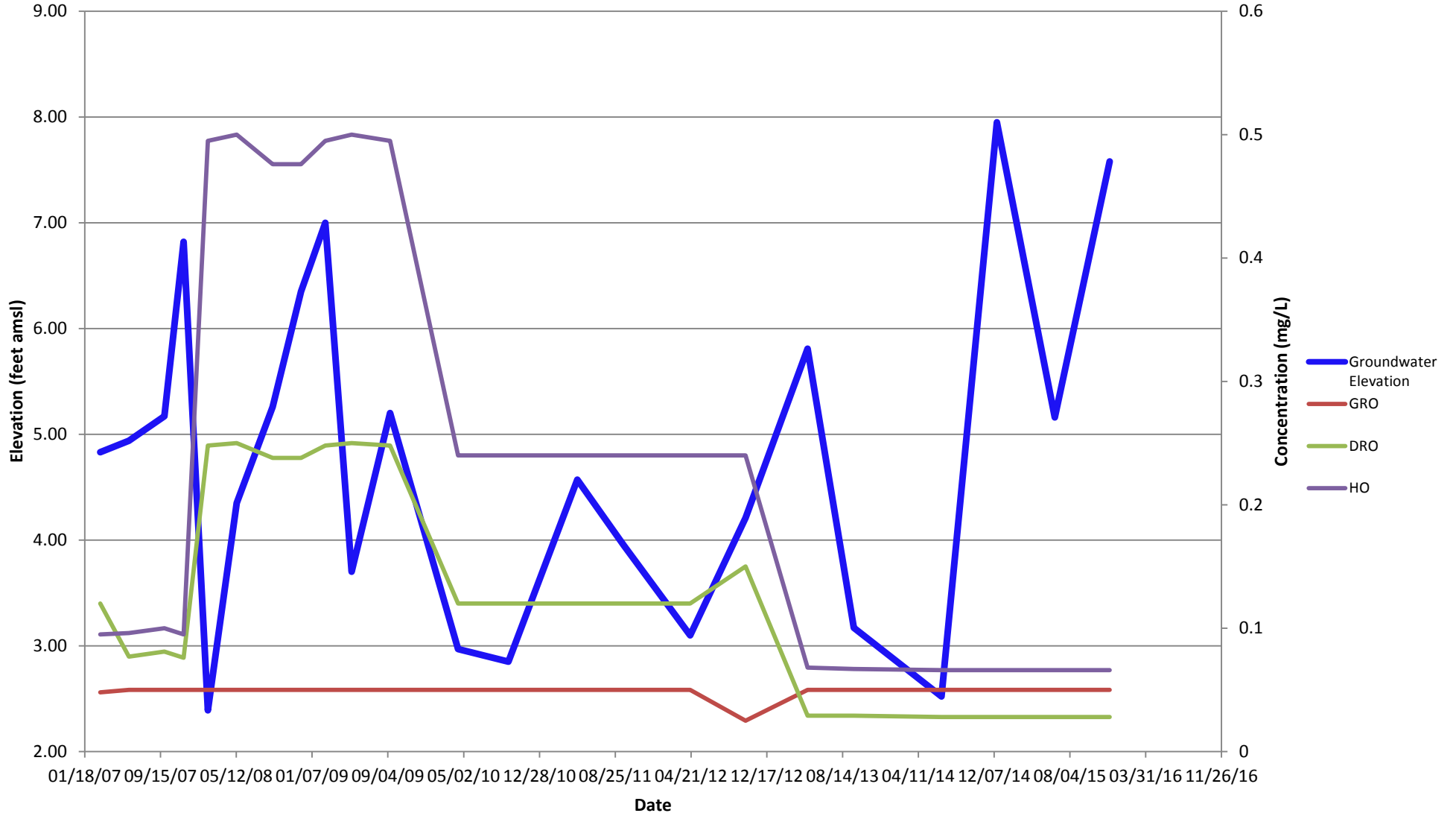
MW-205



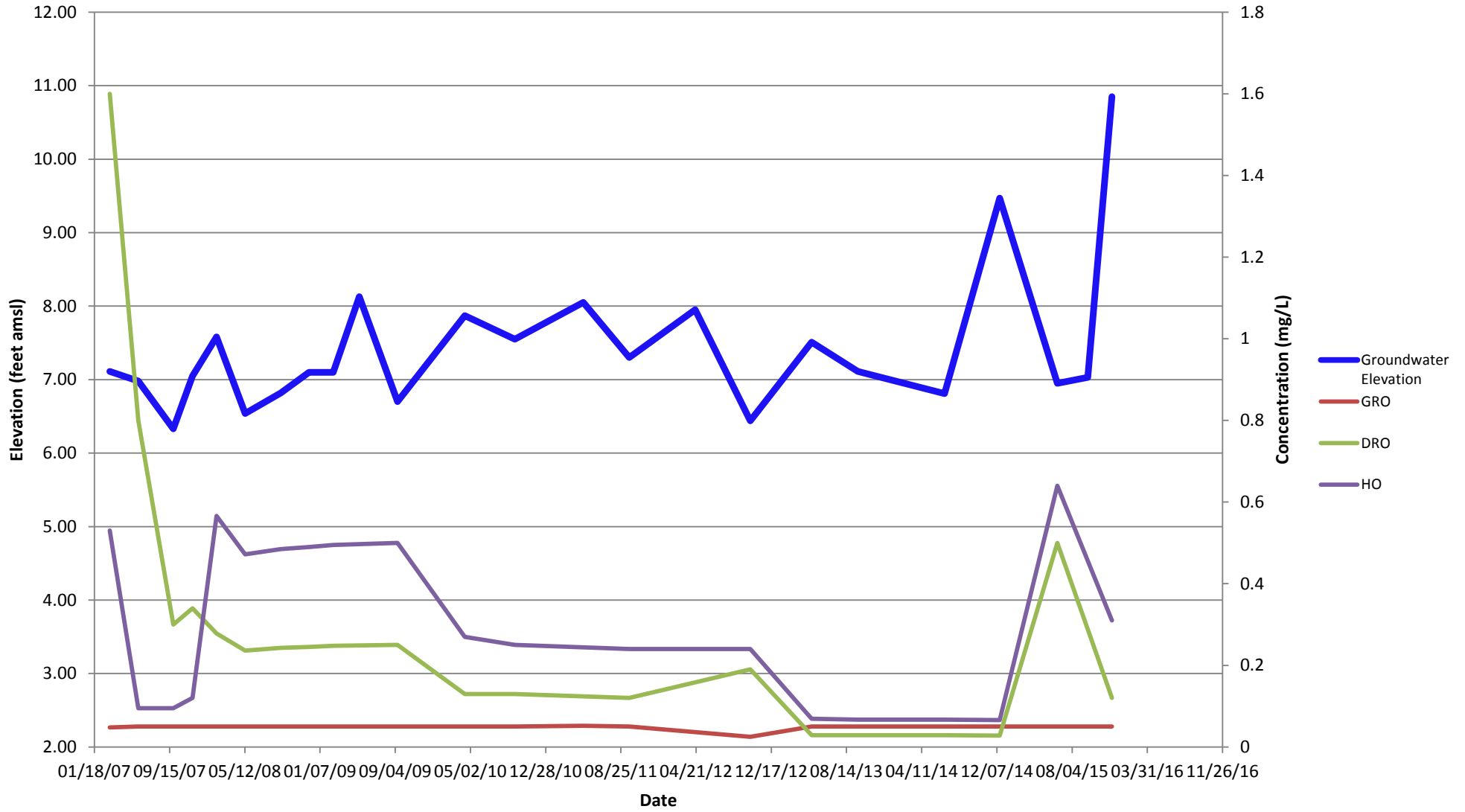
MW-206



MW-207



MW-30



APPENDIX D

Laboratory report and Chain of Custody Forms



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

January 04, 2016

Project: Seattle Terminal

Submittal Date: 12/10/2015
Group Number: 1616274
PO Number: 0015165230
Release Number: JOLITZ
State of Sample Origin: WA

<u>Client Sample Description</u>	<u>Lancaster Labs (LL) #</u>
MW-200 Grab Groundwater	8170388
MW-201 Grab Groundwater	8170389
MW-202 Grab Groundwater	8170390
MW-204 Grab Groundwater	8170391
MW-205 Grab Groundwater	8170392
MW-206 Grab Groundwater	8170393
MW-207 Grab Groundwater	8170394
DUP-1 Grab Groundwater	8170395
Trip Blank NA Water	8170396

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 scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>.

ELECTRONIC COPY TO
ELECTRONIC COPY TO

ARCADIS U.S., Inc.
Arcadis

Attn: Sam Miles

Attn: Rebecca Andresen

Respectfully Submitted,



Megan A. Moeller
Senior Specialist

(717) 556-7261

Sample Description: MW-200 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170388
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 13:10 by RB

Chevron Environmental Mgmt Co

Submitted: 12/10/2015 10:00

BR1 X5139C

Reported: 01/04/2016 08:14

6101 Bollinger Canyon Road
San Ramon CA 94583

ST200

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	
08357	Benzo(a)anthracene	56-55-3	0.017	0.010	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
08357	Chrysene	218-01-9	N.D.	0.010	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
08357	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.	460	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	0.8	0.5	1
02102	Toluene	108-88-3	0.5	0.5	1
02102	Total Xylenes	1330-20-7	N.D.	1.5	1
GC Petroleum ECY 97-602 NWTPH-Dx			ug/l	ug/l	
Hydrocarbons w/Si modified					
12005	DRO C12-C24 w/Si Gel	n.a.	92	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	67	1

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

General 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
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15345WAI026	12/21/2015 20:56	Catherine E Bachman	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15345WAI026	12/12/2015 09:00	Jessica M Velez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15345A53A	12/13/2015 20:39	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	15345A53A	12/13/2015 20:39	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15345A53A	12/13/2015 20:39	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	15345A53A	12/13/2015 20:39	Jeremy C Giffin	1

Sample Description: MW-200 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170388
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 13:10 by RB

Chevron Environmental Mgmt Co

BR1 X5139C

Submitted: 12/10/2015 10:00

6101 Bollinger Canyon Road

Reported: 01/04/2016 08:14

San Ramon CA 94583

ST200

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	153450014A	12/17/2015 12:50	Thomas C Wildermuth	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	153450014A	12/12/2015 08:15	Olivia Arosemena	1

Sample Description: MW-201 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170389
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 11:30 by RB

Chevron Environmental Mgmt Co

Submitted: 12/10/2015 10:00

BR1 X5139C

Reported: 01/04/2016 08:14

6101 Bollinger Canyon Road

San Ramon CA 94583

ST201

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	
08357	Benzo(a)anthracene	56-55-3	0.029	0.010	1
08357	Benzo(a)pyrene	50-32-8	0.011	0.010	1
08357	Benzo(b)fluoranthene	205-99-2	0.013	0.010	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
08357	Chrysene	218-01-9	0.030	0.010	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	0.011	0.010	1
GC Volatiles ECY 97-602 NWTPH-Gx			ug/l	ug/l	
08274	NWTPH-Gx water C7-C12	n.a.	580	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	N.D.	0.5	1
02102	Total Xylenes	1330-20-7	1.6	1.5	1
GC Petroleum ECY 97-602 NWTPH-Dx			ug/l	ug/l	
Hydrocarbons w/Si modified					
12005	DRO C12-C24 w/Si Gel	n.a.	62	28	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	66	1

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

General 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
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15345WAI026	12/21/2015 21:23	Catherine E Bachman	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15345WAI026	12/12/2015 09:00	Jessica M Velez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15345A53A	12/13/2015 22:31	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	15345A53A	12/13/2015 22:31	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15345A53A	12/13/2015 22:31	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	15345A53A	12/13/2015 22:31	Jeremy C Giffin	1

Sample Description: MW-201 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170389
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 11:30 by RB

Chevron Environmental Mgmt Co

BR1 X5139C

Submitted: 12/10/2015 10:00

6101 Bollinger Canyon Road

Reported: 01/04/2016 08:14

San Ramon CA 94583

ST201

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	153450014A	12/17/2015 13:11	Thomas C Wildermuth	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	153450014A	12/12/2015 08:15	Olivia Arosemena	1

Sample Description: MW-202 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170390
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 11:00 by RB

Chevron Environmental Mgmt Co

Submitted: 12/10/2015 10:00

BR1 X5139C

Reported: 01/04/2016 08:14

6101 Bollinger Canyon Road

San Ramon CA 94583

ST202

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	
08357	Benzo(a)anthracene	56-55-3	0.025	0.011	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.011	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.011	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.011	1
08357	Chrysene	218-01-9	0.023	0.011	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.011	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.011	1
GC Volatiles ECY 97-602 NWTPH-Gx			ug/l	ug/l	
08274	NWTPH-Gx water C7-C12	n.a.	64	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 ECY 97-602 NWTPH-Dx modified			ug/l	ug/l	
Hydrocarbons w/Si					
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%.

General 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
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15345WAI026	12/21/2015 21:50	Catherine E Bachman	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15345WAI026	12/12/2015 09:00	Jessica M Velez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15345A53A	12/13/2015 22:59	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	15345A53A	12/13/2015 22:59	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15345A53A	12/13/2015 22:59	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	15345A53A	12/13/2015 22:59	Jeremy C Giffin	1

Sample Description: MW-202 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170390
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 11:00 by RB

Chevron Environmental Mgmt Co

BR1 X5139C

Submitted: 12/10/2015 10:00

6101 Bollinger Canyon Road

Reported: 01/04/2016 08:14

San Ramon CA 94583

ST202

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	153450014A	12/17/2015 13:33	Thomas C Wildermuth	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	153450014A	12/12/2015 08:15	Olivia Arosemena	1

Sample Description: MW-204 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170391
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/09/2015 12:30 by RB

Chevron Environmental Mgmt Co

Submitted: 12/10/2015 10:00

BR1 X5139C

Reported: 01/04/2016 08:14

6101 Bollinger Canyon Road
San Ramon CA 94583

ST204

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
08357	Chrysene	218-01-9	N.D.	0.010	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
08357	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.	1,400	50	1
GC Volatiles SW-846 8021B			ug/l	ug/l	
02102	Benzene	71-43-2	1.0	0.5	1
02102	Ethylbenzene	100-41-4	1.4	0.5	1
02102	Toluene	108-88-3	1.6	0.5	1
02102	Total Xylenes	1330-20-7	3.8	1.5	1
GC Petroleum ECY 97-602 NWTPH-Dx modified			ug/l	ug/l	
Hydrocarbons w/Si					
12005	DRO C12-C24 w/Si Gel	n.a.	190	29	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	69	1

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

General 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
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15345WAI026	12/21/2015 22:18	Catherine E Bachman	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15345WAI026	12/12/2015 09:00	Jessica M Velez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15348A53A	12/15/2015 17:11	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	15348A53A	12/15/2015 17:11	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15348A53A	12/15/2015 17:11	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	15348A53A	12/15/2015 17:11	Jeremy C Giffin	1

Sample Description: MW-204 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170391
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/09/2015 12:30 by RB

Chevron Environmental Mgmt Co

BR1 X5139C

Submitted: 12/10/2015 10:00

6101 Bollinger Canyon Road

Reported: 01/04/2016 08:14

San Ramon CA 94583

ST204

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	153450014A	12/17/2015 13:54	Thomas C Wildermuth	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	153450014A	12/12/2015 08:15	Olivia Arosemena	1

Sample Description: MW-205 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170392
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/09/2015 12:05 by RB

Chevron Environmental Mgmt Co

Submitted: 12/10/2015 10:00

BR1 X5139C

Reported: 01/04/2016 08:14

6101 Bollinger Canyon Road

San Ramon CA 94583

ST205

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
08357	Benzo(a)pyrene	50-32-8	0.012	0.010	1
08357	Benzo(b)fluoranthene	205-99-2	0.011	0.010	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
08357	Chrysene	218-01-9	N.D.	0.010	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	0.022	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 ECY 97-602 NWTPH-Dx modified			ug/l	ug/l	
12005	DRO C12-C24 w/Si Gel	n.a.	N.D.	31	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	72	1

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

General 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
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15345WAI026	12/21/2015 22:45	Catherine E Bachman	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15345WAI026	12/12/2015 09:00	Jessica M Velez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15348A53A	12/15/2015 17:39	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	15348A53A	12/15/2015 17:39	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15348A53A	12/15/2015 17:39	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	15348A53A	12/15/2015 17:39	Jeremy C Giffin	1

Sample Description: MW-205 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170392
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/09/2015 12:05 by RB

Chevron Environmental Mgmt Co

BR1 X5139C

Submitted: 12/10/2015 10:00

6101 Bollinger Canyon Road

Reported: 01/04/2016 08:14

San Ramon CA 94583

ST205

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	153450014A	12/17/2015 14:15	Thomas C Wildermuth	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	153450014A	12/12/2015 08:15	Olivia Arosemena	1

Sample Description: MW-206 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170393
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 09:30 by RB

Chevron Environmental Mgmt Co

Submitted: 12/10/2015 10:00

BR1 X5139C

Reported: 01/04/2016 08:14

6101 Bollinger Canyon Road
San Ramon CA 94583

ST206

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
08357	Chrysene	218-01-9	N.D.	0.010	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
08357	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 ECY 97-602 NWTPH-Dx			ug/l	ug/l	
Hydrocarbons w/Si modified					
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%.

General 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
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15345WAI026	12/21/2015 23:12	Catherine E Bachman	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15345WAI026	12/12/2015 09:00	Jessica M Velez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15348A53A	12/15/2015 18:06	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	15348A53A	12/15/2015 18:06	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15348A53A	12/15/2015 18:06	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	15348A53A	12/15/2015 18:06	Jeremy C Giffin	1

Sample Description: MW-206 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170393
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 09:30 by RB

Chevron Environmental Mgmt Co

BR1 X5139C

Submitted: 12/10/2015 10:00

6101 Bollinger Canyon Road

Reported: 01/04/2016 08:14

San Ramon CA 94583

ST206

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	153530006A	12/29/2015 12:46	Christine E Dolman	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	153530006A	12/20/2015 08:40	Olivia Arosemena	1

Sample Description: MW-207 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170394
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 09:00 by RB

Chevron Environmental Mgmt Co

Submitted: 12/10/2015 10:00

BR1 X5139C

Reported: 01/04/2016 08:14

6101 Bollinger Canyon Road
San Ramon CA 94583

ST207

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
08357	Chrysene	218-01-9	N.D.	0.010	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
08357	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 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%.					

General 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
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15345WAI026	12/21/2015 23:40	Catherine E Bachman	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15345WAI026	12/12/2015 09:00	Jessica M Velez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15348A53A	12/15/2015 18:34	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	15348A53A	12/15/2015 18:34	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15348A53A	12/15/2015 18:34	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	15348A53A	12/15/2015 18:34	Jeremy C Giffin	1

Sample Description: MW-207 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170394
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 09:00 by RB

Chevron Environmental Mgmt Co

BR1 X5139C

Submitted: 12/10/2015 10:00

6101 Bollinger Canyon Road

Reported: 01/04/2016 08:14

San Ramon CA 94583

ST207

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	153530006A	12/29/2015 13:08	Christine E Dolman	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	153530006A	12/20/2015 08:40	Olivia Arosemena	1

Sample Description: DUP-1 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170395
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 by RB

Chevron Environmental Mgmt Co

Submitted: 12/10/2015 10:00

BR1 X5139C

Reported: 01/04/2016 08:14

6101 Bollinger Canyon Road
San Ramon CA 94583

STDU1

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	
08357	Benzo(a)anthracene	56-55-3	0.022	0.010	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
08357	Chrysene	218-01-9	0.022	0.010	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
08357	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.	500	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 ECY 97-602 NWTPH-Dx modified			ug/l	ug/l	
12005	DRO C12-C24 w/Si Gel	n.a.	190	28	1
12005	HRO C24-C40 w/Si Gel	n.a.	270	66	1
The reverse surrogate, capric acid, is present at <1%.					

General 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
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15345WAI026	12/22/2015 00:07	Catherine E Bachman	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15345WAI026	12/12/2015 09:00	Jessica M Velez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15348A53A	12/15/2015 19:02	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	15350A94A	12/18/2015 22:38	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15348A53A	12/15/2015 19:02	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	15350A94A	12/18/2015 22:38	Jeremy C Giffin	1

Sample Description: DUP-1 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170395
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015 by RB

Chevron Environmental Mgmt Co

Submitted: 12/10/2015 10:00

BR1 X5139C

Reported: 01/04/2016 08:14

6101 Bollinger Canyon Road

San Ramon CA 94583

STDU1

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	153530006A	12/29/2015 14:13	Christine E Dolman	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	153530006A	12/20/2015 08:40	Olivia Arosemena	1

Sample Description: Trip Blank NA Water
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8170396
LL Group # 1616274
Account # 11964

Project Name: Seattle Terminal

Collected: 12/08/2015

Chevron Environmental Mgmt Co

Submitted: 12/10/2015 10:00

BR1 X5139C

Reported: 01/04/2016 08:14

6101 Bollinger Canyon Road
San Ramon CA 94583

STTB-

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Volatiles					
08274	NWTPH-Gx water C7-C12	ECY 97-602 n.a.	ug/l N.D.	ug/l 50	1
GC Volatiles					
02102	Benzene	SW-846 8021B 71-43-2	ug/l N.D.	ug/l 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

General 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	15348A53A	12/15/2015 15:20	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	15348A53A	12/15/2015 15:20	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15348A53A	12/15/2015 15:20	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	15348A53A	12/15/2015 15:20	Jeremy C Giffin	1

Quality Control Summary

Client Name: Chevron Environmental Mgmt Co
Reported: 01/04/2016 08:14

Group Number: 1616274

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.

Laboratory Compliance Quality Control

<u>Analysis Name</u>	<u>Blank Result</u>	<u>Blank MDL</u>	<u>Report Units</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>LCS/LCSD Limits</u>	<u>RPD</u>	<u>RPD Max</u>
Batch number: 15345WAI026	Sample number(s): 8170388-8170395							
Benzo(a)anthracene	N.D.	0.010	ug/l	87	85	76-119	1	30
Benzo(a)pyrene	N.D.	0.010	ug/l	86	85	70-120	2	30
Benzo(b)fluoranthene	N.D.	0.010	ug/l	89	90	76-132	0	30
Benzo(k)fluoranthene	N.D.	0.010	ug/l	88	86	69-126	2	30
Chrysene	N.D.	0.010	ug/l	85	84	76-121	0	30
Dibenz(a,h)anthracene	N.D.	0.010	ug/l	85	83	47-136	2	30
Indeno(1,2,3-cd)pyrene	N.D.	0.010	ug/l	84	82	56-129	3	30
Batch number: 15345A53A	Sample number(s): 8170388-8170390							
Benzene	N.D.	0.2	ug/l	104	105	80-120	1	30
Ethylbenzene	N.D.	0.2	ug/l	104	105	80-120	1	30
NWTPH-Gx water C7-C12	N.D.	50.	ug/l	92	97	80-123	5	30
Toluene	N.D.	0.2	ug/l	107	108	80-120	1	30
Total Xylenes	N.D.	0.2	ug/l	110	111	80-120	1	30
Batch number: 15348A53A	Sample number(s): 8170391-8170396							
Benzene	N.D.	0.2	ug/l	103	103	80-120	1	30
Ethylbenzene	N.D.	0.2	ug/l	104	104	80-120	1	30
NWTPH-Gx water C7-C12	N.D.	50.	ug/l	95	98	80-123	3	30
Toluene	N.D.	0.2	ug/l	104	104	80-120	1	30
Total Xylenes	N.D.	0.2	ug/l	109	109	80-120	1	30
Batch number: 15350A94A	Sample number(s): 8170395							
Benzene	N.D.	0.2	ug/l	99	99	80-120	0	30
Ethylbenzene	N.D.	0.2	ug/l	103	103	80-120	0	30
Toluene	N.D.	0.2	ug/l	103	104	80-120	0	30
Total Xylenes	N.D.	0.2	ug/l	106	107	80-120	1	30
Batch number: 153450014A	Sample number(s): 8170388-8170392							
DRO C12-C24 w/Si Gel	N.D.	30.	ug/l	59	63	32-117	7	20
HRO C24-C40 w/Si Gel	N.D.	70.	ug/l					
Batch number: 153530006A	Sample number(s): 8170393-8170395							
DRO C12-C24 w/Si Gel	N.D.	30.	ug/l	46	57	32-117	21*	20
HRO C24-C40 w/Si Gel	N.D.	70.	ug/l					

*- 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: 01/04/2016 08:14

Group Number: 1616274

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: PAHs in waters by SIM
Batch number: 15345WAI026

	Fluoranthene-d10	Benzo(a)pyrene-d12	1-Methylnaphthalene-d10
8170388	93	98	96
8170389	88	98	95
8170390	90	98	99
8170391	92	96	101
8170392	107	99	96
8170393	102	96	94
8170394	107	93	96
8170395	103	96	94
Blank	101	94	97
LCS	95	95	105
LCSD	97	97	106
Limits:	56-134	44-149	52-127

Analysis Name: Method 8021 Water Master
Batch number: 15345A53A

	Trifluorotoluene-P	Trifluorotoluene-F
8170388	108	105
8170389	125*	125
8170390	104	94
Blank	104	115
LCS	103	109
LCSD	102	109
Limits:	51-120	63-135

Analysis Name: Method 8021 Water Master
Batch number: 15348A53A

	Trifluorotoluene-P	Trifluorotoluene-F
8170391	92	99
8170392	103	94
8170393	103	107
8170394	103	104
8170395		120
8170396	102	94
Blank	102	108
LCS	102	108
LCSD	102	108
Limits:	51-120	63-135

Analysis Name: Method 8021 Water Master
Batch number: 15350A94A

	Trifluorotoluene-P
8170395	94
Blank	87
LCS	85

*- 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: 01/04/2016 08:14

Group Number: 1616274

Surrogate Quality Control

LCS D 86
Limits: 51-120

Analysis Name: NWT PH-Dx water w/ 10g Si Gel
Batch number: 153450014A
Orthoterphenyl

8170388	84
8170389	82
8170390	83
8170391	86
8170392	80
Blank	78
LCS	86
LCS D	92

Limits: 50-150

Analysis Name: NWT PH-Dx water w/ 10g Si Gel
Batch number: 153530006A
Orthoterphenyl

8170393	56
8170394	65
8170395	67
Blank	71
LCS	65
LCS D	85

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.

Explanation of Symbols and Abbreviations

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

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

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq 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...

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

December 23, 2015

Project: Seattle Terminal

Submittal Date: 12/08/2015
Group Number: 1615292
PO Number: 0015165230
Release Number: JOLITZ
State of Sample Origin: WA

Client Sample Description

MW-203 Grab Groundwater
MW-30 Grab Groundwater

Lancaster Labs (LL) #

8165075
8165076

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 scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>.

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ARCADIS U.S., Inc.
Arcadis

Attn: Sam Miles

Attn: Rebecca Andresen

Respectfully Submitted,



Megan A. Moeller
Senior Specialist

(717) 556-7261

Sample Description: MW-203 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8165075
LL Group # 1615292
Account # 11964

Project Name: Seattle Terminal

Collected: 12/07/2015 13:00 by RA

Chevron Environmental Mgmt Co

Submitted: 12/08/2015 10:40

BR1 X5139C

Reported: 12/23/2015 14:44

6101 Bollinger Canyon Road
San Ramon CA 94583

ST203

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
08357	Chrysene	218-01-9	N.D.	0.010	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
08357	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 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%.					

General 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
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	15345WAI026	12/18/2015 00:55	Catherine E Bachman	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	15345WAI026	12/12/2015 09:00	Jessica M Velez	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	15345A53A	12/13/2015 15:05	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	15345A53A	12/13/2015 15:05	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15345A53A	12/13/2015 15:05	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	15345A53A	12/13/2015 15:05	Jeremy C Giffin	1

Sample Description: MW-203 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8165075
LL Group # 1615292
Account # 11964

Project Name: Seattle Terminal

Collected: 12/07/2015 13:00 by RA

Chevron Environmental Mgmt Co

BR1 X5139C

Submitted: 12/08/2015 10:40

6101 Bollinger Canyon Road

Reported: 12/23/2015 14:44

San Ramon CA 94583

ST203

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	153450014A	12/17/2015 12:07	Thomas C Wildermuth	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	153450014A	12/12/2015 08:15	Olivia Arosemena	1

Sample Description: MW-30 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8165076
LL Group # 1615292
Account # 11964

Project Name: Seattle Terminal

Collected: 12/07/2015 14:50 by RA

Chevron Environmental Mgmt Co

Submitted: 12/08/2015 10:40

BR1 X5139C

Reported: 12/23/2015 14:44

6101 Bollinger Canyon Road

San Ramon CA 94583

ST030

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					
	ECY 97-602	NWTPH-Dx	ug/l	ug/l	
Hydrocarbons w/Si modified					
12005	DRO C12-C24 w/Si Gel	n.a.	120	30	1
12005	HRO C24-C40 w/Si Gel	n.a.	310	71	1
The reverse surrogate, capric acid, is present at <1%.					

General 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	15345A53A	12/13/2015 16:57	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	15345A53A	12/13/2015 16:57	Jeremy C Giffin	1
01146	GC VOA Water Prep	SW-846 5030B	1	15345A53A	12/13/2015 16:57	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	2	15345A53A	12/13/2015 16:57	Jeremy C Giffin	1
12005	NWTPH-Dx water w/ 10g Si Gel	ECY 97-602 NWTPH-Dx modified	1	153450014A	12/17/2015 14:42	Thomas C Wildermuth	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	153450014A	12/12/2015 08:15	Olivia Arosemena	1

Quality Control Summary

Client Name: Chevron Environmental Mgmt Co
Reported: 12/23/2015 14:44

Group Number: 1615292

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.

Laboratory Compliance Quality Control

<u>Analysis Name</u>	<u>Blank Result</u>	<u>Blank MDL</u>	<u>Report Units</u>	<u>LCS %REC</u>	<u>LCSD %REC</u>	<u>LCS/LCSD Limits</u>	<u>RPD</u>	<u>RPD Max</u>
Batch number: 15345WAI026	Sample number(s): 8165075							
Benzo(a)anthracene	N.D.	0.010	ug/l	87	85	76-119	1	30
Benzo(a)pyrene	N.D.	0.010	ug/l	86	85	70-120	2	30
Benzo(b)fluoranthene	N.D.	0.010	ug/l	89	90	76-132	0	30
Benzo(k)fluoranthene	N.D.	0.010	ug/l	88	86	69-126	2	30
Chrysene	N.D.	0.010	ug/l	85	84	76-121	0	30
Dibenz(a,h)anthracene	N.D.	0.010	ug/l	85	83	47-136	2	30
Indeno(1,2,3-cd)pyrene	N.D.	0.010	ug/l	84	82	56-129	3	30
Batch number: 15345A53A	Sample number(s): 8165075-8165076							
Benzene	N.D.	0.2	ug/l	104	105	80-120	1	30
Ethylbenzene	N.D.	0.2	ug/l	104	105	80-120	1	30
NWTPH-Gx water C7-C12	N.D.	50.	ug/l	92	97	80-123	5	30
Toluene	N.D.	0.2	ug/l	107	108	80-120	1	30
Total Xylenes	N.D.	0.2	ug/l	110	111	80-120	1	30
Batch number: 153450014A	Sample number(s): 8165075-8165076							
DRO C12-C24 w/Si Gel	N.D.	30.	ug/l	59	63	32-117	7	20
HRO C24-C40 w/Si Gel	N.D.	70.	ug/l					

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: PAHs in waters by SIM
Batch number: 15345WAI026

	Fluoranthene-d10	Benzo(a)pyrene-d12	1-Methylnaphthalene-d10
8165075	92	100	112
Blank	101	94	97
LCS	95	95	105
LCSD	97	97	106
Limits:	56-134	44-149	52-127

*- 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: 12/23/2015 14:44

Group Number: 1615292

Surrogate Quality Control

Analysis Name: Method 8021 Water Master
Batch number: 15345A53A

	Trifluorotoluene-P	Trifluorotoluene-F
8165075	103	91
8165076	102	110
Blank	104	115
LCS	103	109
LCSD	102	109
Limits:	51-120	63-135

Analysis Name: NWTPH-Dx water w/ 10g Si Gel
Batch number: 153450014A

	Orthoterphenyl
8165075	77
8165076	78
Blank	78
LCS	86
LCSD	92
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



Lancaster Laboratories

Acct. # 119604 Group # 1615292 Sample # 8165075-76
 For Lancaster Laboratories use only
 Instructions on reverse side correspond with circled numbers.

1 Client Information				4 Matrix				5 Analyses Requested										6 Remarks							
Facility # <u>Seattle Terminal</u>		WBS <u>NWENVPM6001400802</u>		Sediment <input type="checkbox"/> Potable <input type="checkbox"/> Ground <input checked="" type="checkbox"/> NPDES <input type="checkbox"/> Surface <input type="checkbox"/> Oil <input type="checkbox"/> Air <input type="checkbox"/>		Total Number of Containers BTEX + MTBE <input checked="" type="checkbox"/> 8260 <input type="checkbox"/> Naphth 8260 full scan Oxygenates NWTPH GX NWTPH DX <input checked="" type="checkbox"/> Silica Gel Cleanup <input checked="" type="checkbox"/>		Lead <input type="checkbox"/> Total <input type="checkbox"/> Diss. <input type="checkbox"/> Method WAVPH <input type="checkbox"/> WAEPH <input type="checkbox"/>		SCR #: _____ <input type="checkbox"/> Results in Dry Weight <input type="checkbox"/> J value reporting needed <input type="checkbox"/> Must meet lowest detection limits possible for 8260 compounds <input type="checkbox"/> 8021 MTBE Confirmation <input type="checkbox"/> Confirm MTBE + Naphthalene <input type="checkbox"/> Confirm highest hit by 8260 <input type="checkbox"/> Confirm all hits by 8260 <input type="checkbox"/> Run _____ oxy's on highest hit <input type="checkbox"/> Run _____ oxy's on all hits		<u>PAHs by 8260 SIM</u>													
Site Address <u>3001 Elliott Ave.</u>		Lead Consultant <u>ARCADIS</u>																							
Chevron PM <u>Kim Jolitz</u>		Consultant/Office <u>Arcadis</u>																							
Consultant Project Mgr. <u>Rebecca Andresen</u>		Consultant Phone # <u>206-325-5254</u>																							
Sampler <u>Ryan Brauchla / Alex Pink</u>		Grab <input type="checkbox"/>																							
Composite <input type="checkbox"/>		Soil <input type="checkbox"/>																							
2 Sample Identification		3 Collected																							
		Date	Time	Grab	Composite	Soil	Water	Oil	Total Number of Containers	BTEX + MTBE	8260	Naphth	Oxygenates	NWTPH GX	NWTPH DX	Silica Gel Cleanup	Lead	Total	Diss.	Method	WAVPH	WAEPH			
<u>MW - 203</u>		<u>12/7/13</u>	<u>1300</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<u>7</u>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
<u>MW - 30</u>		<u>12/7/13</u>	<u>1450</u>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<u>5</u>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										
7 Turnaround Time Requested (TAT) (please circle)				Relinquished by <u>Ryan Brauchla</u>				Date <u>12-7-13</u>		Time <u>1700</u>		Received by <u>VPS</u>				Date		Time							
<input checked="" type="radio"/> Standard 5 day 4 day 72 hour 48 hour 24 hour				Relinquished by				Date		Time		Received by				Date		Time							
8 Data Package Options (please circle if required)				Relinquished by Commercial Carrier:								Received by				Date		Time							
Type I - Full <input checked="" type="radio"/> Type VI (Raw Data)				UPS <input checked="" type="checkbox"/> FedEx _____ Other _____				<u>Krista Abel</u>				<u>12/8/13</u>		<u>1040</u>											
Temperature Upon Receipt <u>0.3</u> °C										Custody Seals Intact? <input checked="" type="radio"/> Yes <input type="radio"/> No															

Explanation of Symbols and Abbreviations

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

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

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq 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...

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

January 28, 2016

Project: Seattle Terminal

Submittal Date: 01/19/2016
Group Number: 1624467
PO Number: 0015190024
Release Number: JOLITZ
State of Sample Origin: WA

<u>Client Sample Description</u>	<u>Lancaster Labs (LL) #</u>
MW-204 Grab Groundwater	8210812
DUP-1 Grab Groundwater	8210813
Trip Blank NA Water	8210814

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 scopes of accreditation can be viewed at <http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/>.

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ARCADIS U.S., Inc.

Arcadis

Attn: Sam Miles

Attn: Rebecca Andresen

Respectfully Submitted,



Megan A. Moeller
Senior Specialist

(717) 556-7261

Sample Description: MW-204 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8210812
LL Group # 1624467
Account # 11964

Project Name: Seattle Terminal

Collected: 01/15/2016 17:05 by AP

Chevron Environmental Mgmt Co

Submitted: 01/19/2016 08:20

BR1 X5139C

Reported: 01/28/2016 14:34

6101 Bollinger Canyon Road
San Ramon CA 94583

EAW04

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles		SW-846 8270C SIM	ug/l	ug/l	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.010	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.010	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.010	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.010	1
08357	Chrysene	218-01-9	N.D.	0.010	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.010	1
08357	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.	1,400	50	1
GC Volatiles		SW-846 8021B	ug/l	ug/l	
02102	Benzene	71-43-2	0.9	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	1.2	1
02102	Toluene	108-88-3	1.4	0.5	1
02102	Total Xylenes	1330-20-7	3.5	1.5	1
Reporting limits were raised due to interference from the sample matrix.					
GC Petroleum		ECY 97-602 NWTPH-Dx	ug/l	ug/l	
Hydrocarbons w/Si modified					
12005	DRO C12-C24 w/Si Gel	n.a.	840	31	1
12005	HRO C24-C40 w/Si Gel	n.a.	390	73	1
Due to the presence of fuel in the sample extract, capric acid recovery can not be determined.					

General 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
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	16019WAK026	01/21/2016 18:32	Catherine E Bachman	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	16019WAK026	01/20/2016 09:30	Bradley W VanLeuven	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	16017A53B	01/20/2016 16:11	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	16017A53B	01/20/2016 16:11	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16017A53B	01/20/2016 16:11	Marie D Beamenderfer	1

Sample Description: MW-204 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8210812
LL Group # 1624467
Account # 11964

Project Name: Seattle Terminal

Collected: 01/15/2016 17:05 by AP

Chevron Environmental Mgmt Co

BR1 X5139C

Submitted: 01/19/2016 08:20

6101 Bollinger Canyon Road

Reported: 01/28/2016 14:34

San Ramon CA 94583

EAW04

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	160250007A	01/27/2016 01:15	Christine E Dolman	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	160250007A	01/25/2016 21:50	Karen L Beyer	1

Sample Description: DUP-1 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8210813
LL Group # 1624467
Account # 11964

Project Name: Seattle Terminal

Collected: 01/15/2016 by AP

Chevron Environmental Mgmt Co

Submitted: 01/19/2016 08:20

BR1 X5139C

Reported: 01/28/2016 14:34

6101 Bollinger Canyon Road
San Ramon CA 94583

EASD1

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS Semivolatiles SW-846 8270C SIM			ug/l	ug/l	
08357	Benzo(a)anthracene	56-55-3	N.D.	0.012	1
08357	Benzo(a)pyrene	50-32-8	N.D.	0.012	1
08357	Benzo(b)fluoranthene	205-99-2	N.D.	0.012	1
08357	Benzo(k)fluoranthene	207-08-9	N.D.	0.012	1
08357	Chrysene	218-01-9	N.D.	0.012	1
08357	Dibenz(a,h)anthracene	53-70-3	N.D.	0.012	1
08357	Indeno(1,2,3-cd)pyrene	193-39-5	N.D.	0.012	1
GC Volatiles ECY 97-602 NWTPH-Gx			ug/l	ug/l	
08274	NWTPH-Gx water C7-C12	n.a.	1,400	50	1
GC Volatiles SW-846 8021B			ug/l	ug/l	
02102	Benzene	71-43-2	0.9	0.5	1
02102	Ethylbenzene	100-41-4	N.D.	1.1	1
02102	Toluene	108-88-3	1.4	0.5	1
02102	Total Xylenes	1330-20-7	3.5	1.5	1
Reporting limits were raised due to interference from the sample matrix.					
GC Petroleum ECY 97-602 NWTPH-Dx			ug/l	ug/l	
Hydrocarbons w/Si modified					
12005	DRO C12-C24 w/Si Gel	n.a.	210	30	1
12005	HRO C24-C40 w/Si Gel	n.a.	N.D.	70	1
The reverse surrogate, capric acid, is present at <1%.					

General 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
08357	PAHs in waters by SIM	SW-846 8270C SIM	1	16019WAK026	01/21/2016 19:00	Catherine E Bachman	1
10470	BNA Water Extraction (SIM)	SW-846 3510C	1	16019WAK026	01/20/2016 09:30	Bradley W VanLeuven	1
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx	1	16017A53B	01/20/2016 16:39	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	16017A53B	01/20/2016 16:39	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16017A53B	01/20/2016 16:39	Marie D Beamenderfer	1

Sample Description: DUP-1 Grab Groundwater
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8210813
LL Group # 1624467
Account # 11964

Project Name: Seattle Terminal

Collected: 01/15/2016 by AP

Chevron Environmental Mgmt Co

Submitted: 01/19/2016 08:20

BR1 X5139C

Reported: 01/28/2016 14:34

6101 Bollinger Canyon Road

San Ramon CA 94583

EASD1

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	160250007A	01/27/2016 00:11	Christine E Dolman	1
12007	NW Dx water w/ 10g column	ECY 97-602 NWTPH-Dx 06/97	1	160250007A	01/25/2016 21:50	Karen L Beyer	1

Sample Description: Trip Blank NA Water
Seattle Terminal
3001 Elliott Ave - Seattle, WA

LL Sample # WW 8210814
LL Group # 1624467
Account # 11964

Project Name: Seattle Terminal

Collected: 01/15/2016

Chevron Environmental Mgmt Co

Submitted: 01/19/2016 08:20

BR1 X5139C

Reported: 01/28/2016 14:34

6101 Bollinger Canyon Road
San Ramon CA 94583

EASTB

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC Volatiles					
08274	NWTPH-Gx water C7-C12	ECY 97-602 NWTPH-Gx n.a.	ug/l N.D.	ug/l 50	1
GC Volatiles					
02102	Benzene	SW-846 8021B 71-43-2	ug/l N.D.	ug/l 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

General 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	16017A53B	01/20/2016 15:15	Marie D Beamenderfer	1
02102	Method 8021 Water Master	SW-846 8021B	1	16017A53B	01/20/2016 15:15	Marie D Beamenderfer	1
01146	GC VOA Water Prep	SW-846 5030B	1	16017A53B	01/20/2016 15:15	Marie D Beamenderfer	1

Quality Control Summary

Client Name: Chevron Environmental Mgmt Co
Reported: 01/28/2016 14:34

Group Number: 1624467

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: 16019WAK026	Sample number(s): 8210812-8210813	
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: 16017A53B	Sample number(s): 8210812-8210814	
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: 160250007A	Sample number(s): 8210812-8210813	
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: 16019WAK026	Sample number(s): 8210812-8210813								
Benzo(a)anthracene	1.00	0.850	1.00	0.837	85	84	76-119	2	30
Benzo(a)pyrene	1.00	0.860	1.00	0.856	86	86	70-120	0	30
Benzo(b)fluoranthene	1.00	0.949	1.00	0.950	95	95	76-132	0	30
Benzo(k)fluoranthene	1.00	0.856	1.00	0.866	86	87	69-126	1	30
Chrysene	1.00	0.843	1.00	0.848	84	85	76-121	1	30
Dibenz(a,h)anthracene	1.00	0.791	1.00	0.884	79	88	47-136	11	30
Indeno(1,2,3-cd)pyrene	1.00	0.811	1.00	0.856	81	86	56-129	5	30
	ug/l	ug/l	ug/l	ug/l					
Batch number: 16017A53B	Sample number(s): 8210812-8210814								
Benzene	20	20.46	20	20.42	102	102	80-120	0	30
Ethylbenzene	20.1	20.57	20.1	20.67	102	103	80-120	0	30
NWTPH-Gx water C7-C12	1100	1005.93	1100	978.04	91	89	80-123	3	30
Toluene	20.2	20.57	20.2	20.66	102	102	80-120	0	30
Total Xylenes	60.2	64.1	60.2	64.48	106	107	80-120	1	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: 01/28/2016 14:34

Group Number: 1624467

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: 160250007A DRO C12-C24 w/Si Gel	1600	890.07	1600	977.92	56	61	32-117	9	20
Sample number(s): 8210812-8210813									

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: PAHs in waters by SIM
Batch number: 16019WAK026

	Fluoranthene-d10	Benzo(a)pyrene-d12	1-Methylnaphthalene-d10
8210812	90	90	112
8210813	84	86	107
Blank	85	83	81
LCS	93	89	85
LCSD	91	90	88
Limits:	56-134	44-149	52-127

Analysis Name: Method 8021 Water Master
Batch number: 16017A53B

	Trifluorotoluene-P	Trifluorotoluene-F
8210812	90	104
8210813	90	103
8210814	99	106
Blank	100	109
LCS	99	102
LCSD	99	102
Limits:	51-120	63-135

Analysis Name: NWTPH-Dx water w/ 10g Si Gel
Batch number: 160250007A

	Orthoterphenyl
8210812	89
8210813	83
Blank	70
LCS	77
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.

Client: Seattle Terminal

Delivery and Receipt Information

Delivery Method:	<u>UPS</u>	Arrival Timestamp:	<u>01/19/2016 8:20</u>
Number of Packages:	<u>1</u>	Number of Projects:	<u>1</u>
State/Province of Origin:	<u>WA</u>		

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 \geq 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 Krista Abel (3058) at 08:38 on 01/19/2016

Samples Chilled Details

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

<u>Cooler #</u>	<u>Thermometer ID</u>	<u>Corrected Temp</u>	<u>Therm. Type</u>	<u>Ice Type</u>	<u>Ice Present?</u>	<u>Ice Container</u>	<u>Elevated Temp?</u>
1	DT146	0.7	DT	Wet	Y	Bagged	N

Explanation of Symbols and Abbreviations

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

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

- B - Analyte detected in the blank
- C - Result confirmed by reanalysis
- E - Concentration exceeds the calibration range
- J (or G, I, X) - estimated value \geq 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...

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.

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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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