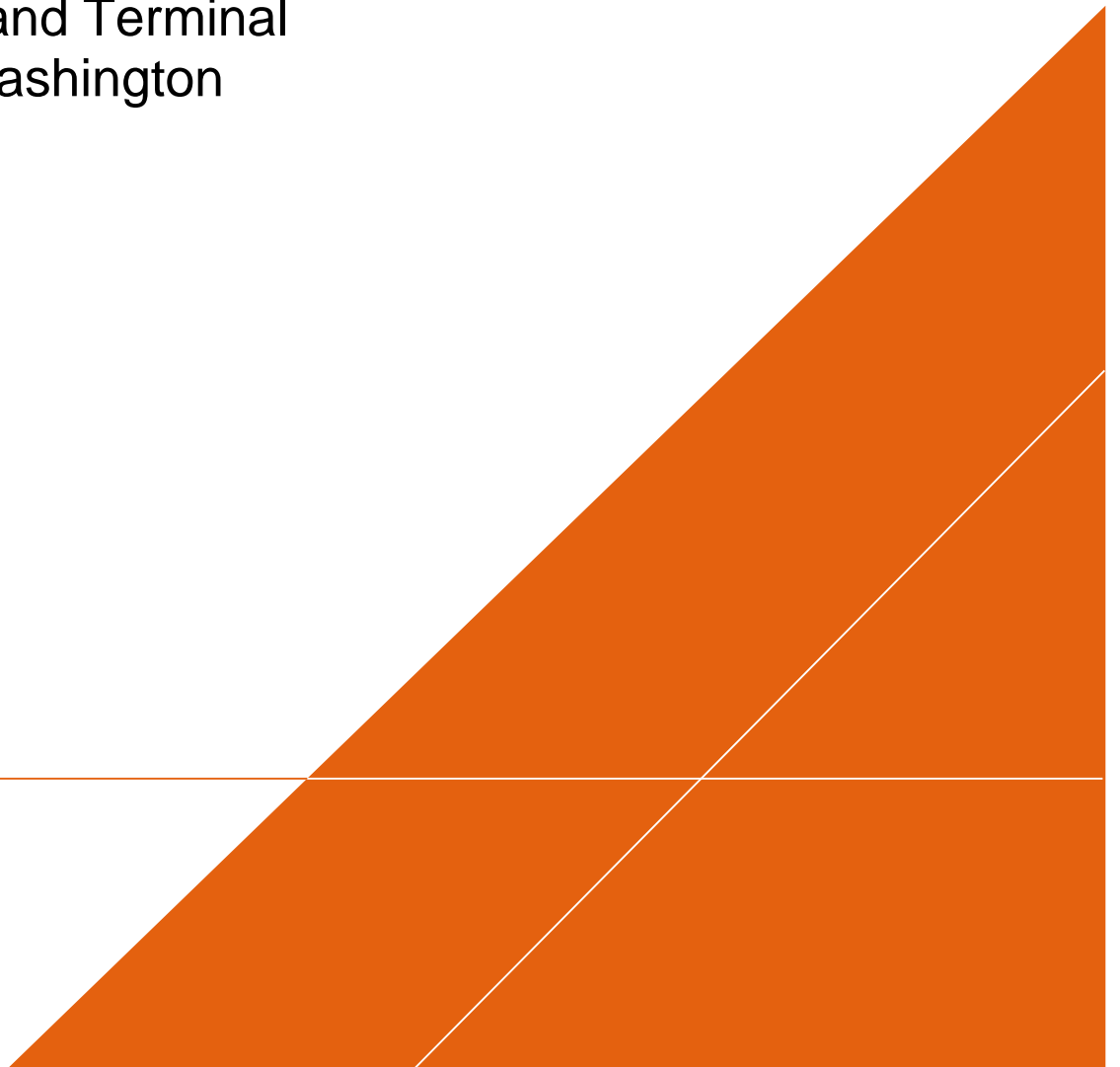


Kinder Morgan Liquids Terminals, LLC

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Harbor Island Terminal
Seattle, Washington



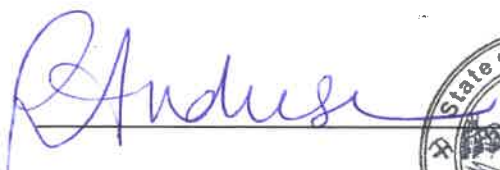
**2019 ANNUAL
GROUNDWATER
MONITORING REPORT**



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1 INTRODUCTION

Arcadis U.S., Inc. (Arcadis) has prepared this report to present the results of the first and second semiannual 2019 groundwater monitoring events at the Kinder Morgan Liquids Terminals, LLC Harbor Island Terminal (site). The site is located at 2720 13th Avenue Southwest in Seattle, Washington. A site location map is presented on **Figure 1**.

Groundwater monitoring events were completed between April 2 and April 3, 2019 and October 1 and October 4, 2019, in accordance with the *Compliance Monitoring Plan* (KHM 1999) and associated addenda, included as **Appendix A**. Remedial performance monitoring was performed monthly in 2019.

1.1 Site Description

The site is a 14-acre bulk petroleum storage facility located east of 13th Avenue Southwest on Harbor Island in Seattle, King County, Washington. The site has operated as a bulk petroleum storage terminal since 1944 and is surrounded by industrial facilities, including shipyards, bulk petroleum storage facilities, and the Port of Seattle. The topography of the site is relatively flat with an elevation of approximately 9 to 16 feet above the North American Vertical Datum of 1988 (NAVD 88). A site plan is presented on **Figure 2**.

The site consists of five distinct operational yards (A, B, C, D, and E). Site features include aboveground storage tanks (ASTs) containing refined petroleum products in the B and C Yards. The A Yard, located in the southern portion of the site, consists of the terminal office, a truck loading rack, and other support structures. The B Yard, located north of the A Yard and south of the D Yard, contains 15 ASTs and associated piping and is surrounded by a 15-foot-high concrete wall. The D Yard, located north of the B Yard, is composed of a driveway and a maintenance building and is the primary corridor for site utilities. The C Yard, located north of the D Yard and south of the E Yard, contains six ASTs and associated piping and is surrounded by a 15-foot-high concrete wall. The E Yard, located at the north end of the site, is leased to other parties and consists of an office building and vehicle storage facilities.

1.2 Regulatory Background

Site-specific cleanup levels (SSCLs) for groundwater were established by the Washington Department of Ecology (Ecology) as part of Consent Decree 00-2-07760-2SEA (CD [Ecology 2000]). The groundwater SSCLs were established on the basis that site groundwater is, and is anticipated to remain, non-potable. As such, the SSCLs were derived to meet surface water standards that are protective of aquatic organisms in the Duwamish River and Elliott Bay. The *Cleanup Action Plan* (Exhibit B of the CD [Ecology 1999]) outlines site-specific constituents of concern (COCs) and applicable cleanup levels. The SSCLs for each COC are as follows:

Constituent	Cleanup Level
Benzene	0.071 mg/L
Ethylbenzene	29.0 mg/L
Lead	0.0058 mg/L
Toluene	200 mg/L
GRO	1.0 mg/L
DRO	10 mg/L
HO	10 mg/L
Product	No sheen

mg/L = milligrams per liter

The *Compliance Monitoring Plan* (Exhibit F of the CD [KHM 1999]) provides groundwater monitoring objectives for site compliance. Groundwater monitoring compliance requirements have been amended in the *Site-Wide Groundwater Compliance Monitoring Plan - Proposed Reduced Monitoring* (Delta 2007), *Technical Revision Request – Low Flow Groundwater Sampling* (Delta 2008), *Revised Site Groundwater Monitoring Plan* (Arcadis 2014), and the *Groundwater Analytical Reduction Request* (Arcadis 2016). Groundwater monitoring compliance documents and approvals are included in **Appendix A**. The compliance status, most recent detections of COCs above SSCLs, and most recent separate phase hydrocarbons (SPH) observations in monitoring wells at the site are presented in **Table 1**.

1.3 Remedial Sulfate Application

In July 2013, gypsum and Epsom salt were applied to the ground surface in the B and D Yards to enhance anaerobic biological oxidation (ABOx) of residual petroleum hydrocarbons in the soil and groundwater by using sulfate as a terminal electron acceptor, as summarized in the *B and D Yards Groundwater Remediation – Engineering Design Report* (Arcadis 2012). Approximately 264,000 pounds of gypsum and 42,000 pounds of Epsom salt were applied across 30,000 square feet (SF) of permeable soil to supply sulfate to the vadose zone soils and groundwater.

Supplemental applications of Epsom salt in targeted areas of the B, C, and D Yards were conducted in accordance with the *B and D Yards Groundwater Remediation – Engineering Design Report* (Arcadis 2012) in September 2015, October 2016, April 2018, November 2018, and December 2019. The scope and timing of supplemental sulfate applications is informed by performance monitoring, which includes analytical results from semiannual groundwater monitoring and periodic measurements of groundwater conductivity using a water quality meter. To maintain the target sulfate concentration of 900 mg/L in groundwater, 16,000 pounds of Epsom salt were dispersed across approximately 19,650 SF in September 2015 and 15,000 pounds of Epsom salt were dispersed across 17,500 SF in October 2016. In April 2018, 10,000 pounds of Epsom salt were applied in the B, C and D Yards. An additional 5,000 pounds of Epsom salt were applied in November 2018 and focused on the C and D Yard application area

near MW-19. In December 2019, approximately 14,400 pounds of Epsom salt were applied in the B, C, and D Yards. The remedial sulfate application extents are presented on **Figure 3**.

2 SCOPE OF WORK

Semiannual groundwater monitoring, remedial sulfate application, and remedial performance monitoring activities were completed in 2019, as described below.

2.1 Semiannual Groundwater Monitoring Events

The 2019 semiannual groundwater monitoring events were performed in accordance with the groundwater monitoring compliance requirements presented in Section 1.2 and included as **Appendix A**. The scope of work for the 2019 semiannual monitoring events included:

- Measuring depth to water and SPH (where present) in 51 monitoring wells.
- Collecting field parameters, including dissolved oxygen (DO), oxygen-reduction potential (ORP), pH, temperature, turbidity, and specific conductivity, from:
 - 19 wells in the first semiannual groundwater monitoring event; and
 - 40 wells in the second semiannual groundwater monitoring event.
- Purging monitoring wells using low-flow sampling methods and collecting groundwater samples from:
 - 19 monitoring wells for the first semiannual groundwater monitoring event; and
 - 40 wells in the second semiannual groundwater monitoring event.
- Submitting groundwater samples to Pace National Center for Testing and Innovation (Pace) of Mount Juliet, Tennessee, for laboratory analyses.

Monitoring wells were purged using low-flow methodology with a peristaltic pump and groundwater quality field parameters were measured using an Aqua TROLL 600 Multiparameter Sonde. Monitoring wells were sampled after depth to water, pH, specific conductivity, DO, ORP, turbidity and temperature had stabilized in accordance with the *Technical Revision Request – Low-Flow Groundwater Sampling* (Delta 2008). Groundwater elevation data are presented in **Table 2** and groundwater monitoring field data sheets are included in **Appendix B**.

Groundwater samples were collected in laboratory-provided bottles, placed in coolers with ice, and submitted to Pace under standard chain-of-custody protocol. Groundwater samples were analyzed for some or all of the following constituents in accordance with the *Groundwater Analytical Reduction Request* (Arcadis 2016) included in **Appendix A**:

- Gasoline Range Organics (GRO) by Northwest Method NWTPH-Gx.
- Diesel Range Organics and Heavy Oil by Northwest Method NWTPH-Dx.
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX, collectively) by United States Environmental Protection Agency (EPA) Method 8260B.
- Dissolved lead by EPA Method 200.8.

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- Total lead by EPA Method 6020A.
- Sulfate by EPA Method 300.0.

During the second semiannual groundwater monitoring event, groundwater samples collected from five monitoring wells located in the 13th Avenue Southwest area were also analyzed for the following geochemical parameters:

- Methane by EPA Method RSK-175.
- Ferrous iron by Standard Method 3500Fe B-2011.
- Nitrate by EPA Method 353.2.
- Sulfide by Standard Method 4500S2 D-2011.

Blind duplicate samples were collected from MW-7 and MW-23 in the first semiannual groundwater monitoring event and from MW-7 and MW-21 in the second groundwater monitoring event for quality assurance purposes. Laboratory analytical reports and chain-of-custody documentation are included as **Appendix C**.

2.2 Supplemental Sulfate Application

A supplemental application of Epsom salt was completed on December 4 and 5, 2019 as approved by Ecology on November 27, 2019. During the application, 14,400 pounds of Epsom salt were applied to the ground in the B, C and D Yards at a rate of approximately 1 pound per square foot. Application areas were similar to previous events and shown on **Figure 3**.

2.3 Remedial Performance Monitoring and Irrigation

Performance monitoring of the remedial application in the B, C, and D Yards has been performed on an approximately monthly basis since the initial remedial sulfate application was completed in July 2013. Specific conductivity was measured at nine monitoring wells within the sulfate application area (12, MW-7, MW-19, and TMW-1 through TMW-6) using a multi-parameter water quality meter. Field measurements of specific conductivity have been correlated to groundwater sulfate concentrations to monitor remedial performance between semiannual monitoring events to obtain more frequent sulfate concentration information.

Precipitation and infiltration are the primary mechanism for delivering sulfate to the groundwater to support ABOx reactions. The irrigation system was used to supplement natural rainfall during the summer, when precipitation is less frequent, to drive dissolution of Epsom salt and gypsum on the ground surface and infiltration of sulfate to the groundwater. Irrigation in the B, C and D Yards was set to three times a week for a 3.5-hour duration per day with a 12:30 AM start time from July 1, 2019 through October 4, 2019. The system was shut off and winterized prior to the supplemental sulfate application in December 2019 and will be restarted in late spring or early summer 2020, depending on natural precipitation rates. Monthly precipitation, including irrigation and natural rainfall, are shown on **Graphs 1** through **10**.

3 SUMMARY OF RESULTS

Sample analytical results and field measurements collected during the first and second semiannual 2019 groundwater monitoring events are presented below.

3.1 Water Level Measurements

Depth-to-groundwater in monitoring wells was measured on April 2, 2019 and October 1, 2019 using electronic water level meters and an oil/water interface probe. Monitoring well A-23R could not be accessed during the first semiannual monitoring event due to accessibility issues. During the second semiannual monitoring event, A-23R was gauged on October 3, 2019 when it was accessed for sampling. Groundwater elevations were calculated using depth-to-water measurements and wellhead survey elevations obtained in July 2003. Depth-to-groundwater for the April 2, 2019 gauging event ranged from 1.95 feet (monitoring well 12) to 10.23 feet (A-27) with groundwater elevations (relative to NAVD 88) ranging from 5.98 feet (MW-25) to 10.11 feet (A-8). Depth-to-groundwater during the October 1, 2019 monitoring event ranged from 2.09 (monitoring well 12) to 10.86 (A-27) with groundwater elevations (relative to NAVD 88) ranging from 5.51 feet (MW-25) to 7.85 feet (MW-19). Groundwater direction is generally to the south from the D Yard toward the A Yard with an approximate hydraulic gradient ranging from 0.003 to 0.004 foot per foot, which is consistent with previous monitoring events. The groundwater elevation data are presented in **Table 2**, and potentiometric contour maps for the two semiannual groundwater monitoring events are presented on **Figures 4A** and **4B**.

3.2 Passive Separate Phase Hydrocarbon Recovery

Monitoring wells A-6 and A-16 were gauged using an oil/water interface probe on January 11, 2019 (first quarter of 2019). SPH was not observed in either well and absorbent socks were not placed in A-16 or A-6. SPH was not observed in monitoring wells A-6 and A-16 during the first semiannual groundwater monitoring event on April 2, 2019 and no socks were installed.

During the second semiannual groundwater monitoring event (October 1, 2019), SPH was observed in monitoring well A-6 at a thickness of 0.06 foot and in A-16 at a thickness of 0.24 foot. Absorbent socks were installed in A-6 and A-16 following gauging and the observation of measurable SPH.

Monitoring wells A-6 and A-16 were gauged on December 26, 2019. SPH was not observed during gauging but was observed on the absorbent socks and new socks were installed. Monitoring wells A-6 and A-16 will be gauged in the first quarter of 2020 consistent with Ecology's approval of the *Revised Site Groundwater Monitoring Plan* (Ecology 2014).

3.3 Groundwater Analytical and Geochemical Results

Concentrations of COCs exceeding SSCLs in groundwater samples collected from monitoring wells at the site during 2019 are summarized below:

COC	Number of Wells Exceeding SSCL	Number of Wells Analyzed	Maximum Concentration (mg/L)	Location of Maximum Concentration
First Semiannual Groundwater Monitoring Event				
GRO	7	19	13.6	MW-24
Benzene	3	19	0.719	MW-24
Second Semiannual Groundwater Monitoring Event				
GRO	10	40	11.6	TMW-6
Benzene	3	40	0.581	MW-24
Total Lead	2	19	0.00951	12

During the second semiannual 2019 groundwater monitoring event, groundwater samples from five monitoring wells (A-27, A-28R, TMW-B1, MW-23, and MW-24) were analyzed for geochemical parameters to monitor natural attenuation along 13th Avenue Southwest:

- Methane was detected in all five monitoring wells at concentrations ranging from 2.65 mg/L (A-27) to 19.6 mg/L (MW-24).
- Ferrous iron was detected in three monitoring wells at concentrations ranging from 14.9 mg/L (MW-23) to 53.0 mg/L (MW-24).
- Sulfate was detected in one monitoring well at a concentration of 6.65 mg/L (A-27).

Nitrate and sulfide were analyzed, but not detected in any groundwater samples. Groundwater analytical results are presented in **Table 3**. Groundwater geochemical data, including field measurements, are presented in **Table 4**. Laboratory analytical reports and chain-of-custody documentation are included in **Appendix C**, historical groundwater elevations are included in **Appendix D**, and historical groundwater analytical results are included in **Appendix E**.

3.4 Remedial Performance Results

During the semiannual 2019 monitoring events, samples from 10 monitoring wells (11, 12, MW-7, MW-19, and TMW-1 through TMW-6) within the target remedial application areas were analyzed for sulfate and compared to the target sulfate concentration to support ABOx of petroleum hydrocarbons (900 mg/L).

During the first semiannual event, sulfate concentrations in the sulfate application area ranged from 254 mg/L in well 12 to 1,480 mg/L in well TMW-2. During the second semiannual event, sulfate concentrations in the sulfate application area ranged from 130 mg/L in MW-19 to 1,370 mg/L in well TMW-2. Sulfate concentrations greater than the target of 900 mg/L were present in:

- Monitoring wells TMW-2, TMW-3, and MW-19 during the first event.
- Monitoring well TMW-2 during the second event.

Sulfate concentrations lower than the target concentration of 900 mg/L were present in:

- Monitoring wells 11, 12, MW-7, TMW-1, TMW-4, TMW-5, and TMW-6 during the first event.
- Monitoring wells 11, 12, MW-7, MW-19, TMW-1, TMW-3, TMW-4, TMW-5 and TMW-6 during the second event.

Groundwater from MW-9 and A-27 was also analyzed for sulfate to evaluate downgradient migration of sulfate from the remedial application area. Sulfate concentrations detected in MW-9 during the first and second semiannual monitoring events were 5.20 and 6.77 mg/L, respectively. Sulfate concentrations detected in A-27 during the first and second semiannual monitoring events were 292 and 6.65 mg/L, respectively. Groundwater analytical results for geochemical parameters are presented in **Table 4**. Constituent trend graphs for the performance monitoring of wells within the sulfate application area are presented on **Graphs 1** through **10**. Laboratory analytical reports and chain-of-custody documentation are included in **Appendix C**. Historical groundwater analytical results are included in **Appendix E**.

3.5 Data Validation Results

Analytical data produced as part of the first and second semiannual 2019 groundwater monitoring events (sample delivery groups L1086418, L1146815 and L1146865 [**Appendix C**]) were reviewed for completeness and technical compliance. All field samples from both semiannual monitoring events were analyzed within their specified hold times with the exception of the samples analyzed for ferrous iron by Method 3500-Fe B-2011. Ferrous iron is considered “out of hold” as received at the laboratory in accordance with the method, but the results are minimally impacted. Reported concentrations of ferrous iron should be considered minimum values. Two field duplicates, DUP-1 (MW-23) and DUP-2 (MW-7) during the first event, and DUP-1 (MW-21) and DUP-2 (MW-7) during the second event, were collected and analyzed. The relative percent differences between the parent and the duplicates were acceptable at less than 30%, with the exception of GRO in the duplicate from MW-7 during the first semiannual event. Quality control samples analyzed by the laboratory were within established acceptance criteria.

4 COMPLIANCE AND CONCLUSIONS

4.1 A Yard

Monitoring well A-6 and A-16 are historically used as an SPH recovery point. Passive recovery of SPH using absorbent socks is conducted in accordance with the procedure outlined in the Ecology email approval of the *Revised Site Groundwater Monitoring Plan* (Arcadis 2014), which requires quarterly gauging and sock replacement for four quarters following the observance of sheen or measurable SPH during a semiannual monitoring event (Ecology 2014).

During the second semiannual event, SPH was observed in A-6 and A-16 at 0.06 foot and 0.24 foot, respectively. Absorbent socks were placed in A-6 and A-16 to passively recover SPH. The wells will continue to be gauged on a quarterly basis to monitor for SPH in accordance with the *Revised Site Groundwater Monitoring Plan* (Arcadis 2014) and absorbent socks will be deployed as needed when SPH is observed.

Groundwater samples were collected from within the A Yard at one monitoring well (A-5) during the first groundwater monitoring event and five monitoring wells (A-5, A-8, A-10, A-14R, and MW-25) during the

second groundwater monitoring event. COCs in groundwater samples collected from the A Yard monitoring wells have been below SSCLs since 2012. There were no exceedances in the A Yard in 2019. Analytical results are presented on **Figures 5A** and **Figure 5B** and presented in **Table 3**.

4.2 B, C and D Yards

4.2.1 Remedial Application Area

Concentrations of COCs during the first and second semiannual 2019 groundwater monitoring events in the 10 performance monitoring wells within the sulfate application area (11, 12, MW-7, MW-19, and TMW-1 through TMW-6) were generally consistent with or lower than concentrations observed during previous groundwater monitoring events. Concentrations of COCs were below SSCLs for all constituents in four performance monitoring wells (11, TMW-1, TMW-2, and TMW-3) for both monitoring events.

Concentrations of COCs in the samples collected from MW-7 and MW-19 in the first groundwater monitoring event, and the sample collected from TMW-5 in the second event, were below SSCLs. Six performance monitoring wells (12, MW-7, MW-19, TMW-4, TMW-5, and TMW-6) had GRO concentrations exceeding the SSCL during one or both of the 2019 monitoring events and there were no BTEX exceedances within the sulfate application area. Analytical results of the 10 performance monitoring wells within the remedial footprint for the first and second groundwater monitoring events are presented on **Figures 6A** and **6B**, respectively. Trend graphs showing the remedial performance and historical concentrations of COCs and sulfate are presented on **Graphs 1** through **10**. In general, COC concentrations in the remedial application area demonstrate stable to decreasing trends.

Sulfate concentrations in groundwater were above the target threshold of 900 mg/L, which is supportive of ABOx of petroleum hydrocarbons, at monitoring wells TMW-2, TMW-3, and MW-19 during the first groundwater monitoring event. Sulfate concentrations were below the target threshold of 900 mg/L at monitoring wells 11, 12, MW-7, TMW-1, TMW-4, TMW-5, and TMW-6. During the second groundwater monitoring event, well TMW-2 exceeded 900 mg/L of sulfate while monitoring wells 11, 12, MW-7, MW-19, TMW-1, and TMW-3 through TMW-6 were below the target concentration. A supplemental application of Epsom salt was completed in December 2019 to replenish sulfate in the B, C, and D Yards, as described in Section 2.2.

During the second semiannual 2019 groundwater monitoring event, total lead was detected in monitoring well 12 and MW-3 at concentrations that exceeded the SSCL. Lead impacts at the site have been attributed to former offsite smelting operations and the former smelter located on Harbor Island. Lead impacted shallow soil removal from the B and C Yards was completed in 2002 (KHM 2002). Residual total lead and dissolved lead impacts to groundwater are monitored in accordance with the CD (Ecology 2000).

4.2.2 Non-Remedial Application Area

There are seven monitoring wells in the B, C and D Yards (MW-3, MW-5, MW-8, MW-9, MW-14, MW-20, and MW-21) that are sampled either annually or semiannually and are not located within the remedial application area. Concentrations of all site COCs were below SSCLs in six of the seven monitoring wells and are in compliance with the requirements of the CD (Ecology 2000). Concentrations of total lead measured in monitoring well MW-3 exceeded the SSCL during the second semiannual 2019 groundwater

monitoring event at a concentration 0.00743 mg/L. SPH has not been observed in the B Yard since April 2014, the C Yard since gauging was initiated in 2000 (KHM 2001), or the D yard since May 2002 (KHM 2002). Analytical results for both semiannual groundwater monitoring events in non-remedial application area wells are presented on **Figures 5A and 5B** and in **Table 3**. Analytical results for select monitoring wells with recent or historical concentrations exceeding SSCLs (MW-5, MW-8 and MW-14) are presented on **Graphs 11 through 13**.

4.3 E Yard

Groundwater sampling is conducted annually in one well (MW-1) located within the E Yard. Concentrations of site COCs have been below SSCLs in the E Yard since 2002.

4.4 13th Avenue Southwest Monitored Natural Attenuation Area

Concentrations of COCs in wells within the 13th Avenue Southwest monitored natural attenuation (MNA) area (A-21, A-27, A-28R, TMW-B1, MW-23, and MW-24) are consistent with historical concentrations, which show generally stable to decreasing trends.

In the 13th Avenue Southwest MNA area, concentrations of GRO in 3 of the wells sampled in the first semiannual monitoring event and 5 of the wells sampled in the second semiannual monitoring event exceeded the SSCL. Benzene concentrations exceeded the SSCL in 3 of the wells sampled during the first semiannual monitoring event and 3 of the wells sampled during the second semiannual monitoring event. Constituent trend graphs for monitoring wells exceeding SSCLs are presented on **Graphs 14 through 18**.

Concentrations of geochemical parameters in the 13th Avenue Southwest MNA wells are consistent with previous groundwater monitoring events. Concentrations of DO in wells A-27, A-28R, TMW-B1, MW-23, and MW-24 are between 0.08 mg/L and 0.76 mg/L, indicating that groundwater conditions are typically anaerobic. Concentrations of methane and ferrous iron in wells A-27, A-28R, TMW-B1, MW-23, and MW-24 are elevated compared to wells without detectable petroleum impacts.

These data demonstrate that natural attenuation is occurring in wells located in the 13th Avenue Southwest MNA area and suggest that anaerobic biological degradation is occurring through iron reduction and methanogenesis (Ecology 2005). These indicators are consistent with the conclusion from the fourth Five-Year Review Report for Harbor Island (EPA 2015) that natural attenuation continues to result in the reduction of COCs in the 13th Avenue area and that the lateral extents of the groundwater impacts are stable or shrinking.

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TABLES



Table 1
Monitoring Well Compliance Status
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Location	Date of Last SPH or Sheen Observation	Date of Last Exceedance of SSCL	Constituent(s)	Comments
A-4	A Yard	05/23/11	--	--	SPH Skimmer
A-5	A Yard	09/15/03	03/28/18	GRO	
A-6	A Yard	10/01/19	--	--	SPH Skimmer, EFR, PR
A-8	A Yard	11/18/03	--	--	
A-10	A Yard	05/10/04	06/07/05	DRO	
A-11	A Yard	09/19/05	--	--	
A-12	A Yard	03/08/05	--	--	
A-14R	A Yard	09/19/05	12/14/04	Total Lead	
A-16	A Yard	10/01/19	--	--	SPH, EFR, PR
A-18	A Yard	09/19/05	--	--	
A-19	13th Ave	09/11/06	--	--	EFR
A-20	13th Ave	09/19/05	05/25/11	GRO	
A-21	13th Ave	05/20/02	08/25/12	GRO	
A-22R	13th Ave	10/12/05	05/25/11	GRO, Benzene	EFR
A-23R	13th Ave	Never	12/11/07	Benzene	
A-25	A Yard	11/15/10	06/16/11	GRO, Benzene	
A-26R	13th Ave	09/19/05	05/25/11	GRO, Benzene	EFR
A-27	13th Ave	12/18/00	10/04/19	GRO	
A-28R	13th Ave	Never	10/04/19	GRO, Benzene	
11	B Yard	Never	--	--	ABOX
12	B Yard	03/28/17	10/03/19	GRO, Total Lead	ABOX
MW-1	E Yard	Never	11/05/02	Total Lead	
MW-2	13th Ave	Never	06/08/10	Total Lead	
MW-3	C Yard	Never	10/02/19	Total Lead	
MW-4	11th Ave	12/13/04	09/21/05	DRO	
MW-5	D Yard	Never	04/09/13	Total Lead	
MW-6	13th Ave	12/18/00	12/13/05	GRO	
MW-7	B Yard	11/16/09	10/03/19	GRO	ABOX
MW-8	B Yard	05/20/02	10/12/17	Total Lead	
MW-9	B Yard	05/23/11	10/04/18	Total Lead	
MW-12R	11th Ave	Never	08/26/04	Benzene	
MW-14	D Yard	Never	10/11/16	GRO	
MW-16	13th Ave	Never	--	--	
MW-17	13th Ave	Never	--	--	
MW-18	13th Ave	Never	06/08/06	GRO, Benzene	
MW-19	D Yard	05/20/02	10/02/19	GRO	ABOX
MW-20	C Yard	Never	09/25/01	Benzene	
MW-21	B Yard	03/01/12	09/22/09	GRO	
MW-22	13th Ave	Never	11/05/02	Benzene	
MW-23	13th Ave	08/29/11	10/04/19	GRO, Benzene	EFR
MW-24	13th Ave	08/29/11	10/04/19	GRO, Benzene	EFR
MW-25	A Yard	02/24/04	09/20/05	Total Lead	
SH-02R	11th Ave	Never	09/16/03	Total Lead	
SH-04	13th Ave	Never	--	--	
SH-05	11th Ave	Never	12/20/00	Total Lead	
SH-05R	11th Ave	11/18/03	12/15/04	DRO	
MW-07R	11th Ave	Never	09/13/06	Total Lead	
TMW-B1	13th Ave	Never	10/04/19	GRO	
TMW-1	D Yard	Never	09/29/15	GRO	ABOX

Table 1
Monitoring Well Compliance Status
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Location	Date of Last SPH or Sheen Observation	Date of Last Exceedance of SSCL	Constituent(s)	Comments
TMW-2	D Yard	Never	--	--	ABOX
TMW-3	B Yard	Never	10/04/18	GRO	ABOX
TMW-4	B Yard	Never	10/03/19	GRO	ABOX
TMW-5	B Yard	Never	04/03/19	GRO	ABOX
TMW-6	B Yard	Never	10/02/19	GRO	ABOX

Notes:

Shading indicates SPH observance or SSCL exceedance in 2019

-- = No data/not applicable

ABOX = Anaerobic biological oxidation

DRO = Diesel range organics

EFR = Enhanced fluids recovery, pilot test

GRO = Gasoline range organics

PR = Passive recovery absorbent sock

SSCL = Site-specific cleanup level

SPH = Separate phase hydrocarbons

Table 2
Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Measured	Casing Elevation ¹ (feet)	Depth to Groundwater (feet BTOC)	SPH Thickness (feet)	Groundwater Elevation ¹ (feet)
A-4	04/02/19	13.22	6.67	--	6.55
	10/01/19	13.22	7.25	--	5.97
A-5	04/02/19	14.13	7.46	--	6.67
	10/01/19	14.13	7.99	--	6.14
A-6	04/02/19	12.81	6.30	--	6.51
	10/01/19	12.81	6.96	0.06	5.90
A-8	04/02/19	14.61	4.50	--	10.11
	10/01/19	14.61	8.06	--	6.55
A-10	04/02/19	13.51	6.65	--	6.86
	10/01/19	13.51	7.10	--	6.41
A-11	04/02/19	14.40	7.47	--	6.93
	10/01/19	14.40	7.95	--	6.45
A-12	04/02/19	12.95	6.24	--	6.71
	10/01/19	12.95	6.72	--	6.23
A-14R	04/02/19	14.21	7.39	--	6.82
	10/01/19	14.21	7.83	--	6.38
A-16	04/02/19	14.39	7.64	--	6.75
	10/01/19	14.39	8.32	0.24	6.26
A-18	04/02/19	14.74	7.84	--	6.90
	10/01/19	14.74	8.28	--	6.46
A-19	04/02/19	14.57	7.76	--	6.81
	10/01/19	14.57	8.25	--	6.32
A-20	04/02/19	14.19	7.45	--	6.74
	10/01/19	14.19	8.17	--	6.02
A-21	04/02/19	14.35	7.54	--	6.81
	10/01/19	14.35	7.96	--	6.39
A-22R	04/02/19	14.11	7.17	--	6.94
	10/01/19	14.11	7.74	--	6.37
A-23R ²	--	15.57	--	--	--
	10/03/19	15.57	9.23	--	6.34
A-25	04/02/19	13.90	7.06	--	6.84
	10/01/19	13.90	7.67	--	6.23
A-26R	04/02/19	14.19	7.25	--	6.94
	10/01/19	14.19	7.85	--	6.34
A-27	04/02/19	17.22	10.23	--	6.99
	10/01/19	17.22	10.86	--	6.36
A-28R	04/02/19	14.93	7.67	--	7.26
	10/01/19	14.93	8.50	--	6.43
11	04/02/19	12.08	4.33	--	7.75
	10/01/19	12.08	5.02	--	7.06
12	04/02/19	9.79	1.95	--	7.84
	10/01/19	9.79	2.09	--	7.70
MW-1	04/02/19	13.21	6.35	--	6.86
	10/01/19	13.21	6.21	--	7.00
MW-2	04/02/19	15.22	6.81	--	8.41
	10/01/19	15.22	8.08	--	7.14

Table 2
Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Measured	Casing Elevation ¹ (feet)	Depth to Groundwater (feet BTOC)	SPH Thickness (feet)	Groundwater Elevation ¹ (feet)
MW-3	04/02/19	11.39	2.88	--	8.51
	10/01/19	11.39	4.00	--	7.39
MW-4	04/02/19	14.69	6.26	--	8.43
	10/01/19	14.69	7.14	--	7.55
MW-5	04/02/19	11.13	2.71	--	8.42
	10/01/19	11.13	3.53	--	7.60
MW-6	04/02/19	15.17	6.77	--	8.40
	10/01/19	15.17	7.81	--	7.36
MW-7	04/02/19	10.62	2.52	--	8.10
	10/01/19	10.62	3.18	--	7.44
MW-8	04/02/19	10.63	3.36	--	7.27
	10/01/19	10.63	4.06	--	6.57
MW-9	04/02/19	9.75	2.60	--	7.15
	10/01/19	9.75	3.24	--	6.51
MW-12R	04/02/19	15.47	7.30	--	8.17
	10/01/19	15.47	8.00	--	7.47
MW-14	04/02/19	11.44	3.11	--	8.33
	10/01/19	11.44	3.98	--	7.46
MW-16	04/02/19	15.23	6.60	--	8.63
	10/01/19	15.23	7.87	--	7.36
MW-18	04/02/19	15.49	6.67	--	8.82
	10/01/19	15.49	7.97	--	7.52
MW-19	04/02/19	11.39	2.59	--	8.80
	10/01/19	11.39	3.54	--	7.85
MW-20	04/02/19	11.72	3.25	--	8.47
	10/01/19	11.72	3.97	--	7.75
MW-21	04/02/19	9.41	2.65	--	6.76
	10/01/19	9.41	3.25	--	6.16
MW-22	04/02/19	16.32	7.81	--	8.51
	10/01/19	16.32	8.98	--	7.34
MW-23	04/02/19	14.15	7.25	--	6.90
	10/01/19	14.15	7.75	--	6.40
MW-24	04/02/19	14.34	7.22	--	7.12
	10/01/19	14.34	7.76	--	6.58
MW-25	04/02/19	13.05	7.07	--	5.98
	10/01/19	13.05	7.54	--	5.51
SH-02R	04/02/19	13.40	5.20	--	8.20
	10/01/19	13.40	6.02	--	7.38
SH-05R	04/02/19	13.89	6.75	--	7.14
	10/01/19	13.89	7.33	--	6.56
MW-07R	04/02/19	13.92	6.09	--	7.83
	10/01/19	13.92	6.84	--	7.08
TMW-B1	04/02/19	--	7.53	--	--
	10/01/19	--	8.42	--	--
TMW-1	04/02/19	--	3.06	--	--
	10/01/19	--	3.95	--	--

Table 2
Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Measured	Casing Elevation ¹ (feet)	Depth to Groundwater (feet BTOC)	SPH Thickness (feet)	Groundwater Elevation ¹ (feet)
TMW-2	04/02/19	--	3.20	--	--
	10/01/19	--	4.02	--	--
TMW-3	04/02/19	--	3.42	--	--
	10/01/19	--	4.01	--	--
TMW-4	04/02/19	--	2.90	--	--
	10/01/19	--	3.76	--	--
TMW-5	04/02/19	--	2.82	--	--
	10/01/19	--	3.75	--	--
TMW-6	04/02/19	--	2.00	--	--
	10/01/19	--	3.01	--	--

Notes:

-- = not measured/not applicable

BTOC = below top of casing (TOC); depth to groundwater measured from TOC

SPH = separate phase hydrocarbons

1. Prior to the September 2003 monitoring event, TOC elevations were relative to National Geodetic Vertical Datum (N.G.V.D.) 1929 TIDAL 2 (survey benchmark elev=10.617). All TOC elevations were resurveyed in July 2003, relative to North American Vertical Datum (N.A.V.D.) 1988 with modified benchmark elevations to account for shifts from February 2001 earthquake.

2. A-23R was inaccessible during the first semiannual groundwater monitoring event and therefore not gauged. During the second semiannual groundwater monitoring event A-23R was gauged prior to sampling due to accessibility issues.

Table 3
Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO, SGC mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L
Site-Specific Cleanup Levels:		1.0	10	10	0.071	200	29.0	N/A	0.0058	0.0058
A-5	04/03/19	0.591	--	--	0.00169	0.00145	<0.00100	<0.00300	--	--
	10/03/19	0.355	--	--	<0.00100	0.00141	<0.00100	<0.00300	--	--
A-8	10/02/19	<0.100	0.794	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--
A-10	10/02/19	<0.100	0.441	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--
A-14R	10/02/19	<0.100	<0.200	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200
A-21	04/03/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
	10/04/19	0.206 B	--	--	<0.00100	<0.00100	<0.00100	<0.00300	0.00212	<0.00200
A-23R	10/03/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
A-27	04/03/19	0.869	--	--	0.00859	<0.00100	0.0116	<0.00300	--	--
	10/04/19	1.32	--	--	0.0217	0.00104	0.00201	0.0041	--	--
A-28R	04/03/19	6.24	--	--	0.127	0.00690	0.294	0.0230	--	--
	10/04/19	8.86	--	--	0.544	0.0128	0.240	0.0265	<0.00200	<0.00200
11	04/03/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
	10/03/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
12	04/03/19	1.23	--	--	0.00225	0.00150	0.0185	0.0175	--	--
	10/03/19	1.36	1.41	<0.250	0.00435	0.00295	0.0226	0.0109	0.00951	0.00334
MW-1	10/02/19	<0.100	<0.200	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200
MW-2	10/03/19	<0.100	<0.200	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200
MW-3	10/02/19	<0.100	<0.200	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	0.00743	<0.00200
MW-4	10/03/19	<0.100	1.44	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--
MW-5	10/01/19	<0.100	<0.200	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200
MW-6	10/03/19	0.249	--	--	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200
MW-7	04/03/19	0.451	--	--	<0.00100	<0.00100	0.00142	<0.00300	--	--
	10/03/19	1.83	--	--	0.00213	0.00397	0.0413	0.0193	0.00326	0.00226
MW-7 (DUP)	04/03/19	0.251	--	--	<0.00100	<0.00100	0.00116	<0.00300	--	--
	10/03/19	1.74	--	--	0.00215	0.00399	0.0385	0.0194	0.00333	0.00237
MW-07R	10/03/19	<0.100	0.229	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200
MW-8	10/02/19	<0.100	0.328	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	0.00579	<0.00200
MW-9	04/03/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
	10/02/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	0.00435	<0.00200
MW-12R	10/03/19	<0.100	<0.200	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200
MW-14	10/01/19	0.526	--	--	<0.00100	0.00109	<0.00100	0.00649	--	--
MW-16	10/04/19	<0.100	<0.200	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--
MW-18	04/03/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
	10/03/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
MW-19	04/02/19	0.810	--	--	0.00180	<0.00100	<0.00100	<0.00300	--	--
	10/02/19	1.23	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
MW-20	10/02/19	<0.100	<0.200	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--

Table 3
Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO, SGC mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L
Site-Specific Cleanup Levels:		1.0	10	10	0.071	200	29.0	N/A	0.0058	0.0058
MW-21	04/03/19	0.165 B	0.967	0.271 B	<0.00100	<0.00100	<0.00100	<0.00300	--	--
	10/02/19	<0.100	1.15	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--
MW-21 (DUP)	10/02/19	<0.100	1.21	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--
MW-22	10/03/19	0.826	0.258	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--
MW-23	04/03/19	1.74	--	--	0.240	0.00369	0.00231	0.00760	--	--
	10/04/19	3.17	--	--	0.360	0.00797	0.00370	0.00539	<0.00200	<0.00200
MW-23 (DUP)	04/03/19	1.65	--	--	0.255	0.00397	0.00245	0.00630	--	--
MW-24	04/03/19	13.6	--	--	0.719	0.0274	1.23	0.309	--	--
	10/04/19	10.3	--	--	0.581	0.0173	0.643	0.112	<0.00200	<0.00200
MW-25	10/03/19	<0.100	<0.200	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200
SH-02R	10/03/19	<0.100	0.565	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200
SH-05R	10/03/19	<0.100	0.391	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200
TMW-B1	10/04/19	5.68	--	--	0.0599	0.00758	0.0259	0.00913	--	--
TMW-1	04/02/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
	10/02/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
TMW-2	04/02/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
	10/02/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
TMW-3	04/03/19	0.553	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
	10/03/19	0.955	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
TMW-4	04/03/19	3.07	--	--	<0.0100	<0.0100	0.257	<0.0300	--	--
	10/03/19	6.02	--	--	0.00347	0.0532	0.263	0.337	--	--
TMW-5	04/03/19	1.04	--	--	<0.00100	<0.00100	0.00200	<0.00300	--	--
	10/02/19	<0.100	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--
TMW-6	04/03/19	4.77	--	--	<0.00100	<0.00100	0.289	0.413	--	--
	10/02/19	11.6	--	--	<0.00100	0.00486	0.640	1.09	--	--

Notes:

-- = Not applicable/Sample not analyzed for this parameter

< = Denotes compound was not detected at designated detection limit.

Bold = Analyte detected at a concentration above the laboratory reporting limit

Highlight = Detected concentration above the Site-Specific Cleanup Level

mg/L = milligrams per liter (parts per million [ppm])

B = The same analyte is found in the associated blank.

N/A = Not applicable

SGC = A silica gel wash as performed on the solvent extract before analysis. Silica gel cleanup was completed for samples with TPH-DRO and TPH-HO detections above the method reporting limit. All samples analyzed since September 2015 were performed with SGC for all TPH-DRO and TPH-HO analysis.

1. Total Petroleum Hydrocarbons (TPH) as gasoline range organics (GRO) - Analysis by Washington Method WTPH-G prior to 5/20/98; analysis by Northwest Method NWTPH-Gx from 5/20/98 through present.

2. Total Petroleum Hydrocarbons (TPH) as diesel range organics (DRO) and heavy oil range organics (HO) - Analysis by Washington Method WTPH-D+ extended prior to 5/20/98; analysis by Northwest Method NWTPH-Dx from 5/20/98 through present.

3. Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) Compounds - Analysis by EPA Method 8020 prior to 5/20/98; analysis by EPA Method 8260B from 5/20/98 through present.

Table 4
Groundwater Geochemical Parameters
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	Dissolved Oxygen ¹ mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L
A-5	04/03/19	0.10	--	--	--	--	--	--	--
	10/03/19	0.17	--	--	--	--	--	--	--
A-8	10/02/19	0.13	--	--	--	--	--	--	--
A-10	10/02/19	0.13	--	--	--	--	--	--	--
A-14R	10/02/19	0.15	--	--	--	--	--	--	--
A-21	04/03/19	3.01	--	--	--	--	--	--	--
	10/04/19	0.16	--	--	--	--	--	--	--
A-23R	10/03/19	0.11	--	--	--	--	--	--	--
A-27	04/03/19	0.08	--	--	--	--	--	292	--
	10/04/19	0.18	2.65	--	--	<1.25 T8	<0.100	6.65	<0.0500
A-28R	04/03/19	0.09	--	--	--	--	--	--	--
	10/04/19	0.28	15.5	--	--	32.5 T8	<0.100	<5.00	<0.0500
11	04/03/19	7.62	--	--	--	--	--	90	--
	10/03/19	3.30	--	--	--	--	--	175	--
12	04/03/19	0.02	--	--	--	--	--	254	--
	10/03/19	0.12	--	--	--	--	--	125	--
MW-1	10/02/19	0.16	--	--	--	--	--	--	--
MW-2	10/03/19	1.37	--	--	--	--	--	--	--
MW-3	10/02/19	4.44	--	--	--	--	--	--	--
MW-4	10/03/19	0.21	--	--	--	--	--	--	--
MW-5	10/1/2019	1.46	--	--	--	--	--	--	--
MW-6	10/03/19	0.15	--	--	--	--	--	--	--
MW-7	04/03/19	0.01	--	--	--	--	--	763	--
	10/03/19	0.05	--	--	--	--	--	400	--
MW-7 (DUP)	04/03/19	0.01	--	--	--	--	--	--	--
	10/03/19	0.05	--	--	--	--	--	379	--
MW-8	10/02/19	0.31	--	--	--	--	--	--	--
MW-9	04/03/19	3.96	--	--	--	--	--	5.2	--
	10/02/19	0.15	--	--	--	--	--	6.77	--
MW-12R	10/03/19	0.13	--	--	--	--	--	--	--
MW-14	10/01/19	0.08	--	--	--	--	--	--	--
MW-16	10/04/19	0.24	--	--	--	--	--	--	--
MW-18	04/03/19	0.10	--	--	--	--	--	--	--
	10/03/19	0.13	--	--	--	--	--	--	--
MW-19	04/02/19	0.06	--	--	--	--	--	1,310	--
	10/02/19	0.24	--	--	--	--	--	130	--
MW-20	10/02/19	0.20	--	--	--	--	--	--	--

Table 4
Groundwater Geochemical Parameters
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	Dissolved Oxygen ¹ mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L
MW-21	04/03/19	0.50	--	--	--	--	--	--	--
	10/02/19	0.14	--	--	--	--	--	--	--
MW-21 (DUP)	10/02/19	0.14	--	--	--	--	--	--	--
MW-22	10/03/19	0.10	--	--	--	--	--	--	--
MW-23	04/03/19	0.09	--	--	--	--	--	--	--
	10/04/19	0.22	18.7	--	--	14.9 T8	<0.100	<5.00	<0.0500
MW-23 (DUP)	04/03/19	0.09	--	--	--	--	--	--	--
MW-24	04/03/19	0.09	--	--	--	--	--	--	--
	10/04/19	0.76	19.6	--	--	53.0 T8	<0.100	<5.00	<0.0500
MW-25	10/03/19	0.16	--	--	--	--	--	--	--
SH-02R	10/03/19	0.17	--	--	--	--	--	--	--
SH-05R	10/03/19	0.13	--	--	--	--	--	--	--
MW-07R	10/03/19	0.13	--	--	--	--	--	--	--
TMW-B1	10/04/19	0.08	6.57	--	--	<1.25 T8	<0.100	<5.00	<0.0500
TMW-1	04/02/19	6.77	--	--	--	--	--	627	--
	10/02/19	3.94	--	--	--	--	--	641	--
TMW-2	04/02/19	0.09	--	--	--	--	--	1,480	--
	10/02/19	0.22	--	--	--	--	--	1,370	--
TMW-3	04/03/19	0.01	--	--	--	--	--	909	--
	10/03/19	0.16	--	--	--	--	--	513	--
TMW-4	04/03/19	0.07	--	--	--	--	--	696	--
	10/03/19	0.10	--	--	--	--	--	446	--
TMW-5	04/03/19	0.01	--	--	--	--	--	832	--
	10/02/19	0.29	--	--	--	--	--	581	--
TMW-6	04/03/19	0.05	--	--	--	--	--	344	--
	10/02/19	0.13	--	--	--	--	--	416	--

Notes:

< = Denotes compound was not detected above the designated detection limit.

-- = Not applicable/Sample not analyzed for this parameter

Bold = Analyte detected at a concentration above the laboratory reporting limit

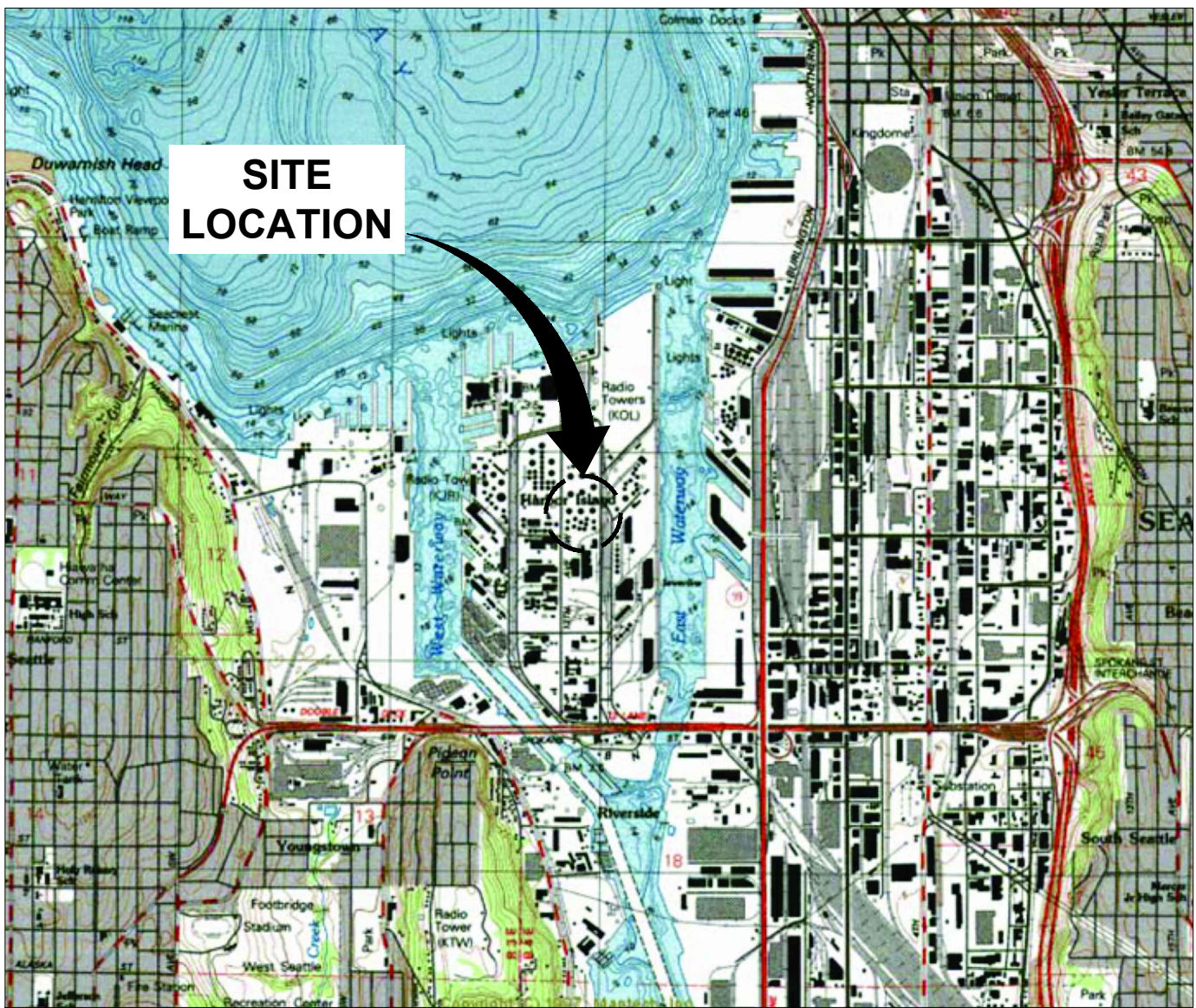
mg/L = milligrams per liter (parts per million)

T8 = Sample was received by the lab outside the hold time for the analyte; value should be considered a minimum.

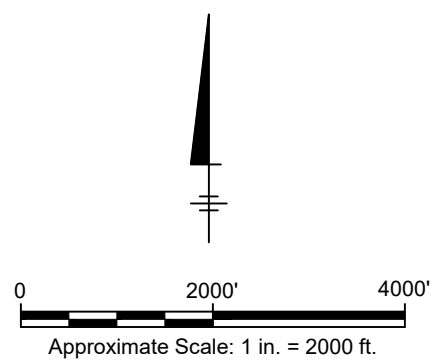
1. Dissolved oxygen measurements were collected in the field and reflect the final reading recorded following stabilization and prior to sample collection.

FIGURES





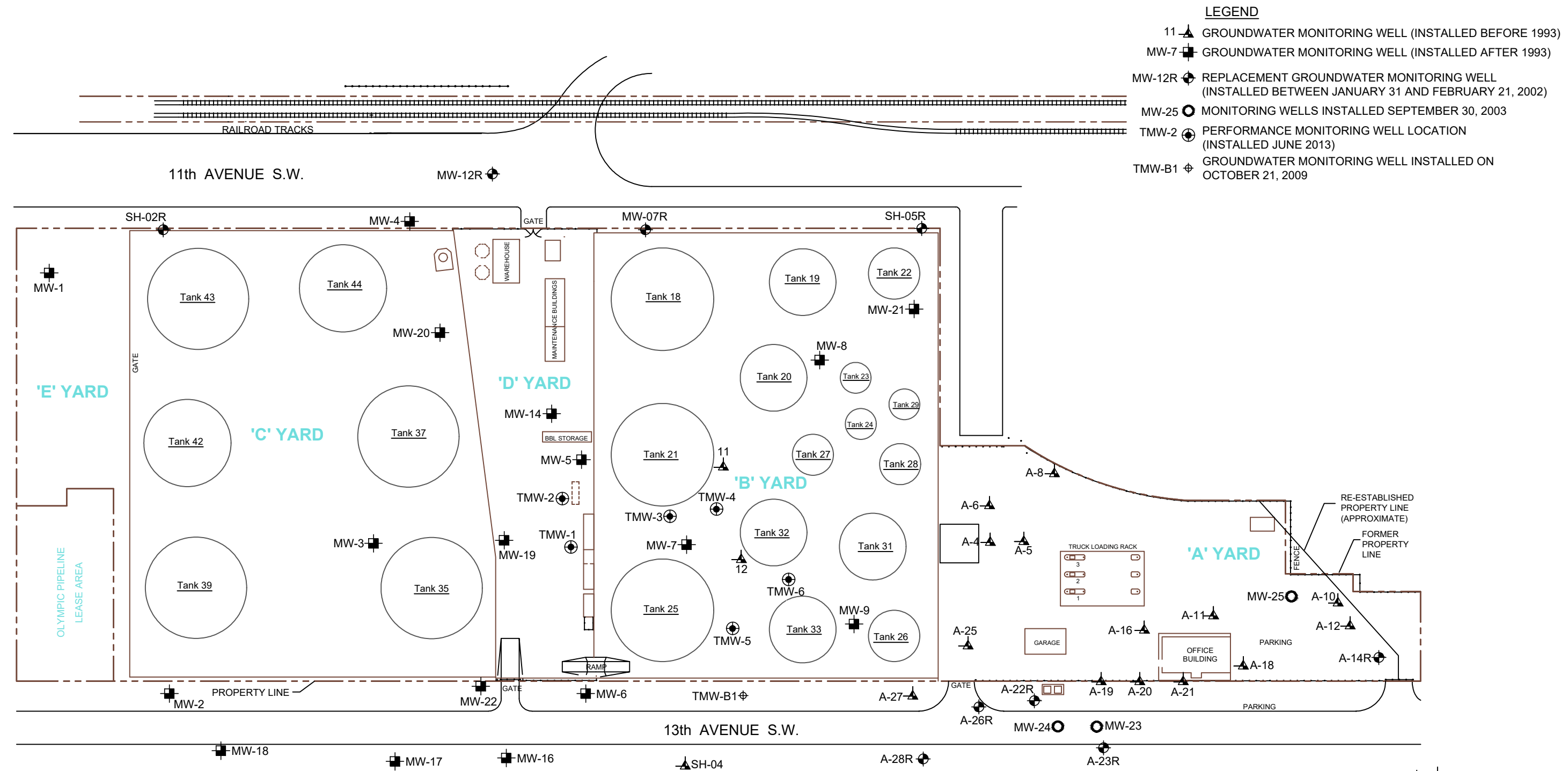
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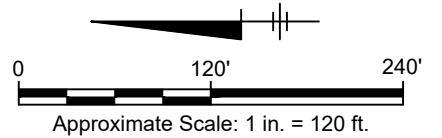
KINDER MORGAN LIQUIDS TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2019 ANNUAL GROUNDWATER MONITORING REPORT

SITE LOCATION MAP

CITY: (Red) DIV/GRP: (Red) DB: (Red) LD: (Red) PIC: (Red) PM: (Red) TM: (Red) LVR: (Red) ON: (Red) OFF: (Red) REF: C:\Users\mdeou\BIM\360\Arcadis\NAVA - KINDER MORGAN ENERGY PARTNERS\Project Files\Harbor Island 2017\WDR\2019\WAO00804\2019011-DWG\GWMR-Fig2-Site Plan.dwg LAYOUT: 2. PAGES: 23.1S (LMS TECH) ACADVER: 23.1S (LMS TECH) PAGES: 23.1S (LMS TECH) PLOTSETUP: ---- PLOTSTYLETABLE: ACAD.CTB
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 XREFS: IMAGES: PROJECTNAME: X-SITEBASE WAO00804



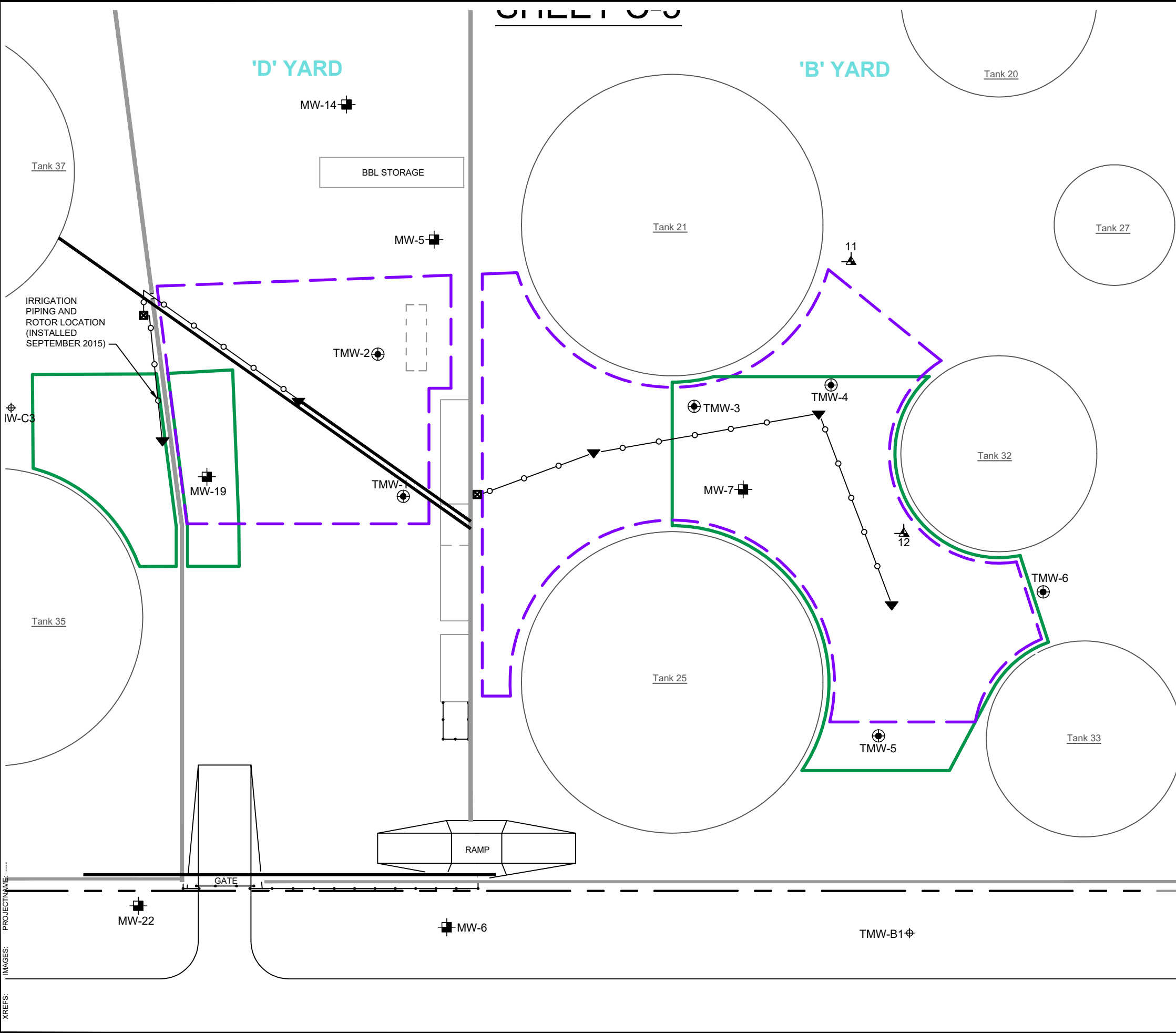
- LEGEND**
- 11 ▲ GROUNDWATER MONITORING WELL (INSTALLED BEFORE 1993)
 - MW-7 ■ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
 - MW-12R ● REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
 - MW-25 ○ MONITORING WELLS INSTALLED SEPTEMBER 30, 2003
 - TMW-2 ⊕ PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
 - TMW-B1 ⊕ GROUNDWATER MONITORING WELL INSTALLED ON OCTOBER 21, 2009



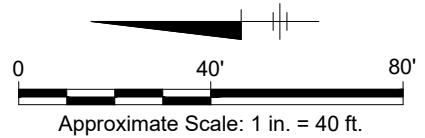
KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2019 ANNUAL GROUNDWATER MONITORING REPORT

SITE PLAN

CITY: (Rect) DIV: (Group) (Rect) DB: (Rect) LD: (Opt) PIC: (Opt) PM: (Rect) LVR: (Opt) ON: "OFF" REF: C:\Users\kavals\BIM\380\Arcadis\ANA - KINDER MORGAN ENERGY PARTNERS\Project Files\Harbor Island 2017\WDR\2020\3001885701-DWG\GWMR-Fig3-Remedial Sulfate Application Area.dwg LAYOUT: 3 SAVED: 1/8/2020 11:29 AM ACADVER: 23.1S (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ACAD.CTB PLOTTED: 1/8/2020 12:31 PM BY: DAVIS, KATHI XREFS: PROJECTNAME:



- LEGEND**
- SH-02 ▲ GROUNDWATER MONITORING WELL (INSTALLED BEFORE 1993)
 - MW-7 ■ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
 - MW-12R ● REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
 - WATER SOURCE LOCATION
 - TMW-2 ● PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
 - TMW-B1 ● GROUNDWATER MONITORING WELL INSTALLED ON OCTOBER 21, 2009
 - ▼ IRRIGATION ROTOR LOCATION
 - IRRIGATION PIPING
 - CONCRETE WALL
 - - - SULFATE APPLICATION AREA; JUNE 2013
 - APPROXIMATE BOUNDARY OF THE SUPPLEMENTAL SULFATE APPLICATION AREA; APPLIED IN SEPTEMBER 2015, OCTOBER 2016, APRIL 2018, NOVEMBER 2018, AND NOVEMBER 2019



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 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2019 ANNUAL GROUNDWATER MONITORING REPORT

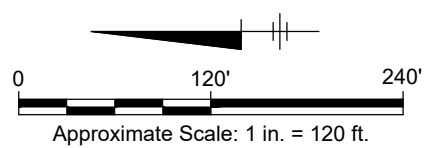
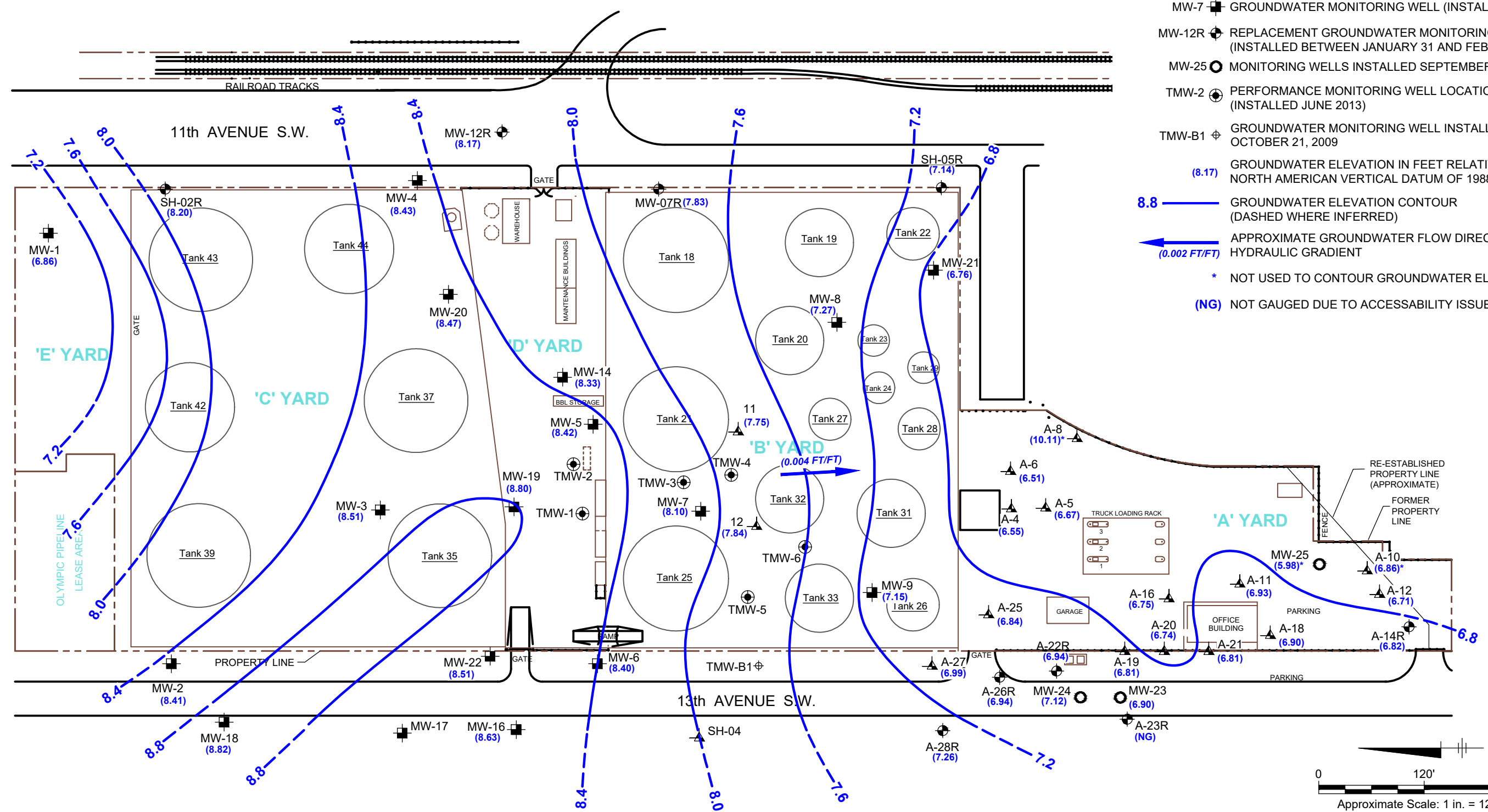
REMEDIAL SULFATE APPLICATION AREA



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 XREFS: IMAGES: PROJECTNAME:

LEGEND

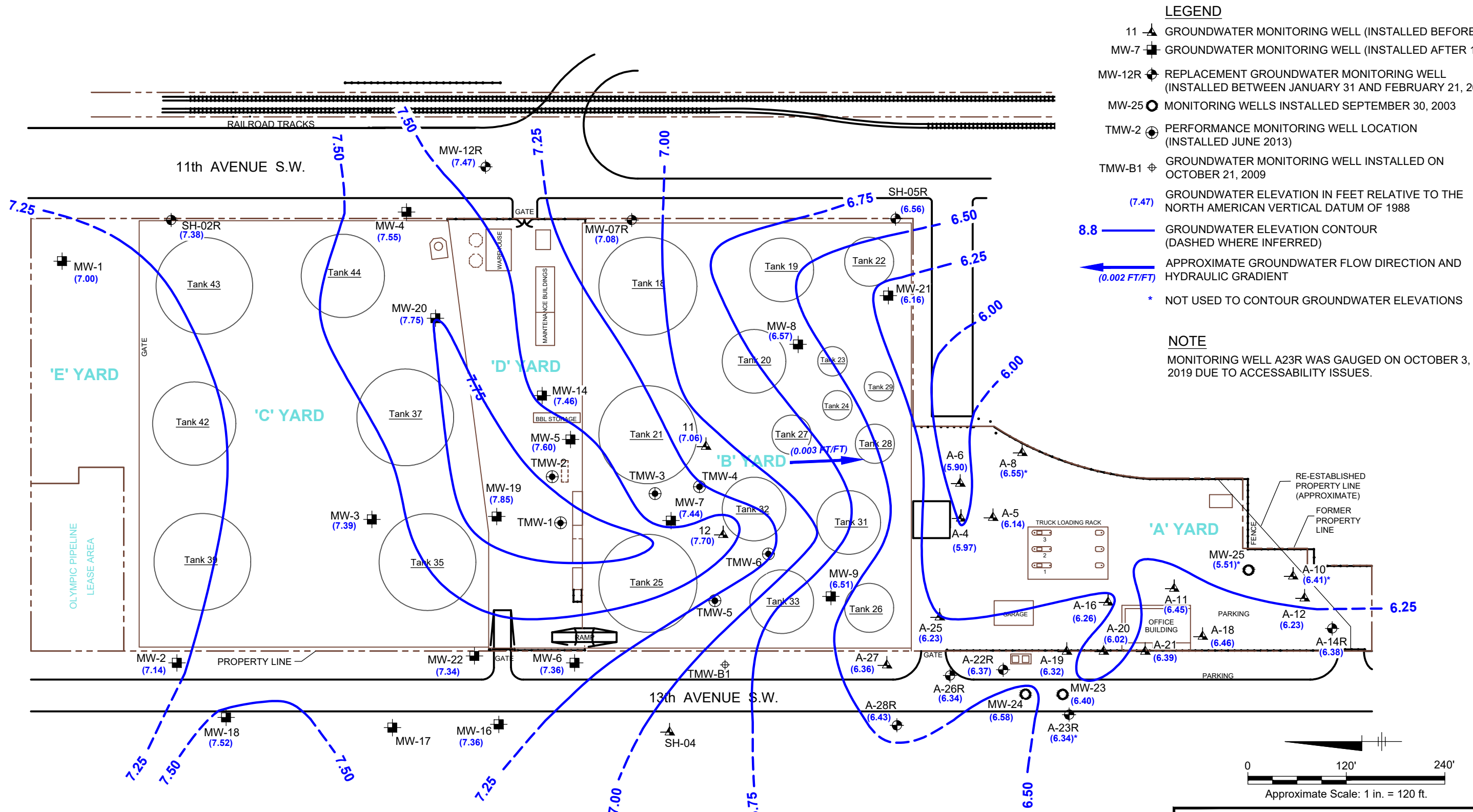
- 11 ▲ GROUNDWATER MONITORING WELL (INSTALLED BEFORE 1993)
- MW-7 ■ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
- MW-12R ● REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
- MW-25 ○ MONITORING WELLS INSTALLED SEPTEMBER 30, 2003
- TMW-2 ⊕ PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
- TMW-B1 ⊕ GROUNDWATER MONITORING WELL INSTALLED ON OCTOBER 21, 2009
- (8.17) GROUNDWATER ELEVATION IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988
- 8.8 ——— GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
- ← (0.002 FT/FT) APPROXIMATE GROUNDWATER FLOW DIRECTION AND HYDRAULIC GRADIENT
- * NOT USED TO CONTOUR GROUNDWATER ELEVATIONS
- (NG) NOT GAUGED DUE TO ACCESSIBILITY ISSUES



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 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2019 ANNUAL GROUNDWATER MONITORING REPORT

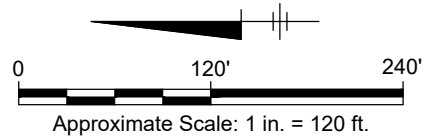
GROUNDWATER ELEVATION CONTOURS
APRIL 02, 2019

CITY: (Red) DIV: (Red) DB: (Red) LD: (Red) PIC: (Red) PM: (Red) TM: (Red) LVR: (Red) ON: (Red) OFF: (Red) REF: (Red)
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 XREFS: IMAGES: PROJECTNAME: X-SITEBASE WA000004



- LEGEND**
- 11 ▲ GROUNDWATER MONITORING WELL (INSTALLED BEFORE 1993)
 - MW-7 ■ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
 - MW-12R ● REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
 - MW-25 ○ MONITORING WELLS INSTALLED SEPTEMBER 30, 2003
 - TMW-2 ⊕ PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
 - TMW-B1 ⊕ GROUNDWATER MONITORING WELL INSTALLED ON OCTOBER 21, 2009
 - (7.47) GROUNDWATER ELEVATION IN FEET RELATIVE TO THE NORTH AMERICAN VERTICAL DATUM OF 1988
 - 8.8 — GROUNDWATER ELEVATION CONTOUR (DASHED WHERE INFERRED)
 - ← (0.002 FT/FT) APPROXIMATE GROUNDWATER FLOW DIRECTION AND HYDRAULIC GRADIENT
 - * NOT USED TO CONTOUR GROUNDWATER ELEVATIONS

NOTE
 MONITORING WELL A23R WAS GAUGED ON OCTOBER 3, 2019 DUE TO ACCESSABILITY ISSUES.

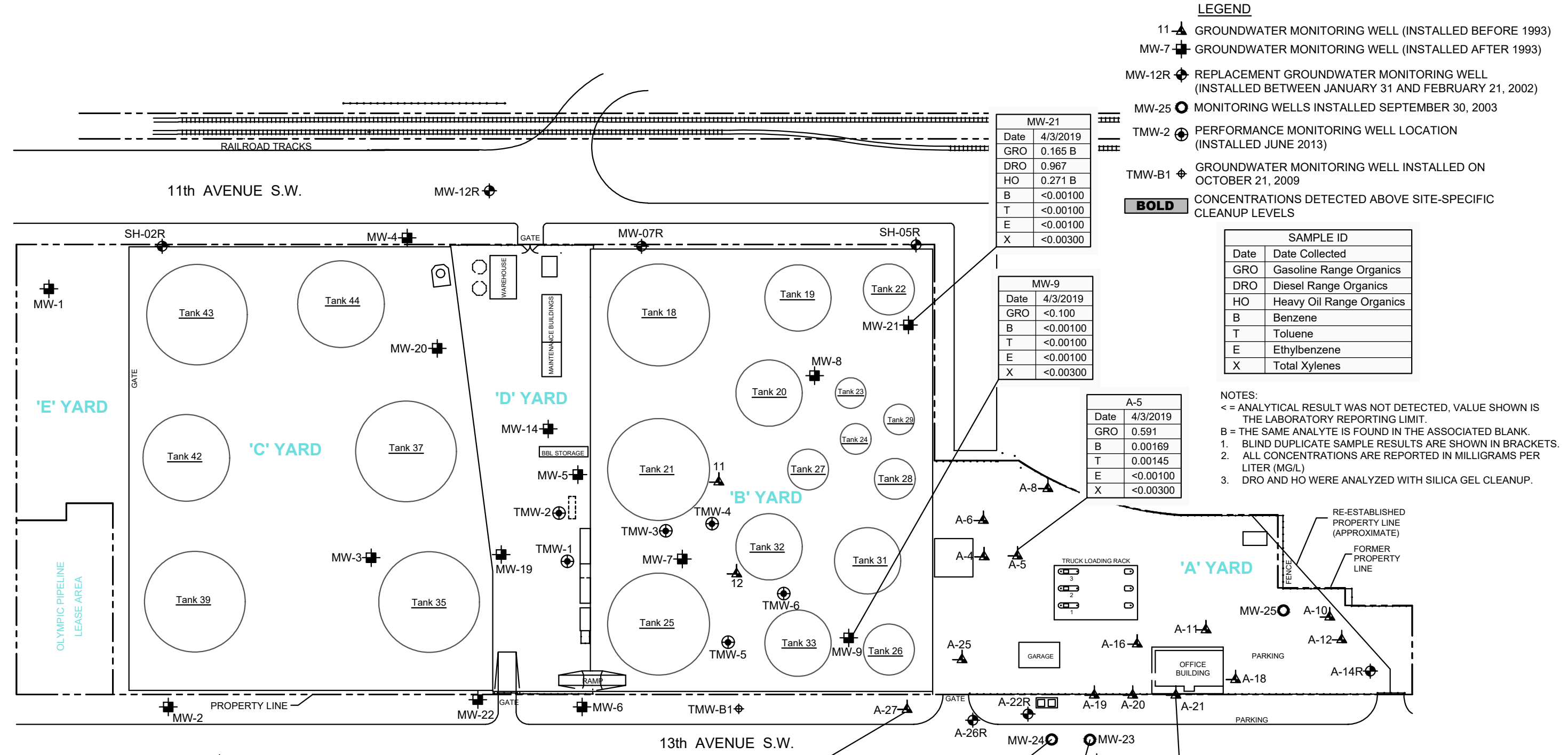


KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2019 ANNUAL GROUNDWATER MONITORING REPORT

**GROUNDWATER ELEVATION CONTOURS
 OCTOBER 01, 2019**



CITY:\Redd\DIV\GROU\IP\Redd\ DB:\Redd\ LD:\(Opt) PIC:\(Opt) PM:\(Redd) TM:\(Opt) LVR:\(Opt)\ON="OFF" REF=" REF"
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- LEGEND**
- 11 ▲ GROUNDWATER MONITORING WELL (INSTALLED BEFORE 1993)
 - MW-7 ■ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
 - MW-12R ● REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
 - MW-25 ○ MONITORING WELLS INSTALLED SEPTEMBER 30, 2003
 - TMW-2 ⊕ PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
 - TMW-B1 ⊕ GROUNDWATER MONITORING WELL INSTALLED ON OCTOBER 21, 2009
 - BOLD** CONCENTRATIONS DETECTED ABOVE SITE-SPECIFIC CLEANUP LEVELS

MW-21	
Date	4/3/2019
GRO	0.165 B
DRO	0.967
HO	0.271 B
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300

MW-9	
Date	4/3/2019
GRO	<0.100
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300

A-5	
Date	4/3/2019
GRO	0.591
B	0.00169
T	0.00145
E	<0.00100
X	<0.00300

SAMPLE ID	
Date	Date Collected
GRO	Gasoline Range Organics
DRO	Diesel Range Organics
HO	Heavy Oil Range Organics
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total Xylenes

- NOTES:**
- < = ANALYTICAL RESULT WAS NOT DETECTED, VALUE SHOWN IS THE LABORATORY REPORTING LIMIT.
 - B = THE SAME ANALYTE IS FOUND IN THE ASSOCIATED BLANK.
 - 1. BLIND DUPLICATE SAMPLE RESULTS ARE SHOWN IN BRACKETS.
 - 2. ALL CONCENTRATIONS ARE REPORTED IN MILLIGRAMS PER LITER (MG/L)
 - 3. DRO AND HO WERE ANALYZED WITH SILICA GEL CLEANUP.

MW-18	
Date	4/3/2019
GRO	<0.100
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300

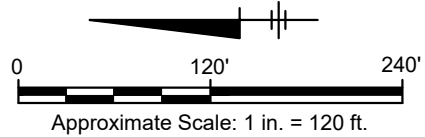
A-27	
Date	4/3/2019
GRO	0.869
B	0.00859
T	<0.00100
E	0.0116
X	<0.00300

A-28R	
Date	4/3/2019
GRO	6.24
B	0.127
T	0.00690
E	0.294
X	0.0230

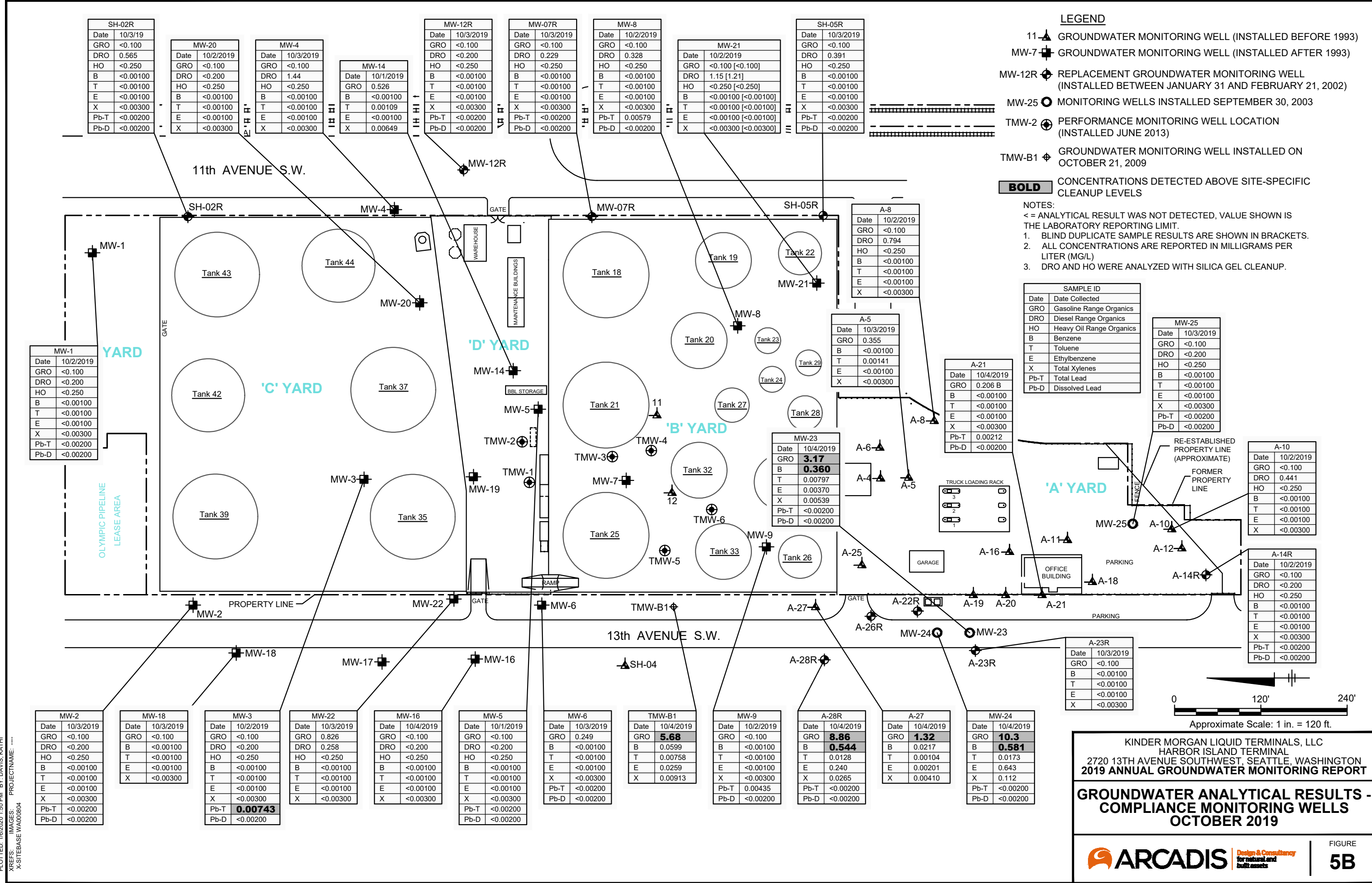
MW-24	
Date	4/3/2019
GRO	13.6
B	0.719
T	0.0274
E	1.23
X	0.309

MW-23	
Date	4/3/2019
GRO	1.74 [1.65]
B	0.240 [0.255]
T	0.00369 [0.00397]
E	0.00231 [0.00245]
X	0.00760 [0.00630]

A-21	
Date	4/3/2019
GRO	<0.100
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300



KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2019 ANNUAL GROUNDWATER MONITORING REPORT
GROUNDWATER ANALYTICAL RESULTS - COMPLIANCE MONITORING WELLS
APRIL 2019



LEGEND

- 11 ▲ GROUNDWATER MONITORING WELL (INSTALLED BEFORE 1993)
- MW-7 ■ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
- MW-12R ● REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
- MW-25 ○ MONITORING WELLS INSTALLED SEPTEMBER 30, 2003
- TMW-2 ⊕ PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
- TMW-B1 ⊕ GROUNDWATER MONITORING WELL INSTALLED ON OCTOBER 21, 2009

BOLD CONCENTRATIONS DETECTED ABOVE SITE-SPECIFIC CLEANUP LEVELS

- NOTES:
- < = ANALYTICAL RESULT WAS NOT DETECTED, VALUE SHOWN IS THE LABORATORY REPORTING LIMIT.
 - 1. BLIND DUPLICATE SAMPLE RESULTS ARE SHOWN IN BRACKETS.
 - 2. ALL CONCENTRATIONS ARE REPORTED IN MILLIGRAMS PER LITER (MG/L)
 - 3. DRO AND HO WERE ANALYZED WITH SILICA GEL CLEANUP.

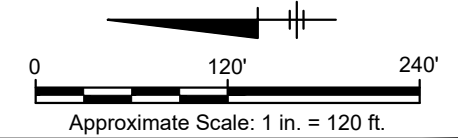
SAMPLE ID	
Date	Date Collected
GRO	Gasoline Range Organics
DRO	Diesel Range Organics
HO	Heavy Oil Range Organics
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total Xylenes
Pb-T	Total Lead
Pb-D	Dissolved Lead

MW-25	
Date	10/3/2019
GRO	<0.100
DRO	<0.200
HO	<0.250
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300
Pb-T	<0.00200
Pb-D	<0.00200

A-10	
Date	10/2/2019
GRO	<0.100
DRO	0.441
HO	<0.250
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300

A-14R	
Date	10/2/2019
GRO	<0.100
DRO	<0.200
HO	<0.250
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300
Pb-T	<0.00200
Pb-D	<0.00200

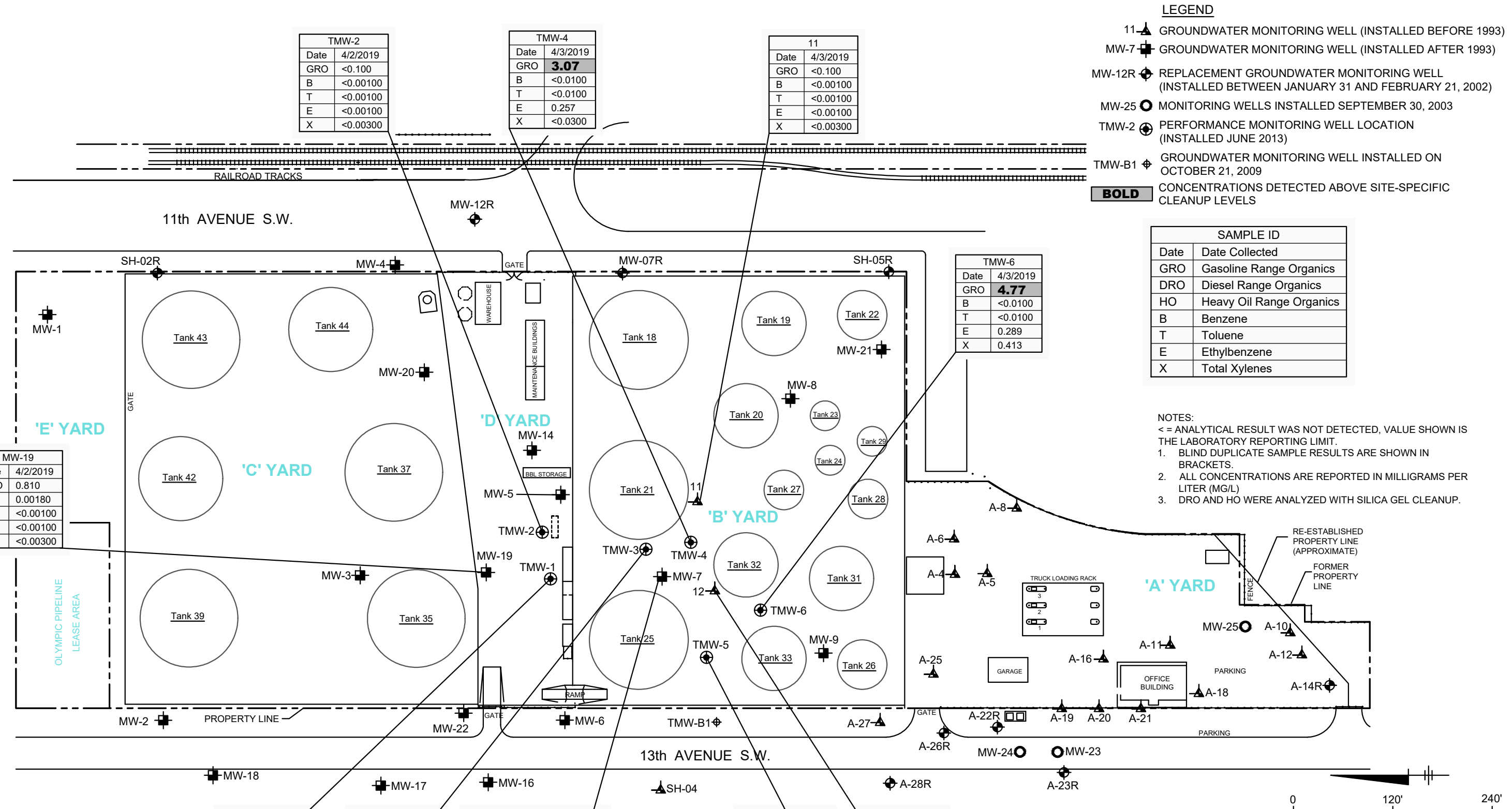
A-23R	
Date	10/3/2019
GRO	<0.100
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300



KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2019 ANNUAL GROUNDWATER MONITORING REPORT

GROUNDWATER ANALYTICAL RESULTS - COMPLIANCE MONITORING WELLS - OCTOBER 2019

CITY: (Red) DIV: (Red) DB: (Red) LD: (Red) PIC: (Red) PM: (Red) TM: (Red) LVR: (Red) ON: (Red) OFF: (Red) REF: C:\Users\kjavies\BIM_380\Arcadis\ANA - KINDER MORGAN ENERGY PARTNERS\Project Files\Harbor Island 2017\WDR\2020\30018857\01-DWG\GWMR-Fig6A-Database (Performance).dwg LAYOUT: 6A ACADVER: 23.1S (LMS TECH) PAGES: 23 OF 23 PLOT SETUP: --- PLOT STYLE TABLE: ACAD.CTB PLOTTED: 11/20/2020 12:56 PM BY: DAVIS, KATHI XREFS: IMAGES: PROJECTNAME: X-SITEBASE WA000004



LEGEND

- 11-▲ GROUNDWATER MONITORING WELL (INSTALLED BEFORE 1993)
- MW-7-■ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
- MW-12R-◆ REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
- MW-25-● MONITORING WELLS INSTALLED SEPTEMBER 30, 2003
- TMW-2-⊕ PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
- TMW-B1-⊕ GROUNDWATER MONITORING WELL INSTALLED ON OCTOBER 21, 2009
- BOLD** CONCENTRATIONS DETECTED ABOVE SITE-SPECIFIC CLEANUP LEVELS

SAMPLE ID	
Date	Date Collected
GRO	Gasoline Range Organics
DRO	Diesel Range Organics
HO	Heavy Oil Range Organics
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total Xylenes

NOTES:

- < = ANALYTICAL RESULT WAS NOT DETECTED, VALUE SHOWN IS THE LABORATORY REPORTING LIMIT.
- 1. BLIND DUPLICATE SAMPLE RESULTS ARE SHOWN IN BRACKETS.
- 2. ALL CONCENTRATIONS ARE REPORTED IN MILLIGRAMS PER LITER (MG/L)
- 3. DRO AND HO WERE ANALYZED WITH SILICA GEL CLEANUP.

TMW-2	
Date	4/2/2019
GRO	<0.100
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300

TMW-4	
Date	4/3/2019
GRO	3.07
B	<0.0100
T	<0.0100
E	0.257
X	<0.0300

11	
Date	4/3/2019
GRO	<0.100
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300

TMW-6	
Date	4/3/2019
GRO	4.77
B	<0.0100
T	<0.0100
E	0.289
X	0.413

MW-19	
Date	4/2/2019
GRO	0.810
B	0.00180
T	<0.00100
E	<0.00100
X	<0.00300

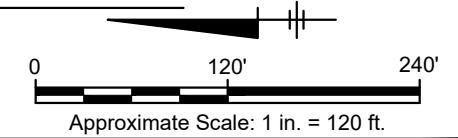
TMW-1	
Date	4/2/2019
GRO	<0.100
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300

TMW-3	
Date	4/3/2019
GRO	0.553
B	<0.00100
T	<0.00100
E	<0.00100
X	<0.00300

MW-7	
Date	4/3/2019
GRO	0.451 [0.251]
B	<0.00100 [<0.00100]
T	<0.00100 [<0.00100]
E	0.00142 [0.00116]
X	<0.00300 [<0.00300]

TMW-5	
Date	4/3/2019
GRO	1.04
B	<0.00100
T	<0.00100
E	0.00200
X	<0.00300

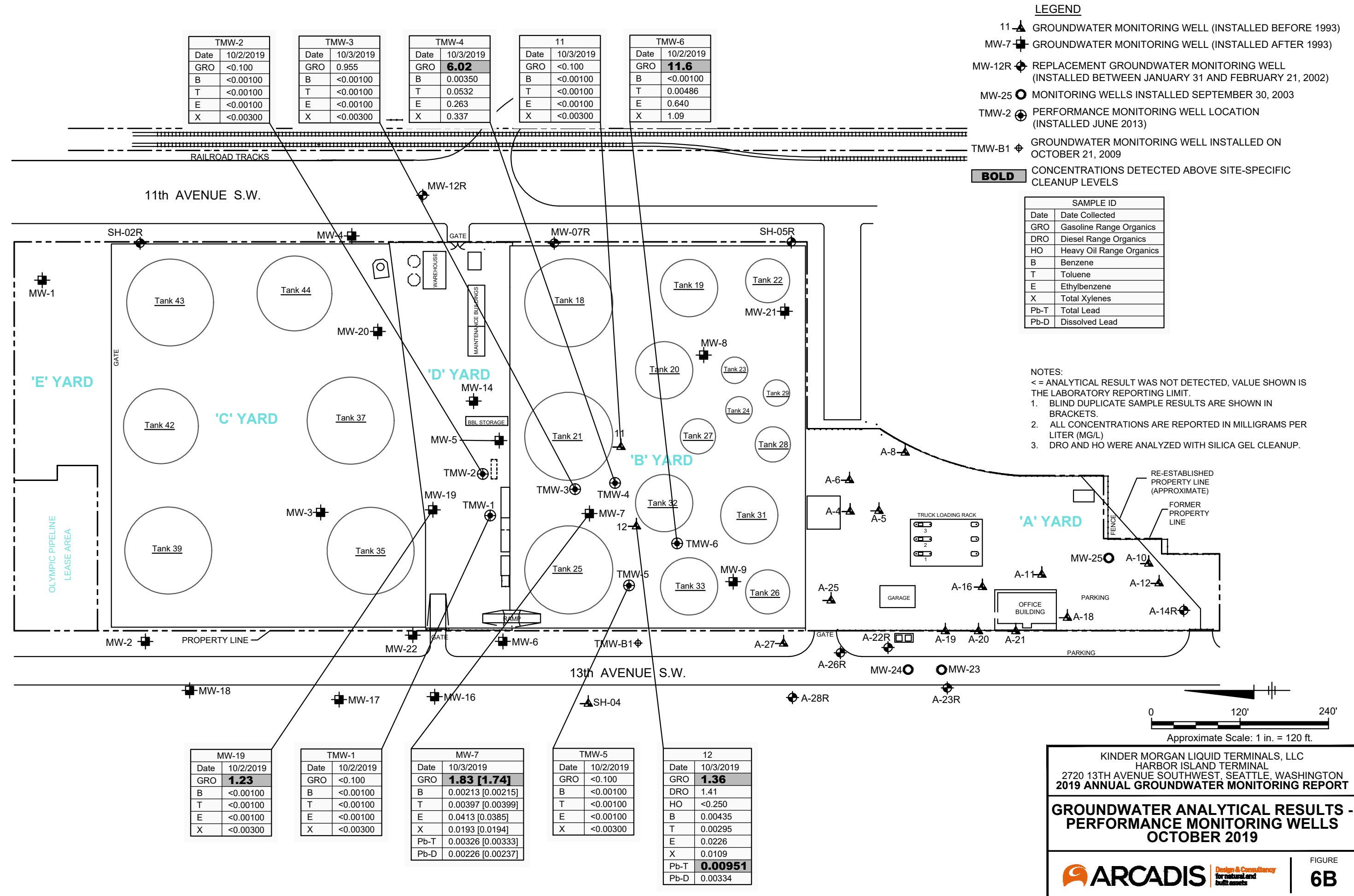
12	
Date	4/3/2019
GRO	1.23
B	0.00225
T	0.00150
E	0.0185
X	0.0175



KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2019 ANNUAL GROUNDWATER MONITORING REPORT

**GROUNDWATER ANALYTICAL RESULTS -
 PERFORMANCE MONITORING WELLS
 APRIL 2019**

CITY: (Read) DIV: (Read) DB: (Read) LD: (Opt) PIC: (Opt) PM: (Read) TM: (Opt) LVR: (Opt) ON: "OFF" REF: C:\Users\mckeeugh\OneDrive\Documents\KINDER MORGAN ENERGY PARTNERS\Project Files\Harbor Island 2017 WDR\2020\30018857\01-DWG\GWMR-Fig6B-Database (Performance).dwg LAYOUT: 6B SAVER: 1/3/2020 9:40 AM ACADVER: 23.1S (LMS TECH) PAGES: 1 OF 1 PLOTSTYLE: TABLE: ACAD_CTB PLOTTED: 1/21/2020 7:39 AM BY: MCKEEOUGH, CAROL XREFS: IMAGES: PROJECTNAME: X-SITEBASE WA000004



TMW-2		TMW-3		TMW-4		11		TMW-6	
Date	10/2/2019	Date	10/3/2019	Date	10/3/2019	Date	10/3/2019	Date	10/2/2019
GRO	<0.100	GRO	0.955	GRO	6.02	GRO	<0.100	GRO	11.6
B	<0.00100	B	<0.00100	B	0.00350	B	<0.00100	B	<0.00100
T	<0.00100	T	<0.00100	T	0.0532	T	<0.00100	T	0.00486
E	<0.00100	E	<0.00100	E	0.263	E	<0.00100	E	0.640
X	<0.00300	X	<0.00300	X	0.337	X	<0.00300	X	1.09

- LEGEND**
- 11 ▲ GROUNDWATER MONITORING WELL (INSTALLED BEFORE 1993)
 - MW-7 ■ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
 - MW-12R ◆ REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
 - MW-25 ○ MONITORING WELLS INSTALLED SEPTEMBER 30, 2003
 - TMW-2 ⊕ PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
 - TMW-B1 ◆ GROUNDWATER MONITORING WELL INSTALLED ON OCTOBER 21, 2009
 - BOLD** CONCENTRATIONS DETECTED ABOVE SITE-SPECIFIC CLEANUP LEVELS

SAMPLE ID	
Date	Date Collected
GRO	Gasoline Range Organics
DRO	Diesel Range Organics
HO	Heavy Oil Range Organics
B	Benzene
T	Toluene
E	Ethylbenzene
X	Total Xylenes
Pb-T	Total Lead
Pb-D	Dissolved Lead

- NOTES:**
- < = ANALYTICAL RESULT WAS NOT DETECTED, VALUE SHOWN IS THE LABORATORY REPORTING LIMIT.
 - 1. BLIND DUPLICATE SAMPLE RESULTS ARE SHOWN IN BRACKETS.
 - 2. ALL CONCENTRATIONS ARE REPORTED IN MILLIGRAMS PER LITER (MG/L)
 - 3. DRO AND HO WERE ANALYZED WITH SILICA GEL CLEANUP.

MW-19		TMW-1		MW-7		TMW-5		12	
Date	10/2/2019	Date	10/2/2019	Date	10/3/2019	Date	10/2/2019	Date	10/3/2019
GRO	1.23	GRO	<0.100	GRO	1.83 [1.74]	GRO	<0.100	GRO	1.36
B	<0.00100	B	<0.00100	B	0.00213 [0.00215]	B	<0.00100	B	1.41
T	<0.00100	T	<0.00100	T	0.00397 [0.00399]	T	<0.00100	HO	<0.250
E	<0.00100	E	<0.00100	E	0.0413 [0.0385]	E	<0.00100	B	0.00435
X	<0.00300	X	<0.00300	X	0.0193 [0.0194]	X	<0.00300	T	0.00295
				Pb-T	0.00326 [0.00333]			E	0.0226
				Pb-D	0.00226 [0.00237]			X	0.0109
								Pb-T	0.00951
								Pb-D	0.00334

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**GROUNDWATER ANALYTICAL RESULTS -
PERFORMANCE MONITORING WELLS
OCTOBER 2019**


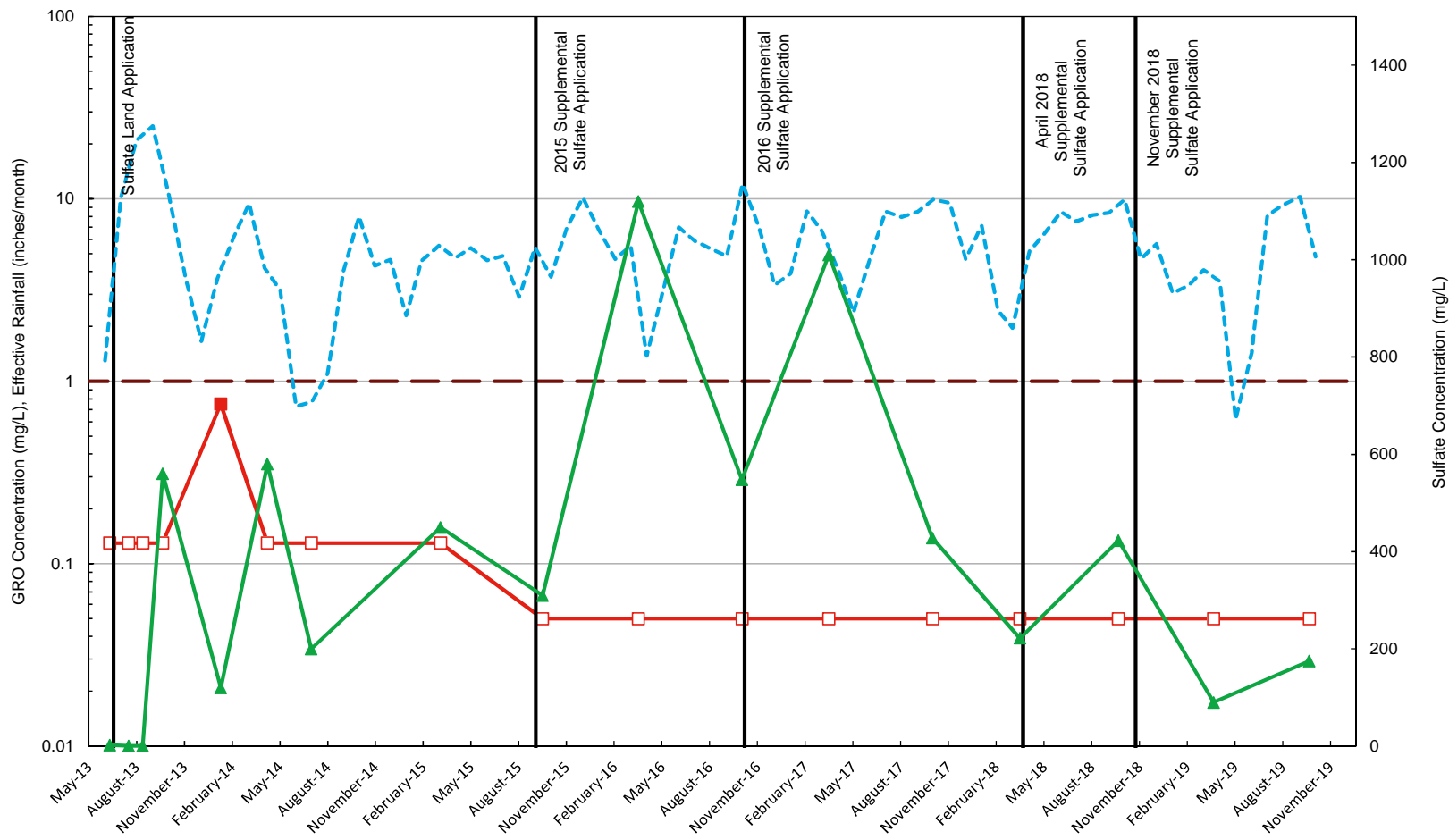


FIGURE
6B

GRAPHS





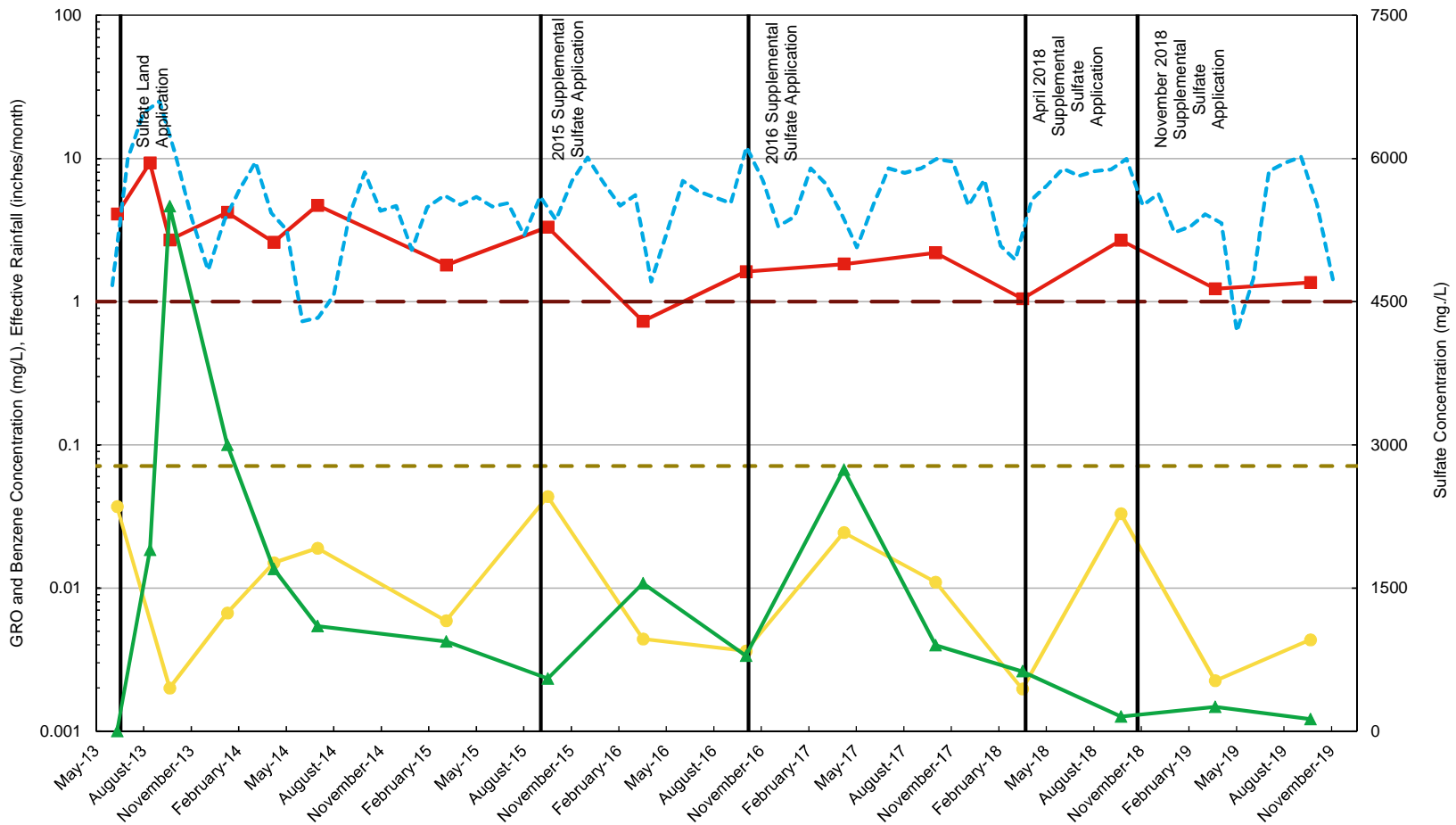
- GRO
- Site-Specific Cleanup Level; GRO
- - - Effective Rainfall (Precipitation + Irrigation)
- ▲ Sulfate

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL

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11 CONSTITUENT TREND PLOT

 ARCADIS	Design & Consultancy for natural and built assets	GRAPH
		1



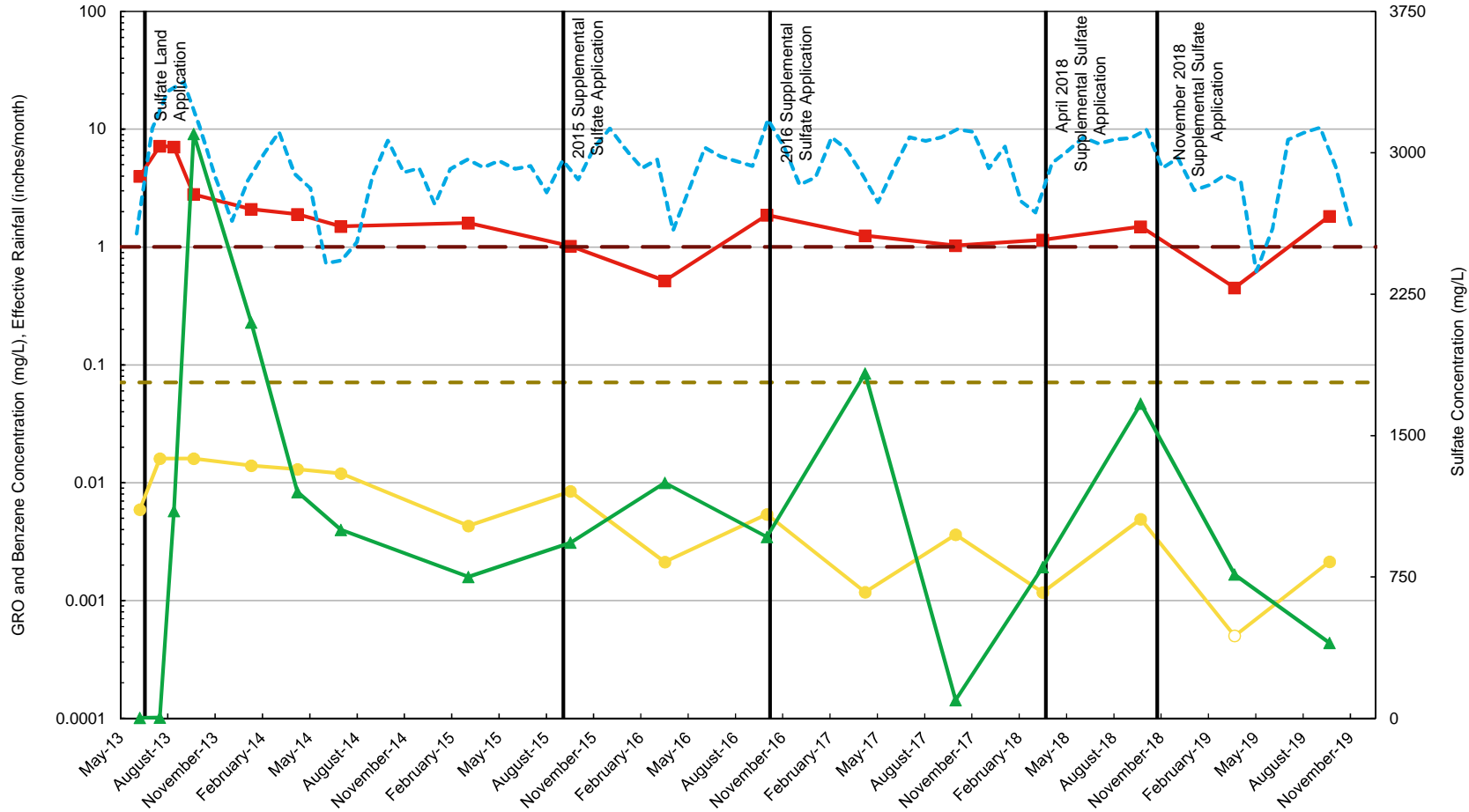
- GRO
- Site-Specific Cleanup Level; GRO
- Benzene
- Site-Specific Cleanup Level; Benzene
- - - Effective Rainfall (Precipitation + Irrigation)
- ▲ Sulfate

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter

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12 CONSTITUENT TREND PLOT

	Design & Consultancy for natural and built assets	GRAPH
		2



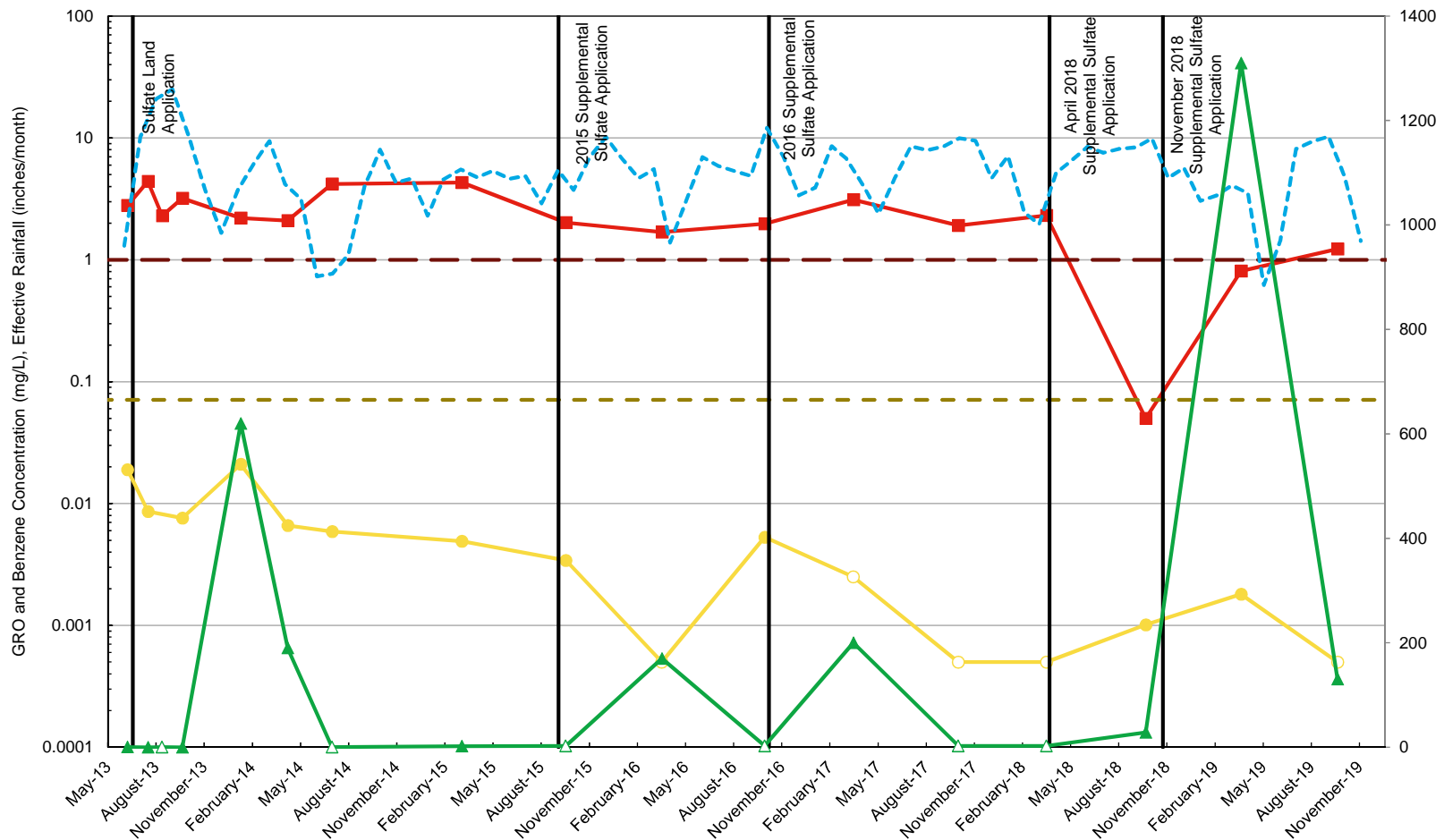
- GRO
- Site-Specific Cleanup Level; GRO
- Benzene
- Site-Specific Cleanup Level; Benzene
- - - Effective Rainfall (Precipitation + Irrigation)
- ▲ Sulfate

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL

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MW-7 CONSTITUENT TREND PLOT

	Design & Consultancy for natural and built assets	GRAPH
		3



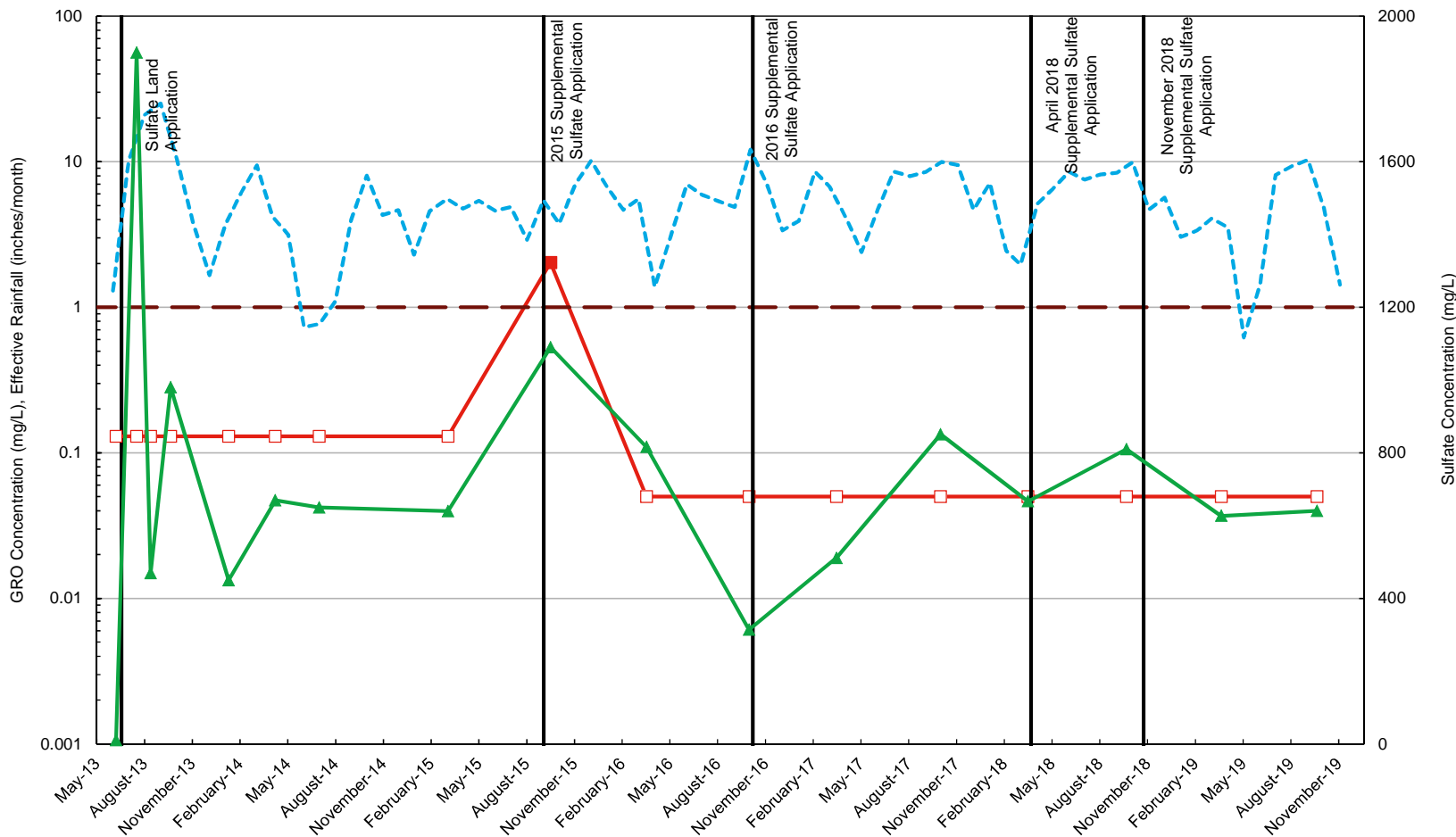
- GRO
- Site-Specific Cleanup Level; GRO
- Benzene
- Site-Specific Cleanup Level; Benzene
- - - Effective Rainfall (Precipitation + Irrigation)
- ▲ Sulfate

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL

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MW-19 CONSTITUENT TREND PLOT





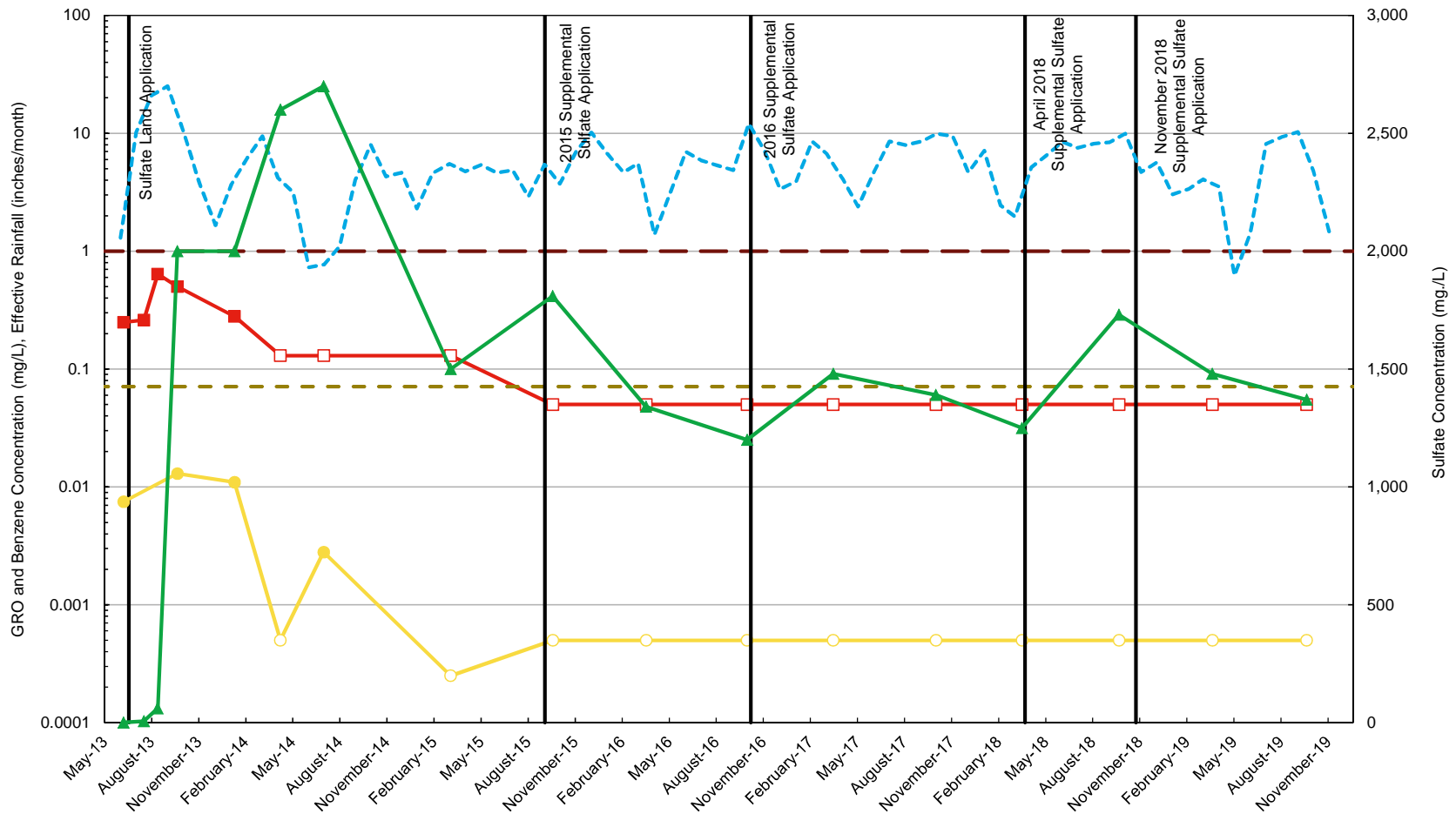
- GRO
- Site-Specific Cleanup Level; GRO
- - - Effective Rainfall (Precipitation + Irrigation)
- ▲ Sulfate

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL

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TMW-1 CONSTITUENT TREND PLOT

	Design & Consultancy for natural and built assets	GRAPH
		5



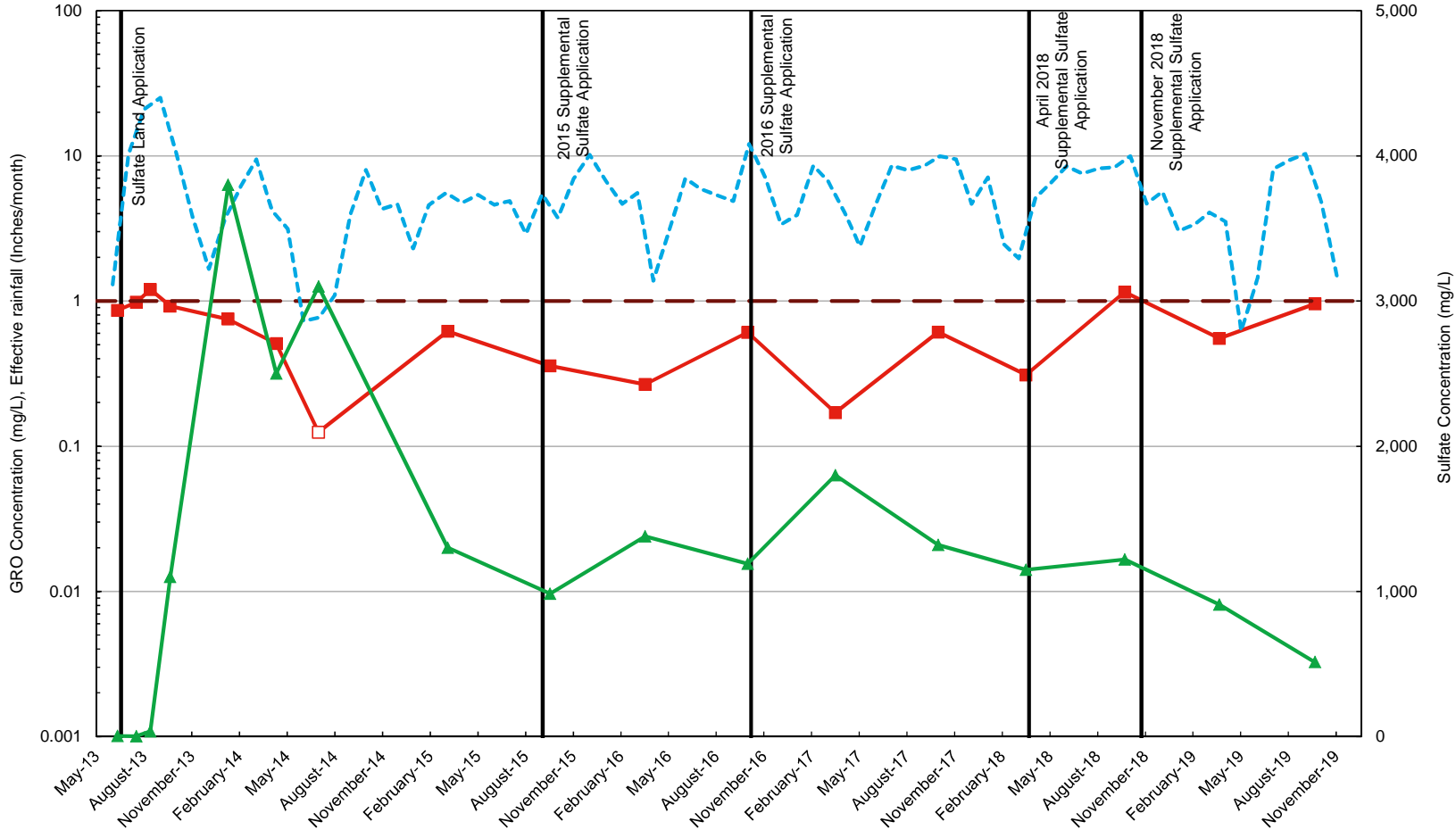
- GRO
- Site-Specific Cleanup Level; GRO
- Benzene
- Site-Specific Cleanup Level; Benzene
- - - Effective Rainfall (Precipitation + Irrigation)
- ▲ Sulfate

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL

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GROUNDWATER MONITORING REPORT

TMW-2 CONSTITUENT TREND PLOT





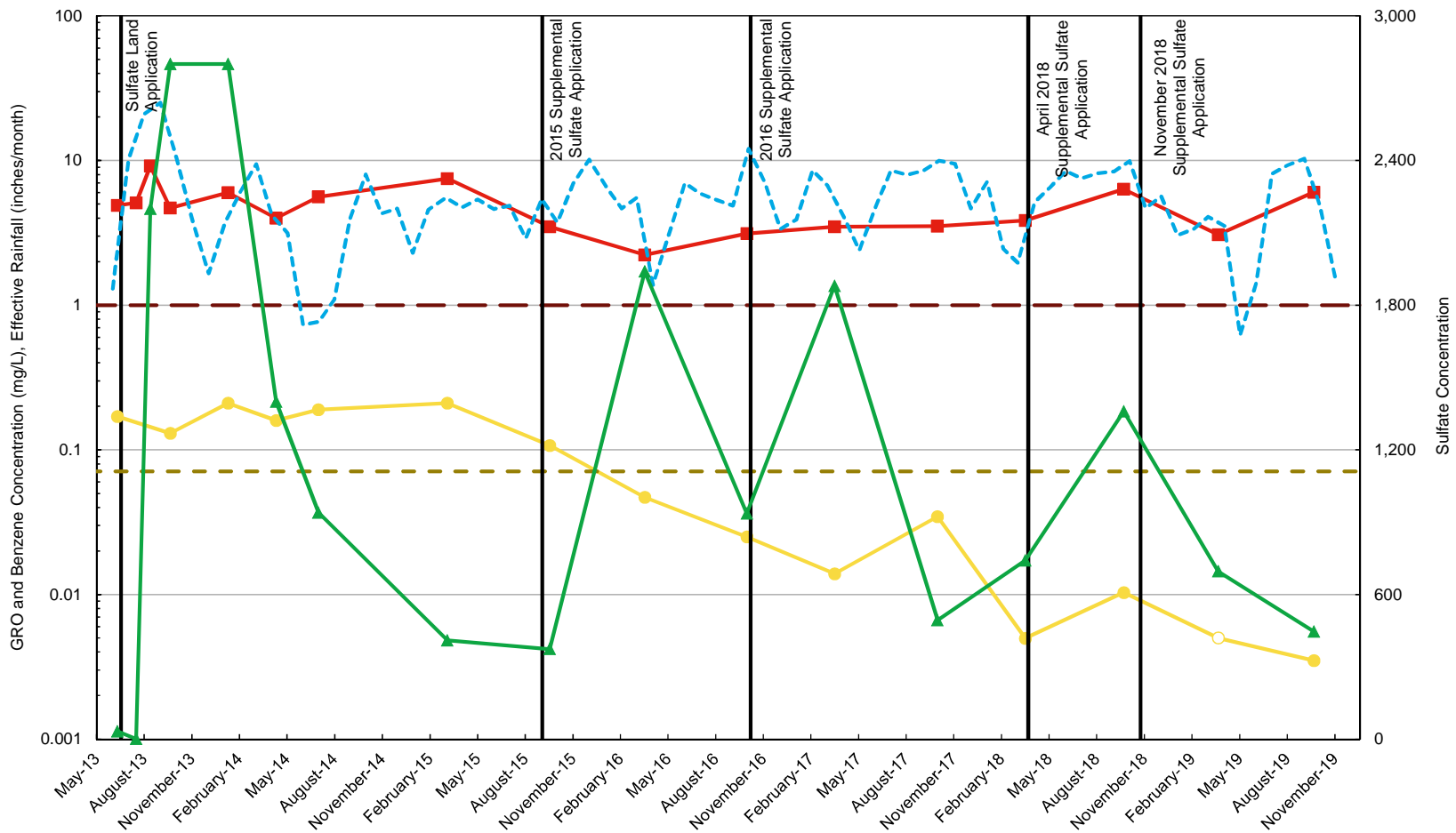
- GRO
- Site-Specific Cleanup Level; GRO
- - - Effective Rainfall (Precipitation + Irrigation)
- ▲ Sulfate

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL

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GROUNDWATER MONITORING REPORT

TMW-3 CONSTITUENT TREND PLOT

	Design & Consultancy for natural and built assets	GRAPH 7
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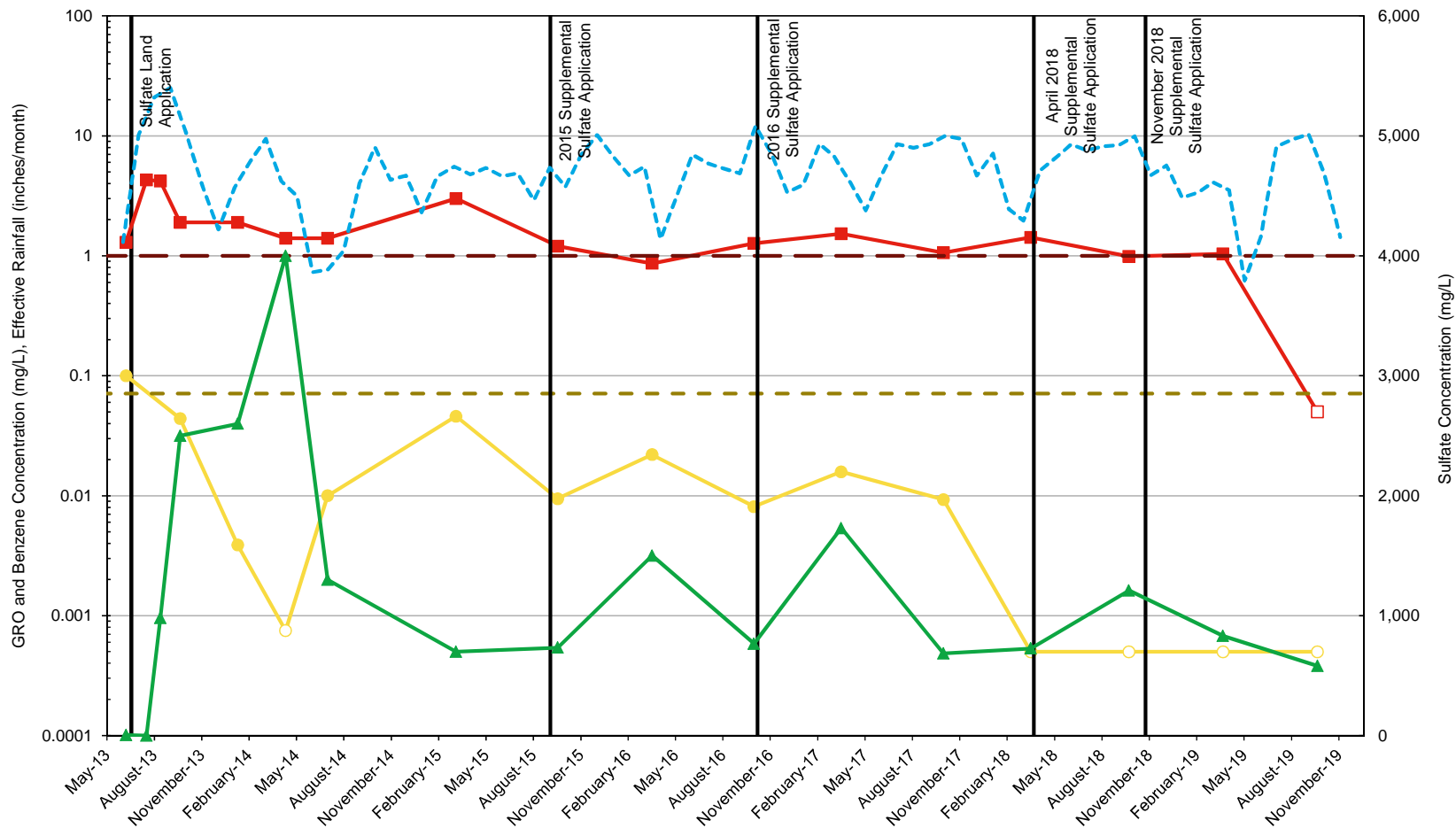
- GRO
- Site-Specific Cleanup Level; GRO
- Benzene
- Site-Specific Cleanup Level; Benzene
- - - Effective Rainfall (Precipitation + Irrigation)

Notes: Sulfate
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL

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TMW-4 CONSTITUENT TREND PLOT

	Design & Consultancy for natural and built assets	GRAPH
		8



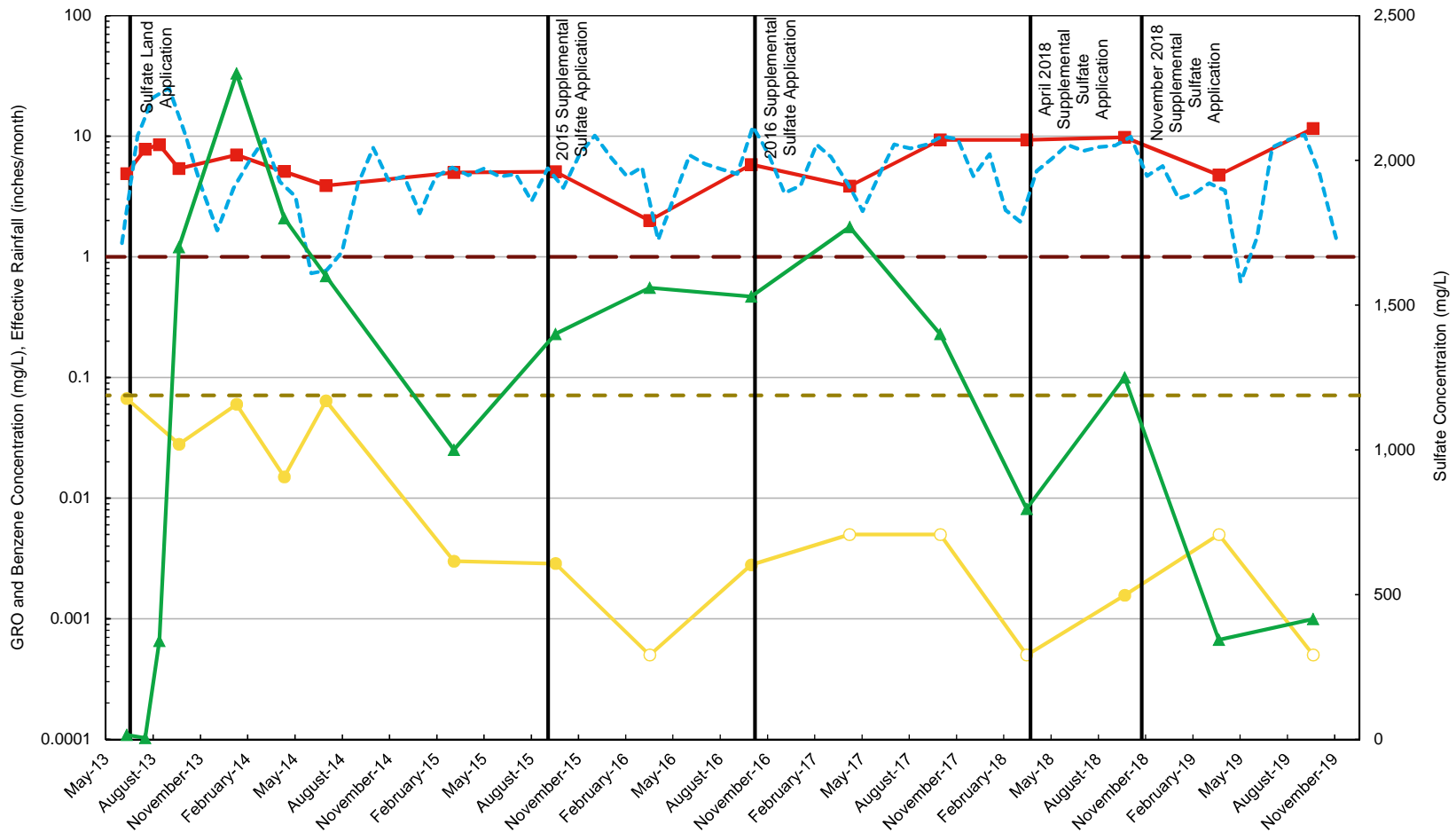
- GRO
- Site-Specific Cleanup Level; GRO
- Benzene
- Site-Specific Cleanup Level; Benzene
- - - Effective Rainfall (Precipitation + Irrigation)
- ▲ Sulfate

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL

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GROUNDWATER MONITORING REPORT

TMW-5 CONSTITUENT TREND PLOT

	Design & Consultancy for natural and built assets	GRAPH 9
--	--	-------------------



- GRO
- Site Specific Cleanup Level; GRO
- Benzene
- Site Specific Cleanup Level; Benzene
- - - Effective Rainfall (Precipitation + Irrigation)
- ▲ Sulfate

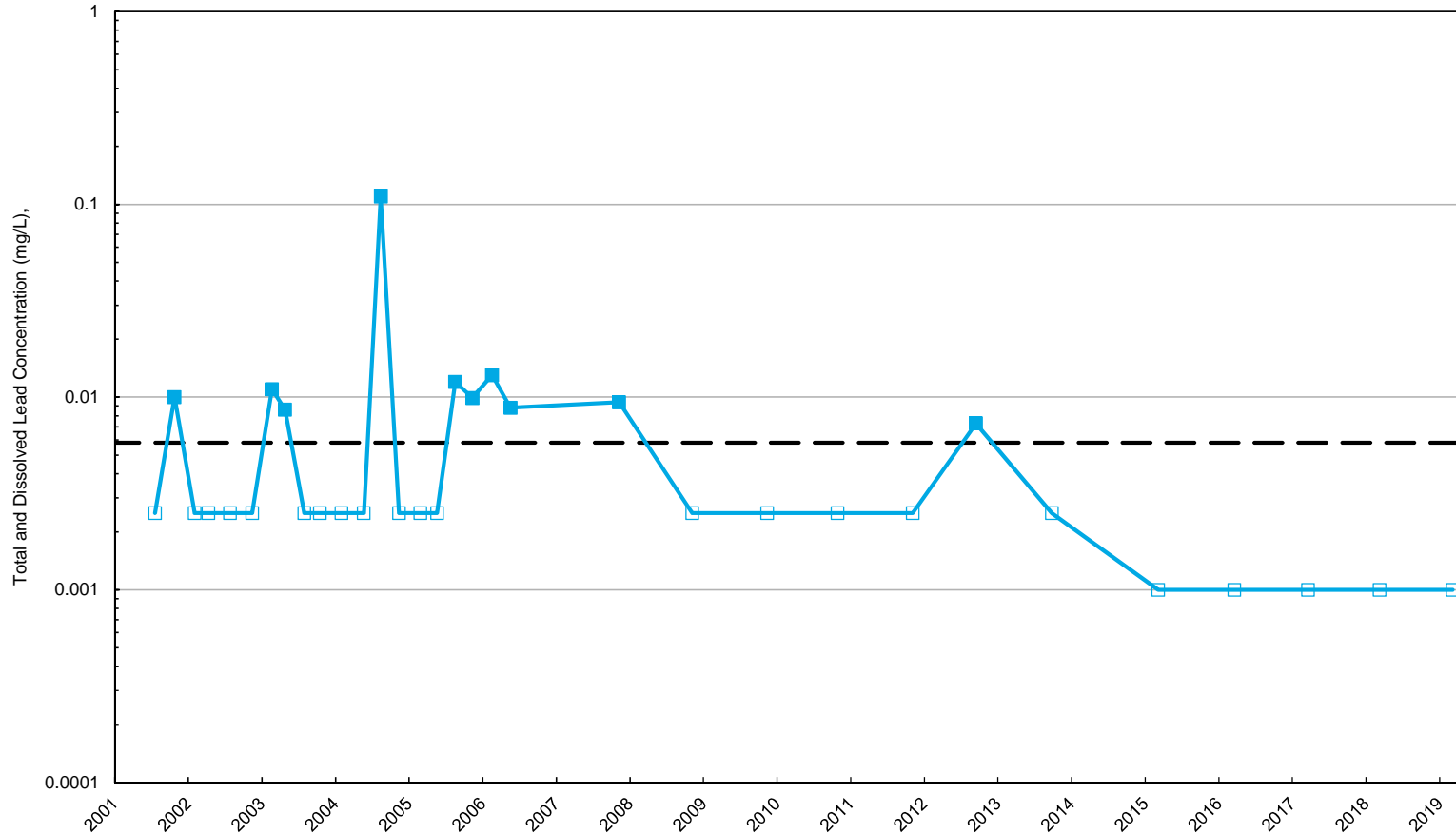
Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL

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GROUNDWATER MONITORING REPORT

TMW-6 CONSTITUENT TREND PLOT



GRAPH
10



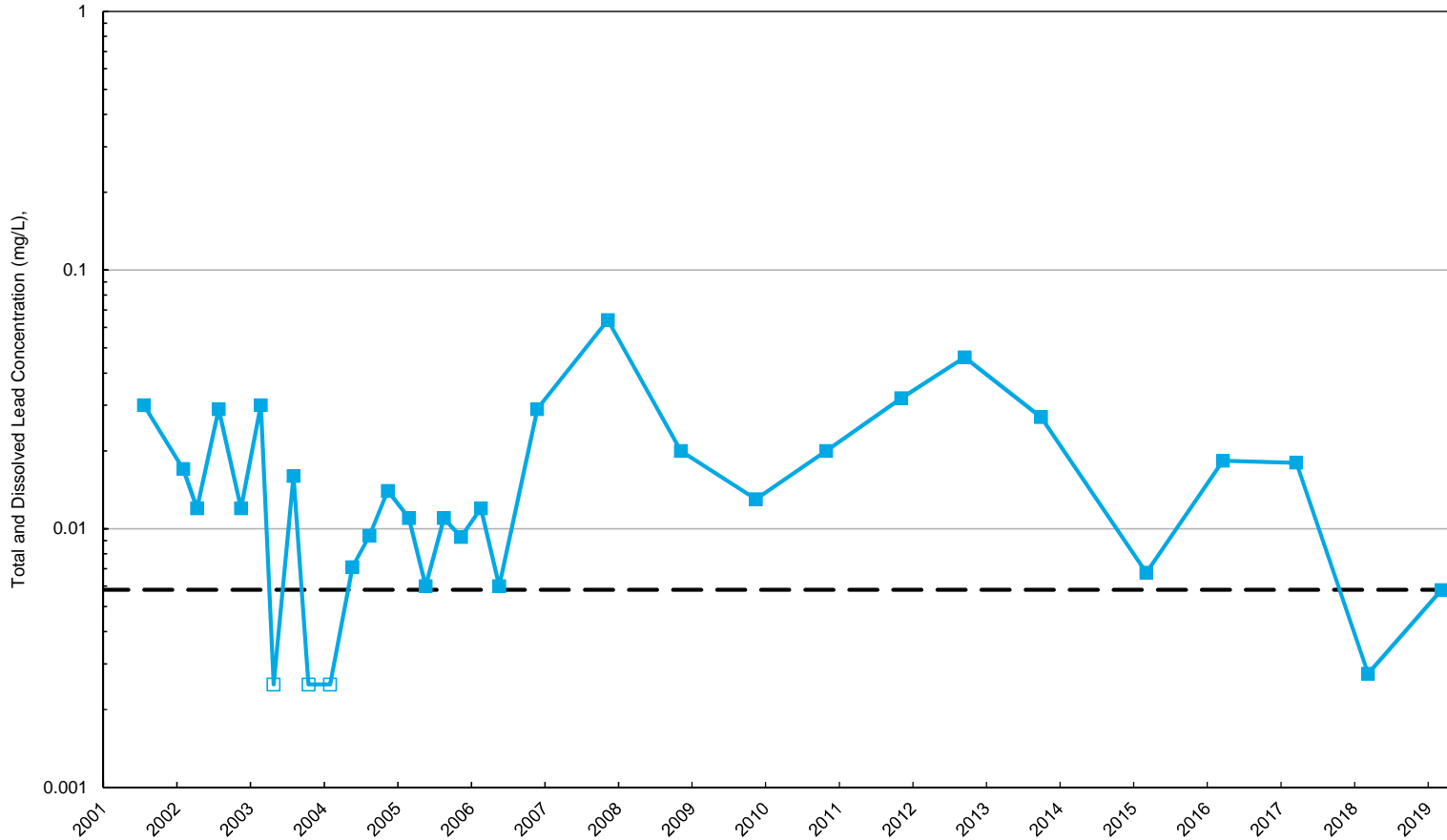
— • Site-Specific Cleanup Level; Total and Dissolved Lead
 — □ Total Lead

- Notes:
1. mg/L = milligrams per liter
 2. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL
 3. Dissolved lead was analyzed prior to 2006 and in the 2015 and 2016 groundwater monitoring events. Concentrations were below the method detection limit.

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MW-5 CONSTITUENT TREND PLOT

	Design & Consultancy for natural and built assets	GRAPH
		11



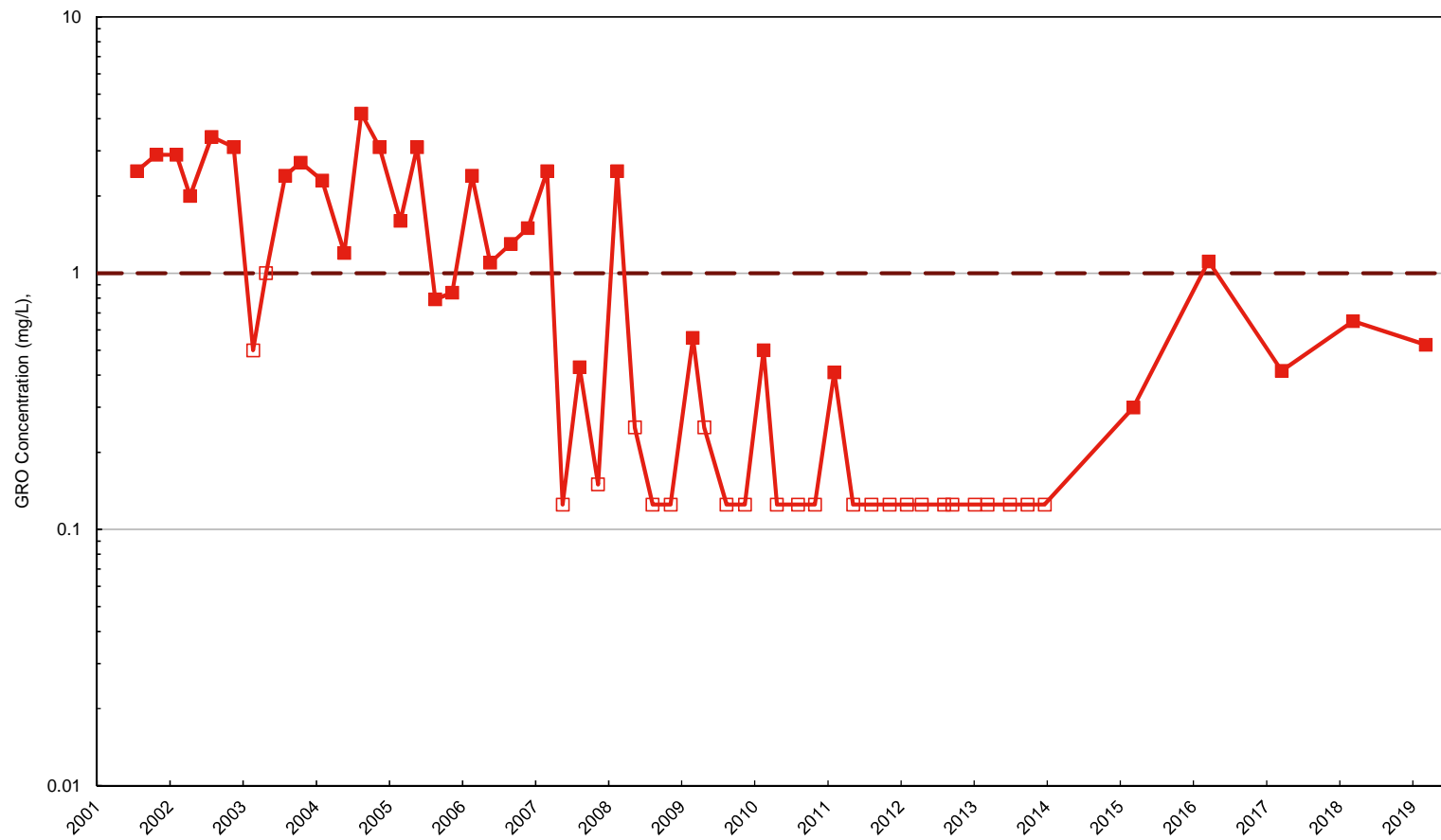
— Site-Specific Cleanup Level; Total and Dissolved Lead
 — Total Lead

Notes:
 1. mg/L = milligrams per liter
 2. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL
 3. Dissolved lead was analyzed prior to 2006 and in the 2015 and 2016 groundwater monitoring events. Concentrations were below the method detection limit.

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MW-8 CONSTITUENT TREND PLOT

 ARCADIS	Design & Consultancy for natural and built assets	GRAPH
		12



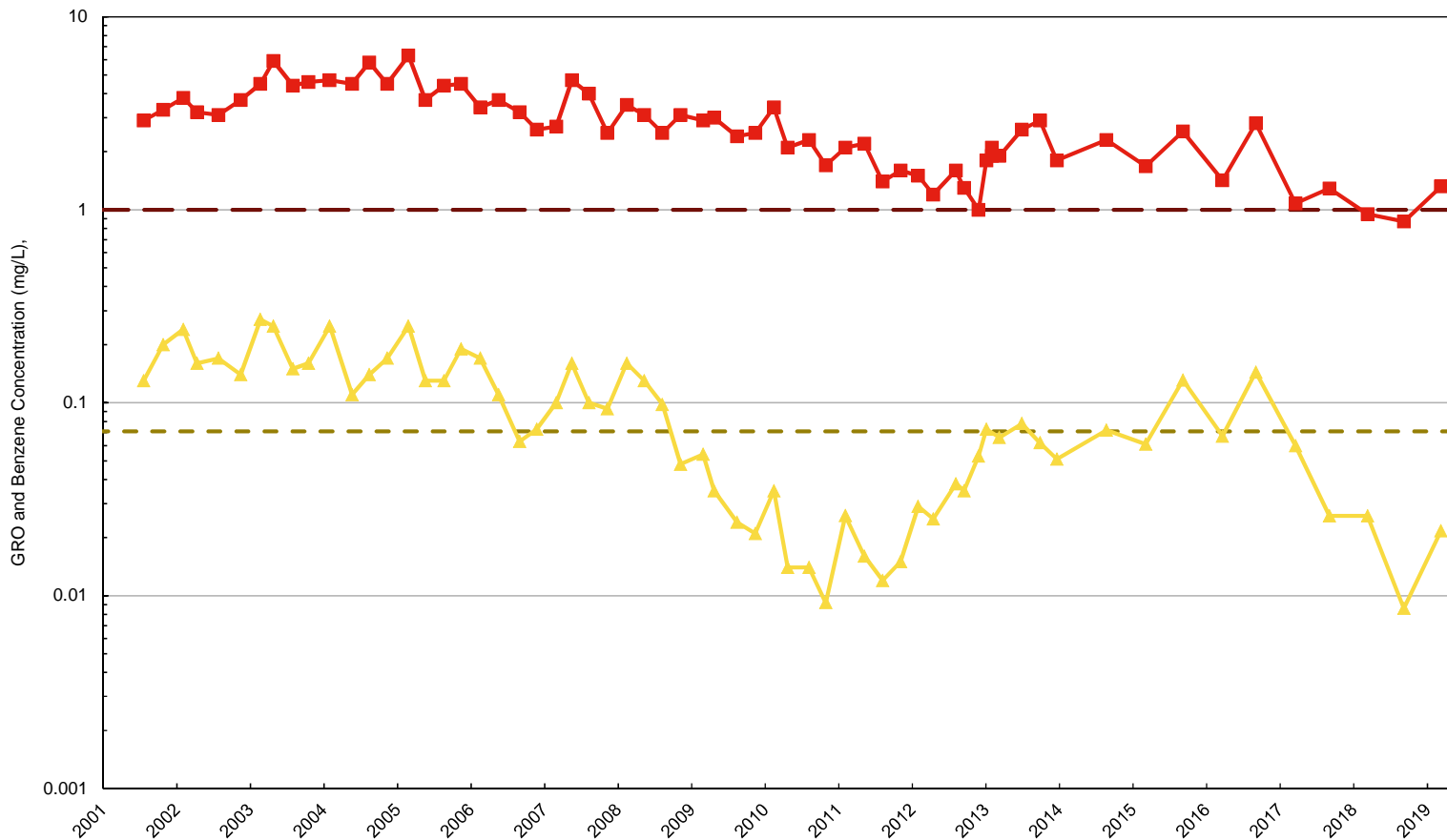
— Site-Specific Cleanup Level; GRO
 —■ GRO

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL

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MW-14 CONSTITUENT TREND PLOT

	Design & Consultancy for natural and built assets	GRAPH
		13



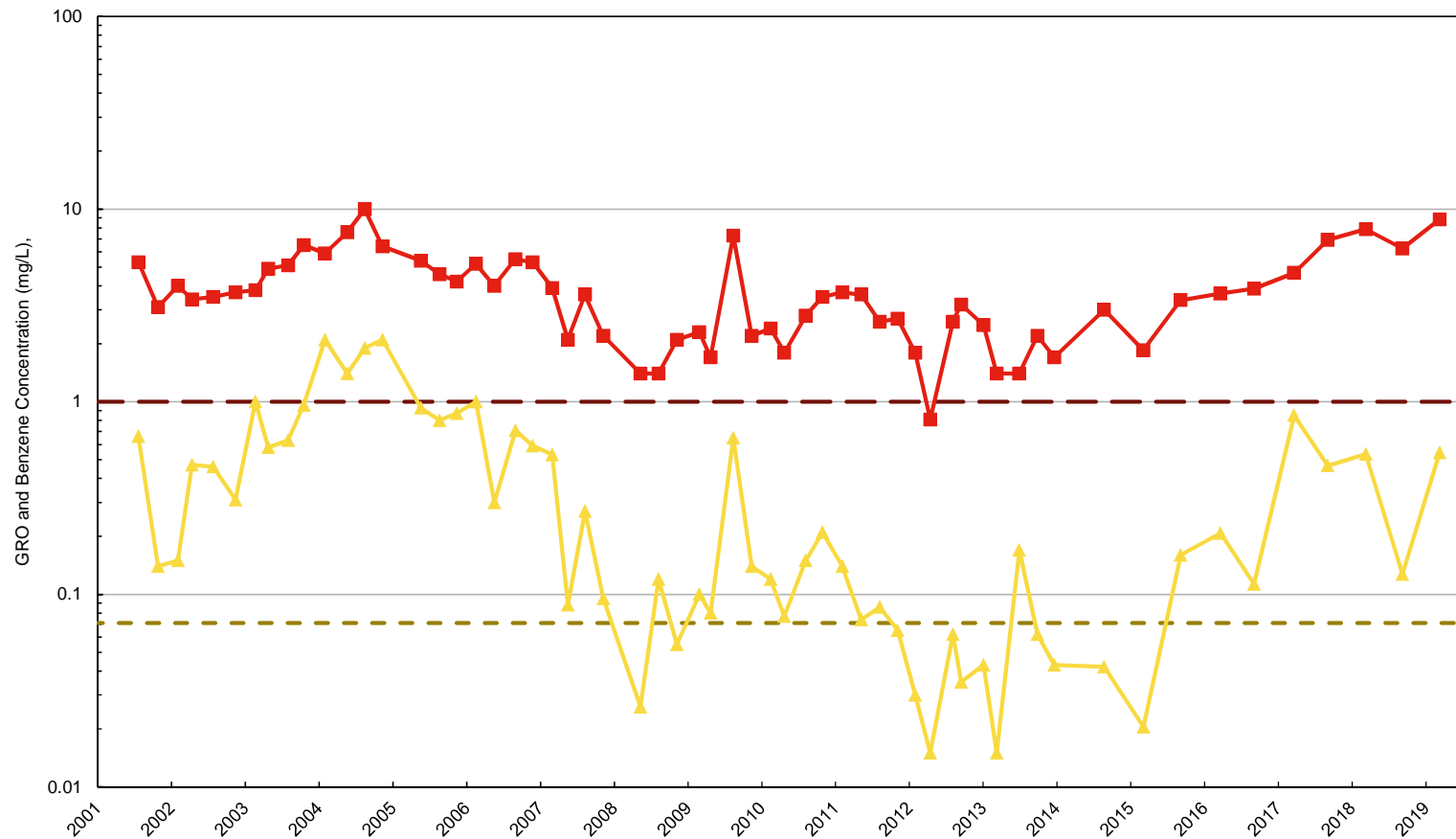
- Site-Specific Cleanup Level; GRO
- GRO
- ▲— Site-Specific Cleanup Level; Benzene
- ▲— Benzene

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter

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GROUNDWATER MONITORING REPORT

A-27 CONSTITUENT TREND PLOT





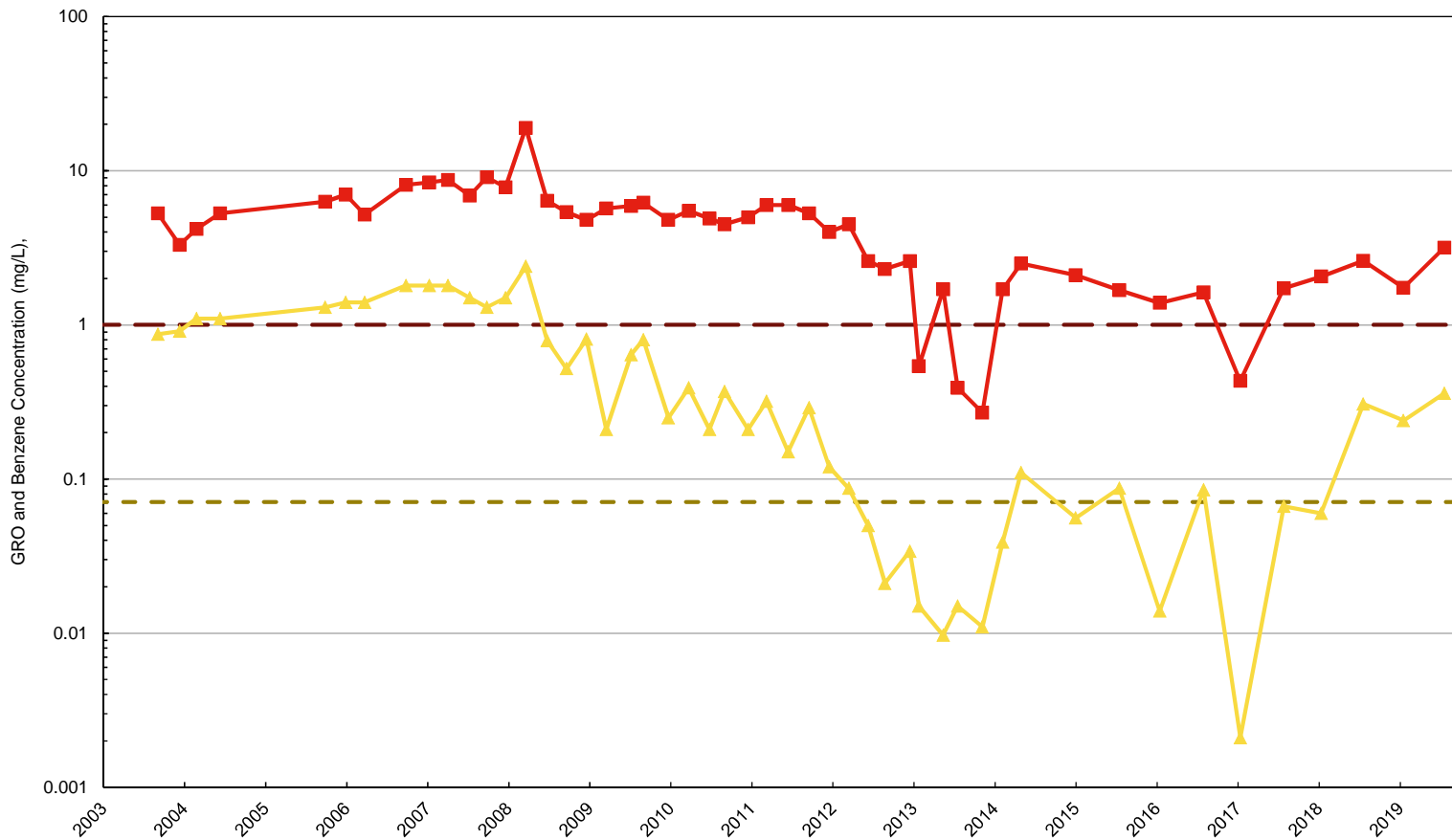
- Site-Specific Cleanup Level; GRO
- GRO
- Site-Specific Cleanup Level; Benzene
- ▲ Benzene

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter

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A-28R CONSTITUENT TREND PLOT





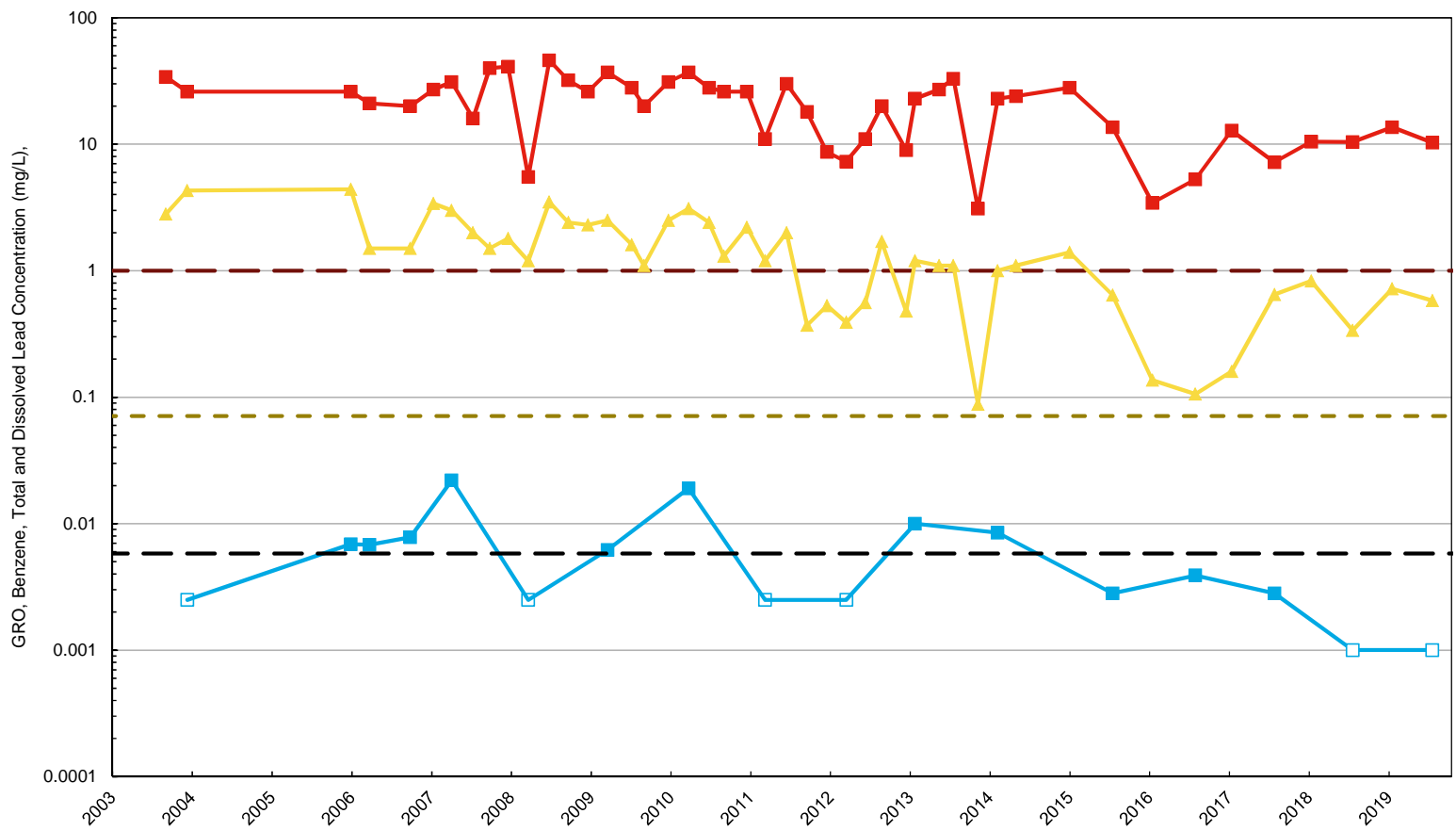
- Site-Specific Cleanup Level; GRO
- GRO
- Site-Specific Cleanup Level; Benzene
- ▲ Benzene

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL

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GROUNDWATER MONITORING REPORT

MW-23 CONSTITUENT TREND PLOT

	Design & Consultancy for natural and built assets	GRAPH
		16



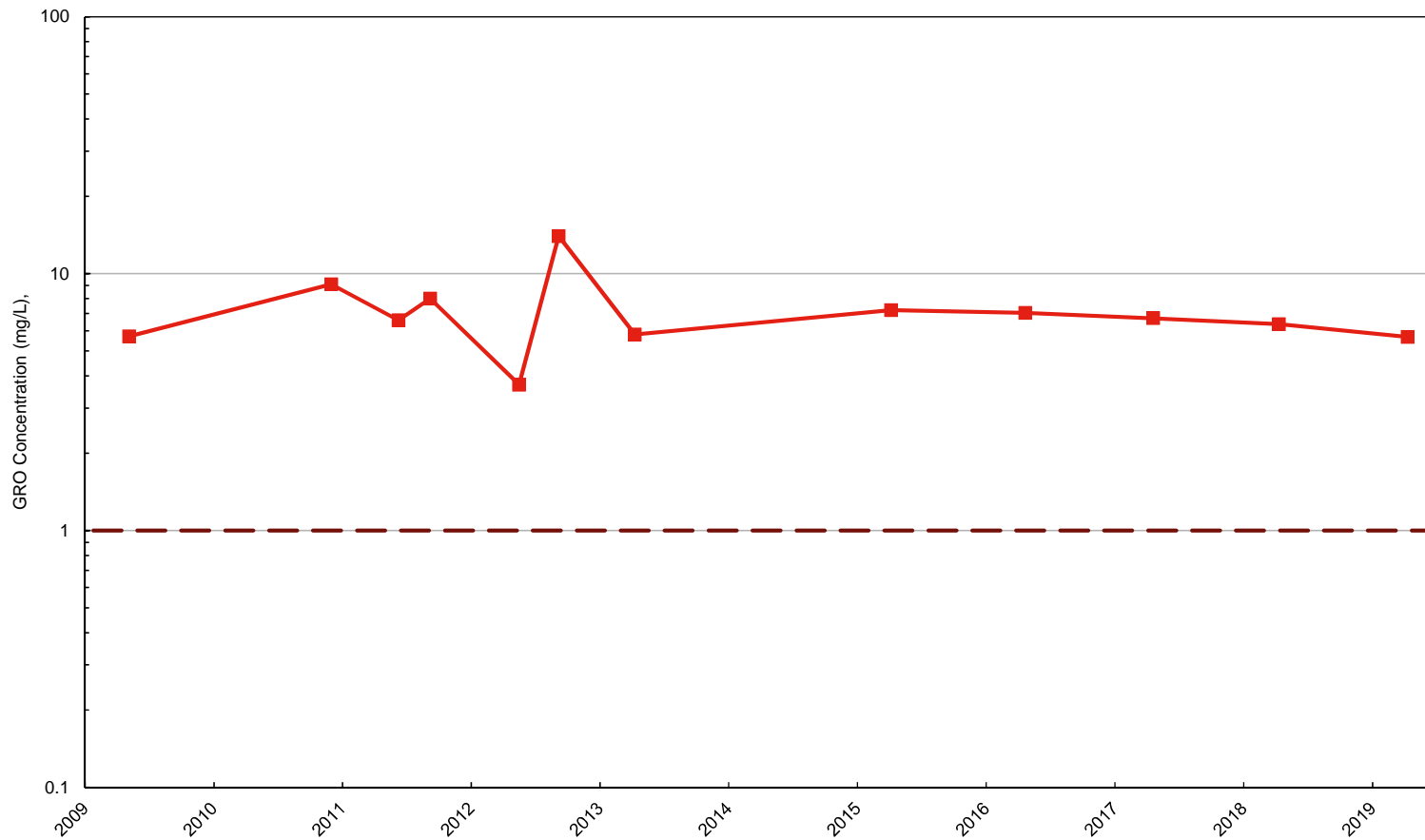
- Site-Specific Cleanup Level; GRO
- GRO
- Site-Specific Cleanup Level; Benzene
- ▲ Benzene
- Total Lead
- Site Specific Cleanup Level; Total and Dissolved Lead

Notes:
 1. GRO = gasoline range organics
 2. mg/L = milligrams per liter
 3. Open data points indicate that concentrations were not measured above the laboratory reporting limit (RL), plotted at half the RL
 4. Dissolved lead was analyzed in periodically prior to 2015 and in the 2015 and 2016 groundwater monitoring events. Concentrations were below the method detection limit.

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GROUNDWATER MONITORING REPORT

MW-24 CONSTITUENT TREND PLOT

	Design & Consultancy for natural and built assets	GRAPH 17
--	--	--------------------



— Site-Specific Cleanup Level; GRO

■ GRO

Notes:

1. GRO = gasoline range organics
2. mg/L = milligrams per liter

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GROUNDWATER MONITORING REPORT

TMW-B1 CONSTITUENT TREND PLOT

 **ARCADIS** Design & Consultancy
 for natural and built assets

GRAPH
18

APPENDIX A

Groundwater Monitoring Compliance Program

Compliance Monitoring Plan

Site-Wide Groundwater Compliance Monitoring Plan -
Proposed Reduced Monitoring

Ecology Approval Letter

Technical Revision Request – Low-Flow Groundwater
Sampling

Ecology Approval Letter

Revised Site Groundwater Monitoring Plan

Ecology Approval Emails

Groundwater Analytical Reduction Request

Ecology Approval Email

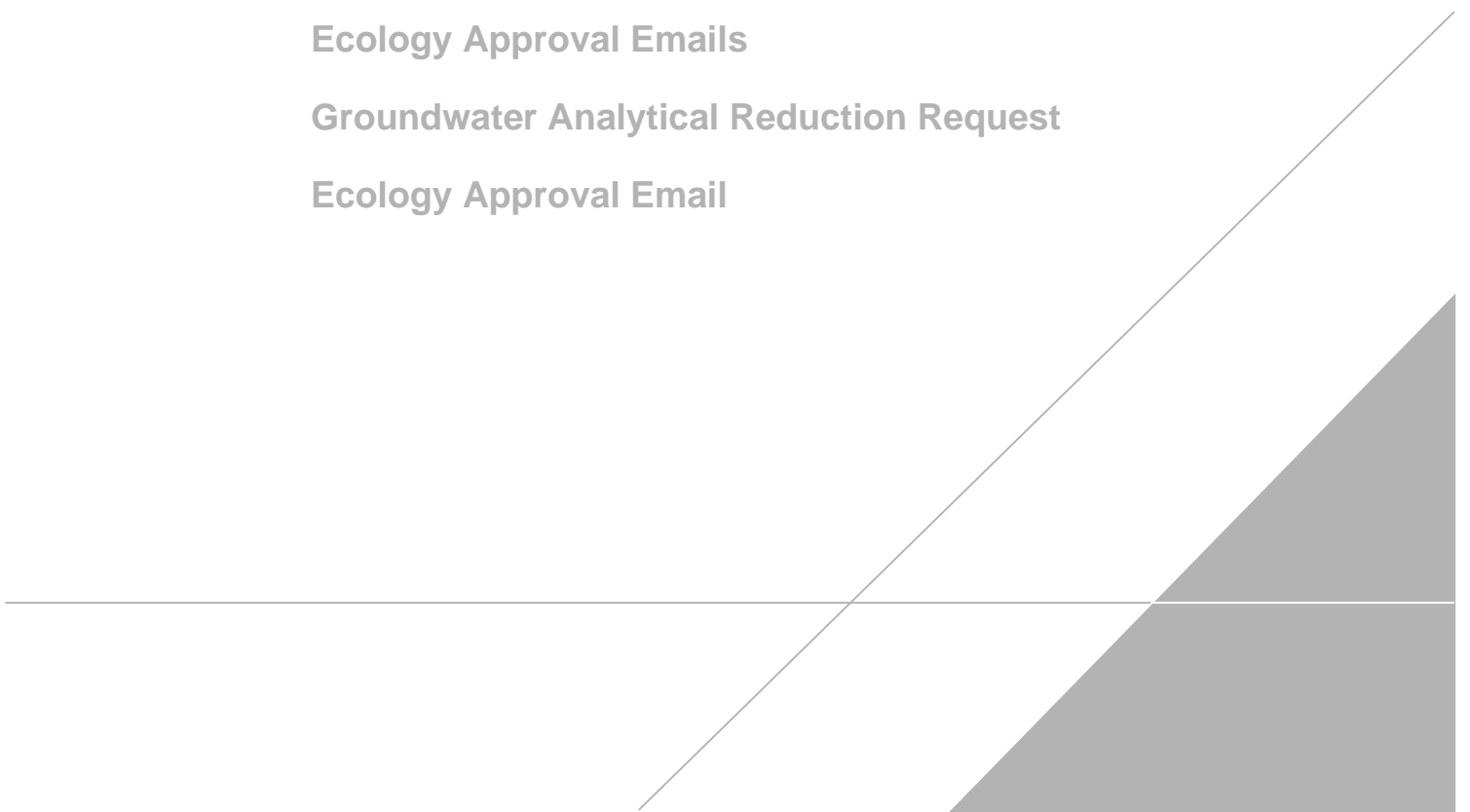


EXHIBIT F

COMPLIANCE MONITORING PLAN
GATX TERMINALS CORPORATION
HARBOR ISLAND TERMINAL
SEATTLE, WASHINGTON

ISSUED TO:

WASHINGTON STATE DEPARTMENT OF ECOLOGY

SUBMITTED BY:

GATX TERMINALS CORPORATION

October 27, 1999

PREPARED BY:

KHM ENVIRONMENTAL MANAGEMENT, INC.
16771 NE 80th Street, Suite 203
REDMOND, WASHINGTON 98052

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figures & Tables

Figure 1 – Compliance Well Location Map

Table 1 – Compliance Monitoring Wells

Table 2 – Groundwater Cleanup Levels

Table 3 – Natural Attenuation Parameters

Appendices

Appendix A – Compliance Sampling and Analysis Plan

10 Introduction

This Compliance Monitoring Plan has been prepared to describe the protocol and procedures that will be used to confirm that cleanup requirements have been achieved at the GATX Harbor Island Terminal (Terminal) located in Seattle, Washington. The monitoring plan has been prepared to satisfy the requirements of the Model Toxics Control Act (MTCA) regulations WAC 173-340-410, -720, and -820. This plan was also prepared in accordance with requirements of the Consent Decree, cooperatively entered into between GATX Terminals Corporation (GATX) and the Washington State Department of Ecology (Ecology).

A variety of components included in this compliance monitoring plan address the requirements of WAC 173-340-410. These components include:

- 1) Introduction: Discuss site overview, hydrogeology, cleanup action summary, monitoring objectives and rationale, types of monitoring, monitoring locations, and schedule;
- 2) Protection Monitoring: Describe the criteria for protection monitoring under WAC 173-340-400;
- 3) Performance Monitoring: Describe the criteria and methodology for performance monitoring of free product recovery, natural attenuation, and other selected remedial technologies to document that the cleanup action is performing as anticipated;
- 4) Confirmation Monitoring: Describe the confirmation criteria which monitors the long-term effectiveness of the cleanup action once cleanup and performance standards have been attained;
- 5) Data Evaluation and Reporting: Discuss free product monitoring, groundwater sampling and analytical procedures, data validation, evaluation procedures, reporting, and monitoring schedules;
- 6) Criteria for Meeting Performance and Compliance Standards: Discuss criteria to be used to determine if performance and compliance standards have been met; and
- 7) Contingency Plans: Discuss the steps that will be implemented in the event the proposed cleanup actions are not effective.

11 SITE DESCRIPTION

The GATX Harbor Island Terminal is located at 2720 13th Avenue Southwest in Seattle, Washington and is part of a U.S. EPA Superfund Site, the Terminal Operable Unit. The facility, approximately 14 acres in size, is located in the highly industrialized north-central section of Harbor Island. The Terminal is situated on relatively level property, with surface elevations ranging between 6 to 11 feet above sea level. There are no surface water bodies within the Terminal property boundaries. The site is situated approximately 1,400 feet from the West Waterway and over 1,000 feet from the East Waterway. The site is zoned industrial and meets the industrial criteria established under WAC 173-340-745. It is likely that the site will remain an industrial facility in the foreseeable future because of the site zoning, and, perhaps more importantly, because of the substantial industrial improvements to Harbor Island (e.g., construction of cargo handling facilities and construction of major petroleum distribution pipelines for the island). Ecology and EPA have determined that there is no current or planned future use of groundwater beneath Harbor Island for drinking water purposes.

The Terminal is presently divided into five distinct areas. These areas include the A, B, C, D, and E Yards. The A Yard contains two fuel tanker truck-loading racks. The administrative office and maintenance building is also situated in the A Yard. The A Yard is entirely paved with asphalt or concrete. The A Yard is bounded by a containment dike for the B Yard on the north, and by chain-link fencing on the south, east, and west.

The B and C Yards are used as bulk fuel storage areas. Fifteen above ground storage tanks are located within the B Yard and six are situated within the C Yard. Both yards are mostly unpaved and are surrounded by concrete containment dikes. The D Yard is situated between the B and C Yards and has been used to route product and utility lines. Several maintenance buildings and material handling areas are also situated within the D Yard.

The Terminal is situated on the southeast portion of a groundwater mound which is centered on the northern half of Harbor Island. Groundwater flow migration is south and southeast across the site. The primary groundwater discharge point is the Duwamish River East and West Waterways. Due to the dampening effect of the bulkhead structures along the East and West Waterways of the Duwamish River, and the inland location of the site, water table fluctuations in response to tidal influence and seasonal fluctuations is less than one foot.

12 SELECTED CLEANUP ACTION SUMMARY

The selected cleanup action is designed to accomplish the following requirements: protect human health and the environment, comply with cleanup standards established in WAC 173-340-700, comply with applicable state and federal laws under WAC 173-340-710, provide compliance monitoring as set forth in WAC 173-340-410, use permanent solutions to the maximum extent practicable as mandated in WAC 173-340-360 (2), (3), (4), (5), (7), and (8), provide a reasonable time restoration in accordance with WAC 173-340-360 (6), and consider public concerns as designated in WAC 173-340-600.

Cleanup actions at the site include source removal in the soil and groundwater and recycling/off-site disposal, monitoring, natural attenuation, and institutional controls.

Soil. The goal of soil cleanup standards for petroleum hydrocarbons is to protect the beneficial use of groundwater (surface water quality and associated ecosystem). The preferred alternative will result in substantive compliance with the soil cleanup standards by reducing concentrations of contaminants in soils to levels that will support and maintain compliance with ground water quality standards.

The specific soil cleanup actions are:

- In-situ treatment of soil that includes soil vapor extraction (SVE), and natural attenuation/intrinsic biodegradation.
- Excavation of accessible total petroleum hydrocarbons (TPH) subsurface soil hot spots with concentrations above 10,000 milligrams per kilogram (mg/kg) to the extent practicable in the C Yard.
- Excavation of accessible TPH subsurface hot spots with concentrations above 20,000 mg/kg to the extent practicable in the A, B, and D Yards.
- In-situ treatment of inaccessible soil hot spots to the extent practicable in all Yards.
- Natural attenuation of the residual TPH in the subsurface soil.

- Excavation or capping of lead- and arsenic-impacted surface soil with concentrations above 1,000 mg/kg and 32.6 mg/kg, respectively, in the B and C Yards.

Groundwater. The achievement of cleanup levels in groundwater shall be measured at points of performance and compliance located within the product plume area and at the downgradient edge of the site. The wells at the downgradient edge of the site are considered conditional points of compliance wells. These points of compliance and performance shall consist of a network of monitoring wells located in the product plume area and on the downgradient property boundary. Other wells (sentry wells) situated off-site will also be used to document plume migration, performance standards, and to warn of any unanticipated change in off-site groundwater conditions. Exact locations of these wells are identified in the Section 2 of this plan.

The specific cleanup actions include:

- Active and passive free product recovery in the A, B, and C Yards,
- Dual-phase extraction of groundwater and product in the A and C Yards,
- Extraction of groundwater and/or free product,
- Active and passive point-source extraction in the A, B, and C Yards,
- Partially-penetrating down-gradient vertical barrier to stop product migration in the A and C Yards,
- Free product monitoring in the A, B, C, and D Yards,
- Groundwater monitoring in point of compliance (confirmation), performance and offsite (sentry) wells for the site, and
- Institutional control in the form of a deed restriction for the site.

13 MONITORING OBJECTIVES AND RATIONALE

The cleanup action incorporates monitoring to determine that cleanup standards are achieved and maintained after remedial actions have been completed. During the remedial actions, performance monitoring will be conducted to confirm that cleanup actions have attained cleanup standards and treatment goals. After remedial actions are performed, performance monitoring will be conducted to confirm and document that cleanup actions have attained cleanup standards and performance standards. Protection monitoring will be used to adequately protect human health and the environment during construction and operation of the cleanup actions.

The achievement of cleanup levels in groundwater shall be measured at points of performance and compliance located within the free product plume area and at the downgradient edge of the site. The overall objective of the compliance monitoring wells downgradient of the free product plumes and on the property boundaries is to provide additional safeguards by providing both Ecology and GATX with early warning of potential contamination migration and basis for Contingency Plan reviews and implementation, if necessary. Sentry wells, situated off property limits and downgradient of dissolved petroleum hydrocarbon plumes, will also be used to monitor migration of dissolved petroleum constituents.

Monitoring methods, monitoring locations, and types of analyses were selected to monitor the effectiveness of the cleanup actions in attaining the soil, free product, and groundwater cleanup standards for the site. The specific details of these monitoring activities are described in subsequent sections of this document.

13.1 SOIL

TPH, arsenic, and lead concentrations were above levels requiring action at the site.

The determination of adequate soil treatment will be based on the ability to comply with the groundwater cleanup standards for the site, to meet performance standards designed to minimize human health or environmental exposure to soils above cleanup levels, and to provide practicable treatment of contaminated soils.

Monitoring objectives are based on the following site observations:

1. **TPH in the A Yard.** Soil TPH concentrations were above the cleanup action levels (20,000 mg/kg) north, northwest and west of the Garage Building Area.
2. **TPH, Arsenic, and Lead in the B Yard.** Soil TPH concentrations were above the cleanup action levels (20,000 mg/kg) between Tanks 18 and 21, and southwest of Tank 22. Concentrations of arsenic and lead in surface soil were above the cleanup levels (32.6 and 1,000 mg/kg, respectively) in unpaved soil covering roughly half of the B Yard.
3. **TPH, Arsenic, and Lead in the C Yard.** Soil TPH concentrations were above the cleanup action levels (10,000 mg/kg) at seven locations in the C Yard as follows: i) MW-4, SS-17, SS-18, which is southeast of Tank 44, ii) SS-2, which is northwest of Tank 44, iii) S-6, which is northwest of Tank 37, iv) SS-2 and SS-13, which is between Tanks 42 and 39, v) S-5 and S-8, which is between Tanks 35 and 37, vi) S-10, which is north of Tank 35, and vii) S-12, which is southwest of Tank 35. Concentrations of arsenic and lead in surface soil were above the cleanup levels (32.6 and 1,000 mg/kg, respectively) in unpaved soil covering roughly half of the C Yard.

13.2 GROUNDWATER

Groundwater will be monitored for benzene, toluene, ethylbenzene, TPH-G, TPH-D, TPH-O, free product, and lead in specific areas of the site

prior, during and after implementation of the cleanup action discussed in Section 1.2. The selected analysis and monitoring locations correspond to the soil cleanup areas identified in Section 1.3.1, areas of product recovery, and the water quality chemistry data for the site.

Wells Not Included in Compliance Monitoring Program.

Monitoring wells not included in the confirmation, performance, or the sentry wells are excluded from this Compliance Groundwater Monitoring Program. After the one-year review of the site groundwater analytical data as discussed in Section 3.4.1, Ecology and GATX will review potential wells for abandonment as appropriate.

Damaged Wells Due To Cleanup Action Implementation.

Monitoring wells designated for confirmation, performance or sentry wells that become disabled as a result of the cleanup action implementation must be replaced. Ecology must approve the new proposed location before replacement of the damaged groundwater monitoring well.

Areas Above Cleanup Levels

BTEX and TPH Areas. Shallow monitoring wells with periodic or consistent detection of BTEX constituents or TPH above the cleanup levels include, Well 24, T-10, T-17, T-11, MW-3, T-15, T-8, T-5, T-19, T-13, T-18, Well 17, MW-14, MW-7, Well 15, MW-9, A-27, A-28, A-26, A-24, A-3, A-21, A-23, A-15, and A-10. These wells are located in or around Yards A, B, C, and D and, due to historic detection of petroleum-hydrocarbon-related IHSs above cleanup levels (Table 2), these monitoring wells will be included in the compliance monitoring program. Monitoring in these wells will be focused on the IHSs for groundwater to provide water quality data for baseline data and trend analysis. Furthermore, a selection of these wells will be monitored for natural attenuation parameters (Table 3).

Lead Areas. Total lead was detected periodically above the cleanup level (0.0058 mg/l) in the following wells: MW-1, MW-2, MW-3, MW-5, MW-6, MW-7, MW-07, MW-8, MW-9, MW-11D, MW-12, MW-13, A-14, A-21, A-23, A-24, A-28, SF-01, SH-02, SH-04, and SH-05. Dissolved lead was detected periodically above the cleanup level (0.0058mg/l) in MW-7. These wells will be included in the compliance monitoring wells and analyzed for total and dissolved lead as part of the performance and confirmation monitoring of the surface cleanup action for the site as described in Section 1.2.

14 COMPLIANCE MONITORING CATEGORIES AND SCHEDULE

Groundwater compliance monitoring will consist of free product monitoring, groundwater elevation monitoring, and groundwater sampling.

- Free product monitoring will consist of measuring free product thickness in areas of the site as part of the performance standard evaluation after implementation of the preferred remedial alternative.
- Groundwater elevation monitoring will be performed during free product monitoring events and during groundwater sampling events.
- Groundwater samples will be collected from designated GATX compliance monitoring wells, performance monitoring wells, and sentry wells.

The monitoring objectives have been categorized as protection, confirmation, and performance monitoring. These three forms of compliance monitoring will be performed in accordance with WAC 173-340-410.

Protection Monitoring to confirm that human health and the environment are adequately protected during construction and the operation and maintenance period of the cleanup action.

Performance Monitoring to confirm that the cleanup action has attained cleanup standards and other performance standards.

Confirmation Monitoring (Confirmation and Sentry Wells) to confirm the long-term effectiveness of the cleanup action once cleanup actions and other performance standards have been attained.

Monitoring Schedule. Groundwater sampling will begin in the quarter that the Consent Decree is approved (December 1999) and will continue for five years (December 2004). Sampling will occur quarterly for the first year. Ecology and GATX will review the data after one year. If trends are declining, the sampling frequency and number of parameters may be reduced.

2.0 Compliance Monitoring

Compliance monitoring will begin within the quarter the Consent Decree is approved and will continue for five years. Figure 1 shows the locations of all wells in which product will be monitored, groundwater levels will be measured, and groundwater samples will be collected as part of the site compliance monitoring program. Table 1 provides a list of compliance monitoring wells, identifying the well location, monitoring objective, and well use. A summary of the analytical parameters to be used in compliance monitoring is presented in Tables 2 and 3. A detailed description of each compliance-monitoring component, including the media type, location, and schedule, is presented this section. Specific schedule details are discussed within Sections 2.2.3 and 2.3.3. and Table 1.

2.1 PROTECTION MONITORING

The objective of protection monitoring is to confirm that human health and the environment are adequately protected during construction, operation and maintenance of the cleanup action [WAC 173-340-410(1)(a)]. Protection monitoring will be addressed in the health and safety plan prepared in conjunction with the engineering design report, construction plans and specifications, and operation and maintenance plan (WAC 173-340-400).

2.2 PERFORMANCE MONITORING

The objective of performance monitoring is to confirm that the cleanup action has attained cleanup standards and other performance standards as appropriate [WAC 173-340-410(1)(b)]. Performance monitoring will consist of free product monitoring during product recovery activities and groundwater sampling to evaluate the effectiveness of soil and groundwater cleanup actions and natural attenuation.

2.2.1 PERFORMANCE MONITORING LOCATIONS

Wells A-14, A-21, A-23, A-27, MW-3 through MW-9, MW-14, MW-07, SH-02, SH-05, and three new wells will be used for performance wells. These wells are located in or around Yards A, B, C, and D within groundwater plume. Due to historic detection of petroleum-hydrocarbon-related IHSs above cleanup levels, these monitoring wells will be included in the compliance monitoring program. Monitoring in these wells will be focused on the IHSs for groundwater to provide water quality data for baseline data

and trend analysis. These wells will also be monitored for natural attenuation parameters (Table 3).

Areas Below Cleanup Levels: IHSs were not detected above the groundwater cleanup levels (Table 2) more than once in shallow monitoring wells MW-1, MW-2, MW-5, MW-07, MW-8, MW-12, MW-13, MW-16, MW-17, MW-18, A-8, A-24, SH-02, SH-05, T-3, T-4, and T-12. Most of these wells are located at the downgradient sides of the C Yard and some are located in the A, B, and D Yards.

Free Product: Shallow wells located in or around a free product plume in the C Yard include Well 20, Well 21, Well 22, MW-4, Well 25 and Well 27. Shallow wells located in or around a free product plume within the A Yard, include, A-6, A-4, A-29, A-22, A-16, A-13, A-14, A-20 and A-19. A shallow well located in or around a free product plume within the B Yard is Well 12.

All monitoring wells where water level measurements are taken will be measured for free product. A measurable thickness of free product is defined as greater than or equal to 0.01 feet. There are presently 76 monitoring wells being used to develop groundwater elevation contours for the site.

A Yard: Shallow wells located in or around a free product plume at the A Yard with current free product detection include A-6, A-4, A-29, A-22, A-16, A-13, A-14, A-20 and A-19.

B Yard: Shallow well located in or around a free product plume at the B Yard with current free product detection is Well 12.

C Yard: Shallow wells located in or around a free product plume at the C Yard with historic and current free product detection include Well 20, Well 21, Well 22, MW-4, Well 25 and Well 27.

Product performance monitoring will be performed in these wells prior, during, and after implementation of the remedial action alternatives discussed in Section 1.2. The product performance standard is a “measurable product thickness”, and the product cleanup standard is “no visible sheen.” Sheen is defined as a visible display of iridescent colors on equipment or water removed from a monitoring well. After the performance standard has been met in these wells, they will be sampled for BTEX, TPH, (Table 2) and natural attenuation parameters (Table 3). Product shall be removed from the water table throughout the site, when ever present, to the extent technically feasible.

Dissolved TPH Constituents: Dissolved TPH constituents of TPH-G, -D, -O, and BTEX performance monitoring will be monitored in these wells prior, during and after implementation of the remedial action alternatives discussed in Section 1.2 for baseline data and trend analysis. Shallow monitoring wells with periodic or consistent detection of BTEX constituents or TPH above the cleanup levels include Wells 15, 17, 24, MW-3, MW-7, MW-9, MW-14, A-3, A-10, A-15, A-21, A-23, A-24, A-26, A-27, and A-28. These wells are located in or around Yards A, B, C, and D. Due to historic detection of petroleum-hydrocarbon-related IHSs above cleanup levels (Table 2), some of these monitoring wells will be included in the compliance monitoring program. Monitoring in these selected wells will be focused on the IHSs for groundwater to provide water quality data for baseline data and trend analysis. Additionally, these selected wells will be monitored for natural attenuation parameters (Table 3).

A Yard: Shallow well located adjacent to a free product plume at the A Yard with dissolved TPH constituents detected above cleanup standards (Table 2) include A-23 and A-28.

B Yard: Shallow well located adjacent to a free product plume at the B Yard with dissolved TPH constituents detected above cleanup standards (Table 2) is MW-7.

C Yard: Shallow wells located in or around a free product plume and soil TPH hot spots at the C Yard with dissolved TPH constituents detected above cleanup standards (Table 2) include MW-3, MW-4, Well 24, Well 25, T-5, T-18, and T-19.

D Yard: Shallow wells located adjacent to a free product plume and soil TPH hot spots at the D Yard with dissolved TPH constituents detected above cleanup standards (Table 2) include Wells MW-14, Well 17, T-13, T-15, and T-17.

Total and Dissolved Lead: Total lead was detected periodically above the cleanup level (Table 2) in Wells MW-6, MW-7, MW-07, MW-8, MW-9, MW-12, MW-13, A-21, A-23, A-24, A-28, SF-01, SH-02, SH-04, and SH-05. Dissolved lead was detected periodically above the cleanup level (Table 2) in MW-7. Performance monitoring will be performed in these wells, prior, during and after implementation of the remedial alternative discussed in Section 1.2 for total lead baseline data and trend analysis.

Off-site Sentry Monitoring wells: Wells A-23, A-28, MW-12, MW-13, MW-16, and MW-18 will serve as sentry wells. These wells will be included in the program due to their location adjacent to areas with soil cleanup

actions, free product plume or to provide off property boundary well network. Monitoring in these wells will be focused on the IHSs for groundwater to provide water quality data for baseline data and trend analysis.

Background wells: Wells MW-1 and MW-2 are located upgradient along a south/southeast groundwater flow direction for the site and will serve as the site background monitoring wells. These wells will be monitored for the IHSs for groundwater and natural attenuation parameters to establish baseline and background groundwater quality data. After one year, these wells will be monitored for the IHSs for groundwater only.

2.2.2 PERFORMANCE CRITERIA

Separate-Phase Hydrocarbons: To monitor the effectiveness of the preferred remedial alternative discussed in Section 1.2 for free product, the performance criterion will be a lack of measurable product thickness in compliance monitoring wells.

Dissolved TPH Constituents and Lead: Groundwater cleanup levels (Table 2) are based on the protection of aquatic organisms and on human ingestion of such organisms. The Conditional Point of Compliance for the site groundwater is the property boundary.

Natural Attenuation: To demonstrate that natural attenuation is occurring to reduce contaminant concentrations, the performance criteria will be periodic monitoring of constituent plume data (i.e., BTEX and TPH) and a variety of other indicators of natural attenuation processes. These processes include physical, chemical, or biological processes in the form of biodegradation, dispersion, dilution, sorption, volatilization, and chemical or biological stabilization or destruction of contaminants. Following is the rationale for the selection of the natural attenuation monitoring parameters (from USEPA, 1994c).

Constituent Plume Characteristics

In the absence of natural attenuation mechanisms, constituent concentrations would remain relatively constant within the plume and then decrease rapidly at the edge of the plume. If natural attenuation is occurring, constituent concentrations will decrease with distance from the source along the flow path of the plume as a result of dispersion. If other natural attenuation mechanisms are occurring, the rate at which concentrations of constituents are reduced will be accelerated.

Monitoring of constituent concentrations in the groundwater over time will give the best indication of whether natural attenuation is occurring. If natural attenuation is occurring, the contaminant plume will migrate more slowly than expected based on the average groundwater velocity. Receding plumes typically occur when the

source has been eliminated. Natural attenuation may also be occurring in plumes that are expanding, but at a slower than expected rate. For example, in sandy soils [similar to Harbor Island] with relatively low organic carbon content (about 0.1 percent), BTEX constituents are expected to migrate at one-third to two-thirds of the average groundwater speed velocity (McAllister, 1994). Higher organic carbon content would further retard constituent migration. If constituents are migrating more slowly than expected based on groundwater flow rates and retardation factors, then other natural attenuation mechanisms (primarily biodegradation) are likely reducing constituent concentrations. For stable plumes, the rate at which contaminants are being added to the system at the source is equal to the rate of attenuation. A plume may be stable for a long period of time before it begins to recede, and in some cases, if the source is not eliminated, the plume may not recede.

Occurrence of biodegradation might also be deduced by comparison of the relative migration of individual constituents. The relative migration rates of BTEX constituents, based on the chemical properties, are expected to be in the following order:

benzene > toluene, o-xylene > ethylbenzene, m-xylene, p-xylene

If the actual migration rates do not follow this pattern, biodegradation may be responsible.

Dissolved Oxygen Indicators

The rate of biodegradation will depend, in part, on the supply of oxygen to the contaminated area. At levels of dissolved oxygen (D.O.) below 1 to 2 mg/L in the groundwater, aerobic biodegradation rates are very slow. If background D.O. levels (upgradient of the contaminant source) equal or exceed 1 to 2 mg/L, the flow of groundwater from the up-gradient source will supply D.O. to the contaminated area, and aerobic degradation is possible.

Where aerobic biodegradation is occurring, an inverse relationship between D.O. concentration and constituent concentrations can be expected (i.e., D.O. levels increase as constituent levels decrease). Thus, if D.O. is significantly below background within the plume, aerobic biodegradation is probably occurring at the perimeter of the plume.

Geochemical Indicators

Certain geochemical characteristics can also serve as indicators that natural attenuation, particularly biodegradation, is occurring. Aerobic biodegradation of petroleum products produces carbon dioxide and organic acids, both of which tend to cause a region of lower pH and increased alkalinity within the constituent plume.

Anaerobic biodegradation may result in different geochemical changes, such as increased pH. Under anaerobic conditions, biodegradation of aromatic hydrocarbons typically causes reduction of Fe^{3+} (insoluble) to Fe^{2+} (soluble), because iron is commonly used as an electron acceptor under anaerobic conditions. Thus, soluble iron concentrations in the groundwater tend to increase immediately downgradient of a petroleum source as the D.O. is depleted, and conditions change to become anaerobic (i.e., reduced). The concentration of methane increases, another indication that anaerobic biodegradation is occurring.

Oxidation/Reduction Potential

The oxidation/reduction (redox) potential of groundwater is a measure of electron activity and is an indicator of the relative tendency of a solution to accept or transfer electrons. Because redox reactions in groundwater are biologically mediated, the rates of biodegradation both influence and depend on redox potential. Many biological processes operate only within a prescribed range of redox conditions. Redox potential also can be used as an indicator of certain geochemical activities (e.g., reduction of sulfate, nitrate, or iron). The redox potential of groundwater generally ranges from 800 millivolts to about -400 millivolts. The lower the redox potential, the more reducing and anaerobic the environment.

Measurement of redox potential of groundwater also allows for approximate delineation of the extent of the contaminant plume. Redox potential values taken from within the contaminant plume will be lower than background (upgradient) redox values and values from outside the plume. This is due in part to the anaerobic conditions that typically exist within the core of the dissolved hydrocarbon plume.

Methane. Methanogenesis has been determined to be a predominant biodegradation mechanism for fuel spills. During the aerobic biodegradation of petroleum constituents, methane is produced. Methane concentrations above background levels may indicate the occurrence of aerobic biodegradation of petroleum constituents.

Nitrate. After dissolved oxygen has been depleted, nitrate may be used as an electron acceptor for anaerobic biodegradation. Nitrate concentrations below background levels may indicate the occurrence of anaerobic biodegradation of petroleum compounds.

Sulfate. After dissolved oxygen and nitrate have been depleted, sulfate may be used as an electron acceptor for anaerobic biodegradation. Sulfate concentrations below background levels may indicate the occurrence of anaerobic biodegradation of petroleum compounds.

Based on this discussion (USEPA, 1994c), groundwater samples collected for natural attenuation evaluation will be analyzed for plume characterization parameters (BTEX, TPH-G, TPH-D, and TPH-O), dissolved oxygen, geochemical indicators (alkalinity, carbon dioxide, total iron (from which ferric iron [Fe³⁺] can be calculated), ferrous iron (Fe²⁺), hardness, methane, pH, and sulfate), and oxidation/reduction potential (Table 3).

2.2.3 MONITORING SCHEDULE

Free product monitoring will be conducted at periodic intervals to allow product to accumulate in wells but no less frequently than once a month. The frequency of free product monitoring will also depend on the amount

and type of free product removed from the monitoring wells as well as the season and type of free product recovery activity.

Groundwater monitoring conducted to confirm the effectiveness of natural attenuation and to estimate the rate will be conducted quarterly for the first year and annually thereafter (Table 3). Natural attenuation monitoring will be performed in accordance with confirmation groundwater sampling described in Section 2.3.

2.3 CONFIRMATION MONITORING

The objective of confirmation monitoring is to confirm the long-term effectiveness of the cleanup action as discussed in Section 1.2, once performance and cleanup standards have been met [WAC 173-340-410(1)(c)]. Confirmation monitoring will include the sentry wells, and will consist of free product and groundwater monitoring for the IHS indicator parameters (Tables 2 and 3) as appropriate.

2.3.1 CONFIRMATION MONITORING LOCATIONS

All monitoring wells in which water level measurements are taken will be checked for free product. There are presently 76 monitoring wells being used to develop groundwater elevation contours for the site.

A total of 28 monitoring wells designated in Table 1 will be used as confirmation monitoring wells. These wells will be included in the program due to their location adjacent to areas with soil cleanup actions or to provide a property boundary well network. Monitoring in these wells will be focused on the IHSs (BTEX, TPH) to provide water quality data for baseline data and trend analysis. Some of these wells will also be monitored for natural attenuation parameters.

2.3.2 SENTRY MONITORING WELLS

Wells A-23, A-28, MW-12, MW-13, MW-16, and MW-18 will serve as sentry wells. These wells will be included in the program due to their location adjacent to areas with soil cleanup actions, product plume, or to provide off property boundary well network. Monitoring in these wells will be focused on the IHSs (Table 2) for groundwater to provide water quality data for baseline data and trend analysis. Except for A-19, A-23, A-27, and A-28, the rest of these wells will not be monitored for natural attenuation parameters (Table 3) since cleanup levels have been already met in these wells.

Total and Dissolved Lead: Total lead was detected periodically above the cleanup level in the following wells MW-6, MW-7, MW-07, MW-8, MW-9, MW-12, MW-13, A-21, A-23, A-28, SH-02, and SH-05. Dissolved lead was detected periodically above the cleanup level (Table 2) in MW-7. Confirmation monitoring will be performed in these wells, prior, during, and after implementation of the remedial alternative discussed in Section 1.2 for total lead baseline data and trend analysis.

2.33 COMPLIANCE CRITERIA

Separate-Phase Hydrocarbons: To demonstrate that free product removal has been accomplished, the performance criterion will be a lack of sheen in compliance monitoring wells.

Groundwater: Cleanup levels are based on the protection of aquatic organisms and humans ingesting such organisms. The conditional point of compliance where these cleanup levels will be met is at the property boundary of the GATX site. The groundwater cleanup levels are presented in Table 2.

Groundwater compliance criteria will document that cleanup levels have been achieved. Groundwater analytical data will be evaluated using time-trend plots, data comparison to cleanup levels, and statistical analysis, if appropriate. Time-trend plots will be used to evaluate long-term analytical trends in relation to the associated cleanup levels. If statistical analysis is performed, the analysis will be conducted in accordance with WAC 173-340-720(8) and Ecology Guidance (1992, 1993, and 1995).

2.34 MONITORING SCHEDULE

Confirmation free product monitoring will be conducted monthly for a period of one year after cessation of free product recovery activities as discussed in Section 1.2. The schedule will be reevaluated at that time as discussed in Section 3.4.1.

Monitoring of the confirmation, performance, and sentry groundwater monitoring wells will begin within the quarter the Consent Decree is approved. Confirmation monitoring will continue for five years after completion of the cleanup action. Sampling will occur quarterly for the first year. Ecology and GATX will review the data after one year. If monitoring data indicates that trends are declining, the sampling frequency and number of parameters may be reduced as warranted.

30 Data Evaluation

3.1 DATA VALIDATION

Analytical data will be validated according to United States Environmental Protection Agency (USEPA) data validation guidelines. Data validation will include evaluation of holding times, method blank results, surrogate recovery results, field and laboratory duplicate results, completeness, detection limits, laboratory control sample results, and chain-of-custody forms. Data validation procedures are further described in the Sampling and Analysis Plan (Appendix A).

3.2 PRACTICAL QUANTITATION LIMITS

Practical Quantitation Limits (PQLs) will be established for each analyte to determine whether any of the limits are above the corresponding cleanup level. The PQL will be determined by multiplying the lowest method detection limit (MDL) obtained by the laboratory for Terminal groundwater samples by a factor of ten (Ecology, 1993). If the PQL for any constituent is above the corresponding cleanup level, the cleanup level will be considered to be attained if the constituent is detected below the PQL [WAC 173-340-707(2)].

3.3 PRODUCT MONITORING DATA

Product monitoring data will be reviewed as it is generated to determine the need for free product recovery system alterations or to determine changes in free product monitoring frequency. Quality control protocol will be followed to ensure that free product measurements are reliably obtained and consistently measured. Groundwater and product level data will be entered in spreadsheets for trend plots and analysis.

3.4 GROUNDWATER CHEMISTRY DATA REVIEW

Natural Attenuation Monitoring Data. Natural attenuation monitoring data will be reviewed to determine if the data is sufficient to evaluate natural attenuation processes at the site. If data gaps are identified, GATX may propose to add parameters as necessary to adequately evaluate natural attenuation.

Confirmation, Performance, and Sentry Monitoring Data. After each monitoring event, groundwater chemistry data will be reviewed once

it is validated. The data will be compared to groundwater cleanup levels. If a sample result is above a groundwater cleanup level and is also above the historic high concentration in that well, the well will be re-sampled to verify the result. Re-sampling will occur within one month of receiving the laboratory data. Groundwater chemistry and elevation data will be used in the one and five-year review as subsequently described.

3.4.1 ONE YEAR SITE REVIEW

Groundwater elevation and chemistry data will be evaluated after the first year of sampling. Natural attenuation monitoring well data will be evaluated as previously discussed in Section 2.2.2. Spatial and temporal changes in plume characterization parameters, dissolved oxygen, geochemical indicators, and oxidation/reduction potential (Table 3) will be evaluated to determine the effectiveness and rate of natural attenuation at the site.

Groundwater analytical results will be evaluated using time-trend plots and data comparison to cleanup levels. Time-trend plots will be prepared for each constituent detected above the PQL; trends will be identified by visual observation. The time-trend plots will be used to evaluate long-term trends in compliance wells and to compare groundwater conditions with cleanup levels. A groundwater contour map will be prepared to verify that the predominant groundwater flow directions at the Terminal remain relatively consistent.

The data evaluation will be submitted to Ecology for review. After the first year review, if the confirmation (and or sentry) wells exceed cleanup standards, Ecology and GATX (and the potentially affected adjacent property owner) will evaluate groundwater conditions prior to considering contingency plans. If monitoring data indicates that trends are declining, the sampling frequency and number of parameters may be reduced as warranted.

3.4.2 FIVE YEAR SITE REVIEW

Groundwater elevation and chemistry data will be evaluated after five years of monitoring. Groundwater contour maps will be prepared to verify that the groundwater flow directions at the Terminal have not changed significantly.

Natural Attenuation Monitoring Data. Natural attenuation monitoring data will be evaluated as previously described in Section 2.2.2.

The data evaluation will be documented and presented in the five-year review report.

Sentry Well Data: Groundwater analytical data will be evaluated using time-trend plots and data comparison to cleanup levels. Time-trend plots will be prepared for each constituent detected above the PQL and trends will be identified by visual observation.

Confirmation and Performance Well Data: Groundwater analytical data will be evaluated using time-trend plots, data comparison to cleanup levels, and, if appropriate, statistical analysis. Time-trend plots will be prepared for each constituent detected above the PQL and trends will be identified. Time-trend plots will be used to evaluate long-term analytical trends in relation to the associated cleanup levels. If statistical analysis is performed, the analysis will be conducted in accordance with WAC 173-340-720(8) and Ecology Guidance (1992, 1993, and 1995).

4.0 Compliance Evaluation Criteria

4.1 PERFORMANCE MONITORING

Monitoring data will be evaluated to determine the effectiveness of the remedy, whether changes to the free product monitoring schedule and/or monitoring wells are warranted. Changes may be made in the frequency of free product monitoring to optimize free product removal or system efficiency. These changes may depend on the amount and type of free product removed from the monitoring wells, the season, and the type of free product recovery activity. Other changes in performance monitoring will be made as follows:

- Additional free product recovery activities and monitoring will be initiated immediately if free product is observed in wells that previously had not contained free product.
- An additional well or well point will be installed and monitored if free product is observed for the first time in a downgradient or cross-gradient well. The need for additional free product recovery activities will also be reviewed.
- Performance monitoring will continue as long as free product is observed in the area being monitored.
- Performance monitoring will end and confirmation monitoring will begin when free product has not been observed in any well in the area being monitored for a period of six months.

4.2 CONFIRMATIONAL MONITORING

4.2.1 FREE PRODUCT

Free product confirmation monitoring will end and the area will be considered to be free of free product when no sheen is observed in any well in the area being monitored for a period of one year.

Free product recovery activities and performance monitoring will resume if measurable product is found in any well in an area being monitored.

4.2.2 GROUNDWATER

The review of groundwater quality data will be focused on evaluating groundwater quality trends and not on a single event or exceedance in a single well. Changes to the groundwater-monitoring program will be based on groundwater quality data review as described in Section 3.4.

Groundwater quality data will be tabulated and trend plots prepared as part of the one-year site review and five-year site review. If the chemistry results are all below cleanup levels for four consecutive quarters, then GATX will petition Ecology for site de-listing review and if Ecology concurs, the site shall be de-listed.

As part of the five-year site review, statistical analysis of the data will be performed if groundwater analytical results remain above cleanup levels. Alternatively, if the cleanup standards are met in 95 percent of the wells for four consecutive quarters, GATX will petition Ecology for site de-listing review and if Ecology concurs, the site shall be de-listed. In addition to reviewing chemistry data for the indicator hazardous substances (Table 2), natural attenuation parameters (Table 3) will also be evaluated to determine the effectiveness of natural attenuation at the site.

Data will be evaluated as described in Section 3.4.2. The contingency plan (summarized in Section 5.0) will be initiated if the five-year review identifies the following:

- There is an increasing trend in the groundwater quality data and the data trend exceeds the cleanup level in the performance, confirmation and sentry wells.
- An analyte is consistently above the cleanup level or statistically above the cleanup level with an increasing trend and with no evidence of natural attenuation.

5.0 Contingency Plan

A contingency plan sets forth a “backup” remediation technology in the event that a remedial technology within the Cleanup Plan fails or proves ineffective in a timely manner (five years after implementation of the preferred option discussed in Section 1.2). When evaluating the need to implement the contingency plan, all data will be evaluated as described in Section 3.4.2. A contingency plan will be initiated and implemented within 30 days of meeting any of the following criteria:

- If, after implementing the selective remedial action, the results of the groundwater monitoring program indicate elevated contaminant concentration over the specified restoration time frame of 5 years;
- If contaminants are newly identified in point of compliance wells located beyond the original plume boundary, indicating renewed contaminant migration; or
- If contaminant migration is not decreasing at a sufficient rate to ensure that the primary and secondary concerns identified for the site are being met.

The following actions will be initiated if the above criteria are triggered:

- Identification of the source(s) causing the criteria to be triggered. The highest priority in the compliance plan would be to identify and control the source. Accessible sources will be removed to the extent technically practicable without undermining the integrity of the adjacent above storage tanks, if present near the source area(s).
- Review Preferred Options Summary discussed in Section 1.2 and propose a supplemental remedy or combination of remedies, if needed, to prevent adverse impacts to offsite properties. (e.g., evaluation and potential expansion of the free product recovery system to ensure removal of free product from the water table if residual free product is identified beyond the capture zone of the system).

In the event that site conditions trigger a contingency plan implementation due to adverse impacts to offsite properties, Ecology, GATX, and the potential to be affected adjacent property owner will evaluate groundwater conditions prior to implementation of the contingency plan. In the event that site conditions trigger a contingency plan implementation other than considerations due to adverse impacts to offsite properties, Ecology and GATX will evaluate groundwater conditions prior to implementation of the contingency plan.

In the event that the contingency plan should be implemented, GATX will prepare a contingency work plan that contains engineering design criteria to address the remediation technology necessary to address the criteria triggering the contingency plan implementation. The contingency work plan will be approved by Ecology prior to its implementation.

6.0 Reporting

During the compliance-monitoring program, monitoring data will be submitted to Ecology on a periodic basis. Ecology will also be notified if new data indicates that a significant change in site conditions has occurred. Monitoring data and other information will be submitted in the following reports:

- **Quarterly Data Reports.** Laboratory analytical data reports will be submitted to Ecology after each round of monitoring has been completed.
- **Annual Monitoring Reports.** Monitoring reports will be prepared annually. The report will include a data validation memo, updated groundwater chemistry tables (including any well re-sampling results), and free product recovery data. Analytical time-trend plots will also be included in the reports. Analytical time-trends will be discussed when they are observed and other relevant data observations will be described. Any changes in the free product recovery system will also be discussed.
- **Five-year Review Report.** A report will be submitted to Ecology summarizing the five-year review of the compliance monitoring data. The report will include an updated groundwater elevation table, a representative groundwater contour map, time-trend plots for analytes detected above the PQL, and a comparison of the data to cleanup levels. Groundwater elevation and chemistry data will be evaluated. In addition to reviewing chemistry data relative to the indicator hazardous substances, natural attenuation parameters will also be evaluated to determine the effectiveness of natural attenuation and other cleanup action implementation at the site. As part of the five-year site review, statistical analysis of the data will be performed if analytical results remain above cleanup levels.

7.0 References

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Table 1
Compliance Monitoring Wells
GATX Harbor Island Terminal
Seattle, Washington

Monitoring Well	Well Location	Compliance Monitoring Objective
A-5	A Yard	Confirmational
A-8	A Yard	Confirmational
A-10	A Yard	Confirmational
A-14	A Yard	Performance / Confirmational
A-21	A Yard	Performance / Confirmational
A-23	A Yard*	Performance / Confirmational / Sentry
MW-7	B Yard	Performance / Confirmational
MW-8	B Yard	Performance / Confirmational
MW-9	B Yard	Performance / Confirmational
MW-07	B Yard	Performance / Confirmational
A-27	B Yard	Performance / Confirmational
SH-05	B Yard	Performance / Confirmational
A-28	B Yard*	Confirmational / Sentry
New Well #2	B Yard	Confirmational
MW-2	C Yard	Background / Confirmational
MW-3	C Yard	Performance/ Confirmational
MW-4	C Yard	Performance / Confirmational
SH-02	C Yard	Performance / Confirmational
New Well #1	C Yard	Performance / Confirmational
New Well #4	C Yard	Performance / Confirmational
MW-12	D Yard*	Confirmational / Sentry
MW-13	C Yard*	Confirmational / Sentry
MW-16	C Yard*	Confirmational / Sentry
MW-18	C Yard*	Confirmational / Sentry
MW-5	D Yard	Performance / Confirmational
MW-6	D Yard	Performance / Confirmational
MW-14	D Yard	Performance
New Well #3	D Yard	Performance / Confirmational
MW-1	E Yard	Background / Confirmational

NOTES: All wells where water levels are measured serve as Performance or Confirmation wells for free product

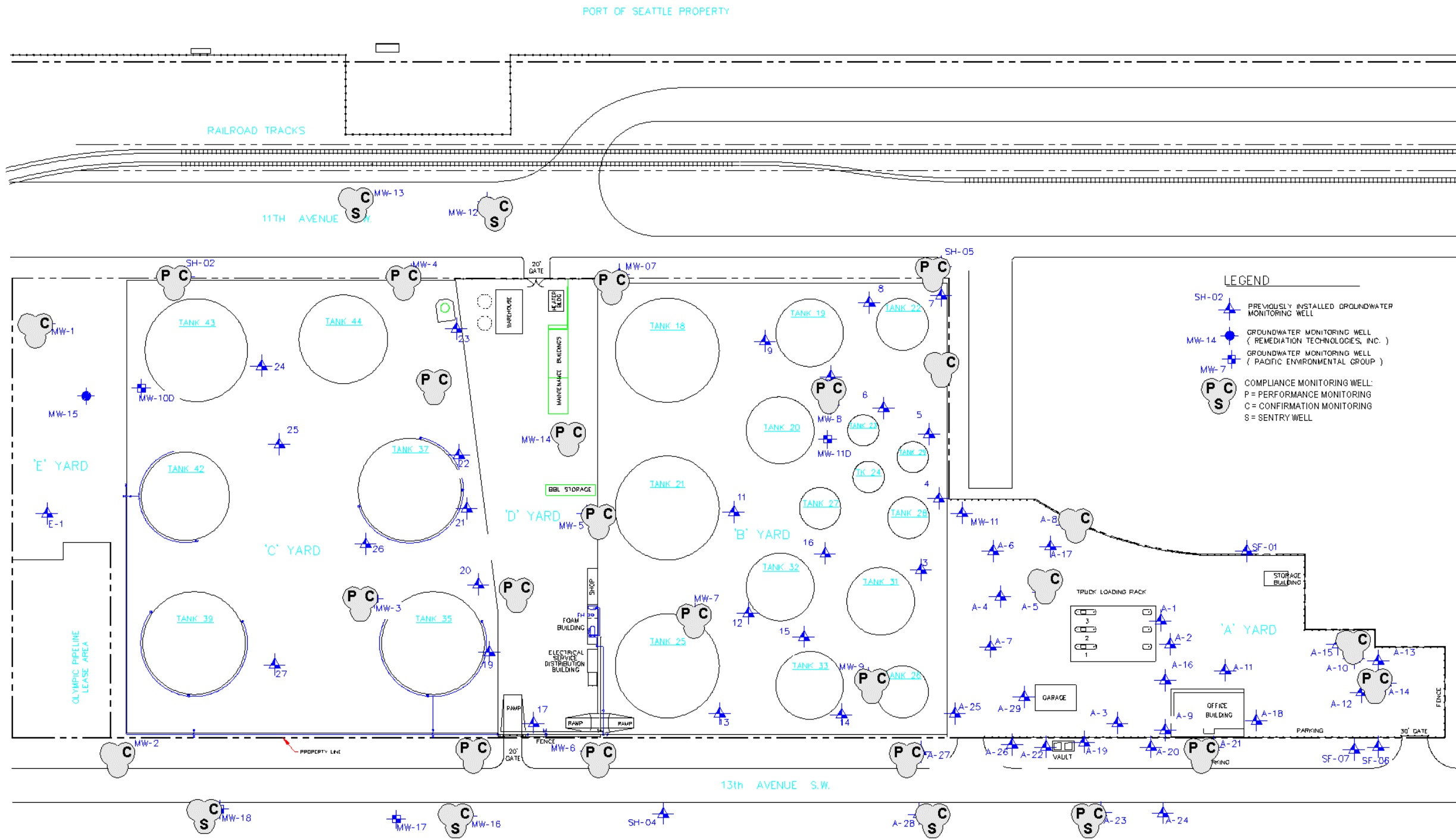
* Located Off-site

Table 2
Groundwater Cleanup Levels
GATX Harbor Island Terminal
Seattle, Washington

Constituent	Cleanup Level (mg/L)
Benzene	0.071
Toluene	200.0
Ethylbenzene	29.0
TPH-G	1
TPH-D	10
TPH-O	10
Lead	0.0058

Table 3
Natural Attenuation Indicator Parameters
 GATX Harbor Island Terminal
 Seattle, Washington

PARAMETER	METHOD / UNIT
Temperature, pH, alkalinity	Field / variable
Dissolved Oxygen (DO)	Field / mg/l
Carbon dioxide	Field / mg/l
Nitrate (NO ₃)	Laboratory / mg/l
Nitrite (NO ₂)	Laboratory / mg/l
Dissolved ferrous iron (Fe ²⁺)	Laboratory / mg/l
Dissolved Methane (CH ₄)	Laboratory / mg/l
Sulfate (SO ₄)	Laboratory / mg/l
Sulfide (H ₂ S)	Laboratory / mg/l
Reduction/Oxidation potential (Redox, Eh)	Field / millivolts



	TITLE Compliance Well Location Map		
	GATX Terminals Corporation Harbor Island Terminal 2720 13th Avenue Southwest Seattle, Washington		
DATE 10/26/99	PROJECT A30-01A	FIGURE 1	

June 21, 2007

Mr. Roger Nye
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue N.E.
Bellevue, Washington 98008-5452

Sent via FedEx Saver

SUBJ: Site-Wide Groundwater Compliance Monitoring Plan – Proposed
Reduced Monitoring
Kinder Morgan Harbor Island Terminal
Seattle, Washington
Delta Project No. STKM-001-M.0005



Dear Mr. Nye:

This plan has been prepared on behalf of Kinder Morgan Liquid Terminals, LLC (KMLT) by Delta Environmental Consultants (Delta) and presents a proposed revision to the site-wide groundwater compliance monitoring program for the KMLT Harbor Island Terminal located at 2720 13th Avenue Southwest in Seattle, Washington ("the site"). The revisions included in this document supersede those revisions previously proposed in an August 2, 2006 letter to you, and in a second draft dated March 22, 2007. These plan revisions are proposed in accordance with Section 2.3.4 of the Compliance Monitoring Plan (Plan) developed for the site. Further modifications to the Draft Plan were discussed with you by telephone on June 13, 2007, and this Final Proposed Reduced Monitoring Plan incorporates those modifications.

PROPOSED SITE-WIDE COMPLIANCE MONITORING PLAN

The Plan was developed to describe the protocol and procedures used to confirm that cleanup requirements are achieved at the site. This monitoring plan was prepared to satisfy the requirements of the Model Toxics Control Act (MTCA) regulations WAC 173-340-410, -720, and -820 and in accordance with requirements from Exhibit F of the Consent Decree.

The achievement of cleanup levels in groundwater is measured at points of performance and compliance located within the hydrocarbon plume area and at the downgradient edge of the site. The wells at the downgradient edge of the site are considered conditional points of compliance wells. These points of compliance and performance consist of a network of monitoring wells located in the hydrocarbon plume area and on the downgradient property boundary. Sentry wells are also used to document plume migration, performance standards, and to warn of any unanticipated change in off-site groundwater conditions.

The Compliance Monitoring Plan incorporated in the Consent Decree includes quarterly monitoring for free product, dissolved TPH constituents, total and dissolved lead, and natural attenuation parameters. In accordance with *Section 2.3.4 Monitoring Schedule* of the Plan, the sampling frequency and number of parameters may be reduced if monitoring data indicates that trends are declining. Following are the proposed revisions for each of these compliance monitoring criteria, and the rationale for each revision.

Free Product

As established in the Plan, KMLT currently performs quarterly gauging of 71 wells for monitoring of free product. KMLT proposes to continue monitoring of wells in which free product has been observed during the past 8 quarters, and the 29 wells which were identified as Compliance Monitoring Wells in Table 1 of the Plan. Accordingly, KMLT proposes to continue quarterly gauging of the following 43 wells: A-4, A-5, A-6, A-8, A-10, A-11, A-12, A-14R, A-16, A-18, A-19, A-20, A-21, A-22R, A-23R, A-25, A-26R, A-27, A-28R, 12, MW-1, MW-2, MW-3, MW-4, MW-5, MW-6, MW-7, MW-8, MW-9, MW-12R, MW-13R, MW-14, MW-16, MW-18, MW-19, MW-20, MW-21, MW-22, MW-23, MW-24, SH-02R, SH-05R, and MW-07R.

Dissolved TPH Constituents

The current compliance monitoring program for dissolved TPH constituents includes quarterly sampling of 32 monitoring wells (29 Compliance Monitoring Wells and 3 additional wells which were installed in September 2003 as part of a supplemental study to further characterize free product in the A Yard). A summary of monitoring wells and annual analyses included in the current dissolved TPH constituents compliance monitoring program is presented on Table 1. A site map showing locations of groundwater monitoring wells is included as Figure 2.

An evaluation of groundwater analytical data collected since the execution of the Consent Decree indicates that data collected from numerous monitoring wells have demonstrated that cleanup criteria have either been met from the outset of the program or have demonstrated at least 4 consecutive quarters meeting cleanup criteria. A summary of groundwater analytical results for 2000 through December 2006 are presented in Table 2.

An evaluation of historical groundwater analytical results with respect to established cleanup criteria is summarized in Table 3. Where applicable, wells and corresponding analytes which demonstrate a consistent trend of meeting cleanup criteria are noted. Wells and corresponding analytes are highlighted where historic monitoring indicates a reduction in monitoring frequency or analytes is warranted.

KMLT proposes a revision from quarterly monitoring for TPH parameters as follows. For wells which have demonstrated that cleanup criteria for TPH-G, BTEX, TPH-D, and TPH-O have been met from the outset of the program, KMLT proposes to reduce the frequency of quarterly monitoring to annual monitoring. For wells which have not met the criteria for TPH-G and BTEX, but have met the criteria for TPH-D and TPH-O, KMLT proposes to continue quarterly monitoring for TPH-G and BTEX and discontinue monitoring for TPH-D and TPH-O. Proposed compliance monitoring plan revisions are summarized in Table 4.

After the revised program is initiated, if results demonstrate that any TPH cleanup criteria has been exceeded in a well, KMLT will revert to quarterly monitoring for respective analytes that were exceeded for the well, and will resume quarterly monitoring for natural attenuation parameters.

Total and Dissolved Lead

As established in the Plan, KMLT currently monitors for total lead on a quarterly basis in 20 wells. The purpose of this monitoring is to demonstrate performance and confirmation monitoring of the surface cleanup action for the site. The surface cleanup action, which included removal of surface soils containing concentrations of total lead exceeding the hot-spot cleanup criteria, was executed and completed in April and May 2002. In accordance with *Section 2.2* of the Plan, performance monitoring for total lead has been performed on a quarterly basis since the completion of the surface cleanup action. Following the performance of the surface cleanup action, total lead has infrequently exceeded the cleanup criterion. KMLT proposes to continue monitoring for this parameter on an annual basis.

As required in the Plan, KMLT also currently monitors for dissolved lead on a quarterly basis in the same 20 wells which are monitored for total lead. Cleanup criteria for this parameter was not established in the Cleanup Action Plan. Dissolved lead has been detected in 4 of the 20 wells. Dissolved lead was detected in one or two instances in two wells, and was detected in two wells on a more frequent basis in two wells. Delta proposes to monitor for

dissolved lead in two wells (A-23R and MW-7) which have contained measurable concentrations on a periodic basis in the past.

A summary of monitoring wells and annual analyses included in the current total and dissolved lead compliance monitoring program is presented on Table 1. A summary of groundwater analytical results for 2000 through December 2006 are presented in Table 2. An evaluation of historical groundwater analytical results with respect to established cleanup criteria is summarized in Table 3. Proposed compliance monitoring plan revisions are summarized in Table 4.

Natural Attenuation Parameters


The current compliance monitoring program for natural attenuation parameters includes quarterly sampling of 26 monitoring wells (23 Compliance Monitoring Wells and 3 additional wells which were installed in September 2003 as part of a supplemental study to further characterize free product in the A Yard). In accordance with *Section 2.2.3 Monitoring Schedule* of the Plan which states that natural attenuation monitoring will be conducted quarterly for the first year and annually thereafter, KMLT proposes to discontinue monitoring of wells which have met the criteria for TPH-G, BTEX, TPH-D and TPH-O constituents, and continue monitoring on an annual basis those wells which have not met the criteria. Proposed compliance monitoring plan revisions are summarized in Table 4.

A summary of proposed compliance monitoring plan revisions are presented in Table 4. Wells which are designated for annual monitoring will be monitored during the second quarter event. A summary of monitoring wells and a tally of annual analyses for all parameters proposed in this compliance monitoring program revision is presented on Table 5.

KMLT proposes to incorporate the compliance monitoring plan revisions included herein during the third quarter 2007 monitoring event. Please call if you have any questions regarding the contents of this letter, or if you would like to discuss any aspect of the proposed compliance monitoring plan. Delta looks forward to your approval of this program.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.


for Ward Crell
Principal Geologist

Enc: Table 1 – Summary of Current Annual Analyses, Groundwater Compliance Program
Table 2 – Groundwater Analytical Results
Table 3 – Analytical Summary 2000 – December 2006, Current Groundwater Compliance Program
Table 4 – Proposed Groundwater Compliance Program, Recommended Monitoring Frequency
Table 5 – Summary of Proposed Annual Analyses, Groundwater Compliance Program
Figure 1 – Site Plan – Groundwater Monitoring Well Locations

cc: Mr. Robert Truedinger, Kinder Morgan Energy Partners, L.P., Richmond, California
Ms. Kelsy Hardy, Kinder Morgan Energy Partners, L.P., Orange, California (File Copy - CD Only)

TABLE 1
CURRENT ANNUAL ANALYSES
GROUNDWATER COMPLIANCE PROGRAM
Kinder Morgan Harbor Island Terminal

Well ID	Indicator Hazardous Substances				Natural Attenuation Parameters				
	TPH-G/ BTEX	TPH-D+ extended	Total Lead	Dissolved Lead	Nitrate (NO3)	Ferrous Iron	Methane	Sulfate (SO4)	Sulfide (H2S)
A-5	4	4							
A-8	4	4							
A-10	4	4			4	4	4	4	4
A-14R	4	4	4	4	4	4	4	4	4
A-21	4	4	4	4	4	4	4	4	4
A-23R	4	4	4	4	4	4	4	4	4
A-27	4	4			4	4	4	4	4
A-28R	4	4	4	4	4	4	4	4	4
MW-1	4	4	4	4	4	4	4	4	4
MW-2	4	4	4	4	4	4	4	4	4
MW-3	4	4	4	4	4	4	4	4	4
MW-4	4	4			4	4	4	4	4
MW-5	4	4	4	4	4	4	4	4	4
MW-6	4	4	4	4	4	4	4	4	4
MW-7	4	4	4	4	4	4	4	4	4
MW-8	4	4	4	4	4	4	4	4	4
MW-9	4	4	4	4	4	4	4	4	4
MW-12R	4	4	4	4					
MW-13R	4	4	4	4					
MW-14	4	4			4	4	4	4	4
MW-16	4	4							
MW-18	4	4							
MW-19	4	4			4	4	4	4	4
MW-20	4	4			4	4	4	4	4
MW-21	4	4			4	4	4	4	4
MW-22	4	4			4	4	4	4	4
SH-02R	4	4	4	4	4	4	4	4	4
SH-05R	4	4	4	4	4	4	4	4	4
MW-07R	4	4	4	4	4	4	4	4	4
MW-23	4	4	4	4	4	4	4	4	4
MW-24	4	4	4	4	4	4	4	4	4
MW-25	4	4	4	4	4	4	4	4	4
ANNUAL TOTAL:	128	128	80	80	104	104	104	104	104

Notes: Number denotes number of quarters sampled annually

 Parameter not analyzed

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS**

Kinder Morgan Liquid Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest
Seattle, Washington

Sample I.D.	Date	TPH-Gasoline (ppm)	TPH-Diesel (ppm)	TPH-Oil (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Total Lead (ppm)
MW-4	02/14/02	0.78	280	<50	0.3	0.0072	0.0023	0.0082	NA
	05/21/02	1.5	8.6	<0.5	0.43	0.023	0.034	0.13	NA
	08/28/02	3.3	30	2.6	1.1	0.016	0.016	0.024	NA
	11/04/02	NS	NS	NS	NS	NS	NS	NS	NA
	02/19/03	3.1	31	<0.5	0.056	0.0017	0.014	0.02	NA
	06/10/03	0.39	12	<0.25	0.031	0.0012	0.0091	0.0096	NA
	09/16/03	NS	NS	NS	NS	NS	NS	NS	NS
	11/19/03	0.25	19	<0.50	0.033	<0.001	0.0042	0.0069	NA
	02/25/04	0.36	15	<0.50	0.035	0.0014	0.0056	0.0094	NA
	05/12/04	0.33	7.4	<0.50	0.012	<0.001	0.0048	0.0058	NA
	08/26/04	<0.50	5.1	<0.50	0.014	<0.0025	0.0039	0.0069	NA
	12/15/04	NS	NS	NS	NS	NS	NS	NS	NA
	03/09/05	<2.0	11	<0.50	<0.01	<0.01	<0.01	0.013	NA
	06/08/05	<1.0	16	1.1	<0.005	<0.005	<0.005	<0.005	<0.0050
	09/21/05	<2.0	19	2.1	<0.010	<0.010	<0.010	<0.010	NA
	12/14/05	<0.50	6.2	0.81	0.012	<0.0025	0.0032	0.0084	NA
	03/14/06	<0.40	3.9	0.69	0.0063	<0.0020	0.0020	0.0062	NA
	06/07/06	<0.50	4.5	<0.50	0.0037	<0.0025	<0.0025	<0.0025	NA
	09/13/06	<0.50	2.7	<0.50	0.0034	<0.0025	<0.0025	0.0029	NA
	12/13/06	<0.25	3.7	0.62	0.0012	<0.0005	<0.0005	0.0023	NA
MW-5	02/13/02	<0.25	<0.25	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*
	05/21/02	<0.25	<0.5	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	0.01*
	08/29/02	<0.25	1.2	<0.5	<0.0005	0.0018	<0.0005	0.00063	<0.005*
	11/05/02	<0.25	1.6	<0.5	0.0055	0.0016	<0.0005	0.00056	<0.005*
	02/20/03	<0.25	<0.25	<0.5	<0.0005	0.00066	<0.0005	<0.0005	<0.005*
	06/11/03	<0.25	0.36	<0.25	<0.0005	0.00079	<0.0005	<0.0005	<0.005*
	09/16/03	<0.25	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.011*
	11/20/03	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0086*
	02/24/04	<0.25	<0.50	<0.50	<0.0005	0.0014	<0.0005	<0.0005	<0.0050*
	05/11/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	08/26/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/15/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	03/09/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.11*
	06/08/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	09/21/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/14/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	03/14/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.012*
	06/07/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.0099*
	09/13/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.013*
	12/13/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.0088*
MW-6	02/13/02	0.97	1.1	<0.5	0.014	0.0007	<0.0005	0.00065	<0.005*
	05/22/02	1.1	2.5	<0.5	0.035	0.0012	0.0024	0.00072	<0.005*
	08/29/02	0.58	6.4	<0.5	0.0014	<0.001	<0.001	<0.001	<0.005*
	11/05/02	0.59	7.3	<0.5	0.064	<0.001	<0.001	0.0016	0.02*
	02/19/03	0.54	1.7	<0.5	0.0062	<0.0005	<0.0005	<0.0005	<0.005*
	06/10/03	0.70	1.9	<0.25	0.025	0.0011	0.00052	0.00051	<0.005*
	09/16/03	0.68	<0.50	<0.50	<0.0005	<0.0005	0.00053	<0.0005	0.019*
	11/19/03	0.44	1.6	<0.50	0.0095	0.00067	<0.0005	0.00051	<0.0050*
	02/25/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	05/11/04	1.0	0.67	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	08/25/04	<0.25	0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/14/04	0.82	0.81	<0.50	0.008	<0.0005	<0.0005	<0.0005	0.011*
	03/10/05	1.0	0.42	<0.50	0.0011	<0.0005	<0.0005	<0.0005	<0.0050*
	06/07/05	0.9	<0.25	<0.50	0.0014	<0.0005	<0.0005	<0.0005	<0.0050*
	09/20/05	0.9	<0.25	<0.50	<0.0005	<0.0005	0.00062	<0.0005	<0.0050*
	12/13/05	1.2	0.38	<0.50	0.0032	<0.0005	0.0005	<0.0005	<0.0050*
	03/15/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	06/08/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	09/12/06	0.71	<0.25	<0.50	<0.0005	0.00055	<0.0005	<0.0005	<0.0050*
	12/12/06	<0.25	<0.25	<0.50	<0.0005	0.00055	<0.0005	<0.0005	<0.0050*

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS**

Kinder Morgan Liquid Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest
Seattle, Washington

Sample I.D.	Date	TPH-Gasoline (ppm)	TPH-Diesel (ppm)	TPH-Oil (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Total Lead (ppm)
MW-7	02/14/02	13	7.5	<0.5	0.20	0.24	0.57	1.8	0.035*
	05/21/02	6.6	11	<0.5	0.16	0.089	0.43	0.66	0.04*
	08/29/02	2.9	5.7	<0.5	0.12	0.042	0.24	0.11	0.047*
	11/05/02	0.9	5.9	<0.5	0.021	0.0022	0.004	0.0066	0.041*
	02/20/03	9.7	11	<0.5	0.12	0.13	0.33	1.4	0.11 ^{sa}
	06/11/03	5.7	8.7	<0.25	0.13	0.092	0.26	0.52	0.081 ^{sa}
	09/17/03	1.4	12	<0.50	0.078	0.031	0.15	0.089	0.11 ^{sa}
	11/20/03	0.26	0.8	<0.50	<0.0005	<0.0005	<0.0005	0.035	0.019 ^{sa}
	02/26/04	15	21	<0.50	0.11	0.34	0.63	3.8	0.034 ^{sa}
	05/11/04	6.3	11	<0.50	0.059	0.15	0.31	1.3	0.0083 ^{sa}
	08/26/04	7.1	20	<0.50	0.054	0.22	0.34	1.7	0.067 ^{sa}
	12/15/04	18	4.4	<0.50	0.14	0.37	0.53	3	0.19 ^{sa}
	03/09/05	3.5	2.1	<0.50	0.045	0.034	0.09	0.27	0.079 ^{sa}
	06/08/05	2.9	2.3	<0.50	0.054	0.05	0.11	0.44	0.069 ^{sa}
	09/20/05	NS	NS	NS	NS	NS	NS	NS	NS
	12/14/05	8.8	0.59	<0.50	0.16	0.19	0.31	1.5	0.042 ^{sa}
03/14/06	15	0.50	<0.50	0.12	0.26	0.50	3.6	0.026*	
06/07/06	17	0.85	<0.50	0.12	0.35	0.69	4.5	0.023*	
09/13/06	2.4	0.32	<0.50	0.05	0.06	0.19	0.39	0.021 ^a	
12/13/06	NS	NS	NS	NS	NS	NS	NS	NS	
MW-8	02/14/02	<0.25	8.1	<5.0	<0.0005	0.00086	<0.0005	<0.0005	0.03*
	08/29/02	<0.25	7.5	<0.5	<0.0005	0.00082	<0.0005	<0.0005	0.017*
	11/05/02	<0.25	1.7	1.2	<0.0005	<0.0005	<0.0005	<0.0005	0.012*
	02/20/03	<0.25	6.6	<0.5	<0.0005	0.00055	<0.0005	0.0024	0.029*
	06/11/03	<0.25	3.8	<0.25	0.0013	<0.001	<0.001	<0.001	0.012*
	09/17/03	<0.25	3.3	0.77	<0.0005	<0.0005	<0.0005	<0.0005	0.030*
	11/20/03	<0.25	2.5	<0.50	<0.001	<0.001	<0.001	<0.001	<0.0050*
	02/26/04	<0.25	2.7	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.016*
	05/11/04	<0.25	1.5	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	08/26/04	<0.25	1.0	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/15/04	<0.25	1.5	<0.50	<0.001	<0.001	<0.001	<0.001	0.0071*
	03/09/05	<0.25	1.6	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.0094*
	06/08/05	<0.25	1.8	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.014*
	09/21/05	<0.25	1.0	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.011*
	12/14/05	<0.25	1.1	0.58	<0.001	<0.001	<0.001	0.0013	0.0060*
	03/14/06	<0.25	0.54	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.011*
06/07/06	<0.25	0.88	0.61	<0.0005	<0.0005	<0.0005	<0.0005	0.0093*	
09/13/06	<0.25	0.35	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.012*	
12/13/06	<0.25	0.82	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.0060*	
MW-9	06/11/03	6.0	13	<0.50	0.0031	0.036	0.076	0.6	0.022*
	09/17/03	5.3	39	0.72	0.026	0.027	0.09	0.45	0.0095*
	11/20/03	8.5	19	<0.50	<0.005	0.018	0.14	1.1	0.0096*
	02/26/04	4.1	28	<0.50	0.022	0.0072	0.025	0.47	0.0083*
	05/11/04	4.1	5.8	<0.50	0.0023	0.0093	0.081	0.44	<0.0050*
	08/26/04	4.2	6.2	<0.50	0.0066	0.025	0.13	0.43	0.0099*
	12/15/04	5.4	7.6	<0.50	<0.0025	0.011	0.12	0.39	0.0094*
	03/09/05	4.5	3.5	<0.50	0.0037	0.0047	0.042	0.18	0.021*
	06/08/05	3.2	3.9	<0.50	0.0035	0.0087	0.069	0.17	0.0076*
	09/21/05	2.3	2.6	<0.50	0.007	0.0077	0.033	0.12	0.0076*
	12/14/05	4.7	1.2	<0.50	0.0078	0.010	0.12	0.38	0.0095*
	03/14/06	2.4	1.4	<0.50	0.0024	0.003	0.018	0.12	0.013*
	06/07/06	<0.25	1.0	<0.50	0.0011	0.023	0.049	0.21	0.021*
09/13/06	1.8	0.46	<0.50	0.0044	0.016	0.063	0.06	0.010*	
12/13/06	2.6	3.8	<0.50	<0.0025	<0.0025	0.024	0.190	0.025*	

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS**

Kinder Morgan Liquid Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest
Seattle, Washington

Sample I.D.	Date	TPH-Gasoline (ppm)	TPH-Diesel (ppm)	TPH-Oil (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Xylenes (ppm)	Total Lead (ppm)
MW-12	06/20/01	<0.06	1.7	<0.5	<0.001	<0.001	<0.001	<0.003	<0.004
MW-12R	02/14/02	<0.25	1.4	<0.5	0.014	<0.0005	<0.0005	<0.0005	<0.005*
	05/21/02	<0.25	2.5	<0.5	0.08	0.0013	<0.0005	0.00066	<0.005*
	08/28/02	<0.25	2.1	<0.5	0.028	0.0059	<0.0005	0.0015	<0.005*
	11/05/02	<0.25	1.3	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*
	02/19/03	0.26	2.5	<0.5	0.19	0.0012	<0.001	<0.001	<0.005*
	06/10/03	0.41	1.3	<0.25	0.11	0.00055	<0.0005	<0.0005	<0.005*
	09/16/03	<0.25	0.67	<0.50	0.0021	<0.0005	<0.0005	<0.0005	<0.013*
	11/19/03	0.42	<0.25	<0.50	0.26	<0.001	<0.001	<0.001	0.0078
	02/25/04	0.26	1.8	<0.50	0.099	0.0005	<0.0005	0.00076	0.010*
	05/12/04	0.56	0.74	<0.50	0.20	<0.001	<0.001	<0.001	<0.0050*
	08/26/04	0.35	0.50	<0.50	0.089	<0.001	<0.001	<0.001	<0.0050*
	12/15/04	<0.25	0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	03/09/05	<0.25	0.39	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	06/08/05	<0.25	0.39	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA*
	09/21/05	0.26	0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/14/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	03/14/06	<0.25	<0.25	<0.50	<0.001	<0.001	<0.001	<0.001	<0.0050*
	06/07/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	09/13/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/13/06	<0.25	0.27	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
MW-13	06/19/01	<0.05	1.3	<0.5	<0.001	<0.001	<0.001	<0.003	<0.004
MW-13R	02/14/02	<0.25	3.2	<0.5	0.056	<0.0005	<0.0005	0.00075	<0.005*
	05/21/02	<0.25	3.5	<0.5	0.0025	<0.0005	<0.0005	<0.0005	<0.005*
	08/28/02	<0.25	2.4	<0.5	<0.0005	0.0019	<0.0005	0.0007	<0.005*
	11/05/02	<0.25	2.0	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*
	02/19/03	<0.25	1.7	<0.5	0.00078	0.0032	<0.0005	0.00083	<0.005*
	06/10/03	<0.25	0.76	<0.25	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*
	09/16/03	<0.25	1.4	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.0078*
	11/19/03	<0.25	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.0066
	02/25/04	<0.25	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.012*
	05/12/04	<0.25	0.61	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	08/26/04	<0.25	0.49	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/15/04	<0.25	0.91	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	03/09/05	<0.25	0.35	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	06/08/05	<0.25	0.49	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA*
	09/21/05	<0.25	0.39	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/14/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	03/14/06	<0.25	<0.25	<0.50	<0.001	<0.001	<0.001	<0.001	<0.0050*
	06/07/06	<0.25	<0.25	<0.50	<0.005	<0.005	<0.005	<0.005	<0.0050*
	09/13/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/13/06	<0.25	0.33	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0077*

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS**

Kinder Morgan Liquid Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest
Seattle, Washington

Sample I.D.	Date	TPH-Gasoline (ppm)	TPH-Diesel (ppm)	TPH-Oil (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Total Lead (ppm)
MW-14	02/13/02	2.5	37	<5.0	0.01	0.0085	0.18	0.22	NA
	05/21/02	2.9	23	1.0	0.0093	0.0057	0.18	0.15	NA
	08/29/02	2.9	28	<0.5	0.017	0.0073	0.21	0.14	NA
	11/05/02	2.0	28	0.91	0.06	0.0059	0.12	0.076	NA
	02/20/03	3.4	18	<0.5	0.056	0.0062	0.14	0.11	NA
	06/11/03	3.1	28	<0.5	0.059	0.0098	0.23	0.13	NA
	09/16/03	<1.0	15	<0.50	0.13	<0.005	0.019	0.022	NA
	11/20/03	<2.0	29	0.70	0.12	<0.01	0.02	0.031	NA
	02/24/04	2.4	21	<0.50	0.061	0.014	0.25	0.2	NA
	05/11/04	2.7	27	<0.50	0.053	0.0092	0.21	0.16	NA
	08/26/04	2.3	11	0.53	0.024	<0.0025	0.16	0.19	NA
	12/15/04	1.2	9.6	<0.50	0.0084	<0.005	0.01	0.0055	NA
	03/09/05	4.2	7.7	<0.50	0.0053	0.0094	0.18	0.099	NA
	06/08/05	3.1	8.8	<0.50	0.0043	0.0069	0.17	0.11	NA
	09/21/05	1.6	10.0	1.1	0.012	0.0048	0.077	0.068	NA
	12/14/05	3.1	2.0	<0.50	0.0059	0.0075	0.120	0.068	NA
03/14/06	0.79	2.1	<0.50	<0.0025	<0.0025	0.023	0.03	NA	
06/07/06	0.84	3.0	<0.50	<0.0025	<0.0025	0.061	0.033	NA	
09/13/06	2.4	1.8	<0.50	<0.0025	0.0060	0.100	0.056	NA	
	12/13/06	1.1	1.4	<0.50	<0.0025	<0.0025	0.044	0.029	NA
MW-16	02/13/02	<0.25	<0.25	<0.5	0.0013	0.0037	<0.0005	0.0011	NA
	05/21/02	<0.25	<0.5	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	NA
	08/29/02	<0.25	<0.5	<0.5	<0.0005	0.0022	<0.0005	0.00069	NA
	11/05/02	<0.25	0.29	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	NA
	02/19/03	<0.25	<0.25	<0.5	<0.0005	0.0018	<0.0005	<0.0005	NA
	06/10/03	<0.25	<0.25	<0.25	<0.0005	<0.0005	<0.0005	<0.0005	NA
	09/16/03	<0.25	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	11/19/03	<0.25	<0.25	<0.50	<0.0005	0.0013	<0.0005	0.00062	NA
	02/25/04	<0.25	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	05/11/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	08/26/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	12/15/04	<0.25	<0.25	<0.50	0.029	<0.0005	<0.0005	<0.0005	NA
	03/10/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	06/07/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	09/20/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	12/13/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
03/15/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA	
06/08/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA	
09/12/06	<0.25	<0.25	<0.50	<0.0005	0.00062	0.0012	<0.0005	NA	
	12/12/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
MW-18	02/13/02	7.6	0.77	<0.5	1.8	0.067	0.29	0.34	NA
	05/21/02	1.2	0.30	<0.5	0.25	0.016	0.068	0.068	NA
	08/29/02	1.6	<0.5	<0.5	0.45	0.014	0.032	0.044	NA
	11/05/02	1.1	<0.25	<0.5	<0.3	0.010	0.011	0.031	NA
	02/19/03	<0.25	<0.25	<0.5	0.0035	0.0047	<0.0005	0.0016	NA
	06/10/03	<0.25	<0.25	<0.25	0.022	0.0016	<0.0005	0.004	NA
	09/16/03	<0.25	<0.50	<0.50	0.036	0.0019	<0.0005	0.0075	NA
	11/19/03	<0.25	<0.25	<0.50	0.0042	<0.0005	<0.0005	0.0015	NA
	02/25/04	0.58	<0.25	<0.50	0.11	0.0048	0.00087	0.026	NA
	05/11/04	1.1	<0.25	<0.50	0.25	0.0073	0.0016	0.037	NA
	08/26/04	<0.25	<0.25	<0.50	0.003	<0.0005	<0.0005	<0.0005	NA
	12/15/04	0.84	<0.25	<0.50	0.14	0.006	0.0019	0.029	NA
	03/10/05	0.84	<0.25	<0.50	0.25	0.0049	0.002	0.021	NA
	06/07/05	0.68	<0.25	<0.50	0.17	0.0039	0.0019	0.0098	NA
	09/20/05	4.0	<0.25	<0.50	0.74	0.021	0.0091	0.09	NA
	12/13/05	2.3	<0.25	<0.50	0.45	0.015	0.0067	0.033	NA
03/15/06	4.9	<0.25	<0.50	1.2	0.035	0.025	0.12	NA	
06/08/06	1.2	<0.25	<0.50	0.15	0.011	0.011	0.034	NA	
09/12/06	0.35	<0.25	<0.50	0.023	0.0021	0.0022	0.0047	NA	
	12/12/06	0.28	<0.25	<0.50	0.023	0.0018	0.0019	0.0060	NA

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS**

Kinder Morgan Liquid Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest
Seattle, Washington

Sample I.D.	Date	TPH-Gasoline (ppm)	TPH-Diesel (ppm)	TPH-Oil (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Total Lead (ppm)
MW-19	02/13/02	29	6.8	<2.5	0.057	0.73	0.58	6.5	NA
	05/21/02	30	7.7	<0.5	0.049	0.65	0.53	6.5	NA
	08/29/02	13	11	<0.5	0.14	0.29	0.20	2.1	NA
	11/05/02	8.2	3.0	<0.5	0.21	0.37	0.16	1.7	NA
	02/20/03	38	19	<0.5	0.091	1.2	0.80	8.0	NA
	06/11/03	32	15	<1.0	0.042	0.38	0.80	6.7	NA
	09/16/03	4.2	12	<0.50	0.19	0.043	0.19	1.1	NA
	11/20/03	22	10	<0.50	0.11	0.67	0.75	6.1	NA
	02/24/04	19	14	<0.50	<0.015	0.49	0.63	4.7	NA
	05/11/04	27	13	<0.50	<0.025	0.22	0.87	7.2	NA
	08/26/04	22	0.72	<0.50	0.042	0.26	0.64	4.6	NA
	12/15/04	15	7.6	<0.50	0.039	0.12	0.37	2.7	NA
	03/09/05	27	9.1	<0.50	0.073	0.18	0.56	3.4	NA
	06/08/05	17	6.3	<0.50	0.071	0.17	0.61	2.8	NA
	09/20/05	NS	NS	NS	NS	NS	NS	NS	NS
	12/14/05	NS	NS	NS	NS	NS	NS	NS	NS
	03/14/06	NS	NS	NS	NS	NS	NS	NS	NS
	06/07/06	14	1.4	<0.50	<0.010	0.043	0.29	1.4	NA
	09/13/06	11	0.5	<0.50	0.032	0.047	0.41	1.1	NA
		12/13/06	8.0	1.4	<0.50	0.016	0.052	0.30	1.4
MW-20	02/13/02	<0.25	0.64	<0.5	<0.001	<0.001	<0.001	<0.001	NA
	05/20/02	<0.25	1.3	<0.5	0.018	0.0012	0.0048	0.014	NA
	08/29/02	0.6	1.1	<0.5	0.057	0.0065	0.021	0.084	NA
	11/06/02	<0.25	0.81	<0.5	0.0023	0.00053	<0.0005	<0.0005	NA
	02/19/03	<0.25	<0.25	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	NA
	06/11/03	<0.25	0.68	<0.25	<0.0005	<0.0005	<0.0005	<0.0005	NA
	09/17/03	<0.25	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	11/20/03	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	0.00072	NA
	02/25/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	05/11/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	08/26/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	12/15/04	<0.25	0.30	<0.50	0.0013	<0.0005	<0.0005	<0.0005	NA
	03/09/05	<0.25	<0.25	<0.50	0.00074	<0.0005	<0.0005	<0.0005	NA
	06/08/05	<0.25	0.55	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	09/21/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	12/14/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	03/14/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	06/07/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	09/13/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
		12/13/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005
MW-21	06/11/03	NS	NS	NS	NS	NS	NS	NS	NS
	09/17/03	NS	NS	NS	NS	NS	NS	NS	NS
	11/20/03	0.97	19	<0.50	<0.0025	<0.0025	<0.0025	<0.0025	NA
	02/26/04	2.3	35	<0.50	<0.0025	<0.0025	<0.0025	<0.0025	NA
	05/11/04	1.2	29	<0.50	<0.0025	<0.0025	<0.0025	<0.0025	NA
	08/26/04	4.3	33	<0.50	<0.001	<0.001	0.0013	0.0014	NA
	12/15/04	NS	NS	NS	NS	NS	NS	NS	NA
	03/09/05	2.4	140	<5.0	<0.0015	<0.0015	0.0016	<0.0015	NA
	06/08/05	1.8	31	0.5	<0.002	<0.002	0.0026	<0.002	NA
	09/21/05	1.7	46	3.3	<0.0010	<0.0010	0.0013	<0.0010	NA
	12/14/05	1.0	6.1	0.54	<0.002	<0.002	0.0027	<0.002	NA
	03/14/06	<0.25	33	3.1	<0.0005	<0.0005	<0.0005	<0.0005	NA
	06/07/06	0.8	18	1.2	<0.0025	<0.0025	<0.0025	<0.0025	NA
09/13/06	NS	NS	NS	NS	NS	NS	NS	NS	
	12/13/06	NS	NS	NS	NS	NS	NS	NS	NS

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS**

Kinder Morgan Liquid Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest
Seattle, Washington

Sample I.D.	Date	TPH-Gasoline (ppm)	TPH-Diesel (ppm)	TPH-Oil (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Total Lead (ppm)
MW-22	02/13/02	0.96	9.2	<0.5	0.012	0.0053	0.017	0.0097	NA
	05/21/02	1.1	7.7	<0.5	0.16	0.049	0.023	0.03	NA
	08/29/02	1.4	2.4	<0.5	0.5	0.0093	0.044	0.0066	NA
	11/05/02	0.49	1.7	<0.5	0.14	0.0031	0.025	<0.001	NA
	02/19/03	<0.25	9.1	<0.5	<0.001	<0.001	<0.001	<0.001	NA
	06/10/03	<0.25	7.4	0.87 ^a	<0.001	<0.001	<0.001	<0.001	NA
	09/16/03	<0.25	2.7	<0.50	0.0018	<0.0005	<0.0005	<0.0005	NA
	11/19/03	<0.50	8.4	<0.50	<0.0025	<0.0025	<0.0025	<0.0025	NA
	02/25/04	<0.25	6.4	<0.50	<0.001	<0.001	<0.001	<0.001	NA
	05/11/04	<0.25	2.0	<0.50	<0.001	<0.001	<0.001	<0.001	NA
	08/25/04	<0.25	0.61	<0.50	<0.001	<0.001	<0.001	<0.001	NA*
	12/14/04	<0.25	1.1	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	03/10/05	<0.25	2.2	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	06/07/05	<0.25	3.0	<0.50	0.0049	<0.001	<0.001	<0.001	NA
	09/20/05	0.40	2.9	<0.50	<0.001	<0.001	<0.001	<0.001	NA
	12/13/05	<0.25	0.71	<0.50	<0.001	<0.001	<0.001	<0.001	NA
	03/15/06	<0.25	2.4	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	06/08/06	<0.25	0.89	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	09/12/06	<0.25	0.45	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	12/12/06	<0.25	1.4	<0.50	<0.001	<0.001	<0.001	<0.001	NA
MW-23	11/19/03	5.3	1.4	<0.50	0.87	0.016	0.098	0.23	NA
	02/25/04	3.3	0.85	<0.50	0.91	0.011	0.046	0.03	0.0052*
	05/12/04	4.2	1.3	<0.50	1.1	0.013	0.046	0.048	<0.0050*
	08/26/04	5.3	0.72	<0.50	1.1	0.023	0.2	0.17	0.014*
	12/14/04	NS	NS	NS	NS	NS	NS	NS	NS
	03/08/05	NS	NS	NS	NS	NS	NS	NS	NS
	06/07/05	NS	NS	NS	NS	NS	NS	NS	NS
	09/20/05	NS	NS	NS	NS	NS	NS	NS	NS
	12/13/05	6.3	<0.25	<0.50	1.3	0.014	0.048	0.044	<0.0050*
	03/15/06	7.0	0.28	<0.50	1.4	0.015	0.19	0.21	<0.0050*
	06/08/06	5.2	1.30	<0.50	1.4	0.014	0.11	0.11	<0.0050*
	09/12/06	NS	NS	NS	NS	NS	NS	NS	NS
	12/12/06	8.1	<0.25	<0.50	1.8	0.020	0.11	0.16	<0.0050*
MW-24	11/19/03	34	6.4	0.54	2.8	0.54	1.4	6	NA
	02/25/04	26	3.0	<0.50	4.3	0.085	1.0	3.3	<0.0050*
	05/12/04	NS	NS	NS	NS	NS	NS	NS	NS
	08/26/04	NS	NS	NS	NS	NS	NS	NS	NS
	12/14/04	NS	NS	NS	NS	NS	NS	NS	NS
	03/08/05	NS	NS	NS	NS	NS	NS	NS	NS
	06/07/05	NS	NS	NS	NS	NS	NS	NS	NS
	09/20/05	NS	NS	NS	NS	NS	NS	NS	NS
	12/14/05	NS	NS	NS	NS	NS	NS	NS	NS
	03/15/06	26	0.34	<0.50	4.4	0.064	0.88	4.2	0.0069
	06/08/06	21	<0.25	<0.50	1.5	0.039	0.86	4.9	0.0068
	09/12/06	NS	NS	NS	NS	NS	NS	NS	NS
	12/12/06	20	1.1	<0.50	1.5	0.037	0.69	3.2	0.0078*
MW-25	11/20/03	<0.25	1.3	<0.50	0.0061	<0.0005	<0.0005	<0.0005	NA
	02/26/04	0.38	8.9	<0.50	0.0011	<0.0005	0.0027	<0.0005	0.012*
	5/12/04	<0.25	1.6	<0.50	<0.0005	<0.0005	0.0034	<0.0005	<0.0050*
	08/26/04	<0.25	0.27	<0.50	0.013	<0.0005	<0.0005	<0.0005	0.034 ^{a,b}
	12/14/04	<0.25	1.4	<0.50	0.0035	<0.001	<0.001	<0.001	<0.0050*
	03/10/05	0.31	3.7	<0.50	0.0014	<0.0005	0.00064	<0.0005	<0.0050*
	06/07/05	0.40	3.2	<0.50	<0.001	<0.001	0.0014	<0.001	<0.0050*
	09/20/05	0.30	1.4	<0.50	0.0016	<0.0005	<0.0005	<0.0005	0.059 ^a
	12/13/05	<0.25	1.2	<0.50	<0.001	<0.001	<0.001	<0.001	<0.0050*
	03/15/06	<0.25	1.0	<0.50	0.0019	<0.001	<0.001	<0.001	<0.0050*
	06/08/06	<0.25	1.4	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
09/12/06	<0.25	0.31	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	
12/12/06	<0.25	0.86	<0.50	0.0052	<0.0005	<0.0005	<0.0005	<0.0050*	

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS**

Kinder Morgan Liquid Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest
Seattle, Washington

Sample I.D.	Date	TPH-Gasoline (ppm)	TPH-Diesel (ppm)	TPH-Oil (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Total Lead (ppm)
A-5	02/14/02	<0.25	2.3	<0.5	0.00055	0.0017	<0.0005	<0.0005	NA
	05/22/02	<0.25	2.0	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	NA
	08/29/02	<0.25	1.2	<0.5	0.0017	0.00062	<0.0005	0.00099	NA
	11/06/02	<0.25	1.2	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	NA
	02/20/03	<0.25	<0.25	<0.5	0.00086	0.0019	<0.0005	0.001	NA
	06/10/03	0.26	0.4	<0.25	<0.0005	0.00067	<0.0005	0.0007	NA
	09/17/03	<0.25	0.60	<0.50	0.0042	<0.0005	<0.0005	<0.0005	NA
	11/20/03	<0.25	0.53	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	02/26/04	<0.25	3.3	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	05/12/04	0.27	0.43	<0.50	<0.0005	<0.0005	<0.0005	0.00057	NA
	08/25/04	<0.25	1.1	<0.50	0.0029	<0.0005	<0.0005	<0.0005	NA
	12/14/04	<0.25	0.43	<0.50	0.021	<0.001	<0.001	<0.001	NA
	03/10/05	0.43	5.2	<0.50	0.12	0.0025	<0.001	0.0012	NA
	06/07/05	0.54	2.4	1.70	0.12	0.0028	<0.001	0.0013	NA
	09/20/05	0.37	1.2	<0.50	0.037	0.0017	<0.001	0.0011	NA
	12/13/05	0.44	0.31	<0.50	0.049	0.0021	<0.0005	0.0013	NA
03/15/06	0.36	0.45	<0.50	0.052	0.0017	<0.001	0.0017	NA	
06/08/06	0.91	0.55	<0.50	0.099	0.0036	0.00076	0.0034	NA	
09/12/06	0.46	0.43	<0.50	0.031	0.0016	<0.001	0.0014	NA	
	12/12/06	0.70	0.53	<0.50	0.079	0.0028	<0.001	0.0025	NA
A-8	02/14/02	<0.25	1.6	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	NA
	05/22/02	<0.25	0.51	<0.5	<0.0005	0.00058	<0.0005	<0.0005	NA
	08/28/02	<0.25	<0.5	<0.5	<0.0005	0.0014	<0.0005	0.00066	NA
	11/06/02	<0.25	0.43	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	NA
	02/20/03	<0.25	<0.25	<0.5	<0.0005	0.00083	<0.0005	<0.0005	NA
	06/10/03	<0.25	<0.25	<0.25	<0.0005	0.00056	<0.0005	<0.0005	NA
	09/17/03	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	11/20/03	<0.25	1.4	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	02/26/04	0.35	1.0	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	05/12/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	08/25/04	<0.25	4.9	<0.50	<0.001	<0.001	<0.001	<0.001	NA
	12/14/04	<0.25	1.7	<0.50	0.00056	0.00052	<0.0005	0.00094	NA
	03/10/05	<0.25	2.1	<0.50	<0.0005	<0.0005	<0.0005	0.00055	NA
	06/07/05	<0.25	1.2	1.5	<0.0005	<0.0005	<0.0005	<0.0005	NA
	09/20/05	<0.25	3.5	0.8	0.0012	<0.001	<0.001	0.0012	NA
	12/13/05	<0.25	0.54	<0.50	<0.0005	<0.0005	<0.0005	0.0011	NA
03/15/06	<0.25	0.55	<0.50	<0.001	<0.001	<0.001	<0.001	NA	
06/08/06	<0.25	0.47	<0.50	<0.001	<0.001	<0.001	<0.001	NA	
09/12/06	<0.25	0.76	<0.50	<0.001	<0.001	<0.001	0.0011	NA	
	12/12/06	0.27	0.87	<0.50	<0.001	0.0011	<0.001	0.0015	NA
A-10	02/14/02	<0.25	9.2	<0.5	<0.0005	0.00062	<0.0005	<0.0005	NA
	05/22/02	0.31	8.8	<0.5	<0.0005	0.00086	<0.0005	<0.0005	NA
	08/28/02	0.30	15	<0.5	<0.001	<0.001	<0.001	<0.001	NA
	11/06/02	0.37	13	<0.50	<0.0005	0.00057	<0.0005	<0.0005	NA
	02/20/03	<0.25	6.0	<0.5	0.0013	<0.0005	<0.0005	0.00055	NA
	06/10/03	0.45	19	<0.25	<0.001	<0.001	<0.001	<0.001	NA
	09/17/03	0.68	30	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	11/20/03	1.1	89	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	02/26/04	<0.25	35	0.74	<0.0005	<0.0005	<0.0005	<0.0005	NA
	05/12/04	<0.25	3.5	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	08/25/04	<0.25	5.1	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA*
	12/14/04	<0.25	1.1	<0.50	0.003	<0.001	<0.001	<0.001	NA
	03/10/05	<0.25	4.6	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	06/07/05	0.3	68.0	2.10	0.00069	<0.0005	<0.0005	<0.0005	NA
	09/20/05	0.6	1.5	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
	12/13/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA
03/15/06	<0.25	1.7	<0.50	<0.0005	<0.0005	<0.0005	0.0005	NA	
06/08/06	<0.25	0.7	<0.50	<0.0005	<0.0005	<0.0005	0.0005	NA	
09/12/06	<0.25	0.65	<0.50	<0.0005	<0.0005	<0.0005	0.0005	NA	
	12/12/06	<0.25	0.98	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS**

Kinder Morgan Liquid Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest
Seattle, Washington

Sample I.D.	Date	TPH-Gasoline (ppm)	TPH-Diesel (ppm)	TPH-Oil (ppm)	Benzene (ppm)	Toluene (ppm)	Ethylbenzene (ppm)	Xylenes (ppm)	Total Lead (ppm)
A-27	02/14/02	2.9	11	<0.5	0.13	0.014	0.096	0.25	NA
	05/22/02	3.3	8.2	<0.5	0.2	0.016	0.14	0.38	NA
	08/29/02	3.8	8.1	<0.5	0.24	0.016	0.14	0.29	NA
	11/06/02	3.2	8.0	<0.5	0.16	0.016	0.065	0.14	NA
	02/19/03	3.1	6.8	<0.5	0.17	0.017	0.052	0.13	NA
	06/10/03	3.7	4.5	<0.25	0.14	0.013	0.11	0.23	NA
	09/16/03	4.5	5.6	<0.50	0.27	0.02	0.18	0.38	NA
	11/19/03	5.9	5.3	<0.50	0.25	0.023	0.13	0.33	NA
	02/25/04	4.4	16.0	<0.50	0.15	0.016	0.18	0.30	NA
	05/11/04	4.6	5.2	<0.50	0.16	0.017	0.23	0.38	NA
	08/25/04	4.7	2.5	<0.50	0.25	0.018	0.17	0.24	NA*
	12/14/04	4.5	4.4	<0.50	0.11	0.012	0.099	0.14	NA
	03/10/05	5.8	4.7	<0.50	0.14	0.015	0.16	0.22	NA
	06/07/05	4.5	7.8	<0.50	0.17	0.014	0.24	0.34	NA
	09/20/05	6.3	2.3	<0.50	0.25	0.019	0.18	0.22	NA
	12/13/05	3.7	0.83	<0.50	0.13	0.012	0.083	0.095	NA
03/15/06	4.4	1.3	<0.50	0.13	0.017	0.19	0.24	NA	
06/08/06	4.5	1.1	<0.50	0.19	0.016	0.23	0.28	NA	
09/12/06	3.4	0.82	<0.50	0.17	0.011	0.12	0.12	NA	
	12/12/06	3.7	0.90	<0.50	0.110	0.0096	0.10	0.12	NA
A-28R	02/14/02	5.3	2.7	<0.5	0.66	0.027	0.42	0.2	0.035*
	05/22/02	3.1	6.7	<0.5	0.14	0.01	0.2	0.092	0.05*
	08/29/02	4	6	<0.5	0.15	0.019	0.23	0.078	0.032*
	11/06/02	3.4	1.8	<0.5	0.47	0.015	0.053	0.05	0.028*
	02/19/03	3.5	4.6	<0.5	0.46	0.015	0.051	0.05	0.013*
	06/10/03	3.7	2.9	<0.25	0.31	0.0081	0.085	0.051	0.064*
	09/16/03	3.8	2.0	<0.50	1.0	0.013	0.075	0.048	0.17*
	11/19/03	4.9	<0.25	<0.50	0.58	0.012	0.059	0.064	0.11*
	02/25/04	5.1	1.7	<0.50	0.63	0.0093	0.19	0.076	0.0080*
	05/12/04	6.5	2.6	<0.50	0.96	0.012	0.20	0.058	<0.0050*
	08/25/04	5.9	0.88	<0.50	2.1	0.018	0.05	0.053	0.043*
	12/14/04	7.6	3.0	<0.50	1.4	0.015	0.073	0.062	0.025*
	03/10/05	10	0.76	<0.50	1.9	0.019	0.077	0.064	0.0078*
	06/07/05	6	1.20	<0.50	2.1	0.015	0.069	0.048	0.0068*
	09/20/05	NS	NS	NS	NS	NS	NS	NS	NS
	12/13/05	5.4	<0.25	<0.50	0.93	0.011	0.033	0.036	0.012*
03/15/06	4.6	<0.25	<0.50	0.80	0.012	0.11	0.035	<0.0050*	
06/08/06	4.2	0.49	0.73	0.87	0.013	0.07	0.035	0.019*	
09/12/06	5.2	<0.25	<0.50	1.0	0.015	0.048	0.036	0.016*	
	12/12/06	4.0	0.57	<0.50	0.30	0.0095	0.027	0.028	<0.0050*
SH-02	12/20/00	0.078	<0.25	<0.5	0.001	<0.001	<0.001	<0.003	0.015**
SH-02R	02/13/02	<0.25	0.56	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*
	05/21/02	<0.25	2.4	<0.5	0.037	<0.0005	<0.0005	<0.0005	0.005*
	08/28/02	<0.25	4.3	<0.5	0.087	0.0038	0.00061	0.0023	0.006*
	11/05/02	<0.25	1.1	<0.5	0.016	<0.0005	<0.0005	<0.0005	0.005*
	02/19/03	<0.25	<0.5	<0.5	<0.0005	0.00086	<0.0005	<0.0005	<0.005*
	06/10/03	<0.25	0.97	<0.25	<0.0005	0.00051	<0.0005	<0.0005	0.0059*
	09/16/03	<0.25	3.0	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.010*
	11/19/03	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	02/25/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	05/12/04	<0.25	0.74	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	08/26/04	<0.25	0.58	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/15/04	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	03/09/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	06/08/05	<0.25	0.31	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	09/21/05	<0.25	0.58	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/14/05	<0.25	0.30	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.0078*
03/14/06	<0.25	0.30	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.0072*	
06/07/06	<0.25	0.59	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050*	
09/13/06	<0.25	<0.25	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050*	
	12/13/06	<0.25	0.49	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*

**TABLE 2
GROUNDWATER ANALYTICAL RESULTS**

Kinder Morgan Liquid Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest
Seattle, Washington

Sample I.D.	Date	TPH-Gasoline (ppm)	TPH-Diesel (ppm)	TPH-Oil (ppm)	Benzene (ppm)	Toluene (ppm)	Ethyl-benzene (ppm)	Xylenes (ppm)	Total Lead (ppm)
SH-05	12/20/00	<0.05	1.0	<0.5	<0.001	<0.001	<0.003	<0.001	0.017**
SH-05R	05/21/02	0.71	11	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*
	08/28/02	0.77	10	<0.5	<0.0005	0.0015	<0.0005	<0.0005	0.006*
	11/05/02	1.4	7.1	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	0.008*
	02/19/03	0.8	6.8	<0.5	<0.001	0.0016	<0.001	<0.001	<0.005*
	06/10/03	1.1	45	<0.25	<0.0005	<0.0005	<0.0005	<0.0005	0.04*
	09/16/03	<0.25	23	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.074*
	11/19/03	0.62	19	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.075*
	02/25/04	<0.25	5.3	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	05/12/04	0.43	4.3	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	08/26/04	0.63	3.0	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050
	12/15/04	0.30	10	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0056*
	03/09/05	0.78	4.3	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	06/08/05	0.32	4.0	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	09/21/05	0.61	2.8	1.0	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/14/05	0.78	1.3	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	03/14/06	<0.25	1.4	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.0074*
	06/07/06	<0.25	1.4	<0.50	<0.001	<0.001	<0.001	<0.001	<0.0050*
	09/13/06	0.34	0.56	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/13/06	<0.50	1.9	<0.50	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050*
MW-07R	02/13/02	<0.25	1.2	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	0.035*
	05/21/02	<0.25	2.1	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	0.005*
	08/28/02	<0.25	2.4	<0.5	<0.0005	0.0028	<0.0005	0.0012	0.006*
	11/05/02	<0.25	3.7	<0.5	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*
	02/19/03	NS	NS	NS	NS	NS	NS	NS	NS
	06/10/03	NS	NS	NS	NS	NS	NS	NS	NS
	09/16/03	<0.25	1.9	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.045*
	11/19/03	<0.25	2.1	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.020*
	02/25/04	<0.25	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	05/12/04	<0.25	0.48	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	08/26/04	<0.25	0.42	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	NA*
	12/15/04	<0.25	0.85	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.0076*
	03/09/05	<0.25	0.54	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	06/08/05	<0.25	0.46	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	09/21/05	<0.25	0.70	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	12/14/05	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	03/14/06	<0.25	0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	06/07/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*
	09/13/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.0065
	12/13/06	<0.25	<0.25	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*

Notes:
 < = Denotes compound was not detected at designated detection limit.
 NA = Not analyzed for this parameter
 NS = Not sampled
 ^ = Dup-1 is a duplicate sample for A-23R; Dup-2 is a duplicate sample for MW-3.
 * = Also tested for Dissolved Lead (EPA-200.8), results are below detection limit of 0.0050 ppm.
 ** = Also tested for Dissolved Lead (EPA-200.8), results are at or above detection limit of 0.0050 ppm.
 *** = Also tested for Dissolved Lead (EPA-7421), results are below detection limit of 0.004 ppm.
^a = Insulating oil range hydrocarbons were reported for MW-22 at concentration of 0.87 ppm.
 TPH as gasoline - Analysis by Washington Method WTPH-G prior to 5/20/98; analysis by Northwest Method NWTTPH-Gx from 5/20/98 through present.
 TPH as diesel and oil - Analysis by Washington Method WTPH-D+ extended prior to 5/20/98; analysis by Northwest Method NWTTPH-Dx from 5/20/98 through present.
 BTEX Compounds - Analysis by EPA Method 8020 prior to 5/20/98; analysis by EPA Method 8021B from 5/20/98 through present.

TABLE 3
ANALYTICAL SUMMARY 2000 - DECEMBER 2006
CURRENT GROUNDWATER COMPLIANCE PROGRAM
 Kinder Morgan Harbor Island Terminal

Well ID	Indicator Hazardous Substances, concentration in mg/L							
	TPH-G	Benzene	Ethylbenzene	Toluene	TPH-D	TPH-O	Total Lead	Dissolved Lead
Cleanup Criteria	1.0	0.071	29.0	200.0	10	10	0.0058	--
A-5	ND - 0.54	ND - 0.12, >0.071 on 12-06	ND	ND - 0.0036	ND - 5.2	ND - 1.7		
A-8	ND - 0.35	ND - 0.0012	ND	ND - 0.0014	ND - 4.9	ND - 1.5		
A-10	ND - 1.1, <1 since 02-04	ND - 0.0030	ND	ND - 0.00086	ND - 89, <10 since 09-05	ND - 2.1		
A-14R	ND	ND - 0.002	ND	ND - 0.0021	ND	ND	ND-0.032 <0.0058 since 06-05	ND
A-21	ND - 1.6, <1 since 03-06	ND - 0.061, <0.071 since 06-01	ND - 0.045	ND - 0.0025	ND - 0.76	ND	ND-0.062 <0.0058 since 06-05	ND
A-23R	ND - 2.3, >1 on 12-06	0.00060 - 0.46, >0.071 on 12-06	ND - 0.088	ND - 0.012	ND - 6.9	ND	ND - 0.72 <0.0058 since 09-06	detected
A-27	2.0 - 6.3, >1 on 12-06	0.11 - 0.27	0.04 - 0.24	0.009 - 0.023	0.83 - 16, <10 since 05-04	ND		
A-28R	3.1 - 10	0.14 - 2.1	0.033 - 0.42	0.0081 - 0.027	ND - 6.7	ND	ND - 0.17 <0.0058 since 12-06	ND
MW-1	ND - 0.83	ND - 0.0013	ND - 0.0020	ND - 0.0067	ND - 2.0	ND	ND - 0.021 <0.0058 since 02-03	ND
MW-2	ND	ND	ND	ND - 0.00071	ND - 0.91	ND	ND - 0.062 since 09-06	detected
MW-3	ND - 45, <1 since 02-02	ND - 0.36, <0.071 since 02-03	ND - 0.23	ND - 0.18	ND - 17, <10 since 12-00	ND - 0.68	ND - 0.042 <0.0058 since 03-05	ND
MW-4	ND - 3.3, <1 since 06-03*	ND - 1.1, <0.071 since 02-03	ND - 0.034	ND - 0.023	1.1 - 280, <10 since 12-05	ND - 2.6		
MW-5	ND - 0.13	ND - 0.019	ND	ND - 0.0018	ND - 1.6	ND	ND - 0.11 >0.0058 on 12-06	ND
MW-6	ND - 1.1, <1 since 03-06	ND - 0.19, <0.071 since 09-01	ND - 0.0050	ND - 0.0070	ND - 7.3	ND	ND - 0.052 since 03-05	ND
MW-7	0.26 - 18, >1 on 09-06	ND - 0.34, >0.071 on 09-06	ND - 0.69	ND - 0.37	ND - 21, <10 since 12-04	ND - 0.81	0.0083 - 0.23 >0.058 on 09-06	detected
MW-8	ND	ND - 0.0013	ND	ND - 0.00086	0.54 - 42, <10 since 03-01	ND - 2.9	ND - 0.069 <0.0058 since 12-06	ND
MW-9	ND - 10, >1 on 12-06	ND - 0.038	0.020 - 0.23	0.0034 - 0.049	1.2 - 39 <10 since 05-04	ND - 0.72	ND - 0.053 >0.0058 on 12-06	ND
MW-12R	ND - 0.56	ND - 0.26, <0.071 since 12-04	ND	ND - 0.0059	ND - 2.5	ND	ND - 0.013 <0.0058 since 05-04	ND
MW-13R	ND	ND - 0.056	ND	ND - 0.0032	ND - 3.5	ND	ND - 0.012 <0.0058 since 05-04	ND
MW-14	ND - 6.8, >1 on 12-06	ND - 0.48, <0.071 since 02-04	0.019 - 0.26	ND - 0.014	2.0 - 37, <10 since 12-05	ND - 1.1		
MW-16	ND - 0.88	ND - 0.029	ND - 0.0010	ND - 0.0037	ND - 1.7	ND		
MW-18	ND - 7.6, <1 since 09-06	ND - 1.8, <0.071 since 09-06	ND - 0.29	ND - 0.067	ND - 0.77	ND		
MW-19	4.2 - 68	ND - 1.4, <0.071 since 06-06	0.16 - 1.1	0.12 - 4.0	0.72 - 19 <10 since 08-04	ND		
MW-20	ND - 1.8, <1 since 03-01	ND - 0.68, <0.071 since 02-02	ND - 0.067	ND - 0.020	ND - 5.0	ND - 0.7		
MW-21	ND - 4.3, SPH on 12-06	ND	ND - 0.019	ND - 0.006	6.1 - 140, SPH on 12-06	ND - 3.3 SPH on 12-06		
MW-22	ND - 5.1, <1 since 11-02	ND - 1.9, <0.071 since 02-03	ND - 0.35	ND - 0.097	0.61 - 9.2	ND - 0.87		
SH-02R	ND - 0.078	ND - 0.087, <0.071 since 11-02	ND - 0.00061	ND - 0.0038	ND - 4.3	ND	ND - 0.010 <0.0058 since 06-06	ND
SH-05R	ND - 1.4, <1 since 09-03	ND	ND	ND - 0.0016	1.3 - 45, <10 since 03-05	ND - 1.0	ND - 0.075 <0.0058 since 03-05	ND
MW-07R	ND	ND	ND	ND - 0.0028	ND - 3.7	ND	ND - 0.045 <0.0058 since 12-06	ND
MW-23	SPH, 4.2 - 7.0 >1 on 12-06	0.87 - 1.4 >0.071 on 12-06	0.046 - 0.19	0.011 - 0.023	SPH, ND - 1.4	ND	ND - 0.014 <0.0058 since 12-05	ND
MW-24	SPH, 26 - 34	2.8 - 4.4	0.88 - 1.4	0.064 - 0.54	SPH, 0.34 - 6.4	ND - 0.54	ND - 0.0069 >0.0058 on 12-07	ND
MW-25	ND - 0.40	ND - 0.013	ND - 0.0034	ND	0.27 - 8.9	ND	ND - 0.034	detected

Notes: * ND but detection limit > 1 during 2 events in 2005

Recommend reduction in monitoring frequency and/or parameters

Parameter not analyzed

TABLE 4
PROPOSED GROUNDWATER COMPLIANCE PROGRAM
RECOMMENDED MONITORING FREQUENCY
Kinder Morgan Harbor Island Terminal

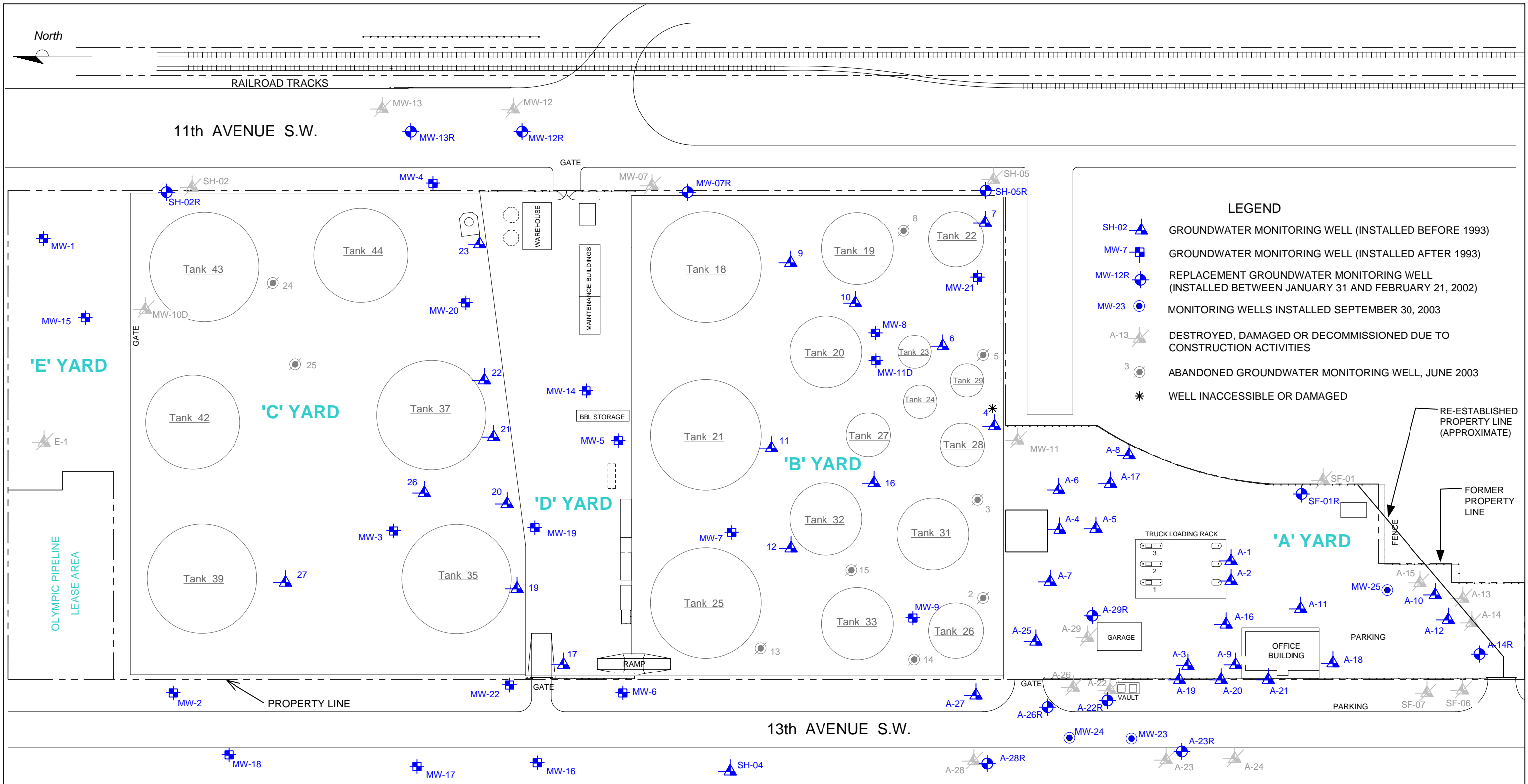
Well ID	Indicator Hazardous Substances				Natural Attenuation Parameters				
	TPH-G/ BTEX	TPH-D/TPH-O	Total Lead	Dissolved Lead	Nitrate (NO3)	Ferrous Iron	Methane	Sulfate (SO4)	Sulfide (H2S)
A-5	Quarterly	Discontinue							
A-8	Annual	Annual							
A-10	Annual	Annual			Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
A-14R	Annual	Annual	Annual	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
A-21	Quarterly	Discontinue	Annual	Discontinue	Annual	Annual	Annual	Annual	Annual
A-23R	Quarterly	Discontinue	Annual	Annual	Annual	Annual	Annual	Annual	Annual
A-27	Quarterly	Discontinue			Annual	Annual	Annual	Annual	Annual
A-28R	Quarterly	Discontinue	Annual	Discontinue	Annual	Annual	Annual	Annual	Annual
MW-1	Annual	Annual	Annual	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
MW-2	Annual	Annual	Annual	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
MW-3	Annual	Annual	Annual	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
MW-4	Annual	Annual			Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
MW-5	Annual	Annual	Annual	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
MW-6	Quarterly	Discontinue	Annual	Discontinue	Annual	Annual	Annual	Annual	Annual
MW-7	Quarterly	Discontinue	Annual	Annual	Annual	Annual	Annual	Annual	Annual
MW-8	Annual	Annual	Annual	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
MW-9	Quarterly	Discontinue	Annual	Discontinue	Annual	Annual	Annual	Annual	Annual
MW-12R	Annual	Annual	Annual	Discontinue					
MW-13R	Annual	Annual	Annual	Discontinue					
MW-14	Quarterly	Discontinue			Annual	Annual	Annual	Annual	Annual
MW-16	Annual	Annual							
MW-18	Quarterly	Discontinue							
MW-19	Quarterly	Discontinue			Annual	Annual	Annual	Annual	Annual
MW-20	Annual	Annual			Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
MW-21	Quarterly	Quarterly			Annual	Annual	Annual	Annual	Annual
MW-22	Annual	Annual			Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
SH-02R	Annual	Annual	Annual	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
SH-05R	Annual	Annual	Annual	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
MW-07R	Annual	Annual	Annual	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue
MW-23	Quarterly	Discontinue	Annual	Discontinue	Annual	Annual	Annual	Annual	Annual
MW-24	Quarterly	Discontinue	Annual	Discontinue	Annual	Annual	Annual	Annual	Annual
MW-25	Annual	Annual	Annual	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue	Discontinue

Notes: Recommended reduced monitoring frequency

 Parameter not analyzed

TABLE 5
PROPOSED ANNUAL ANALYSES
GROUNDWATER COMPLIANCE PROGRAM
Kinder Morgan Harbor Island Terminal

Well ID	Indicator Hazardous Substances				Natural Attenuation Parameters				
	TPH-G/ BTEX	TPH-D+ extended	Total Lead	Dissolved Lead	Nitrate (NO3)	Ferrous Iron	Methane	Sulfate (SO4)	Sulfide (H2S)
A-5	4	0							
A-8	1	1							
A-10	1	1			0	0	0	0	0
A-14R	1	1	1	0	0	0	0	0	0
A-21	4	0	1	0	1	1	1	1	1
A-23R	4	0	1	1	1	1	1	1	1
A-27	4	0			1	1	1	1	1
A-28R	4	0	1	0	1	1	1	1	1
MW-1	1	1	1	0	0	0	0	0	0
MW-2	1	1	1	0	0	0	0	0	0
MW-3	1	1	1	0	0	0	0	0	0
MW-4	1	1			0	0	0	0	0
MW-5	1	1	1	0	0	0	0	0	0
MW-6	4	0	1	0	1	1	1	1	1
MW-7	4	0	1	1	1	1	1	1	1
MW-8	1	1	1	0	0	0	0	0	0
MW-9	4	0	1	0	1	1	1	1	1
MW-12R	1	1	1	0					
MW-13R	1	1	1	0					
MW-14	4	0			1	1	1	1	1
MW-16	1	1							
MW-18	4	0							
MW-19	4	0			1	1	1	1	1
MW-20	1	1			0	0	0	0	0
MW-21	4	4			1	1	1	1	1
MW-22	1	1			0	0	0	0	0
SH-02R	1	1	1	0	0	0	0	0	0
SH-05R	1	1	1	0	0	0	0	0	0
MW-07R	1	1	1	0	0	0	0	0	0
MW-23	4	0	1	0	1	1	1	1	1
MW-24	4	0	1	0	1	1	1	1	1
MW-25	1	1	1	0	0	0	0	0	0
Annual Total	74	22	20	2	12	12	12	12	12



LEGEND

- SH-02 ▲ GROUNDWATER MONITORING WELL (INSTALLED BEFORE 1993)
- MW-7 ■ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
- MW-12R ● REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
- MW-23 ● MONITORING WELLS INSTALLED SEPTEMBER 30, 2003
- A-13 ▲ DESTROYED, DAMAGED OR DECOMMISSIONED DUE TO CONSTRUCTION ACTIVITIES
- 3 ● ABANDONED GROUNDWATER MONITORING WELL, JUNE 2003
- * WELL INACCESSIBLE OR DAMAGED

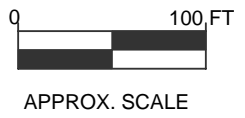
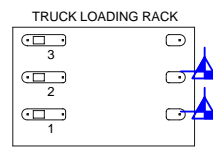


FIGURE 1
SITE MAP
KINDER MORGAN LIQUID TERMINALS, LLC
HARBOR ISLAND TERMINAL
2720 13th AVENUE SOUTHWEST
SEATTLE, WASHINGTON

PROJECT NO. STKM-001-M.0005	DRAWN BY DL March 2007	
FILE NO. STKM-001-M.0005	PREPARED BY DL March 2007	
REVISION NO. 0	REVIEWED BY WC	



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Northwest Regional Office • 3190 160th Avenue SE • Bellevue, Washington 98008-5452 • (425) 649-7000

August 7, 2007

Robert Truedinger
Remediation Project Manager
Kinder Morgan Energy Partners
1140 Canal Boulevard
Richmond, CA 94804

Re: Reduced Groundwater Monitoring Plan

Dear Mr. Truedinger:

This letter is to indicate the Department of Ecology's approval of the Site-Wide Groundwater Compliance Monitoring Plan – Proposed Reduced Monitoring, as presented in Delta Environmental Consultants' submittal dated June 21, 2007.

Sorry that this approval has taken awhile. Further adjustments / reductions in the monitoring may be appropriate in the future.

Sincerely,

A handwritten signature in cursive script that reads "Roger K. Nye".

Roger K. Nye
Project Coordinator

cc: Ward Crell, Dawna Leong: Delta Environmental Consultants



September 4, 2008

Mr. Roger Nye
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue N.E.
Bellevue, Washington 98008-5452

Sent via FedEx Saver

SUBJ: Technical Revision Request – Low-Flow Groundwater Sampling
Kinder Morgan Harbor Island Terminal
Seattle, Washington
Delta Project No. STKM-001-P.0005



Dear Mr. Nye:

Delta Consultants (Delta) has prepared this request on behalf of Kinder Morgan Liquid Terminals, LLC (KMLT) to propose a technical revision to Appendix A (Compliance Sampling and Analysis Plan) of the Compliance Monitoring Plan, dated October 27, 1999. This letter request supersedes a previous request, dated July 16, 2008. The Compliance Monitoring Plan was included as Appendix F of the Model Toxics Control Act (MTCA) Consent Decree 00-2-07760-25EA, which was executed to implement remedial actions for the site. As discussed in a March 31, 2008 telephone conversation with you, KMLT is proposing a revision to Section 2.3.2, Sampling Procedures, of the Compliance Sampling and Analysis Plan (Plan) to replace the purge-sampling methodology with low-flow sampling techniques.

CURRENT PURGE-SAMPLING PROCEDURES

Sampling ground water traditionally involves purging a monitoring well to remove stagnant water in the well casing prior to sampling. The current sampling procedure incorporated into the Plan includes purging three to five volumes of the well prior to collecting a groundwater sample. This well evacuation approach can pose several problems, including: 1) as the well recovers, groundwater cascading in the well screen can affect contaminant and dissolved gas concentrations; 2) draining water from the sand pack surrounding the screen can result in air being trapped in the pore spaces, also affecting dissolved gas concentrations; and 3) increased turbidity can affect total and dissolved metal concentrations.

In the Revised Site-Wide Groundwater Compliance Monitoring Plan, dated June 21, 2007, Delta presented an evaluation of historical groundwater analytical results with respect to established cleanup criteria. During the preparation of the Revised Plan, Delta and Ecology discussed the periodic occurrence of dissolved lead in the wells sampled. These occurrences appeared to be random, with no apparent trend to the occurrence.

a member of:



At the time, it was mentioned that turbulence created during sampling may have caused the occurrence of dissolved lead. Eliminating turbulence during sampling may end or reduce this occurrence.

PROPOSED LOW-FLOW SAMPLING PROCEDURES

Low-flow/low-volume sampling is a method that can be used to overcome many of the problems created by traditional purge-sampling. Low-flow sampling can minimize turbidity and minimize groundwater chemistry alteration. By pumping at very low flowrates from the well screen zone, disturbance to the water column in the well is significantly reduced and stress on the surrounding formation is minimized. Samples obtained in this manner will better reflect contaminant concentrations and ground-water chemistry at ambient flow conditions.

Sampling Procedures

KMLT proposes to replace Section 2.3.2 of the Compliance Sampling and Analysis Plan with the following low-flow procedures for sampling the site's compliance wells.

Water Level Measurements

Water level measurements will be taken prior to purging and will be recorded to the nearest 0.01 foot. Measurements will be taken from least contaminated wells first followed by wells in increasing order of contamination. If product is observed, the thickness will be measured with an electronic oil/water interface meter. Wells with measurable product will not be purged or sampled.

Monitoring Well Purging

Purging will be conducted in a manner such that water levels do not drop more than two feet below static. Wells will be purged using dedicated downhole tubing connected to a surface portable peristaltic pump. The pump rate will be monitored and set at a rate of less than 1,000 ml/min. During purging, the following parameters will be monitored: dissolved oxygen, pH, specific conductance, temperature, turbidity, and depth to water. Field parameters will be measured in a flow-through container. Water level data will be collected with an electronic indicator probe. Measurements will be taken beginning with the first water purged from the well. During purging, additional measurements will be taken and recorded as frequently as possible. Measurements will be recorded to the following standards: dissolved oxygen to 0.05 mg/L; pH to ± 0.01 units; specific conductance to \pm uS/cm (measured specific conductance ≤ 99 uS/cm), to ± 10 uS/cm (99 uS/cm < specific conductance < 1,000 uS/cm), or to ± 100 uS/cm (measured specific conductance > 1,000 uS/cm); temperature to $\pm 0.5^\circ\text{C}$; and turbidity to 0.1 NTU. The meters will be calibrated near the beginning and end of each sampling day.

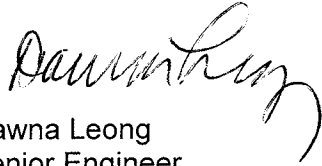
Groundwater samples will be collected after specific conductance and dissolved oxygen measurements are within 10 percent for 3 consecutive readings.

Sample Collection

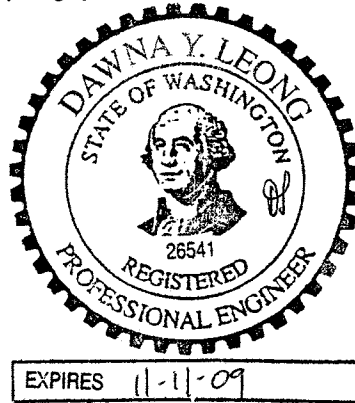
Following purging, samples will be collected for laboratory analyses. Samples will be pumped directly into laboratory-supplied sample containers, and each sample bottle will be labeled with the sample identification number, the sample date, the facility name, and the name of the technician who performed the sampling. Samples will be collected in the following order: TPH-G/BTEX, methane (if analyzed, TPH-Dx, metals (if analyzed), and field analytes (if analyzed). Duplicate samples will be collected by alternately filling the sample and the duplicate sample bottles.

KMLT proposes to implement the low-flow sampling procedures described herein upon approval from Ecology. Please call if you have any questions regarding the contents of this letter, or if you would like to discuss any aspect of the proposed sampling procedures. Delta looks forward to your approval of this proposal.

Sincerely,
DELTA CONSULTANTS, INC.



Dawna Leong
Senior Engineer



cc: Mr. Robert Truedinger, Kinder Morgan Energy Partners, L.P., Richmond, California (Electronic Copy)
Ms. Kelsy Hardy, Kinder Morgan Energy Partners, L.P., Orange, California (File Copy - CD Only)



RECEIVED BY:

FEB 11 2009

Delta Consultants - SEATTLE

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Northwest Regional Office • 3190 160th Avenue SE • Bellevue, Washington 98008-5452 • (425) 649-7000

February 9, 2009

Dawna Leong
Delta Consultants, Inc.
4006 148th Avenue NE
Redmond, Washington 98052

Re: Technical Revision Request – Low-Flow Groundwater Sampling
Kinder Morgan Harbor Island Terminal
Seattle, Washington
Consent Decree No. 00-2-07760-2SEA

Dear Ms. Leong:

This letter indicates the Department of Ecology's approval of your proposal to replace the purge-sampling methodology with low-flow sampling techniques at the Kinder Morgan Harbor Island facility as described in your letter dated September 4, 2008.

The proposal constitutes a technical revision as allowed under Section XV of the Consent Decree, to Section 2.3.2 of the Compliance Sampling and Analysis Plan (Appendix A of the Compliance Monitoring Plan - Exhibit F). The Compliance Monitoring Plan is an attachment to the Cleanup Action Plan - Exhibit B under the Consent Decree.

This letter establishes a mutual written agreement between the Department of Ecology and Kinder Morgan Liquid Terminals LLC to implement the technical revision described above.

Sincerely,

Roger K. Nye
Site Manager

cc: Robert Truedinger, Remediation Project Manager,
Kinder Morgan Energy Partners, L.P.





Ms. Maura O'Brien
Washington State Department of Ecology
Northwest Regional Office
3190 – 160th Avenue SE
Bellevue, WA 98008-5452

Subject:

Revised Site Groundwater Monitoring Plan

Kinder Morgan Harbor Island Terminal
KMLT File No. 29.79.02 (81171)
2720 13th Avenue Southwest
Seattle, Washington 98134

Dear Ms. O'Brien:

On behalf of Kinder Morgan Liquids Terminal, LLC (KMLT), ARCADIS US, Inc (ARCADIS) is pleased to submit this Revised Site Groundwater Monitoring Plan (Plan) for the KMLT Harbor Island Terminal located at 2720 13th Avenue Southwest in Seattle, Washington (site). The purpose of this Plan is to request and provide justification to support the reduction of groundwater sampling frequency at the site for the compliance and performance monitoring programs.

Reduced frequency of groundwater monitoring at the site is warranted due to:

- Quarterly groundwater quality data has been collected at the site since 2002
- Current groundwater conditions onsite are stable and not migrating offsite
- There have been no product releases reported at the site since 2010
- SPH has only been observed in one monitoring well (A-6) in the last 9 quarterly monitoring events.

Cleanup activities at the site are being conducted under a Consent Decree (CD) number 00-2-07760-2SEA between Washington State Department of Ecology (Ecology) and GATX Terminals Corporation (GATX) executed on April 4, 2000. KMLT assumed the obligations of the CD with the purchase of GATX Harbor Island Terminal in 2001. Compliance groundwater monitoring and sampling is currently

ARCADIS U.S., Inc.
1100 Olive Way
Suite 800
Seattle
Washington 98101
Tel 206.325.5254
Fax 206.325.8218
www.arcadis-us.com

ENVIRONMENT

Date:
May 20, 2014

Contact:
Matt Annis

Phone:
206.726.4716

Email:
matt.annis@arcadis-us.com

Our ref:
WA000804.2014

performed in accordance with the *Proposed Reduced Monitoring-Site-Wide Groundwater Compliance Monitoring Plan* (Reduced Monitoring Plan [Delta Consultants Inc. (Delta) 2007]). Additionally, low-flow groundwater sampling techniques are used in accordance with the Technical Revision Request (Delta 2008).

In addition, performance monitoring groundwater samples are collected in accordance with the letter Response to Comments - *B and D Yards Groundwater Remediation Engineering Design Report* dated December 12, 2012 (ARCADIS 2012) to evaluate the overall effectiveness of the sulfate land application.

Contaminants of Concern and Cleanup Levels

The approved Reduced Monitoring Plan (Delta 2007) outlines site-specific contaminants of concern (COCs) and applicable cleanup levels for groundwater. These site-specific COCs and their cleanup levels are as follows:

- Total Petroleum Hydrocarbons as Gasoline Range Organics at 1.0 milligrams per liter (mg/L)
- Total Petroleum Hydrocarbons as Diesel Range Organics at 10 mg/L
- Total Petroleum Hydrocarbons as Heavy Oil at 10 mg/L
- Benzene at 0.071 mg/L
- Toluene at 200 mg/L
- Ethylbenzene at 29 mg/L
- Total Lead at 0.0058 mg/L
- No Product Sheen

Current Groundwater Monitoring Plan

Compliance Monitoring

In accordance with the Reduced Monitoring Plan (Delta 2007) and Technical Revision Request (Delta 2008), the current groundwater compliance plan schedule is presented in Table 1 and Figure 2.

Performance Monitoring

In accordance with the Response to Comments - *B and D Yards Groundwater Remediation Engineering Design Report* dated December 12, 2012 (ARCADIS 2012), the current groundwater performance plan schedule is presented in Table 1.

Proposed Groundwater Monitoring Plan

The section below summarizes the proposed changes to the current groundwater monitoring plan. Groundwater gauging and sample collection protocols and procedures will continue to be implemented in accordance with the Ecology-approved plans mentioned above.

Compliance Monitoring

This proposed groundwater monitoring plan was prepared with consideration for the requirements of the Model Toxics Control Act (MTCA) regulations and requirements from Exhibit F of the CD. The achievement of cleanup levels in groundwater is measured at points of performance and compliance located within the hydrocarbon plume area and at the edges of the site in accordance with section 1.2 in Exhibit F of the CD. Points of compliance will not be altered for this plan and consist of the 44 wells presented in Table 2. Hydrograph and COC trend graphs for monitoring wells MW-7, MW-9, MW-14, and MW-19 are presented in Attachment A. The graphs are representative of the compliance points and indicate stable or decreasing groundwater conditions.

Future compliance groundwater monitoring events are proposed to be conducted on a semi-annual basis until the site has achieved compliance with the applicable cleanup levels. The proposed compliance groundwater monitoring plan is summarized in Table 2 and presented in Figure 3.

Proposed Performance Groundwater Monitoring Plan

In accordance with the Response to Comments letter dated December 20, 2012 and the KMLT *Remedial Action Report – B and D Yards* (RAP) [ARCADIS 2013]), the current groundwater performance monitoring plan will be conducted quarterly through third quarter 2014.

After the completion of the third quarter 2014 monitoring event KMLT proposes to alter the performance monitoring schedule to semi-annual monitoring which will be conducted concurrently with compliance monitoring activities. The proposed performance groundwater monitoring plan is summarized in Table 2 and presented in Figure 4.

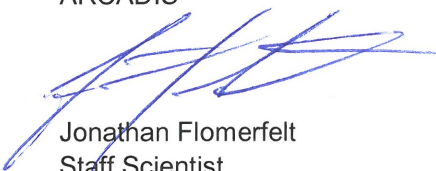
Schedule

The proposed Plan would be initiated during the third quarter 2014 sampling event upon Ecology approval; annual sampling will be conducted in the third quarter of each year.

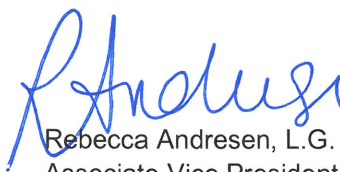
If you have any questions or comments, please contact Matt Annis at 206.726.4716 or by email at matt.annis@arcadis-us.com.

Sincerely,

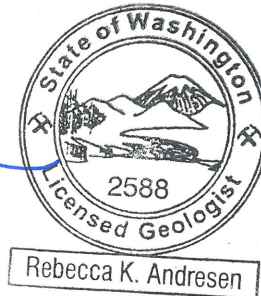
ARCADIS



Jonathan Flomerfelt
Staff Scientist



Rebecca Andresen, L.G.
Associate Vice President



Copies:

- Mr. Dave Rowland, KMLT, Seattle (CD Copy)
- Mr. Robert Truedinger, c/o Stephanie Randall, KMLT, Orange, CA (CD copy)
- Stephanie Randall, KMLT, Orange, CA (File Copy)

Tables

Table 1	Current Groundwater Monitoring
Table 2	Proposed Groundwater Monitoring Plan

Figures

Figure 1	Site Location
Figure 2	Current Groundwater Monitoring Plan
Figure 3	Proposed Groundwater Monitoring Plan
Figure 4	Proposed Performance Monitoring Plan

Attachments

Attachment A	Hydrographs and Trend Graphs
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Tables

Table 1
Current Monitoring Schedule
2014 Revised Groundwater Monitoring Plan
Kinder Morgan Liquids Terminals, LLC, Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
A-4	1Q, 3Q, 4Q							X
	2Q							X
A-5	1Q, 3Q, 4Q	X			X			X
	2Q	X			X			X
A-6	1Q, 3Q, 4Q							X
	2Q							X
A-8	1Q, 3Q, 4Q							X
	2Q	X	X	X	X			X
A-10	1Q, 3Q, 4Q							X
	2Q	X	X	X	X			X
A-11	1Q, 3Q, 4Q							X
	2Q							X
A-12	1Q, 3Q, 4Q							X
	2Q							X
A-14R	1Q, 3Q, 4Q							X
	2Q	X	X	X	X	X		X
A-16	1Q, 3Q, 4Q							X
	2Q							X
A-18	1Q, 3Q, 4Q							X
	2Q							X
A-19	1Q, 3Q, 4Q							X
	2Q							X
A-20	1Q, 3Q, 4Q							X
	2Q							X

Table 1
Current Monitoring Schedule
2014 Revised Groundwater Monitoring Plan
Kinder Morgan Liquids Terminals, LLC, Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
A-21	1Q, 3Q, 4Q	X			X		X	X
	2Q	X			X	X	X	X
A-22R	1Q, 3Q, 4Q							X
	2Q							X
A-23R	1Q, 3Q, 4Q	X			X			X
	2Q	X			X		X	X
A-25	1Q, 3Q, 4Q							X
	2Q							X
A-26R	1Q, 3Q, 4Q							X
	2Q							X
A-27	1Q, 3Q, 4Q	X			X		X	X
	2Q	X			X		X	X
A-28R	1Q, 3Q, 4Q	X			X		X	X
	2Q	X			X	X	X	X
12	1Q, 3Q, 4Q							X
	2Q							X
MW-1	1Q, 3Q, 4Q							X
	2Q	X	X	X	X	X		X
MW-2	1Q, 3Q, 4Q							X
	2Q	X	X	X	X	X	X	X
MW-3	1Q, 3Q, 4Q							X
	2Q	X	X	X	X	X		X
MW-4	1Q, 3Q, 4Q							X
	2Q	X	X	X	X			X

Table 1
Current Monitoring Schedule
2014 Revised Groundwater Monitoring Plan
Kinder Morgan Liquids Terminals, LLC, Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
MW-5	1Q, 3Q, 4Q							X
	2Q	X	X	X	X	X		X
MW-6	1Q, 3Q, 4Q	X			X			X
	2Q	X			X	X	X	X
MW-7	1Q, 3Q, 4Q	X			X		X	X
	2Q	X			X	X	X	X
MW-8	1Q, 3Q, 4Q							X
	2Q	X	X	X	X	X		X
MW-9	1Q, 3Q, 4Q	X			X		X	X
	2Q	X			X	X	X	X
MW-12R	1Q, 3Q, 4Q							X
	2Q	X	X	X	X	X	X	X
MW-14	1Q, 3Q, 4Q	X			X		X	X
	2Q	X			X		X	X
MW-16	1Q, 3Q, 4Q							X
	2Q	X	X	X	X			X
MW-18	1Q, 3Q, 4Q	X			X			X
	2Q	X			X			X
MW-19	1Q, 3Q, 4Q	X			X		X	X
	2Q	X			X		X	X
MW-20	1Q, 3Q, 4Q							X
	2Q	X	X	X	X			X
MW-21	1Q, 3Q, 4Q	X	X	X	X		X	X
	2Q	X	X	X	X		X	X

Table 1
Current Monitoring Schedule
2014 Revised Groundwater Monitoring Plan
Kinder Morgan Liquids Terminals, LLC, Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
MW-22	1Q, 3Q, 4Q							X
	2Q	X	X	X	X			X
MW-23	1Q, 3Q, 4Q	X			X		X	X
	2Q	X			X	X	X	X
MW-24	1Q, 3Q, 4Q	X			X		X	X
	2Q	X			X	X	X	X
MW-25	1Q, 3Q, 4Q							X
	2Q	X	X	X	X	X		X
MW-07R	1Q, 3Q, 4Q							X
	2Q	X	X	X	X	X	X	X
SH-02R	1Q, 3Q, 4Q							X
	2Q	X	X	X	X	X	X	X
SH-05R	1Q, 3Q, 4Q							X
	2Q							X
TMW-B1	1Q, 3Q, 4Q							X
	2Q	X			X			

Notes

1 Monitored Natural Attenuation (MNA) Geochemical Parameters include dissolved oxygen, methane, ferrous iron, nitrate, sulfate, and sulfide
GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics by Northwest Method NWTPH-Gx
BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes by Environmental Protection Agency (EPA) Method 8260B.
1Q, 2Q, 3Q, 4Q = Denotes the quarter for each sampling event
-- Not Applicable

Table 2
Proposed Monitoring Schedule
2014 Revised Groundwater Monitoring Plan
Kinder Morgan Liquids Terminals, LLC, Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
A-4	1Q							X
	3Q							X
A-5	1Q	X			X			X
	3Q	X			X			X
A-6	1Q							X
	3Q							X
A-8	1Q							X
	3Q	X	X	X	X			X
A-10	1Q							X
	3Q	X	X	X	X			X
A-11	1Q							X
	3Q							X
A-12	1Q							X
	3Q							X
A-14R	1Q							X
	3Q	X	X	X	X	X		X
A-16	1Q							X
	3Q							X
A-18	1Q							X
	3Q							X
A-19	1Q							X
	3Q							X
A-20	1Q							X
	3Q							X

Table 2
Proposed Monitoring Schedule
2014 Revised Groundwater Monitoring Plan
Kinder Morgan Liquids Terminals, LLC, Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
A-21	1Q	X			X		X	X
	3Q	X			X	X	X	X
A-22R	1Q							X
	3Q							X
A-23R	1Q							X
	3Q	X			X		X	X
A-25	1Q							X
	3Q							X
A-26R	1Q							X
	3Q							X
A-27	1Q	X			X		X	X
	3Q	X			X		X	X
A-28R	1Q	X			X		X	X
	3Q	X			X	X	X	X
11 ²	1Q	X			X		X	X
	3Q	X			X		X	X
12 ²	1Q	X			X		X	X
	3Q	X	X	X	X	X	X	X
MW-1	1Q							X
	3Q	X	X	X	X	X		X
MW-2	1Q							X
	3Q	X	X	X	X	X	X	X
MW-3	1Q							X
	3Q	X	X	X	X	X		X

Table 2
Proposed Monitoring Schedule
2014 Revised Groundwater Monitoring Plan
Kinder Morgan Liquids Terminals, LLC, Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
MW-4	1Q							X
	3Q	X	X	X	X			X
MW-5	1Q							X
	3Q	X	X	X	X	X		X
MW-6	1Q							X
	3Q	X			X	X	X	X
MW-7 ²	1Q	X			X		X	X
	3Q	X			X	X	X	X
MW-8	1Q							X
	3Q	X	X	X	X	X		X
MW-9 ²	1Q	X			X		X	X
	3Q	X			X	X	X	X
MW-12R	1Q							X
	3Q	X	X	X	X	X	X	X
MW-14	1Q							X
	3Q	X			X		X	X
MW-16	1Q							X
	3Q	X	X	X	X			X
MW-18	1Q	X			X			X
	3Q	X			X			X
MW-19 ²	1Q	X			X		X	X
	3Q	X			X		X	X
MW-20	1Q							X
	3Q	X	X	X	X			X

Table 2
Proposed Monitoring Schedule
2014 Revised Groundwater Monitoring Plan
Kinder Morgan Liquids Terminals, LLC, Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
MW-21	1Q	X	X	X	X		X	X
	3Q	X	X	X	X		X	X
MW-22	1Q							X
	3Q	X	X	X	X			X
MW-23	1Q	X			X		X	X
	3Q	X			X	X	X	X
MW-24	1Q	X			X		X	X
	3Q	X			X	X	X	X
MW-25	1Q							X
	3Q	X	X	X	X	X		X
MW-07R	1Q							X
	3Q	X	X	X	X	X	X	X
SH-02R	1Q							X
	3Q	X	X	X	X	X	X	X
SH-05R	1Q							X
	3Q	X	X	X	X	X		X
TMW-B1	1Q							X
	3Q	X			X			

Table 2
Proposed Monitoring Schedule
2014 Revised Groundwater Monitoring Plan
Kinder Morgan Liquids Terminals, LLC, Harbor Island Terminal
Seattle, Washington

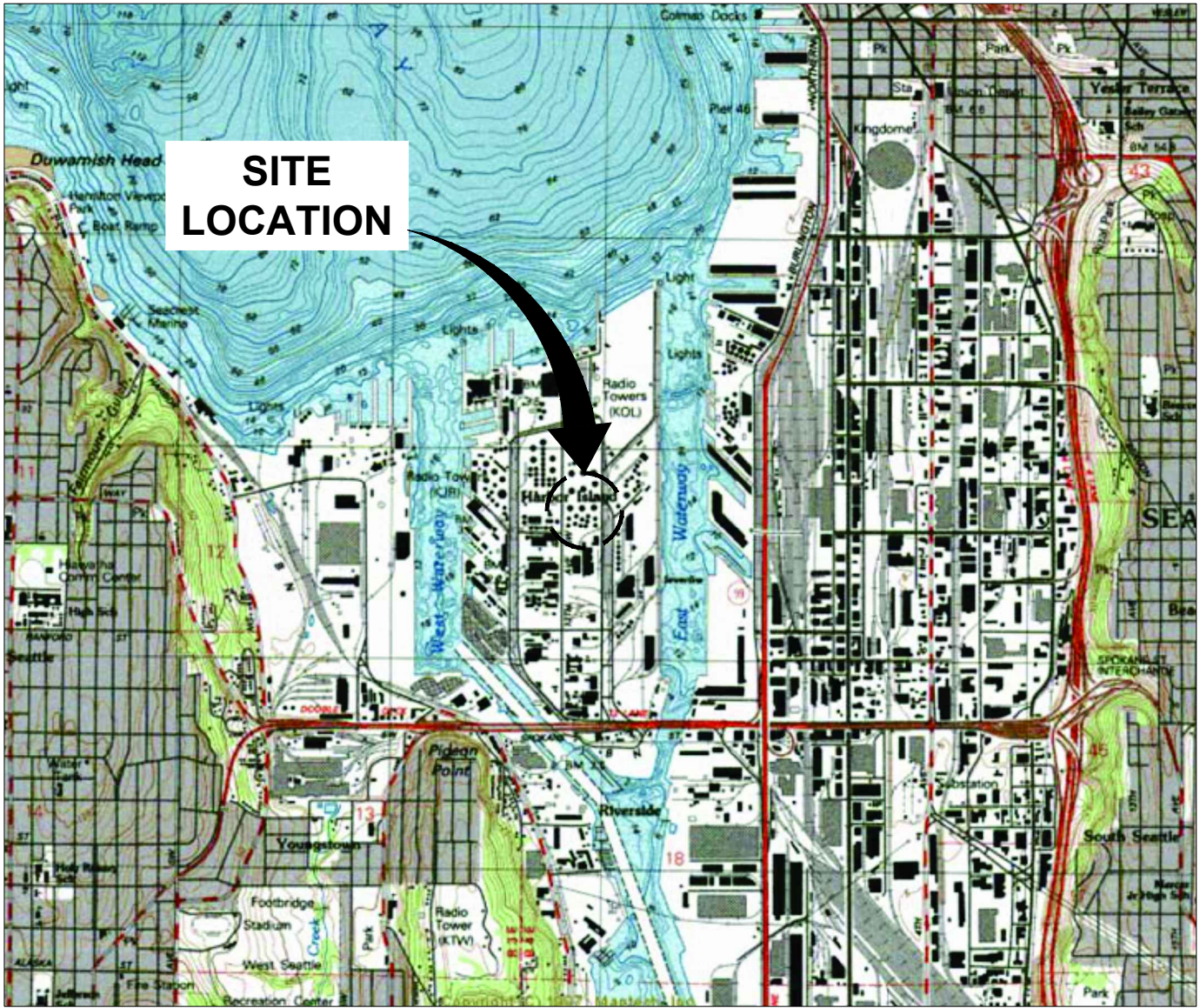
Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
TMW-1 ²	1Q	X			X		X	X
	3Q	X			X		X	X
TMW-2 ²	1Q	X			X		X	X
	3Q	X			X		X	X
TMW-3 ²	1Q	X			X		X	X
	3Q	X			X		X	X
TMW-4 ²	1Q	X			X		X	X
	3Q	X			X		X	X
TMW-5 ²	1Q	X			X		X	X
	3Q	X			X		X	X
TMW-6 ²	1Q	X			X		X	X
	3Q	X			X		X	X

Notes

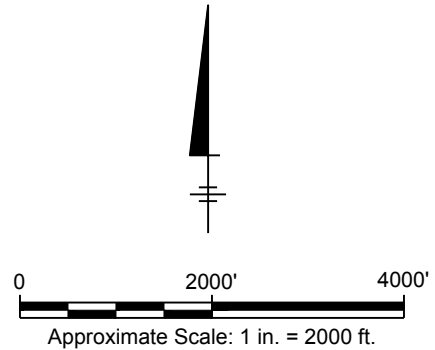
1 Monitored Natural Attenuation (MNA) Geochemical Parameters include dissolved oxygen, methane, ferrous iron, nitrate, sulfate, and sulfide
2 Performance monitoring locations
GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics by Northwest Method NWTPH-Gx
BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes by Environmental Protection Agency (EPA) Method 8260B.
1Q, 2Q, 3Q, 4Q = Denotes the quarter for each sampling event
-- Not Applicable


Figures

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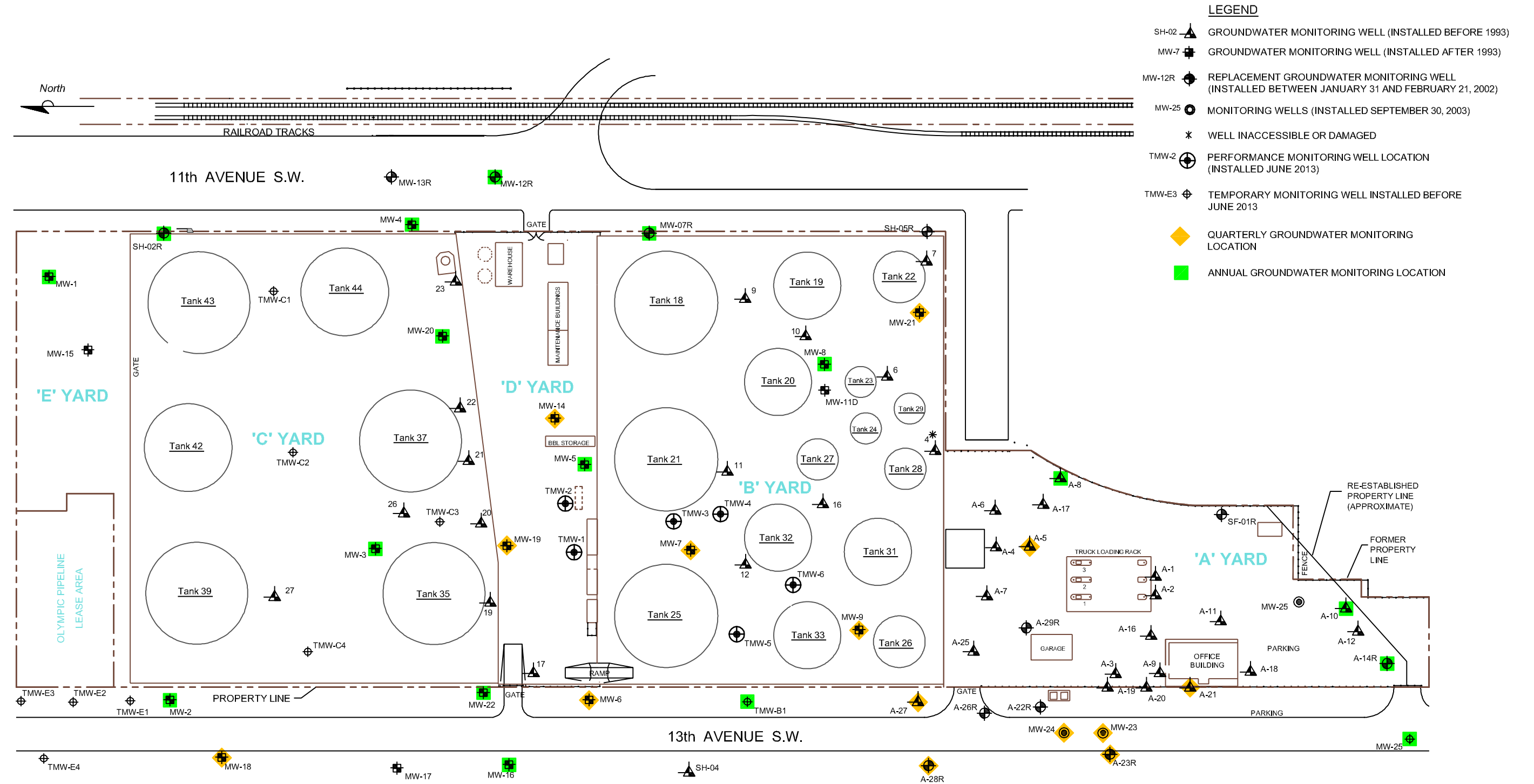


REFERENCE: BASE MAP USGS 7.5. MINUTE TOPOGRAPHIC MAP SEATTLE SOUTH, WASHINGTON 1083

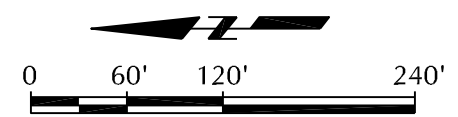


KINDER MORGAN LIQUID TERMINALS, LLC HARBOR ISLAND TERMINAL 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON 2014 REVISED GROUNDWATER MONITORING PLAN	
SITE LOCATION MAP	
	FIGURE 1

CITY:\Read\ DIV\GROUP\F\Read\ DB\Read\ LD\Op\ PIC\Op\ PM\Read\ TM\Op\ LYR\Option\OFF\REF*
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- LEGEND**
- SH-02 ▲ GROUNDWATER MONITORING WELL (INSTALLED BEFORE 1993)
 - MW-7 ■ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
 - MW-12R ● REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
 - MW-25 ◆ MONITORING WELLS (INSTALLED SEPTEMBER 30, 2003)
 - * WELL INACCESSIBLE OR DAMAGED
 - TMW-2 ⊕ PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
 - TMW-E3 ⊕ TEMPORARY MONITORING WELL INSTALLED BEFORE JUNE 2013
 - ◆ QUARTERLY GROUNDWATER MONITORING LOCATION
 - ANNUAL GROUNDWATER MONITORING LOCATION

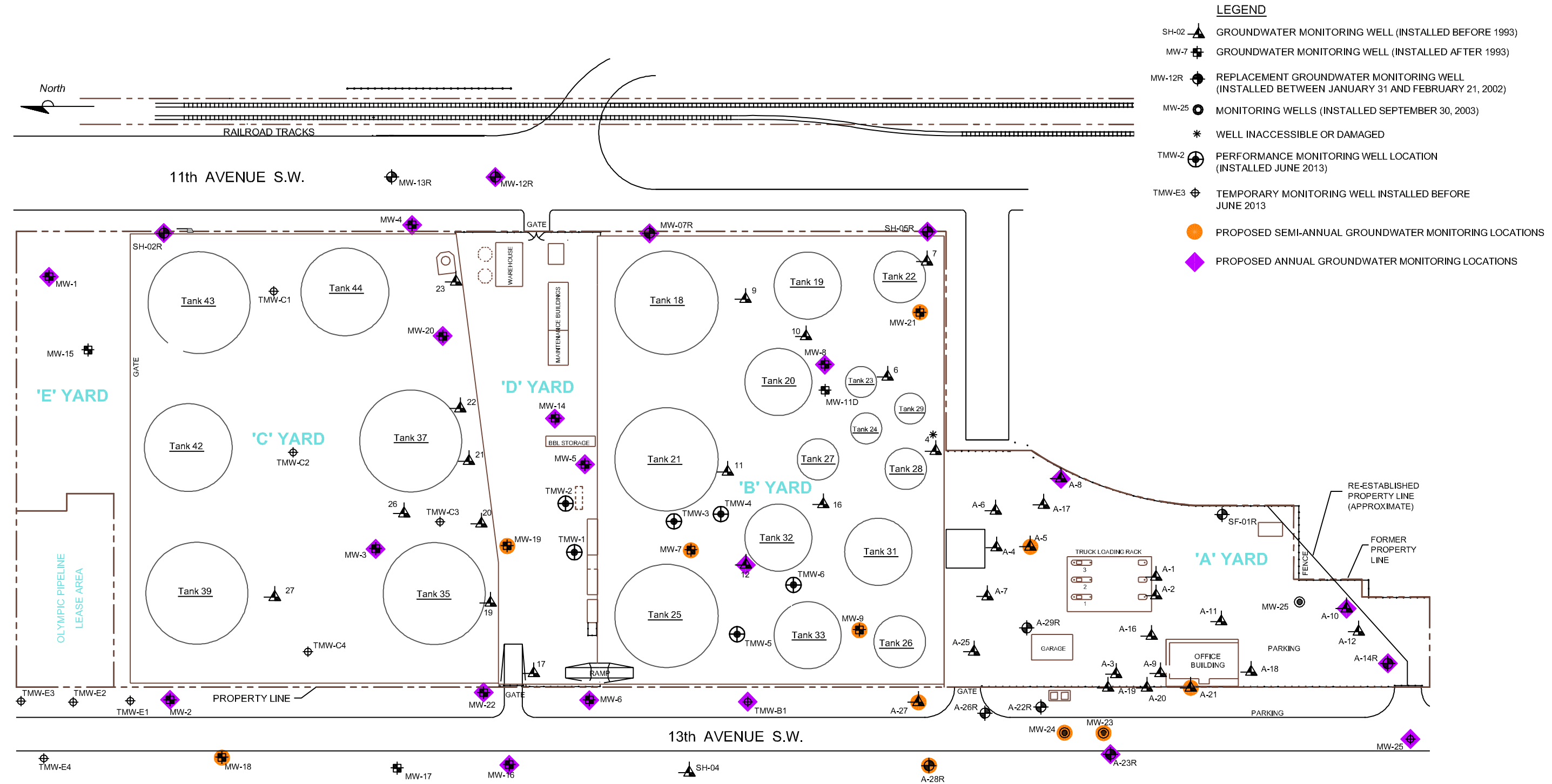


KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2014 REVISED GROUNDWATER MONITORING PLAN

**CURRENT QUARTERLY AND ANNUAL
 GROUNDWATER MONITORING
 LOCATIONS**

FIGURE
2

CITY:\Read\ DIV\GROUP\F\Read\ DB\Read\ LD\Op\ PIC\Op\ PM\Read\ TM\Op\ LYR\Option\OFF\REF*
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 - MW-7 ◻ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
 - MW-12R ● REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
 - MW-25 ○ MONITORING WELLS (INSTALLED SEPTEMBER 30, 2003)
 - * WELL INACCESSIBLE OR DAMAGED
 - TMW-2 ⊕ PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
 - TMW-E3 ⊕ TEMPORARY MONITORING WELL INSTALLED BEFORE JUNE 2013
 - PROPOSED SEMI-ANNUAL GROUNDWATER MONITORING LOCATIONS
 - ◊ PROPOSED ANNUAL GROUNDWATER MONITORING LOCATIONS









KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2014 REVISED GROUNDWATER MONITORING PLAN

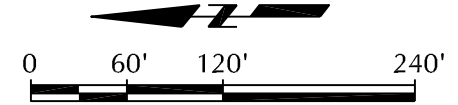
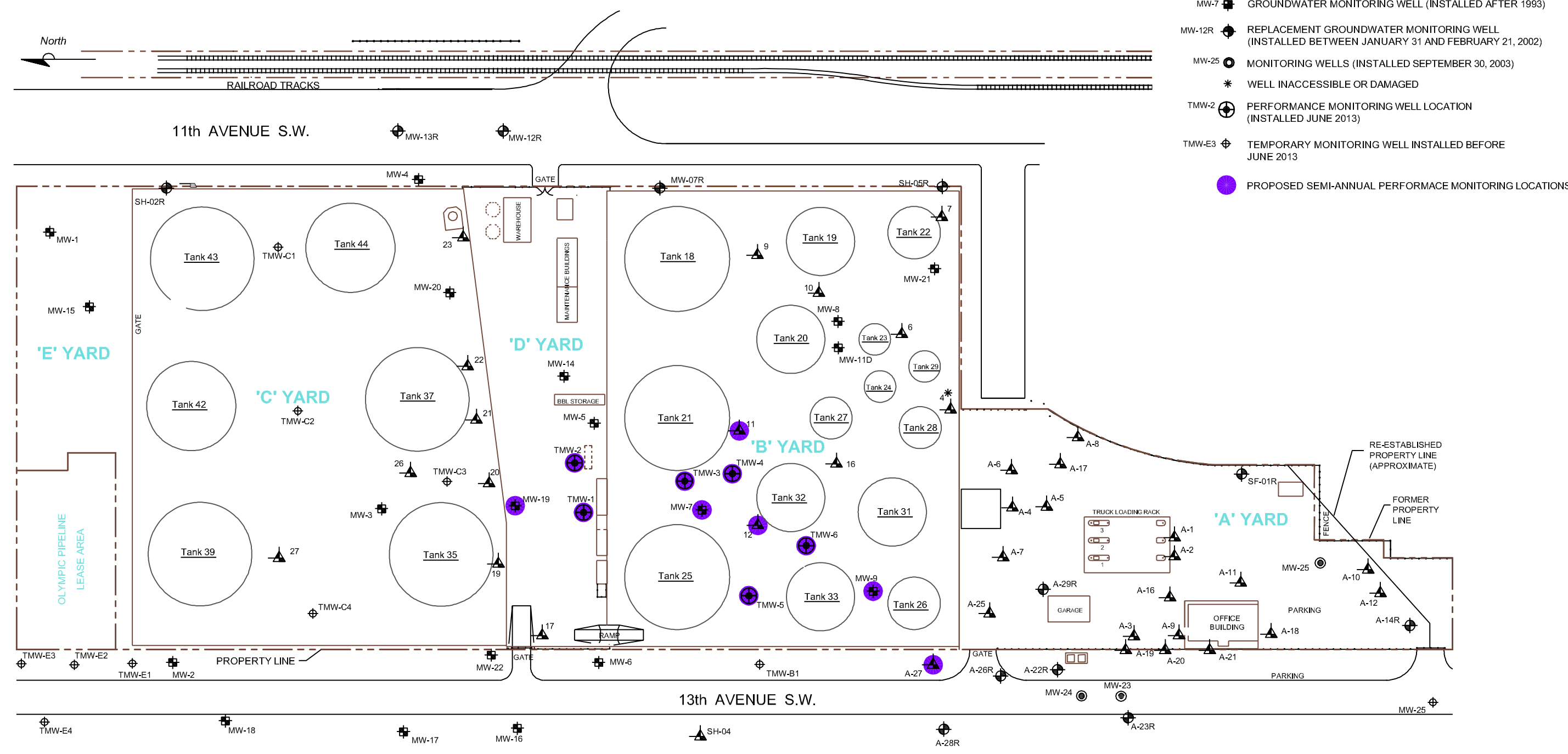
**PROPOSED SEMI-ANNUAL AND ANNUAL
 GROUNDWATER MONITORING
 LOCATIONS**

FIGURE
3

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LEGEND

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- MW-7  GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
- MW-12R  REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
- MW-25  MONITORING WELLS (INSTALLED SEPTEMBER 30, 2003)
- *  WELL INACCESSIBLE OR DAMAGED
- TMW-2  PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
- TMW-E3  TEMPORARY MONITORING WELL INSTALLED BEFORE JUNE 2013
-  PROPOSED SEMI-ANNUAL PERFORMANCE MONITORING LOCATIONS



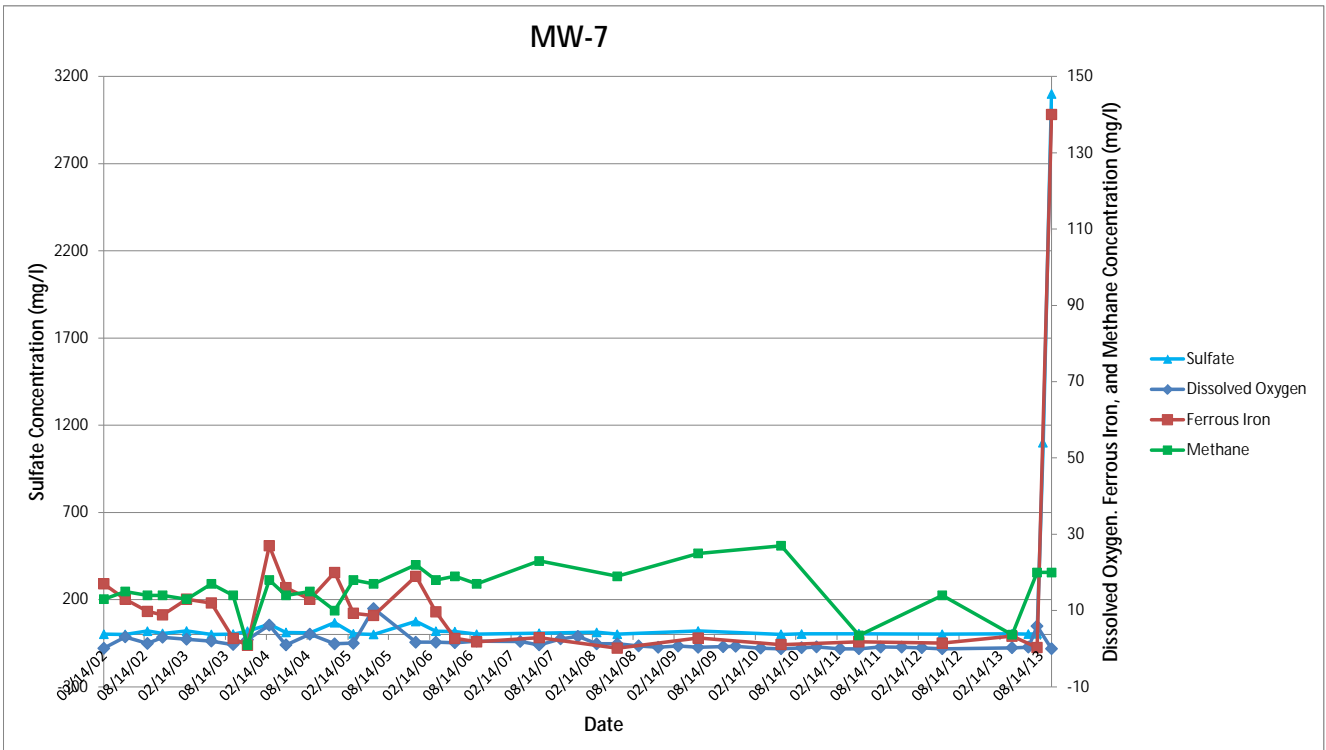
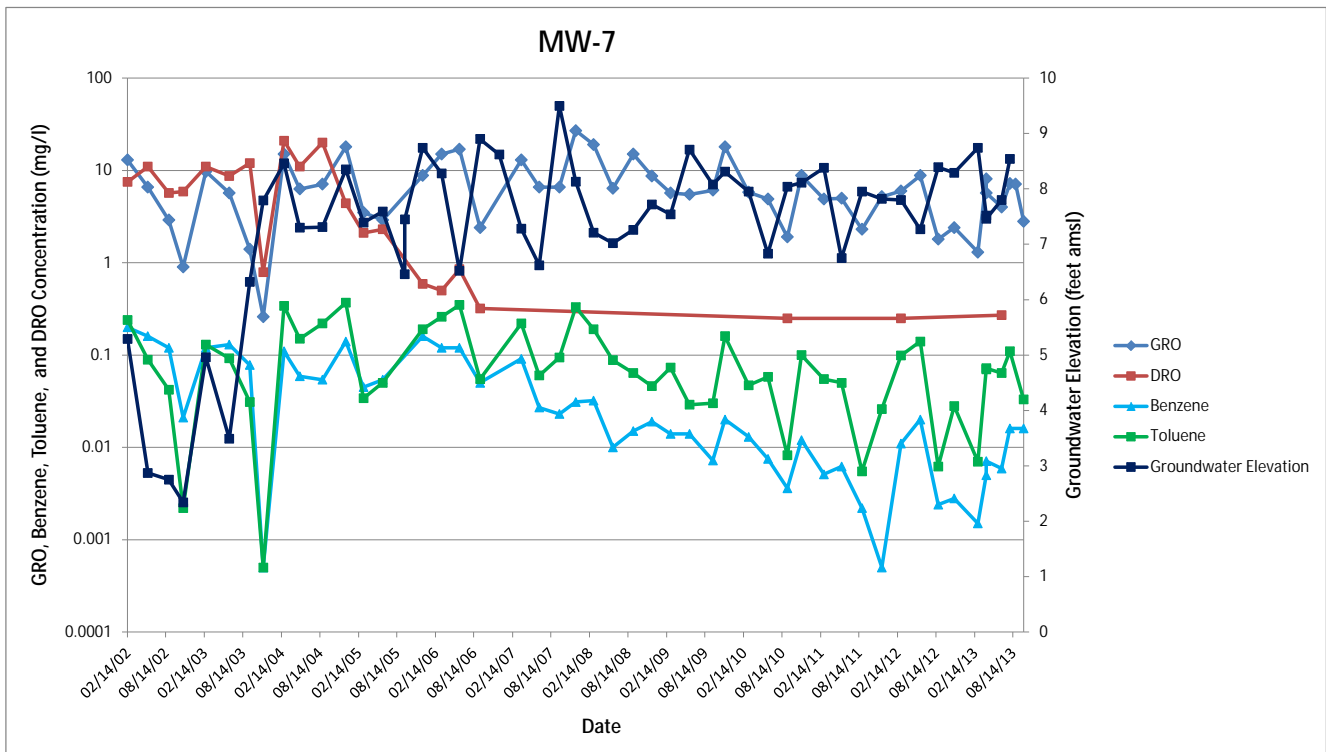
KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2014 REVISED GROUNDWATER MONITORING PLAN

PROPOSED PERFORMANCE MONITORING LOCATIONS

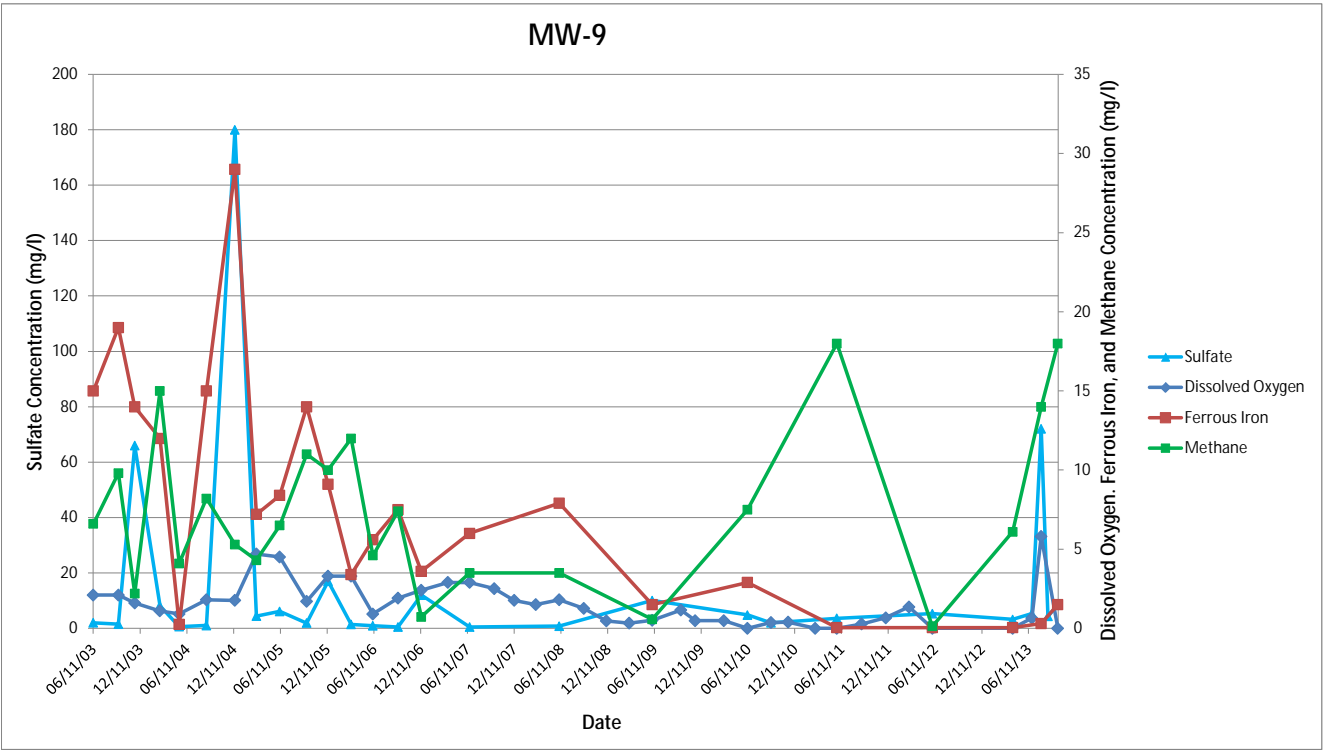
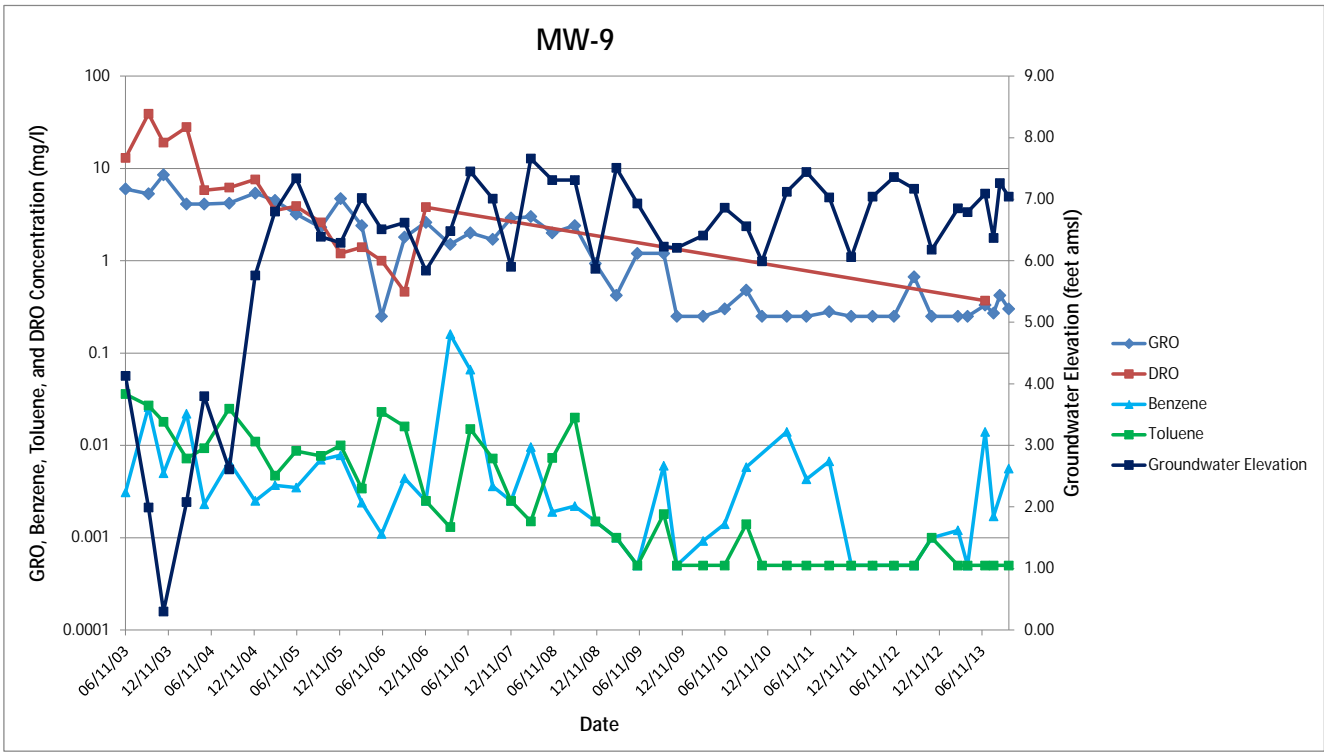




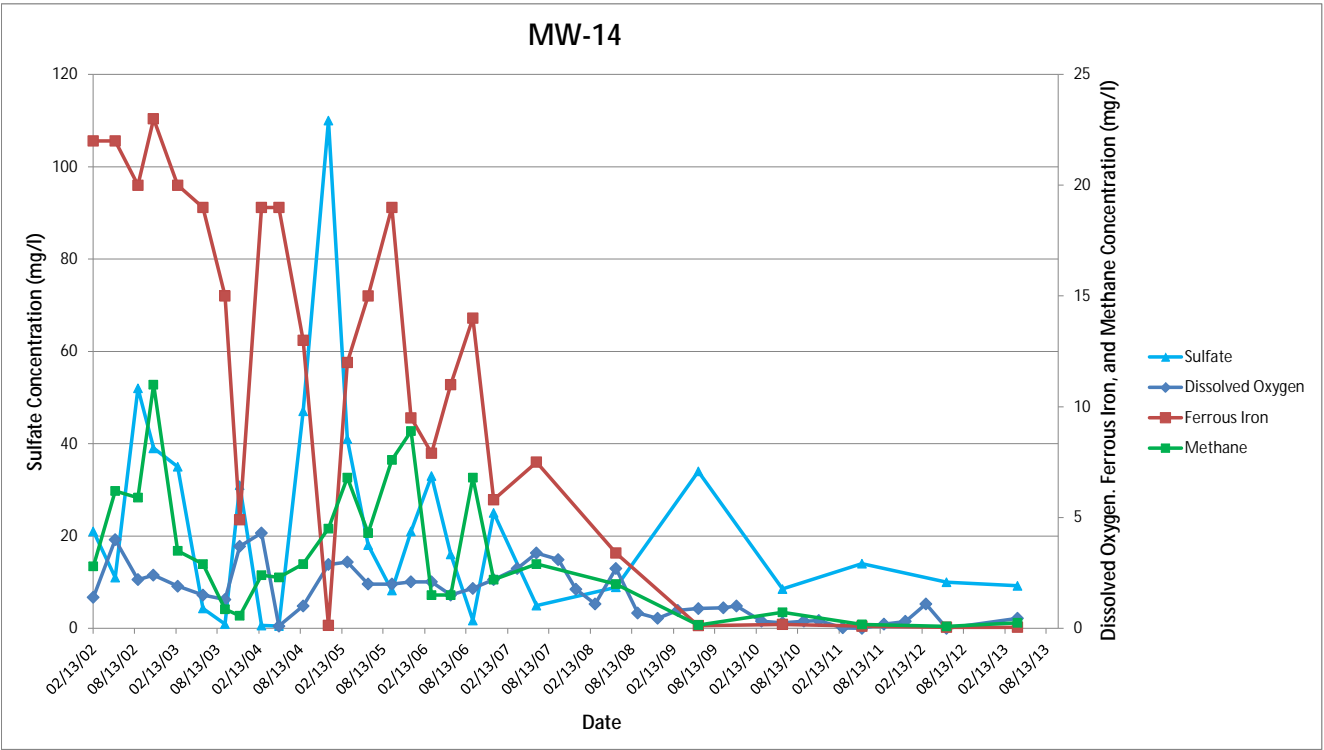
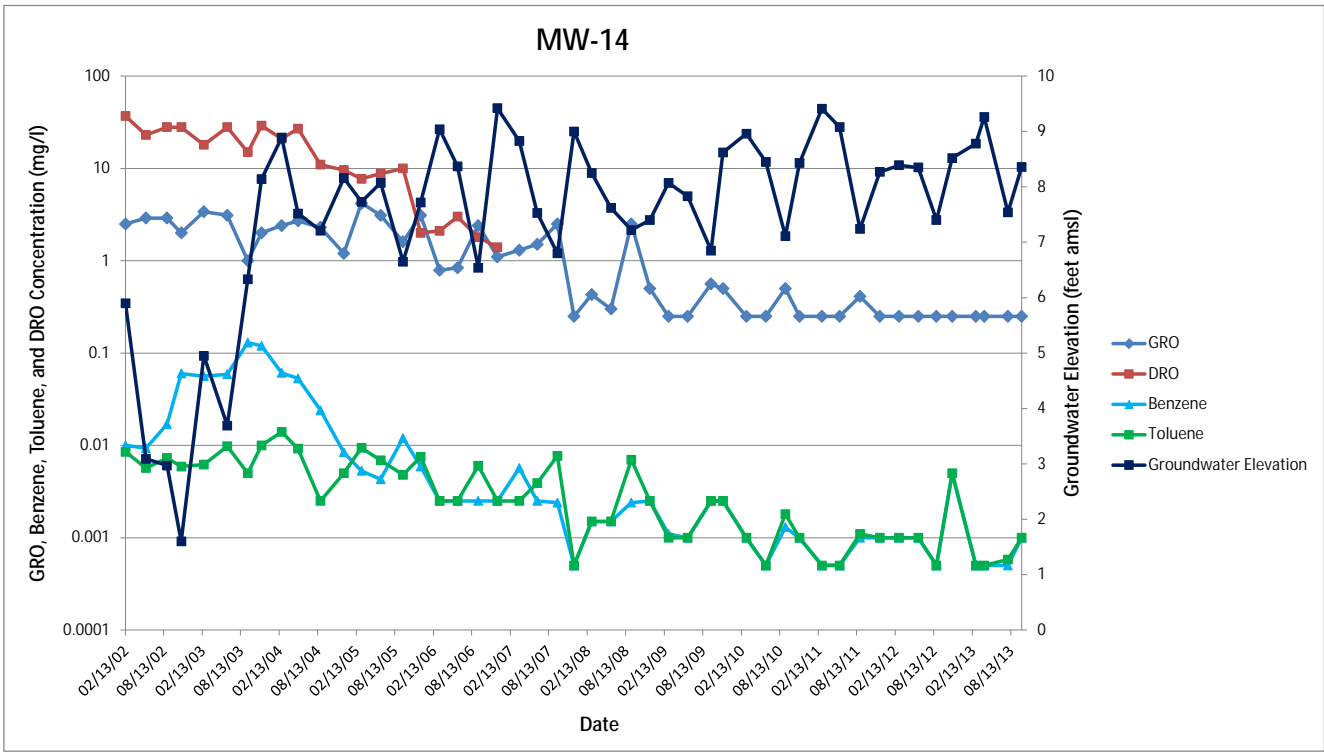
Attachment A



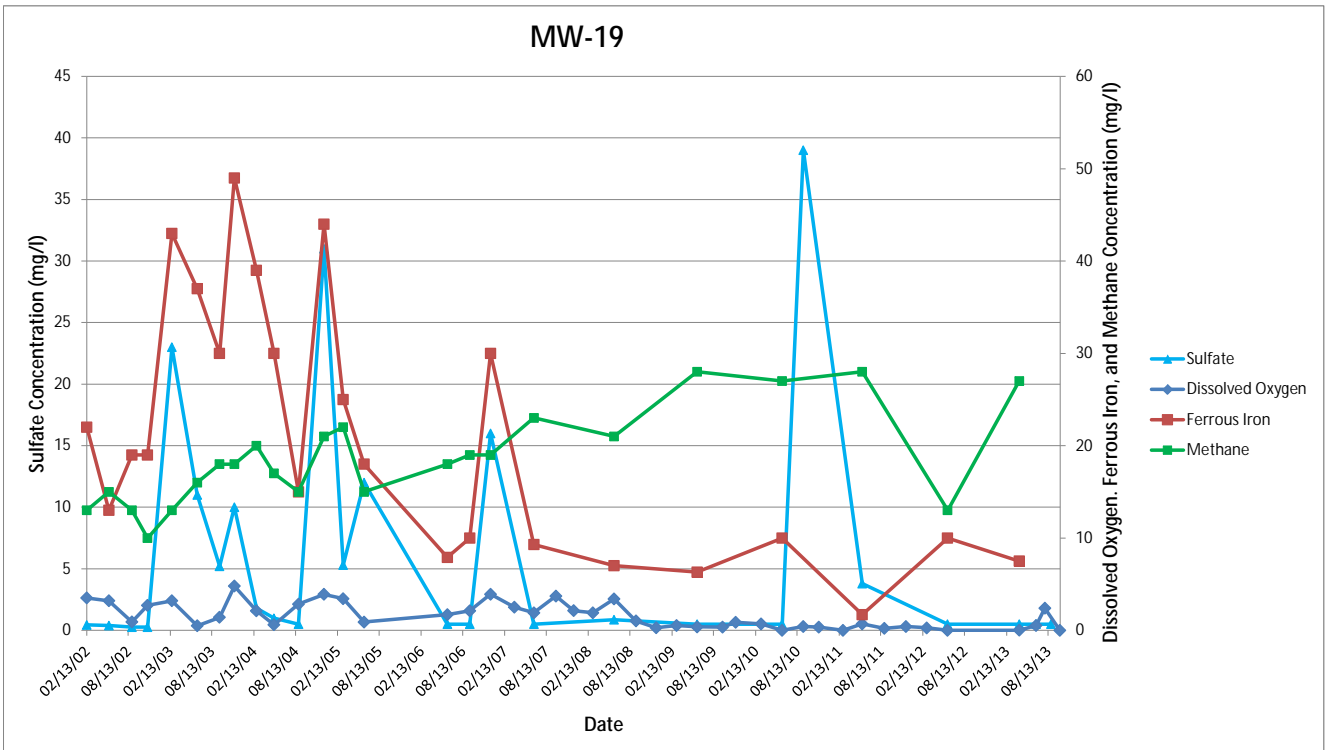
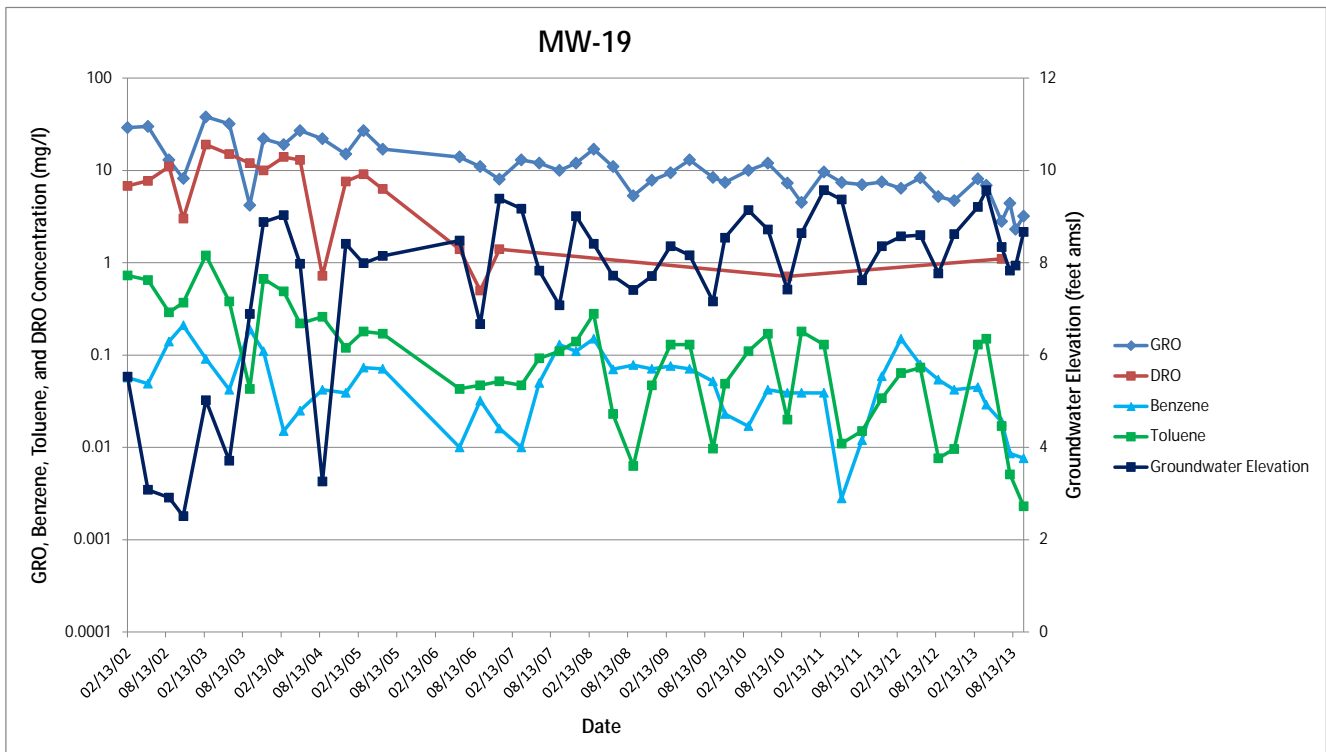
KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2014 REVISED GROUNDWATER MONITORING PLAN
ATTACHMENT A
HYDROGRAPH AND CONSTITUENT TREND GRAPHS




KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2014 REVISED GROUNDWATER MONITORING PLAN
ATTACHMENT A
HYDROGRAPH AND CONSTITUENT TREND GRAPHS



KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2014 REVISED GROUNDWATER MONITORING PLAN
ATTACHMENT A
HYDROGRAPH AND CONSTITUENT TREND GRAPHS



KINDER MORGAN LIQUID TERMINALS, LLC
 HARBOR ISLAND TERMINAL
 2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON
2014 REVISED GROUNDWATER MONITORING PLAN
ATTACHMENT A
HYDROGRAPH AND CONSTITUENT TREND GRAPHS



From: [Flomerfelt, Jonathan](mailto:Flomerfelt_Jonathan)
To: [Wenning, Scott](mailto:Wenning_Scott)
Cc: [Annis, Matt](mailto:Annis_Matt)
Subject: FW: Kinder Morgan Harbor Island Terminal Proposed Revised Compliance Monitoring Plan
Date: Wednesday, August 20, 2014 9:25:42 AM

Since there were some clarifications, lets use 8/13, email below as official approval

From: O'Brien, Maura (ECY) [<mailto:MOBR461@ECY.WA.GOV>]
Sent: Wednesday, August 13, 2014 4:50 PM
To: Annis, Matt; Flomerfelt, Jonathan; Truedinger, Robert
Cc: Wang, Ching-Pi (ECY)
Subject: RE: Kinder Morgan Harbor Island Terminal Proposed Revised Compliance Monitoring Plan

This is fine.

Maura

Maura S. O'Brien, PG/HG #869
Professional Geologist/Hydrogeologist
Toxics Cleanup Program - NWRO
Department of Ecology
3190 - 160th Avenue SE
Bellevue, WA 98008-5452
Tele 425-649-7249
Fax 425-649-7098
Email mobr461@ecy.wa.gov

From: Annis, Matt [<mailto:Matt.Annis@arcadis-us.com>]
Sent: Wednesday, August 13, 2014 3:08 PM
To: O'Brien, Maura (ECY); Flomerfelt, Jonathan; Truedinger, Robert
Cc: Wang, Ching-Pi (ECY)
Subject: RE: Kinder Morgan Harbor Island Terminal Proposed Revised Compliance Monitoring Plan

Hi Maura – One last clarification. Please see below in red. Thanks.

Matt Annis | Principal Environmental Scientist | matt.annis@arcadis-us.com
ARCADIS U.S., Inc. | 1100 Olive Way, Suite 800 | Seattle, WA, 98101
T: 206.726.4716 | C: 206.434.1929 | F: 206.325.8218
www.arcadis-us.com

ARCADIS, Imagine the result

Please consider the environment before printing this email.

From: O'Brien, Maura (ECY) [<mailto:MOBR461@ECY.WA.GOV>]
Sent: Wednesday, August 13, 2014 2:07 PM
To: Annis, Matt; Flomerfelt, Jonathan; Truedinger, Robert
Cc: Wang, Ching-Pi (ECY)
Subject: RE: Kinder Morgan Harbor Island Terminal Proposed Revised Compliance Monitoring Plan

Rob Truedinger and Matt Annis,
Ecology approves the revised Kinder Morgan Harbor Island Terminal Proposed Revised Compliance Monitoring Plan for the KM Terminal prepared by Arcadis on May 20, 2014 and revised August 13, 2014. The revised plan is effective fall 2014 and the next monitoring **quarter event** will occur first quarter 2015.

Maura

Maura S. O'Brien, PG/HG #869
Professional Geologist/Hydrogeologist
Toxics Cleanup Program - NWRO
Department of Ecology
3190 - 160th Avenue SE
Bellevue, WA 98008-5452
Tele 425-649-7249
Fax 425-649-7098
Email mobr461@ecy.wa.gov

From: Annis, Matt [<mailto:Matt.Annis@arcadis-us.com>]
Sent: Wednesday, August 13, 2014 12:50 PM
To: O'Brien, Maura (ECY); Flomerfelt, Jonathan; Truedinger, Robert
Cc: Wang, Ching-Pi (ECY)
Subject: RE: Kinder Morgan Harbor Island Terminal Proposed Revised Compliance Monitoring Plan

Hi Maura,

Below in red are responses/clarifications to your comments. Thank you for reviewing the Revised Site Groundwater Monitoring Plan so quickly.

Matt Annis | Principal Environmental Scientist | matt.annis@arcadis-us.com
ARCADIS U.S., Inc. | 1100 Olive Way, Suite 800 | Seattle, WA, 98101
T: 206.726.4716 | C: 206.434.1929 | F: 206.325.8218
www.arcadis-us.com

ARCADIS, Imagine the result

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From: O'Brien, Maura (ECY) [<mailto:MOBR461@ECY.WA.GOV>]
Sent: Thursday, August 07, 2014 3:35 PM
To: Annis, Matt; Flomerfelt, Jonathan; Truedinger, Robert
Cc: Wang, Ching-Pi (ECY)
Subject: RE: Kinder Morgan Harbor Island Terminal Proposed Revised Compliance Monitoring Plan

Hello

Thank you for your proposed Revised Site Groundwater Monitoring Plan at the Kinder Morgan Harbor Island Terminal site prepared by Arcadis US dated May 20, 2014. Ecology approves this

revised compliance plan with two additions:

-If SPH or LNAPL occur at any well, then gauging and removal will be implemented quarterly for four quarters and then to re-evaluate. If SPH or LNAPL occur at any well, ARCADIS will gauge and remove quarterly. Removal will be performed using absorbent socks, which is consistent with recent SPH/LNAPL removal performed at the site.

-If any groundwater compliance well shows concentration increase for two consecutive events, then to discuss with Ecology if additional monitoring or cleanup action needs to be implemented at that location. OK

Starting third quarter 2014, this revised annual and semi-annual monitoring will begin. The next monitoring event will occur in 1Q2015 and moving forward reporting will be conducted semi-annually.

Thanks for your hard work and continued efforts to bring this site to completion under MTCA.

Maura

Maura S. O'Brien, PG/HG #869
Professional Geologist/Hydrogeologist
Toxics Cleanup Program - NWRO
Department of Ecology
3190 - 160th Avenue SE
Bellevue, WA 98008-5452
Tele 425-649-7249
Fax 425-649-7098
Email mobr461@ecy.wa.gov

From: Annis, Matt [<mailto:Matt.Annis@arcadis-us.com>]
Sent: Thursday, August 07, 2014 11:09 AM
To: O'Brien, Maura (ECY)
Cc: Flomerfelt, Jonathan
Subject: Kinder Morgan Harbor Island Periodic Review

Hi Maura,

Under Section 2.2 of the boilerplate you sent, are you looking for a summary of all site investigations and sample results to date or just those between the last 5-year review and present? Thanks.

Matt Annis | Senior Environmental Scientist | matt.annis@arcadis-us.com
ARCADIS U.S., Inc. | 1100 Olive Way, Suite 800 | Seattle, WA, 98101
T: 206.726.4716 | C: 206.434.1929 | F: 206.325.8218
www.arcadis-us.com

ARCADIS, Imagine the result

Please consider the environment before printing this email.

SUBJECT**Kinder Morgan Harbor Island Terminal
Groundwater Analytical Reduction Request****DATE**

February 11, 2016

TO

Maura O'Brien—Washington Department of Ecology

COPY

Rob Truedinger—Kinder Morgan

PROJECT NUMBER

WA000804.2016

FROMMatt Annis—Arcadis U.S., Inc.
Kyle Haslam—Arcadis U.S., Inc.

Arcadis U.S., Inc. (Arcadis), on behalf of Kinder Morgan Energy Partners (Kinder Morgan), is requesting a revision to our current sampling scheme at the Kinder Morgan Harbor Island fuel terminal in Seattle, Washington (**Figure 1**). Kinder Morgan is currently analyzing samples from 24 wells for geochemical natural attenuation (NA) indicators (**Table 1**), such as ferrous iron and nitrate, in accordance with the Washington Department of Ecology (Ecology) approved Revised Site Groundwater Monitoring Plan (Arcadis 2014). Based on a review of recent data, it appears that a number of these 24 wells either have groundwater concentrations below site-specific cleanup levels for the constituents of concern (COCs) outlined in the Consent Decree (Ecology 2000), or are in a portion of the site undergoing remedial action via sulfate land application. Analyzing for natural attenuation indicators is not appropriate at these locations, as NA does not need to be demonstrated where groundwater concentrations are already below applicable cleanup levels and NA should not be evaluated in an area where remediation is ongoing. As such, Arcadis proposes to reduce the number of wells where full NA geochemical evaluations are performed from 24 to four (**Table 2**). The four well locations (A-27, A-28R, MW-23, and MW-24) proposed for continued evaluation of NA geochemical indicators are located within the 13th Avenue right-of-way, where NA is the approved remedy. We further propose to reduce the frequency of NA geochemical sample collection to annually, which would provide the ample data for continued NA evaluation in this area. Wells that are within the ongoing remedial area would be analyzed for facility COCs, in addition to sulfate, which is the primary remedial performance evaluation analyte. For wells outside of the ongoing remedial area and the 13th Avenue right-of-way, all of which have been below site-specific cleanup levels for at least 4 years¹ and a majority of which have been below site-specific cleanup levels for close to 10 years, Arcadis proposes to analyze for COCs only (gasoline-range organics, diesel-range organics, heavy oil, benzene, toluene, ethylbenzene, xylenes, and lead [total and dissolved]).

Arcadis would like to implement this reduced analyte sampling scheme beginning in the first quarter of 2016. Our proposed sampling start date is March 14, 2016. Please contact us if you would like any additional information regarding our request.

Enclosures:

Figure 1 – Site Plan

Table 1 – Current Groundwater Monitoring Plan

Table 2 – Proposed Groundwater Monitoring Plan

References:

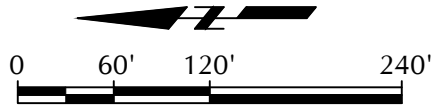
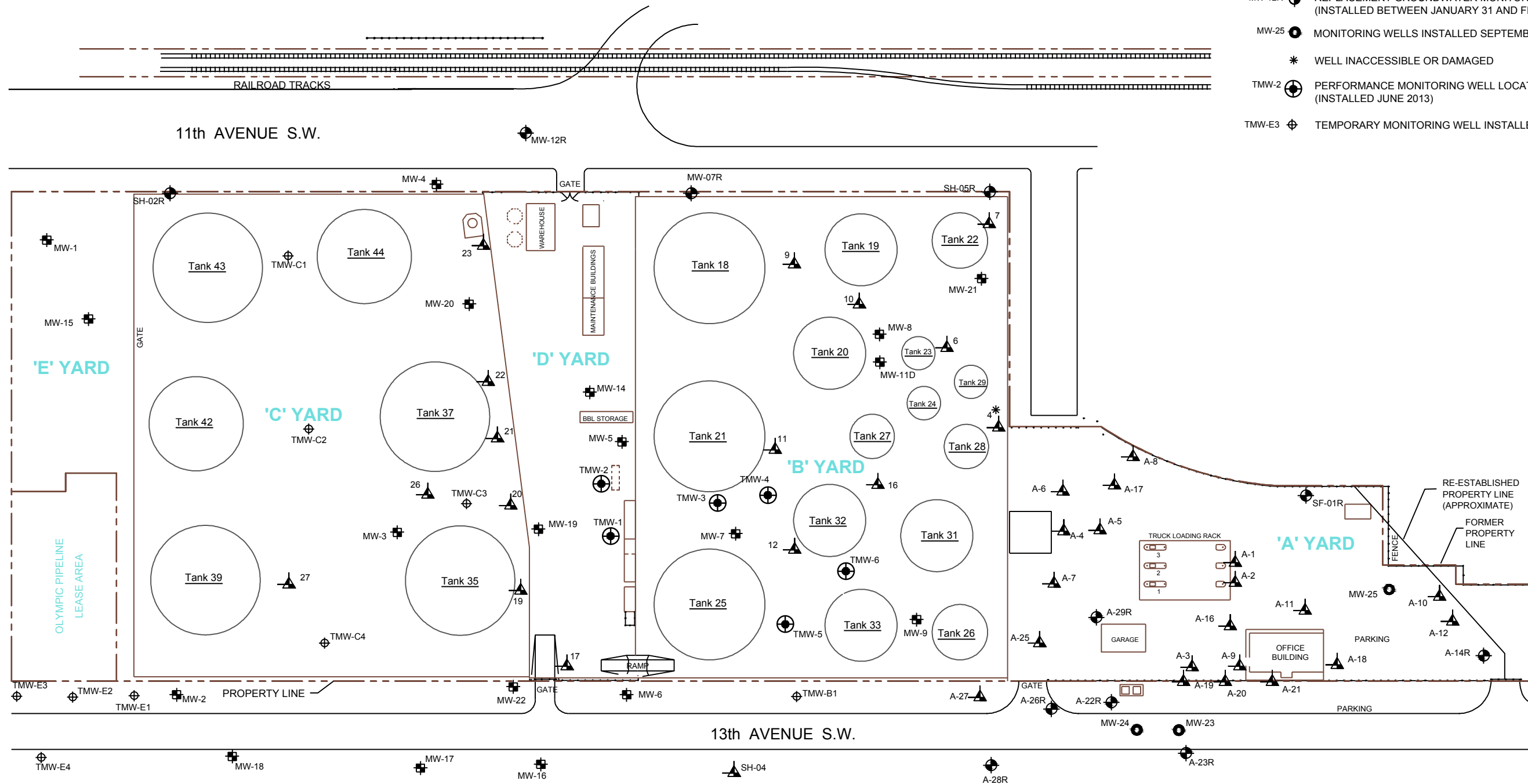
Arcadis. 2014. Revised Wide Groundwater Monitoring Plan. Kinder Morgan Harbor Island Terminal. May 20.

Ecology. 2000. Consent Decree 00-2-07760-2SEA. April 12.

ⁱ Well MW-8 has exceeded the site-specific cleanup level for lead since sampling of this well began in 2002. Lead is not a constituent that is subject to NA through biological means, therefore collecting NA geochemical indicator samples would not provide any benefit at this location.

CITY:\Red\DIV\GROUP\Read\ DB\Read\ LD\Opt\ PIC\Opt\ PM\Read\ TM\Opt\ Lyr\Opt\ OFF=REF* PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 10/22/2015 12:21 PM BY: REYES, ALEC G:\ENVCAD\Emeryville\ACT\W\008042015\000012\ref\semi\Ann2015\DWG\WVA00804 B02.dwg LAYOUT: 2_SAVED: 10/22/2015 11:12 AM ACADVER: 19.1S (LMS TECH) PAGESETUP: --- PLOTSTYLETABLE: ARCADIS.CTB PLOTTED: 10/22/2015 12:21 PM BY: REYES, ALEC

- LEGEND**
- SH-02 ▲ GROUNDWATER MONITORING WELL (INSTALLED BEFORE 1993)
 - MW-7 ■ GROUNDWATER MONITORING WELL (INSTALLED AFTER 1993)
 - MW-12R ● REPLACEMENT GROUNDWATER MONITORING WELL (INSTALLED BETWEEN JANUARY 31 AND FEBRUARY 21, 2002)
 - MW-25 ● MONITORING WELLS INSTALLED SEPTEMBER 30, 2003
 - * WELL INACCESSIBLE OR DAMAGED
 - TMW-2 ⊕ PERFORMANCE MONITORING WELL LOCATION (INSTALLED JUNE 2013)
 - TMW-E3 ⊕ TEMPORARY MONITORING WELL INSTALLED BEFORE JUNE 2013



KINDER MORGAN LIQUID TERMINALS, LLC
HARBOR ISLAND TERMINAL
2720 13TH AVENUE SOUTHWEST, SEATTLE, WASHINGTON

SITE PLAN

ARCADIS Design & Consulting
for natural and built assets

FIGURE
1

**Table 1
Current Groundwater Monitoring Plan
2016 Analyte Reduction Request
Kinder Morgan Harbor Island Terminal
Seattle, Washington**

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
A-4	1Q							X
	3Q							X
A-5	1Q	X			X			X
	3Q	X			X			X
A-6	1Q							X
	3Q							X
A-8	1Q							X
	3Q	X	X	X	X			X
A-10	1Q							X
	3Q	X	X	X	X			X
A-11	1Q							X
	3Q							X
A-12	1Q							X
	3Q							X
A-14R	1Q							X
	3Q	X	X	X	X	X		X
A-16	1Q							X
	3Q							X
A-18	1Q							X
	3Q							X
A-19	1Q							X
	3Q							X
A-20	1Q							X
	3Q							X

**Table 1
Current Groundwater Monitoring Plan
2016 Analyte Reduction Request
Kinder Morgan Harbor Island Terminal
Seattle, Washington**

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
A-21	1Q	X			X		X	X
	3Q	X			X	X	X	X
A-22R	1Q							X
	3Q							X
A-23R	1Q							X
	3Q	X			X		X	X
A-25	1Q							X
	3Q							X
A-26R	1Q							X
	3Q							X
A-27 ²	1Q	X			X		X	X
	3Q	X			X		X	X
A-28R	1Q	X			X		X	X
	3Q	X			X	X	X	X
11 ²	1Q	X			X		X	X
	3Q	X			X		X	X
12 ²	1Q	X			X		X	X
	3Q	X	X	X	X	X	X	X
MW-1	1Q							X
	3Q	X	X	X	X	X		X
MW-2	1Q							X
	3Q	X	X	X	X	X	X	X
MW-3	1Q							X
	3Q	X	X	X	X	X		X

Table 1
Current Groundwater Monitoring Plan
2016 Analyte Reduction Request
Kinder Morgan Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
MW-4	1Q							X
	3Q	X	X	X	X			X
MW-5	1Q							X
	3Q	X	X	X	X	X		X
MW-6	1Q							X
	3Q	X			X	X	X	X
MW-7 ²	1Q	X			X		X	X
	3Q	X			X	X	X	X
MW-8	1Q							X
	3Q	X	X	X	X	X		X
MW-9 ²	1Q	X			X		X	X
	3Q	X			X	X	X	X
MW-12R	1Q							X
	3Q	X	X	X	X	X	X	X
MW-14	1Q							X
	3Q	X			X		X	X
MW-16	1Q							X
	3Q	X	X	X	X			X
MW-18	1Q	X			X			X
	3Q	X			X			X
MW-19 ²	1Q	X			X		X	X
	3Q	X			X		X	X
MW-20	1Q							X
	3Q	X	X	X	X			X

**Table 1
Current Groundwater Monitoring Plan
2016 Analyte Reduction Request
Kinder Morgan Harbor Island Terminal
Seattle, Washington**

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
MW-21	1Q	X	X	X	X		X	X
	3Q	X	X	X	X		X	X
MW-22	1Q							X
	3Q	X	X	X	X			X
MW-23	1Q	X			X		X	X
	3Q	X			X	X	X	X
MW-24	1Q	X			X		X	X
	3Q	X			X	X	X	X
MW-25	1Q							X
	3Q	X	X	X	X	X		X
MW-07R	1Q							X
	3Q	X	X	X	X	X	X	X
SH-02R	1Q							X
	3Q	X	X	X	X	X	X	X
SH-05R	1Q							X
	3Q	X	X	X	X	X		X
TMW-B1	1Q							X
	3Q	X			X			X

**Table 1
Current Groundwater Monitoring Plan
2016 Analyte Reduction Request
Kinder Morgan Harbor Island Terminal
Seattle, Washington**

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
TMW-1 ²	1Q	X			X		X	X
	3Q	X			X		X	X
TMW-2 ²	1Q	X			X		X	X
	3Q	X			X		X	X
TMW-3 ²	1Q	X			X		X	X
	3Q	X			X		X	X
TMW-4 ²	1Q	X			X		X	X
	3Q	X			X		X	X
TMW-5 ²	1Q	X			X		X	X
	3Q	X			X		X	X
TMW-6 ²	1Q	X			X		X	X
	3Q	X			X		X	X

Notes

1 Monitored Natural Attenuation (MNA) Geochemical Parameters include dissolved oxygen, methane, ferrous iron, nitrate, sulfate, and sulfide
2 Performance monitoring locations
GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics by Northwest Method NWTPH-Gx
DRO = Total Petroleum Hydrocarbons - Diesel Range Organics by Northwest Method NWTPH-Dx
HO = Total Petroleum Hydrocarbons - Heavy Oil by Northwest Method NWTPH-Gx
BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes by Environmental Protection Agency (EPA) Method 8260B.
1Q, 2Q, 3Q, 4Q = Denotes the quarter for each sampling event
-- Not Applicable

**Table 2
Proposed Groundwater Monitoring Plan
2016 Analyte Reduction Request
Kinder Morgan Harbor Island Terminal
Seattle, Washington**

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
A-4	1Q							X
	3Q							X
A-5	1Q	X			X			X
	3Q	X			X			X
A-6	1Q							X
	3Q							X
A-8	1Q							X
	3Q	X	X	X	X			X
A-10	1Q							X
	3Q	X	X	X	X			X
A-11	1Q							X
	3Q							X
A-12	1Q							X
	3Q							X
A-14R	1Q							X
	3Q	X	X	X	X	X		X
A-16	1Q							X
	3Q							X
A-18	1Q							X
	3Q							X
A-19	1Q							X
	3Q							X
A-20	1Q							X
	3Q							X

Table 2
Proposed Groundwater Monitoring Plan
2016 Analyte Reduction Request
Kinder Morgan Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
A-21	1Q	X			X			X
	3Q	X			X	X		X
A-22R	1Q							X
	3Q							X
A-23R	1Q							X
	3Q	X			X			X
A-25	1Q							X
	3Q							X
A-26R	1Q							X
	3Q							X
A-27 ²	1Q	X			X		X	X
	3Q	X			X		X	X
A-28R	1Q	X			X		X	X
	3Q	X			X	X	X	X
11 ²	1Q	X			X		X ³	X
	3Q	X			X		X ³	X
12 ²	1Q	X			X		X ³	X
	3Q	X	X	X	X	X	X ³	X
MW-1	1Q							X
	3Q	X	X	X	X	X		X
MW-2	1Q							X
	3Q	X	X	X	X	X		X
MW-3	1Q							X
	3Q	X	X	X	X	X		X

Table 2
Proposed Groundwater Monitoring Plan
2016 Analyte Reduction Request
Kinder Morgan Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
MW-4	1Q							X
	3Q	X	X	X	X			X
MW-5	1Q							X
	3Q	X	X	X	X	X		X
MW-6	1Q							X
	3Q	X			X	X		X
MW-7 ²	1Q	X			X		X ³	X
	3Q	X			X	X	X ³	X
MW-8	1Q							X
	3Q	X	X	X	X	X		X
MW-9 ²	1Q	X			X		X ³	X
	3Q	X			X	X	X ³	X
MW-12R	1Q							X
	3Q	X	X	X	X	X		X
MW-14	1Q							X
	3Q	X			X			X
MW-16	1Q							X
	3Q	X	X	X	X			X
MW-18	1Q	X			X			X
	3Q	X			X			X
MW-19 ²	1Q	X			X		X ³	X
	3Q	X			X		X ³	X
MW-20	1Q							X
	3Q	X	X	X	X			X

**Table 2
Proposed Groundwater Monitoring Plan
2016 Analyte Reduction Request
Kinder Morgan Harbor Island Terminal
Seattle, Washington**

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
MW-21	1Q	X	X	X	X			X
	3Q	X	X	X	X			X
MW-22	1Q							X
	3Q	X	X	X	X			X
MW-23	1Q	X			X		X	X
	3Q	X			X	X	X	X
MW-24	1Q	X			X		X	X
	3Q	X			X	X	X	X
MW-25	1Q							X
	3Q	X	X	X	X	X		X
MW-07R	1Q							X
	3Q	X	X	X	X	X		X
SH-02R	1Q							X
	3Q	X	X	X	X	X		X
SH-05R	1Q							X
	3Q	X	X	X	X	X		X
TMW-B1	1Q							X
	3Q	X			X		X	X

Table 2
Proposed Groundwater Monitoring Plan
2016 Analyte Reduction Request
Kinder Morgan Harbor Island Terminal
Seattle, Washington

Well	Sampling Schedule	GRO by NWTPH-GX	DRO by NWTPH-DX	HO by NWTPH-DX	BTEX by EPA 8260B	Total and Dissolved Lead by EPA 200.8	MNA Geochemical Parameters ¹	Depth to Water/SPH by downhole meter
TMW-1 ²	1Q	X			X		X ³	X
	3Q	X			X		X ³	X
TMW-2 ²	1Q	X			X		X ³	X
	3Q	X			X		X ³	X
TMW-3 ²	1Q	X			X		X ³	X
	3Q	X			X		X ³	X
TMW-4 ²	1Q	X			X		X ³	X
	3Q	X			X		X ³	X
TMW-5 ²	1Q	X			X		X ³	X
	3Q	X			X		X ³	X
TMW-6 ²	1Q	X			X		X ³	X
	3Q	X			X		X ³	X

Notes

1 = Monitored Natural Attenuation (MNA) Geochemical Parameters include dissolved oxygen, methane, ferrous iron, nitrate, sulfate, and sulfide
2 = Performance monitoring locations
3 = Sulfate is the only geochemical analysis to be run at this location
GRO = Total Petroleum Hydrocarbons - Gasoline Range Organics by Northwest Method NWTPH-Gx
DRO = Total Petroleum Hydrocarbons - Diesel Range Organics by Northwest Method NWTPH-Dx
HO = Total Petroleum Hydrocarbons - Heavy Oil by Northwest Method NWTPH-Gx
BTEX = Benzene, Toluene, Ethylbenzene, and Xylenes by Environmental Protection Agency (EPA) Method 8260B.
1Q, 2Q, 3Q, 4Q = Denotes the quarter for each sampling event
-- Not Applicable

Ullery, Mark

From: Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>
Sent: Thursday, September 15, 2016 4:15 PM
To: Annis, Matt
Cc: Haslam, Kyle; Truedinger, Robert (Robert_Truedinger@kindermorgan.com); Wang, Ching-Pi (ECY)
Subject: RE: Kinder Morgan Harbor Island Terminal - analyte frequency reduction request

Hi Rob, Matt, and Kyle,

Thank you for meeting with me today and for your patience while I get up to speed with the site issues and requests.

My understanding is that the reduction request will consist of eliminating only natural attenuation indicators such as ferrous iron and nitrate (with the exception of sulfate) from the list of analytes at select wells depicted in Figure 3 of the Proposed MNA Geochemical Parameters Analytical Reduction Plan. Site COCs will continue to be analyzed.

I concur with the analyte groundwater reduction request in your memo dated August 3, 2016. Please proceed in accordance with the revisions proposed in the memo.

Please also proceed with the proposed sulfate land reapplication in accordance with the August 31, 2016 field implementation memorandum.

Thanks,

Jerome



Jerome B. Cruz, Ph.D.
Toxics Cleanup Program, Northwest Regional Office
3190 - 160th SE Bellevue, WA 98008
Tel: (425) 649-7094 Fax: (425) 649-7098
Jerome.Cruz@ecy.wa.gov
<http://www.ecy.wa.gov/programs/tcp/cleanup.html>

From: Annis, Matt [mailto:Matt.Annis@arcadis.com]
Sent: Thursday, August 04, 2016 10:12 AM
To: Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>
Cc: Haslam, Kyle <Kyle.Haslam@arcadis.com>; Truedinger, Robert (Robert_Truedinger@kindermorgan.com) <Robert_Truedinger@kindermorgan.com>
Subject: RE: Kinder Morgan Harbor Island Terminal - analyte frequency reduction request

Hi Jerome,

We have revised our analyte reduction request memo to incorporate the maps you requested below (see attached). For clarification, at this time we are not proposing to drop any wells from the program. This request is limited to dropping

NA analytical parameters from a handful of wells. Perhaps later this year we should take a look at dropping wells from the program that have been in compliance for several years. Please confirm the revisions meet the expectations of your request. Thanks.

Matt Annis | Principal Environmental Scientist | matt.annis@arcadis.com

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From: Cruz, Jerome (ECY) [<mailto:JCRU461@ECY.WA.GOV>]

Sent: Thursday, July 28, 2016 9:18 AM

To: Annis, Matt <Matt.Annis@arcadis.com>

Cc: Haslam, Kyle <Kyle.Haslam@arcadis.com>; Truedinger, Robert (Robert_Truedinger@kindermorgan.com) <Robert_Truedinger@kindermorgan.com>

Subject: RE: Kinder Morgan Harbor Island Terminal - analyte frequency reduction request

Hi Matt,

I started reviewing the analyte reduction request and first semiannual 2016 GW monitoring report. In order to understand the nature of this request and evolution, I reviewed the past requests for reduced monitoring in the semiannual monitoring report. From what I could find, there were two requests:

- June 21, 2007 to Roger Nye, approved August 7, 2007
- May 20, 2014 to Maura O'Brien, approved ??

The May 20 request had maps showing current quarterly and annual GW monitoring locations (Fig. 2), proposed semi- and annual locations (Fig. 3), and proposed performance monitoring locations (Fig. 4).

May I request similar maps for the current proposal? This will allow me to better understand the proposal, its variation from past/current monitoring, and its rationale. What might also help is to superimpose contaminant concentrations in the proposed monitoring network/frequency map for me to verify how the current proposal addresses the existing site conditions. I agree that if a well has been in compliance for several years, we should consider dropping it from the monitoring program, but I would like to identify where these are on the maps before I approve anything.

Please don't hesitate to contact me if you have questions or would like to discuss.

Thanks,

Jerome



Jerome B. Cruz, Ph.D.
Toxics Cleanup Program, Northwest Regional Office
3190 - 160th SE Bellevue, WA 98008
Tel: (425) 649-7094 Fax: (425) 649-7098
Jerome.Cruz@ecy.wa.gov
<http://www.ecy.wa.gov/programs/tcp/cleanup.html>

From: Annis, Matt [<mailto:Matt.Annis@arcadis.com>]
Sent: Wednesday, July 20, 2016 1:43 PM
To: Cruz, Jerome (ECY) <JCRU461@ECY.WA.GOV>
Cc: Haslam, Kyle <Kyle.Haslam@arcadis.com>; Truedinger, Robert (Robert_Truedinger@kindermorgan.com) <Robert_Truedinger@kindermorgan.com>
Subject: FW: Kinder Morgan Harbor Island Terminal - analyte frequency reduction request

Hi Jerome,

Please see below and attached. We are starting to plan for our Q3 monitoring event and were hoping Ecology would provide an opinion on our request before then. Please give me a call if you have questions or would like to discuss. Thanks.

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From: Annis, Matt
Sent: Wednesday, February 24, 2016 3:53 PM
To: 'mobr461@ecy.wa.gov' <mobr461@ecy.wa.gov>
Cc: Truedinger, Robert (Robert_Truedinger@kindermorgan.com) <Robert_Truedinger@kindermorgan.com>
Subject: FW: Kinder Morgan Harbor Island Terminal - analyte frequency reduction request

Hi Maura,

Thanks for taking the time to call me on 2/22 to discuss this request and your pending retirement (good for you!). You indicated you were in general agreement with our request to reduce the number of wells we have been performing natural attenuation analyses on and were also going to discuss with the new site manager (Jerome Cruz). As you suggested, we will push our Q1 sampling back to the week of 3/21 so Ecology has sufficient time to provide an opinion on our request.

Also, you mentioned having a transition meeting with Ecology, Kinder Morgan and Arcadis prior to your last day. Kinder Morgan and Arcadis definitely want to take you up on that offer. Are you and Jerome available for this transition meeting on the afternoon of 3/24? Please let us know as soon as you can as Rob will need to travel from Portland to attend. Thanks.

Matt Annis | Principal Environmental Scientist | matt.annis@arcadis.com

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www.arcadis.com

From: Annis, Matt

Sent: Thursday, February 11, 2016 2:23 PM

To: 'mobr461@ecy.wa.gov' <mobr461@ecy.wa.gov>

Cc: Truedinger, Robert (Robert_Truedinger@kindermorgan.com) <Robert_Truedinger@kindermorgan.com>; Haslam, Kyle <Kyle.Haslam@arcadis.com>

Subject: Kinder Morgan Harbor Island Terminal - analyte frequency reduction request

Hi Maura,

Attached is a memorandum that includes a request to cease the analysis of natural attenuation parameters in monitoring wells that are currently below site-specific cleanup levels (and have been for some time) at the Kinder Morgan terminal on Harbor Island. The memorandum also includes a request to temporarily cease the analysis of natural attenuation parameters (with the exception of sulfate) at the performance monitoring wells located with the sulfate land application. We are hoping to have an opinion from Ecology on this request prior to our first quarter sampling event, which is current scheduled for mid-March 2016. Please give me a call if you have any questions or would like to discuss. Thanks.

Matt Annis | Principal Environmental Scientist | matt.annis@arcadis.com

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APPENDIX B

Groundwater Monitoring Field Data Sheets



Low-Flow Test Report:

Test Date / Time: 4/2/2019 3:47:19 PM
Project: KMLT Harbor Island 1SA GWM
Operator Name: MU

Location Name: TMW-1 Well Diameter: 2 in Casing Type: PVC Total Depth: 13.24 ft Initial Depth to Water: 3.06 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 8.5 ft Estimated Total Volume Pumped: 3600 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.1 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 467545
--	--	---

Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/2/2019 3:47 PM	00:00	6.49 pH	13.43 °C	867.44 µS/cm	7.96 mg/L	422.18 NTU	189.5 mV	3.06 ft	150.00 ml/min
4/2/2019 3:50 PM	03:00	6.36 pH	11.33 °C	901.89 µS/cm	7.72 mg/L	22.72 NTU	164.3 mV	3.06 ft	150.00 ml/min
4/2/2019 3:53 PM	06:00	6.25 pH	10.65 °C	936.37 µS/cm	7.45 mg/L	27.6 NTU	151.7 mV	3.06 ft	150.00 ml/min
4/2/2019 3:56 PM	09:00	6.19 pH	10.29 °C	980.87 µS/cm	7.24 mg/L	14.1 NTU	149.3 mV	3.06 ft	150.00 ml/min
4/2/2019 3:59 PM	12:00	6.14 pH	10.11 °C	999.84 µS/cm	7.20 mg/L	6.27 NTU	149.7 mV	3.06 ft	150.00 ml/min
4/2/2019 4:02 PM	15:00	6.13 pH	9.99 °C	1,018.3 µS/cm	7.07 mg/L	0.00 NTU	149.8 mV	3.06 ft	150.00 ml/min
4/2/2019 4:05 PM	18:00	6.11 pH	9.91 °C	1,050.1 µS/cm	6.88 mg/L	2.51 NTU	151.2 mV	3.06 ft	150.00 ml/min
4/2/2019 4:08 PM	21:00	6.11 pH	9.84 °C	1,051.1 µS/cm	6.90 mg/L	1.81 NTU	151.1 mV	3.06 ft	150.00 ml/min
4/2/2019 4:11 PM	24:00	6.11 pH	9.77 °C	1,063.6 µS/cm	6.77 mg/L	1.56 NTU	151.0 mV	3.06 ft	150.00 ml/min

Samples

Sample ID:	Description:
TMW-1	TMW-1

Low-Flow Test Report:

Test Date / Time: 4/3/2019 8:42:45 AM
Project: KMLT Harbor Island 1SA GWM
Operator Name: KF

Location Name: MW-21 Well Diameter: 2 in Casing Type: PVC Total Depth: 11.6 ft Initial Depth to Water: 2.66 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 7 ft Estimated Total Volume Pumped: 6895 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.93 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 467545
---	---	---

Test Notes:

Well did not stabilize

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 8:42 AM	00:00	5.55 pH	12.60 °C	55.47 µS/cm	2.93 mg/L	22.6 NTU	163.5 mV	2.66 ft	150.00 ml/min
4/3/2019 8:45 AM	03:00	5.34 pH	12.24 °C	47.85 µS/cm	0.18 mg/L	16.7 NTU	152.7 mV	2.66 ft	150.00 ml/min
4/3/2019 8:48 AM	06:00	5.29 pH	12.15 °C	47.30 µS/cm	0.17 mg/L	18.4 NTU	152.5 mV	2.66 ft	150.00 ml/min
4/3/2019 8:51 AM	09:00	5.23 pH	12.08 °C	45.85 µS/cm	0.40 mg/L	20.3 NTU	154.9 mV	2.66 ft	150.00 ml/min
4/3/2019 8:52 AM	09:58	5.03 pH	12.05 °C	49.04 µS/cm	0.51 mg/L	9.75 NTU	166.4 mV	2.66 ft	150.00 ml/min
4/3/2019 8:55 AM	12:58	5.19 pH	12.04 °C	46.42 µS/cm	0.44 mg/L	9.13 NTU	159.2 mV	2.66 ft	150.00 ml/min
4/3/2019 8:58 AM	15:58	5.17 pH	12.04 °C	46.27 µS/cm	0.38 mg/L	8.95 NTU	159.7 mV	2.66 ft	150.00 ml/min
4/3/2019 9:01 AM	18:58	5.19 pH	12.05 °C	46.68 µS/cm	0.80 mg/L	6.96 NTU	152.6 mV	2.66 ft	150.00 ml/min
4/3/2019 9:04 AM	21:58	5.15 pH	12.02 °C	50.12 µS/cm	1.12 mg/L	4.93 NTU	143.9 mV	2.66 ft	150.00 ml/min
4/3/2019 9:07 AM	24:58	5.15 pH	11.96 °C	51.47 µS/cm	1.24 mg/L	4.72 NTU	115.7 mV	2.66 ft	150.00 ml/min
4/3/2019 9:10 AM	27:58	5.20 pH	11.92 °C	54.06 µS/cm	1.27 mg/L	3.28 NTU	60.4 mV	2.66 ft	150.00 ml/min
4/3/2019 9:13 AM	30:58	5.25 pH	11.89 °C	55.84 µS/cm	0.98 mg/L	2.56 NTU	-25.8 mV	2.66 ft	150.00 ml/min
4/3/2019 9:16 AM	33:58	5.27 pH	11.86 °C	56.53 µS/cm	0.80 mg/L	1.95 NTU	-66.1 mV	2.66 ft	150.00 ml/min
4/3/2019 9:19 AM	36:58	5.29 pH	11.85 °C	57.64 µS/cm	0.57 mg/L	1.90 NTU	-82.8 mV	2.66 ft	150.00 ml/min
4/3/2019 9:22 AM	39:58	5.30 pH	11.84 °C	60.45 µS/cm	0.48 mg/L	1.85 NTU	-91.3 mV	2.66 ft	150.00 ml/min

4/3/2019 9:25 AM	42:58	5.29 pH	11.87 °C	58.64 µS/cm	0.40 mg/L	1.62 NTU	-90.5 mV	2.66 ft	150.00 ml/min
4/3/2019 9:28 AM	45:58	5.33 pH	11.87 °C	59.20 µS/cm	0.50 mg/L	1.30 NTU	-95.7 mV	2.66 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-21	Final DTW: 3.59 Sample Time: 0930

Low-Flow Test Report:

Test Date / Time: 4/3/2019 10:08:32 AM

Project: KMLT Harbor Island 1SA GWM

Operator Name: KF

Location Name: MW-9 Well Diameter: 2 in Casing Type: PVC Total Depth: 12.93 ft Initial Depth to Water: 2.65 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 7.5 ft Estimated Total Volume Pumped: 2250 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.07 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 467545
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Test Notes:

Weather Conditions:

Drizzling

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 10:08 AM	00:00	5.50 pH	12.02 °C	103.68 µS/cm	7.04 mg/L	18.0 NTU	121.8 mV	2.65 ft	150.00 ml/min
4/3/2019 10:11 AM	03:00	5.93 pH	11.04 °C	104.16 µS/cm	4.04 mg/L	8.28 NTU	118.1 mV	2.65 ft	150.00 ml/min
4/3/2019 10:14 AM	06:00	5.98 pH	10.96 °C	104.51 µS/cm	4.03 mg/L	10.5 NTU	120.7 mV	2.65 ft	150.00 ml/min
4/3/2019 10:17 AM	09:00	5.85 pH	10.73 °C	104.67 µS/cm	3.98 mg/L	4.81 NTU	130.6 mV	2.65 ft	150.00 ml/min
4/3/2019 10:20 AM	12:00	5.87 pH	10.75 °C	104.94 µS/cm	3.97 mg/L	4.83 NTU	131.6 mV	2.65 ft	150.00 ml/min
4/3/2019 10:23 AM	15:00	5.88 pH	10.76 °C	104.95 µS/cm	3.96 mg/L	4.79 NTU	132.5 mV	2.65 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-9	Final DTW: 2.72 Sample Time: 1030

Low-Flow Test Report:

Test Date / Time: 4/3/2019 10:46:19 AM

Project: KMLT Harbor Island 1SA GWM

Operator Name: KF

Location Name: TMW-6 Well Diameter: 2 in Casing Type: PVC Total Depth: 14.3 ft Initial Depth to Water: 2.42 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 8 ft Estimated Total Volume Pumped: 3150 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.38 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 467545
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 10:46 AM	00:00	5.95 pH	11.63 °C	706.11 µS/cm	0.13 mg/L	5.88 NTU	-156.9 mV	2.42 ft	150.00 ml/min
4/3/2019 10:49 AM	03:00	6.02 pH	11.68 °C	714.52 µS/cm	0.09 mg/L	12.2 NTU	-171.5 mV	2.42 ft	150.00 ml/min
4/3/2019 10:52 AM	06:00	6.03 pH	11.68 °C	718.29 µS/cm	0.08 mg/L	11.0 NTU	-176.5 mV	2.42 ft	150.00 ml/min
4/3/2019 10:55 AM	09:00	6.04 pH	11.71 °C	736.99 µS/cm	0.07 mg/L	14.0 NTU	-179.0 mV	2.42 ft	150.00 ml/min
4/3/2019 10:58 AM	12:00	5.99 pH	11.63 °C	740.12 µS/cm	0.05 mg/L	12.4 NTU	-179.1 mV	2.42 ft	150.00 ml/min
4/3/2019 11:01 AM	15:00	6.04 pH	11.63 °C	765.71 µS/cm	0.04 mg/L	11.7 NTU	-182.1 mV	2.42 ft	150.00 ml/min
4/3/2019 11:04 AM	18:00	6.06 pH	11.74 °C	782.44 µS/cm	0.04 mg/L	12.4 NTU	-182.9 mV	2.42 ft	150.00 ml/min
4/3/2019 11:07 AM	21:00	6.07 pH	11.86 °C	786.24 µS/cm	0.05 mg/L	12.1 NTU	-183.5 mV	2.42 ft	150.00 ml/min

Samples

Sample ID:	Description:
TMW-6	Final DTW: 2.80 Sample Time: 1115

Low-Flow Test Report:

Test Date / Time: 4/3/2019 11:39:23 AM

Project: KMLT Harbor Island 1SA GWM

Operator Name: KF

Location Name: 11 Well Diameter: 4 in Casing Type: PVC Total Depth: 10.89 ft Initial Depth to Water: 4.34 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 7 ft Estimated Total Volume Pumped: 2250 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.49 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 467545
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 11:39 AM	00:00	6.35 pH	14.33 °C	240.13 µS/cm	8.04 mg/L	4.79 NTU	25.2 mV	4.34 ft	150.00 ml/min
4/3/2019 11:42 AM	03:00	6.46 pH	14.02 °C	237.08 µS/cm	7.94 mg/L	2.95 NTU	38.7 mV	4.34 ft	150.00 ml/min
4/3/2019 11:45 AM	06:00	6.45 pH	13.96 °C	235.45 µS/cm	7.95 mg/L	4.27 NTU	49.7 mV	4.34 ft	150.00 ml/min
4/3/2019 11:48 AM	09:00	6.44 pH	14.16 °C	232.50 µS/cm	7.85 mg/L	3.56 NTU	55.7 mV	4.34 ft	150.00 ml/min
4/3/2019 11:51 AM	12:00	6.41 pH	14.34 °C	231.94 µS/cm	7.73 mg/L	3.92 NTU	61.1 mV	4.34 ft	150.00 ml/min
4/3/2019 11:54 AM	15:00	6.35 pH	14.17 °C	231.48 µS/cm	7.62 mg/L	3.43 NTU	65.7 mV	4.34 ft	150.00 ml/min

Samples

Sample ID:	Description:
11	Final DTW: 4.83 Sample Time: 1200

Low-Flow Test Report:

Test Date / Time: 4/3/2019 12:11:55 PM

Project: KMLT Harbor Island 1SA GWM

Operator Name: KF

Location Name: TMW-4 Well Diameter: 2 in Casing Type: PVC Total Depth: 15.43 ft Initial Depth to Water: 3.18 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 9 ft Estimated Total Volume Pumped: 1800 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.15 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 467545
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 12:11 PM	00:00	7.11 pH	15.16 °C	1,576.7 µS/cm	1.26 mg/L	2.73 NTU	-227.1 mV	3.18 ft	150.00 ml/min
4/3/2019 12:14 PM	03:00	7.06 pH	13.60 °C	1,637.4 µS/cm	0.11 mg/L	2.90 NTU	-255.0 mV	3.18 ft	150.00 ml/min
4/3/2019 12:17 PM	06:00	7.07 pH	13.05 °C	1,658.7 µS/cm	0.06 mg/L	1.72 NTU	-264.8 mV	3.18 ft	150.00 ml/min
4/3/2019 12:20 PM	09:00	7.08 pH	12.97 °C	1,666.4 µS/cm	0.05 mg/L	1.55 NTU	-269.1 mV	3.18 ft	150.00 ml/min
4/3/2019 12:23 PM	12:00	7.06 pH	13.29 °C	1,660.3 µS/cm	0.07 mg/L	2.10 NTU	-265.1 mV	3.18 ft	150.00 ml/min

Samples

Sample ID:	Description:
TMW-4	Final DTW: 3.33 Sample Time: 1230

Low-Flow Test Report:

Test Date / Time: 4/3/2019 12:43:22 PM

Project: KMLT Harbor Island 1SA GWM

Operator Name: KF

Location Name: TMW-3 Well Diameter: 2 in Casing Type: PVC Total Depth: 10.6 ft Initial Depth to Water: 3.44 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 7 ft Estimated Total Volume Pumped: 3150 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.1 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 467545
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 12:43 PM	00:00	6.77 pH	13.36 °C	1,580.2 µS/cm	0.31 mg/L	3.14 NTU	-148.2 mV	3.44 ft	150.00 ml/min
4/3/2019 12:46 PM	03:00	6.83 pH	12.70 °C	1,604.2 µS/cm	0.07 mg/L	1.58 NTU	-164.2 mV	3.44 ft	150.00 ml/min
4/3/2019 12:49 PM	06:00	6.83 pH	12.58 °C	1,625.7 µS/cm	0.08 mg/L	1.58 NTU	-169.0 mV	3.44 ft	150.00 ml/min
4/3/2019 12:52 PM	09:00	6.75 pH	12.37 °C	1,454.8 µS/cm	0.04 mg/L	1.19 NTU	-168.0 mV	3.44 ft	150.00 ml/min
4/3/2019 12:55 PM	12:00	6.70 pH	12.24 °C	1,267.1 µS/cm	0.03 mg/L	0.78 NTU	-168.5 mV	3.44 ft	150.00 ml/min
4/3/2019 12:58 PM	15:00	6.69 pH	12.07 °C	1,305.4 µS/cm	0.02 mg/L	1.11 NTU	-169.8 mV	3.44 ft	150.00 ml/min
4/3/2019 1:01 PM	18:00	6.69 pH	12.02 °C	1,332.6 µS/cm	0.02 mg/L	1.02 NTU	-170.5 mV	3.44 ft	150.00 ml/min
4/3/2019 1:04 PM	21:00	6.69 pH	11.92 °C	1,301.6 µS/cm	0.01 mg/L	1.21 NTU	-171.3 mV	3.44 ft	150.00 ml/min

Samples

Sample ID:	Description:
TMW-3	Final DTW: 3.54 Sample Time: 1305

Low-Flow Test Report:

Test Date / Time: 4/3/2019 1:24:42 PM
Project: KMLT Harbor Island 1SA GWM
Operator Name: KF

Location Name: MW-7 Well Diameter: 4 in Casing Type: PVC Total Depth: 13.02 ft Initial Depth to Water: 2.56 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 8 ft Estimated Total Volume Pumped: 3150 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 467545
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Test Notes:

Weather Conditions:
 Windy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 1:24 PM	00:00	6.54 pH	13.39 °C	1,446.4 µS/cm	3.38 mg/L	2.93 NTU	-134.9 mV	2.56 ft	150.00 ml/min
4/3/2019 1:27 PM	03:00	6.40 pH	12.52 °C	1,401.1 µS/cm	0.16 mg/L	0.06 NTU	-176.7 mV	2.56 ft	150.00 ml/min
4/3/2019 1:30 PM	06:00	6.34 pH	12.30 °C	1,413.7 µS/cm	0.08 mg/L	0.25 NTU	-191.8 mV	2.56 ft	150.00 ml/min
4/3/2019 1:33 PM	09:00	6.35 pH	12.23 °C	1,445.6 µS/cm	0.06 mg/L	0.54 NTU	-201.2 mV	2.56 ft	150.00 ml/min
4/3/2019 1:36 PM	12:00	6.33 pH	12.24 °C	1,415.7 µS/cm	0.05 mg/L	0.12 NTU	-205.7 mV	2.56 ft	150.00 ml/min
4/3/2019 1:39 PM	15:00	6.35 pH	12.20 °C	1,396.2 µS/cm	0.04 mg/L	0.78 NTU	-209.7 mV	2.56 ft	150.00 ml/min
4/3/2019 1:42 PM	18:00	6.37 pH	12.15 °C	1,360.6 µS/cm	0.03 mg/L	0.34 NTU	-214.4 mV	2.56 ft	150.00 ml/min
4/3/2019 1:45 PM	21:00	6.41 pH	12.06 °C	1,371.3 µS/cm	0.01 mg/L	0.11 NTU	-215.3 mV	2.56 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-7	Final DTW: 3.18 Sample Time: 1350 DUP-02

Low-Flow Test Report:

Test Date / Time: 4/3/2019 2:49:15 PM
Project: KMLT Harbor Island 1SA GWM
Operator Name: KF

Location Name: 12 Well Diameter: 4 in Casing Type: PVC Total Depth: 7.52 ft Initial Depth to Water: 1.97 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 4.5 ft Estimated Total Volume Pumped: 2250 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 1.91 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 467545
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Test Notes:

Weather Conditions:
Windy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 2:49 PM	00:00	6.39 pH	11.75 °C	553.69 µS/cm	0.61 mg/L	0.65 NTU	-153.5 mV	1.97 ft	150.00 ml/min
4/3/2019 2:52 PM	03:00	6.32 pH	11.59 °C	559.64 µS/cm	0.10 mg/L	0.37 NTU	-180.8 mV	1.97 ft	150.00 ml/min
4/3/2019 2:55 PM	06:00	6.28 pH	11.40 °C	561.80 µS/cm	0.06 mg/L	0.38 NTU	-190.2 mV	1.97 ft	150.00 ml/min
4/3/2019 2:58 PM	09:00	6.23 pH	11.27 °C	562.35 µS/cm	0.04 mg/L	0.35 NTU	-193.2 mV	1.97 ft	150.00 ml/min
4/3/2019 3:01 PM	12:00	6.15 pH	11.23 °C	564.45 µS/cm	0.03 mg/L	0.16 NTU	-192.9 mV	1.97 ft	150.00 ml/min
4/3/2019 3:04 PM	15:00	6.15 pH	11.23 °C	568.61 µS/cm	0.02 mg/L	0.30 NTU	-195.9 mV	1.97 ft	150.00 ml/min

Samples

Sample ID:	Description:
12	Final DTW: 3.89 Sample Time: 1505

Low-Flow Test Report:

Test Date / Time: 4/3/2019 3:26:05 PM
Project: KMLT Harbor Island 1SA GWM
Operator Name: KF

Location Name: TMW-5 Well Diameter: 2 in Casing Type: PVC Total Depth: 13.89 m Initial Depth to Water: 2.99 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 8.5 ft Estimated Total Volume Pumped: 6750 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.13 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 467545
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Test Notes:
Well did not stabilize

Weather Conditions:
Windy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 3:26 PM	00:00	7.03 pH	12.90 °C	1,952.6 µS/cm	1.20 mg/L	1.29 NTU	-209.0 mV	2.99 ft	150.00 ml/min
4/3/2019 3:29 PM	03:00	6.96 pH	12.25 °C	1,793.8 µS/cm	0.08 mg/L	0.92 NTU	-242.4 mV	2.99 ft	150.00 ml/min
4/3/2019 3:32 PM	06:00	6.91 pH	12.23 °C	1,742.4 µS/cm	0.06 mg/L	0.16 NTU	-245.3 mV	2.99 ft	150.00 ml/min
4/3/2019 3:35 PM	09:00	6.89 pH	12.19 °C	1,669.4 µS/cm	0.04 mg/L	0.59 NTU	-248.6 mV	2.99 ft	150.00 ml/min
4/3/2019 3:38 PM	12:00	6.89 pH	12.09 °C	1,630.4 µS/cm	0.03 mg/L	0.00 NTU	-252.0 mV	2.99 ft	150.00 ml/min
4/3/2019 3:41 PM	15:00	6.85 pH	12.08 °C	1,562.0 µS/cm	0.03 mg/L	0.00 NTU	-252.0 mV	2.99 ft	150.00 ml/min
4/3/2019 3:44 PM	18:00	6.83 pH	12.06 °C	1,488.5 µS/cm	0.02 mg/L	0.00 NTU	-252.3 mV	2.99 ft	150.00 ml/min
4/3/2019 3:47 PM	21:00	6.82 pH	12.06 °C	1,410.4 µS/cm	0.01 mg/L	0.00 NTU	-251.0 mV	2.99 ft	150.00 ml/min
4/3/2019 3:50 PM	24:00	6.76 pH	12.03 °C	1,599.5 µS/cm	0.03 mg/L	0.84 NTU	-249.0 mV	2.99 ft	150.00 ml/min
4/3/2019 3:53 PM	27:00	6.77 pH	12.03 °C	1,559.9 µS/cm	0.01 mg/L	0.62 NTU	-249.5 mV	2.99 ft	150.00 ml/min
4/3/2019 3:56 PM	30:00	6.79 pH	12.03 °C	1,533.6 µS/cm	0.01 mg/L	0.00 NTU	-250.2 mV	2.99 ft	150.00 ml/min
4/3/2019 3:59 PM	33:00	6.79 pH	12.02 °C	1,454.2 µS/cm	0.01 mg/L	0.14 NTU	-250.6 mV	2.99 ft	150.00 ml/min
4/3/2019 4:02 PM	36:00	6.81 pH	12.03 °C	1,424.6 µS/cm	0.01 mg/L	0.00 NTU	-249.0 mV	2.99 ft	150.00 ml/min

4/3/2019 4:05 PM	39:00	6.77 pH	12.01 °C	1,366.6 μ S/cm	0.01 mg/L	0.10 NTU	-241.6 mV	2.99 ft	150.00 ml/min
4/3/2019 4:08 PM	42:00	6.78 pH	12.02 °C	1,308.3 μ S/cm	0.01 mg/L	0.00 NTU	-237.0 mV	2.99 ft	150.00 ml/min
4/3/2019 4:11 PM	45:00	6.79 pH	12.03 °C	1,192.2 μ S/cm	0.01 mg/L	0.00 NTU	-238.9 mV	2.99 ft	150.00 ml/min

Samples

Sample ID:	Description:
TMW-5	Final DTW: 3.12 Sample Time: 1545

Low-Flow Test Report:

Test Date / Time: 4/2/2019 3:34:01 PM
Project: KMLT Harbor Island 1SA GWM
Operator Name: KF & LS

Location Name: TMW-2 Well Diameter: 2 in Casing Type: PVC Total Depth: 15.37 ft Initial Depth to Water: 3.2 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 9.5 m Estimated Total Volume Pumped: 4065 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.12 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 457166
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 3:34 PM	00:00	7.00 pH	15.31 °C	2,212.9 µS/cm	3.04 mg/L	47.2 NTU	140.8 mV	3.20 ft	150.00 ml/min
4/3/2019 3:37 PM	03:05	7.36 pH	13.22 °C	2,336.2 µS/cm	0.22 mg/L	20.9 NTU	27.4 mV	3.20 ft	150.00 ml/min
4/3/2019 3:40 PM	06:06	7.44 pH	12.63 °C	2,344.7 µS/cm	0.22 mg/L	20.0 NTU	-16.8 mV	3.20 ft	150.00 ml/min
4/3/2019 3:43 PM	09:06	7.48 pH	12.33 °C	2,350.7 µS/cm	0.14 mg/L	12.5 NTU	-38.2 mV	3.20 ft	150.00 ml/min
4/3/2019 3:46 PM	12:06	7.48 pH	12.08 °C	2,354.6 µS/cm	0.14 mg/L	13.8 NTU	-50.9 mV	3.20 ft	150.00 ml/min
4/3/2019 3:49 PM	15:06	7.50 pH	12.03 °C	2,358.6 µS/cm	0.12 mg/L	7.23 NTU	-61.0 mV	3.20 ft	150.00 ml/min
4/3/2019 3:52 PM	18:06	7.51 pH	11.97 °C	2,367.8 µS/cm	0.11 mg/L	6.77 NTU	-67.2 mV	3.20 ft	150.00 ml/min
4/3/2019 3:55 PM	21:06	7.51 pH	11.80 °C	2,363.8 µS/cm	0.10 mg/L	5.20 NTU	-72.5 mV	3.20 ft	150.00 ml/min
4/3/2019 3:58 PM	24:06	7.52 pH	11.81 °C	2,354.9 µS/cm	0.10 mg/L	4.36 NTU	-76.7 mV	3.20 ft	150.00 ml/min
4/3/2019 4:01 PM	27:06	7.52 pH	11.74 °C	2,350.3 µS/cm	0.09 mg/L	2.53 NTU	-80.2 mV	3.20 ft	150.00 ml/min

Samples

Sample ID:	Description:
TMW-2	Final DTW: 3.32 Sample Time: 1600

Low-Flow Test Report:

Test Date / Time: 4/2/2019 4:29:39 PM
Project: KMLT Harbor Island 1SA GWM
Operator Name: KF & LS

Location Name: MW-19 Well Diameter: 2 in Casing Type: PVC Total Depth: 13.01 ft Initial Depth to Water: 2.59 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 8 ft Estimated Total Volume Pumped: 4507.5 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min	Instrument Used: Aqua TROLL 600 Vented Serial Number: 457166
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 4:29 PM	00:00	6.68 pH	13.98 °C	3,415.6 µS/cm	0.82 mg/L	3.19 NTU	-10.2 mV	2.59 ft	150.00 ml/min
4/3/2019 4:32 PM	03:03	6.54 pH	13.01 °C	3,052.3 µS/cm	0.24 mg/L	1.94 NTU	-40.4 mV	2.59 ft	150.00 ml/min
4/3/2019 4:35 PM	06:03	6.48 pH	12.76 °C	2,657.1 µS/cm	0.12 mg/L	1.06 NTU	-45.9 mV	2.59 ft	150.00 ml/min
4/3/2019 4:38 PM	09:03	6.46 pH	12.63 °C	2,395.8 µS/cm	0.12 mg/L	1.08 NTU	-49.8 mV	2.59 ft	150.00 ml/min
4/3/2019 4:41 PM	12:03	6.47 pH	12.57 °C	2,250.5 µS/cm	0.10 mg/L	1.03 NTU	-53.5 mV	2.59 ft	150.00 ml/min
4/3/2019 4:44 PM	15:03	6.47 pH	12.49 °C	2,217.6 µS/cm	0.11 mg/L	1.58 NTU	-56.1 mV	2.59 ft	150.00 ml/min
4/3/2019 4:47 PM	18:03	6.47 pH	12.48 °C	2,128.5 µS/cm	0.08 mg/L	2.64 NTU	-57.9 mV	2.59 ft	150.00 ml/min
4/3/2019 4:50 PM	21:03	6.46 pH	12.45 °C	2,276.2 µS/cm	0.09 mg/L	1.47 NTU	-59.4 mV	2.59 ft	150.00 ml/min
4/3/2019 4:53 PM	24:03	6.46 pH	12.40 °C	2,153.2 µS/cm	0.07 mg/L	1.28 NTU	-60.9 mV	2.59 ft	150.00 ml/min
4/3/2019 4:56 PM	27:03	6.46 pH	12.37 °C	2,122.9 µS/cm	0.07 mg/L	1.49 NTU	-62.0 mV	2.59 ft	150.00 ml/min
4/3/2019 4:59 PM	30:03	6.46 pH	12.37 °C	2,118.5 µS/cm	0.06 mg/L	1.49 NTU	-62.9 mV	2.59 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-19	Final DTW: 2.73 feet Sample Time: 1700

Low-Flow Test Report:

Test Date / Time: 4/3/2019 8:24:05 AM
Project: KMLT Harbor Island 1SA GWM
Operator Name: LS

<p>Location Name: A-5 Well Diameter: 4 in Casing Type: PVC Total Depth: 14.84 ft</p>	<p>Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 7215 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 7.59 ft</p>	<p>Instrument Used: Aqua TROLL 600 Vented Serial Number: 457166</p>
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10	
4/3/2019 8:24 AM	00:00	6.61 pH	13.82 °C	717.12 µS/cm	1.37 mg/L	26.1 NTU	89.0 mV	150.00 ml/min
4/3/2019 8:27 AM	03:05	6.63 pH	13.81 °C	715.57 µS/cm	0.25 mg/L	3.00 NTU	-6.8 mV	150.00 ml/min
4/3/2019 8:30 AM	06:06	6.62 pH	13.87 °C	713.99 µS/cm	0.18 mg/L	2.67 NTU	-34.5 mV	150.00 ml/min
4/3/2019 8:33 AM	09:06	6.63 pH	13.82 °C	711.47 µS/cm	0.16 mg/L	1.65 NTU	-48.2 mV	150.00 ml/min
4/3/2019 8:36 AM	12:06	6.63 pH	13.82 °C	708.83 µS/cm	0.14 mg/L	1.62 NTU	-56.4 mV	150.00 ml/min
4/3/2019 8:39 AM	15:06	6.64 pH	13.81 °C	706.36 µS/cm	0.16 mg/L	0.96 NTU	-62.3 mV	150.00 ml/min
4/3/2019 8:42 AM	18:06	6.63 pH	13.81 °C	705.87 µS/cm	0.13 mg/L	0.85 NTU	-66.5 mV	150.00 ml/min
4/3/2019 8:45 AM	21:06	6.64 pH	13.82 °C	705.43 µS/cm	0.13 mg/L	1.00 NTU	-70.0 mV	150.00 ml/min
4/3/2019 8:48 AM	24:06	6.64 pH	13.79 °C	700.47 µS/cm	0.10 mg/L	1.21 NTU	-73.1 mV	150.00 ml/min
4/3/2019 8:51 AM	27:06	6.64 pH	13.81 °C	703.26 µS/cm	0.12 mg/L	0.84 NTU	-75.4 mV	150.00 ml/min
4/3/2019 8:54 AM	30:06	6.64 pH	13.81 °C	703.08 µS/cm	0.10 mg/L	1.16 NTU	-77.2 mV	150.00 ml/min
4/3/2019 8:57 AM	33:06	6.64 pH	13.82 °C	700.60 µS/cm	0.09 mg/L	0.93 NTU	-79.1 mV	150.00 ml/min
4/3/2019 9:00 AM	36:06	6.64 pH	13.81 °C	700.79 µS/cm	0.11 mg/L	0.93 NTU	-80.9 mV	150.00 ml/min
4/3/2019 9:03 AM	39:06	6.64 pH	13.79 °C	697.12 µS/cm	0.10 mg/L	1.45 NTU	-82.4 mV	150.00 ml/min
4/3/2019 9:06 AM	42:06	6.65 pH	13.78 °C	700.90 µS/cm	0.11 mg/L	0.73 NTU	-83.9 mV	150.00 ml/min

4/3/2019 9:09 AM	45:06	6.65 pH	13.74 °C	695.39 μ S/cm	0.11 mg/L	1.19 NTU	-84.6 mV	150.00 ml/min
4/3/2019 9:12 AM	48:06	6.65 pH	13.75 °C	696.47 μ S/cm	0.10 mg/L	1.08 NTU	-86.0 mV	150.00 ml/min

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 4/3/2019 9:54:54 AM
Project: KMLT Harbor Island 1SA GWM
Operator Name: LS

Location Name: A-21 Well Diameter: 4 in Casing Type: PVC Total Depth: 14.5 ft Initial Depth to Water: 7.54 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 1815 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.01 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 457166
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Test Notes:

Weather Conditions:
Light rain

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 9:54 AM	00:00	6.64 pH	13.67 °C	468.15 µS/cm	5.18 mg/L	5.02 NTU	23.8 mV	7.54 ft	150.00 ml/min
4/3/2019 9:57 AM	03:04	6.49 pH	13.22 °C	470.62 µS/cm	3.21 mg/L	2.21 NTU	41.7 mV	7.54 ft	150.00 ml/min
4/3/2019 10:00 AM	06:04	6.48 pH	13.15 °C	472.50 µS/cm	3.13 mg/L	2.01 NTU	48.8 mV	7.54 ft	150.00 ml/min
4/3/2019 10:04 AM	09:06	6.48 pH	13.11 °C	470.80 µS/cm	3.03 mg/L	1.90 NTU	54.0 mV	7.54 ft	150.00 ml/min
4/3/2019 10:07 AM	12:06	6.48 pH	13.09 °C	469.90 µS/cm	3.01 mg/L	2.09 NTU	58.0 mV	7.54 ft	150.00 ml/min

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 4/3/2019 10:36:19 AM

Project: KMLT Harbor Island 1SA GWM

Operator Name: LS

Location Name: MW-24 Well Diameter: 4 in Casing Type: PVC Total Depth: 14.81 ft Initial Depth to Water: 7.22 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 3165 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.03 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 457166
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 10:36 AM	00:00	6.30 pH	13.76 °C	877.35 µS/cm	3.96 mg/L	8.93 NTU	85.7 mV	7.22 ft	150.00 ml/min
4/3/2019 10:39 AM	03:04	6.33 pH	13.38 °C	881.26 µS/cm	0.23 mg/L	4.80 NTU	-4.7 mV	7.22 ft	150.00 ml/min
4/3/2019 10:42 AM	06:04	6.33 pH	13.30 °C	878.30 µS/cm	0.18 mg/L	3.96 NTU	-36.4 mV	7.22 ft	150.00 ml/min
4/3/2019 10:45 AM	09:04	6.33 pH	13.31 °C	875.63 µS/cm	0.15 mg/L	4.52 NTU	-50.9 mV	7.22 ft	150.00 ml/min
4/3/2019 10:48 AM	12:06	6.32 pH	13.61 °C	878.10 µS/cm	0.24 mg/L	4.17 NTU	-58.4 mV	7.22 ft	150.00 ml/min
4/3/2019 10:51 AM	15:06	6.32 pH	13.18 °C	871.02 µS/cm	0.10 mg/L	3.64 NTU	-63.1 mV	7.22 ft	150.00 ml/min
4/3/2019 10:54 AM	18:06	6.33 pH	13.19 °C	871.12 µS/cm	0.10 mg/L	4.04 NTU	-66.6 mV	7.22 ft	150.00 ml/min
4/3/2019 10:57 AM	21:06	6.32 pH	13.19 °C	871.09 µS/cm	0.09 mg/L	3.39 NTU	-69.1 mV	7.22 ft	150.00 ml/min

Samples

Sample ID:	Description:
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Low-Flow Test Report:

Test Date / Time: 4/3/2019 11:36:27 AM

Project: KMLT Harbor Island 1SA GWM

Operator Name: LS

Location Name: MW-23 Well Diameter: 4 in Casing Type: PVC Total Depth: 14.84 ft Initial Depth to Water: 7.25 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 5417.5 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.30 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 457166
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Test Notes:

DUP-01 taken

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 11:36 AM	00:00	6.43 pH	15.24 °C	1,157.4 µS/cm	3.42 mg/L	2.97 NTU	16.5 mV	7.25 ft	150.00 ml/min
4/3/2019 11:39 AM	03:05	6.41 pH	14.47 °C	1,184.7 µS/cm	0.20 mg/L	1.03 NTU	-7.3 mV	7.25 ft	150.00 ml/min
4/3/2019 11:42 AM	06:06	6.40 pH	15.07 °C	1,191.7 µS/cm	0.31 mg/L	1.18 NTU	-17.9 mV	7.25 ft	150.00 ml/min
4/3/2019 11:45 AM	09:06	6.41 pH	14.57 °C	1,183.5 µS/cm	0.21 mg/L	1.01 NTU	-24.2 mV	7.25 ft	150.00 ml/min
4/3/2019 11:48 AM	12:06	6.40 pH	14.27 °C	1,182.1 µS/cm	0.14 mg/L	1.70 NTU	-28.0 mV	7.25 ft	150.00 ml/min
4/3/2019 11:51 AM	15:06	6.40 pH	15.21 °C	1,197.3 µS/cm	0.19 mg/L	1.68 NTU	-31.9 mV	7.25 ft	150.00 ml/min
4/3/2019 11:54 AM	18:07	6.39 pH	15.85 °C	1,177.5 µS/cm	0.31 mg/L	1.65 NTU	-34.2 mV	7.25 ft	150.00 ml/min
4/3/2019 11:57 AM	21:07	6.39 pH	14.36 °C	1,177.8 µS/cm	0.14 mg/L	1.18 NTU	-35.0 mV	7.25 ft	150.00 ml/min
4/3/2019 12:00 PM	24:07	6.40 pH	14.20 °C	1,180.7 µS/cm	0.11 mg/L	1.40 NTU	-36.7 mV	7.25 ft	150.00 ml/min
4/3/2019 12:03 PM	27:07	6.39 pH	14.22 °C	1,183.5 µS/cm	0.11 mg/L	1.27 NTU	-37.9 mV	7.25 ft	150.00 ml/min
4/3/2019 12:06 PM	30:07	6.40 pH	14.25 °C	1,176.7 µS/cm	0.09 mg/L	1.03 NTU	-39.5 mV	7.25 ft	150.00 ml/min
4/3/2019 12:09 PM	33:07	6.39 pH	14.30 °C	1,179.5 µS/cm	0.09 mg/L	1.25 NTU	-40.3 mV	7.25 ft	150.00 ml/min
4/3/2019 12:12 PM	36:07	6.39 pH	14.34 °C	1,176.5 µS/cm	0.09 mg/L	1.59 NTU	-41.4 mV	7.25 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-23	
DUP-01	

Low-Flow Test Report:

Test Date / Time: 4/3/2019 1:04:26 PM
Project: KMLT Harbor Island 1SA GWM
Operator Name: LS

Location Name: A-28R Well Diameter: 2 in Casing Type: PVC Total Depth: 14.31 ft Initial Depth to Water: 7.67 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 5860 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.11 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 457166
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 1:04 PM	00:00	6.67 pH	15.68 °C	151.08 µS/cm	1.76 mg/L	6.11 NTU	5.5 mV	7.67 ft	150.00 ml/min
4/3/2019 1:07 PM	03:02	6.42 pH	12.98 °C	149.55 µS/cm	0.24 mg/L	6.19 NTU	-14.7 mV	7.67 ft	150.00 ml/min
4/3/2019 1:10 PM	06:02	6.37 pH	12.61 °C	144.94 µS/cm	0.17 mg/L	5.67 NTU	-26.4 mV	7.67 ft	150.00 ml/min
4/3/2019 1:13 PM	09:03	6.37 pH	12.37 °C	141.73 µS/cm	0.16 mg/L	6.53 NTU	-35.0 mV	7.67 ft	150.00 ml/min
4/3/2019 1:16 PM	12:03	6.41 pH	12.23 °C	143.57 µS/cm	0.16 mg/L	6.85 NTU	-42.9 mV	7.67 ft	150.00 ml/min
4/3/2019 1:19 PM	15:03	6.40 pH	12.12 °C	147.50 µS/cm	0.14 mg/L	3.84 NTU	-46.1 mV	7.67 ft	150.00 ml/min
4/3/2019 1:22 PM	18:03	6.43 pH	12.06 °C	149.57 µS/cm	0.14 mg/L	4.71 NTU	-50.9 mV	7.67 ft	150.00 ml/min
4/3/2019 1:25 PM	21:03	6.43 pH	12.03 °C	151.16 µS/cm	0.18 mg/L	5.01 NTU	-53.2 mV	7.67 ft	150.00 ml/min
4/3/2019 1:28 PM	24:03	6.45 pH	12.09 °C	153.11 µS/cm	0.17 mg/L	4.95 NTU	-56.3 mV	7.67 ft	150.00 ml/min
4/3/2019 1:31 PM	27:03	6.44 pH	12.07 °C	151.55 µS/cm	0.20 mg/L	3.66 NTU	-57.4 mV	7.67 ft	150.00 ml/min
4/3/2019 1:34 PM	30:03	6.46 pH	12.00 °C	149.94 µS/cm	0.10 mg/L	3.13 NTU	-59.9 mV	7.67 ft	150.00 ml/min
4/3/2019 1:37 PM	33:04	6.48 pH	12.09 °C	143.96 µS/cm	0.09 mg/L	3.56 NTU	-62.3 mV	7.67 ft	150.00 ml/min
4/3/2019 1:40 PM	36:04	6.49 pH	11.97 °C	142.07 µS/cm	0.10 mg/L	3.36 NTU	-63.6 mV	7.67 ft	150.00 ml/min
4/3/2019 1:43 PM	39:04	6.49 pH	11.94 °C	142.72 µS/cm	0.09 mg/L	3.77 NTU	-64.2 mV	7.67 ft	150.00 ml/min

Samples

Sample ID:	Description:
A-28R	

Low-Flow Test Report:

Test Date / Time: 4/3/2019 2:39:07 PM
Project: KMLT Harbor Island 1SA GWM
Operator Name: LS

Location Name: A-27 Well Diameter: 4 in Casing Type: PVC Total Depth: 18.13 ft Initial Depth to Water: 10.23 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 14 ft Estimated Total Volume Pumped: 8112.5 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.17 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 457166
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 2:39 PM	00:00	6.32 pH	14.09 °C	736.87 µS/cm	4.19 mg/L	3.66 NTU	27.7 mV	10.23 ft	150.00 ml/min
4/3/2019 2:42 PM	03:04	6.29 pH	12.82 °C	429.72 µS/cm	0.17 mg/L	1.76 NTU	2.6 mV	10.23 ft	150.00 ml/min
4/3/2019 2:45 PM	06:05	6.26 pH	12.66 °C	426.70 µS/cm	0.13 mg/L	1.43 NTU	-5.4 mV	10.23 ft	150.00 ml/min
4/3/2019 2:48 PM	09:05	6.26 pH	12.56 °C	435.95 µS/cm	0.11 mg/L	1.17 NTU	-11.8 mV	10.23 ft	150.00 ml/min
4/3/2019 2:51 PM	12:05	6.27 pH	12.52 °C	464.21 µS/cm	0.10 mg/L	1.13 NTU	-16.9 mV	10.23 ft	150.00 ml/min
4/3/2019 2:54 PM	15:05	6.28 pH	12.53 °C	489.45 µS/cm	0.10 mg/L	1.29 NTU	-21.1 mV	10.23 ft	150.00 ml/min
4/3/2019 2:57 PM	18:05	6.29 pH	12.51 °C	537.55 µS/cm	0.09 mg/L	1.27 NTU	-25.5 mV	10.23 ft	150.00 ml/min
4/3/2019 3:00 PM	21:05	6.29 pH	12.67 °C	488.67 µS/cm	0.14 mg/L	2.06 NTU	-28.1 mV	10.23 ft	150.00 ml/min
4/3/2019 3:03 PM	24:05	6.30 pH	12.72 °C	560.85 µS/cm	0.14 mg/L	1.69 NTU	-30.8 mV	10.23 ft	150.00 ml/min
4/3/2019 3:06 PM	27:05	6.30 pH	12.62 °C	562.71 µS/cm	0.12 mg/L	1.66 NTU	-33.2 mV	10.23 ft	150.00 ml/min
4/3/2019 3:09 PM	30:05	6.31 pH	12.62 °C	598.74 µS/cm	0.09 mg/L	1.37 NTU	-35.5 mV	10.23 ft	150.00 ml/min
4/3/2019 3:12 PM	33:05	6.32 pH	12.59 °C	645.00 µS/cm	0.12 mg/L	1.67 NTU	-37.8 mV	10.23 ft	150.00 ml/min
4/3/2019 3:15 PM	36:05	6.32 pH	12.57 °C	628.80 µS/cm	0.09 mg/L	1.60 NTU	-39.4 mV	10.23 ft	150.00 ml/min
4/3/2019 3:18 PM	39:05	6.33 pH	12.62 °C	678.37 µS/cm	0.12 mg/L	1.60 NTU	-41.1 mV	10.23 ft	150.00 ml/min
4/3/2019 3:21 PM	42:05	6.35 pH	12.63 °C	717.38 µS/cm	0.09 mg/L	1.69 NTU	-43.4 mV	10.23 ft	150.00 ml/min

4/3/2019 3:24 PM	45:05	6.35 pH	12.62 °C	736.69 µS/cm	0.11 mg/L	1.58 NTU	-45.1 mV	10.23 ft	150.00 ml/min
4/3/2019 3:27 PM	48:05	6.36 pH	12.63 °C	757.92 µS/cm	0.09 mg/L	1.15 NTU	-46.7 mV	10.23 ft	150.00 ml/min
4/3/2019 3:30 PM	51:05	6.36 pH	12.60 °C	783.91 µS/cm	0.11 mg/L	1.08 NTU	-48.0 mV	10.23 ft	150.00 ml/min
4/3/2019 3:33 PM	54:05	6.37 pH	12.60 °C	809.64 µS/cm	0.08 mg/L	1.08 NTU	-49.5 mV	10.23 ft	150.00 ml/min

Samples

Sample ID:	Description:
A-27	

Low-Flow Test Report:

Test Date / Time: 4/3/2019 4:01:46 PM
Project: KMLT Harbor Island 1SA GWM
Operator Name: LS

Location Name: MW-18 Well Diameter: 2 in Casing Type: PVC Total Depth: 13.6 ft Initial Depth to Water: 6.67 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 10 ft Estimated Total Volume Pumped: 3615 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.06 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 457166
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
4/3/2019 4:01 PM	00:00	6.65 pH	13.16 °C	174.34 µS/cm	3.37 mg/L	101 NTU	-4.8 mV	6.67 ft	150.00 ml/min
4/3/2019 4:04 PM	03:04	6.69 pH	12.49 °C	168.21 µS/cm	0.16 mg/L	25.6 NTU	-21.2 mV	6.67 ft	150.00 ml/min
4/3/2019 4:07 PM	06:04	6.76 pH	12.47 °C	163.21 µS/cm	0.14 mg/L	10.8 NTU	-37.7 mV	6.67 ft	150.00 ml/min
4/3/2019 4:10 PM	09:04	6.75 pH	12.41 °C	162.59 µS/cm	0.13 mg/L	9.17 NTU	-47.6 mV	6.67 ft	150.00 ml/min
4/3/2019 4:13 PM	12:06	6.74 pH	12.35 °C	161.31 µS/cm	0.11 mg/L	10.1 NTU	-53.2 mV	6.67 ft	150.00 ml/min
4/3/2019 4:16 PM	15:06	6.78 pH	12.37 °C	157.78 µS/cm	0.12 mg/L	6.39 NTU	-59.9 mV	6.67 ft	150.00 ml/min
4/3/2019 4:19 PM	18:06	6.79 pH	12.38 °C	156.96 µS/cm	0.10 mg/L	6.03 NTU	-64.2 mV	6.67 ft	150.00 ml/min
4/3/2019 4:22 PM	21:06	6.80 pH	12.39 °C	156.73 µS/cm	0.10 mg/L	5.40 NTU	-67.8 mV	6.67 ft	150.00 ml/min
4/3/2019 4:25 PM	24:06	6.79 pH	12.34 °C	155.17 µS/cm	0.10 mg/L	5.24 NTU	-69.8 mV	6.67 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-18	

Low-Flow Test Report:

Test Date / Time: 10/1/2019 3:15:17 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: MW-14 Well Diameter: 4 in Casing Type: PVC Total Depth: 15 ft Initial Depth to Water: 3.98 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 10 ft Estimated Total Volume Pumped: 5850 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.1 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Sunny, 60

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/1/2019 3:15 PM	00:00	6.45 pH	18.98 °C	239.88 µS/cm	1.28 mg/L	23.48 NTU	-52.7 mV	3.98 ft	150.00 ml/min
10/1/2019 3:18 PM	03:00	6.54 pH	18.98 °C	228.92 µS/cm	0.29 mg/L	3.22 NTU	-78.6 mV	3.98 ft	150.00 ml/min
10/1/2019 3:21 PM	06:00	6.56 pH	18.92 °C	227.98 µS/cm	0.20 mg/L	3.88 NTU	-90.8 mV	3.98 ft	150.00 ml/min
10/1/2019 3:24 PM	09:00	6.56 pH	18.93 °C	228.21 µS/cm	0.16 mg/L	4.25 NTU	-97.0 mV	3.98 ft	150.00 ml/min
10/1/2019 3:27 PM	12:00	6.56 pH	18.91 °C	228.01 µS/cm	0.14 mg/L	3.76 NTU	-102.6 mV	3.98 ft	150.00 ml/min
10/1/2019 3:30 PM	15:00	6.55 pH	18.82 °C	228.00 µS/cm	0.12 mg/L	9.81 NTU	-105.4 mV	3.98 ft	150.00 ml/min
10/1/2019 3:33 PM	18:00	6.54 pH	18.74 °C	228.02 µS/cm	0.11 mg/L	3.71 NTU	-107.6 mV	3.98 ft	150.00 ml/min
10/1/2019 3:36 PM	21:00	6.56 pH	18.84 °C	227.50 µS/cm	0.10 mg/L	4.26 NTU	-110.7 mV	3.98 ft	150.00 ml/min
10/1/2019 3:39 PM	24:00	6.54 pH	18.85 °C	227.41 µS/cm	0.09 mg/L	4.09 NTU	-111.8 mV	3.98 ft	150.00 ml/min
10/1/2019 3:42 PM	27:00	6.56 pH	18.92 °C	227.44 µS/cm	0.09 mg/L	3.86 NTU	-114.1 mV	3.98 ft	150.00 ml/min
10/1/2019 3:45 PM	30:00	6.56 pH	18.96 °C	227.38 µS/cm	0.08 mg/L	4.30 NTU	-114.9 mV	3.98 ft	150.00 ml/min
10/1/2019 3:48 PM	33:00	6.55 pH	18.92 °C	227.67 µS/cm	0.08 mg/L	5.10 NTU	-115.8 mV	3.98 ft	150.00 ml/min
10/1/2019 3:51 PM	36:00	6.55 pH	18.87 °C	228.08 µS/cm	0.08 mg/L	5.47 NTU	-116.3 mV	3.98 ft	150.00 ml/min

10/1/2019 3:54 PM	39:00	6.78 pH	19.91 °C	1.66 µS/cm	9.42 mg/L	1.05 NTU	-86.4 mV	3.98 ft	150.00 ml/min
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Samples

Sample ID:	Description:
MW-14	Sample Time: 1555 Final DTW: 4.08

Low-Flow Test Report:

Test Date / Time: 10/1/2019 3:29:51 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-5 Well Diameter: 2 in Casing Type: PVC Total Depth: 15 ft Initial Depth to Water: 3.53 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 10 ft Estimated Total Volume Pumped: 6987.5 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.13 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

DO did not stabilize

Weather Conditions:

Sunny, 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/1/2019 3:29 PM	00:00	6.71 pH	19.12 °C	153.44 µS/cm	1.69 mg/L	113.66 NTU	-10.7 mV	3.53 ft	150.00 ml/min
10/1/2019 3:34 PM	04:35	6.54 pH	17.69 °C	157.37 µS/cm	0.28 mg/L	10.03 NTU	-27.9 mV	3.53 ft	150.00 ml/min
10/1/2019 3:37 PM	07:35	6.54 pH	17.55 °C	155.59 µS/cm	0.38 mg/L	23.71 NTU	-25.6 mV	3.53 ft	150.00 ml/min
10/1/2019 3:40 PM	10:35	6.53 pH	17.43 °C	157.52 µS/cm	0.44 mg/L	7.06 NTU	-27.4 mV	3.53 ft	150.00 ml/min
10/1/2019 3:43 PM	13:35	6.54 pH	17.38 °C	159.77 µS/cm	0.39 mg/L	7.49 NTU	-32.5 mV	3.53 ft	150.00 ml/min
10/1/2019 3:46 PM	16:35	6.56 pH	17.36 °C	157.76 µS/cm	0.40 mg/L	10.94 NTU	-31.4 mV	3.53 ft	150.00 ml/min
10/1/2019 3:49 PM	19:35	6.56 pH	17.36 °C	158.95 µS/cm	0.49 mg/L	13.36 NTU	-30.7 mV	3.53 ft	150.00 ml/min
10/1/2019 3:52 PM	22:35	6.56 pH	17.40 °C	157.08 µS/cm	0.67 mg/L	11.58 NTU	-27.0 mV	3.53 ft	150.00 ml/min
10/1/2019 3:55 PM	25:35	6.56 pH	17.38 °C	157.77 µS/cm	0.78 mg/L	15.33 NTU	-29.8 mV	3.53 ft	150.00 ml/min
10/1/2019 3:58 PM	28:35	6.57 pH	17.39 °C	159.93 µS/cm	0.68 mg/L	13.13 NTU	-28.2 mV	3.53 ft	150.00 ml/min
10/1/2019 4:01 PM	31:35	6.57 pH	17.38 °C	160.26 µS/cm	0.82 mg/L	9.83 NTU	-28.0 mV	3.53 ft	150.00 ml/min
10/1/2019 4:04 PM	34:35	6.57 pH	17.38 °C	160.79 µS/cm	1.05 mg/L	9.94 NTU	-26.7 mV	3.53 ft	150.00 ml/min
10/1/2019 4:07 PM	37:35	6.58 pH	17.39 °C	159.96 µS/cm	1.22 mg/L	8.42 NTU	-25.2 mV	3.53 ft	150.00 ml/min

10/1/2019 4:10 PM	40:35	6.58 pH	17.38 °C	162.74 µS/cm	1.30 mg/L	6.69 NTU	-26.7 mV	3.53 ft	150.00 ml/min
10/1/2019 4:13 PM	43:35	6.58 pH	17.39 °C	163.39 µS/cm	1.40 mg/L	4.79 NTU	-27.5 mV	3.53 ft	150.00 ml/min
10/1/2019 4:16 PM	46:35	6.59 pH	17.41 °C	162.56 µS/cm	1.46 mg/L	15.10 NTU	-28.9 mV	3.53 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-5	Sample Time: 1615 Final DTW: 3.66

Low-Flow Test Report:

Test Date / Time: 10/2/2019 10:12:54 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: TMW-2 Well Diameter: 2 in Casing Type: PVC Total Depth: 15 m Initial Depth to Water: 4.09 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 10 ft Estimated Total Volume Pumped: 4050 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.02 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Partly cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 10:12 AM	00:00	6.91 pH	15.89 °C	2,240.2 µS/cm	1.50 mg/L	3.69 NTU	-71.3 mV	4.09 ft	150.00 ml/min
10/2/2019 10:15 AM	03:00	7.23 pH	16.80 °C	2,273.1 µS/cm	0.27 mg/L	0.00 NTU	-98.2 mV	4.09 ft	150.00 ml/min
10/2/2019 10:18 AM	06:00	7.33 pH	17.32 °C	2,252.8 µS/cm	0.19 mg/L	0.10 NTU	-111.2 mV	4.09 ft	150.00 ml/min
10/2/2019 10:21 AM	09:00	7.37 pH	17.50 °C	2,247.8 µS/cm	0.17 mg/L	1.99 NTU	-117.6 mV	4.09 ft	150.00 ml/min
10/2/2019 10:24 AM	12:00	7.39 pH	17.85 °C	2,229.7 µS/cm	0.16 mg/L	3.26 NTU	-121.7 mV	4.09 ft	150.00 ml/min
10/2/2019 10:27 AM	15:00	7.41 pH	18.14 °C	2,215.6 µS/cm	0.19 mg/L	0.90 NTU	-123.2 mV	4.09 ft	150.00 ml/min
10/2/2019 10:30 AM	18:00	7.41 pH	18.28 °C	2,205.6 µS/cm	0.22 mg/L	0.67 NTU	-124.7 mV	4.09 ft	150.00 ml/min
10/2/2019 10:33 AM	21:00	7.40 pH	18.42 °C	2,194.9 µS/cm	0.24 mg/L	0.69 NTU	-124.2 mV	4.09 ft	150.00 ml/min
10/2/2019 10:36 AM	24:00	7.41 pH	18.32 °C	2,200.6 µS/cm	0.23 mg/L	0.52 NTU	-125.6 mV	4.09 ft	150.00 ml/min
10/2/2019 10:39 AM	27:00	7.41 pH	18.36 °C	2,200.7 µS/cm	0.22 mg/L	0.00 NTU	-126.8 mV	4.09 ft	150.00 ml/min

Samples

Sample ID:	Description:
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TMW-2	Sample time: 1045 Final DTW: 4.11 ft btoc
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Low-Flow Test Report:

Test Date / Time: 10/2/2019 10:18:36 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-20 Well Diameter: 2 in Casing Type: PVC Total Depth: 15 ft Initial Depth to Water: 3.57 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 9 ft Estimated Total Volume Pumped: 2700 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.37 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Sunny 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 10:18 AM	00:00	6.64 pH	16.05 °C	286.46 µS/cm	2.91 mg/L	168.86 NTU	-89.4 mV	3.57 ft	150.00 ml/min
10/2/2019 10:21 AM	03:00	6.74 pH	17.34 °C	285.50 µS/cm	0.75 mg/L	16.20 NTU	-115.9 mV	3.57 ft	150.00 ml/min
10/2/2019 10:24 AM	06:00	6.76 pH	17.77 °C	278.82 µS/cm	0.39 mg/L	12.73 NTU	-119.2 mV	3.57 ft	150.00 ml/min
10/2/2019 10:27 AM	09:00	6.75 pH	18.09 °C	276.45 µS/cm	0.23 mg/L	11.48 NTU	-121.1 mV	3.57 ft	150.00 ml/min
10/2/2019 10:30 AM	12:00	6.76 pH	18.33 °C	275.86 µS/cm	0.21 mg/L	13.54 NTU	-122.9 mV	3.57 ft	150.00 ml/min
10/2/2019 10:33 AM	15:00	6.77 pH	18.35 °C	273.43 µS/cm	0.21 mg/L	7.96 NTU	-124.0 mV	3.57 ft	150.00 ml/min
10/2/2019 10:36 AM	18:00	6.74 pH	18.53 °C	270.30 µS/cm	0.20 mg/L	48.56 NTU	-123.8 mV	3.57 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-20	Sample Time: 1040 Final DTW: 3.94

Low-Flow Test Report:

Test Date / Time: 10/2/2019 11:10:23 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: TMW-1 Well Diameter: 2 in Casing Type: PVC Total Depth: 15 ft Initial Depth to Water: 4.02 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 10 ft Estimated Total Volume Pumped: 1800 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Partly cloudy, 55

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 11:10 AM	00:00	7.19 pH	20.75 °C	1,140.1 µS/cm	6.02 mg/L	210.31 NTU	18.7 mV	4.02 ft	150.00 ml/min
10/2/2019 11:13 AM	03:00	6.82 pH	18.47 °C	1,224.1 µS/cm	4.12 mg/L	251.41 NTU	28.2 mV	4.02 ft	150.00 ml/min
10/2/2019 11:16 AM	06:00	6.75 pH	18.92 °C	1,232.6 µS/cm	4.06 mg/L	255.89 NTU	28.9 mV	4.02 ft	150.00 ml/min
10/2/2019 11:19 AM	09:00	6.73 pH	19.05 °C	1,229.2 µS/cm	3.98 mg/L	255.03 NTU	24.6 mV	4.02 ft	150.00 ml/min
10/2/2019 11:22 AM	12:00	6.72 pH	19.03 °C	1,229.8 µS/cm	3.94 mg/L	251.24 NTU	21.1 mV	4.02 ft	150.00 ml/min

Samples

Sample ID:	Description:
TMW-1	Sample time 1125 Final DTW: 4.01 ft btoc

Low-Flow Test Report:

Test Date / Time: 10/2/2019 11:15:15 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-1 Well Diameter: 4 in Casing Type: PVC Total Depth: 13 ft Initial Depth to Water: 6.2 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 10 ft Estimated Total Volume Pumped: 5400 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Sunny 65°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 11:15 AM	00:00	6.41 pH	17.90 °C	387.14 µS/cm	1.77 mg/L	631.21 NTU	-16.6 mV	6.20 ft	150.00 ml/min
10/2/2019 11:18 AM	03:00	6.40 pH	17.15 °C	391.32 µS/cm	0.98 mg/L	157.11 NTU	-37.0 mV	6.20 ft	150.00 ml/min
10/2/2019 11:21 AM	06:00	6.41 pH	16.94 °C	390.86 µS/cm	0.97 mg/L	215.40 NTU	-42.4 mV	6.20 ft	150.00 ml/min
10/2/2019 11:24 AM	09:00	6.41 pH	16.91 °C	389.24 µS/cm	0.76 mg/L	138.25 NTU	-45.7 mV	6.20 ft	150.00 ml/min
10/2/2019 11:27 AM	12:00	6.42 pH	16.80 °C	389.46 µS/cm	0.45 mg/L	125.41 NTU	-47.9 mV	6.20 ft	150.00 ml/min
10/2/2019 11:30 AM	15:00	6.45 pH	16.80 °C	384.75 µS/cm	0.49 mg/L	59.62 NTU	-49.8 mV	6.20 ft	150.00 ml/min
10/2/2019 11:33 AM	18:00	6.43 pH	16.76 °C	382.12 µS/cm	0.28 mg/L	108.98 NTU	-50.3 mV	6.20 ft	150.00 ml/min
10/2/2019 11:36 AM	21:00	6.44 pH	16.76 °C	378.70 µS/cm	0.22 mg/L	76.82 NTU	-52.9 mV	6.20 ft	150.00 ml/min
10/2/2019 11:39 AM	24:00	6.43 pH	16.77 °C	376.98 µS/cm	0.20 mg/L	85.73 NTU	-54.5 mV	6.20 ft	150.00 ml/min
10/2/2019 11:42 AM	27:00	6.44 pH	16.77 °C	373.61 µS/cm	0.17 mg/L	63.56 NTU	-56.7 mV	6.20 ft	150.00 ml/min
10/2/2019 11:45 AM	30:00	6.45 pH	16.77 °C	371.14 µS/cm	0.16 mg/L	62.48 NTU	-58.6 mV	6.20 ft	150.00 ml/min
10/2/2019 11:48 AM	33:00	6.46 pH	16.75 °C	371.70 µS/cm	0.14 mg/L	57.01 NTU	-59.8 mV	6.20 ft	150.00 ml/min
10/2/2019 11:51 AM	36:00	6.46 pH	16.70 °C	367.89 µS/cm	0.16 mg/L	50.33 NTU	-60.9 mV	6.20 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-1	Sample Time: 1210 Final DTW: 6.20

Low-Flow Test Report:

Test Date / Time: 10/2/2019 11:58:44 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: MW-19 Well Diameter: 2 in Casing Type: PVC Total Depth: 12.9 m Initial Depth to Water: 3.6 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 8 ft Estimated Total Volume Pumped: 1800 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Partly cloudy, 60

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 11:58 AM	00:00	6.46 pH	20.60 °C	496.24 µS/cm	2.59 mg/L	0.65 NTU	-63.5 mV	3.60 ft	150.00 ml/min
10/2/2019 12:01 PM	03:00	6.40 pH	19.72 °C	493.93 µS/cm	0.35 mg/L	0.30 NTU	-81.9 mV	3.60 ft	150.00 ml/min
10/2/2019 12:04 PM	06:00	6.39 pH	19.44 °C	496.03 µS/cm	0.24 mg/L	0.42 NTU	-89.2 mV	3.60 ft	150.00 ml/min
10/2/2019 12:07 PM	09:00	6.39 pH	19.35 °C	496.29 µS/cm	0.23 mg/L	0.50 NTU	-92.8 mV	3.60 ft	150.00 ml/min
10/2/2019 12:10 PM	12:00	6.40 pH	19.31 °C	494.60 µS/cm	0.24 mg/L	0.24 NTU	-93.9 mV	3.60 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-19	Sample time 1215 Final DTW 3.60 ft btoc

Low-Flow Test Report:

Test Date / Time: 10/2/2019 12:14:24 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-3 Well Diameter: 4 in Casing Type: PVC Total Depth: 13 ft Initial Depth to Water: 4.01 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 9 ft Estimated Total Volume Pumped: 2700 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Sunny, 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 12:14 PM	00:00	6.87 pH	17.12 °C	210.78 µS/cm	4.03 mg/L	26.38 NTU	12.5 mV	4.01 ft	150.00 ml/min
10/2/2019 12:17 PM	03:00	6.98 pH	17.10 °C	212.00 µS/cm	3.30 mg/L	11.33 NTU	16.2 mV	4.01 ft	150.00 ml/min
10/2/2019 12:20 PM	06:00	6.96 pH	16.93 °C	210.88 µS/cm	3.25 mg/L	0.00 NTU	22.5 mV	4.01 ft	150.00 ml/min
10/2/2019 12:23 PM	09:00	6.99 pH	16.94 °C	210.94 µS/cm	3.66 mg/L	0.00 NTU	28.0 mV	4.01 ft	150.00 ml/min
10/2/2019 12:26 PM	12:00	7.00 pH	16.91 °C	210.75 µS/cm	4.10 mg/L	0.87 NTU	31.8 mV	4.01 ft	150.00 ml/min
10/2/2019 12:29 PM	15:00	7.01 pH	16.92 °C	210.63 µS/cm	4.36 mg/L	0.05 NTU	35.5 mV	4.01 ft	150.00 ml/min
10/2/2019 12:32 PM	18:00	7.04 pH	16.97 °C	210.25 µS/cm	4.44 mg/L	0.00 NTU	36.4 mV	4.01 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-3	Sample Time: 1250 Final DTW: 4.01

Low-Flow Test Report:

Test Date / Time: 10/2/2019 1:40:41 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-21 Well Diameter: 2 in Casing Type: PVC Total Depth: 12.8 ft Initial Depth to Water: 3.25 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 8 ft Estimated Total Volume Pumped: 4050 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 1 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Duplicate taken

Weather Conditions:

Cloudy, 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 1:40 PM	00:00	6.39 pH	20.03 °C	88.38 µS/cm	1.94 mg/L	39.60 NTU	1.6 mV	3.25 ft	150.00 ml/min
10/2/2019 1:43 PM	03:00	5.96 pH	18.64 °C	87.37 µS/cm	0.19 mg/L	27.70 NTU	6.7 mV	3.25 ft	150.00 ml/min
10/2/2019 1:46 PM	06:00	5.96 pH	18.58 °C	84.01 µS/cm	0.16 mg/L	30.39 NTU	5.4 mV	3.25 ft	150.00 ml/min
10/2/2019 1:49 PM	09:00	5.97 pH	18.57 °C	80.54 µS/cm	0.15 mg/L	19.08 NTU	11.9 mV	3.25 ft	150.00 ml/min
10/2/2019 1:52 PM	12:00	5.94 pH	18.50 °C	77.90 µS/cm	0.17 mg/L	25.14 NTU	20.1 mV	3.25 ft	150.00 ml/min
10/2/2019 1:55 PM	15:00	5.97 pH	18.62 °C	78.79 µS/cm	0.21 mg/L	25.27 NTU	23.4 mV	3.25 ft	150.00 ml/min
10/2/2019 1:58 PM	18:00	5.91 pH	18.57 °C	80.58 µS/cm	0.18 mg/L	22.39 NTU	22.7 mV	3.25 ft	150.00 ml/min
10/2/2019 2:01 PM	21:00	5.94 pH	18.58 °C	83.01 µS/cm	0.16 mg/L	16.89 NTU	14.8 mV	3.25 ft	150.00 ml/min
10/2/2019 2:04 PM	24:00	5.97 pH	18.47 °C	86.38 µS/cm	0.15 mg/L	17.90 NTU	7.0 mV	3.25 ft	150.00 ml/min
10/2/2019 2:07 PM	27:00	6.00 pH	18.58 °C	87.41 µS/cm	0.14 mg/L	15.10 NTU	3.1 mV	3.25 ft	150.00 ml/min

Samples

Sample ID:	Description:
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MW-21	Sample Time: 1420 Final DTW: 4.25 DUP-1
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Created using VuSitu from In-Situ, Inc.

Low-Flow Test Report:

Test Date / Time: 10/2/2019 1:48:22 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: A-8 Well Diameter: 4 in Casing Type: PVC Initial Depth to Water: 8.02 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 3600 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.01 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Cloudy, 55

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 1:48 PM	00:00	6.59 pH	20.80 °C	626.53 µS/cm	2.53 mg/L	0.79 NTU	-94.0 mV	8.02 ft	150.00 ml/min
10/2/2019 1:51 PM	03:00	6.83 pH	19.80 °C	638.93 µS/cm	0.34 mg/L	0.00 NTU	-122.5 mV	8.02 ft	150.00 ml/min
10/2/2019 1:54 PM	06:00	6.84 pH	19.70 °C	638.77 µS/cm	0.25 mg/L	0.39 NTU	-100.0 mV	8.02 ft	150.00 ml/min
10/2/2019 1:57 PM	09:00	6.83 pH	19.61 °C	640.08 µS/cm	0.19 mg/L	0.20 NTU	-82.9 mV	8.02 ft	150.00 ml/min
10/2/2019 2:00 PM	12:00	6.83 pH	19.56 °C	640.34 µS/cm	0.16 mg/L	1.91 NTU	-77.5 mV	8.02 ft	150.00 ml/min
10/2/2019 2:03 PM	15:00	6.83 pH	19.46 °C	640.56 µS/cm	0.14 mg/L	4.27 NTU	-78.1 mV	8.02 ft	150.00 ml/min
10/2/2019 2:06 PM	18:00	6.84 pH	19.42 °C	639.56 µS/cm	0.13 mg/L	10.24 NTU	-78.1 mV	8.02 ft	150.00 ml/min
10/2/2019 2:09 PM	21:00	6.84 pH	19.51 °C	640.12 µS/cm	0.13 mg/L	16.12 NTU	-78.2 mV	8.02 ft	150.00 ml/min
10/2/2019 2:12 PM	24:00	6.84 pH	19.64 °C	637.59 µS/cm	0.13 mg/L	21.31 NTU	-78.0 mV	8.02 ft	150.00 ml/min

Samples

Sample ID:	Description:
A-8	Sample time 1415 Final DTW 8.02 ft btoc

Low-Flow Test Report:

Test Date / Time: 10/2/2019 2:31:03 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-8 Well Diameter: 4 in Casing Type: PVC Total Depth: 13 ft Initial Depth to Water: 4.06 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 9 ft Estimated Total Volume Pumped: 2250 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.87 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Overcast

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 2:31 PM	00:00	6.26 pH	20.36 °C	179.85 µS/cm	1.00 mg/L	98.76 NTU	-37.6 mV	4.06 ft	150.00 ml/min
10/2/2019 2:34 PM	03:00	6.22 pH	19.86 °C	182.17 µS/cm	0.52 mg/L	128.44 NTU	-53.8 mV	4.06 ft	150.00 ml/min
10/2/2019 2:37 PM	06:00	6.25 pH	19.62 °C	180.60 µS/cm	0.36 mg/L	158.78 NTU	-63.9 mV	4.06 ft	150.00 ml/min
10/2/2019 2:40 PM	09:00	6.26 pH	19.60 °C	180.74 µS/cm	0.32 mg/L	169.26 NTU	-68.0 mV	4.06 ft	150.00 ml/min
10/2/2019 2:43 PM	12:00	6.26 pH	19.50 °C	180.69 µS/cm	0.30 mg/L	255.44 NTU	-71.6 mV	4.06 ft	150.00 ml/min
10/2/2019 2:46 PM	15:00	6.29 pH	19.48 °C	181.67 µS/cm	0.31 mg/L	282.43 NTU	-75.1 mV	4.06 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-8	Sample Time: 1510 Final DTW: 4.93

Low-Flow Test Report:

Test Date / Time: 10/2/2019 3:13:22 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

<p>Location Name: A-10 Well Diameter: 4 in Casing Type: PVC Initial Depth to Water: 7.09 ft</p>	<p>Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 4950 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft</p>	<p>Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472</p>
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Test Notes:

Weather Conditions:

Cloudy, 60

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 3:13 PM	00:00	6.61 pH	23.49 °C	6,330.8 µS/cm	1.30 mg/L	64.23 NTU	-33.8 mV	7.09 ft	150.00 ml/min
10/2/2019 3:16 PM	03:00	6.67 pH	21.52 °C	6,795.1 µS/cm	0.26 mg/L	65.46 NTU	-59.0 mV	7.09 ft	150.00 ml/min
10/2/2019 3:19 PM	06:00	6.68 pH	20.84 °C	7,230.2 µS/cm	0.14 mg/L	78.63 NTU	-67.6 mV	7.09 ft	150.00 ml/min
10/2/2019 3:22 PM	09:00	6.69 pH	20.44 °C	7,447.4 µS/cm	0.11 mg/L	62.96 NTU	-72.0 mV	7.09 ft	150.00 ml/min
10/2/2019 3:25 PM	12:00	6.68 pH	20.30 °C	7,598.5 µS/cm	0.10 mg/L	56.85 NTU	-73.4 mV	7.09 ft	150.00 ml/min
10/2/2019 3:28 PM	15:00	6.70 pH	20.22 °C	126.39 µS/cm	0.34 mg/L	25.32 NTU	-73.4 mV	7.09 ft	150.00 ml/min
10/2/2019 3:31 PM	18:00	6.71 pH	20.15 °C	9,887.3 µS/cm	0.64 mg/L	1.86 NTU	-67.1 mV	7.09 ft	150.00 ml/min
10/2/2019 3:34 PM	21:00	6.68 pH	19.97 °C	8,669.8 µS/cm	0.19 mg/L	1.96 NTU	-71.6 mV	7.09 ft	150.00 ml/min
10/2/2019 3:37 PM	24:00	6.67 pH	19.93 °C	8,365.6 µS/cm	0.15 mg/L	0.97 NTU	-74.4 mV	7.09 ft	150.00 ml/min
10/2/2019 3:40 PM	27:00	6.67 pH	19.90 °C	8,212.5 µS/cm	0.13 mg/L	5.49 NTU	-76.1 mV	7.09 ft	150.00 ml/min
10/2/2019 3:43 PM	30:00	6.66 pH	19.89 °C	8,140.2 µS/cm	0.12 mg/L	0.92 NTU	-77.3 mV	7.09 ft	150.00 ml/min
10/2/2019 3:46 PM	33:00	6.66 pH	19.91 °C	8,032.8 µS/cm	0.13 mg/L	0.71 NTU	-77.7 mV	7.09 ft	150.00 ml/min

Samples

Sample ID:	Description:
A-10	Sample time 1555 Final DTW 7.09 ft btoc

Low-Flow Test Report:

Test Date / Time: 10/2/2019 3:22:10 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-9 Well Diameter: 4 in Casing Type: PVC Total Depth: 11.2 ft Initial Depth to Water: 3.28 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 8 ft Estimated Total Volume Pumped: 1800 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.22 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Overcast

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 3:22 PM	00:00	6.37 pH	18.79 °C	163.43 µS/cm	3.48 mg/L	16.28 NTU	45.0 mV	3.28 ft	150.00 ml/min
10/2/2019 3:25 PM	03:00	6.34 pH	17.60 °C	168.43 µS/cm	0.18 mg/L	1.74 NTU	67.8 mV	3.28 ft	150.00 ml/min
10/2/2019 3:28 PM	06:00	6.34 pH	17.43 °C	168.86 µS/cm	0.15 mg/L	1.34 NTU	69.3 mV	3.28 ft	150.00 ml/min
10/2/2019 3:31 PM	09:00	6.35 pH	17.39 °C	168.52 µS/cm	0.17 mg/L	1.48 NTU	61.2 mV	3.28 ft	150.00 ml/min
10/2/2019 3:34 PM	12:00	6.35 pH	17.35 °C	168.29 µS/cm	0.15 mg/L	2.10 NTU	60.4 mV	3.28 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-9	Sample Time: 1550 Final DTW: 3.50

Low-Flow Test Report:

Test Date / Time: 10/2/2019 3:50:39 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: TMW-6 Well Diameter: 2 in Casing Type: PVC Total Depth: 15 ft Initial Depth to Water: 3.07 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 9 ft Estimated Total Volume Pumped: 2700 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.08 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Overcast

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 3:50 PM	00:00	6.91 pH	17.62 °C	1,246.8 µS/cm	3.39 mg/L	6.03 NTU	-34.4 mV	3.07 ft	150.00 ml/min
10/2/2019 3:53 PM	03:00	7.01 pH	16.97 °C	1,283.0 µS/cm	0.20 mg/L	5.02 NTU	-78.3 mV	3.07 ft	150.00 ml/min
10/2/2019 3:56 PM	06:00	7.01 pH	16.95 °C	1,284.5 µS/cm	0.15 mg/L	21.92 NTU	-89.8 mV	3.07 ft	150.00 ml/min
10/2/2019 3:59 PM	09:00	7.01 pH	16.94 °C	1,262.5 µS/cm	0.12 mg/L	17.17 NTU	-97.3 mV	3.07 ft	150.00 ml/min
10/2/2019 4:02 PM	12:00	7.02 pH	16.94 °C	1,227.0 µS/cm	0.10 mg/L	12.84 NTU	-104.0 mV	3.07 ft	150.00 ml/min
10/2/2019 4:05 PM	15:00	7.02 pH	16.95 °C	1,212.6 µS/cm	0.11 mg/L	8.25 NTU	-109.8 mV	3.07 ft	150.00 ml/min
10/2/2019 4:08 PM	18:00	7.02 pH	16.97 °C	1,211.0 µS/cm	0.13 mg/L	8.98 NTU	-113.3 mV	3.07 ft	150.00 ml/min

Samples

Sample ID:	Description:
TMW-6	Sample Time: 1620 Final DTW: 3.15

Low-Flow Test Report:

Test Date / Time: 10/2/2019 4:13:13 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: A-14R Well Diameter: 2 in Casing Type: PVC Initial Depth to Water: 7.82 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 4950 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Cloudy, 60

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 4:13 PM	00:00	6.90 pH	19.99 °C	4,853.1 µS/cm	3.48 mg/L	0.01 NTU	-67.3 mV	7.82 ft	150.00 ml/min
10/2/2019 4:16 PM	03:00	6.86 pH	19.87 °C	4,927.4 µS/cm	0.36 mg/L	0.00 NTU	-94.5 mV	7.82 ft	150.00 ml/min
10/2/2019 4:19 PM	06:00	6.85 pH	19.88 °C	4,872.1 µS/cm	0.26 mg/L	0.17 NTU	-97.6 mV	7.82 ft	150.00 ml/min
10/2/2019 4:22 PM	09:00	6.83 pH	19.88 °C	4,774.2 µS/cm	0.21 mg/L	1.51 NTU	-98.9 mV	7.82 ft	150.00 ml/min
10/2/2019 4:25 PM	12:00	6.82 pH	19.87 °C	4,733.7 µS/cm	0.18 mg/L	1.12 NTU	-101.1 mV	7.82 ft	150.00 ml/min
10/2/2019 4:28 PM	15:00	6.80 pH	19.87 °C	4,683.0 µS/cm	0.16 mg/L	2.39 NTU	-102.9 mV	7.82 ft	150.00 ml/min
10/2/2019 4:31 PM	18:00	6.79 pH	19.87 °C	4,658.5 µS/cm	0.16 mg/L	9.12 NTU	-103.8 mV	7.82 ft	150.00 ml/min
10/2/2019 4:34 PM	21:00	6.78 pH	19.85 °C	4,673.2 µS/cm	0.15 mg/L	24.13 NTU	-104.3 mV	7.82 ft	150.00 ml/min
10/2/2019 4:37 PM	24:00	6.78 pH	19.83 °C	4,722.8 µS/cm	0.14 mg/L	18.23 NTU	-104.5 mV	7.82 ft	150.00 ml/min
10/2/2019 4:40 PM	27:00	6.77 pH	19.84 °C	4,511.8 µS/cm	0.15 mg/L	23.47 NTU	-105.0 mV	7.82 ft	150.00 ml/min
10/2/2019 4:43 PM	30:00	6.77 pH	19.84 °C	4,596.4 µS/cm	0.16 mg/L	29.97 NTU	-105.8 mV	7.82 ft	150.00 ml/min
10/2/2019 4:46 PM	33:00	6.76 pH	19.84 °C	4,612.6 µS/cm	0.15 mg/L	38.67 NTU	-106.4 mV	7.82 ft	150.00 ml/min

Samples

Sample ID:	Description:
A-14R	Sample time 1655 Final DTW 7.82

Low-Flow Test Report:

Test Date / Time: 10/2/2019 4:24:56 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: TMW-5 Well Diameter: 2 in Casing Type: PVC Total Depth: 15 ft Initial Depth to Water: 3.79 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 9 ft Estimated Total Volume Pumped: 4950 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.12 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Overcast

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/2/2019 4:24 PM	00:00	7.48 pH	17.98 °C	1,670.4 µS/cm	2.48 mg/L	1.43 NTU	-149.5 mV	3.79 ft	150.00 ml/min
10/2/2019 4:27 PM	03:00	7.50 pH	18.07 °C	1,669.9 µS/cm	0.19 mg/L	1.16 NTU	-195.9 mV	3.79 ft	150.00 ml/min
10/2/2019 4:30 PM	06:00	7.52 pH	18.11 °C	1,658.1 µS/cm	0.14 mg/L	1.46 NTU	-213.9 mV	3.79 ft	150.00 ml/min
10/2/2019 4:33 PM	09:00	7.52 pH	18.11 °C	1,590.2 µS/cm	0.12 mg/L	0.86 NTU	-229.4 mV	3.79 ft	150.00 ml/min
10/2/2019 4:36 PM	12:00	7.48 pH	18.09 °C	1,514.6 µS/cm	0.37 mg/L	0.72 NTU	-245.9 mV	3.79 ft	150.00 ml/min
10/2/2019 4:39 PM	15:00	7.46 pH	18.05 °C	1,475.6 µS/cm	0.32 mg/L	0.77 NTU	-259.6 mV	3.79 ft	150.00 ml/min
10/2/2019 4:42 PM	18:00	7.44 pH	18.06 °C	1,445.0 µS/cm	0.32 mg/L	1.45 NTU	-269.0 mV	3.79 ft	150.00 ml/min
10/2/2019 4:45 PM	21:00	7.42 pH	18.04 °C	1,408.2 µS/cm	0.35 mg/L	1.92 NTU	-274.7 mV	3.79 ft	150.00 ml/min
10/2/2019 4:48 PM	24:00	7.40 pH	18.01 °C	1,379.5 µS/cm	0.35 mg/L	2.30 NTU	-280.7 mV	3.79 ft	150.00 ml/min
10/2/2019 4:51 PM	27:00	7.39 pH	18.02 °C	1,385.3 µS/cm	0.30 mg/L	2.07 NTU	-287.5 mV	3.79 ft	150.00 ml/min
10/2/2019 4:54 PM	30:00	7.39 pH	18.01 °C	1,388.8 µS/cm	0.29 mg/L	2.18 NTU	-292.8 mV	3.79 ft	150.00 ml/min
10/2/2019 4:57 PM	33:00	7.38 pH	17.99 °C	1,362.2 µS/cm	0.29 mg/L	2.46 NTU	-297.4 mV	3.79 ft	150.00 ml/min

Samples

Sample ID:	Description:
TMW-5	Sample Time: 1710 Final DTW: 3.91

Low-Flow Test Report:

Test Date / Time: 10/3/2019 8:54:40 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: A-23R Well Diameter: 2 in Casing Type: PVC Total Depth: 16.2 ft Initial Depth to Water: 9.23 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 12 ft Estimated Total Volume Pumped: 3600 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: -0.02 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Partly cloudy, 55

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 8:54 AM	00:00	6.80 pH	15.52 °C	1,103.8 µS/cm	2.00 mg/L	3.74 NTU	-64.4 mV	9.23 ft	150.00 ml/min
10/3/2019 8:57 AM	03:00	6.74 pH	16.04 °C	1,029.1 µS/cm	0.33 mg/L	0.74 NTU	-78.0 mV	9.23 ft	150.00 ml/min
10/3/2019 9:00 AM	06:00	6.73 pH	16.18 °C	1,025.0 µS/cm	0.23 mg/L	3.07 NTU	-81.2 mV	9.23 ft	150.00 ml/min
10/3/2019 9:03 AM	09:00	6.73 pH	16.30 °C	1,025.1 µS/cm	0.19 mg/L	0.00 NTU	-82.4 mV	9.23 ft	150.00 ml/min
10/3/2019 9:06 AM	12:00	6.73 pH	16.41 °C	1,024.0 µS/cm	0.16 mg/L	1.23 NTU	-83.1 mV	9.23 ft	150.00 ml/min
10/3/2019 9:09 AM	15:00	6.73 pH	16.52 °C	1,023.3 µS/cm	0.15 mg/L	81.66 NTU	-83.2 mV	9.23 ft	150.00 ml/min
10/3/2019 9:12 AM	18:00	6.73 pH	16.56 °C	1,021.0 µS/cm	0.12 mg/L	82.33 NTU	-82.8 mV	9.23 ft	150.00 ml/min
10/3/2019 9:15 AM	21:00	6.72 pH	16.58 °C	1,019.3 µS/cm	0.11 mg/L	85.46 NTU	-82.6 mV	9.23 ft	150.00 ml/min
10/3/2019 9:18 AM	24:00	6.73 pH	16.62 °C	1,017.0 µS/cm	0.11 mg/L	87.02 NTU	-82.7 mV	9.23 ft	150.00 ml/min

Samples

Sample ID:	Description:
A-23R	Sample Time: 0925 Final DTW: 9.21

Low-Flow Test Report:

Test Date / Time: 10/3/2019 10:00:52 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: MW-25 Well Diameter: 4 in Casing Type: PVC Total Depth: 15 ft Initial Depth to Water: 7.54 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 2250 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.01 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Partly cloudy, 55

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 10:00 AM	00:00	6.75 pH	17.49 °C	10,971 µS/cm	2.21 mg/L	17.51 NTU	-68.9 mV	7.54 ft	150.00 ml/min
10/3/2019 10:03 AM	03:00	6.76 pH	18.44 °C	10,010 µS/cm	0.27 mg/L	0.00 NTU	-88.7 mV	7.54 ft	150.00 ml/min
10/3/2019 10:06 AM	06:00	6.75 pH	18.74 °C	9,859.6 µS/cm	0.20 mg/L	1.59 NTU	-94.7 mV	7.54 ft	150.00 ml/min
10/3/2019 10:09 AM	09:00	6.75 pH	18.88 °C	9,523.8 µS/cm	0.16 mg/L	0.00 NTU	-97.3 mV	7.54 ft	150.00 ml/min
10/3/2019 10:12 AM	12:00	6.74 pH	18.88 °C	9,574.1 µS/cm	0.17 mg/L	0.00 NTU	-98.4 mV	7.54 ft	150.00 ml/min
10/3/2019 10:15 AM	15:00	6.72 pH	18.94 °C	9,539.7 µS/cm	0.16 mg/L	0.59 NTU	-99.4 mV	7.54 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-25	Sample time 1025 Final DTW 7.53

Low-Flow Test Report:

Test Date / Time: 10/3/2019 10:24:32 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: 11 Well Diameter: 4 in Casing Type: PVC Initial Depth to Water: 5.1 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 9 ft Estimated Total Volume Pumped: 6750 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.37 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

SPC did not stabilize

Weather Conditions:

Windy 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 10:24 AM	00:00	7.59 pH	17.33 °C	438.70 µS/cm	9.20 mg/L	24.83 NTU	16.0 mV	5.10 ft	150.00 ml/min
10/3/2019 10:27 AM	03:00	7.28 pH	19.69 °C	407.84 µS/cm	6.38 mg/L	0.86 NTU	28.3 mV	5.10 ft	150.00 ml/min
10/3/2019 10:30 AM	06:00	7.25 pH	20.09 °C	398.64 µS/cm	6.28 mg/L	0.42 NTU	35.0 mV	5.10 ft	150.00 ml/min
10/3/2019 10:33 AM	09:00	7.22 pH	20.44 °C	397.76 µS/cm	6.21 mg/L	0.13 NTU	38.5 mV	5.10 ft	150.00 ml/min
10/3/2019 10:36 AM	12:00	7.20 pH	20.47 °C	438.49 µS/cm	5.57 mg/L	1.59 NTU	40.6 mV	5.10 ft	150.00 ml/min
10/3/2019 10:39 AM	15:00	7.15 pH	20.60 °C	457.74 µS/cm	5.33 mg/L	1.26 NTU	26.8 mV	5.10 ft	150.00 ml/min
10/3/2019 10:42 AM	18:00	7.10 pH	20.87 °C	484.08 µS/cm	4.74 mg/L	3.27 NTU	15.1 mV	5.10 ft	150.00 ml/min
10/3/2019 10:45 AM	21:00	7.08 pH	20.88 °C	449.49 µS/cm	4.65 mg/L	1.12 NTU	3.6 mV	5.10 ft	150.00 ml/min
10/3/2019 10:48 AM	24:00	7.08 pH	20.98 °C	495.63 µS/cm	4.37 mg/L	2.04 NTU	-6.2 mV	5.10 ft	150.00 ml/min
10/3/2019 10:51 AM	27:00	7.09 pH	21.16 °C	509.69 µS/cm	4.14 mg/L	2.56 NTU	-24.4 mV	5.10 ft	150.00 ml/min
10/3/2019 10:54 AM	30:00	7.08 pH	21.24 °C	516.95 µS/cm	3.75 mg/L	2.57 NTU	-38.8 mV	5.10 ft	150.00 ml/min
10/3/2019 10:57 AM	33:00	7.08 pH	21.28 °C	481.83 µS/cm	3.91 mg/L	15.40 NTU	-45.3 mV	5.10 ft	150.00 ml/min
10/3/2019 11:00 AM	36:00	7.08 pH	21.33 °C	490.74 µS/cm	3.53 mg/L	18.65 NTU	-47.9 mV	5.10 ft	150.00 ml/min

10/3/2019 11:03 AM	39:00	7.08 pH	21.19 °C	494.74 µS/cm	3.41 mg/L	18.69 NTU	-50.3 mV	5.10 ft	150.00 ml/min
10/3/2019 11:06 AM	42:00	7.08 pH	21.40 °C	441.81 µS/cm	3.58 mg/L	25.49 NTU	-50.2 mV	5.10 ft	150.00 ml/min
10/3/2019 11:09 AM	45:00	7.07 pH	21.43 °C	488.23 µS/cm	3.30 mg/L	27.23 NTU	-55.6 mV	5.10 ft	150.00 ml/min

Samples

Sample ID:	Description:
11	Sample Time: 11 Final DTW: 5.47

Low-Flow Test Report:

Test Date / Time: 10/3/2019 11:01:45 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: A-5 Well Diameter: 4 in Casing Type: PVC Total Depth: 18.46 ft Initial Depth to Water: 7.96 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 13 ft Estimated Total Volume Pumped: 2700 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.06 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Partly cloudy, 60

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 11:01 AM	00:00	6.85 pH	18.43 °C	907.62 µS/cm	2.51 mg/L	0.00 NTU	-80.1 mV	7.96 ft	150.00 ml/min
10/3/2019 11:04 AM	03:00	6.80 pH	18.82 °C	833.50 µS/cm	0.39 mg/L	0.00 NTU	-105.4 mV	7.96 ft	150.00 ml/min
10/3/2019 11:07 AM	06:00	6.78 pH	18.97 °C	834.64 µS/cm	0.26 mg/L	0.00 NTU	-108.5 mV	7.96 ft	150.00 ml/min
10/3/2019 11:10 AM	09:00	6.78 pH	19.05 °C	837.52 µS/cm	0.21 mg/L	0.00 NTU	-109.9 mV	7.96 ft	150.00 ml/min
10/3/2019 11:13 AM	12:00	6.77 pH	19.10 °C	841.58 µS/cm	0.18 mg/L	0.00 NTU	-110.2 mV	7.96 ft	150.00 ml/min
10/3/2019 11:16 AM	15:00	6.76 pH	19.16 °C	842.15 µS/cm	0.16 mg/L	0.00 NTU	-110.9 mV	7.96 ft	150.00 ml/min
10/3/2019 11:19 AM	18:00	6.76 pH	19.17 °C	845.91 µS/cm	0.17 mg/L	0.00 NTU	-111.5 mV	7.96 ft	150.00 ml/min

Samples

Sample ID:	Description:
A-5	Sample time 1125 Final DTW 7.98

Low-Flow Test Report:

Test Date / Time: 10/3/2019 11:23:10 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: TMW-4 Well Diameter: 2 in Casing Type: PVC Total Depth: 15 ft Initial Depth to Water: 3.8 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 9 ft Estimated Total Volume Pumped: 4050 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.14 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Sunny 65°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 11:23 AM	00:00	7.25 pH	22.21 °C	1,664.4 µS/cm	6.06 mg/L	3.03 NTU	-113.8 mV	3.80 ft	150.00 ml/min
10/3/2019 11:26 AM	03:00	7.31 pH	18.85 °C	1,829.2 µS/cm	0.22 mg/L	1.27 NTU	-194.5 mV	3.80 ft	150.00 ml/min
10/3/2019 11:29 AM	06:00	7.32 pH	18.58 °C	1,819.2 µS/cm	0.15 mg/L	3.27 NTU	-207.5 mV	3.80 ft	150.00 ml/min
10/3/2019 11:32 AM	09:00	7.34 pH	18.54 °C	1,864.5 µS/cm	0.12 mg/L	1.11 NTU	-216.5 mV	3.80 ft	150.00 ml/min
10/3/2019 11:35 AM	12:00	7.36 pH	18.48 °C	1,882.2 µS/cm	0.11 mg/L	1.11 NTU	-225.5 mV	3.80 ft	150.00 ml/min
10/3/2019 11:38 AM	15:00	7.38 pH	18.50 °C	1,892.8 µS/cm	0.14 mg/L	0.79 NTU	-234.4 mV	3.80 ft	150.00 ml/min
10/3/2019 11:41 AM	18:00	7.40 pH	18.45 °C	1,908.3 µS/cm	0.13 mg/L	0.95 NTU	-241.9 mV	3.80 ft	150.00 ml/min
10/3/2019 11:44 AM	21:00	7.41 pH	18.43 °C	1,909.3 µS/cm	0.12 mg/L	0.98 NTU	-249.1 mV	3.80 ft	150.00 ml/min
10/3/2019 11:47 AM	24:00	7.42 pH	18.26 °C	1,912.7 µS/cm	0.10 mg/L	0.86 NTU	-255.4 mV	3.80 ft	150.00 ml/min
10/3/2019 11:50 AM	27:00	7.42 pH	18.25 °C	1,912.5 µS/cm	0.10 mg/L	0.70 NTU	-259.3 mV	3.80 ft	150.00 ml/min

Samples

Sample ID:	Description:
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TMW-4	Sample Time: 1200 Final DTW: 3.94
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Created using VuSitu from In-Situ, Inc.

Low-Flow Test Report:

Test Date / Time: 10/3/2019 12:01:04 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: TMW-3 Well Diameter: 2 in Casing Type: PVC Total Depth: 15 ft Initial Depth to Water: 4.12 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 9 ft Estimated Total Volume Pumped: 1800 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Cloudy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 12:01 PM	00:00	7.79 pH	19.71 °C	1,279.3 µS/cm	4.54 mg/L	21.51 NTU	-143.2 mV	4.12 ft	150.00 ml/min
10/3/2019 12:04 PM	03:00	7.34 pH	18.25 °C	1,254.3 µS/cm	0.25 mg/L	22.50 NTU	-181.2 mV	4.12 ft	150.00 ml/min
10/3/2019 12:07 PM	06:00	7.34 pH	18.09 °C	1,330.9 µS/cm	0.16 mg/L	25.67 NTU	-189.7 mV	4.12 ft	150.00 ml/min
10/3/2019 12:10 PM	09:00	7.39 pH	18.17 °C	1,370.7 µS/cm	0.16 mg/L	27.67 NTU	-195.7 mV	4.12 ft	150.00 ml/min
10/3/2019 12:13 PM	12:00	7.40 pH	18.10 °C	1,335.8 µS/cm	0.16 mg/L	31.94 NTU	-195.5 mV	4.12 ft	150.00 ml/min

Samples

Sample ID:	Description:
TMW-3	Sample Time: 1230 Final DTW: 4.12

Low-Flow Test Report:

Test Date / Time: 10/3/2019 12:26:46 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: SH-05R Well Diameter: 2 in Casing Type: PVC Initial Depth to Water: 7.3 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 1800 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Sunny, 60

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 12:26 PM	00:00	5.79 pH	21.29 °C	128.86 µS/cm	0.59 mg/L	0.21 NTU	97.7 mV	7.30 ft	150.00 ml/min
10/3/2019 12:29 PM	03:00	5.77 pH	20.22 °C	123.87 µS/cm	0.20 mg/L	1.16 NTU	99.2 mV	7.30 ft	150.00 ml/min
10/3/2019 12:32 PM	06:00	5.74 pH	19.67 °C	122.89 µS/cm	0.15 mg/L	2.69 NTU	101.3 mV	7.30 ft	150.00 ml/min
10/3/2019 12:35 PM	09:00	5.74 pH	19.55 °C	121.60 µS/cm	0.14 mg/L	1.40 NTU	100.5 mV	7.30 ft	150.00 ml/min
10/3/2019 12:38 PM	12:00	5.74 pH	19.37 °C	121.25 µS/cm	0.13 mg/L	7.75 NTU	100.1 mV	7.30 ft	150.00 ml/min

Samples

Sample ID:	Description:
SH-05R	Sample time 1245 Final DTW 7.30

Low-Flow Test Report:

Test Date / Time: 10/3/2019 12:44:50 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

<p>Location Name: MW-7 Well Diameter: 4 in Casing Type: PVC Total Depth: 12.82 ft Initial Depth to Water: 3.23 ft</p>	<p>Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 8 ft Estimated Total Volume Pumped: 6750 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.37 ft</p>	<p>Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586</p>
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Test Notes:

Duplicate Taken

Weather Conditions:

Windy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 12:44 PM	00:00	7.29 pH	19.45 °C	1,247.2 µS/cm	0.48 mg/L	16.66 NTU	-212.5 mV	3.23 ft	150.00 ml/min
10/3/2019 12:47 PM	03:00	7.27 pH	18.79 °C	1,243.0 µS/cm	0.18 mg/L	18.41 NTU	-216.2 mV	3.23 ft	150.00 ml/min
10/3/2019 12:50 PM	06:00	7.26 pH	18.47 °C	1,218.1 µS/cm	0.13 mg/L	19.17 NTU	-195.2 mV	3.23 ft	150.00 ml/min
10/3/2019 12:53 PM	09:00	7.26 pH	18.35 °C	1,129.4 µS/cm	0.11 mg/L	19.00 NTU	-197.1 mV	3.23 ft	150.00 ml/min
10/3/2019 12:56 PM	12:00	7.26 pH	18.31 °C	1,126.3 µS/cm	0.09 mg/L	18.55 NTU	-212.8 mV	3.23 ft	150.00 ml/min
10/3/2019 12:59 PM	15:00	7.26 pH	18.25 °C	1,088.3 µS/cm	0.08 mg/L	15.77 NTU	-220.6 mV	3.23 ft	150.00 ml/min
10/3/2019 1:02 PM	18:00	7.27 pH	18.25 °C	1,064.9 µS/cm	0.07 mg/L	19.75 NTU	-224.9 mV	3.23 ft	150.00 ml/min
10/3/2019 1:05 PM	21:00	7.27 pH	18.32 °C	1,040.8 µS/cm	0.07 mg/L	15.66 NTU	-206.2 mV	3.23 ft	150.00 ml/min
10/3/2019 1:08 PM	24:00	7.28 pH	18.29 °C	977.95 µS/cm	0.07 mg/L	15.12 NTU	-206.0 mV	3.23 ft	150.00 ml/min
10/3/2019 1:11 PM	27:00	7.29 pH	18.22 °C	955.69 µS/cm	0.06 mg/L	15.09 NTU	-207.1 mV	3.23 ft	150.00 ml/min
10/3/2019 1:14 PM	30:00	7.29 pH	18.10 °C	931.41 µS/cm	0.06 mg/L	13.78 NTU	-208.0 mV	3.23 ft	150.00 ml/min
10/3/2019 1:17 PM	33:00	7.30 pH	18.09 °C	917.41 µS/cm	0.06 mg/L	14.00 NTU	-210.2 mV	3.23 ft	150.00 ml/min
10/3/2019 1:20 PM	36:00	7.30 pH	18.06 °C	883.60 µS/cm	0.06 mg/L	14.03 NTU	-211.0 mV	3.23 ft	150.00 ml/min

10/3/2019 1:23 PM	39:00	7.31 pH	18.00 °C	863.58 µS/cm	0.05 mg/L	13.05 NTU	-213.6 mV	3.23 ft	150.00 ml/min
10/3/2019 1:26 PM	42:00	7.31 pH	18.06 °C	843.74 µS/cm	0.05 mg/L	12.63 NTU	-223.1 mV	3.23 ft	150.00 ml/min
10/3/2019 1:29 PM	45:00	7.31 pH	18.02 °C	824.37 µS/cm	0.05 mg/L	12.45 NTU	-218.9 mV	3.23 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-7	Sample Time: 1330 Final DTW: 3.60 DUP-2

Low-Flow Test Report:

Test Date / Time: 10/3/2019 1:48:34 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: 12 Well Diameter: 4 in Casing Type: PVC Total Depth: 14.7 ft Initial Depth to Water: 2.17 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 8 ft Estimated Total Volume Pumped: 6750 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 3.03 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

SPC and ORP did not stabilize

Weather Conditions:

Windy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 1:48 PM	00:00	7.42 pH	18.04 °C	1,136.9 µS/cm	1.98 mg/L	26.94 NTU	-277.9 mV	2.17 ft	150.00 ml/min
10/3/2019 1:51 PM	03:00	7.45 pH	17.43 °C	955.60 µS/cm	0.15 mg/L	16.56 NTU	-266.6 mV	2.17 ft	150.00 ml/min
10/3/2019 1:54 PM	06:00	7.44 pH	17.36 °C	778.32 µS/cm	0.11 mg/L	17.04 NTU	-270.4 mV	2.17 ft	150.00 ml/min
10/3/2019 1:57 PM	09:00	7.40 pH	17.29 °C	617.21 µS/cm	0.09 mg/L	18.83 NTU	-267.1 mV	2.17 ft	150.00 ml/min
10/3/2019 2:00 PM	12:00	7.33 pH	17.28 °C	471.24 µS/cm	0.08 mg/L	19.24 NTU	-264.7 mV	2.17 ft	150.00 ml/min
10/3/2019 2:03 PM	15:00	7.28 pH	17.27 °C	355.95 µS/cm	0.08 mg/L	19.55 NTU	-260.4 mV	2.17 ft	150.00 ml/min
10/3/2019 2:06 PM	18:00	7.24 pH	17.23 °C	284.56 µS/cm	0.08 mg/L	17.95 NTU	-244.8 mV	2.17 ft	150.00 ml/min
10/3/2019 2:09 PM	21:00	7.21 pH	17.20 °C	268.28 µS/cm	0.07 mg/L	15.77 NTU	-240.4 mV	2.17 ft	150.00 ml/min
10/3/2019 2:12 PM	24:00	7.19 pH	17.21 °C	268.06 µS/cm	0.07 mg/L	22.58 NTU	-228.6 mV	2.17 ft	150.00 ml/min
10/3/2019 2:15 PM	27:00	7.16 pH	17.29 °C	294.11 µS/cm	0.06 mg/L	14.77 NTU	-232.1 mV	2.17 ft	150.00 ml/min
10/3/2019 2:18 PM	30:00	7.16 pH	17.28 °C	305.36 µS/cm	0.06 mg/L	17.52 NTU	-236.0 mV	2.17 ft	150.00 ml/min
10/3/2019 2:21 PM	33:00	7.17 pH	17.30 °C	317.92 µS/cm	0.07 mg/L	18.89 NTU	-241.9 mV	2.17 ft	150.00 ml/min
10/3/2019 2:24 PM	36:00	7.18 pH	17.32 °C	333.38 µS/cm	0.07 mg/L	14.96 NTU	-245.1 mV	2.17 ft	150.00 ml/min

10/3/2019 2:27 PM	39:00	7.20 pH	17.33 °C	355.21 µS/cm	0.10 mg/L	15.28 NTU	-246.9 mV	2.17 ft	150.00 ml/min
10/3/2019 2:30 PM	42:00	7.21 pH	17.39 °C	516.53 µS/cm	0.11 mg/L	14.92 NTU	-246.9 mV	2.17 ft	150.00 ml/min
10/3/2019 2:33 PM	45:00	7.23 pH	17.47 °C	409.55 µS/cm	0.12 mg/L	14.56 NTU	-257.3 mV	2.17 ft	150.00 ml/min

Samples

Sample ID:	Description:
12	Sample Time: 1450 Final DTW: 5.20

Low-Flow Test Report:

Test Date / Time: 10/3/2019 1:48:55 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: MW-07R Well Diameter: 2 in Casing Type: PVC Initial Depth to Water: 6.84 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 4500 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.01 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Partly cloudy, 60

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 1:48 PM	00:00	6.12 pH	22.25 °C	148.51 µS/cm	3.43 mg/L	39.61 NTU	30.8 mV	6.84 ft	150.00 ml/min
10/3/2019 1:51 PM	03:00	6.04 pH	20.94 °C	153.85 µS/cm	0.28 mg/L	24.06 NTU	18.9 mV	6.84 ft	150.00 ml/min
10/3/2019 1:54 PM	06:00	6.05 pH	20.58 °C	155.92 µS/cm	0.21 mg/L	52.40 NTU	13.4 mV	6.84 ft	150.00 ml/min
10/3/2019 1:57 PM	09:00	6.08 pH	20.39 °C	158.42 µS/cm	0.17 mg/L	35.80 NTU	7.9 mV	6.84 ft	150.00 ml/min
10/3/2019 2:00 PM	12:00	6.11 pH	20.29 °C	161.13 µS/cm	0.16 mg/L	28.71 NTU	1.4 mV	6.84 ft	150.00 ml/min
10/3/2019 2:03 PM	15:00	6.15 pH	20.22 °C	163.53 µS/cm	0.15 mg/L	29.38 NTU	-5.0 mV	6.84 ft	150.00 ml/min
10/3/2019 2:06 PM	18:00	6.19 pH	20.21 °C	165.30 µS/cm	0.17 mg/L	11.57 NTU	-11.6 mV	6.84 ft	150.00 ml/min
10/3/2019 2:09 PM	21:00	6.19 pH	20.21 °C	166.59 µS/cm	0.14 mg/L	23.93 NTU	-14.9 mV	6.84 ft	150.00 ml/min
10/3/2019 2:12 PM	24:00	6.23 pH	20.11 °C	168.91 µS/cm	0.12 mg/L	34.08 NTU	-21.7 mV	6.84 ft	150.00 ml/min
10/3/2019 2:15 PM	27:00	6.24 pH	20.12 °C	169.58 µS/cm	0.13 mg/L	12.71 NTU	-24.6 mV	6.84 ft	150.00 ml/min
10/3/2019 2:18 PM	30:00	6.26 pH	20.07 °C	170.42 µS/cm	0.13 mg/L	20.60 NTU	-27.5 mV	6.84 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-07R	Sample time 1425 Final DTW 6.83

Created using VuSitu from In-Situ, Inc.

Low-Flow Test Report:

Test Date / Time: 10/3/2019 3:04:13 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: MW-4 Well Diameter: 4 in Casing Type: PVC Total Depth: 13 ft Initial Depth to Water: 7.14 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 10 ft Estimated Total Volume Pumped: 3600 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Cloudy, 60

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 3:04 PM	00:00	6.02 pH	21.62 °C	159.93 µS/cm	3.71 mg/L	314.59 NTU	13.5 mV	7.14 ft	150.00 ml/min
10/3/2019 3:07 PM	03:00	5.98 pH	21.57 °C	158.68 µS/cm	0.59 mg/L	274.73 NTU	2.0 mV	7.14 ft	150.00 ml/min
10/3/2019 3:10 PM	06:00	5.97 pH	21.54 °C	158.80 µS/cm	0.38 mg/L	330.14 NTU	-2.2 mV	7.14 ft	150.00 ml/min
10/3/2019 3:13 PM	09:00	5.98 pH	21.54 °C	158.89 µS/cm	0.31 mg/L	333.42 NTU	-5.2 mV	7.14 ft	150.00 ml/min
10/3/2019 3:16 PM	12:00	5.99 pH	21.57 °C	158.61 µS/cm	0.27 mg/L	334.32 NTU	-7.7 mV	7.14 ft	150.00 ml/min
10/3/2019 3:19 PM	15:00	5.98 pH	21.47 °C	158.47 µS/cm	0.24 mg/L	312.31 NTU	-8.8 mV	7.14 ft	150.00 ml/min
10/3/2019 3:22 PM	18:00	5.98 pH	21.48 °C	158.62 µS/cm	0.23 mg/L	5.44 NTU	-10.5 mV	7.14 ft	150.00 ml/min
10/3/2019 3:25 PM	21:00	5.98 pH	21.38 °C	158.73 µS/cm	0.21 mg/L	6.05 NTU	-12.4 mV	7.14 ft	150.00 ml/min
10/3/2019 3:28 PM	24:00	5.98 pH	21.29 °C	159.28 µS/cm	0.21 mg/L	7.88 NTU	-13.4 mV	7.14 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-4	Sample time 1535 Final DTW 7.48 ft btoc

Low-Flow Test Report:

Test Date / Time: 10/3/2019 3:12:01 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-6 Well Diameter: 4 in Casing Type: PVC Total Depth: 12.75 m Initial Depth to Water: 7.82 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 9 ft Estimated Total Volume Pumped: 1800 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.03 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 3:12 PM	00:00	6.99 pH	18.99 °C	459.54 µS/cm	1.23 mg/L	0.05 NTU	-105.9 mV	7.82 ft	150.00 ml/min
10/3/2019 3:15 PM	03:00	6.78 pH	18.49 °C	460.44 µS/cm	0.29 mg/L	6.78 NTU	-116.1 mV	7.82 ft	150.00 ml/min
10/3/2019 3:18 PM	06:00	6.77 pH	18.44 °C	460.74 µS/cm	0.16 mg/L	1.42 NTU	-119.5 mV	7.82 ft	150.00 ml/min
10/3/2019 3:21 PM	09:00	6.76 pH	18.45 °C	459.30 µS/cm	0.15 mg/L	0.94 NTU	-123.0 mV	7.82 ft	150.00 ml/min
10/3/2019 3:24 PM	12:00	6.75 pH	18.41 °C	458.46 µS/cm	0.15 mg/L	1.43 NTU	-127.0 mV	7.82 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-6	Sample Time: 1530 Final DTW: 7.85

Low-Flow Test Report:

Test Date / Time: 10/3/2019 3:38:59 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-22 Well Diameter: 2 in Casing Type: PVC Total Depth: 13 ft Initial Depth to Water: 9.01 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 5850 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.03 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 3:38 PM	00:00	6.95 pH	19.04 °C	176.30 µS/cm	6.34 mg/L	105.08 NTU	-72.5 mV	9.01 ft	150.00 ml/min
10/3/2019 3:41 PM	03:00	6.31 pH	19.12 °C	173.21 µS/cm	0.29 mg/L	56.13 NTU	-74.7 mV	9.01 ft	150.00 ml/min
10/3/2019 3:44 PM	06:00	6.28 pH	19.11 °C	175.31 µS/cm	0.21 mg/L	25.55 NTU	-82.8 mV	9.01 ft	150.00 ml/min
10/3/2019 3:47 PM	09:00	6.28 pH	18.99 °C	174.53 µS/cm	0.18 mg/L	40.27 NTU	-57.3 mV	9.01 ft	150.00 ml/min
10/3/2019 3:50 PM	12:00	6.28 pH	19.06 °C	177.63 µS/cm	0.15 mg/L	39.94 NTU	-47.3 mV	9.01 ft	150.00 ml/min
10/3/2019 3:53 PM	15:00	6.30 pH	18.97 °C	174.68 µS/cm	0.16 mg/L	37.57 NTU	-53.1 mV	9.01 ft	150.00 ml/min
10/3/2019 3:56 PM	18:00	6.31 pH	18.91 °C	175.57 µS/cm	0.25 mg/L	28.00 NTU	-57.4 mV	9.01 ft	150.00 ml/min
10/3/2019 3:59 PM	21:00	6.32 pH	18.93 °C	173.91 µS/cm	0.20 mg/L	20.97 NTU	-75.6 mV	9.01 ft	150.00 ml/min
10/3/2019 4:02 PM	24:00	6.33 pH	18.93 °C	176.07 µS/cm	0.22 mg/L	23.24 NTU	-84.0 mV	9.01 ft	150.00 ml/min
10/3/2019 4:05 PM	27:00	6.34 pH	19.02 °C	178.08 µS/cm	0.19 mg/L	26.08 NTU	-87.5 mV	9.01 ft	150.00 ml/min
10/3/2019 4:08 PM	30:00	6.35 pH	18.93 °C	177.98 µS/cm	0.13 mg/L	22.35 NTU	-89.2 mV	9.01 ft	150.00 ml/min
10/3/2019 4:11 PM	33:00	6.36 pH	18.92 °C	178.24 µS/cm	0.11 mg/L	17.54 NTU	-92.0 mV	9.01 ft	150.00 ml/min
10/3/2019 4:14 PM	36:00	6.37 pH	18.91 °C	180.44 µS/cm	0.11 mg/L	19.98 NTU	-93.8 mV	9.01 ft	150.00 ml/min
10/3/2019 4:17 PM	39:00	6.39 pH	18.93 °C	181.54 µS/cm	0.10 mg/L	48.39 NTU	-95.1 mV	9.01 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-22	Sample Time: 1620 Final DTW: 9.04

Low-Flow Test Report:

Test Date / Time: 10/3/2019 4:02:23 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: SH-02R Well Diameter: 2 in Casing Type: PVC Total Depth: 13.4 ft Initial Depth to Water: 6.06 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 10 ft Estimated Total Volume Pumped: 2700 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Light showers, 55

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 4:02 PM	00:00	6.37 pH	20.26 °C	372.98 µS/cm	1.77 mg/L	0.00 NTU	-51.4 mV	6.06 ft	150.00 ml/min
10/3/2019 4:05 PM	03:00	6.55 pH	20.30 °C	357.05 µS/cm	0.33 mg/L	0.00 NTU	-84.4 mV	6.06 ft	150.00 ml/min
10/3/2019 4:08 PM	06:00	6.57 pH	20.29 °C	357.25 µS/cm	0.24 mg/L	0.00 NTU	-90.6 mV	6.06 ft	150.00 ml/min
10/3/2019 4:11 PM	09:00	6.58 pH	20.28 °C	354.35 µS/cm	0.20 mg/L	0.00 NTU	-93.6 mV	6.06 ft	150.00 ml/min
10/3/2019 4:14 PM	12:00	6.59 pH	20.24 °C	354.03 µS/cm	0.17 mg/L	0.00 NTU	-95.4 mV	6.06 ft	150.00 ml/min
10/3/2019 4:17 PM	15:00	6.59 pH	20.28 °C	351.26 µS/cm	0.18 mg/L	0.00 NTU	-96.1 mV	6.06 ft	150.00 ml/min
10/3/2019 4:20 PM	18:00	6.59 pH	20.24 °C	349.72 µS/cm	0.17 mg/L	0.00 NTU	-96.5 mV	6.06 ft	150.00 ml/min

Samples

Sample ID:	Description:
SH-02R	Sample time 1625 Final DTW 6.06 ft btoc

Low-Flow Test Report:

Test Date / Time: 10/3/2019 4:40:00 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

<p>Location Name: MW-2 Well Diameter: 4 in Casing Type: PVC Total Depth: 13 ft Initial Depth to Water: 8.07 ft</p>	<p>Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 3150 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft</p>	<p>Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586</p>
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 4:40 PM	00:00	6.21 pH	18.66 °C	62.49 µS/cm	3.58 mg/L	13.88 NTU	23.4 mV	8.07 ft	150.00 ml/min
10/3/2019 4:43 PM	03:00	6.00 pH	18.64 °C	58.33 µS/cm	2.79 mg/L	367.13 NTU	21.2 mV	8.07 ft	150.00 ml/min
10/3/2019 4:46 PM	06:00	6.04 pH	18.61 °C	57.60 µS/cm	2.23 mg/L	2,366.4 NTU	13.9 mV	8.07 ft	150.00 ml/min
10/3/2019 4:49 PM	09:00	6.06 pH	18.58 °C	56.68 µS/cm	1.88 mg/L	4,167.1 NTU	9.4 mV	8.07 ft	150.00 ml/min
10/3/2019 4:52 PM	12:00	6.08 pH	18.62 °C	54.76 µS/cm	1.70 mg/L	4,948.3 NTU	5.3 mV	8.07 ft	150.00 ml/min
10/3/2019 4:55 PM	15:00	6.10 pH	18.65 °C	55.52 µS/cm	1.47 mg/L	1,260.2 NTU	2.0 mV	8.07 ft	150.00 ml/min
10/3/2019 4:58 PM	18:00	6.10 pH	18.62 °C	55.68 µS/cm	1.33 mg/L	1,078.9 NTU	0.3 mV	8.07 ft	150.00 ml/min
10/3/2019 5:01 PM	21:00	6.11 pH	18.61 °C	56.55 µS/cm	1.37 mg/L	1,140.0 NTU	-0.5 mV	8.07 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-2	Sample Time: 1710 Final DTW: 8.07

Low-Flow Test Report:

Test Date / Time: 10/3/2019 5:10:29 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: MW-12R Well Diameter: 2 in Casing Type: PVC Initial Depth to Water: 8.02 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 3150 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Cloudy, 50

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 5:10 PM	00:00	6.89 pH	18.18 °C	396.31 µS/cm	3.71 mg/L	0.00 NTU	-17.3 mV	8.02 ft	150.00 ml/min
10/3/2019 5:13 PM	03:00	7.20 pH	17.69 °C	397.78 µS/cm	0.41 mg/L	0.00 NTU	-80.7 mV	8.02 ft	150.00 ml/min
10/3/2019 5:16 PM	06:00	7.24 pH	17.59 °C	399.26 µS/cm	0.25 mg/L	222.78 NTU	-93.0 mV	8.02 ft	150.00 ml/min
10/3/2019 5:19 PM	09:00	7.25 pH	17.59 °C	399.41 µS/cm	0.19 mg/L	216.39 NTU	-97.5 mV	8.02 ft	150.00 ml/min
10/3/2019 5:22 PM	12:00	7.25 pH	17.63 °C	397.45 µS/cm	0.17 mg/L	224.34 NTU	-99.2 mV	8.02 ft	150.00 ml/min
10/3/2019 5:25 PM	15:00	7.25 pH	17.67 °C	396.36 µS/cm	0.15 mg/L	227.68 NTU	-99.2 mV	8.02 ft	150.00 ml/min
10/3/2019 5:28 PM	18:00	7.26 pH	17.74 °C	393.16 µS/cm	0.14 mg/L	220.95 NTU	-99.4 mV	8.02 ft	150.00 ml/min
10/3/2019 5:31 PM	21:00	7.24 pH	17.75 °C	393.87 µS/cm	0.13 mg/L	223.86 NTU	-98.8 mV	8.02 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-12R	Sample time 1735 Final DTW 8.03 ft btoc

Low-Flow Test Report:

Test Date / Time: 10/3/2019 5:19:40 PM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-18 Well Diameter: 2 in Casing Type: PVC Total Depth: 13 ft Initial Depth to Water: 8 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 6300 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.02 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/3/2019 5:19 PM	00:00	5.94 pH	19.30 °C	163.18 µS/cm	1.76 mg/L	98.86 NTU	30.0 mV	8.00 ft	150.00 ml/min
10/3/2019 5:22 PM	03:00	6.09 pH	19.17 °C	161.85 µS/cm	0.59 mg/L	25.03 NTU	15.8 mV	8.00 ft	150.00 ml/min
10/3/2019 5:25 PM	06:00	6.13 pH	18.96 °C	160.50 µS/cm	0.38 mg/L	17.64 NTU	14.2 mV	8.00 ft	150.00 ml/min
10/3/2019 5:28 PM	09:00	6.18 pH	18.83 °C	156.94 µS/cm	0.24 mg/L	15.97 NTU	-5.3 mV	8.00 ft	150.00 ml/min
10/3/2019 5:31 PM	12:00	6.28 pH	18.70 °C	151.34 µS/cm	0.18 mg/L	20.68 NTU	-23.8 mV	8.00 ft	150.00 ml/min
10/3/2019 5:34 PM	15:00	6.38 pH	18.63 °C	152.59 µS/cm	0.14 mg/L	21.63 NTU	-39.0 mV	8.00 ft	150.00 ml/min
10/3/2019 5:37 PM	18:00	6.45 pH	18.60 °C	148.92 µS/cm	0.13 mg/L	18.76 NTU	-51.0 mV	8.00 ft	150.00 ml/min
10/3/2019 5:40 PM	21:00	6.49 pH	18.54 °C	143.18 µS/cm	0.14 mg/L	13.40 NTU	-56.9 mV	8.00 ft	150.00 ml/min
10/3/2019 5:43 PM	24:00	6.51 pH	18.55 °C	124.85 µS/cm	0.13 mg/L	16.91 NTU	-28.4 mV	8.00 ft	150.00 ml/min
10/3/2019 5:46 PM	27:00	6.52 pH	18.53 °C	119.46 µS/cm	0.12 mg/L	22.15 NTU	-17.4 mV	8.00 ft	150.00 ml/min
10/3/2019 5:49 PM	30:00	6.53 pH	18.51 °C	117.28 µS/cm	0.12 mg/L	31.57 NTU	-16.3 mV	8.00 ft	150.00 ml/min
10/3/2019 5:52 PM	33:00	6.54 pH	18.53 °C	111.19 µS/cm	0.13 mg/L	40.38 NTU	-13.5 mV	8.00 ft	150.00 ml/min
10/3/2019 5:55 PM	36:00	6.55 pH	18.53 °C	135.80 µS/cm	0.12 mg/L	51.66 NTU	-13.7 mV	8.00 ft	150.00 ml/min
10/3/2019 5:58 PM	39:00	6.56 pH	18.54 °C	127.29 µS/cm	0.12 mg/L	55.49 NTU	-14.6 mV	8.00 ft	150.00 ml/min
10/3/2019 6:01 PM	42:00	6.56 pH	18.50 °C	131.45 µS/cm	0.13 mg/L	59.32 NTU	-16.2 mV	8.00 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-18	Sample Time: 1810 Final DTW: 8.02

Low-Flow Test Report:

Test Date / Time: 10/4/2019 8:13:30 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: MW-16 Well Diameter: 2 in Casing Type: PVC Initial Depth to Water: 7.89 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 4500 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.01 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Cloudy, 55

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/4/2019 8:13 AM	00:00	6.26 pH	15.32 °C	367.60 µS/cm	1.36 mg/L	4.77 NTU	60.1 mV	7.89 ft	150.00 ml/min
10/4/2019 8:16 AM	03:00	6.18 pH	16.22 °C	376.24 µS/cm	0.95 mg/L	2.83 NTU	66.8 mV	7.89 ft	150.00 ml/min
10/4/2019 8:19 AM	06:00	6.18 pH	16.76 °C	395.78 µS/cm	0.71 mg/L	1.27 NTU	67.9 mV	7.89 ft	150.00 ml/min
10/4/2019 8:22 AM	09:00	6.19 pH	17.17 °C	407.50 µS/cm	0.49 mg/L	0.00 NTU	67.8 mV	7.89 ft	150.00 ml/min
10/4/2019 8:25 AM	12:00	6.19 pH	17.37 °C	411.32 µS/cm	0.39 mg/L	0.00 NTU	67.2 mV	7.89 ft	150.00 ml/min
10/4/2019 8:28 AM	15:00	6.19 pH	17.43 °C	409.21 µS/cm	0.31 mg/L	0.00 NTU	66.8 mV	7.89 ft	150.00 ml/min
10/4/2019 8:31 AM	18:00	6.19 pH	17.55 °C	409.18 µS/cm	0.28 mg/L	0.00 NTU	66.3 mV	7.89 ft	150.00 ml/min
10/4/2019 8:34 AM	21:00	6.21 pH	17.60 °C	409.45 µS/cm	0.25 mg/L	3.27 NTU	65.2 mV	7.89 ft	150.00 ml/min
10/4/2019 8:37 AM	24:00	6.21 pH	17.60 °C	403.94 µS/cm	0.24 mg/L	0.36 NTU	64.6 mV	7.89 ft	150.00 ml/min
10/4/2019 8:40 AM	27:00	6.20 pH	17.66 °C	405.20 µS/cm	0.24 mg/L	0.00 NTU	64.7 mV	7.89 ft	150.00 ml/min
10/4/2019 8:43 AM	30:00	6.21 pH	17.65 °C	398.22 µS/cm	0.24 mg/L	0.97 NTU	64.2 mV	7.89 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-16	Sample time 0845 Final DTW 7.90

Created using VuSitu from In-Situ, Inc.

Low-Flow Test Report:

Test Date / Time: 10/4/2019 8:13:31 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: A-28R Well Diameter: 2 in Casing Type: PVC Total Depth: 14.25 m Initial Depth to Water: 8.51 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 6750 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.03 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Cloudy, 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/4/2019 8:13 AM	00:00	6.29 pH	14.34 °C	609.19 µS/cm	5.17 mg/L	7.98 NTU	-1.3 mV	8.51 ft	150.00 ml/min
10/4/2019 8:16 AM	03:00	6.44 pH	16.30 °C	577.95 µS/cm	2.07 mg/L	150.71 NTU	-53.5 mV	8.51 ft	150.00 ml/min
10/4/2019 8:19 AM	06:00	6.42 pH	16.85 °C	576.39 µS/cm	2.31 mg/L	334.30 NTU	-61.0 mV	8.51 ft	150.00 ml/min
10/4/2019 8:22 AM	09:00	6.42 pH	17.06 °C	566.67 µS/cm	1.99 mg/L	538.49 NTU	-66.2 mV	8.51 ft	150.00 ml/min
10/4/2019 8:25 AM	12:00	6.42 pH	17.15 °C	561.07 µS/cm	2.57 mg/L	524.43 NTU	-68.4 mV	8.51 ft	150.00 ml/min
10/4/2019 8:28 AM	15:00	6.42 pH	17.24 °C	554.77 µS/cm	1.72 mg/L	426.38 NTU	-70.9 mV	8.51 ft	150.00 ml/min
10/4/2019 8:31 AM	18:00	6.42 pH	17.29 °C	585.27 µS/cm	1.45 mg/L	10.54 NTU	-73.1 mV	8.51 ft	150.00 ml/min
10/4/2019 8:34 AM	21:00	6.42 pH	17.36 °C	576.35 µS/cm	0.64 mg/L	12.17 NTU	-74.8 mV	8.51 ft	150.00 ml/min
10/4/2019 8:37 AM	24:00	6.43 pH	17.41 °C	572.74 µS/cm	0.75 mg/L	18.47 NTU	-75.3 mV	8.51 ft	150.00 ml/min
10/4/2019 8:40 AM	27:00	6.43 pH	17.44 °C	568.84 µS/cm	0.70 mg/L	21.21 NTU	-75.0 mV	8.51 ft	150.00 ml/min
10/4/2019 8:43 AM	30:00	6.43 pH	17.48 °C	570.93 µS/cm	0.99 mg/L	22.32 NTU	-72.8 mV	8.51 ft	150.00 ml/min
10/4/2019 8:46 AM	33:00	6.43 pH	17.44 °C	565.31 µS/cm	0.28 mg/L	26.82 NTU	-73.5 mV	8.51 ft	150.00 ml/min
10/4/2019 8:49 AM	36:00	6.43 pH	17.39 °C	552.11 µS/cm	0.42 mg/L	40.98 NTU	-71.3 mV	8.51 ft	150.00 ml/min

10/4/2019 8:52 AM	39:00	6.43 pH	17.43 °C	553.32 µS/cm	0.46 mg/L	48.50 NTU	-68.7 mV	8.51 ft	150.00 ml/min
10/4/2019 8:55 AM	42:00	6.43 pH	17.41 °C	549.11 µS/cm	0.36 mg/L	74.64 NTU	-67.2 mV	8.51 ft	150.00 ml/min
10/4/2019 8:58 AM	45:00	6.43 pH	17.44 °C	545.81 µS/cm	0.28 mg/L	87.27 NTU	-66.4 mV	8.51 ft	150.00 ml/min

Samples

Sample ID:	Description:
A-28R	Sample Time: 0900 Final DTW: 8.54

Low-Flow Test Report:

Test Date / Time: 10/4/2019 9:28:01 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-24 Well Diameter: 4 in Casing Type: PVC Total Depth: 14.7 ft Initial Depth to Water: 7.78 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 6300 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.03 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Overcast

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/4/2019 9:28 AM	00:00	6.56 pH	16.48 °C	734.47 µS/cm	3.61 mg/L	5.12 NTU	-40.1 mV	7.78 ft	150.00 ml/min
10/4/2019 9:31 AM	03:00	6.42 pH	17.12 °C	729.73 µS/cm	0.72 mg/L	3.75 NTU	-70.6 mV	7.78 ft	150.00 ml/min
10/4/2019 9:34 AM	06:00	6.41 pH	17.25 °C	726.57 µS/cm	0.47 mg/L	7.33 NTU	-76.6 mV	7.78 ft	150.00 ml/min
10/4/2019 9:37 AM	09:00	6.41 pH	17.30 °C	721.07 µS/cm	1.32 mg/L	13.54 NTU	-79.8 mV	7.78 ft	150.00 ml/min
10/4/2019 9:40 AM	12:00	6.42 pH	17.37 °C	719.38 µS/cm	2.15 mg/L	19.36 NTU	-81.9 mV	7.78 ft	150.00 ml/min
10/4/2019 9:43 AM	15:00	6.42 pH	17.38 °C	714.59 µS/cm	0.41 mg/L	27.34 NTU	-83.0 mV	7.78 ft	150.00 ml/min
10/4/2019 9:46 AM	18:00	6.42 pH	17.42 °C	711.52 µS/cm	0.19 mg/L	34.44 NTU	-84.1 mV	7.78 ft	150.00 ml/min
10/4/2019 9:49 AM	21:00	6.42 pH	17.45 °C	707.69 µS/cm	0.33 mg/L	43.80 NTU	-85.4 mV	7.78 ft	150.00 ml/min
10/4/2019 9:52 AM	24:00	6.42 pH	17.47 °C	704.78 µS/cm	0.46 mg/L	53.92 NTU	-86.7 mV	7.78 ft	150.00 ml/min
10/4/2019 9:55 AM	27:00	6.42 pH	17.49 °C	700.98 µS/cm	0.27 mg/L	81.57 NTU	-88.0 mV	7.78 ft	150.00 ml/min
10/4/2019 9:58 AM	30:00	6.42 pH	17.53 °C	698.00 µS/cm	0.23 mg/L	81.83 NTU	-88.7 mV	7.78 ft	150.00 ml/min
10/4/2019 10:01 AM	33:00	6.43 pH	17.53 °C	693.98 µS/cm	0.41 mg/L	99.53 NTU	-89.4 mV	7.78 ft	150.00 ml/min
10/4/2019 10:04 AM	36:00	6.43 pH	17.57 °C	690.65 µS/cm	0.69 mg/L	214.01 NTU	-90.4 mV	7.78 ft	150.00 ml/min

10/4/2019 10:07 AM	39:00	6.43 pH	17.56 °C	688.34 µS/cm	0.74 mg/L	215.08 NTU	-90.9 mV	7.78 ft	150.00 ml/min
10/4/2019 10:10 AM	42:00	6.43 pH	17.56 °C	687.53 µS/cm	0.76 mg/L	256.46 NTU	-91.2 mV	7.78 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-24	Sample Time: 1030 Final DTW: 7.81

Low-Flow Test Report:

Test Date / Time: 10/4/2019 9:32:46 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: A-27 Well Diameter: 4 in Casing Type: PVC Total Depth: 15 ft Initial Depth to Water: 10.89 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 13 ft Estimated Total Volume Pumped: 2700 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Cloudy, 55

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/4/2019 9:32 AM	00:00	6.25 pH	15.82 °C	293.44 µS/cm	2.09 mg/L	0.00 NTU	-25.7 mV	10.89 ft	150.00 ml/min
10/4/2019 9:35 AM	03:00	6.27 pH	16.15 °C	292.01 µS/cm	0.39 mg/L	0.00 NTU	-39.9 mV	10.89 ft	150.00 ml/min
10/4/2019 9:38 AM	06:00	6.27 pH	16.34 °C	290.01 µS/cm	0.28 mg/L	0.00 NTU	-44.3 mV	10.89 ft	150.00 ml/min
10/4/2019 9:41 AM	09:00	6.26 pH	16.37 °C	294.35 µS/cm	0.23 mg/L	0.00 NTU	-47.8 mV	10.89 ft	150.00 ml/min
10/4/2019 9:44 AM	12:00	6.27 pH	16.44 °C	294.39 µS/cm	0.20 mg/L	0.00 NTU	-52.1 mV	10.89 ft	150.00 ml/min
10/4/2019 9:47 AM	15:00	6.26 pH	16.46 °C	295.61 µS/cm	0.19 mg/L	0.00 NTU	-54.6 mV	10.89 ft	150.00 ml/min
10/4/2019 9:50 AM	18:00	6.26 pH	16.45 °C	299.40 µS/cm	0.18 mg/L	0.00 NTU	-57.5 mV	10.89 ft	150.00 ml/min

Samples

Sample ID:	Description:
A-27	Sample time 955 Final DTW 10.89

Low-Flow Test Report:

Test Date / Time: 10/4/2019 10:51:35 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: MW-23 Well Diameter: 4 in Casing Type: PVC Total Depth: 14.6 ft Initial Depth to Water: 7.75 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 2700 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.01 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Partly cloudy, 60°F

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/4/2019 10:51 AM	00:00	6.61 pH	17.96 °C	1,096.4 µS/cm	4.46 mg/L	3.95 NTU	-42.4 mV	7.75 ft	150.00 ml/min
10/4/2019 10:54 AM	03:00	6.56 pH	18.09 °C	1,103.9 µS/cm	0.57 mg/L	43.95 NTU	-67.9 mV	7.75 ft	150.00 ml/min
10/4/2019 10:57 AM	06:00	6.55 pH	18.10 °C	1,103.3 µS/cm	0.19 mg/L	33.31 NTU	-75.6 mV	7.75 ft	150.00 ml/min
10/4/2019 11:00 AM	09:00	6.55 pH	18.09 °C	1,102.5 µS/cm	0.26 mg/L	43.17 NTU	-80.3 mV	7.75 ft	150.00 ml/min
10/4/2019 11:03 AM	12:00	6.56 pH	18.08 °C	1,103.7 µS/cm	0.23 mg/L	16.20 NTU	-83.1 mV	7.75 ft	150.00 ml/min
10/4/2019 11:06 AM	15:00	6.56 pH	18.09 °C	1,101.8 µS/cm	0.22 mg/L	51.45 NTU	-85.4 mV	7.75 ft	150.00 ml/min
10/4/2019 11:09 AM	18:00	6.56 pH	18.05 °C	1,101.4 µS/cm	0.22 mg/L	43.54 NTU	-86.9 mV	7.75 ft	150.00 ml/min

Samples

Sample ID:	Description:
MW-23	Sample Time: 1120 Final DTW: 7.76

Low-Flow Test Report:

Test Date / Time: 10/4/2019 10:54:25 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: L.S.

Location Name: TMW-B1 Well Diameter: 2 in Casing Type: PVC Total Depth: 15 ft Initial Depth to Water: 8.46 ft	Pump Type: Peri pump Tubing Type: Poly Pump Intake From TOC: 12 ft Estimated Total Volume Pumped: 4050 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0.04 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466472
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Test Notes:

Weather Conditions:

Sunny, 55

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/4/2019 10:54 AM	00:00	6.55 pH	16.80 °C	625.79 µS/cm	4.21 mg/L	0.00 NTU	-20.8 mV	8.46 ft	150.00 ml/min
10/4/2019 10:57 AM	03:00	6.72 pH	17.68 °C	645.46 µS/cm	0.31 mg/L	0.00 NTU	-64.9 mV	8.46 ft	150.00 ml/min
10/4/2019 11:00 AM	06:00	6.73 pH	17.75 °C	656.26 µS/cm	0.21 mg/L	0.00 NTU	-71.8 mV	8.46 ft	150.00 ml/min
10/4/2019 11:03 AM	09:00	6.73 pH	18.13 °C	657.74 µS/cm	0.16 mg/L	0.00 NTU	-75.3 mV	8.46 ft	150.00 ml/min
10/4/2019 11:06 AM	12:00	6.73 pH	18.00 °C	662.46 µS/cm	0.14 mg/L	0.00 NTU	-78.5 mV	8.46 ft	150.00 ml/min
10/4/2019 11:09 AM	15:00	6.73 pH	17.91 °C	660.38 µS/cm	0.12 mg/L	0.00 NTU	-80.1 mV	8.46 ft	150.00 ml/min
10/4/2019 11:12 AM	18:00	6.73 pH	18.25 °C	655.10 µS/cm	0.11 mg/L	0.00 NTU	-80.7 mV	8.46 ft	150.00 ml/min
10/4/2019 11:15 AM	21:00	6.72 pH	18.37 °C	652.14 µS/cm	0.09 mg/L	0.00 NTU	-80.9 mV	8.46 ft	150.00 ml/min
10/4/2019 11:18 AM	24:00	6.72 pH	18.48 °C	649.45 µS/cm	0.09 mg/L	0.00 NTU	-81.2 mV	8.46 ft	150.00 ml/min
10/4/2019 11:21 AM	27:00	6.71 pH	18.66 °C	645.95 µS/cm	0.08 mg/L	0.00 NTU	-82.6 mV	8.46 ft	150.00 ml/min

Samples

Sample ID:	Description:
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TMW-B1

Sample time 1125
Final DTW 8.50

Created using VuSitu from In-Situ, Inc.

Low-Flow Test Report:

Test Date / Time: 10/4/2019 11:31:41 AM

Project: KMLT Harbor Island 2SA GWM

Operator Name: KF

Location Name: A-21 Well Diameter: 4 in Casing Type: PVC Total Depth: 14.5 ft Initial Depth to Water: 7.95 ft	Pump Type: Peri Pump Tubing Type: Poly Pump Intake From TOC: 11 ft Estimated Total Volume Pumped: 4050 ml Flow Cell Volume: 130 ml Final Flow Rate: 150 ml/min Final Draw Down: 0 ft	Instrument Used: Aqua TROLL 600 Vented Serial Number: 466586
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Test Notes:

Weather Conditions:

Windy

Low-Flow Readings:

Date Time	Elapsed Time	pH	Temperature	Specific Conductivity	RDO Concentration	Turbidity	ORP	Depth To Water	Flow
		+/- 0.1	+/- 3 %	+/- 3 %	+/- 10 %	+/- 10 %	+/- 10		
10/4/2019 11:31 AM	00:00	7.64 pH	18.41 °C	1,292.4 µS/cm	7.04 mg/L	9.02 NTU	-34.3 mV	7.95 ft	150.00 ml/min
10/4/2019 11:34 AM	03:00	7.74 pH	18.01 °C	2,161.8 µS/cm	0.21 mg/L	7.39 NTU	-80.2 mV	7.95 ft	150.00 ml/min
10/4/2019 11:37 AM	06:00	7.72 pH	18.06 °C	2,209.4 µS/cm	0.22 mg/L	5.98 NTU	-86.6 mV	7.95 ft	150.00 ml/min
10/4/2019 11:40 AM	09:00	7.69 pH	18.05 °C	2,241.8 µS/cm	0.20 mg/L	6.99 NTU	-90.9 mV	7.95 ft	150.00 ml/min
10/4/2019 11:43 AM	12:00	7.67 pH	18.09 °C	1,781.1 µS/cm	0.20 mg/L	9.06 NTU	-95.0 mV	7.95 ft	150.00 ml/min
10/4/2019 11:46 AM	15:00	7.59 pH	18.23 °C	1,833.1 µS/cm	0.15 mg/L	10.96 NTU	-93.6 mV	7.95 ft	150.00 ml/min
10/4/2019 11:49 AM	18:00	7.54 pH	18.22 °C	1,859.2 µS/cm	0.13 mg/L	12.35 NTU	-95.2 mV	7.95 ft	150.00 ml/min
10/4/2019 11:52 AM	21:00	7.53 pH	18.33 °C	1,892.7 µS/cm	0.15 mg/L	14.30 NTU	-95.4 mV	7.95 ft	150.00 ml/min
10/4/2019 11:55 AM	24:00	7.51 pH	18.18 °C	1,826.4 µS/cm	0.15 mg/L	16.16 NTU	-96.1 mV	7.95 ft	150.00 ml/min
10/4/2019 11:58 AM	27:00	7.45 pH	18.08 °C	1,841.2 µS/cm	0.16 mg/L	20.42 NTU	-93.4 mV	7.95 ft	150.00 ml/min

Samples

Sample ID:	Description:
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A-21

Sample Time: 1220

Final DTW: 7.95

Created using VuSitu from In-Situ, Inc.

Well ID: TMW-2
Date: _____

Elapsed Time	NTU	Elapsed Time	NTU
0	6.36	24	0.02
3	0.02	27	
6	0.02	30	
9	0.02	33	
12	0.02	36	
15	0.04	39	
18	0.02	42	
21	0.02	45	

Well ID: TMW-1
Date: _____

Elapsed Time	NTU	Elapsed Time	NTU
0	222	24	
3	165	27	
6	157	30	
9	164	33	
12	154	36	
15		39	
18		42	
21		45	

Well ID: MW-1A
Date: _____

Elapsed Time	NTU	Elapsed Time	NTU
0	5.75	24	
3	0.47	27	
6	0.02	30	
9	0.02	33	
12	0.02	36	
15		39	
18		42	
21		45	

Well ID: A-8
Date: _____

Elapsed Time	NTU	Elapsed Time	NTU
0	12.9	24	0.06
3	0.02	27	
6	0.02	30	
9	0.02	33	
12	0.02	36	
15	0.02	39	
18	0.02	42	
21	0.02	45	

Well ID: MW-25
Date: _____

Elapsed Time	NTU	Elapsed Time	NTU
0	29.1	24	
3	0.23	27	
6	0.02	30	
9	0.45	33	
12	0.13	36	
15	0.02	39	
18		42	
21		45	

Well ID: A-10
Date: _____

Elapsed Time	NTU	Elapsed Time	NTU
0	10.5	24	0.02
3	2.29	27	0.02
6	1.08	30	0.02
9	0.02	33	0.02
12	0.02	36	
15	0.02	39	
18	2.06	42	
21	0.68	45	

Well ID: A-14R

Date:

Elapsed Time	NTU	Elapsed Time	NTU
0	0.98	24	0.02
3	0.02	27	0.02
6	0.02	30	0.02
9	0.02	33	0.02
12	0.02	36	
15	0.02	39	
18	0.02	42	
21	0.02	45	

Well ID: A-23R

Date:

Elapsed Time	NTU	Elapsed Time	NTU
0	3.56	24	1.39
3	0.02	27	
6	0.02	30	
9	0.02	33	
12	0.02	36	
15	0.02	39	
18	0.57	42	
21	1.53	45	

Well ID: A-5

Date:

Elapsed Time	NTU	Elapsed Time	NTU
0	2.64	24	
3	0.02	27	
6	0.55	30	
9	0.02	33	
12	0.02	36	
15	0.50	39	
18	0.07	42	
21		45	

Well ID: SH-05R

Date:

Elapsed Time	NTU	Elapsed Time	NTU
0	2.22	24	
3	1.42	27	
6	2.26	30	
9	2.74	33	
12	3.06	36	
15		39	
18		42	
21		45	

Well ID: MW-07R

Date:

Elapsed Time	NTU	Elapsed Time	NTU
0	37.5	24	12.4
3	23.5	27	12.5
6	22.7	30	12.7
9	25.2	33	
12	23.2	36	
15	20.0	39	
18	15.8	42	
21	16.4	45	

Well ID: MW-4

Date:

Elapsed Time	NTU	Elapsed Time	NTU
0	4.24	24	2.05
3	2.27	27	
6	1.98	30	
9	1.31	33	
12	0.90	36	
15	1.43	39	
18	1.35	42	
21	1.75	45	

Well ID: SH-02R
Date:

Elapsed Time	NTU	Elapsed Time	NTU
0	0.02	24	
3	0.02	27	
6	0.02	30	
9	0.02	33	
12	0.02	36	
15	0.02	39	
18	0.02	42	
21		45	

Well ID: MW-12R
Date:

Elapsed Time	NTU	Elapsed Time	NTU
0	0.02	24	
3	0.02	27	
6	0.02	30	
9	0.02	33	
12	0.02	36	
15	0.02	39	
18	0.02	42	
21	0.02	45	

Well ID: MW-1U
Date:

Elapsed Time	NTU	Elapsed Time	NTU
0	9.29	24	2.27
3	4.19	27	3.21
6	2.98	30	2.31
9	2.13	33	
12	0.02	36	
15	0.02	39	
18	0.02	42	
21	2.15	45	

Well ID: ~~MTW-11~~ A-27
Date:

Elapsed Time	NTU	Elapsed Time	NTU
0	0.81	24	
3	0.02	27	
6	0.02	30	
9	0.02	33	
12	0.02	36	
15	0.02	39	
18		42	
21		45	

Well ID: TMW-B1
Date:

Elapsed Time	NTU	Elapsed Time	NTU
0	0.73	24	0.02
3	0.02	27	0.02
6	0.02	30	
9	0.02	33	
12	0.02	36	
15	0.02	39	
18	0.02	42	
21	0.02	45	

Well ID: MW-14
Date: 10/1/19

Elapsed Time	NTU	Elapsed Time	NTU
0		24	2.79
3	6.60	27	3.67
6	6.31	30	4.30
9	5.48	33	2.60
12	4.90	36	3.98
15	2.51	39	
18	2.15	42	
21	3.60	45	

Well ID: MW-20

Date: 10/2/19

Elapsed Time	NTU	Elapsed Time	NTU
0	34.2	24	
3	16.1	27	
6	11.8	30	
9	10.2	33	
12	8.14	36	
15	7.89	39	
18	7.20	42	
21		45	

Well ID: MW-1

Date: 10/2/19

Elapsed Time	NTU	Elapsed Time	NTU
0	258	24	50.4
3	104	27	42.9
6	80.8	30	35.7
9	80.2	33	37.1
12	66.7	36	31.1
15	63.2	39	
18	67.1	42	
21	53.2	45	

Well ID: MW-3

Date: 10/2/19

Elapsed Time	NTU	Elapsed Time	NTU
0	26.3	24	
3	11.3	27	
6	0.98	30	
9	0.75	33	
12	0.02	36	
15	0.11	39	
18	0.08	42	
21		45	

Well ID: MW-21

Date: 10/2/19

Elapsed Time	NTU	Elapsed Time	NTU
0	40.2	24	8.77
3	16.7	27	
6	15.2	30	
9	15.2	33	
12	13.2	36	
15	10.4	39	
18	10.9	42	
21	9.57	45	

Well ID: MW-8

Date: 10/2/19

Elapsed Time	NTU	Elapsed Time	NTU
0	98.7	24	
3	54.2	27	
6	36.4	30	
9	18.1	33	
12	17.4	36	
15	17.6	39	
18		42	
21		45	

Well ID: MW-9

Date: 10/2/19

Elapsed Time	NTU	Elapsed Time	NTU
0	16.28	24	
3	2.46	27	
6	1.55	30	
9	0.86	33	
12	0.79	36	
15		39	
18		42	
21		45	

Well ID: TMW-6

Date: 10/2/19

Elapsed Time	NTU	Elapsed Time	NTU
0	3.86	24	
3	4.94	27	
6	13.4	30	
9	11.1	33	
12	8.47	36	
15	7.27	39	
18	7.44	42	
21		45	

Well ID: TMW-5

Date: 10/2/19

Elapsed Time	NTU	Elapsed Time	NTU
0	6.79	24	0.57
3	0.16	27	1.00
6	0.02	30	0.23
9	0.02	33	0.09
12	0.11	36	
15	0.18	39	
18	0.27	42	
21	0.22	45	

Well ID: 11

Date: 10/2/19

Elapsed Time	NTU	Elapsed Time	NTU
0	9.40	24	1.49
3	6.41	27	1.07
6	3.51	30	0.64
9	2.93	33	0.38
12	2.77	36	1.31
15	2.25	39	1.74
18	1.49	42	0.43
21	2.11	45	0.07

Well ID: TMW-4

Date: 10/3/19

Elapsed Time	NTU	Elapsed Time	NTU
0	3.03	24	0.02
3	0.58	27	0.90
6	0.52	30	
9	0.02	33	
12	0.02	36	
15	0.26	39	
18	0.20	42	
21	0.02	45	

Well ID: TMW-3

Date: 10/3/19

Elapsed Time	NTU	Elapsed Time	NTU
0	0.32	24	
3	0.02	27	
6	1.25	30	
9	0.80	33	
12	0.37	36	
15		39	
18		42	
21		45	

Well ID: MW-7

Date: 10/3/19

Elapsed Time	NTU	Elapsed Time	NTU
0	9.11	24	5.90
3	15.71	27	6.09
6	10.30	30	7.45
9	9.35	33	5.21
12	9.53	36	5.20
15	7.52	39	4.93
18	6.73	42	5.67
21	7.46	45	5.14

Well ID: 12

Date: 10/3/19

Elapsed Time	NTU	Elapsed Time	NTU
0	8.81	24	6.94
3	8.11	27	6.75
6	7.44	30	6.44
9	6.46	33	6.20
12	6.15	36	7.51
15	7.09	39	5.94
18	7.34	42	5.37
21	7.37	45	5.66

Well ID: MW-22

Date: 10/3/19

Elapsed Time	NTU	Elapsed Time	NTU
0	70.3	24	1.88
3	45.7	27	1.78
6	22.2	30	1.36
9	14.7	33	0.78
12	10.5	36	0.80
15	9.80	39	
18	6.40	42	
21	3.87	45	

Well ID: MW-6

Date: 10/3/19

Elapsed Time	NTU	Elapsed Time	NTU
0	15.6	24	
3	12.0	27	
6	6.05	30	
9	5.13	33	
12	5.14	36	
15		39	
18		42	
21		45	

Well ID: ~~MW-16~~ MW-2

Date: 10/3/19

Elapsed Time	NTU	Elapsed Time	NTU
0	70.3 33.97	24	
3	8.79	27	
6	4.91	30	
9	5.34	33	
12	4.40	36	
15	4.88	39	
18	3.96	42	
21	4.78	45	

Well ID: MW-18

Date: 10/3/19

Elapsed Time	NTU	Elapsed Time	NTU
0	77.5	24	2.06
3	27.3	27	1.65
6	8.96	30	1.86
9	2.59	33	2.13
12	2.77	36	0.94
15	1.91	39	1.87
18	1.86	42	1.68
21	1.23	45	

Well ID: A-282

Date: 10/4/19

Elapsed Time	NTU	Elapsed Time	NTU
0	7.00	24	1.93
3	5.11	27	2.52
6	3.82	30	1.87
9	3.77	33	4.64
12	1.80	36	2.13
15	2.45	39	1.87
18	3.25	42	2.84
21	2.40	45	3.85

Well ID: MW-24
Date: 10/4/19

Elapsed Time	NTU	Elapsed Time	NTU
0	8.43	24	5.55
3	4.94	27	4.25
6	4.12	30	4.93
9	3.34	33	5.05
12	3.45	36	3.49
15	5.41	39	3.37
18	4.48	42	3.24
21	3.78	45	

Well ID: MW-23
Date: 10/4/19

Elapsed Time	NTU	Elapsed Time	NTU
0	3.57	24	
3	1.24	27	
6	2.74	30	
9	1.07	33	
12	2.31	36	
15	2.06	39	
18	1.75	42	
21		45	

Well ID: A-21
Date: 10/4/19

Elapsed Time	NTU	Elapsed Time	NTU
0	10.4	24	7.95
3	5.93	27	7.34
6	6.91	30	
9	7.76	33	
12	7.12	36	
15	6.65	39	
18	6.75	42	
21	7.95	45	

Well ID: MW-5
Date: 10/1/19

Elapsed Time	NTU	Elapsed Time	NTU
0	6.37	24	7.02
3	7.21	27	8.07
6	22.3	30	8.35
9	5.67	33	9.11
12	6.70	36	8.47
15	6.20	39	8.35
18	9.42	42	7.89
21	8.45	45	8.16

Well ID: _____
Date: _____

Elapsed Time	NTU	Elapsed Time	NTU
0		24	
3		27	
6		30	
9		33	
12		36	
15		39	
18		42	
21		45	

Well ID: _____
Date: _____

Elapsed Time	NTU	Elapsed Time	NTU
0		24	
3		27	
6		30	
9		33	
12		36	
15		39	
18		42	
21		45	

Site ID: **KMLT Harbor Island Terminal**
 Site Address: **2720 13th Ave SW, Seattle, WA**

 Project #: **WA000804.2018.00002**
 Date: **4/12/2019**

Well ID	Time	Sheen/ Odor	LNAPL Depth (ft btoc)	LNAPL Thickness (feet)	DTW (feet btoc)	TD (feet btoc)	Notes
A-4	1103	—	—	—	6.67		
A-5	1104	—	—	—	7.46		
A-6	1502	—	—	—	6.30		
A-8	1108	—	—	—	4.50		
A-10	1119	—	—	—	6.65		
A-11	1126	—	—	—	7.47		
A-12	1120	—	—	—	6.24		
A-14R	1121	—	—	—	7.39		
A-16	1458	—	—	—	7.64		no sock when access up no sock added
A-18	1124	—	—	—	7.84		
A-19	1142	—	—	—	7.76		
A-20	1140	—	—	—	7.45		
A-21	1137	—	—	—	7.54		
A-22R	1145	—	—	—	7.17		
A-23R	—	—	—	—	—		unable to access well
A-25	1135	—	—	—	7.06		
A-26R	1147	—	—	—	7.25		
A-27	1158	—	—	—	10.23		
A-28R	1201	—	—	—	7.67		
K 11	1448	—	—	—	4.33		
12	1020	—	—	—	1.95		
MW-07R	920	—	—	—	6.00		
MW-1	906	—	—	—	6.35		
MW-2	1424	—	—	—	6.81		
MW-3	1009	—	—	—	2.88		

Site ID: **KMLT Harbor Island Terminal**
 Site Address: **2720 13th Ave SW, Seattle, WA**

 Project #: **WA000804.2018.00002**
 Date: **4/12/2019**

Well ID	Time	Sheen/ Odor	LNAPL Depth (ft btoc)	LNAPL Thickness (feet)	DTW (feet btoc)	TD (feet btoc)	Notes
MW-4	0925	—	—	—	6.24		
MW-5	0944	—	—	—	2.71		
MW-6	1213	—	—	—	6.77		
MW-7	1024	—	—	—	2.52		
MW-8	1040	—	—	—	3.36		
MW-9	1048	—	—	—	2.60		
MW 12R	1433	—	—	—	7.30		Measurement correct - MLU
MW-14	0941	—	—	—	3.11		
MW-16	1452	—	—	—	6.40		
MW-18	1427	—	—	—	6.67		
MW-19	1000	—	—	—	2.59		water pumped.
MW-20	1004	—	—	—	3.25		
MW-21	1044	—	—	—	2.65		
MW-22	1419	—	—	—	7.81		
MW-23	1153	—	—	—	7.25		
MW-24	1150	—	—	—	7.22		
MW-25	1113	—	—	—	7.07		water pumped.
SH-02R	0928	—	—	—	5.20		
K SH-05R	0919	—	—	—	6.75		
TMW-B1	1210	—	—	—	7.53		
TMW-1	0956	—	—	—	3.06		water had to be pumped casing moves w/ cap. pressure in well
TMW-2	0951	—	—	—	3.20		water had to be pumped. casing moves w/ well cap
TMW-3	1027	—	—	—	3.42		
TMW-4	1029	—	—	—	2.90		
TMW-5	1017	—	—	—	2.82		
TMW-6	1022	—	—	—	2.00		

Site ID: KMLT Harbor Island Terminal
Site Address: 2720 13th Ave SW, Seattle, WA

Project #: 30018857
Date: 10/1/2019

Well ID	Time	Sheen/ Odor	LNAPL Depth (ft btoc)	LNAPL Thickness (feet)	DTW (feet btoc)	TD (feet btoc)	Notes
A-4	1130	—	—	—	7.25	—	
A-5	1134	—	—	—	7.99	—	
A-6	1130	odor	6.90	0.06	6.96	—	sock added
A-8	1136	odor	—	—	8.06	—	
A-10	1155	—	—	—	7.10	—	
A-11	1155	—	—	—	7.95	—	
A-12	1200	—	—	—	6.72	—	monument broken
A-14R	1157	—	—	—	7.83	—	
A-16	1125	—	8.08	0.24	8.32	—	sock added
A-18	1200	—	—	—	8.28	—	
A-19	1205	—	—	—	8.25	—	
A-20	1202	—	—	—	8.17	—	
A-21	1207	—	—	—	7.96	—	
A-22R	1213	—	—	—	7.74	—	
A-23R	0850	—	—	—	9.23	—	
A-25	1149	—	—	—	7.67	—	
A-26R	1355	—	—	—	7.85	—	
A-27	1345	—	—	—	10.86	—	
A-28R	1350	—	—	—	8.50	—	
11	1034	—	—	—	5.02	—	
12	1032	—	—	—	2.09	—	
MW-07R	0915	—	—	—	6.84	—	
MW-1	1004	—	—	—	6.21	—	
MW-2	1359	—	—	—	8.08	—	
MW-3	1009	—	—	—	4.00	—	

Site ID: KMLT Harbor Island Terminal
Site Address: 2720 13th Ave SW, Seattle, WA

Project #: 30018857
Date: 10/1/2019

Well ID	Time	Sheen/ Odor	LNAPL Depth (ft btoc)	LNAPL Thickness (feet)	DTW (feet btoc)	TD (feet btoc)	Notes
MW-4	0910	odor	—	—	7.14	—	
MW-5	1055	—	—	—	3.53	—	
MW-6	1403	—	—	—	7.81	—	
MW-7	1042	odor	—	—	3.18	—	water
MW-8	1019	—	—	—	4.06	—	
MW-9	1025	—	—	—	3.24	—	
MW-12R	0940	—	—	—	8.00	—	
MW-14	1057	—	—	—	3.98	—	
MW-16	1350	—	—	—	7.87	—	
MW-18	1346	—	—	—	7.97	—	
MW-19	1050	—	—	—	3.54	—	water
MW-20	0957	—	—	—	3.97	—	
MW-21	1017	—	—	—	3.25	—	
MW-22	1353	—	—	—	8.98	—	
MW-23	1220	—	—	—	7.75	—	
MW-24	1217	—	—	—	7.76	—	
MW-25	1141	—	—	—	7.54	—	lid bent
SH-02R	0933	—	—	—	6.02	—	
SH-05R	0918	—	—	—	7.33	—	
TMW-B1	1340	Slight odor	—	—	8.42	—	water
TMW-1	1046	—	—	—	3.95	—	water
TMW-2	1052	—	—	—	4.02	—	water
TMW-3	1039	—	—	—	4.01	—	
TMW-4	1037	—	—	—	3.76	—	Water
TMW-5	1028	—	—	—	3.75	—	
TMW-6	1030	—	—	—	3.01	—	Water

APPENDIX C

Laboratory Reports and Chain-of-Custody Documentation

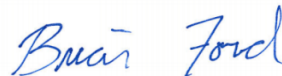


April 19, 2019

Kinder Morgan- Orange, CA

Sample Delivery Group: L1086418
Samples Received: 04/05/2019
Project Number: WA000804.2018
Description: KMEP Harbor Island
Site: 2720 13TH AVENUE SW SEATTLE,WA
Report To: Kyle Haslam
1100 Olive Way, Suite 800
Seattle, WA 98101

Entire Report Reviewed By:



Brian Ford
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



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1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

SAMPLE SUMMARY



TMW-1 L1086418-01 GW

Collected by
KF/LS Collected date/time
04/02/19 16:20 Received date/time
04/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	10	04/17/19 01:47	04/17/19 01:47	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264228	1	04/11/19 14:50	04/11/19 14:50	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/08/19 22:21	04/08/19 22:21	JCP	Mt. Juliet, TN

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

TMW-2 L1086418-02 GW

Collected by
KF/LS Collected date/time
04/02/19 16:00 Received date/time
04/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	50	04/17/19 02:01	04/17/19 02:01	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264228	1	04/11/19 15:13	04/11/19 15:13	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/08/19 22:40	04/08/19 22:40	JCP	Mt. Juliet, TN

TMW-3 L1086418-03 GW

Collected by
KF/LS Collected date/time
04/03/19 13:05 Received date/time
04/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	20	04/17/19 02:15	04/17/19 02:15	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264228	1	04/11/19 15:33	04/11/19 15:33	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1264425	1	04/11/19 21:19	04/11/19 21:19	ADM	Mt. Juliet, TN

TMW-4 L1086418-04 GW

Collected by
KF/LS Collected date/time
04/03/19 12:30 Received date/time
04/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	20	04/17/19 02:30	04/17/19 02:30	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264228	1	04/11/19 15:54	04/11/19 15:54	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	10	04/08/19 23:19	04/08/19 23:19	JCP	Mt. Juliet, TN

TMW-5 L1086418-05 GW

Collected by
KF/LS Collected date/time
04/03/19 15:45 Received date/time
04/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	20	04/17/19 02:44	04/17/19 02:44	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264228	1	04/11/19 16:14	04/11/19 16:14	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/08/19 23:39	04/08/19 23:39	JCP	Mt. Juliet, TN

TMW-6 L1086418-06 GW

Collected by
KF/LS Collected date/time
04/03/19 11:15 Received date/time
04/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	10	04/17/19 02:59	04/17/19 02:59	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264228	1	04/11/19 16:35	04/11/19 16:35	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	10	04/08/19 23:58	04/08/19 23:58	JCP	Mt. Juliet, TN

SAMPLE SUMMARY



MW-7 L1086418-07 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	20	04/17/19 03:13	04/17/19 03:13	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264228	1	04/11/19 16:55	04/11/19 16:55	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/09/19 00:18	04/09/19 00:18	JCP	Mt. Juliet, TN

Collected by KF/LS Collected date/time 04/03/19 13:50 Received date/time 04/05/19 08:45

1 Cp

2 Tc

3 Ss

MW-9 L1086418-08 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	1	04/17/19 03:27	04/17/19 03:27	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264228	1	04/11/19 17:15	04/11/19 17:15	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1264425	1	04/11/19 21:39	04/11/19 21:39	ADM	Mt. Juliet, TN

Collected by KF/LS Collected date/time 04/03/19 10:30 Received date/time 04/05/19 08:45

4 Cn

5 Sr

6 Qc

MW-18 L1086418-09 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264228	1	04/11/19 17:35	04/11/19 17:35	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/09/19 00:57	04/09/19 00:57	JCP	Mt. Juliet, TN

Collected by KF/LS Collected date/time 04/03/19 16:30 Received date/time 04/05/19 08:45

7 Gl

8 Al

9 Sc

MW-19 L1086418-10 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	50	04/17/19 03:42	04/17/19 03:42	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264228	1	04/11/19 17:56	04/11/19 17:56	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/09/19 01:17	04/09/19 01:17	JCP	Mt. Juliet, TN

Collected by KF/LS Collected date/time 04/02/19 17:00 Received date/time 04/05/19 08:45

MW-21 L1086418-11 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264241	1	04/12/19 09:27	04/12/19 09:27	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/09/19 01:37	04/09/19 01:37	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1262660	1	04/09/19 07:13	04/09/19 15:11	TH	Mt. Juliet, TN

Collected by KF/LS Collected date/time 04/03/19 09:30 Received date/time 04/05/19 08:45

MW-23 L1086418-12 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264228	1	04/11/19 18:16	04/11/19 18:16	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/09/19 01:56	04/09/19 01:56	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1264425	10	04/11/19 21:59	04/11/19 21:59	ADM	Mt. Juliet, TN

Collected by KF/LS Collected date/time 04/03/19 12:15 Received date/time 04/05/19 08:45

MW-24 L1086418-13 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264241	10	04/12/19 09:47	04/12/19 09:47	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	10	04/09/19 02:16	04/09/19 02:16	JCP	Mt. Juliet, TN

Collected by KF/LS Collected date/time 04/03/19 11:00 Received date/time 04/05/19 08:45

SAMPLE SUMMARY



A-5 L1086418-14 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	04/03/19 09:20	04/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264241	1	04/12/19 10:08	04/12/19 10:08	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/09/19 02:36	04/09/19 02:36	JCP	Mt. Juliet, TN

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

A-21 L1086418-15 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	04/03/19 10:10	04/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264241	1	04/12/19 10:28	04/12/19 10:28	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/09/19 02:56	04/09/19 02:56	JCP	Mt. Juliet, TN

A-27 L1086418-16 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	04/03/19 15:40	04/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	10	04/17/19 04:25	04/17/19 04:25	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264241	1	04/12/19 10:49	04/12/19 10:49	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/09/19 03:15	04/09/19 03:15	JCP	Mt. Juliet, TN

A-28R L1086418-17 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	04/03/19 13:50	04/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264241	1	04/12/19 11:09	04/12/19 11:09	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1264425	1	04/11/19 22:19	04/11/19 22:19	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1264990	5	04/12/19 14:37	04/12/19 14:37	BMB	Mt. Juliet, TN

11 L1086418-18 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	04/03/19 12:00	04/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	5	04/17/19 04:40	04/17/19 04:40	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1265084	1	04/12/19 16:34	04/12/19 16:34	JAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/09/19 03:55	04/09/19 03:55	JCP	Mt. Juliet, TN

12 L1086418-19 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	04/03/19 15:05	04/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1265413	5	04/17/19 04:54	04/17/19 04:54	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264916	1	04/12/19 13:46	04/12/19 13:46	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/09/19 04:14	04/09/19 04:14	JCP	Mt. Juliet, TN

DUP-01 L1086418-20 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	04/03/19 00:00	04/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264916	1	04/12/19 14:10	04/12/19 14:10	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1262810	1	04/09/19 04:34	04/09/19 04:34	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1264425	10	04/11/19 22:39	04/11/19 22:39	ADM	Mt. Juliet, TN

SAMPLE SUMMARY

DUP-02 L1086418-21 GW

Collected by: KF/LS
 Collected date/time: 04/03/19 00:00
 Received date/time: 04/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264916	1	04/12/19 14:34	04/12/19 14:34	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1265163	1	04/12/19 16:23	04/12/19 16:23	JAH	Mt. Juliet, TN

- 1
Cp
- 2
Tc
- 3
Ss
- 4
Cn
- 5
Sr
- 6
Qc
- 7
Gl
- 8
Al
- 9
Sc

DRUM-01 L1086418-22 GW

Collected by: KF/LS
 Collected date/time: 04/03/19 17:00
 Received date/time: 04/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7470A	WG1262270	1	04/08/19 19:00	04/09/19 10:49	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1262857	1	04/10/19 10:23	04/10/19 13:20	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1262052	1	04/13/19 12:10	04/15/19 22:08	RDS	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1262052	1	04/13/19 12:10	04/18/19 12:28	LAT	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1264916	1	04/12/19 14:58	04/12/19 14:58	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1263420	1	04/10/19 01:44	04/10/19 01:44	ACG	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Project Manager

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	627000		50000	10	04/17/2019 01:47	WG1265413

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	04/11/2019 14:50	WG1264228
(S) a,a,a-Trifluorotoluene(FID)	106		78.0-120		04/11/2019 14:50	WG1264228

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	04/08/2019 22:21	WG1262810
Toluene	ND		1.00	1	04/08/2019 22:21	WG1262810
Ethylbenzene	ND		1.00	1	04/08/2019 22:21	WG1262810
Total Xylenes	ND		3.00	1	04/08/2019 22:21	WG1262810
(S) Toluene-d8	112		80.0-120		04/08/2019 22:21	WG1262810
(S) a,a,a-Trifluorotoluene	91.6		80.0-120		04/08/2019 22:21	WG1262810
(S) 4-Bromofluorobenzene	86.4		77.0-126		04/08/2019 22:21	WG1262810
(S) 1,2-Dichloroethane-d4	99.0		70.0-130		04/08/2019 22:21	WG1262810

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	1480000		250000	50	04/17/2019 02:01	WG1265413

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	04/11/2019 15:13	WG1264228
(S) a,a,a-Trifluorotoluene(FID)	106		78.0-120		04/11/2019 15:13	WG1264228

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	04/08/2019 22:40	WG1262810
Toluene	ND		1.00	1	04/08/2019 22:40	WG1262810
Ethylbenzene	ND		1.00	1	04/08/2019 22:40	WG1262810
Total Xylenes	ND		3.00	1	04/08/2019 22:40	WG1262810
(S) Toluene-d8	95.9		80.0-120		04/08/2019 22:40	WG1262810
(S) a,a,a-Trifluorotoluene	88.4		80.0-120		04/08/2019 22:40	WG1262810
(S) 4-Bromofluorobenzene	86.2		77.0-126		04/08/2019 22:40	WG1262810
(S) 1,2-Dichloroethane-d4	95.6		70.0-130		04/08/2019 22:40	WG1262810

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	909000		100000	20	04/17/2019 02:15	WG1265413

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	553		100	1	04/11/2019 15:33	WG1264228
(S) a,a,a-Trifluorotoluene(FID)	102		78.0-120		04/11/2019 15:33	WG1264228

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	04/11/2019 21:19	WG1264425
Toluene	ND		1.00	1	04/11/2019 21:19	WG1264425
Ethylbenzene	ND		1.00	1	04/11/2019 21:19	WG1264425
Total Xylenes	ND		3.00	1	04/11/2019 21:19	WG1264425
(S) Toluene-d8	100		80.0-120		04/11/2019 21:19	WG1264425
(S) a,a,a-Trifluorotoluene	107		80.0-120		04/11/2019 21:19	WG1264425
(S) 4-Bromofluorobenzene	100		77.0-126		04/11/2019 21:19	WG1264425
(S) 1,2-Dichloroethane-d4	90.6		70.0-130		04/11/2019 21:19	WG1264425

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	696000		100000	20	04/17/2019 02:30	WG1265413

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	3070		100	1	04/11/2019 15:54	WG1264228
(S) a,a,a-Trifluorotoluene(FID)	86.5		78.0-120		04/11/2019 15:54	WG1264228

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		10.0	10	04/08/2019 23:19	WG1262810
Toluene	ND		10.0	10	04/08/2019 23:19	WG1262810
Ethylbenzene	257		10.0	10	04/08/2019 23:19	WG1262810
Total Xylenes	ND		30.0	10	04/08/2019 23:19	WG1262810
(S) Toluene-d8	103		80.0-120		04/08/2019 23:19	WG1262810
(S) a,a,a-Trifluorotoluene	108		80.0-120		04/08/2019 23:19	WG1262810
(S) 4-Bromofluorobenzene	115		77.0-126		04/08/2019 23:19	WG1262810
(S) 1,2-Dichloroethane-d4	131	J1	70.0-130		04/08/2019 23:19	WG1262810

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Sample Narrative:

L1086418-04 WG1262810: Surrogate failure due to matrix interference.



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	832000		100000	20	04/17/2019 02:44	WG1265413

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	1040		100	1	04/11/2019 16:14	WG1264228
(S) a,a,a-Trifluorotoluene(FID)	102		78.0-120		04/11/2019 16:14	WG1264228

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	04/08/2019 23:39	WG1262810
Toluene	ND		1.00	1	04/08/2019 23:39	WG1262810
Ethylbenzene	2.00		1.00	1	04/08/2019 23:39	WG1262810
Total Xylenes	ND		3.00	1	04/08/2019 23:39	WG1262810
(S) Toluene-d8	93.0		80.0-120		04/08/2019 23:39	WG1262810
(S) a,a,a-Trifluorotoluene	126	J1	80.0-120		04/08/2019 23:39	WG1262810
(S) 4-Bromofluorobenzene	88.0		77.0-126		04/08/2019 23:39	WG1262810
(S) 1,2-Dichloroethane-d4	109		70.0-130		04/08/2019 23:39	WG1262810

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Sample Narrative:

L1086418-05 WG1262810: Surrogate failure due to matrix interference.



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	344000		50000	10	04/17/2019 02:59	WG1265413

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	4770		100	1	04/11/2019 16:35	WG1264228
(S) a,a,a-Trifluorotoluene(FID)	73.5	<u>J2</u>	78.0-120		04/11/2019 16:35	WG1264228

3 Ss

4 Cn

Sample Narrative:

L1086418-06 WG1264228: Surrogate failure due to matrix interference.

5 Sr

6 Qc

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		10.0	10	04/08/2019 23:58	WG1262810
Toluene	ND		10.0	10	04/08/2019 23:58	WG1262810
Ethylbenzene	289		10.0	10	04/08/2019 23:58	WG1262810
Total Xylenes	413		30.0	10	04/08/2019 23:58	WG1262810
(S) Toluene-d8	77.2	<u>J2</u>	80.0-120		04/08/2019 23:58	WG1262810
(S) a,a,a-Trifluorotoluene	99.2		80.0-120		04/08/2019 23:58	WG1262810
(S) 4-Bromofluorobenzene	115		77.0-126		04/08/2019 23:58	WG1262810
(S) 1,2-Dichloroethane-d4	119		70.0-130		04/08/2019 23:58	WG1262810

7 Gl

8 Al

9 Sc

Sample Narrative:

L1086418-06 WG1262810: Surrogate failure due to matrix interference.



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	763000		100000	20	04/17/2019 03:13	WG1265413

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	451		100	1	04/11/2019 16:55	WG1264228
(S) a,a,a-Trifluorotoluene(FID)	95.2		78.0-120		04/11/2019 16:55	WG1264228

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	04/09/2019 00:18	WG1262810
Toluene	ND		1.00	1	04/09/2019 00:18	WG1262810
Ethylbenzene	1.42		1.00	1	04/09/2019 00:18	WG1262810
Total Xylenes	ND		3.00	1	04/09/2019 00:18	WG1262810
(S) Toluene-d8	96.1		80.0-120		04/09/2019 00:18	WG1262810
(S) a,a,a-Trifluorotoluene	91.2		80.0-120		04/09/2019 00:18	WG1262810
(S) 4-Bromofluorobenzene	91.9		77.0-126		04/09/2019 00:18	WG1262810
(S) 1,2-Dichloroethane-d4	97.3		70.0-130		04/09/2019 00:18	WG1262810

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	5200		5000	1	04/17/2019 03:27	WG1265413

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	04/11/2019 17:15	WG1264228
(S) a,a,a-Trifluorotoluene(FID)	105		78.0-120		04/11/2019 17:15	WG1264228

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	04/11/2019 21:39	WG1264425
Toluene	ND		1.00	1	04/11/2019 21:39	WG1264425
Ethylbenzene	ND		1.00	1	04/11/2019 21:39	WG1264425
Total Xylenes	ND		3.00	1	04/11/2019 21:39	WG1264425
(S) Toluene-d8	102		80.0-120		04/11/2019 21:39	WG1264425
(S) a,a,a-Trifluorotoluene	108		80.0-120		04/11/2019 21:39	WG1264425
(S) 4-Bromofluorobenzene	103		77.0-126		04/11/2019 21:39	WG1264425
(S) 1,2-Dichloroethane-d4	91.9		70.0-130		04/11/2019 21:39	WG1264425

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	04/11/2019 17:35	WG1264228
(S) a,a,a-Trifluorotoluene(FID)	105		78.0-120		04/11/2019 17:35	WG1264228

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	04/09/2019 00:57	WG1262810
Toluene	ND		1.00	1	04/09/2019 00:57	WG1262810
Ethylbenzene	ND		1.00	1	04/09/2019 00:57	WG1262810
Total Xylenes	ND		3.00	1	04/09/2019 00:57	WG1262810
(S) Toluene-d8	97.7		80.0-120		04/09/2019 00:57	WG1262810
(S) a,a,a-Trifluorotoluene	84.8		80.0-120		04/09/2019 00:57	WG1262810
(S) 4-Bromofluorobenzene	93.8		77.0-126		04/09/2019 00:57	WG1262810
(S) 1,2-Dichloroethane-d4	95.3		70.0-130		04/09/2019 00:57	WG1262810

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	1310000		250000	50	04/17/2019 03:42	WG1265413

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	810		100	1	04/11/2019 17:56	WG1264228
(S) a,a,a-Trifluorotoluene(FID)	74.1	<u>J2</u>	78.0-120		04/11/2019 17:56	WG1264228

3 Ss

4 Cn

Sample Narrative:

L1086418-10 WG1264228: Surrogate failure due to matrix interference.

5 Sr

6 Qc

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	1.80		1.00	1	04/09/2019 01:17	WG1262810
Toluene	ND		1.00	1	04/09/2019 01:17	WG1262810
Ethylbenzene	ND		1.00	1	04/09/2019 01:17	WG1262810
Total Xylenes	ND		3.00	1	04/09/2019 01:17	WG1262810
(S) Toluene-d8	90.9		80.0-120		04/09/2019 01:17	WG1262810
(S) a,a,a-Trifluorotoluene	98.4		80.0-120		04/09/2019 01:17	WG1262810
(S) 4-Bromofluorobenzene	87.8		77.0-126		04/09/2019 01:17	WG1262810
(S) 1,2-Dichloroethane-d4	91.9		70.0-130		04/09/2019 01:17	WG1262810

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	165	<u>B</u>	100	1	04/12/2019 09:27	WG1264241
(S) a,a,a-Trifluorotoluene(FID)	105		78.0-120		04/12/2019 09:27	WG1264241

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	04/09/2019 01:37	WG1262810
Toluene	ND		1.00	1	04/09/2019 01:37	WG1262810
Ethylbenzene	ND		1.00	1	04/09/2019 01:37	WG1262810
Total Xylenes	ND		3.00	1	04/09/2019 01:37	WG1262810
(S) Toluene-d8	99.3		80.0-120		04/09/2019 01:37	WG1262810
(S) a,a,a-Trifluorotoluene	91.8		80.0-120		04/09/2019 01:37	WG1262810
(S) 4-Bromofluorobenzene	99.1		77.0-126		04/09/2019 01:37	WG1262810
(S) 1,2-Dichloroethane-d4	92.9		70.0-130		04/09/2019 01:37	WG1262810

4 Cn

5 Sr

6 Qc

7 Gl

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	967		200	1	04/09/2019 15:11	WG1262660
Residual Range Organics (RRO)	271	<u>B</u>	250	1	04/09/2019 15:11	WG1262660
(S) o-Terphenyl	69.5		52.0-156		04/09/2019 15:11	WG1262660

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	1740		100	1	04/11/2019 18:16	WG1264228
(S) a,a,a-Trifluorotoluene(FID)	90.7		78.0-120		04/11/2019 18:16	WG1264228

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	240		10.0	10	04/11/2019 21:59	WG1264425
Toluene	3.69		1.00	1	04/09/2019 01:56	WG1262810
Ethylbenzene	2.31		1.00	1	04/09/2019 01:56	WG1262810
Total Xylenes	7.60		3.00	1	04/09/2019 01:56	WG1262810
(S) Toluene-d8	83.4		80.0-120		04/09/2019 01:56	WG1262810
(S) Toluene-d8	102		80.0-120		04/11/2019 21:59	WG1264425
(S) a,a,a-Trifluorotoluene	88.7		80.0-120		04/09/2019 01:56	WG1262810
(S) a,a,a-Trifluorotoluene	107		80.0-120		04/11/2019 21:59	WG1264425
(S) 4-Bromofluorobenzene	129	J1	77.0-126		04/09/2019 01:56	WG1262810
(S) 4-Bromofluorobenzene	102		77.0-126		04/11/2019 21:59	WG1264425
(S) 1,2-Dichloroethane-d4	125		70.0-130		04/09/2019 01:56	WG1262810
(S) 1,2-Dichloroethane-d4	90.3		70.0-130		04/11/2019 21:59	WG1264425

Sample Narrative:

L1086418-12 WG1262810: Surrogate failure due to matrix interference.



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	13600		1000	10	04/12/2019 09:47	WG1264241
(S) a,a,a-Trifluorotoluene(FID)	86.1		78.0-120		04/12/2019 09:47	WG1264241

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Benzene	719		10.0	10	04/09/2019 02:16	WG1262810
Toluene	27.4		10.0	10	04/09/2019 02:16	WG1262810
Ethylbenzene	1230		10.0	10	04/09/2019 02:16	WG1262810
Total Xylenes	309		30.0	10	04/09/2019 02:16	WG1262810
(S) Toluene-d8	95.4		80.0-120		04/09/2019 02:16	WG1262810
(S) a,a,a-Trifluorotoluene	93.6		80.0-120		04/09/2019 02:16	WG1262810
(S) 4-Bromofluorobenzene	93.6		77.0-126		04/09/2019 02:16	WG1262810
(S) 1,2-Dichloroethane-d4	115		70.0-130		04/09/2019 02:16	WG1262810



Collected date/time: 04/03/19 09:20

L1086418

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	591		100	1	04/12/2019 10:08	WG1264241
(S) a,a,a-Trifluorotoluene(FID)	92.3		78.0-120		04/12/2019 10:08	WG1264241

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	1.69		1.00	1	04/09/2019 02:36	WG1262810
Toluene	1.45		1.00	1	04/09/2019 02:36	WG1262810
Ethylbenzene	ND		1.00	1	04/09/2019 02:36	WG1262810
Total Xylenes	ND		3.00	1	04/09/2019 02:36	WG1262810
(S) Toluene-d8	92.4		80.0-120		04/09/2019 02:36	WG1262810
(S) a,a,a-Trifluorotoluene	101		80.0-120		04/09/2019 02:36	WG1262810
(S) 4-Bromofluorobenzene	99.3		77.0-126		04/09/2019 02:36	WG1262810
(S) 1,2-Dichloroethane-d4	125		70.0-130		04/09/2019 02:36	WG1262810



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	04/12/2019 10:28	WG1264241
(S) a,a,a-Trifluorotoluene(FID)	107		78.0-120		04/12/2019 10:28	WG1264241

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	04/09/2019 02:56	WG1262810
Toluene	ND		1.00	1	04/09/2019 02:56	WG1262810
Ethylbenzene	ND		1.00	1	04/09/2019 02:56	WG1262810
Total Xylenes	ND		3.00	1	04/09/2019 02:56	WG1262810
(S) Toluene-d8	100		80.0-120		04/09/2019 02:56	WG1262810
(S) a,a,a-Trifluorotoluene	90.9		80.0-120		04/09/2019 02:56	WG1262810
(S) 4-Bromofluorobenzene	92.5		77.0-126		04/09/2019 02:56	WG1262810
(S) 1,2-Dichloroethane-d4	96.4		70.0-130		04/09/2019 02:56	WG1262810

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	292000		50000	10	04/17/2019 04:25	WG1265413

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	869		100	1	04/12/2019 10:49	WG1264241
(S) a,a,a-Trifluorotoluene(FID)	97.2		78.0-120		04/12/2019 10:49	WG1264241

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	8.59		1.00	1	04/09/2019 03:15	WG1262810
Toluene	ND		1.00	1	04/09/2019 03:15	WG1262810
Ethylbenzene	11.6		1.00	1	04/09/2019 03:15	WG1262810
Total Xylenes	ND		3.00	1	04/09/2019 03:15	WG1262810
(S) Toluene-d8	60.8	<u>J2</u>	80.0-120		04/09/2019 03:15	WG1262810
(S) a,a,a-Trifluorotoluene	96.2		80.0-120		04/09/2019 03:15	WG1262810
(S) 4-Bromofluorobenzene	93.5		77.0-126		04/09/2019 03:15	WG1262810
(S) 1,2-Dichloroethane-d4	116		70.0-130		04/09/2019 03:15	WG1262810

Sample Narrative:

L1086418-16 WG1262810: Surrogate failure due to matrix interference.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	6240		100	1	04/12/2019 11:09	WG1264241
(S) a,a,a-Trifluorotoluene(FID)	92.1		78.0-120		04/12/2019 11:09	WG1264241

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	127		1.00	1	04/11/2019 22:19	WG1264425
Toluene	6.90		1.00	1	04/11/2019 22:19	WG1264425
Ethylbenzene	294		5.00	5	04/12/2019 14:37	WG1264990
Total Xylenes	23.0		3.00	1	04/11/2019 22:19	WG1264425
(S) Toluene-d8	97.2		80.0-120		04/11/2019 22:19	WG1264425
(S) Toluene-d8	103		80.0-120		04/12/2019 14:37	WG1264990
(S) a,a,a-Trifluorotoluene	85.4		80.0-120		04/11/2019 22:19	WG1264425
(S) a,a,a-Trifluorotoluene	109		80.0-120		04/12/2019 14:37	WG1264990
(S) 4-Bromofluorobenzene	96.9		77.0-126		04/11/2019 22:19	WG1264425
(S) 4-Bromofluorobenzene	103		77.0-126		04/12/2019 14:37	WG1264990
(S) 1,2-Dichloroethane-d4	103		70.0-130		04/11/2019 22:19	WG1264425
(S) 1,2-Dichloroethane-d4	91.4		70.0-130		04/12/2019 14:37	WG1264990



Collected date/time: 04/03/19 12:00

L1086418

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	90000		25000	5	04/17/2019 04:40	WG1265413

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	04/12/2019 16:34	WG1265084
(S) a,a,a-Trifluorotoluene(FID)	112		78.0-120		04/12/2019 16:34	WG1265084

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	04/09/2019 03:55	WG1262810
Toluene	ND		1.00	1	04/09/2019 03:55	WG1262810
Ethylbenzene	ND		1.00	1	04/09/2019 03:55	WG1262810
Total Xylenes	ND		3.00	1	04/09/2019 03:55	WG1262810
(S) Toluene-d8	101		80.0-120		04/09/2019 03:55	WG1262810
(S) a,a,a-Trifluorotoluene	90.1		80.0-120		04/09/2019 03:55	WG1262810
(S) 4-Bromofluorobenzene	90.1		77.0-126		04/09/2019 03:55	WG1262810
(S) 1,2-Dichloroethane-d4	95.9		70.0-130		04/09/2019 03:55	WG1262810

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 04/03/19 15:05

L1086418

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	254000		25000	5	04/17/2019 04:54	WG1265413

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	1230		100	1	04/12/2019 13:46	WG1264916
(S) a,a,a-Trifluorotoluene(FID)	100		78.0-120		04/12/2019 13:46	WG1264916

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	2.25		1.00	1	04/09/2019 04:14	WG1262810
Toluene	1.50		1.00	1	04/09/2019 04:14	WG1262810
Ethylbenzene	18.5		1.00	1	04/09/2019 04:14	WG1262810
Total Xylenes	17.5		3.00	1	04/09/2019 04:14	WG1262810
(S) Toluene-d8	87.1		80.0-120		04/09/2019 04:14	WG1262810
(S) a,a,a-Trifluorotoluene	98.3		80.0-120		04/09/2019 04:14	WG1262810
(S) 4-Bromofluorobenzene	97.6		77.0-126		04/09/2019 04:14	WG1262810
(S) 1,2-Dichloroethane-d4	123		70.0-130		04/09/2019 04:14	WG1262810

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	1650		100	1	04/12/2019 14:10	WG1264916
(S) a,a,a-Trifluorotoluene(FID)	96.3		78.0-120		04/12/2019 14:10	WG1264916

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	255		10.0	10	04/11/2019 22:39	WG1264425
Toluene	3.97		1.00	1	04/09/2019 04:34	WG1262810
Ethylbenzene	2.45		1.00	1	04/09/2019 04:34	WG1262810
Total Xylenes	6.30		3.00	1	04/09/2019 04:34	WG1262810
(S) Toluene-d8	88.4		80.0-120		04/09/2019 04:34	WG1262810
(S) Toluene-d8	102		80.0-120		04/11/2019 22:39	WG1264425
(S) a,a,a-Trifluorotoluene	87.7		80.0-120		04/09/2019 04:34	WG1262810
(S) a,a,a-Trifluorotoluene	110		80.0-120		04/11/2019 22:39	WG1264425
(S) 4-Bromofluorobenzene	93.6		77.0-126		04/09/2019 04:34	WG1262810
(S) 4-Bromofluorobenzene	105		77.0-126		04/11/2019 22:39	WG1264425
(S) 1,2-Dichloroethane-d4	120		70.0-130		04/09/2019 04:34	WG1262810
(S) 1,2-Dichloroethane-d4	88.8		70.0-130		04/11/2019 22:39	WG1264425

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	251		100	1	04/12/2019 14:34	WG1264916
(S) a,a,a-Trifluorotoluene(FID)	109		78.0-120		04/12/2019 14:34	WG1264916

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	04/12/2019 16:23	WG1265163
Toluene	ND		1.00	1	04/12/2019 16:23	WG1265163
Ethylbenzene	1.16		1.00	1	04/12/2019 16:23	WG1265163
Total Xylenes	ND		3.00	1	04/12/2019 16:23	WG1265163
(S) Toluene-d8	103		80.0-120		04/12/2019 16:23	WG1265163
(S) a,a,a-Trifluorotoluene	93.9		80.0-120		04/12/2019 16:23	WG1265163
(S) 4-Bromofluorobenzene	99.4		77.0-126		04/12/2019 16:23	WG1265163
(S) 1,2-Dichloroethane-d4	102		70.0-130		04/12/2019 16:23	WG1265163



Collected date/time: 04/03/19 17:00

L1086418

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Mercury	ND		0.200	1	04/09/2019 10:49	WG1262270

1 Cp

2 Tc

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Barium	14.7		5.00	1	04/10/2019 13:20	WG1262857
Beryllium	ND		2.00	1	04/10/2019 13:20	WG1262857
Chromium	ND		10.0	1	04/10/2019 13:20	WG1262857
Cobalt	ND		10.0	1	04/10/2019 13:20	WG1262857
Molybdenum	ND		5.00	1	04/10/2019 13:20	WG1262857
Vanadium	ND		20.0	1	04/10/2019 13:20	WG1262857

3 Ss

4 Cn

5 Sr

6 Qc

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Antimony	2.42		2.00	1	04/18/2019 12:28	WG1262052
Arsenic	7.64		2.00	1	04/15/2019 22:08	WG1262052
Cadmium	ND		1.00	1	04/15/2019 22:08	WG1262052
Copper	ND		5.00	1	04/15/2019 22:08	WG1262052
Lead	3.28		2.00	1	04/15/2019 22:08	WG1262052
Nickel	ND		2.00	1	04/15/2019 22:08	WG1262052
Selenium	ND		2.00	1	04/15/2019 22:08	WG1262052
Silver	ND		2.00	1	04/15/2019 22:08	WG1262052
Thallium	ND		2.00	1	04/15/2019 22:08	WG1262052
Zinc	ND		25.0	1	04/15/2019 22:08	WG1262052

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	2240		100	1	04/12/2019 14:58	WG1264916
(S) a,a,a-Trifluorotoluene(FID)	101		78.0-120		04/12/2019 14:58	WG1264916

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	45.1		1.00	1	04/10/2019 01:44	WG1263420
Toluene	2.21		1.00	1	04/10/2019 01:44	WG1263420
Ethylbenzene	88.0		1.00	1	04/10/2019 01:44	WG1263420
Total Xylenes	26.9		3.00	1	04/10/2019 01:44	WG1263420
(S) Toluene-d8	110		80.0-120		04/10/2019 01:44	WG1263420
(S) a,a,a-Trifluorotoluene	92.2		80.0-120		04/10/2019 01:44	WG1263420
(S) 4-Bromofluorobenzene	102		77.0-126		04/10/2019 01:44	WG1263420
(S) 1,2-Dichloroethane-d4	102		70.0-130		04/10/2019 01:44	WG1263420



Method Blank (MB)

(MB) R3402411-1 04/16/19 21:54

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Sulfate	U		77.4	5000

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1086362-26 Original Sample (OS) • Duplicate (DUP)

(OS) L1086362-26 04/16/19 23:08 • (DUP) R3402411-3 04/16/19 23:22

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Sulfate	U	0.000	1	0.000		15

L1086504-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1086504-01 04/17/19 05:37 • (DUP) R3402411-6 04/17/19 05:52

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Sulfate	25400	25500	1	0.141		15

Laboratory Control Sample (LCS)

(LCS) R3402411-2 04/16/19 22:08

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Sulfate	40000	40000	100	80.0-120	

L1086362-26 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1086362-26 04/16/19 23:08 • (MS) R3402411-4 04/16/19 23:37 • (MSD) R3402411-5 04/16/19 23:51

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Sulfate	50000	U	48100	48000	96.2	96.1	1	80.0-120			0.144	15

L1086504-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1086504-01 04/17/19 05:37 • (MS) R3402411-7 04/17/19 06:06

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Sulfate	50000	25400	72600	94.4	1	80.0-120	



Method Blank (MB)

(MB) R3399807-1 04/09/19 09:13

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Mercury	U		0.0490	0.200

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1086260-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1086260-01 04/09/19 09:27 • (DUP) R3399807-4 04/09/19 09:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Mercury	0.630	0.643	1	2.14		20

L1086260-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1086260-04 04/09/19 09:30 • (DUP) R3399807-5 04/09/19 09:37

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Mercury	U	0.000	1	0.000		20

L1086260-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1086260-07 04/09/19 09:32 • (DUP) R3399807-6 04/09/19 09:40

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Mercury	U	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3399807-2 04/09/19 09:15 • (LCSD) R3399807-3 04/09/19 09:25

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Mercury	3.00	2.90	3.30	96.7	110	80.0-120			13.1	20



L1086362-18 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1086362-18 04/09/19 09:42 • (MS) R3399807-7 04/09/19 09:45 • (MSD) R3399807-8 04/09/19 09:47

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Mercury	3.00	U	2.79	2.37	93.0	79.0	1	75.0-125			16.3	20

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3400310-1 04/10/19 12:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Barium	U		1.70	5.00
Beryllium	U		0.700	2.00
Chromium	U		1.40	10.0
Cobalt	U		2.30	10.0
Molybdenum	U		1.60	5.00
Vanadium	U		2.40	20.0

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3400310-2 04/10/19 12:38 • (LCSD) R3400310-3 04/10/19 12:40

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Barium	1000	1010	998	101	99.8	80.0-120			1.31	20
Beryllium	1000	1010	990	101	99.0	80.0-120			1.96	20
Chromium	1000	947	938	94.7	93.8	80.0-120			0.885	20
Cobalt	1000	995	980	99.5	98.0	80.0-120			1.58	20
Molybdenum	1000	1010	998	101	99.8	80.0-120			1.17	20
Vanadium	1000	989	971	98.9	97.1	80.0-120			1.90	20

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1085184-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1085184-07 04/10/19 12:43 • (MS) R3400310-5 04/10/19 12:48 • (MSD) R3400310-6 04/10/19 12:51

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Barium	1000	73.4	1100	1110	102	104	1	75.0-125			1.01	20
Beryllium	1000	U	991	1040	99.1	104	1	75.0-125			4.51	20
Chromium	1000	12.3	937	956	92.5	94.4	1	75.0-125			2.03	20
Cobalt	1000	U	1010	1020	101	102	1	75.0-125			1.08	20
Molybdenum	1000	U	1040	1050	104	105	1	75.0-125			1.16	20
Vanadium	1000	U	977	1020	97.7	102	1	75.0-125			4.43	20



Method Blank (MB)

(MB) R3401773-1 04/15/19 11:18

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Antimony	U		0.754	2.00
Arsenic	U		0.250	2.00
Cadmium	U		0.160	1.00
Copper	U		0.520	5.00
Lead	U		0.240	2.00
Nickel	U		0.350	2.00
Selenium	U		0.380	2.00
Silver	U		0.310	2.00
Thallium	U		0.190	2.00
Zinc	U		2.56	25.0

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3401773-2 04/15/19 11:23 • (LCSD) R3401773-3 04/15/19 11:29

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	55.9	57.0	112	114	80.0-120			2.01	20
Arsenic	50.0	50.8	51.5	102	103	80.0-120			1.41	20
Cadmium	50.0	50.2	50.2	100	100	80.0-120			0.0148	20
Copper	50.0	51.3	52.3	103	105	80.0-120			1.90	20
Lead	50.0	49.0	51.1	98.1	102	80.0-120			4.18	20
Nickel	50.0	51.4	52.1	103	104	80.0-120			1.38	20
Selenium	50.0	52.0	51.3	104	103	80.0-120			1.30	20
Silver	50.0	50.8	51.3	102	103	80.0-120			0.992	20
Thallium	50.0	49.7	50.6	99.4	101	80.0-120			1.82	20
Zinc	50.0	52.2	52.5	104	105	80.0-120			0.547	20

L1086226-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1086226-09 04/15/19 11:34 • (MS) R3401773-5 04/15/19 11:45 • (MSD) R3401773-6 04/15/19 11:51

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Antimony	50.0	U	58.2	59.0	116	118	1	75.0-125			1.27	20
Arsenic	50.0	7.48	58.8	60.0	103	105	1	75.0-125			1.98	20
Cadmium	50.0	0.411	50.2	50.3	99.6	99.7	1	75.0-125			0.161	20
Copper	50.0	4.74	54.1	56.3	98.6	103	1	75.0-125			4.05	20
Lead	50.0	0.744	50.1	51.7	98.6	102	1	75.0-125			3.31	20
Nickel	50.0	9.34	58.4	59.6	98.0	101	1	75.0-125			2.10	20
Selenium	50.0	29.9	83.1	83.7	106	108	1	75.0-125			0.661	20



L1086226-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1086226-09 04/15/19 11:34 • (MS) R3401773-5 04/15/19 11:45 • (MSD) R3401773-6 04/15/19 11:51

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Silver	50.0	0.476	51.0	50.9	101	101	1	75.0-125			0.263	20
Thallium	50.0	0.621	50.8	52.4	100	104	1	75.0-125			3.15	20
Zinc	50.0	U	51.4	51.2	103	102	1	75.0-125			0.221	20

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Method Blank (MB)

(MB) R3401219-5 04/11/19 11:20

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	38.5	↓	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	107			78.0-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3401219-3 04/11/19 10:18 • (LCSD) R3401219-4 04/11/19 10:39

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	5500	5560	5680	101	103	70.0-124			2.04	20
(S) a,a,a-Trifluorotoluene(FID)				94.5	94.9	78.0-120				

L1086396-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1086396-11 04/11/19 12:48 • (MS) R3401219-8 04/11/19 19:38 • (MSD) R3401219-9 04/11/19 19:58

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	5500	1280	5570	5990	78.1	85.7	1	10.0-155			7.25	21
(S) a,a,a-Trifluorotoluene(FID)					102	103		78.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3401193-2 04/12/19 00:04

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	36.2	↓	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	106			78.0-120

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3401193-1 04/11/19 23:23

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5650	103	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			94.3	78.0-120	



Method Blank (MB)

(MB) R3401250-2 04/12/19 11:59

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	112			78.0-120

1 Cp

2 Tc

3 Ss

4 Cn

Laboratory Control Sample (LCS)

(LCS) R3401250-1 04/12/19 11:11

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	6400	116	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			102	78.0-120	

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3401322-2 04/12/19 11:59

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	112			78.0-120

Laboratory Control Sample (LCS)

(LCS) R3401322-1 04/12/19 11:11

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	6400	116	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			102	78.0-120	

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Method Blank (MB)

(MB) R3400691-4 04/08/19 21:09

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
Toluene	U		0.412	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	112			80.0-120
(S) a,a,a-Trifluorotoluene	88.7			80.0-120
(S) 4-Bromofluorobenzene	99.7			77.0-126
(S) 1,2-Dichloroethane-d4	97.8			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3400691-1 04/08/19 19:51 • (LCSD) R3400691-2 04/08/19 20:11

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	25.0	24.6	25.2	98.4	101	70.0-123			2.39	20
Ethylbenzene	25.0	24.5	25.5	98.2	102	79.0-123			3.89	20
Toluene	25.0	25.3	27.0	101	108	79.0-120			6.49	20
Xylenes, Total	75.0	73.3	73.8	97.7	98.4	79.0-123			0.680	20
(S) Toluene-d8				106	111	80.0-120				
(S) a,a,a-Trifluorotoluene				90.2	89.2	80.0-120				
(S) 4-Bromofluorobenzene				95.6	94.6	77.0-126				
(S) 1,2-Dichloroethane-d4				97.9	96.8	70.0-130				

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3400116-2 04/09/19 20:01

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
Toluene	U		0.412	1.00
Xylenes, Total	U		1.06	3.00
<i>(S) Toluene-d8</i>	109			80.0-120
<i>(S) a,a,a-Trifluorotoluene</i>	97.8			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	101			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	103			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

Laboratory Control Sample (LCS)

(LCS) R3400116-1 04/09/19 19:21

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Benzene	25.0	21.2	84.6	70.0-123	
Ethylbenzene	25.0	24.9	99.6	79.0-123	
Toluene	25.0	23.3	93.1	79.0-120	
Xylenes, Total	75.0	74.2	98.9	79.0-123	
<i>(S) Toluene-d8</i>			107	80.0-120	
<i>(S) a,a,a-Trifluorotoluene</i>			93.3	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			97.8	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			107	70.0-130	

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3401058-3 04/11/19 17:48

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
Toluene	U		0.412	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	103			80.0-120
(S) a,a,a-Trifluorotoluene	110			80.0-120
(S) 4-Bromofluorobenzene	102			77.0-126
(S) 1,2-Dichloroethane-d4	93.3			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3401058-1 04/11/19 16:48 • (LCSD) R3401058-2 04/11/19 17:08

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	25.0	25.3	25.0	101	99.9	70.0-123			1.22	20
Ethylbenzene	25.0	24.0	23.3	95.9	93.3	79.0-123			2.83	20
Toluene	25.0	25.4	24.8	102	99.1	79.0-120			2.43	20
Xylenes, Total	75.0	72.7	71.5	96.9	95.3	79.0-123			1.66	20
(S) Toluene-d8				104	101	80.0-120				
(S) a,a,a-Trifluorotoluene				106	108	80.0-120				
(S) 4-Bromofluorobenzene				104	102	77.0-126				
(S) 1,2-Dichloroethane-d4				92.5	91.3	70.0-130				

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3401244-3 04/12/19 09:47

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Ethylbenzene	U		0.384	1.00
(S) Toluene-d8	104			80.0-120
(S) a,a,a-Trifluorotoluene	109			80.0-120
(S) 4-Bromofluorobenzene	105			77.0-126
(S) 1,2-Dichloroethane-d4	91.7			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3401244-1 04/12/19 08:47 • (LCSD) R3401244-2 04/12/19 09:07

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Ethylbenzene	25.0	22.5	21.9	90.0	87.5	79.0-123			2.85	20
(S) Toluene-d8				103	101	80.0-120				
(S) a,a,a-Trifluorotoluene				109	110	80.0-120				
(S) 4-Bromofluorobenzene				104	103	77.0-126				
(S) 1,2-Dichloroethane-d4				91.2	89.2	70.0-130				

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3401315-3 04/12/19 13:04

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
Toluene	U		0.412	1.00
Xylenes, Total	U		1.06	3.00
<i>(S) Toluene-d8</i>	106			80.0-120
<i>(S) a,a,a-Trifluorotoluene</i>	97.3			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	103			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	94.3			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3401315-1 04/12/19 12:05 • (LCSD) R3401315-2 04/12/19 12:24

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	25.0	26.0	25.4	104	102	70.0-123			2.01	20
Ethylbenzene	25.0	26.0	25.3	104	101	79.0-123			2.52	20
Toluene	25.0	25.9	25.3	104	101	79.0-120			2.41	20
Xylenes, Total	75.0	80.2	78.6	107	105	79.0-123			2.02	20
<i>(S) Toluene-d8</i>				98.3	98.9	80.0-120				
<i>(S) a,a,a-Trifluorotoluene</i>				99.3	98.9	80.0-120				
<i>(S) 4-Bromofluorobenzene</i>				101	98.0	77.0-126				
<i>(S) 1,2-Dichloroethane-d4</i>				108	107	70.0-130				

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3399962-1 04/09/19 13:11

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Diesel Range Organics (DRO)	U		66.7	200
Residual Range Organics (RRO)	129	J	83.3	250
<i>(S) o-Terphenyl</i>	66.0			52.0-156

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3399962-2 04/09/19 13:31 • (LCSD) R3399962-3 04/09/19 13:51

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Diesel Range Organics (DRO)	750	675	695	90.0	92.7	50.0-150			2.92	20
Residual Range Organics (RRO)	750	577	619	76.9	82.5	50.0-150			7.02	20
<i>(S) o-Terphenyl</i>				74.0	74.0	52.0-156				

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 GI

8 AI

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

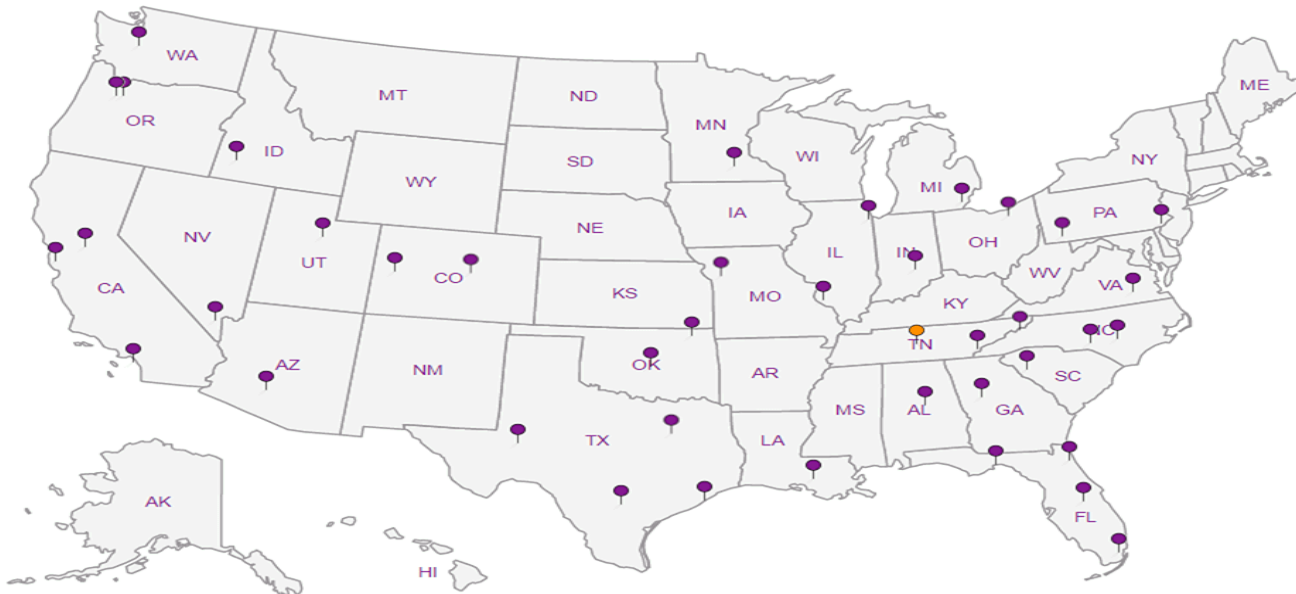
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Kinder Morgan- Orange, CA

1100 Olive Way, Suite 800
Seattle, WA 98101

Report to:
Kyle Haslam

Project Description: **KMEP Harbor Island**

Phone: **206-726-4713**
Fax:

Client Project #
WA000804.2018

City/State Collected: **Seattle, WA**

Lab Project #
KINMOROCA-HARBORISLA

Collected by (print):
Kelsey Franz
Lanreth Suleck

Site/Facility ID #
2720 13TH AVENUE SW

P.O. #

Collected by (signature):
[Signature]

Rush? (Lab MUST Be Notified)

Quote #

Immediately Packed on Ice N Y

Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Date Results Needed

STAT

No. of Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs
TMW-1	G	GW	—	4/2/19	1620	7
TMW-2	G	GW	—	4/2/19	1600	7
TMW-3	G	GW	—	4/3/19	1305	7
TMW-4	G	GW	—	4/3/19	1230	7
TMW-5	G	GW	—	4/3/19	1545	7
TMW-6	G	GW	—	4/3/19	1115	7
MW-7	G	GW	—	4/3/19	1350	7
MW-9	G	GW	—	4/3/19	1030	7
MW-18	G	GW	—	4/3/19	1630	6
MW-19	G	GW	—	4/2/19	1700	7

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

Samples returned via:
 UPS FedEx Courier

Tracking # **7910 1662 0032/0021**

pH _____ Temp _____

Flow _____ Other _____

Sample Receipt Checklist	
COC Seal Present/Intact:	<input checked="" type="checkbox"/> NP <input type="checkbox"/> N
COC Signed/Accurate:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Bottles arrive intact:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Correct bottles used:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Sufficient volume sent:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
If Applicable	
VOA Zero Headspace:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Preservation Correct/Checked:	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N

Relinquished by: (Signature) <i>[Signature]</i>	Date: 4/4/19	Time: 1421
Relinquished by: (Signature) <i>[Signature]</i>	Date: 4-4	Time: 1700
Relinquished by: (Signature) <i>[Signature]</i>	Date:	Time:

Received by: (Signature) <i>[Signature]</i>	Trip Blank Received: Yes/No 2
Received by: (Signature) <i>[Signature]</i>	Temp: °C 3.8-0.1=3.7
Received for lab by: (Signature) <i>[Signature]</i>	Date: 4/5/19

Bottles Received: 147	If preservation required by Login: Date/Time
Hold:	Condition: OK

Analysis / Container / Preservative

Chain of Custody Page **1** of **3**



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L# **1086418**

G039

Account: **KINMOROCA**

Template: **T148131**

Prelogin: **P700639**

TSR: **110 - Brian Ford**

PB:

Shipped Via:

Remarks Sample # (lab only)

01
02
03
04
05
06
07
08
09
10

RAD SCREEN: 0.5 mR/hr

Kinder Morgan- Orange, CA

1100 Olive Way, Suite 800
Seattle, WA 98101

Billing Information:
Accounts Payable-Scott Martin
1100 Town and Country Rd
Orange, CA 92868

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page 2 of 3



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



Report to:
Kyle Haslam

Email To: Kyle.Haslam@arcadis.com;
Scott.Wenning@arcadis.com;

Project
Description: **KMEP Harbor Island**

City/State
Collected: **Seattle, WA**

Phone: **206-726-4713**
Fax:

Client Project #
WA000804.2018

Lab Project #
KINMOROCA-HARBORISLA

Collected by (print): **Kelsey Franz**
Laura Selbeck

Site/Facility ID #
2720 13TH AVENUE SW

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Date Results Needed

STAT

Immediately Packed on Ice N Y

No.
of
Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time															
MW-21	G	GW	—	4/3/19	0930	8	X													11
MW-23	G	GW	—	4/3/19	1215	6	X													12
MW-24	G	GW	—	4/3/19	1100	6	X													13
A-5	G	GW	—	4/3/19	0920	6	X													14
A-21	G	GW	—	4/3/19	1010	6	X													15
A-27	G	GW	—	4/3/19	1540	7	X													16
A-28R	G	GW	—	4/3/19	1350	6	X													17
11	G	GW	—	4/3/19	1200	7	X													18
12	G	GW	—	4/3/19	1505	7	X													19
DUP-01	G	GW	—	4/3/19	—	6	X													20

RAD SCREEN: <0.5 mPa

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
UPS FedEx Courier

Tracking # **5000**

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by: (Signature)
[Signature]
Date: **4/4/19**
Time: **1421**

Date: **4-4**
Time: **1421**

Received by: (Signature)
[Signature]
Received by: (Signature)
[Signature]
Received for lab by: (Signature)
[Signature]

Trip Blank Received: Yes No
HCL/MeOH
TBR
Temp: **3.8-0.1 = 3.7**
Bottles Received: **147**
Date: **4/5/19**
Time: **0800**

If preservation required by Login: Date/Time
Hold:
Condition: **NCF / OK**

Kinder Morgan- Orange, CA

1100 Olive Way, Suite 800
Seattle, WA 98101

Billing Information:
Accounts Payable-Scott Martin
1100 Town and Country Rd
Orange, CA 92868

Email To: Kyle.Haslam@arcadis.com;
Scott.Wenning@arcadis.com;

Report to:
Kyle Haslam

Project
Description: **KMEP Harbor Island**

City/State
Collected: **Seattle, WA**

Phone: **206-726-4713**
Fax:

Client Project #
WA000804.2018

Lab Project #
KINMOROCA-HARBORISLA

Collected by (print):
*Kelsey Franz
Laura Selbeck*

Site/Facility ID #
2720 13TH AVENUE SW

P.O. #

Collected by (signature):
Kelsey Franz

Rush? (Lab MUST Be Notified)

Quote #

Immediately
Packed on Ice N Y

Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Date Results Needed

STAT

No. of
Cnts

Analysis / Container / Preservative

Chain of Custody Page **3** of **3**



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L# **1086418**

Table #
Acctnum: **KINMOROCA**

Template: **T148131**

Prelogin: **P700639**

TSR: **110 - Brian Ford**

PB:

Shipped Via:

Remarks Sample # (lab only)

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cnts	BTEX 8260C 40mlAmb-HCl	FF-Biss CAM17 Metals 250mlHDPE-HNO3	NWTPHDX w/ SGT 40mlAmb-HCl-BT	NWTPHGX 40mlAmb HCl	Sulfate 125mlHDPE-NoPres	Total CAM17 Metals 250mlHDPE-HNO3
DUP-02	G	GW	—	4/3/19	—	6	X			X		
DRUM-01	G	GW	—	4/3/19	1700	7	X			X		X
Trip Blank	G	GW	—	—	—	2						
		GW										
		GW										
		GW										
		GW										
		GW										
		GW										

HAD SCREEN: 0.5 MP/HP

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
 UPS FedEx Courier

Tracking # **5024**

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by: (Signature)
[Signature]
Date: **4/4/19**
Time: **1421**

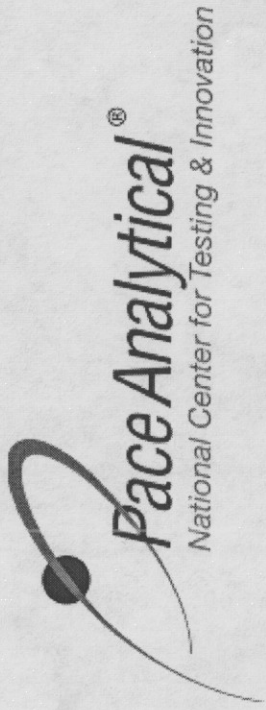
Date: **4-4**
Time: **1700**

Received by: (Signature)
[Signature]
Received by: (Signature)
[Signature]
Received for lab by: (Signature)
[Signature]

Trip Blank Received: Yes / No
HCL / MeOH
TBR
Temp: **38.0 ± 0.1 °C**
Bottles Received: **147**
Date: **4/8/19**
Time: **0825**

If preservation required by Login: Date/Time
Hold:
Condition: **NCF / OK**

Kelsey Stephenson



Login #:L1086418	Client:KINMOROCA	Date:04/04	Evaluated by:Kelsey S
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Non-Conformance (check applicable items)

Sample Integrity	Chain of Custody Clarification	If Broken Container:
Parameter(s) past holding time	Login Clarification Needed	Insufficient packing material around container
Temperature not in range	Chain of custody is incomplete	Insufficient packing material inside cooler
Improper container type	Please specify Metals requested.	Improper handling by carrier (FedEx / UPS / Courier)
pH not in range.	Please specify TCLP requested.	Sample was frozen
Insufficient sample volume.	Received additional samples not listed on coc.	Container lid not intact
Sample is biphasic.	Sample ids on containers do not match ids on coc	If no Chain of Custody:
Vials received with headspace.	Trip Blank not received.	Received by:
Broken container	Client did not "X" analysis.	Date/Time:
Broken container:	Chain of Custody is missing	Temp./Cont. Rec./pH:
Sufficient sample remains		Carrier:
		Tracking#

Login Comments: Client did not mark analysis for Trip Blank

Client informed by:	Call	Email	Voice Mail	Date:	Time:
TSR Initials:	Client Contact:				

Login Instructions:

Place trip blank on hold

October 16, 2019

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Kinder Morgan- Orange, CA

Sample Delivery Group: L1146815
Samples Received: 10/05/2019
Project Number: 30018857
Description: KMEP Harbor Island
Site: 2720 13TH AVENUE SW SEATTLE,WA
Report To: Kyle Haslam
1100 Olive Way, Suite 800
Seattle, WA 98101

Entire Report Reviewed By:

Brian Ford

Brian Ford
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Cp: Cover Page	1	1 Cp
Tc: Table of Contents	2	
Ss: Sample Summary	3	2 Tc
Cn: Case Narrative	5	
Sr: Sample Results	6	3 Ss
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A-27 L1146815-03	7	4 Cn
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MW-23 L1146815-05	9	
MW-16 L1146815-06	10	6 Qc
MW-24 L1146815-07	11	
A-28R L1146815-08	12	7 Gl
Qc: Quality Control Summary	13	8 Al
Wet Chemistry by Method 3500Fe B-2011	13	
Wet Chemistry by Method 4500S2 D-2011	14	9 Sc
Wet Chemistry by Method 9056A	15	
Metals (ICPMS) by Method 6020B	17	
Volatile Organic Compounds (GC) by Method NWTPHGX	19	
Volatile Organic Compounds (GC) by Method RSK175	20	
Volatile Organic Compounds (GC/MS) by Method 8260C	22	
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Gl: Glossary of Terms	26	
Al: Accreditations & Locations	27	
Sc: Sample Chain of Custody	28	

SAMPLE SUMMARY

TMW-B1 L1146815-01 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/04/19 11:25	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3500Fe B-2011	WG1359181	25	10/08/19 17:26	10/08/19 17:26	JIC	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1358462	1	10/07/19 16:50	10/07/19 16:50	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1358078	1	10/05/19 23:10	10/05/19 23:10	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1360878	1	10/10/19 22:50	10/10/19 22:50	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1359638	1	10/09/19 15:35	10/09/19 15:35	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 04:32	10/13/19 04:32	JHH	Mt. Juliet, TN

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

A-27 L1146815-03 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/04/19 09:55	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3500Fe B-2011	WG1359181	25	10/08/19 17:27	10/08/19 17:27	JIC	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1358462	1	10/07/19 16:50	10/07/19 16:50	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1358078	1	10/05/19 23:45	10/05/19 23:45	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1360878	1	10/10/19 23:12	10/10/19 23:12	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1359638	1	10/09/19 15:38	10/09/19 15:38	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 04:55	10/13/19 04:55	JHH	Mt. Juliet, TN

A-21 L1146815-04 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/04/19 12:20	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1358572	1	10/10/19 00:40	10/10/19 14:06	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1358757	1	10/08/19 09:07	10/08/19 14:42	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1360878	1	10/10/19 23:34	10/10/19 23:34	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 05:17	10/13/19 05:17	JHH	Mt. Juliet, TN

MW-23 L1146815-05 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/04/19 11:20	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3500Fe B-2011	WG1359181	10	10/08/19 17:27	10/08/19 17:27	JIC	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1358462	1	10/07/19 16:51	10/07/19 16:51	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1358078	1	10/06/19 00:21	10/06/19 00:21	ELN	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1358572	1	10/10/19 00:40	10/10/19 14:09	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1358757	1	10/08/19 09:07	10/08/19 14:47	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1360878	1	10/10/19 23:57	10/10/19 23:57	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1360425	10	10/10/19 11:51	10/10/19 11:51	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 05:40	10/13/19 05:40	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362791	10	10/15/19 08:54	10/15/19 08:54	ACG	Mt. Juliet, TN

MW-16 L1146815-06 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/04/19 08:45	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1360878	1	10/11/19 00:19	10/11/19 00:19	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 06:03	10/13/19 06:03	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362791	1	10/15/19 05:54	10/15/19 05:54	ACG	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1359286	1	10/09/19 08:18	10/10/19 23:41	SHG	Mt. Juliet, TN

SAMPLE SUMMARY



MW-24 L1146815-07 GW

Collected by
KF/LS Collected date/time
10/04/19 10:30 Received date/time
10/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3500Fe B-2011	WG1359181	50	10/08/19 17:28	10/08/19 17:28	JIC	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1358462	1	10/07/19 16:51	10/07/19 16:51	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1358078	1	10/06/19 00:56	10/06/19 00:56	ELN	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1358572	1	10/10/19 00:40	10/10/19 14:12	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1358757	1	10/08/19 09:07	10/08/19 14:52	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1360878	1	10/11/19 00:41	10/11/19 00:41	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1360425	10	10/10/19 12:00	10/10/19 12:00	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 06:26	10/13/19 06:26	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362791	10	10/15/19 09:14	10/15/19 09:14	ACG	Mt. Juliet, TN

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

A-28R L1146815-08 GW

Collected by
KF/LS Collected date/time
10/04/19 09:00 Received date/time
10/05/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 3500Fe B-2011	WG1359181	50	10/08/19 17:28	10/08/19 17:28	JIC	Mt. Juliet, TN
Wet Chemistry by Method 4500S2 D-2011	WG1358462	1	10/07/19 16:52	10/07/19 16:52	MJA	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1358078	1	10/06/19 01:31	10/06/19 01:31	ELN	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1358572	1	10/10/19 00:40	10/10/19 14:16	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1358757	1	10/08/19 09:07	10/08/19 14:56	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1360878	1	10/11/19 01:03	10/11/19 01:03	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method RSK175	WG1360425	10	10/10/19 13:07	10/10/19 13:07	DAH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 06:49	10/13/19 06:49	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1363138	10	10/15/19 17:55	10/15/19 17:55	BMB	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Project Manager

Sample Delivery Group (SDG) Narrative

VOC pH outside of method requirement.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1146815-06	MW-16	8260C

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Wet Chemistry by Method 3500Fe B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ferrous Iron	ND	T8	1250	25	10/08/2019 17:26	WG1359181

Sample Narrative:

L1146815-01 WG1359181: diluted due to matrix

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		50.0	1	10/07/2019 16:50	WG1358462

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate	ND		100	1	10/05/2019 23:10	WG1358078
Sulfate	ND		5000	1	10/05/2019 23:10	WG1358078

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	5680		100	1	10/10/2019 22:50	WG1360878
(S) a,a,a-Trifluorotoluene(FID)	134	J1	78.0-120		10/10/2019 22:50	WG1360878

Sample Narrative:

L1146815-01 WG1360878: High surrogate due to matrix interference.

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	6570		10.0	1	10/09/2019 15:35	WG1359638

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	59.9		1.00	1	10/13/2019 04:32	WG1362039
Toluene	7.58		1.00	1	10/13/2019 04:32	WG1362039
Ethylbenzene	25.9		1.00	1	10/13/2019 04:32	WG1362039
Total Xylenes	9.13		3.00	1	10/13/2019 04:32	WG1362039
(S) Toluene-d8	105		80.0-120		10/13/2019 04:32	WG1362039
(S) 4-Bromofluorobenzene	103		77.0-126		10/13/2019 04:32	WG1362039
(S) 1,2-Dichloroethane-d4	109		70.0-130		10/13/2019 04:32	WG1362039

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 3500Fe B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ferrous Iron	ND	T8	1250	25	10/08/2019 17:27	WG1359181

Sample Narrative:

L1146815-03 WG1359181: diluted due to matrix

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		50.0	1	10/07/2019 16:50	WG1358462

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate	ND		100	1	10/05/2019 23:45	WG1358078
Sulfate	6650		5000	1	10/05/2019 23:45	WG1358078

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	1320		100	1	10/10/2019 23:12	WG1360878
(S) a,a,a-Trifluorotoluene(FID)	116		78.0-120		10/10/2019 23:12	WG1360878

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	2650		10.0	1	10/09/2019 15:38	WG1359638

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	21.7		1.00	1	10/13/2019 04:55	WG1362039
Toluene	1.04		1.00	1	10/13/2019 04:55	WG1362039
Ethylbenzene	2.01		1.00	1	10/13/2019 04:55	WG1362039
Total Xylenes	4.07		3.00	1	10/13/2019 04:55	WG1362039
(S) Toluene-d8	107		80.0-120		10/13/2019 04:55	WG1362039
(S) 4-Bromofluorobenzene	113		77.0-126		10/13/2019 04:55	WG1362039
(S) 1,2-Dichloroethane-d4	96.5		70.0-130		10/13/2019 04:55	WG1362039

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	2.12		2.00	1	10/10/2019 14:06	WG1358572
Lead,Dissolved	ND		2.00	1	10/08/2019 14:42	WG1358757

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	206	B	100	1	10/10/2019 23:34	WG1360878
(S) a,a,a-Trifluorotoluene(FID)	117		78.0-120		10/10/2019 23:34	WG1360878

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 05:17	WG1362039
Toluene	ND		1.00	1	10/13/2019 05:17	WG1362039
Ethylbenzene	ND		1.00	1	10/13/2019 05:17	WG1362039
Total Xylenes	ND		3.00	1	10/13/2019 05:17	WG1362039
(S) Toluene-d8	106		80.0-120		10/13/2019 05:17	WG1362039
(S) 4-Bromofluorobenzene	92.1		77.0-126		10/13/2019 05:17	WG1362039
(S) 1,2-Dichloroethane-d4	96.5		70.0-130		10/13/2019 05:17	WG1362039

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 3500Fe B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ferrous Iron	14900	T8	500	10	10/08/2019 17:27	WG1359181

1 Cp

2 Tc

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		50.0	1	10/07/2019 16:51	WG1358462

3 Ss

4 Cn

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate	ND		100	1	10/06/2019 00:21	WG1358078
Sulfate	ND		5000	1	10/06/2019 00:21	WG1358078

5 Sr

6 Qc

7 Gl

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	10/10/2019 14:09	WG1358572
Lead,Dissolved	ND		2.00	1	10/08/2019 14:47	WG1358757

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	3170		100	1	10/10/2019 23:57	WG1360878
(S) a,a,a-Trifluorotoluene(FID)	114		78.0-120		10/10/2019 23:57	WG1360878

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	18700		100	10	10/10/2019 11:51	WG1360425

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	360		10.0	10	10/15/2019 08:54	WG1362791
Toluene	7.97		1.00	1	10/13/2019 05:40	WG1362039
Ethylbenzene	3.70		1.00	1	10/13/2019 05:40	WG1362039
Total Xylenes	5.39		3.00	1	10/13/2019 05:40	WG1362039
(S) Toluene-d8	108		80.0-120		10/13/2019 05:40	WG1362039
(S) Toluene-d8	106		80.0-120		10/15/2019 08:54	WG1362791
(S) 4-Bromofluorobenzene	107		77.0-126		10/13/2019 05:40	WG1362039
(S) 4-Bromofluorobenzene	104		77.0-126		10/15/2019 08:54	WG1362791
(S) 1,2-Dichloroethane-d4	96.1		70.0-130		10/13/2019 05:40	WG1362039
(S) 1,2-Dichloroethane-d4	100		70.0-130		10/15/2019 08:54	WG1362791



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/11/2019 00:19	WG1360878
(S) a,a,a-Trifluorotoluene(FID)	115		78.0-120		10/11/2019 00:19	WG1360878

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/15/2019 05:54	WG1362791
Toluene	ND		1.00	1	10/13/2019 06:03	WG1362039
Ethylbenzene	ND		1.00	1	10/13/2019 06:03	WG1362039
Total Xylenes	ND		3.00	1	10/13/2019 06:03	WG1362039
(S) Toluene-d8	109		80.0-120		10/13/2019 06:03	WG1362039
(S) Toluene-d8	102		80.0-120		10/15/2019 05:54	WG1362791
(S) 4-Bromofluorobenzene	94.3		77.0-126		10/13/2019 06:03	WG1362039
(S) 4-Bromofluorobenzene	102		77.0-126		10/15/2019 05:54	WG1362791
(S) 1,2-Dichloroethane-d4	96.1		70.0-130		10/13/2019 06:03	WG1362039
(S) 1,2-Dichloroethane-d4	102		70.0-130		10/15/2019 05:54	WG1362791

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		200	1	10/10/2019 23:41	WG1359286
Residual Range Organics (RRO)	ND		250	1	10/10/2019 23:41	WG1359286
(S) o-Terphenyl	99.5		52.0-156		10/10/2019 23:41	WG1359286

9 Sc



Collected date/time: 10/04/19 10:30

L1146815

Wet Chemistry by Method 3500Fe B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ferrous Iron	53000	T8	2500	50	10/08/2019 17:28	WG1359181

1 Cp

2 Tc

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		50.0	1	10/07/2019 16:51	WG1358462

3 Ss

4 Cn

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate	ND		100	1	10/06/2019 00:56	WG1358078
Sulfate	ND		5000	1	10/06/2019 00:56	WG1358078

5 Sr

6 Qc

7 Gl

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	10/10/2019 14:12	WG1358572
Lead,Dissolved	ND		2.00	1	10/08/2019 14:52	WG1358757

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	10300		100	1	10/11/2019 00:41	WG1360878
(S) a,a,a-Trifluorotoluene(FID)	144	J1	78.0-120		10/11/2019 00:41	WG1360878

Sample Narrative:

L1146815-07 WG1360878: High surrogate due to matrix interference.

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	19600		100	10	10/10/2019 12:00	WG1360425

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	581		10.0	10	10/15/2019 09:14	WG1362791
Toluene	17.3		1.00	1	10/13/2019 06:26	WG1362039
Ethylbenzene	643		10.0	10	10/15/2019 09:14	WG1362791
Total Xylenes	112		3.00	1	10/13/2019 06:26	WG1362039
(S) Toluene-d8	67.5	J2	80.0-120		10/13/2019 06:26	WG1362039
(S) Toluene-d8	101		80.0-120		10/15/2019 09:14	WG1362791
(S) 4-Bromofluorobenzene	64.2	J2	77.0-126		10/13/2019 06:26	WG1362039
(S) 4-Bromofluorobenzene	105		77.0-126		10/15/2019 09:14	WG1362791
(S) 1,2-Dichloroethane-d4	123		70.0-130		10/13/2019 06:26	WG1362039
(S) 1,2-Dichloroethane-d4	102		70.0-130		10/15/2019 09:14	WG1362791



Wet Chemistry by Method 3500Fe B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ferrous Iron	32500	T8	2500	50	10/08/2019 17:28	WG1359181

1 Cp

2 Tc

Wet Chemistry by Method 4500S2 D-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfide	ND		50.0	1	10/07/2019 16:52	WG1358462

3 Ss

4 Cn

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Nitrate	ND		100	1	10/06/2019 01:31	WG1358078
Sulfate	ND		5000	1	10/06/2019 01:31	WG1358078

5 Sr

6 Qc

7 Gl

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	10/10/2019 14:16	WG1358572
Lead,Dissolved	ND		2.00	1	10/08/2019 14:56	WG1358757

8 Al

9 Sc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	8860		100	1	10/11/2019 01:03	WG1360878
(S) a,a,a-Trifluorotoluene(FID)	136	J1	78.0-120		10/11/2019 01:03	WG1360878

Sample Narrative:

L1146815-08 WG1360878: High surrogate due to matrix interference.

Volatile Organic Compounds (GC) by Method RSK175

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Methane	15500		100	10	10/10/2019 13:07	WG1360425

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	544		10.0	10	10/15/2019 17:55	WG1363138
Toluene	12.8		1.00	1	10/13/2019 06:49	WG1362039
Ethylbenzene	240		10.0	10	10/15/2019 17:55	WG1363138
Total Xylenes	26.5		3.00	1	10/13/2019 06:49	WG1362039
(S) Toluene-d8	90.0		80.0-120		10/13/2019 06:49	WG1362039
(S) Toluene-d8	108		80.0-120		10/15/2019 17:55	WG1363138
(S) 4-Bromofluorobenzene	89.1		77.0-126		10/13/2019 06:49	WG1362039
(S) 4-Bromofluorobenzene	89.9		77.0-126		10/15/2019 17:55	WG1363138
(S) 1,2-Dichloroethane-d4	122		70.0-130		10/13/2019 06:49	WG1362039
(S) 1,2-Dichloroethane-d4	96.2		70.0-130		10/15/2019 17:55	WG1363138



Method Blank (MB)

(MB) R3458992-1 10/08/19 17:16

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Ferrous Iron	U		15.0	50.0

¹Cp

²Tc

³Ss

⁴Cn

L1145936-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1145936-01 10/08/19 17:23 • (DUP) R3458992-3 10/08/19 17:23

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ferrous Iron	530	551	1	3.89		20

⁵Sr

⁶Qc

Laboratory Control Sample (LCS)

(LCS) R3458992-2 10/08/19 17:21

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Ferrous Iron	1000	1100	110	85.0-115	

⁷Gl

⁸Al

L1145936-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1145936-11 10/08/19 17:24 • (MS) R3458992-4 10/08/19 17:30 • (MSD) R3458992-5 10/08/19 17:30

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Ferrous Iron	1500	U	ND	ND	0.000	0.000	1	80.0-120	<u>J6</u>	<u>J6</u>	0.000	20

⁹Sc



Method Blank (MB)

(MB) R3458536-1 10/07/19 16:35

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Sulfide	U		6.50	50.0

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1146776-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1146776-01 10/07/19 16:36 • (DUP) R3458536-3 10/07/19 16:41

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Sulfide	U	0.000	1	0.000		20

L1146815-08 Original Sample (OS) • Duplicate (DUP)

(OS) L1146815-08 10/07/19 16:52 • (DUP) R3458536-6 10/07/19 16:52

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Sulfide	ND	0.000	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3458536-2 10/07/19 16:35

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Sulfide	500	544	109	85.0-115	

L1146793-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1146793-01 10/07/19 16:47 • (MS) R3458536-4 10/07/19 16:48 • (MSD) R3458536-5 10/07/19 16:49

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Sulfide	1000	ND	1020	1040	102	104	1	80.0-120			2.13	20



Method Blank (MB)

(MB) R3458302-1 10/05/19 09:11

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Nitrate	U		22.7	100
Sulfate	U		77.4	5000

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1146813-14 Original Sample (OS) • Duplicate (DUP)

(OS) L1146813-14 10/05/19 20:14 • (DUP) R3458302-3 10/05/19 20:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Nitrate	413	431	1	4.31		15
Sulfate	34800	34800	1	0.0834		15

L1146856-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1146856-04 10/06/19 04:10 • (DUP) R3458302-6 10/06/19 04:27

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Nitrate	ND	0.000	1	0.000		15
Sulfate	8890	0.000	1	200	P1	15

Laboratory Control Sample (LCS)

(LCS) R3458302-2 10/05/19 09:28

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Nitrate	8000	8110	101	80.0-120	
Sulfate	40000	38600	96.5	80.0-120	

L1146813-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1146813-14 10/05/19 20:14 • (MS) R3458302-4 10/05/19 20:49 • (MSD) R3458302-5 10/05/19 21:07

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Nitrate	5000	413	5640	5710	105	106	1	80.0-120			1.17	15
Sulfate	50000	34800	84100	83800	98.7	98.0	1	80.0-120			0.420	15



L1146856-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1146856-04 10/06/19 04:10 • (MS) R3458302-7 10/06/19 04:45

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Nitrate	5000	ND	5130	103	1	80.0-120	
Sulfate	50000	8890	50600	83.4	1	80.0-120	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3459749-1 10/10/19 13:21

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Lead	U		0.240	2.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3459749-2 10/10/19 13:25 • (LCSD) R3459749-3 10/10/19 13:28

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Lead	50.0	47.3	49.3	94.6	98.5	80.0-120			4.06	20

L1146896-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1146896-09 10/10/19 13:31 • (MS) R3459749-5 10/10/19 13:38 • (MSD) R3459749-6 10/10/19 13:42

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lead	50.0	ND	48.6	49.3	96.5	97.9	1	75.0-125			1.43	20

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3458931-1 10/08/19 13:34

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Lead,Dissolved	U		0.240	2.00

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3458931-2 10/08/19 13:38 • (LCSD) R3458931-3 10/08/19 13:43

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Lead,Dissolved	50.0	48.2	48.0	96.4	96.1	80.0-120			0.296	20

L1146602-14 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1146602-14 10/08/19 13:47 • (MS) R3458931-5 10/08/19 13:57 • (MSD) R3458931-6 10/08/19 14:01

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Lead,Dissolved	50.0	0.260	47.7	50.5	94.8	100	1	75.0-125			5.72	20

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3460029-2 10/10/19 16:37

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	56.7	J	31.6	100
(S) a,a,a-Trifluorotoluene(FID)	115			78.0-120

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3460029-1 10/10/19 15:53

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	6130	111	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			115	78.0-120	

L1146669-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1146669-01 10/10/19 17:14 • (MS) R3460029-3 10/11/19 01:25 • (MSD) R3460029-4 10/11/19 01:47

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	5500	ND	7300	7560	131	136	1	10.0-155			3.50	21
(S) a,a,a-Trifluorotoluene(FID)					118	119		78.0-120				



Method Blank (MB)

(MB) R3459385-1 10/09/19 14:23

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Methane	U		2.91	10.0

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1146813-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1146813-05 10/09/19 14:32 • (DUP) R3459385-2 10/09/19 15:06

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Methane	4070	3940	1	3.27		20

L1146813-21 Original Sample (OS) • Duplicate (DUP)

(OS) L1146813-21 10/09/19 15:13 • (DUP) R3459385-3 10/09/19 16:07

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Methane	U	0.000	1	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3459385-4 10/09/19 16:10 • (LCSD) R3459385-5 10/09/19 16:14

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Methane	67.8	73.5	73.3	108	108	85.0-115			0.213	20



Method Blank (MB)

(MB) R3459751-1 10/10/19 11:30

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Methane	U		2.91	10.0

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1146581-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1146581-02 10/10/19 11:33 • (DUP) R3459751-2 10/10/19 13:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Methane	8690	8750	10	0.762		20

L1147407-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1147407-01 10/10/19 13:42 • (DUP) R3459751-3 10/10/19 13:56

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Methane	44.0	40.7	1	7.94		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3459751-6 10/10/19 14:11 • (LCSD) R3459751-7 10/10/19 14:14

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Methane	67.8	73.7	73.7	109	109	85.0-115			0.00760	20

L1146896-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1146896-09 10/10/19 13:39 • (MS) R3459751-4 10/10/19 14:00 • (MSD) R3459751-5 10/10/19 14:05

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Methane	67.8	13700	13900	13700	309	116	1	85.0-115	<u>E V</u>	<u>E V</u>	0.945	20



Method Blank (MB)

(MB) R3460861-3 10/13/19 01:07

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
Toluene	U		0.412	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	104			80.0-120
(S) 4-Bromofluorobenzene	92.5			77.0-126
(S) 1,2-Dichloroethane-d4	98.3			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460861-1 10/12/19 23:59 • (LCSD) R3460861-2 10/13/19 00:21

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	25.0	23.6	23.6	94.4	94.4	70.0-123			0.000	20
Ethylbenzene	25.0	27.4	26.4	110	106	79.0-123			3.72	20
Toluene	25.0	26.7	25.5	107	102	79.0-120			4.60	20
Xylenes, Total	75.0	86.0	82.2	115	110	79.0-123			4.52	20
(S) Toluene-d8				110	105	80.0-120				
(S) 4-Bromofluorobenzene				101	101	77.0-126				
(S) 1,2-Dichloroethane-d4				107	105	70.0-130				

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3461039-3 10/15/19 03:53

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
(S) Toluene-d8	104			80.0-120
(S) 4-Bromofluorobenzene	101			77.0-126
(S) 1,2-Dichloroethane-d4	97.9			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3461039-1 10/15/19 02:53 • (LCSD) R3461039-2 10/15/19 03:13

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	25.0	23.4	23.4	93.6	93.6	70.0-123			0.000	20
Ethylbenzene	25.0	26.3	26.5	105	106	79.0-123			0.758	20
(S) Toluene-d8				103	105	80.0-120				
(S) 4-Bromofluorobenzene				107	104	77.0-126				
(S) 1,2-Dichloroethane-d4				101	96.9	70.0-130				

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3461369-3 10/15/19 10:23

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
(S) Toluene-d8	111			80.0-120
(S) 4-Bromofluorobenzene	91.1			77.0-126
(S) 1,2-Dichloroethane-d4	102			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3461369-1 10/15/19 09:01 • (LCSD) R3461369-2 10/15/19 09:21

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	25.0	26.5	28.4	106	114	70.0-123			6.92	20
Ethylbenzene	25.0	23.9	24.4	95.6	97.6	79.0-123			2.07	20
(S) Toluene-d8				108	105	80.0-120				
(S) 4-Bromofluorobenzene				94.6	89.3	77.0-126				
(S) 1,2-Dichloroethane-d4				104	106	70.0-130				

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3459906-1 10/10/19 08:09

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Diesel Range Organics (DRO)	U		66.7	200
Residual Range Organics (RRO)	U		83.3	250
<i>(S) o-Terphenyl</i>	69.0			52.0-156

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3459906-2 10/10/19 08:29 • (LCSD) R3459906-3 10/10/19 08:49

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Diesel Range Organics (DRO)	1500	1400	1370	93.3	91.3	50.0-150			2.17	20
<i>(S) o-Terphenyl</i>				79.5	84.5	52.0-156				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

B	The same analyte is found in the associated blank.
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J1	Surrogate recovery limits have been exceeded; values are outside upper control limits.
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

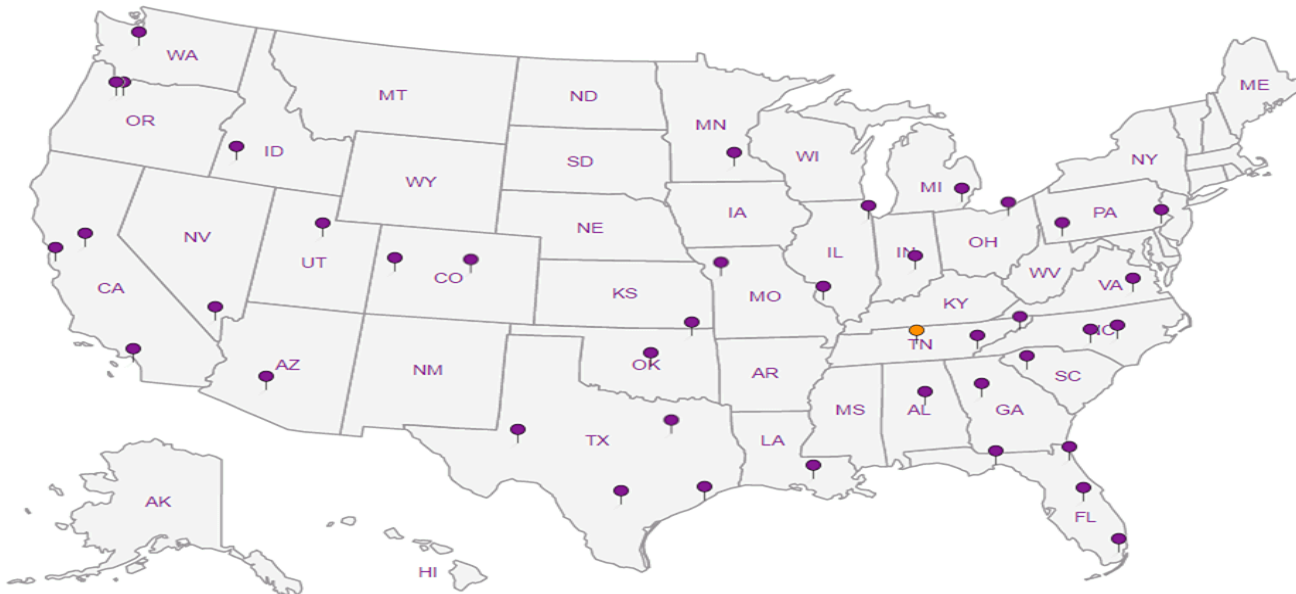
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn


5 Sr


6 Qc


7 Gl

8 Al

9 Sc

Kinder Morgan - Orange, CA 1100 Olive Way, Suite 800 Seattle, WA 98101	Billing Information: Accounts Payable - Scott Martin 1100 Town and Country Rd Orange, CA 92868	Analysis / Container / Preservative Pres Chk	Chain of Custody Page <u> </u> of <u> </u>
	Report to: Mark Ullery	Email To: mark.ullery@arcadis.com, kyle.haslam@arcadis.com	

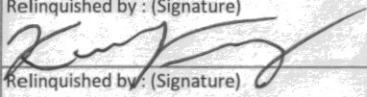
Project Description: KMEP Harbor Island	City/State Collected: Seattle, WA	12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859	
Phone: 206-726-4713 Fax:	Client Project # 30018857	Lab Project #	

Collected by (print): Kelsey Franz/Lauren Selleck	Site/Facility ID # 2720 13th Ave SW	P.O. #	L# 1146815 C039
Collected by (signature): 	Rush? (Lab MUST Be Notified) <input type="checkbox"/> Same Day <input type="checkbox"/> Five Day <input type="checkbox"/> Next Day <input type="checkbox"/> 5 Day (Rad Only) <input type="checkbox"/> Two Day <input type="checkbox"/> 10 Day (Rad Only) <input type="checkbox"/> Three Day	Quote # Date Results Needed STAT	Acctnum: Template: Prelogin: TSR: PB:

Immediately Packed on Ice N <input type="checkbox"/> Y <input checked="" type="checkbox"/>	No. of Cntrs	Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	NWTPH-Gx, 40 mL Amber HCl	NWTPH-Dx w/SGT, 40 mL Amber HCl	BTEX 8260B, 40 mL Amber HCl	Diss Pb 6020, 250 mL HDPE No Pres	Total Pb 6020, 250 mL HDPE No Pres	Sulfate, 125 mL HDPE No Pres	Sulfide, 125 mL Amber NaOH+ ZnAc	Ferrous Fe, 250 mL Amber HCl (Field Filt)	Methane, RSK175 40 mL Amber HCl	Nitrate - 125 mL HDPE - No pres	Remarks	Sample # (lab only)
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Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	NWTPH-Gx, 40 mL Amber HCl	NWTPH-Dx w/SGT, 40 mL Amber HCl	BTEX 8260B, 40 mL Amber HCl	Diss Pb 6020, 250 mL HDPE No Pres	Total Pb 6020, 250 mL HDPE No Pres	Sulfate, 125 mL HDPE No Pres	Sulfide, 125 mL Amber NaOH+ ZnAc	Ferrous Fe, 250 mL Amber HCl (Field Filt)	Methane, RSK175 40 mL Amber HCl	Nitrate - 125 mL HDPE - No pres	Remarks	Sample # (lab only)	
TMW-B1	Grab	GW	—	10.4.19	11:25	11	X		X			X	X	X	X	X			-01
A-27	Grab	GW	—	10.4.19	9:55	11	X		X			X	X	X	X	X			03
A-21	Grab	GW	—	10.4.19	12:20	8	X		X	X	X								04
MW-23	Grab	GW	—	10.4.19	11:20	13	X		X	X	X	X	X	X	X	X			05
MW-16	Grab	GW	—	10.4.19	8:45	8	X	X	X										06
MW-24	Grab	GW	—	10.4.19	10:30	13	X		X	X	X	X	X	X	X	X			07
A-28R	Grab	GW	—	10.4.19	9:00	13	X		X	X	X	X	X	X	X	X			08
DRUM-1	Grab	GW	—	10.4.19	12:20	7	X		X										
	Grab	GW																	
	Grab	GW																	

* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other	Remarks: Ferrous Fe field filtered	pH _____ Temp _____ Flow _____ Other _____	Sample Receipt Checklist COC Seal Present/Intact: <input type="checkbox"/> NP <input checked="" type="checkbox"/> Y <input type="checkbox"/> N COC Signed/Accurate: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N Bottles arrive intact: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N Correct bottles used: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N Sufficient volume sent: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N If Applicable VOA Zero Headspace: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N Preservation Correct/Checked: <input type="checkbox"/> Y <input checked="" type="checkbox"/> N RAD SCREEN: <0.5 mR/hr
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Relinquished by: (Signature) 	Date: 10-4-19	Time: 1500	Received by: (Signature) FedEx	Trip Blank Received: Yes/No <input checked="" type="checkbox"/> HCL <input checked="" type="checkbox"/> MeoH <input type="checkbox"/> TBR	Temp: _____ °C 10.17.19	Bottles Received: 77	If preservation required by Login: Date/Time	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: _____ °C	Date:	Time:	Hold:	Condition: OK / OK

Troy Dunlap



Login #: L1146815	Client: KINMOROCA	Date: 10/05	Evaluated by: Kelsey S
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Non-Conformance (check applicable items)

Sample Integrity	Chain of Custody Clarification	If Broken Container:
Parameter(s) past holding time	Login Clarification Needed	Insufficient packing material around container
Temperature not in range	Chain of custody is incomplete	Insufficient packing material inside cooler
Improper container type	Please specify Metals requested.	Improper handling by carrier (FedEx / UPS / Courier)
pH not in range.	Please specify TCLP requested.	Sample was frozen
Insufficient sample volume.	Received additional samples not listed on coc.	Container lid not intact
Sample is biphasic.	Sample ids on containers do not match ids on coc	If no Chain of Custody:
Vials received with headspace.	Trip Blank not received.	Received by:
Broken container	Client did not "X" analysis.	Date/Time:
Broken container:	Chain of Custody is missing	Temp./Cont. Rec./pH:
Sufficient sample remains		Carrier:
		Tracking#

Login Comments:

1. Received all sulfides with a pH of ~10
2. FERUSFE for TMW-B1, A-27, and MW-23 received unpreserved

Client informed by:	Call	Email x	Voice Mail	Date: 10/07/19	Time: 1115
TSR Initials: bjf	Client Contact: PMs				

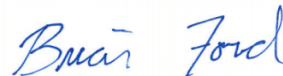
LOGIN INSTRUCTIONS:

1 and 2) adjust pH and proceed.

Kinder Morgan- Orange, CA

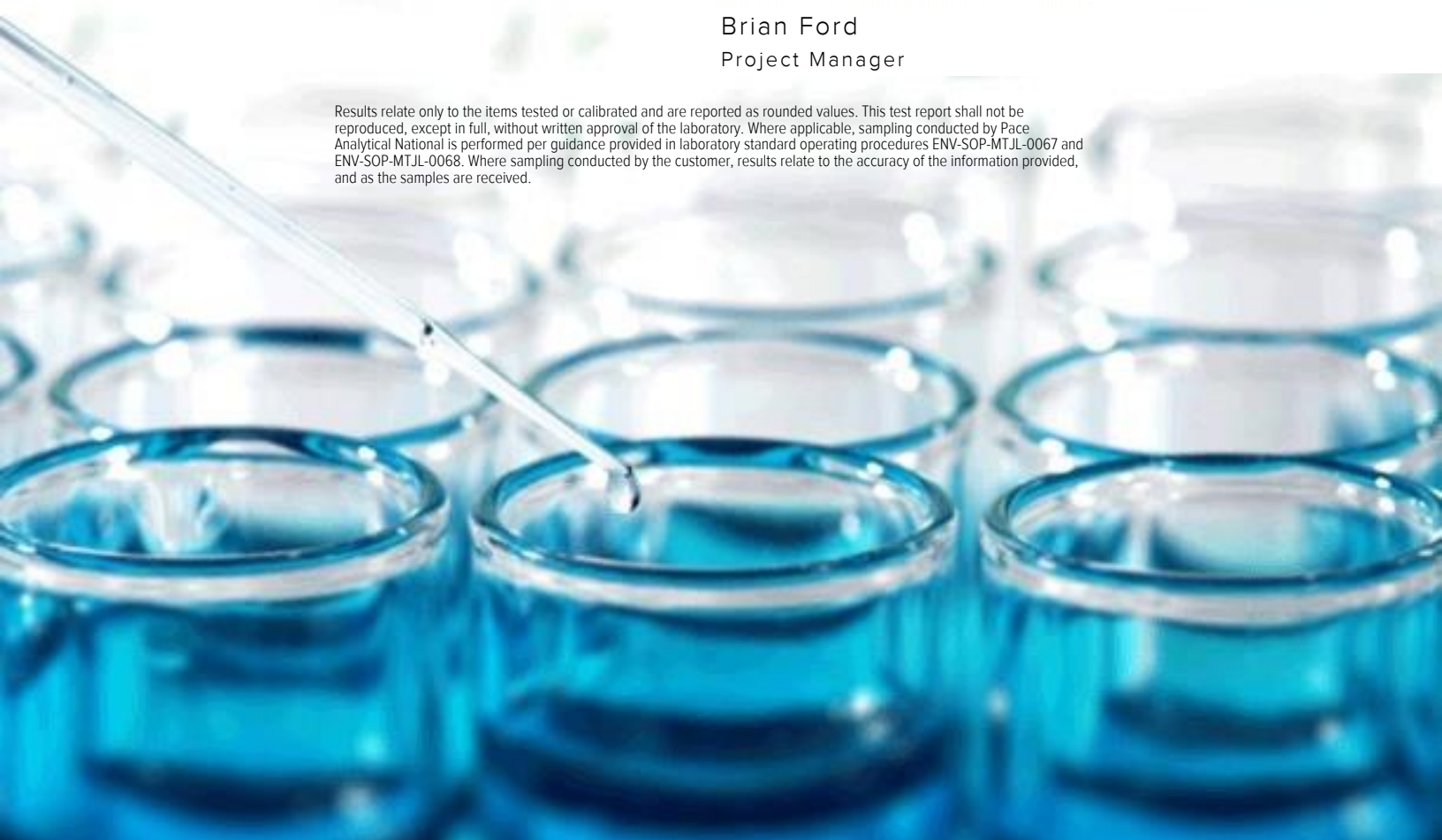
Sample Delivery Group: L1146865
Samples Received: 10/05/2019
Project Number: 30018857
Description: KMEP Harbor Island
Site: 2720 13TH AVE SW
Report To: Kyle Haslam
1100 Olive Way, Suite 800
Seattle, WA 98101

Entire Report Reviewed By:



Brian Ford
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.





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		⁷Gl
		⁸Al
		⁹Sc

SAMPLE SUMMARY



TMW-2 L1146865-01 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1360518	50	10/10/19 15:49	10/10/19 15:49	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361717	1	10/12/19 02:51	10/12/19 02:51	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 16:28	10/12/19 16:28	BMB	Mt. Juliet, TN

Collected by KF/LS
 Collected date/time 10/02/19 10:45
 Received date/time 10/05/19 08:45

1 Cp

2 Tc

3 Ss

MW-19 L1146865-02 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1360518	5	10/11/19 08:59	10/11/19 08:59	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361717	1	10/12/19 03:15	10/12/19 03:15	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 16:50	10/12/19 16:50	BMB	Mt. Juliet, TN

Collected by KF/LS
 Collected date/time 10/02/19 12:15
 Received date/time 10/05/19 08:45

4 Cn

5 Sr

6 Qc

MW-5 L1146865-03 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 19:53	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 12:30	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361717	1	10/12/19 03:39	10/12/19 03:39	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1363139	1	10/15/19 12:42	10/15/19 12:42	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358351	1	10/07/19 10:43	10/08/19 02:32	JN	Mt. Juliet, TN

Collected by KF/LS
 Collected date/time 10/01/19 16:15
 Received date/time 10/05/19 08:45

7 Gl

8 Al

9 Sc

MW-14 L1146865-04 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361717	1	10/12/19 04:03	10/12/19 04:03	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1363139	1	10/15/19 13:01	10/15/19 13:01	BMB	Mt. Juliet, TN

Collected by KF/LS
 Collected date/time 10/01/19 15:55
 Received date/time 10/05/19 08:45

TMW-1 L1146865-05 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1360518	10	10/10/19 16:21	10/10/19 16:21	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361717	1	10/12/19 04:26	10/12/19 04:26	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 17:13	10/12/19 17:13	BMB	Mt. Juliet, TN

Collected by KF/LS
 Collected date/time 10/02/19 11:25
 Received date/time 10/05/19 08:45

A-8 L1146865-06 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361717	1	10/12/19 04:50	10/12/19 04:50	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 17:35	10/12/19 17:35	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358351	1	10/07/19 10:43	10/08/19 02:52	JN	Mt. Juliet, TN

Collected by KF/LS
 Collected date/time 10/02/19 14:15
 Received date/time 10/05/19 08:45

SAMPLE SUMMARY



A-14R L1146865-07 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/02/19 16:55	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 19:58	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 12:34	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 10:25	10/12/19 10:25	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 17:58	10/12/19 17:58	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358351	1	10/07/19 10:43	10/08/19 03:12	JN	Mt. Juliet, TN

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

SH-02R L1146865-08 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 16:25	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 20:02	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 12:37	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 10:49	10/12/19 10:49	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 07:34	10/13/19 07:34	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358718	1	10/08/19 17:27	10/10/19 11:10	SHG	Mt. Juliet, TN

MW-07R L1146865-09 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 14:25	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 20:07	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 12:40	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 11:13	10/12/19 11:13	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 07:57	10/13/19 07:57	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358718	1	10/08/19 17:27	10/12/19 02:49	SHG	Mt. Juliet, TN

MW-21 L1146865-10 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/02/19 14:20	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 11:36	10/12/19 11:36	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 18:21	10/12/19 18:21	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358351	1	10/07/19 10:43	10/08/19 03:32	JN	Mt. Juliet, TN

MW-9 L1146865-11 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/02/19 15:50	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1360518	1	10/10/19 16:38	10/10/19 16:38	ELN	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 20:12	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 12:44	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 13:24	10/12/19 13:24	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 18:43	10/12/19 18:43	BMB	Mt. Juliet, TN

MW-22 L1146865-12 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 16:20	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 13:48	10/12/19 13:48	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 08:20	10/13/19 08:20	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358718	1	10/08/19 17:27	10/12/19 03:09	SHG	Mt. Juliet, TN

SAMPLE SUMMARY



TMW-5 L1146865-13 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/02/19 17:10	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1360518	10	10/10/19 18:16	10/10/19 18:16	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 14:12	10/12/19 14:12	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 19:06	10/12/19 19:06	BMB	Mt. Juliet, TN

1
Cp

2
Tc

3
Ss

DUP-1 L1146865-14 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/02/19 00:00	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 14:36	10/12/19 14:36	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 19:29	10/12/19 19:29	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358351	1	10/07/19 10:43	10/08/19 03:52	JN	Mt. Juliet, TN

4
Cn

5
Sr

6
Qc

MW-8 L1146865-15 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/02/19 15:10	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 20:16	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 12:47	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 15:00	10/12/19 15:00	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 19:51	10/12/19 19:51	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358351	1	10/07/19 10:43	10/08/19 04:12	JN	Mt. Juliet, TN

7
Gl

8
Al

9
Sc

MW-18 L1146865-16 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 18:10	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 15:24	10/12/19 15:24	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 08:42	10/13/19 08:42	JHH	Mt. Juliet, TN

MW-20 L1146865-17 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/02/19 10:40	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 15:47	10/12/19 15:47	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 20:13	10/12/19 20:13	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358351	1	10/07/19 10:43	10/08/19 04:32	JN	Mt. Juliet, TN

MW-1 L1146865-18 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/02/19 12:10	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 20:21	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 12:50	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 16:11	10/12/19 16:11	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 20:36	10/12/19 20:36	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358718	1	10/08/19 17:27	10/12/19 03:29	SHG	Mt. Juliet, TN

SAMPLE SUMMARY



A-23R L1146865-19 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
			Collected by KF/LS	Collected date/time 10/03/19 09:25	Received date/time 10/05/19 08:45	
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 16:35	10/12/19 16:35	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362039	1	10/13/19 09:09	10/13/19 09:09	JHH	Mt. Juliet, TN

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

MW-25 L1146865-20 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
			Collected by KF/LS	Collected date/time 10/03/19 10:25	Received date/time 10/05/19 08:45	
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 20:25	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 12:53	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 16:59	10/12/19 16:59	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 12:10	10/13/19 12:10	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1361966	1	10/12/19 15:17	10/13/19 00:06	JN	Mt. Juliet, TN

11 L1146865-21 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
			Collected by KF/LS	Collected date/time 10/03/19 11:10	Received date/time 10/05/19 08:45	
Wet Chemistry by Method 9056A	WG1360518	5	10/10/19 18:33	10/10/19 18:33	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 17:23	10/12/19 17:23	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 12:33	10/13/19 12:33	JCP	Mt. Juliet, TN

TMW-4 L1146865-22 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
			Collected by KF/LS	Collected date/time 10/03/19 12:00	Received date/time 10/05/19 08:45	
Wet Chemistry by Method 9056A	WG1360518	10	10/10/19 18:49	10/10/19 18:49	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 18:00	10/12/19 18:00	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 12:55	10/13/19 12:55	JCP	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1363449	20	10/15/19 18:33	10/15/19 18:33	BMB	Mt. Juliet, TN

MW-7 L1146865-23 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
			Collected by KF/LS	Collected date/time 10/03/19 13:30	Received date/time 10/05/19 08:45	
Wet Chemistry by Method 9056A	WG1360518	10	10/10/19 19:05	10/10/19 19:05	ELN	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 20:39	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 12:57	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 18:24	10/12/19 18:24	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 13:18	10/13/19 13:18	JCP	Mt. Juliet, TN

MW-6 L1146865-24 GW

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
			Collected by KF/LS	Collected date/time 10/03/19 15:30	Received date/time 10/05/19 08:45	
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 20:44	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 13:07	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 18:48	10/12/19 18:48	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 13:41	10/13/19 13:41	JCP	Mt. Juliet, TN

SAMPLE SUMMARY



MW-2 L1146865-25 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 17:10	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 20:48	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 13:10	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 19:12	10/12/19 19:12	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 14:03	10/13/19 14:03	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1361966	1	10/12/19 15:17	10/13/19 00:26	JN	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

DUP-2 L1146865-26 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 00:00	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1360518	5	10/11/19 09:15	10/11/19 09:15	ELN	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 20:53	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 13:14	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1361718	1	10/12/19 19:37	10/12/19 19:37	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 14:26	10/13/19 14:26	JCP	Mt. Juliet, TN

5 Sr

6 Qc

7 Gl

8 Al

12 L1146865-27 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 14:50	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1360518	5	10/10/19 19:38	10/10/19 19:38	ELN	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 20:57	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 13:17	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1362112	1	10/13/19 11:47	10/13/19 11:47	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 14:48	10/13/19 14:48	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358718	1	10/08/19 17:27	10/12/19 04:29	SHG	Mt. Juliet, TN

9 Sc

TMW-6 L1146865-28 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/02/19 16:20	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1360518	5	10/10/19 19:55	10/10/19 19:55	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1363418	5	10/16/19 13:46	10/16/19 13:46	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 20:58	10/12/19 20:58	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362221	50	10/13/19 13:51	10/13/19 13:51	JHH	Mt. Juliet, TN

A-10 L1146865-29 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/02/19 15:55	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1362112	1	10/13/19 12:35	10/13/19 12:35	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 21:21	10/12/19 21:21	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362221	1	10/13/19 14:11	10/13/19 14:11	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358718	1	10/08/19 17:27	10/12/19 04:49	SHG	Mt. Juliet, TN

SAMPLE SUMMARY



MW-3 L1146865-30 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/02/19 12:50	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 21:02	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 13:20	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1362112	1	10/13/19 12:59	10/13/19 12:59	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362012	1	10/12/19 21:43	10/12/19 21:43	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1361966	1	10/12/19 15:17	10/13/19 00:46	JN	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

SH-05R L1146865-31 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 12:45	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 21:06	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 13:23	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1362112	1	10/13/19 13:23	10/13/19 13:23	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 15:11	10/13/19 15:11	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358718	1	10/08/19 17:27	10/12/19 05:30	SHG	Mt. Juliet, TN

5 Sr

6 Qc

7 Gl

8 Al

MW-12R L1146865-32 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 17:35	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICPMS) by Method 6020B	WG1358569	1	10/11/19 15:35	10/11/19 19:08	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020B	WG1359002	1	10/10/19 22:46	10/11/19 13:27	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1362112	1	10/13/19 13:47	10/13/19 13:47	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 15:33	10/13/19 15:33	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358718	1	10/08/19 17:27	10/12/19 05:50	SHG	Mt. Juliet, TN

9 Sc

A-5 L1146865-33 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 11:25	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1362112	1	10/13/19 14:10	10/13/19 14:10	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 15:56	10/13/19 15:56	JCP	Mt. Juliet, TN

MW-4 L1146865-34 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 15:35	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1362112	1	10/13/19 15:30	10/13/19 15:30	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 16:19	10/13/19 16:19	JCP	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT	WG1358718	1	10/08/19 17:27	10/12/19 06:10	SHG	Mt. Juliet, TN

TMW-3 L1146865-35 GW

				Collected by	Collected date/time	Received date/time
				KF/LS	10/03/19 12:30	10/05/19 08:45
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1360518	20	10/10/19 20:11	10/10/19 20:11	ELN	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method NWTPHGX	WG1362112	1	10/13/19 15:53	10/13/19 15:53	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260C	WG1362049	1	10/13/19 16:41	10/13/19 16:41	JCP	Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Brian Ford
Project Manager

Sample Delivery Group (SDG) Narrative

VOC pH outside of method requirement.

<u>Lab Sample ID</u>	<u>Project Sample ID</u>	<u>Method</u>
L1146865-22	TMW-4	8260C, NWTPHGX

- ¹ Cp
- ² Tc
- ³ Ss
- ⁴ Cn
- ⁵ Sr
- ⁶ Qc
- ⁷ Gl
- ⁸ Al
- ⁹ Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	1370000		250000	50	10/10/2019 15:49	WG1360518

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 02:51	WG1361717
(S) a,a,a-Trifluorotoluene(FID)	107		78.0-120		10/12/2019 02:51	WG1361717

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 16:28	WG1362012
Toluene	ND		1.00	1	10/12/2019 16:28	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 16:28	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 16:28	WG1362012
(S) Toluene-d8	103		80.0-120		10/12/2019 16:28	WG1362012
(S) 4-Bromofluorobenzene	92.7		77.0-126		10/12/2019 16:28	WG1362012
(S) 1,2-Dichloroethane-d4	96.1		70.0-130		10/12/2019 16:28	WG1362012

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	130000		25000	5	10/11/2019 08:59	WG1360518

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	1230		100	1	10/12/2019 03:15	WG1361717
(S) a,a,a-Trifluorotoluene(FID)	101		78.0-120		10/12/2019 03:15	WG1361717

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 16:50	WG1362012
Toluene	ND		1.00	1	10/12/2019 16:50	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 16:50	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 16:50	WG1362012
(S) Toluene-d8	101		80.0-120		10/12/2019 16:50	WG1362012
(S) 4-Bromofluorobenzene	99.6		77.0-126		10/12/2019 16:50	WG1362012
(S) 1,2-Dichloroethane-d4	99.5		70.0-130		10/12/2019 16:50	WG1362012

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	10/11/2019 19:53	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 12:30	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 03:39	WG1361717
(S) a,a,a-Trifluorotoluene(FID)	108		78.0-120		10/12/2019 03:39	WG1361717

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/15/2019 12:42	WG1363139
Toluene	ND		1.00	1	10/15/2019 12:42	WG1363139
Ethylbenzene	ND		1.00	1	10/15/2019 12:42	WG1363139
Total Xylenes	ND		3.00	1	10/15/2019 12:42	WG1363139
(S) Toluene-d8	106		80.0-120		10/15/2019 12:42	WG1363139
(S) 4-Bromofluorobenzene	102		77.0-126		10/15/2019 12:42	WG1363139
(S) 1,2-Dichloroethane-d4	102		70.0-130		10/15/2019 12:42	WG1363139

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	ND		200	1	10/08/2019 02:32	WG1358351
Residual Range Organics (RRO)	ND		250	1	10/08/2019 02:32	WG1358351
(S) o-Terphenyl	64.2		52.0-156		10/08/2019 02:32	WG1358351



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	526		100	1	10/12/2019 04:03	WG1361717
(S) a,a,a-Trifluorotoluene(FID)	99.2		78.0-120		10/12/2019 04:03	WG1361717

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/15/2019 13:01	WG1363139
Toluene	1.09		1.00	1	10/15/2019 13:01	WG1363139
Ethylbenzene	ND		1.00	1	10/15/2019 13:01	WG1363139
Total Xylenes	6.49		3.00	1	10/15/2019 13:01	WG1363139
(S) Toluene-d8	107		80.0-120		10/15/2019 13:01	WG1363139
(S) 4-Bromofluorobenzene	98.4		77.0-126		10/15/2019 13:01	WG1363139
(S) 1,2-Dichloroethane-d4	101		70.0-130		10/15/2019 13:01	WG1363139

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	641000		50000	10	10/10/2019 16:21	WG1360518

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 04:26	WG1361717
(S) a,a,a-Trifluorotoluene(FID)	107		78.0-120		10/12/2019 04:26	WG1361717

3 Ss

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 17:13	WG1362012
Toluene	ND		1.00	1	10/12/2019 17:13	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 17:13	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 17:13	WG1362012
(S) Toluene-d8	107		80.0-120		10/12/2019 17:13	WG1362012
(S) 4-Bromofluorobenzene	94.4		77.0-126		10/12/2019 17:13	WG1362012
(S) 1,2-Dichloroethane-d4	97.8		70.0-130		10/12/2019 17:13	WG1362012

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 10/02/19 14:15

L1146865

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 04:50	WG1361717
(S) a,a,a-Trifluorotoluene(FID)	105		78.0-120		10/12/2019 04:50	WG1361717

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 17:35	WG1362012
Toluene	ND		1.00	1	10/12/2019 17:35	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 17:35	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 17:35	WG1362012
(S) Toluene-d8	108		80.0-120		10/12/2019 17:35	WG1362012
(S) 4-Bromofluorobenzene	100		77.0-126		10/12/2019 17:35	WG1362012
(S) 1,2-Dichloroethane-d4	99.2		70.0-130		10/12/2019 17:35	WG1362012

4 Cn

5 Sr

6 Qc

7 Gl

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	794		200	1	10/08/2019 02:52	WG1358351
Residual Range Organics (RRO)	ND		250	1	10/08/2019 02:52	WG1358351
(S) o-Terphenyl	70.5		52.0-156		10/08/2019 02:52	WG1358351

8 Al

9 Sc



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	10/11/2019 19:58	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 12:34	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 10:25	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	107		78.0-120		10/12/2019 10:25	WG1361718

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/12/2019 17:58	WG1362012
Toluene	ND		1.00	1	10/12/2019 17:58	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 17:58	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 17:58	WG1362012
(S) Toluene-d8	108		80.0-120		10/12/2019 17:58	WG1362012
(S) 4-Bromofluorobenzene	92.2		77.0-126		10/12/2019 17:58	WG1362012
(S) 1,2-Dichloroethane-d4	95.3		70.0-130		10/12/2019 17:58	WG1362012

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	ND		200	1	10/08/2019 03:12	WG1358351
Residual Range Organics (RRO)	ND		250	1	10/08/2019 03:12	WG1358351
(S) o-Terphenyl	71.1		52.0-156		10/08/2019 03:12	WG1358351



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	10/11/2019 20:02	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 12:37	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 10:49	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	108		78.0-120		10/12/2019 10:49	WG1361718

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/13/2019 07:34	WG1362039
Toluene	ND		1.00	1	10/13/2019 07:34	WG1362039
Ethylbenzene	ND		1.00	1	10/13/2019 07:34	WG1362039
Total Xylenes	ND		3.00	1	10/13/2019 07:34	WG1362039
(S) Toluene-d8	109		80.0-120		10/13/2019 07:34	WG1362039
(S) 4-Bromofluorobenzene	99.0		77.0-126		10/13/2019 07:34	WG1362039
(S) 1,2-Dichloroethane-d4	96.4		70.0-130		10/13/2019 07:34	WG1362039

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	565		200	1	10/10/2019 11:10	WG1358718
Residual Range Organics (RRO)	ND		250	1	10/10/2019 11:10	WG1358718
(S) o-Terphenyl	55.8		52.0-156		10/10/2019 11:10	WG1358718



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	10/11/2019 20:07	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 12:40	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 11:13	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	104		78.0-120		10/12/2019 11:13	WG1361718

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 07:57	WG1362039
Toluene	ND		1.00	1	10/13/2019 07:57	WG1362039
Ethylbenzene	ND		1.00	1	10/13/2019 07:57	WG1362039
Total Xylenes	ND		3.00	1	10/13/2019 07:57	WG1362039
(S) Toluene-d8	106		80.0-120		10/13/2019 07:57	WG1362039
(S) 4-Bromofluorobenzene	94.6		77.0-126		10/13/2019 07:57	WG1362039
(S) 1,2-Dichloroethane-d4	94.9		70.0-130		10/13/2019 07:57	WG1362039

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	229		200	1	10/12/2019 02:49	WG1358718
Residual Range Organics (RRO)	ND		250	1	10/12/2019 02:49	WG1358718
(S) o-Terphenyl	54.7		52.0-156		10/12/2019 02:49	WG1358718



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 11:36	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	107		78.0-120		10/12/2019 11:36	WG1361718

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 18:21	WG1362012
Toluene	ND		1.00	1	10/12/2019 18:21	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 18:21	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 18:21	WG1362012
(S) Toluene-d8	110		80.0-120		10/12/2019 18:21	WG1362012
(S) 4-Bromofluorobenzene	103		77.0-126		10/12/2019 18:21	WG1362012
(S) 1,2-Dichloroethane-d4	101		70.0-130		10/12/2019 18:21	WG1362012

4 Cn

5 Sr

6 Qc

7 Gl

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	1150		200	1	10/08/2019 03:32	WG1358351
Residual Range Organics (RRO)	ND		250	1	10/08/2019 03:32	WG1358351
(S) o-Terphenyl	72.1		52.0-156		10/08/2019 03:32	WG1358351

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	6770		5000	1	10/10/2019 16:38	WG1360518

1 Cp

2 Tc

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	4.35		2.00	1	10/11/2019 20:12	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 12:44	WG1359002

3 Ss

4 Cn

5 Sr

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 13:24	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	104		78.0-120		10/12/2019 13:24	WG1361718

6 Qc

7 Gl

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 18:43	WG1362012
Toluene	ND		1.00	1	10/12/2019 18:43	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 18:43	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 18:43	WG1362012
(S) Toluene-d8	110		80.0-120		10/12/2019 18:43	WG1362012
(S) 4-Bromofluorobenzene	97.1		77.0-126		10/12/2019 18:43	WG1362012
(S) 1,2-Dichloroethane-d4	98.9		70.0-130		10/12/2019 18:43	WG1362012

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	826		100	1	10/12/2019 13:48	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	101		78.0-120		10/12/2019 13:48	WG1361718

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 08:20	WG1362039
Toluene	ND		1.00	1	10/13/2019 08:20	WG1362039
Ethylbenzene	ND		1.00	1	10/13/2019 08:20	WG1362039
Total Xylenes	ND		3.00	1	10/13/2019 08:20	WG1362039
(S) Toluene-d8	109		80.0-120		10/13/2019 08:20	WG1362039
(S) 4-Bromofluorobenzene	96.4		77.0-126		10/13/2019 08:20	WG1362039
(S) 1,2-Dichloroethane-d4	96.7		70.0-130		10/13/2019 08:20	WG1362039

4 Cn

5 Sr

6 Qc

7 Gl

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	258		200	1	10/12/2019 03:09	WG1358718
Residual Range Organics (RRO)	ND		250	1	10/12/2019 03:09	WG1358718
(S) o-Terphenyl	55.3		52.0-156		10/12/2019 03:09	WG1358718

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	581000		50000	10	10/10/2019 18:16	WG1360518

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 14:12	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	108		78.0-120		10/12/2019 14:12	WG1361718

3 Ss

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 19:06	WG1362012
Toluene	ND		1.00	1	10/12/2019 19:06	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 19:06	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 19:06	WG1362012
(S) Toluene-d8	111		80.0-120		10/12/2019 19:06	WG1362012
(S) 4-Bromofluorobenzene	102		77.0-126		10/12/2019 19:06	WG1362012
(S) 1,2-Dichloroethane-d4	96.4		70.0-130		10/12/2019 19:06	WG1362012

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 14:36	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	107		78.0-120		10/12/2019 14:36	WG1361718

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 19:29	WG1362012
Toluene	ND		1.00	1	10/12/2019 19:29	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 19:29	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 19:29	WG1362012
(S) Toluene-d8	109		80.0-120		10/12/2019 19:29	WG1362012
(S) 4-Bromofluorobenzene	103		77.0-126		10/12/2019 19:29	WG1362012
(S) 1,2-Dichloroethane-d4	104		70.0-130		10/12/2019 19:29	WG1362012

4 Cn

5 Sr

6 Qc

7 Gl

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	1210		200	1	10/08/2019 03:52	WG1358351
Residual Range Organics (RRO)	ND		250	1	10/08/2019 03:52	WG1358351
(S) o-Terphenyl	74.7		52.0-156		10/08/2019 03:52	WG1358351

8 Al

9 Sc



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	5.79		2.00	1	10/11/2019 20:16	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 12:47	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 15:00	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	107		78.0-120		10/12/2019 15:00	WG1361718

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/12/2019 19:51	WG1362012
Toluene	ND		1.00	1	10/12/2019 19:51	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 19:51	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 19:51	WG1362012
(S) Toluene-d8	103		80.0-120		10/12/2019 19:51	WG1362012
(S) 4-Bromofluorobenzene	95.1		77.0-126		10/12/2019 19:51	WG1362012
(S) 1,2-Dichloroethane-d4	95.4		70.0-130		10/12/2019 19:51	WG1362012

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	328		200	1	10/08/2019 04:12	WG1358351
Residual Range Organics (RRO)	ND		250	1	10/08/2019 04:12	WG1358351
(S) o-Terphenyl	68.9		52.0-156		10/08/2019 04:12	WG1358351



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 15:24	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	108		78.0-120		10/12/2019 15:24	WG1361718

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 08:42	WG1362039
Toluene	ND		1.00	1	10/13/2019 08:42	WG1362039
Ethylbenzene	ND		1.00	1	10/13/2019 08:42	WG1362039
Total Xylenes	ND		3.00	1	10/13/2019 08:42	WG1362039
(S) Toluene-d8	107		80.0-120		10/13/2019 08:42	WG1362039
(S) 4-Bromofluorobenzene	96.4		77.0-126		10/13/2019 08:42	WG1362039
(S) 1,2-Dichloroethane-d4	95.9		70.0-130		10/13/2019 08:42	WG1362039

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 15:47	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	107		78.0-120		10/12/2019 15:47	WG1361718

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 20:13	WG1362012
Toluene	ND		1.00	1	10/12/2019 20:13	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 20:13	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 20:13	WG1362012
(S) Toluene-d8	109		80.0-120		10/12/2019 20:13	WG1362012
(S) 4-Bromofluorobenzene	97.8		77.0-126		10/12/2019 20:13	WG1362012
(S) 1,2-Dichloroethane-d4	99.3		70.0-130		10/12/2019 20:13	WG1362012

4 Cn

5 Sr

6 Qc

7 Gl

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		200	1	10/08/2019 04:32	WG1358351
Residual Range Organics (RRO)	ND		250	1	10/08/2019 04:32	WG1358351
(S) o-Terphenyl	57.9		52.0-156		10/08/2019 04:32	WG1358351

8 Al

9 Sc



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	10/11/2019 20:21	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 12:50	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 16:11	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	105		78.0-120		10/12/2019 16:11	WG1361718

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/12/2019 20:36	WG1362012
Toluene	ND		1.00	1	10/12/2019 20:36	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 20:36	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 20:36	WG1362012
(S) Toluene-d8	106		80.0-120		10/12/2019 20:36	WG1362012
(S) 4-Bromofluorobenzene	90.3		77.0-126		10/12/2019 20:36	WG1362012
(S) 1,2-Dichloroethane-d4	97.9		70.0-130		10/12/2019 20:36	WG1362012

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	ND		200	1	10/12/2019 03:29	WG1358718
Residual Range Organics (RRO)	ND		250	1	10/12/2019 03:29	WG1358718
(S) o-Terphenyl	55.3		52.0-156		10/12/2019 03:29	WG1358718



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 16:35	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	107		78.0-120		10/12/2019 16:35	WG1361718

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 09:09	WG1362039
Toluene	ND		1.00	1	10/13/2019 09:09	WG1362039
Ethylbenzene	ND		1.00	1	10/13/2019 09:09	WG1362039
Total Xylenes	ND		3.00	1	10/13/2019 09:09	WG1362039
(S) Toluene-d8	103		80.0-120		10/13/2019 09:09	WG1362039
(S) 4-Bromofluorobenzene	94.5		77.0-126		10/13/2019 09:09	WG1362039
(S) 1,2-Dichloroethane-d4	95.3		70.0-130		10/13/2019 09:09	WG1362039

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	10/11/2019 20:25	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 12:53	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 16:59	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	108		78.0-120		10/12/2019 16:59	WG1361718

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 12:10	WG1362049
Toluene	ND		1.00	1	10/13/2019 12:10	WG1362049
Ethylbenzene	ND		1.00	1	10/13/2019 12:10	WG1362049
Total Xylenes	ND		3.00	1	10/13/2019 12:10	WG1362049
(S) Toluene-d8	105		80.0-120		10/13/2019 12:10	WG1362049
(S) 4-Bromofluorobenzene	90.3		77.0-126		10/13/2019 12:10	WG1362049
(S) 1,2-Dichloroethane-d4	101		70.0-130		10/13/2019 12:10	WG1362049

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		200	1	10/13/2019 00:06	WG1361966
Residual Range Organics (RRO)	ND		250	1	10/13/2019 00:06	WG1361966
(S) o-Terphenyl	70.0		52.0-156		10/13/2019 00:06	WG1361966

Sample Narrative:

L1146865-20 WG1361966: pH meets requirements to extend holding time



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	175000		25000	5	10/10/2019 18:33	WG1360518

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 17:23	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	109		78.0-120		10/12/2019 17:23	WG1361718

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 12:33	WG1362049
Toluene	ND		1.00	1	10/13/2019 12:33	WG1362049
Ethylbenzene	ND		1.00	1	10/13/2019 12:33	WG1362049
Total Xylenes	ND		3.00	1	10/13/2019 12:33	WG1362049
(S) Toluene-d8	107		80.0-120		10/13/2019 12:33	WG1362049
(S) 4-Bromofluorobenzene	94.9		77.0-126		10/13/2019 12:33	WG1362049
(S) 1,2-Dichloroethane-d4	97.7		70.0-130		10/13/2019 12:33	WG1362049

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	446000		50000	10	10/10/2019 18:49	WG1360518

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	6020		100	1	10/12/2019 18:00	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	83.9		78.0-120		10/12/2019 18:00	WG1361718

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	3.47		1.00	1	10/13/2019 12:55	WG1362049
Toluene	53.2		1.00	1	10/13/2019 12:55	WG1362049
Ethylbenzene	263		20.0	20	10/15/2019 18:33	WG1363449
Total Xylenes	337		3.00	1	10/13/2019 12:55	WG1362049
(S) Toluene-d8	93.4		80.0-120		10/13/2019 12:55	WG1362049
(S) Toluene-d8	103		80.0-120		10/15/2019 18:33	WG1363449
(S) 4-Bromofluorobenzene	88.1		77.0-126		10/13/2019 12:55	WG1362049
(S) 4-Bromofluorobenzene	102		77.0-126		10/15/2019 18:33	WG1363449
(S) 1,2-Dichloroethane-d4	103		70.0-130		10/13/2019 12:55	WG1362049
(S) 1,2-Dichloroethane-d4	98.5		70.0-130		10/15/2019 18:33	WG1363449

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Collected date/time: 10/03/19 13:30

L1146865

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	400000		50000	10	10/10/2019 19:05	WG1360518

1 Cp

2 Tc

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	3.26		2.00	1	10/11/2019 20:39	WG1358569
Lead,Dissolved	2.26		2.00	1	10/11/2019 12:57	WG1359002

3 Ss

4 Cn

5 Sr

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	1830		100	1	10/12/2019 18:24	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	96.3		78.0-120		10/12/2019 18:24	WG1361718

6 Qc

7 Gl

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	2.13		1.00	1	10/13/2019 13:18	WG1362049
Toluene	3.97		1.00	1	10/13/2019 13:18	WG1362049
Ethylbenzene	41.3		1.00	1	10/13/2019 13:18	WG1362049
Total Xylenes	19.3		3.00	1	10/13/2019 13:18	WG1362049
(S) Toluene-d8	105		80.0-120		10/13/2019 13:18	WG1362049
(S) 4-Bromofluorobenzene	95.4		77.0-126		10/13/2019 13:18	WG1362049
(S) 1,2-Dichloroethane-d4	101		70.0-130		10/13/2019 13:18	WG1362049

8 Al

9 Sc



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	10/11/2019 20:44	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 13:07	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	249		100	1	10/12/2019 18:48	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	105		78.0-120		10/12/2019 18:48	WG1361718

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 13:41	WG1362049
Toluene	ND		1.00	1	10/13/2019 13:41	WG1362049
Ethylbenzene	ND		1.00	1	10/13/2019 13:41	WG1362049
Total Xylenes	ND		3.00	1	10/13/2019 13:41	WG1362049
(S) Toluene-d8	102		80.0-120		10/13/2019 13:41	WG1362049
(S) 4-Bromofluorobenzene	94.1		77.0-126		10/13/2019 13:41	WG1362049
(S) 1,2-Dichloroethane-d4	92.4		70.0-130		10/13/2019 13:41	WG1362049

6 Qc

7 Gl

8 Al

9 Sc



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	10/11/2019 20:48	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 13:10	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/12/2019 19:12	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	106		78.0-120		10/12/2019 19:12	WG1361718

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 14:03	WG1362049
Toluene	ND		1.00	1	10/13/2019 14:03	WG1362049
Ethylbenzene	ND		1.00	1	10/13/2019 14:03	WG1362049
Total Xylenes	ND		3.00	1	10/13/2019 14:03	WG1362049
(S) Toluene-d8	105		80.0-120		10/13/2019 14:03	WG1362049
(S) 4-Bromofluorobenzene	92.9		77.0-126		10/13/2019 14:03	WG1362049
(S) 1,2-Dichloroethane-d4	96.3		70.0-130		10/13/2019 14:03	WG1362049

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		200	1	10/13/2019 00:26	WG1361966
Residual Range Organics (RRO)	ND		250	1	10/13/2019 00:26	WG1361966
(S) o-Terphenyl	60.5		52.0-156		10/13/2019 00:26	WG1361966

Sample Narrative:

L1146865-25 WG1361966: pH meets requirements to extend holding time



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	379000		25000	5	10/11/2019 09:15	WG1360518

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	3.33		2.00	1	10/11/2019 20:53	WG1358569
Lead,Dissolved	2.37		2.00	1	10/11/2019 13:14	WG1359002

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	1740		100	1	10/12/2019 19:37	WG1361718
(S) a,a,a-Trifluorotoluene(FID)	97.3		78.0-120		10/12/2019 19:37	WG1361718

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	2.15		1.00	1	10/13/2019 14:26	WG1362049
Toluene	3.99		1.00	1	10/13/2019 14:26	WG1362049
Ethylbenzene	38.5		1.00	1	10/13/2019 14:26	WG1362049
Total Xylenes	19.4		3.00	1	10/13/2019 14:26	WG1362049
(S) Toluene-d8	110		80.0-120		10/13/2019 14:26	WG1362049
(S) 4-Bromofluorobenzene	99.2		77.0-126		10/13/2019 14:26	WG1362049
(S) 1,2-Dichloroethane-d4	95.0		70.0-130		10/13/2019 14:26	WG1362049

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	125000		25000	5	10/10/2019 19:38	WG1360518

Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	9.51		2.00	1	10/11/2019 20:57	WG1358569
Lead,Dissolved	3.34		2.00	1	10/11/2019 13:17	WG1359002

Volatile Organic Compounds (GC) by Method NWTPHGX

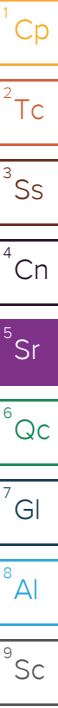
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	1360		100	1	10/13/2019 11:47	WG1362112
(S) <i>a, a, a</i> -Trifluorotoluene(FID)	80.3		78.0-120		10/13/2019 11:47	WG1362112

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	4.35		1.00	1	10/13/2019 14:48	WG1362049
Toluene	2.95		1.00	1	10/13/2019 14:48	WG1362049
Ethylbenzene	22.6		1.00	1	10/13/2019 14:48	WG1362049
Total Xylenes	10.9		3.00	1	10/13/2019 14:48	WG1362049
(S) <i>Toluene-d8</i>	106		80.0-120		10/13/2019 14:48	WG1362049
(S) <i>4-Bromofluorobenzene</i>	97.8		77.0-126		10/13/2019 14:48	WG1362049
(S) <i>1,2-Dichloroethane-d4</i>	91.4		70.0-130		10/13/2019 14:48	WG1362049

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	1410		200	1	10/12/2019 04:29	WG1358718
Residual Range Organics (RRO)	ND		250	1	10/12/2019 04:29	WG1358718
(S) <i>o</i> -Terphenyl	67.9		52.0-156		10/12/2019 04:29	WG1358718





Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	416000		25000	5	10/10/2019 19:55	WG1360518

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	11600		500	5	10/16/2019 13:46	WG1363418
(S) a,a,a-Trifluorotoluene(FID)	93.6		78.0-120		10/16/2019 13:46	WG1363418

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 20:58	WG1362012
Toluene	4.86		1.00	1	10/12/2019 20:58	WG1362012
Ethylbenzene	640		50.0	50	10/13/2019 13:51	WG1362221
Total Xylenes	1090		150	50	10/13/2019 13:51	WG1362221
(S) Toluene-d8	69.8	J2	80.0-120		10/12/2019 20:58	WG1362012
(S) Toluene-d8	110		80.0-120		10/13/2019 13:51	WG1362221
(S) 4-Bromofluorobenzene	72.9	J2	77.0-126		10/12/2019 20:58	WG1362012
(S) 4-Bromofluorobenzene	96.9		77.0-126		10/13/2019 13:51	WG1362221
(S) 1,2-Dichloroethane-d4	110		70.0-130		10/12/2019 20:58	WG1362012
(S) 1,2-Dichloroethane-d4	98.9		70.0-130		10/13/2019 13:51	WG1362221

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/13/2019 12:35	WG1362112
(S) a,a,a-Trifluorotoluene(FID)	107		78.0-120		10/13/2019 12:35	WG1362112

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 21:21	WG1362012
Toluene	ND		1.00	1	10/12/2019 21:21	WG1362012
Ethylbenzene	ND		1.00	1	10/13/2019 14:11	WG1362221
Total Xylenes	ND		3.00	1	10/13/2019 14:11	WG1362221
(S) Toluene-d8	104		80.0-120		10/12/2019 21:21	WG1362012
(S) Toluene-d8	113		80.0-120		10/13/2019 14:11	WG1362221
(S) 4-Bromofluorobenzene	99.1		77.0-126		10/12/2019 21:21	WG1362012
(S) 4-Bromofluorobenzene	88.6		77.0-126		10/13/2019 14:11	WG1362221
(S) 1,2-Dichloroethane-d4	102		70.0-130		10/12/2019 21:21	WG1362012
(S) 1,2-Dichloroethane-d4	96.3		70.0-130		10/13/2019 14:11	WG1362221

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	441		200	1	10/12/2019 04:49	WG1358718
Residual Range Organics (RRO)	ND		250	1	10/12/2019 04:49	WG1358718
(S) o-Terphenyl	62.1		52.0-156		10/12/2019 04:49	WG1358718

9 Sc



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	7.43		2.00	1	10/11/2019 21:02	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 13:20	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/13/2019 12:59	WG1362112
(S) a,a,a-Trifluorotoluene(FID)	108		78.0-120		10/13/2019 12:59	WG1362112

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/12/2019 21:43	WG1362012
Toluene	ND		1.00	1	10/12/2019 21:43	WG1362012
Ethylbenzene	ND		1.00	1	10/12/2019 21:43	WG1362012
Total Xylenes	ND		3.00	1	10/12/2019 21:43	WG1362012
(S) Toluene-d8	111		80.0-120		10/12/2019 21:43	WG1362012
(S) 4-Bromofluorobenzene	96.1		77.0-126		10/12/2019 21:43	WG1362012
(S) 1,2-Dichloroethane-d4	92.3		70.0-130		10/12/2019 21:43	WG1362012

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		200	1	10/13/2019 00:46	WG1361966
Residual Range Organics (RRO)	ND		250	1	10/13/2019 00:46	WG1361966
(S) o-Terphenyl	65.8		52.0-156		10/13/2019 00:46	WG1361966

Sample Narrative:

L1146865-30 WG1361966: pH meets requirements to extend holding time



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Lead	ND		2.00	1	10/11/2019 21:06	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 13:23	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Gasoline Range Organics-NWTPH	ND		100	1	10/13/2019 13:23	WG1362112
(S) a,a,a-Trifluorotoluene(FID)	107		78.0-120		10/13/2019 13:23	WG1362112

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Benzene	ND		1.00	1	10/13/2019 15:11	WG1362049
Toluene	ND		1.00	1	10/13/2019 15:11	WG1362049
Ethylbenzene	ND		1.00	1	10/13/2019 15:11	WG1362049
Total Xylenes	ND		3.00	1	10/13/2019 15:11	WG1362049
(S) Toluene-d8	107		80.0-120		10/13/2019 15:11	WG1362049
(S) 4-Bromofluorobenzene	95.4		77.0-126		10/13/2019 15:11	WG1362049
(S) 1,2-Dichloroethane-d4	96.5		70.0-130		10/13/2019 15:11	WG1362049

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Diesel Range Organics (DRO)	391		200	1	10/12/2019 05:30	WG1358718
Residual Range Organics (RRO)	ND		250	1	10/12/2019 05:30	WG1358718
(S) o-Terphenyl	61.6		52.0-156		10/12/2019 05:30	WG1358718



Metals (ICPMS) by Method 6020B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Lead	ND		2.00	1	10/11/2019 19:08	WG1358569
Lead,Dissolved	ND		2.00	1	10/11/2019 13:27	WG1359002

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/13/2019 13:47	WG1362112
(S) a,a,a-Trifluorotoluene(FID)	108		78.0-120		10/13/2019 13:47	WG1362112

4 Cn

5 Sr

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 15:33	WG1362049
Toluene	ND		1.00	1	10/13/2019 15:33	WG1362049
Ethylbenzene	ND		1.00	1	10/13/2019 15:33	WG1362049
Total Xylenes	ND		3.00	1	10/13/2019 15:33	WG1362049
(S) Toluene-d8	108		80.0-120		10/13/2019 15:33	WG1362049
(S) 4-Bromofluorobenzene	95.6		77.0-126		10/13/2019 15:33	WG1362049
(S) 1,2-Dichloroethane-d4	96.6		70.0-130		10/13/2019 15:33	WG1362049

6 Qc

7 Gl

8 Al

9 Sc

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	ND		200	1	10/12/2019 05:50	WG1358718
Residual Range Organics (RRO)	ND		250	1	10/12/2019 05:50	WG1358718
(S) o-Terphenyl	55.3		52.0-156		10/12/2019 05:50	WG1358718



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	355		100	1	10/13/2019 14:10	WG1362112
(S) a,a,a-Trifluorotoluene(FID)	101		78.0-120		10/13/2019 14:10	WG1362112

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 15:56	WG1362049
Toluene	1.41		1.00	1	10/13/2019 15:56	WG1362049
Ethylbenzene	ND		1.00	1	10/13/2019 15:56	WG1362049
Total Xylenes	ND		3.00	1	10/13/2019 15:56	WG1362049
(S) Toluene-d8	112		80.0-120		10/13/2019 15:56	WG1362049
(S) 4-Bromofluorobenzene	105		77.0-126		10/13/2019 15:56	WG1362049
(S) 1,2-Dichloroethane-d4	94.4		70.0-130		10/13/2019 15:56	WG1362049

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	ND		100	1	10/13/2019 15:30	WG1362112
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	107		78.0-120		10/13/2019 15:30	WG1362112

1 Cp

2 Tc

3 Ss

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 16:19	WG1362049
Toluene	ND		1.00	1	10/13/2019 16:19	WG1362049
Ethylbenzene	ND		1.00	1	10/13/2019 16:19	WG1362049
Total Xylenes	ND		3.00	1	10/13/2019 16:19	WG1362049
(S) <i>Toluene-d8</i>	109		80.0-120		10/13/2019 16:19	WG1362049
(S) <i>4-Bromofluorobenzene</i>	97.9		77.0-126		10/13/2019 16:19	WG1362049
(S) <i>1,2-Dichloroethane-d4</i>	96.8		70.0-130		10/13/2019 16:19	WG1362049

4 Cn

5 Sr

6 Qc

7 Gl

Semi-Volatile Organic Compounds (GC) by Method NWTPHDX-SGT

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Diesel Range Organics (DRO)	1440		200	1	10/12/2019 06:10	WG1358718
Residual Range Organics (RRO)	ND		250	1	10/12/2019 06:10	WG1358718
(S) <i>o</i> -Terphenyl	68.9		52.0-156		10/12/2019 06:10	WG1358718

8 Al

9 Sc



Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Sulfate	513000		100000	20	10/10/2019 20:11	WG1360518

1 Cp

2 Tc

Volatile Organic Compounds (GC) by Method NWTPHGX

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Gasoline Range Organics-NWTPH	955		100	1	10/13/2019 15:53	WG1362112
(S) a,a,a-Trifluorotoluene(FID)	99.1		78.0-120		10/13/2019 15:53	WG1362112

3 Ss

4 Cn

Volatile Organic Compounds (GC/MS) by Method 8260C

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Benzene	ND		1.00	1	10/13/2019 16:41	WG1362049
Toluene	ND		1.00	1	10/13/2019 16:41	WG1362049
Ethylbenzene	ND		1.00	1	10/13/2019 16:41	WG1362049
Total Xylenes	ND		3.00	1	10/13/2019 16:41	WG1362049
(S) Toluene-d8	115		80.0-120		10/13/2019 16:41	WG1362049
(S) 4-Bromofluorobenzene	109		77.0-126		10/13/2019 16:41	WG1362049
(S) 1,2-Dichloroethane-d4	94.6		70.0-130		10/13/2019 16:41	WG1362049

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3460041-1 10/10/19 10:25

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Sulfate	U		77.4	5000

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

L1146865-11 Original Sample (OS) • Duplicate (DUP)

(OS) L1146865-11 10/10/19 16:38 • (DUP) R3460041-3 10/10/19 16:54

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Sulfate	6770	6650	1	1.83		15

L1146947-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1146947-01 10/11/19 01:07 • (DUP) R3460041-7 10/11/19 01:23

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Sulfate	3330000	3340000	500	0.585		15

Laboratory Control Sample (LCS)

(LCS) R3460041-2 10/10/19 10:42

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Sulfate	40000	41100	103	80.0-120	

L1146865-11 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1146865-11 10/10/19 16:38 • (MS) R3460041-4 10/10/19 17:10 • (MSD) R3460041-5 10/10/19 17:27

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Sulfate	50000	6770	57000	57100	100	101	1	80.0-120			0.280	15

L1146896-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1146896-02 10/10/19 21:33 • (MS) R3460041-6 10/10/19 21:50

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Sulfate	50000	67600	115000	94.6	1	80.0-120	E



Method Blank (MB)

(MB) R3460318-1 10/11/19 18:54

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Lead	U		0.240	2.00

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460318-2 10/11/19 18:58 • (LCSD) R3460318-3 10/11/19 19:03

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Lead	50.0	49.1	50.0	98.3	99.9	80.0-120			1.66	20

7 Gl

8 Al

L1146865-32 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1146865-32 10/11/19 19:08 • (MS) R3460318-5 10/11/19 19:17 • (MSD) R3460318-6 10/11/19 19:21

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lead	50.0	ND	49.0	49.8	97.0	98.6	1	75.0-125			1.62	20

9 Sc



Method Blank (MB)

(MB) R3460123-1 10/11/19 11:47

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Lead,Dissolved	U		0.240	2.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460123-2 10/11/19 11:50 • (LCSD) R3460123-3 10/11/19 11:53

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Lead,Dissolved	50.0	50.5	50.2	101	100	80.0-120			0.635	20

⁷Gl

⁸Al

L1147005-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1147005-01 10/11/19 11:57 • (MS) R3460123-5 10/11/19 12:06 • (MSD) R3460123-6 10/11/19 12:09

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Lead,Dissolved	50.0	0.347	48.7	48.1	96.8	95.6	1	75.0-125			1.21	20

⁹Sc



Method Blank (MB)

(MB) R3460552-3 10/11/19 22:52

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	107			78.0-120

1 Cp

2 Tc

3 Ss

4 Cn

Laboratory Control Sample (LCS)

(LCS) R3460552-1 10/11/19 21:00

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5290	96.2	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			93.6	78.0-120	

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3461305-3 10/12/19 10:01

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	106			78.0-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3461305-1 10/12/19 08:49 • (LCSD) R3461305-2 10/12/19 09:13

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	5500	4830	5660	87.8	103	70.0-124			15.8	20
(S) a,a,a-Trifluorotoluene(FID)				90.9	92.2	78.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3461261-4 10/13/19 11:23

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	106			78.0-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3461261-2 10/13/19 10:12 • (LCSD) R3461261-3 10/13/19 10:36

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Gasoline Range Organics-NWTPH	5500	5160	6040	93.8	110	70.0-124			15.7	20
(S) a,a,a-Trifluorotoluene(FID)				93.9	90.1	78.0-120				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3461646-3 10/16/19 12:32

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Gasoline Range Organics-NWTPH	U		31.6	100
(S) a,a,a-Trifluorotoluene(FID)	107			78.0-120

1 Cp

2 Tc

3 Ss

4 Cn

Laboratory Control Sample (LCS)

(LCS) R3461646-2 10/16/19 11:32

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Gasoline Range Organics-NWTPH	5500	5400	98.2	70.0-124	
(S) a,a,a-Trifluorotoluene(FID)			80.7	78.0-120	

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3460458-2 10/12/19 12:28

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
Toluene	U		0.412	1.00
Xylenes, Total	U		1.06	3.00
<i>(S) Toluene-d8</i>	104			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	91.1			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	99.6			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Laboratory Control Sample (LCS)

(LCS) R3460458-1 10/12/19 11:43

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	25.0	23.6	94.4	70.0-123	
Ethylbenzene	25.0	24.7	98.8	79.0-123	
Toluene	25.0	24.6	98.4	79.0-120	
Xylenes, Total	75.0	78.3	104	79.0-123	
<i>(S) Toluene-d8</i>			105	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			93.7	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			107	70.0-130	

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3460861-3 10/13/19 01:07

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
Toluene	U		0.412	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	104			80.0-120
(S) 4-Bromofluorobenzene	92.5			77.0-126
(S) 1,2-Dichloroethane-d4	98.3			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460861-1 10/12/19 23:59 • (LCSD) R3460861-2 10/13/19 00:21

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	25.0	23.6	23.6	94.4	94.4	70.0-123			0.000	20
Ethylbenzene	25.0	27.4	26.4	110	106	79.0-123			3.72	20
Toluene	25.0	26.7	25.5	107	102	79.0-120			4.60	20
Xylenes, Total	75.0	86.0	82.2	115	110	79.0-123			4.52	20
(S) Toluene-d8				110	105	80.0-120				
(S) 4-Bromofluorobenzene				101	101	77.0-126				
(S) 1,2-Dichloroethane-d4				107	105	70.0-130				

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3460862-3 10/13/19 11:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
Toluene	U		0.412	1.00
Xylenes, Total	U		1.06	3.00
(S) Toluene-d8	107			80.0-120
(S) 4-Bromofluorobenzene	91.8			77.0-126
(S) 1,2-Dichloroethane-d4	99.2			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460862-1 10/13/19 09:54 • (LCSD) R3460862-2 10/13/19 10:17

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	25.0	24.6	24.4	98.4	97.6	70.0-123			0.816	20
Ethylbenzene	25.0	26.5	26.4	106	106	79.0-123			0.378	20
Toluene	25.0	25.6	25.8	102	103	79.0-120			0.778	20
Xylenes, Total	75.0	84.0	83.3	112	111	79.0-123			0.837	20
(S) Toluene-d8				106	104	80.0-120				
(S) 4-Bromofluorobenzene				95.5	97.1	77.0-126				
(S) 1,2-Dichloroethane-d4				109	105	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3460790-2 10/13/19 13:00

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Ethylbenzene	U		0.384	1.00
Xylenes, Total	U		1.06	3.00
<i>(S) Toluene-d8</i>	110			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	88.8			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	96.8			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

Laboratory Control Sample (LCS)

(LCS) R3460790-1 10/13/19 11:39

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ethylbenzene	25.0	24.4	97.6	79.0-123	
Xylenes, Total	75.0	73.1	97.5	79.0-123	
<i>(S) Toluene-d8</i>			108	80.0-120	
<i>(S) 4-Bromofluorobenzene</i>			93.8	77.0-126	
<i>(S) 1,2-Dichloroethane-d4</i>			105	70.0-130	

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc



Method Blank (MB)

(MB) R3461340-3 10/15/19 09:58

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Benzene	U		0.331	1.00
Ethylbenzene	U		0.384	1.00
Toluene	U		0.412	1.00
Xylenes, Total	U		1.06	3.00
<i>(S) Toluene-d8</i>	107			80.0-120
<i>(S) 4-Bromofluorobenzene</i>	99.9			77.0-126
<i>(S) 1,2-Dichloroethane-d4</i>	97.4			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3461340-1 10/15/19 08:42 • (LCSD) R3461340-4 10/15/19 10:51

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	%	%	%			%	%
Benzene	25.0	23.7	24.9	94.8	99.6	70.0-123			4.94	20
Ethylbenzene	25.0	23.3	24.0	93.2	96.0	79.0-123			2.96	20
Toluene	25.0	23.9	23.8	95.6	95.2	79.0-120			0.419	20
Xylenes, Total	75.0	71.9	74.7	95.9	99.6	79.0-123			3.82	20
<i>(S) Toluene-d8</i>				105	100	80.0-120				
<i>(S) 4-Bromofluorobenzene</i>				99.7	103	77.0-126				
<i>(S) 1,2-Dichloroethane-d4</i>				105	113	70.0-130				

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Method Blank (MB)

(MB) R3461356-3 10/15/19 17:23

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Ethylbenzene	U		0.384	1.00
(S) Toluene-d8	104			80.0-120
(S) 4-Bromofluorobenzene	102			77.0-126
(S) 1,2-Dichloroethane-d4	101			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3461356-1 10/15/19 16:25 • (LCSD) R3461356-2 10/15/19 16:44

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Ethylbenzene	25.0	26.0	26.1	104	104	79.0-123			0.384	20
(S) Toluene-d8				104	102	80.0-120				
(S) 4-Bromofluorobenzene				107	107	77.0-126				
(S) 1,2-Dichloroethane-d4				97.1	100	70.0-130				

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc



Method Blank (MB)

(MB) R3458715-1 10/08/19 00:51

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Diesel Range Organics (DRO)	U		66.7	200
Residual Range Organics (RRO)	U		83.3	250
<i>(S) o-Terphenyl</i>	64.0			52.0-156

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3458715-2 10/08/19 01:11 • (LCSD) R3458715-3 10/08/19 01:31

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Diesel Range Organics (DRO)	1500	1250	1250	83.3	83.3	50.0-150			0.000	20
<i>(S) o-Terphenyl</i>				74.5	74.0	52.0-156				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3459905-1 10/10/19 10:10

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Diesel Range Organics (DRO)	U		66.7	200
Residual Range Organics (RRO)	U		83.3	250
<i>(S) o-Terphenyl</i>	52.0			52.0-156

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3459905-2 10/10/19 11:30 • (LCSD) R3459905-3 10/10/19 11:50

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Diesel Range Organics (DRO)	1500	1150	1100	76.7	73.3	50.0-150			4.44	20
<i>(S) o-Terphenyl</i>				70.0	65.5	52.0-156				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Method Blank (MB)

(MB) R3460467-1 10/12/19 23:06

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Diesel Range Organics (DRO)	U		66.7	200
Residual Range Organics (RRO)	U		83.3	250
<i>(S) o-Terphenyl</i>	66.0			52.0-156

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3460467-2 10/12/19 23:26 • (LCSD) R3460467-3 10/12/19 23:46

Analyte	Spike Amount ug/l	LCS Result ug/l	LCSD Result ug/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Diesel Range Organics (DRO)	1500	1230	1210	82.0	80.7	50.0-150			1.64	20
<i>(S) o-Terphenyl</i>				73.5	72.5	52.0-156				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc



Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J2	Surrogate recovery limits have been exceeded; values are outside lower control limits.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
 * Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

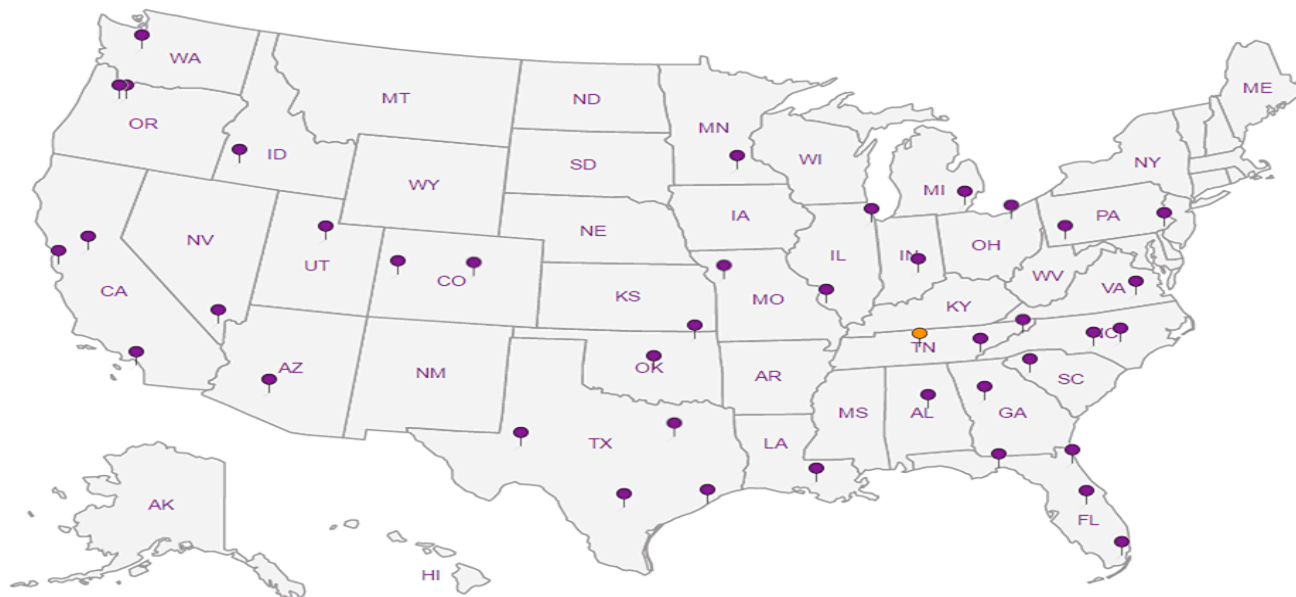
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Kinder Morgan - Orange, CA

1100 Olive Way, Suite 800
Seattle, WA 98101

Billing Information:

Accounts Payable - Scott Martin
1100 Town and Country Rd
Orange, CA 92868

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___

Report to:
Mark Ullery

Email To:
mark.ullery@arcadis.com,
kyle.baclam@arcadis.com

Project
Description: KMEP Harbor Island

City/State
Collected: Seattle, WA

Phone: 206-726-4713
Fax:

Client Project #
30018857

Lab Project #

Collected by (print):
Kelsey Franz/Lauren Selleck

Site/Facility ID #
2720 13th Ave SW

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)

Quote #

Same Day Five Day
Next Day 5 Day (Rad Only)
Two Day 10 Day (Rad Only)
Three Day

Date Results Needed

STAT

No.
of
Cnts

Immediately
Packed on Ice N Y X

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cnts	NWTPH-Gx, 40 mL Amber HCl	NWTPH-Dx w/SGT, 40 mL Amber HCl	BTEX 8260B, 40 mL Amber HCl	Diss Pb 6020, 250 mL HDPE No Pres	Total Pb 6020, 250 mL HDPE No Pres	Sulfate, 125 mL HDPE No Pres	Sulfide, 125 mL Amber NaOH+ZnAc	Ferrous Fe, 250 mL Amber HCl (Field Filtr)	Methane, RSK175 40 mL Amber HCl	Nitrate - 125 mL HDPE - No pres	Remarks	Sample # (lab only)	
TMW-2	Grab	GW		10/2/19	1045	7	X		X			X							
MW-19	Grab	GW		10/2/19	1215	7	X		X			X							02
MW-5	Grab	GW		10/1/19	1615	10	X	X	X	X	X								03
MW-14	Grab	GW		10/1/19	1555	6	X		X										04
TMW-1	Grab	GW		10/2/19	1125	7	X		X			X							05
A-8	Grab	GW		10/2/19	1415	8	X	X	X										06
A-14R	Grab	GW		10/2/19	1655	10	X	X	X	X	X								07
SH-02R	Grab	GW		10/3/19	1625	10	X	X	X	X	X								08
MW-07R	Grab	GW		10/3/19	1425	10	X	X	X	X	X								09
MW-21	Grab	GW		10/2/19	1420	9	X	X	X										10

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:

Ferrous Fe field filtered

Samples returned via:
 UPS FedEx Courier

pH _____ Temp _____

Flow _____ Other _____

Tracking # 4196 3255 8629 / 8640 / 8630

Sample Receipt Checklist

COC Seal Present/Intact: Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Relinquished by: (Signature)

Date: 10/4/19
Time: 1200

Received by: (Signature)

Trip Blank Received: Yes No
HCL / MeOH
TBR

Relinquished by: (Signature)

Date: 10/4/19
Time: 1200

Received by: (Signature)

Temp: °C
Bottles Received: 27-0.1=2.6 292

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: _____
Time: _____

Received for lab by: (Signature)

Date: 10/5/19
Time: 0845

Hold:

Condition:
NCF / OK



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



L # L1146865
M135

Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Kinder Morgan - Orange, CA
1100 Olive Way, Suite 800
Seattle, WA 98101

Billing Information:
Accounts Payable - Scott Martin
1100 Town and Country Rd
Orange, CA 92868

Report to:
Mark Ullery

Project Description:
KMEP Harbor Island

City/State Collected:
Seattle, WA

Phone: **206-726-4713** Client Project # **30018857**

Collected by (print):
Kelsey Franz/Lauren Selleck Site/Facility ID # **2720 13th Ave SW**

Collected by (signature):
[Signature] **Rush? (Lab MUST Be Notified)**

Immediately Packed on Ice **N Y X**

Matrix * **GW**

Remarks:
Ferrous Fe field filtered

Samples returned via:
 UPS / FedEx / Courier

Tracking # **same**

Relinquished by: (Signature) *[Signature]* Date: **10/4/19** Time: **1200**

Relinquished by: (Signature) *[Signature]* Date: **10/4/19** Time: **1200**

Relinquished by: (Signature) *[Signature]* Date: **10/5/19** Time: **0845**

Received by: (Signature) *[Signature]*

Received by: (Signature) *[Signature]*

Received for lab by: (Signature) *[Signature]*

Trip Blank Received: Yes **(No)** HCL / MeOH TBR

Temp: **21.7-21.5-21.6** °C Bottles Received: **292**

Date: **10/5/19** Time: **0845**

Hold: Condition: **NCF / OK**

Chain of Custody Page ___ of ___

Pace Analytical*
 National Center for Testing & Innovation

12065 Lebanon Rd
 Mount Juliet, TN 37122
 Phone: 615-758-5858
 Phone: 800-767-5859
 Fax: 615-758-5859

QR Code

L # **4146865**

Table #

Acctnum:

Template:

Prelogin:

TSR:

PB:

Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	NWTPH-Gx, 40 mL Amber HCl	NWTPH-Dx w/SGT, 40 mL Amber HCl	BTEX 8260B, 40 mL Amber HCl	Diss Pb 6020, 250 mL HDPE No Pres	Total Pb 6020, 250 mL HDPE No Pres	Sulfate, 125 mL HDPE No Pres	Sulfide, 125 mL Amber NaOH+ZnAc	Ferrous Fe, 250 mL Amber HCl (Field Filtr)	Methane, RSK175 40 mL Amber HCl	Nitrate - 125 mL HDPE - No pres
MW-9	Grab	GW		10/2/19	1550	9	X	X	X	X	X	X				
MW-22	Grab	GW		10/3/19	1420	8	X	X	X							
TMW-5	Grab	GW		10/2/19	1710	7	X	X				X				
DUP-1	Grab	GW		10/2/19	—	8	X	X	X							
MW-8	Grab	GW		10/2/19	1510	10	X	X	X	X	X					
MW-18	Grab	GW		10/3/19	1810	6	X	X								
MW-20	Grab	GW		10/2/19	1040	8	X	X	X							
MW-1	Grab	GW		10/2/19	1210	10	X	X	X	X	X					
A-23R	Grab	GW		10/3/19	0925	6	X	X								
MW-25	Grab	GW		10/3/19	1025	10	X	X	X	X	X					

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	NWTPH-Gx, 40 mL Amber HCl	NWTPH-Dx w/SGT, 40 mL Amber HCl	BTEX 8260B, 40 mL Amber HCl	Diss Pb 6020, 250 mL HDPE No Pres	Total Pb 6020, 250 mL HDPE No Pres	Sulfate, 125 mL HDPE No Pres	Sulfide, 125 mL Amber NaOH+ZnAc	Ferrous Fe, 250 mL Amber HCl (Field Filtr)	Methane, RSK175 40 mL Amber HCl	Nitrate - 125 mL HDPE - No pres
MW-9	Grab	GW		10/2/19	1550	9	X	X	X	X	X	X				
MW-22	Grab	GW		10/3/19	1420	8	X	X	X							
TMW-5	Grab	GW		10/2/19	1710	7	X	X				X				
DUP-1	Grab	GW		10/2/19	—	8	X	X	X							
MW-8	Grab	GW		10/2/19	1510	10	X	X	X	X	X					
MW-18	Grab	GW		10/3/19	1810	6	X	X								
MW-20	Grab	GW		10/2/19	1040	8	X	X	X							
MW-1	Grab	GW		10/2/19	1210	10	X	X	X	X	X					
A-23R	Grab	GW		10/3/19	0925	6	X	X								
MW-25	Grab	GW		10/3/19	1025	10	X	X	X	X	X					

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:
Ferrous Fe field filtered

Samples returned via:
 UPS / FedEx / Courier

Tracking # **same**

pH _____ Temp _____

Flow _____ Other _____

Sample Receipt Checklist

COC Seal Present/Intact: Y N

COC Signed/Accurate: Y N

Bottles arrive intact: Y N

Correct bottles used: Y N

Sufficient volume sent: Y N

If Applicable

VOA Zero Headspace: Y N

Preservation Correct/Checked: Y N

Relinquished by: (Signature) *[Signature]* Date: **10/4/19** Time: **1200**

Relinquished by: (Signature) *[Signature]* Date: **10/4/19** Time: **1200**

Relinquished by: (Signature) *[Signature]* Date: **10/5/19** Time: **0845**

Received by: (Signature) *[Signature]*

Received by: (Signature) *[Signature]*

Received for lab by: (Signature) *[Signature]*

Trip Blank Received: Yes **(No)** HCL / MeOH TBR

Temp: **21.7-21.5-21.6** °C Bottles Received: **292**

Date: **10/5/19** Time: **0845**

Hold: Condition: **NCF / OK**

Kinder Morgan - Orange, CA

1100 Olive Way, Suite 800
Seattle, WA 98101

Billing Information:
Accounts Payable - Scott Martin
1100 Town and Country Rd
Orange, CA 92868

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page ___ of ___



12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859



Report to:
Mark Ullery

Email To:
mark.ullery@arcadis.com,
kyle.baclem@arcadis.com

Project Description:
KMEP Harbor Island

City/State
Collected: Seattle, WA

Phone: 206-726-4713
Fax:

Client Project #
30018857

Lab Project #

Collected by (print):
Kelsey Franz/Lauren Selleck

Site/Facility ID #
2720 13th Ave SW

P.O. #

Collected by (signature):
[Signature]

Rush? (Lab MUST Be Notified)

___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

STAT

Immediately
Packed on Ice N ___ Y

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	NWTPH-Gx, 40 mL Amber HCl	NWTPH-Dx w/SGT, 40 mL Amber HCl	BTEX 8260B, 40 mL Amber HCl	Diss Pb 6020, 250 mL HDPE No Pres	Total Pb 6020, 250 mL HDPE No Pres	Sulfate, 125 mL HDPE No Pres	Sulfide, 125 mL Amber NaOH+ZnAc	Ferrous Fe, 250 mL Amber HCl (Field Filtr)	Methane, RSK175 40 mL Amber HCl	Nitrate - 125 mL HDPE - No pres
11	Grab	GW		10/3/19	1110	7	X		X			X				
TW-4	Grab	GW		10/3/19	1200	7	X		X			X				
MW-7	Grab	GW		10/3/19	1330	9	X		X	X	X	X				
MW-6	Grab	GW		10/3/19	1530	8	X		X	X	X					
MW-2	Grab	GW		10/3/19	1710	10	X	X	X	X	X					
DUP-2	Grab	GW		10/3/19	---	9	X		X	X	X	X				
12	Grab	GW		10/3/19	1450	10	X	X	X	X	X	X				
TW-6	Grab	GW		10/2/19	1620	7	X		X			X				
A-10	Grab	GW		10/2/19	1555	8	X	X	X							
MW-3	Grab	GW		10/2/19	1250	10	X	X	X	X	X					

L # L1140865
Table #
Acctnum:
Template:
Prelogin:
TSR:
PB:
Shipped Via:

Remarks	Sample # (lab only)
	21
	22
	23
	24
	25
	26
	27
	28
	29
	30

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other

Remarks:
Ferrous Fe field filtered

Samples returned via:
 UPS FedEx Courier

pH _____ Temp _____
Flow _____ Other _____

Sample Receipt Checklist
COC Seal Present/Intact: NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: Y N
Preservation Correct/Checked: Y N

Tracking # same

Relinquished by: (Signature)

Date: 10/4/19
Time: 1200

Received by: (Signature)

Trip Blank Received: Yes No
HCL / MeOH
TBR

Relinquished by: (Signature)

Date: 10/9/19
Time: 1200

Received by: (Signature)

Temp: °C Bottles Received: 27-0.1=26.9 292

If preservation required by Login: Date/Time

Relinquished by: (Signature)

Date: _____
Time: _____

Received for lab by: (Signature)

Date: 10/5/19
Time: 0845

Hold:

Condition:
NCF / OK


Kinder Morgan - Orange, CA
 1100 Olive Way, Suite 800
 Seattle, WA 98101

Billing Information:
 Accounts Payable - Scott Martin
 1100 Town and Country Rd
 Orange, CA 92868

Chain of Custody Page ___ of ___

Pace Analytical®
 National Center for Testing & Innovation

12065 Lebanon Rd
 Mount Juliet, TN 37122
 Phone: 615-758-5858
 Phone: 800-767-5859
 Fax: 615-758-5859



Report to:
 Mark Ullery

Email To:
 mark.ullery@arcadis.com,
 kyle.baclam@arcadis.com

Project Description:
 KMEP Harbor Island

City/State Collected:
 Seattle, WA

Phone: 206-726-4713
 Fax:

Client Project #
 30018857

Lab Project #

Collected by (print):
 Kelsey Franz/Lauren Selleck

Site/Facility ID #
 2720 13th Ave SW

P.O. #

Collected by (signature):
[Signature]

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Date Results Needed
 STAT

Immediately Packed on Ice N Y

No. of Cntrs

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	NWTPH-Gx, 40 mL Amber HCl	NWTPH-Dx w/SGT, 40 mL Amber HCl	BTEX 8260B, 40 mL Amber HCl	Diss Pb 6020, 250 mL HDPE No Pres	Total Pb 6020, 250 mL HDPE No Pres	Sulfate, 125 mL HDPE No Pres	Sulfide, 125 mL Amber NaOH+ZnAc	Ferrous Fe, 250 mL Amber HCl (Field Filtr)	Methane, RSK175 40 mL Amber HCl	Nitrate - 125 mL HDPE - No pres	Remarks	Sample # (lab only)
SA-05 R	Grab	GW		10/3/19	1245	10	X	X	X	X	X							-31
MW-12R	Grab	GW		10/3/19	1735	10	X	X	X	X	X							-32
A-5	Grab	GW		10/3/19	1125	6	X		X									-33
MW-4	Grab	GW		10/3/19	1535	8	X	X	X									-34
TMW-3	Grab	GW		10/3/19	1230	7	X		X			X						-35
	Grab	GW																
	Grab	GW																
	Grab	GW																
	Grab	GW																

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:
 Ferrous Fe field filtered

Samples returned via:
 UPS FedEx Courier

Tracking # *same*

pH _____ Temp _____
 Flow _____ Other _____

Sample Receipt Checklist
 COC Seal Present/Intact: NP Y N
 COC Signed/Accurate: Y N
 Bottles arrive intact: Y N
 Correct bottles used: Y N
 Sufficient volume sent: Y N
 If Applicable
 VOA Zero HeadSpace: Y N
 Preservation Correct/Checked: Y N

Relinquished by: (Signature) <i>[Signature]</i>	Date: 10/14/19	Time: 1200	Received by: (Signature)	Trip Blank Received: Yes / <input checked="" type="checkbox"/> No HCL / MeoH TBR
Relinquished by: (Signature) <i>[Signature]</i>	Date: 10/14/19	Time: 1200	Received by: (Signature)	Temp: °C 27.0-1 = 26.0 Bottles Received: 292
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature) <i>[Signature]</i>	Date: 10/5/19 Time: 0845

Hold: _____ Condition: NCF / PK

APPENDIX D

Historical Groundwater Elevations



Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-1	02/11/02	10.93	7.47	--	3.46	
A-1	05/20/02	10.93	9.99	--	0.94	
A-1	08/27/02	10.93	4.72	--	6.21	
A-1	11/04/02	10.93	8.95	--	1.98	
A-1	02/18/03	10.93	7.92	--	3.01	
A-1	06/09/03	10.93	8.47	--	2.46	
A-1	09/15/03	14.64	8.83	--	5.81	
A-1	11/18/03	14.64	8.45	--	6.19	
A-1	02/24/04	14.64	7.89	--	6.75	
A-1	05/10/04	14.64	8.53	--	6.11	
A-1	08/24/04	14.64	8.73	--	5.91	
A-1	12/13/04	14.64	8.45	--	6.19	
A-1	03/08/05	14.64	8.59	--	6.05	
A-1	06/06/05	14.64	8.41	--	6.23	
A-1	09/19/05	14.64	8.87	--	5.77	
A-1	12/12/05	14.64	8.63	--	6.01	
A-1	03/13/06	14.64	7.95	--	6.69	
A-1	06/05/06	14.64	8.37	--	6.27	
A-1	09/11/06	14.64	8.81	--	5.83	
A-1	12/11/06	14.64	7.95	--	6.69	
A-2	02/11/02	10.85	7.41	--	3.44	
A-2	05/20/02	10.85	9.28	--	1.57	
A-2	08/27/02	10.85	4.66	--	6.19	
A-2	11/04/02	10.85	8.90	--	1.95	
A-2	02/18/03	10.85	7.98	--	2.87	
A-2	06/09/03	10.85	8.41	--	2.44	
A-2	09/15/03	14.66	8.77	--	5.89	
A-2	11/18/03	14.66	8.35	--	6.31	
A-2	02/24/04	14.66	7.80	--	6.86	
A-2	05/10/04	14.66	8.51	--	6.15	
A-2	08/24/04	14.66	8.55	--	6.11	
A-2	12/13/04	14.66	8.38	--	6.28	
A-2	03/08/05	14.66	8.77	--	5.89	
A-2	06/06/05	14.66	8.45	--	6.21	
A-2	09/19/05	14.66	8.79	--	5.87	
A-2	12/12/05	14.66	8.58	--	6.08	
A-2	03/13/06	14.66	7.81	--	6.85	
A-2	06/05/06	14.66	8.29	--	6.37	
A-2	09/11/06	14.66	8.76	--	5.90	
A-2	12/11/06	14.66	7.96	--	6.70	
A-3	02/11/02	10.50	7.30	<0.01	3.2	
A-3	05/20/02	10.50	9.03	--	1.47	
A-3	08/27/02	10.50	8.43	--	2.07	
A-3	11/04/02	10.50	8.64	--	1.86	
A-3	02/18/03	10.50	7.61	--	2.89	
A-3	06/09/03	10.50	8.19	--	2.31	
A-3	09/15/03	14.32	8.50	--	5.82	
A-3	11/18/03	14.32	7.56	--	6.76	
A-3	02/24/04	14.32	7.56	--	6.76	
A-3	05/10/04	14.32	8.12	--	6.20	
A-3	08/24/04	14.32	8.23	--	6.09	
A-3	12/13/04	14.32	7.85	--	6.47	
A-3	03/08/05	14.32	8.20	--	6.12	
A-3	06/06/05	14.32	8.03	--	6.29	
A-3	09/19/05	14.32	8.50	--	5.82	
A-3	12/12/05	14.32	8.32	--	6.00	
A-3	03/13/06	14.32	7.51	--	6.81	
A-3	06/05/06	14.32	7.96	--	6.36	
A-3	09/11/06	14.32	8.46	--	5.86	
A-3	12/11/06	14.32	7.56	--	6.76	
A-4	02/11/02	10.74	7.38	0.14	3.47	
A-4	05/20/02	10.74	8.20	0.02	2.56	
A-4	08/27/02	10.74	7.62	0.04	3.15	
A-4	11/04/02	10.74	7.92	Sheen	2.82	Product recovery pump in well
A-4	02/18/03	10.74	7.84	Sheen	2.90	Product recovery pump in well
A-4	06/09/03	10.74	6.40	0.10	4.42	Product recovery pump in well
A-4	09/15/03	13.22	8.38	0.10	4.92	Product recovery pump in well

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-4	11/18/03	13.22	6.65	0.01	6.58	Product recovery pump in well
A-4	02/24/04	13.22	7.00	--	6.22	Product recovery pump in well
A-4	05/10/04	13.22	6.79	--	6.43	Product recovery pump in well
A-4	08/24/04	13.22	7.76	--	5.46	Product recovery pump in well
A-4	12/13/04	13.22	6.10	Sheen	7.12	
A-4	03/08/05	13.22	7.21	Sheen	6.01	
A-4	06/06/05	13.22	7.23	Sheen	5.99	
A-4	09/19/05	13.22	7.78	--	5.44	
A-4	12/12/05	13.22	7.77	--	5.45	
A-4	03/13/06	13.22	6.85	--	6.37	
A-4	06/05/06	13.22	7.30	Sheen	5.92	
A-4	09/11/06	13.22	8.02	0.01	5.21	
A-4	12/11/06	13.22	7.04	--	6.18	
A-4	03/26/07	13.22	6.90	--	6.32	
A-4	06/18/07	13.22	7.29	--	5.93	
A-4	09/24/07	13.22	7.48	Sheen	5.74	
A-4	12/10/07	13.22	6.83	--	6.39	
A-4	03/03/08	13.22	7.11	0.01	6.12	
A-4	06/02/08	13.22	7.52	Sheen	5.70	
A-4	09/04/08	13.22	7.57	Sheen	5.65	
A-4	12/04/08	13.22	7.44	--	5.78	
A-4	03/04/09	13.22	7.09	--	6.13	
A-4	06/01/09	13.22	7.32	Sheen	5.90	
A-4	09/21/09	13.22	7.61	Sheen	5.61	
A-4	11/16/09	13.22	6.97	Sheen	6.25	
A-4	03/08/10	13.22	6.54	--	6.68	
A-4	06/07/10	13.22	6.92	Sheen	6.30	
A-4	09/09/10	13.22	7.59	--	5.63	
A-4	11/16/10	13.22	7.11	--	6.11	
A-4	03/01/11	13.22	6.66	--	6.56	
A-4	05/23/11	13.22	6.84	Sheen	6.38	
A-4	08/29/11	13.22	7.50	--	5.72	
A-4	12/01/11	13.22	7.16	--	6.06	
A-4	03/01/12	13.22	--	--	--	Not Measured
A-4	05/30/12	13.22	6.88	--	6.34	
A-4	08/25/12	13.22	7.17	--	6.05	
A-4	11/07/12	13.22	6.77	--	6.45	
A-4	02/28/13	13.22	6.69	--	6.53	
A-4	04/08/13	13.22	6.83	--	6.39	
A-4	07/29/13	13.22	7.23	--	5.99	
A-4	10/02/13	13.22	5.10	--	8.12	
A-4	01/21/14	13.22	7.12	--	6.10	
A-4	04/22/14	13.22	6.71	--	6.51	
A-4	07/15/14	13.22	7.09	--	6.13	
A-4	03/17/15	13.22	3.74	--	9.48	
A-4	09/29/15	13.22	--	--	--	Not Measured
A-4	03/29/16	13.22	6.02	--	7.20	
A-4	10/11/16	13.22	7.32	--	5.90	
A-4	03/28/17	13.22	5.97	--	7.25	
A-4	10/10/17	13.22	7.31	--	5.91	
A-4	03/28/18	13.22	6.70	--	6.52	
A-4	10/02/18	13.22	7.22	--	6.00	
A-4	04/02/19	13.22	6.67	--	6.55	
A-4	10/01/19	13.22	7.25	--	5.97	
A-5	02/11/02	10.42	7.00	--	3.42	
A-5	05/20/02	10.42	8.89	--	1.53	
A-5	08/27/02	10.42	8.25	--	2.17	
A-5	11/04/02	10.42	8.43	--	1.99	
A-5	02/18/03	10.42	7.35	--	3.07	
A-5	06/09/03	10.42	7.99	--	2.43	
A-5	09/15/03	14.13	8.33	Sheen	5.80	
A-5	11/18/03	14.13	7.82	--	6.31	
A-5	02/24/04	14.13	6.45	--	7.68	
A-5	05/10/04	14.13	8.04	--	6.09	
A-5	08/24/04	14.13	8.02	--	6.11	
A-5	12/13/04	14.13	7.88	--	6.25	
A-5	03/08/05	14.13	8.00	--	6.13	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
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Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-5	06/06/05	14.13	7.89	--	6.24	
A-5	09/19/05	14.13	8.37	--	5.76	
A-5	12/12/05	14.13	8.15	--	5.98	
A-5	03/13/06	14.13	7.39	--	6.74	
A-5	06/05/06	14.13	7.82	--	6.31	
A-5	09/11/06	14.13	8.34	--	5.79	
A-5	12/11/06	14.13	7.41	--	6.72	
A-5	03/26/07	14.13	7.41	--	6.72	
A-5	06/18/07	14.13	8.32	--	5.81	
A-5	09/24/07	14.13	8.32	--	5.81	
A-5	12/10/07	14.13	7.66	--	6.47	
A-5	03/03/08	14.13	7.78	--	6.35	
A-5	06/02/08	14.13	8.21	--	5.92	
A-5	09/04/08	14.13	8.10	--	6.03	
A-5	12/04/08	14.13	8.15	--	5.98	
A-5	03/04/09	14.13	7.76	--	6.37	
A-5	06/01/09	14.13	8.03	--	6.10	
A-5	09/21/09	14.13	8.35	--	5.78	
A-5	11/16/09	14.13	7.70	--	6.43	
A-5	03/08/10	14.13	7.21	--	6.92	
A-5	06/07/10	14.13	7.74	--	6.39	
A-5	09/09/10	14.13	8.26	--	5.87	
A-5	11/15/10	14.13	7.85	--	6.28	
A-5	03/01/11	14.13	7.47	--	6.66	
A-5	05/23/11	14.13	7.58	--	6.55	
A-5	08/29/11	14.13	8.17	--	5.96	
A-5	12/01/11	14.13	7.89	--	6.24	
A-5	03/01/12	14.13	7.62	--	6.51	
A-5	05/30/12	14.13	7.67	--	6.46	
A-5	08/25/12	14.13	7.91	--	6.22	
A-5	11/07/12	14.13	7.54	--	6.59	
A-5	02/27/13	14.13	7.59	--	6.54	
A-5	04/08/13	14.13	7.56	--	6.57	
A-5	07/29/13	14.13	7.88	--	6.25	
A-5	10/02/13	14.13	7.64	--	6.49	
A-5	01/21/14	14.13	7.92	--	6.21	
A-5	04/22/14	14.13	7.50	--	6.63	
A-5	07/15/14	14.13	7.85	--	6.28	
A-5	03/17/15	14.13	7.45	--	6.68	
A-5	09/29/15	14.13	7.80	--	6.33	
A-5	03/29/16	14.13	6.89	--	7.24	
A-5	10/11/16	14.13	8.05	--	6.08	
A-5	03/28/17	14.13	6.76	--	7.37	
A-5	10/10/17	14.13	8.05	--	6.08	
A-5	03/28/18	14.13	7.51	--	6.62	
A-5	10/02/18	14.13	7.99	--	6.14	
A-5	04/02/19	14.13	7.46	--	6.67	
A-5	10/01/19	14.13	7.99	--	6.14	
A-6	02/11/02	--	6.40	0.13	--	Not Measured-Casing Broken
A-6	05/20/02	--	8.13	0.14	--	Not Measured-Casing Broken
A-6	08/27/02	--	7.80	0.45	--	Not Measured-Casing Broken
A-6	11/04/02	--	7.33	0.01	--	Not Measured-Product recovery pump in well, Casing Broken
A-6	02/18/03	--	8.50	Sheen	--	Not Measured-Product recovery pump in well, Casing Broken
A-6	06/09/03	--	7.45	0.01	--	Not Measured-Re-cut TOC; repaired
A-6	09/15/03	12.81	7.77	0.01	5.05	Product recovery pump in well
A-6	11/18/03	12.81	7.46	0.54	5.78	Product recovery pump in well
A-6	02/24/04	12.81	6.65	0.40	6.48	Product recovery pump in well
A-6	05/10/04	12.81	6.95	0.10	5.94	Product recovery pump in well
A-6	08/24/04	12.81	7.21	0.21	5.77	Product recovery pump in well
A-6	12/13/04	12.81	6.80	0.14	6.12	
A-6	03/08/05	12.81	6.98	0.32	6.09	
A-6	06/06/05	12.81	6.81	0.04	6.03	
A-6	09/19/05	12.81	7.81	0.59	5.47	
A-6	10/12/05	12.81	7.95	0.50	5.26	
A-6	12/12/05	12.81	8.20	0.95	5.37	
A-6	03/13/06	12.81	6.68	0.08	6.19	
A-6	06/05/06	12.81	7.10	0.13	5.81	

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 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-6	09/11/06	12.81	7.82	0.27	5.21	
A-6	12/11/06	12.81	6.58	0.02	6.25	
A-6	03/26/07	12.81	6.51	--	6.30	
A-6	06/18/07	12.81	7.00	--	5.81	
A-6	09/24/07	12.81	7.20	Sheen	5.61	
A-6	12/10/07	12.81	6.58	--	6.23	
A-6	03/03/08	12.81	6.59	--	6.22	
A-6	06/02/08	12.81	7.05	Sheen	5.76	
A-6	09/04/08	12.81	7.19	Sheen	5.62	
A-6	12/04/08	12.81	7.15	Sheen	5.66	
A-6	03/04/09	12.81	6.51	Sheen	6.30	
A-6	06/01/09	12.81	7.00	Sheen	5.81	
A-6	09/21/09	12.81	7.24	Sheen	5.57	
A-6	11/16/09	12.81	6.50	Sheen	6.31	
A-6	03/08/10	12.81	6.14	--	6.67	
A-6	06/07/10	12.81	6.71	Sheen	6.10	
A-6	09/09/10	12.81	7.12	--	5.69	
A-6	11/15/10	12.81	6.79	Sheen	6.02	
A-6	03/01/11	12.81	6.38	Sheen	6.43	
A-6	05/23/11	12.81	6.52	Sheen	6.29	
A-6	08/29/11	12.81	7.04	0.03	5.79	
A-6	12/01/11	12.81	6.95	Sheen	5.86	
A-6	03/01/12	12.81	6.60	--	6.21	
A-6	05/30/12	12.81	6.58	--	6.23	
A-6	08/25/12	12.81	7.18	--	5.63	
A-6	11/07/12	12.81	6.61	--	6.20	
A-6	02/27/13	12.81	6.54	--	6.27	
A-6	04/08/13	12.81	6.46	--	6.35	
A-6	07/29/13	12.81	6.83	--	5.98	
A-6	10/02/13	12.81	6.66	Sheen	6.15	0.04 ft of SPH observed. Absorbent sock placed in well.
A-6	01/21/14	12.81	6.80	--	6.01	
A-6	04/22/14	12.81	6.32	--	6.49	
A-6	07/15/14	12.81	6.69	--	6.12	
A-6	03/17/15	12.81	6.30	0.10	6.59	Absorbent sock placed in well
A-6	06/08/15	12.81	6.70	--	6.11	
A-6	09/29/15	12.81	7.79	0.05	5.06	Absorbent sock placed in well
A-6	12/21/15	12.81	5.20	--	7.61	
A-6	03/29/16	12.81	5.77	<0.01	7.04	Sheen. Absorbent sock placed in well
A-6	06/16/16	12.81	6.79	--	6.02	
A-6	09/01/16	12.81	7.01	0.05	5.80	Absorbent sock placed in well
A-6	10/11/16	12.81	7.09	--	5.72	
A-6	03/28/17	12.81	5.77	--	7.04	Sheen
A-6	10/10/17	12.81	6.96	0.01	5.85	
A-6	03/28/18	12.81	6.47	0.02	6.36	
A-6	10/02/18	12.81	6.91	--	5.90	
A-6	04/02/19	12.81	6.30	--	6.51	
A-6	10/01/19	12.81	6.96	0.06	5.90	Absorbent sock placed in well
A-7	02/11/02	9.50	6.25	--	3.25	
A-7	05/20/02	9.50	8.10	--	1.40	
A-7	08/27/02	9.50	7.40	--	2.10	
A-7	11/04/02	9.50	7.55	--	1.95	
A-7	02/18/03	9.50	7.53	--	1.97	
A-7	06/09/03	9.50	7.12	--	2.38	
A-7	09/15/03	13.43	7.45	--	5.98	
A-7	11/18/03	13.43	6.78	--	6.65	
A-7	02/24/04	13.43	6.89	--	6.54	
A-7	05/10/04	13.43	6.66	--	6.77	
A-7	08/24/04	13.43	7.67	--	5.76	
A-7	12/13/04	13.43	6.88	--	6.55	
A-7	03/08/05	13.43	4.45	--	8.98	
A-7	06/06/05	13.43	6.84	--	6.59	
A-7	09/19/05	13.43	7.47	--	5.96	
A-7	12/12/05	13.43	7.22	--	6.21	
A-7	03/13/06	13.43	6.41	--	7.02	
A-7	06/05/06	13.43	6.90	--	6.53	
A-7	09/11/06	13.43	7.53	--	5.90	
A-7	12/11/06	13.43	6.69	--	6.74	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-8	02/11/02	10.46	6.98	--	3.48	
A-8	05/20/02	10.46	8.87	--	1.59	
A-8	08/27/02	10.46	7.26	--	3.20	
A-8	11/04/02	10.46	8.51	--	1.95	
A-8	02/18/03	10.46	4.83	--	5.63	
A-8	06/09/03	10.46	8.11	--	2.35	
A-8	09/15/03	14.61	8.38	--	6.23	
A-8	11/18/03	14.61	7.87	Sheen	6.74	
A-8	02/24/04	14.61	7.43	--	7.18	
A-8	05/10/04	14.61	8.04	--	6.57	
A-8	08/24/04	14.61	8.18	--	6.43	
A-8	12/13/04	14.61	7.90	--	6.71	
A-8	03/08/05	14.61	8.11	--	6.50	
A-8	06/06/05	14.61	7.98	--	6.63	
A-8	09/19/05	14.61	8.44	--	6.17	
A-8	12/12/05	14.61	8.22	--	6.39	
A-8	03/13/06	14.61	7.49	--	7.12	
A-8	06/05/06	14.61	7.89	--	6.72	
A-8	09/11/06	14.61	8.45	--	6.16	
A-8	12/11/06	14.61	7.66	--	6.95	
A-8	03/26/07	14.61	7.71	--	6.90	
A-8	06/18/07	14.61	8.27	--	6.34	
A-8	09/24/07	14.61	8.50	--	6.11	
A-8	12/10/07	14.61	7.44	--	7.17	
A-8	03/03/08	14.61	7.83	--	6.78	
A-8	06/02/08	14.61	8.20	--	6.41	
A-8	09/04/08	14.61	--	--	--	Inaccessible
A-8	12/04/08	14.61	8.20	--	6.41	
A-8	03/04/09	14.61	7.70	--	6.91	
A-8	06/01/09	14.61	8.11	--	6.50	
A-8	09/21/09	14.61	8.37	--	6.24	
A-8	11/16/09	14.61	7.70	--	6.91	
A-8	03/08/10	14.61	7.31	--	7.30	
A-8	06/07/10	14.61	7.85	--	6.76	
A-8	09/09/10	14.61	8.28	--	6.33	
A-8	11/15/10	14.61	7.94	--	6.67	
A-8	03/01/11	14.61	7.56	--	7.05	
A-8	05/23/11	14.61	7.70	--	6.91	
A-8	08/29/11	14.61	8.21	--	6.40	
A-8	12/01/11	14.61	8.06	--	6.55	
A-8	03/01/12	14.61	7.74	--	6.87	
A-8	05/30/12	14.61	7.87	--	6.74	
A-8	08/25/12	14.61	7.97	--	6.64	
A-8	11/07/12	14.61	7.63	--	6.98	
A-8	02/27/13	14.61	8.71	--	5.90	
A-8	04/08/13	14.61	7.67	--	6.94	
A-8	07/29/13	14.61	7.98	--	6.63	
A-8	10/02/13	14.61	7.75	--	6.86	
A-8	01/21/14	14.61	7.98	--	6.63	
A-8	04/22/14	14.61	7.52	--	7.09	
A-8	07/15/14	14.61	7.89	--	6.72	
A-8	03/17/15	14.61	7.41	--	7.2	
A-8	09/29/15	14.61	7.92	--	6.69	
A-8	03/29/16	14.61	6.96	--	7.65	
A-8	10/11/16	14.61	8.21	--	6.40	
A-8	03/28/17	14.61	6.95	--	7.66	
A-8	10/10/17	14.61	8.14	--	6.47	
A-8	03/28/18	14.61	7.61	--	7.00	
A-8	10/02/18	14.61	8.11	--	6.50	
A-8	04/02/19	14.61	4.50	--	10.11	
A-8	10/01/19	14.61	8.06	--	6.55	
A-9	02/11/02	10.35	7.20	0.01	3.16	
A-9	05/20/02	10.35	8.86	--	1.49	
A-9	08/27/02	10.35	8.27	Sheen	2.08	
A-9	11/04/02	10.35	8.39	0.01	1.97	
A-9	02/18/03	10.35	7.45	--	2.90	
A-9	06/09/03	10.35	8.06	--	2.29	

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-9	09/15/03	14.42	8.03	--	6.39	
A-9	11/18/03	14.42	7.62	--	6.80	
A-9	02/24/04	14.42	7.21	--	7.21	
A-9	05/10/04	14.42	8.00	--	6.42	
A-9	08/24/04	14.42	8.18	--	6.24	
A-9	12/13/04	14.42	7.73	--	6.69	
A-9	03/08/05	14.42	8.00	--	6.42	
A-9	06/06/05	14.42	7.89	--	6.53	
A-9	09/19/05	14.42	8.28	--	6.14	
A-9	12/12/05	14.42	8.04	--	6.38	
A-9	03/13/06	14.42	7.37	--	7.05	
A-9	06/05/06	14.42	7.79	--	6.63	
A-9	09/11/06	14.42	8.36	--	6.06	
A-9	12/11/06	14.42	7.46	--	6.96	
A-10	02/11/02	9.48	6.15	--	3.33	
A-10	05/20/02	9.48	7.98	--	1.50	
A-10	08/27/02	9.48	7.34	Sheen	2.14	
A-10	11/04/02	9.48	7.54	Sheen	1.94	
A-10	02/18/03	9.48	6.57	--	2.91	
A-10	06/09/03	9.48	7.15	--	2.33	
A-10	09/15/03	13.51	7.45	Sheen	6.06	
A-10	11/18/03	13.51	6.95	Sheen	6.56	
A-10	02/24/04	13.51	6.50	Sheen	7.01	
A-10	05/10/04	13.51	7.15	Sheen	6.36	
A-10	08/24/04	13.51	7.31	--	6.20	
A-10	12/13/04	13.51	6.95	--	6.56	
A-10	03/08/05	13.51	7.17	--	6.34	
A-10	06/06/05	13.51	7.01	--	6.50	
A-10	09/19/05	13.51	7.54	--	5.97	
A-10	12/12/05	13.51	7.25	--	6.26	
A-10	03/13/06	13.51	6.58	--	6.93	
A-10	06/05/06	13.51	6.92	--	6.59	
A-10	09/11/06	13.51	7.43	--	6.08	
A-10	12/11/06	13.51	6.59	--	6.92	
A-10	03/26/07	13.51	6.83	--	6.68	
A-10	06/18/07	13.51	7.29	--	6.22	
A-10	09/24/07	13.51	7.44	--	6.07	
A-10	12/10/07	13.51	6.79	--	6.72	
A-10	03/03/08	13.51	7.83	--	5.68	
A-10	06/02/08	13.51	7.31	--	6.20	
A-10	09/04/08	13.51	7.23	--	6.28	
A-10	12/04/08	13.51	6.87	--	6.64	
A-10	03/04/09	13.51	6.90	--	6.61	
A-10	06/01/09	13.51	7.18	--	6.33	
A-10	09/21/09	13.51	7.39	--	6.12	
A-10	11/16/09	13.51	6.84	--	6.67	
A-10	03/08/10	13.51	6.34	--	7.17	
A-10	06/07/10	13.51	6.84	--	6.67	
A-10	09/09/10	13.51	7.34	--	6.17	
A-10	11/15/10	13.51	6.93	--	6.58	
A-10	03/01/11	13.51	6.60	--	6.91	
A-10	05/23/11	13.51	6.68	--	6.83	
A-10	08/29/11	13.51	7.25	--	6.26	
A-10	12/01/11	13.51	6.96	--	6.55	
A-10	03/01/12	13.51	6.72	--	6.79	
A-10	05/30/12	13.51	6.72	--	6.79	
A-10	08/25/12	13.51	7.30	--	6.21	
A-10	11/07/12	13.51	7.08	--	6.43	
A-10	02/27/13	13.51	6.64	--	6.87	
A-10	04/08/13	13.51	6.61	--	6.90	
A-10	07/29/13	13.51	6.95	--	6.56	
A-10	10/02/13	13.51	6.46	--	7.05	
A-10	01/21/14	13.51	7.05	--	6.46	
A-10	04/22/14	13.51	6.65	--	6.86	
A-10	07/15/14	13.51	7.50	--	6.01	
A-10	03/17/15	13.51	6.48	--	7.03	
A-10	09/29/15	13.51	6.97	--	6.54	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-10	03/29/16	13.51	5.96	--	7.55	
A-10	10/11/16	13.51	7.21	--	6.30	
A-10	03/28/17	13.51	6.02	--	7.49	
A-10	10/10/17	13.51	7.20	--	6.31	
A-10	03/28/18	13.51	6.60	--	6.91	
A-10	10/02/18	13.51	7.19	--	6.32	
A-10	04/02/19	13.51	6.65	--	6.86	
A-10	10/01/19	13.51	7.10	--	6.41	
A-11	02/11/02	10.36	7.01	--	3.35	
A-11	05/20/02	10.36	8.83	--	1.53	
A-11	08/27/02	10.36	8.21	--	2.15	
A-11	11/04/02	10.36	8.73	--	1.63	
A-11	02/18/03	10.36	5.42	--	4.94	
A-11	06/09/03	10.36	8.01	--	2.35	
A-11	09/15/03	14.40	8.32	--	6.08	
A-11	11/18/03	14.40	6.71	--	7.69	
A-11	02/24/04	14.40	7.35	--	7.05	
A-11	05/10/04	14.40	8.10	--	6.30	
A-11	08/24/04	14.40	8.17	--	6.23	
A-11	12/13/04	14.40	7.85	--	6.55	
A-11	03/08/05	14.40	7.90	--	6.50	
A-11	06/06/05	14.40	7.88	--	6.52	
A-11	09/19/05	14.40	8.34	0.01	6.07	
A-11	10/12/05	14.40	8.24	--	6.16	
A-11	12/12/05	14.40	8.10	--	6.30	
A-11	03/13/06	14.40	7.40	--	7.00	
A-11	06/05/06	14.40	7.80	--	6.60	
A-11	09/11/06	14.40	8.32	--	6.08	
A-11	12/11/06	14.40	7.42	--	6.98	
A-11	12/10/07	14.40	7.64	--	6.76	
A-11	03/03/08	14.40	7.39	--	7.01	
A-11	03/04/09	14.40	7.70	--	6.70	
A-11	06/01/09	14.40	8.00	--	6.40	
A-11	09/21/09	14.40	8.26	--	6.14	
A-11	11/16/09	14.40	7.65	--	6.75	
A-11	03/08/10	14.40	7.20	--	7.20	
A-11	06/07/10	14.40	7.69	--	6.71	
A-11	09/09/10	14.40	8.20	--	6.20	
A-11	11/15/10	14.40	7.78	--	6.62	
A-11	03/01/11	14.40	7.43	--	6.97	
A-11	05/23/11	14.40	7.52	--	6.88	
A-11	08/29/11	14.40	8.09	--	6.31	
A-11	12/01/11	14.40	7.82	--	6.58	
A-11	03/01/12	14.40	7.55	--	6.85	
A-11	05/30/12	14.40	7.42	--	6.98	
A-11	08/25/12	14.40	7.63	--	6.77	
A-11	11/07/12	14.40	7.41	--	6.99	
A-11	02/27/13	14.40	7.42	--	6.98	
A-11	04/08/13	14.40	7.42	--	6.98	
A-11	07/29/13	14.40	7.75	--	6.65	
A-11	10/02/13	14.40	7.66	--	6.74	
A-11	01/21/14	14.40	7.93	--	6.47	
A-11	04/22/14	14.40	7.56	--	6.84	
A-11	07/15/14	14.40	7.91	--	6.49	
A-11	03/17/15	14.40	7.35	--	7.05	
A-11	09/29/15	14.40	7.89	--	6.51	
A-11	03/29/16	14.40	6.91	--	7.49	
A-11	10/11/16	14.40	8.08	--	6.32	
A-11	03/28/17	14.40	6.92	--	7.48	
A-11	10/10/17	14.40	8.06	--	6.34	
A-11	03/28/18	14.40	7.45	--	6.95	
A-11	10/02/18	14.40	8.04	--	6.36	
A-11	04/02/19	14.40	7.47	--	6.93	
A-11	10/01/19	14.40	7.95	--	6.45	
A-12	02/11/02	9.10	5.80	--	3.30	
A-12	05/20/02	9.10	8.68	--	0.42	
A-12	08/27/02	9.10	7.04	--	2.06	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-12	11/04/02	9.10	7.23	--	1.87	
A-12	02/18/03	9.10	6.38	--	2.72	
A-12	06/09/03	9.10	6.83	--	2.27	
A-12	09/15/03	12.92	7.15	--	5.77	
A-12	11/18/03	12.92	6.60	--	6.32	
A-12	02/24/04	12.92	6.12	--	6.80	
A-12	05/10/04	12.92	6.74	--	6.18	
A-12	08/24/04	12.92	6.95	--	5.97	
A-12	12/13/04	12.92	6.57	--	6.35	
A-12	03/08/05	12.92	6.75	Sheen	6.17	
A-12	06/06/05	12.95	6.39	--	6.56	
A-12	09/19/05	12.95	7.09	--	5.86	
A-12	12/12/05	12.95	6.89	--	6.06	
A-12	03/13/06	12.95	6.23	--	6.72	
A-12	06/05/06	12.95	6.60	--	6.35	
A-12	09/11/06	12.95	7.14	--	5.81	
A-12	12/11/06	12.95	6.28	--	6.67	
A-12	12/10/07	12.95	6.43	--	6.52	
A-12	03/03/08	12.95	6.50	--	6.45	
A-12	03/04/09	12.95	6.39	--	6.56	
A-12	06/01/09	12.95	6.86	--	6.09	
A-12	09/21/09	12.95	7.02	--	5.93	
A-12	11/16/09	12.95	6.38	--	6.57	
A-12	03/08/10	12.95	6.00	--	6.95	
A-12	06/07/10	12.95	6.54	--	6.41	
A-12	09/09/10	12.95	6.95	--	6.00	
A-12	11/15/10	12.95	6.60	--	6.35	
A-12	03/01/11	12.95	6.24	--	6.71	
A-12	05/23/11	12.95	6.34	--	6.61	
A-12	08/29/11	12.95	6.87	--	6.08	
A-12	12/01/11	12.95	6.66	--	6.29	
A-12	03/01/12	12.95	6.46	--	6.49	
A-12	05/30/12	12.95	6.35	--	6.60	
A-12	08/25/12	12.95	6.57	--	6.38	
A-12	11/07/12	12.95	6.27	--	6.68	
A-12	02/27/13	12.95	6.32	--	6.63	
A-12	04/08/13	12.95	6.28	--	6.67	
A-12	07/29/13	12.95	6.58	--	6.37	
A-12	10/02/13	12.95	6.41	--	6.54	
A-12	01/21/14	12.95	6.67	--	6.28	
A-12	04/22/14	12.95	6.29	--	6.66	
A-12	07/15/14	12.95	6.62	--	6.33	
A-12	03/17/15	12.95	6.13	--	6.82	
A-12	09/29/15	12.95	6.62	--	6.33	
A-12	03/29/16	12.95	5.64	--	7.31	
A-12	10/11/16	12.95	6.90	--	6.05	
A-12	03/28/17	12.95	5.67	--	7.28	
A-12	10/10/17	12.95	6.82	--	6.13	
A-12	03/28/18	12.95	6.28	--	6.67	
A-12	10/02/18	12.95	6.81	--	6.14	
A-12	04/02/19	12.95	6.24	--	6.71	
A-12	10/01/19	12.95	6.72	--	6.23	
A-13	03/27/01	--	--	--	--	
A-13						Destroyed during construction activities
A-14	03/27/01	--	--	--	--	
A-14						Destroyed during construction activities
A-14R	02/11/02	12.62	6.90	--	5.72	
A-14R	05/20/02	12.62	9.77	--	2.85	
A-14R	08/27/02	12.62	8.10	--	4.52	
A-14R	11/04/02	12.62	8.30	--	4.32	
A-14R	02/18/03	10.17	7.31	--	2.86	
A-14R	06/09/03	10.17	4.82	--	5.35	
A-14R	09/15/03	14.21	8.20	--	6.01	
A-14R	11/18/03	14.21	6.10	Sheen	8.11	
A-14R	02/24/04	14.21	7.23	--	6.98	
A-14R	05/10/04	14.21	7.89	--	6.32	
A-14R	08/24/04	14.21	8.01	--	6.20	
A-14R	12/13/04	14.21	7.75	--	6.46	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-14R	03/08/05	14.21	7.87	--	6.34	
A-14R	06/06/05	14.21	7.71	--	6.50	
A-14R	09/19/05	14.21	8.16	0.15	6.17	
A-14R	10/12/05	14.21	8.01	--	6.20	
A-14R	12/12/05	14.21	7.95	--	6.26	
A-14R	03/13/06	14.21	7.26	--	6.95	
A-14R	06/05/06	14.21	7.64	--	6.57	
A-14R	09/11/06	14.21	8.15	--	6.06	
A-14R	12/11/06	14.21	7.30	--	6.91	
A-14R	03/26/07	14.21	7.51	--	6.70	
A-14R	06/18/07	14.21	7.98	--	6.23	
A-14R	09/24/07	14.21	8.18	--	6.03	
A-14R	12/10/07	14.21	7.51	--	6.70	
A-14R	03/03/08	14.21	7.56	--	6.65	
A-14R	06/02/08	14.21	8.02	--	6.19	
A-14R	09/04/08	14.21	7.71	--	6.50	
A-14R	12/04/08	14.21	7.92	--	6.29	
A-14R	03/04/09	14.21	7.62	--	6.59	
A-14R	06/01/09	14.21	7.91	--	6.30	
A-14R	09/21/09	14.21	8.08	--	6.13	
A-14R	11/16/09	14.21	7.57	--	6.64	
A-14R	03/08/10	14.21	7.05	--	7.16	
A-14R	06/07/10	14.21	7.56	--	6.65	
A-14R	09/09/10	14.21	8.05	--	6.16	
A-14R	11/15/10	14.21	7.63	--	6.58	
A-14R	03/01/11	14.21	7.31	--	6.90	
A-14R	05/23/11	14.21	7.40	--	6.81	
A-14R	08/29/11	14.21	7.97	--	6.24	
A-14R	12/01/11	14.21	7.68	--	6.53	
A-14R	03/01/12	14.21	7.42	--	6.79	
A-14R	05/30/12	14.21	7.44	--	6.77	
A-14R	08/25/12	14.21	7.59	--	6.62	
A-14R	11/07/12	14.21	7.33	--	6.88	
A-14R	02/27/13	14.21	7.38	--	6.83	
A-14R	04/08/13	14.21	7.34	--	6.87	
A-14R	07/29/13	14.21	7.67	--	6.54	
A-14R	10/02/13	14.21	7.51	--	6.70	
A-14R	01/21/14	14.21	7.76	--	6.45	
A-14R	04/22/14	14.21	7.36	--	6.85	
A-14R	07/15/14	14.21	7.76	--	6.45	
A-14R	03/17/15	14.21	7.22	--	6.99	
A-14R	09/29/15	14.21	7.74	--	6.47	
A-14R	03/29/16	14.21	7.33	--	6.88	
A-14R	10/11/16	14.21	7.92	--	6.29	
A-14R	03/28/17	14.21	6.76	--	7.45	
A-14R	10/10/17	14.21	7.93	--	6.28	
A-14R	03/28/18	14.21	7.33	--	6.88	
A-14R	10/02/18	14.21	7.92	--	6.29	
A-14R	04/02/19	14.21	7.39	--	6.82	
A-14R	10/01/19	14.21	7.83	--	6.38	
A-15	03/27/01	--	--	--	--	
A-15						Destroyed during construction activities
A-16	02/11/02	10.49	7.23	0.01	3.27	
A-16	05/20/02	10.49	9.03	--	1.46	
A-16	08/27/02	10.49	8.41	0.04	2.11	
A-16	11/04/02	10.49	8.81	0.28	1.9	
A-16	02/18/03	10.49	7.51	Sheen	2.98	
A-16	06/09/03	10.49	8.16	--	2.33	
A-16	09/15/03	14.39	8.80	0.01	5.6	
A-16	11/18/03	14.39	7.74	--	6.65	
A-16	02/24/04	14.39	7.54	--	6.85	
A-16	05/10/04	14.39	8.50	0.31	6.14	
A-16	08/24/04	14.39	9.03	0.82	6.02	
A-16	12/13/04	14.39	8.08	Sheen	6.31	
A-16	03/08/05	14.39	7.90	Sheen	6.49	
A-16	06/06/05	14.39	8.05	Sheen	6.34	
A-16	09/19/05	14.39	9.24	0.90	5.87	
A-16	10/12/05	14.39	9.38	1.20	5.97	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-16	12/12/05	14.39	8.22	--	6.17	
A-16	03/13/06	14.39	7.75	--	6.64	
A-16	06/05/06	14.39	7.98	--	6.41	
A-16	09/11/06	14.39	9.20	0.90	5.91	
A-16	12/11/06	14.39	7.69	Sheen	6.70	
A-16	03/26/07	14.39	7.78	Sheen	6.61	
A-16	06/18/07	14.39	8.45	0.34	6.21	
A-16	09/24/07	14.39	8.45	0.02	5.96	
A-16	12/10/07	14.39	7.65	0.01	6.75	
A-16	03/03/08	14.39	7.88	Sheen	6.51	
A-16	06/02/08	14.39	8.77	0.04	5.65	
A-16	09/04/08	14.39	7.38	0.04	7.04	
A-16	12/04/08	14.39	8.27	--	6.12	
A-16	03/04/09	14.39	7.95	--	6.44	
A-16	06/01/09	14.39	8.50	Sheen	5.89	
A-16	09/21/09	14.39	8.80	0.35	5.87	
A-16	11/16/09	14.39	7.95	Sheen	6.44	
A-16	03/08/10	14.39	7.40	--	6.99	
A-16	06/07/10	14.39	7.91	Sheen	6.48	
A-16	09/09/10	14.39	8.92	0.09	5.54	
A-16	11/15/10	14.39	8.21	Sheen	6.18	
A-16	03/01/11	14.39	7.65	--	6.74	
A-16	05/23/11	14.39	7.79	--	6.60	
A-16	08/29/11	14.39	8.52	0.10	5.95	
A-16	12/01/11	14.39	8.24	Sheen	6.15	
A-16	03/01/12	14.39	7.94	Sheen	6.45	
A-16	05/30/12	14.39	7.67	--	6.72	
A-16	08/25/12	14.39	7.79	--	6.60	
A-16	11/07/12	14.39	7.56	--	6.83	
A-16	02/27/13	14.39	7.66	--	6.73	
A-16	04/08/13	14.39	7.56	--	6.83	
A-16	07/29/13	14.39	7.88	--	6.51	
A-16	10/02/13	14.39	7.46	--	6.93	
A-16	01/21/14	14.39	8.05	--	6.34	
A-16	04/22/14	14.39	7.66	--	6.73	
A-16	07/15/14	14.39	8.04	--	6.35	
A-16	03/17/15	14.39	7.55	--	6.84	
A-16	09/29/15	14.39	8.19	0.17	6.34	Absorbent sock placed in well
A-16	12/21/15	14.39	6.98	--	7.41	
A-16	03/29/16	14.39	7.07	--	7.32	
A-16	06/16/16	14.39	7.96	--	6.43	
A-16	09/01/16	14.39	8.01	0.01	6.38	Absorbent sock placed in well
A-16	10/11/16	14.39	8.65	0.40	6.06	Absorbent sock placed in well
A-16	03/28/17	14.39	7.08	--	7.31	
A-16	10/10/17	14.39	8.60	0.44	6.14	Sheen, saturated sock removed prior to gauging
A-16	03/28/18	14.39	7.62	--	6.77	
A-16	10/02/18	14.39	8.64	0.45	6.11	
A-16	04/02/19	14.39	7.64	--	6.75	
A-16	10/01/19	14.39	8.32	0.24	6.26	Absorbent sock placed in well
A-17	02/11/02	9.51	6.09	--	3.42	
A-17	05/20/02	9.51	7.92	--	1.59	
A-17	08/27/02	9.51	7.33	--	2.18	
A-17	11/04/02	9.51	8.52	--	0.99	
A-17	02/18/03	9.51	6.51	--	3.00	
A-17	06/09/03	9.51	7.19	--	2.32	
A-17	09/15/03	13.41	7.43	--	5.98	
A-17	11/18/03	13.41	7.85	--	5.56	
A-17	02/24/04	13.41	6.47	--	6.94	
A-17	05/10/04	13.41	7.11	--	6.30	
A-17	08/24/04	13.41	7.12	--	6.29	
A-17	12/13/04	13.41	6.90	--	6.51	
A-17	03/08/05	13.41	7.15	--	6.26	
A-17	06/06/05	13.41	6.89	--	6.52	
A-17	09/19/05	13.41	7.55	--	5.86	
A-17	12/12/05	13.41	7.24	--	6.17	
A-17	03/13/06	13.41	6.50	--	6.91	
A-17	06/05/06	13.41	6.94	--	6.47	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-17	09/11/06	13.41	8.34	--	5.07	
A-17	12/11/06	13.41	6.79	--	6.62	
A-18	02/11/02	10.72	7.42	--	3.30	
A-18	05/20/02	10.72	9.22	--	1.50	
A-18	08/27/02	10.72	8.59	--	2.13	
A-18	11/04/02	10.72	9.80	--	0.92	
A-18	02/18/03	10.72	8.36	--	2.36	
A-18	06/09/03	10.72	8.36	--	2.36	
A-18	09/15/03	14.74	8.65	--	6.09	
A-18	11/18/03	14.74	8.22	--	6.52	
A-18	02/24/04	14.74	7.06	--	7.68	
A-18	05/10/04	14.74	8.50	--	6.24	
A-18	08/24/04	14.74	8.56	--	6.18	
A-18	12/13/04	14.74	8.23	--	6.51	
A-18	03/08/05	14.74	8.33	--	6.41	
A-18	06/06/05	14.74	8.21	--	6.53	
A-18	09/19/05	14.74	8.67	0.02	6.09	
A-18	10/12/05	14.74	8.55	--	6.19	
A-18	12/12/05	14.74	8.42	--	6.32	
A-18	03/13/06	14.74	7.74	--	7.00	
A-18	06/05/06	14.74	8.14	--	6.60	
A-18	09/11/06	14.74	8.63	--	6.11	
A-18	12/11/06	14.74	7.78	--	6.96	
A-18	12/10/07	14.74	7.81	--	6.93	
A-18	03/03/08	14.74	8.03	--	6.71	
A-18	03/04/09	14.74	8.07	--	6.67	
A-18	06/01/09	14.74	8.34	--	6.40	
A-18	09/21/09	14.74	8.57	--	6.17	
A-18	11/16/09	14.74	8.07	--	6.67	
A-18	03/08/10	14.74	7.54	--	7.20	
A-18	06/07/10	14.74	8.00	--	6.74	
A-18	09/09/10	14.74	8.53	--	6.21	
A-18	11/15/10	14.74	8.11	--	6.63	
A-18	03/01/11	14.74	7.75	--	6.99	
A-18	05/23/11	14.74	7.85	--	6.89	
A-18	08/29/11	14.74	8.44	--	6.30	
A-18	12/01/11	14.74	8.11	--	6.63	
A-18	03/01/12	14.74	7.83	--	6.91	
A-18	05/30/12	14.74	7.75	--	6.99	
A-18	08/25/12	14.74	7.89	--	6.85	
A-18	11/07/12	14.74	7.68	--	7.06	
A-18	02/27/13	14.74	7.72	--	7.02	
A-18	04/08/13	14.74	7.05	--	7.69	
A-18	07/29/13	14.74	7.99	--	6.75	
A-18	10/02/13	14.74	7.93	--	6.81	
A-18	01/21/14	14.74	8.27	--	6.47	
A-18	04/22/14	14.74	7.84	--	6.90	
A-18	07/15/14	14.74	8.21	--	6.53	
A-18	03/17/15	14.74	7.7	--	7.04	
A-18	09/29/15	14.74	8.24	--	6.50	
A-18	03/29/16	14.74	7.33	--	7.41	
A-18	10/11/16	14.74	8.40	--	6.34	
A-18	03/28/17	14.74	7.33	--	7.41	
A-18	10/10/17	14.74	8.42	--	6.32	
A-18	03/28/18	14.74	7.79	--	6.95	
A-18	10/02/18	14.74	8.38	--	6.36	
A-18	04/02/19	14.74	7.84	--	6.90	
A-18	10/01/19	14.74	8.28	--	6.46	
A-19	02/11/02	10.76	7.52	0.07	3.30	
A-19	05/20/02	10.76	9.19	--	1.57	
A-19	08/27/02	10.76	7.61	Sheen	3.15	
A-19	11/04/02	10.76	8.79	0.01	1.98	
A-19	02/18/03	10.76	7.70	Sheen	3.06	
A-19	06/09/03	10.76	8.35	0.01	2.42	
A-19	09/15/03	14.57	8.71	0.01	5.87	
A-19	11/18/03	14.57	7.69	0.01	6.89	
A-19	02/24/04	14.57	7.81	Sheen	6.76	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-19	05/10/04	14.57	8.35	Sheen	6.22	
A-19	08/24/04	14.57	8.68	Sheen	5.89	
A-19	12/13/04	14.57	7.98	Sheen	6.59	
A-19	03/08/05	14.57	8.28	--	6.29	
A-19	06/06/05	14.57	7.26	--	7.31	
A-19	09/19/05	14.57	8.66	0.03	5.93	
A-19	10/12/05	14.57	8.55	0.02	6.04	
A-19	12/12/05	14.57	8.46	0.06	6.16	
A-19	03/13/06	14.57	7.65	--	6.92	
A-19	06/05/06	14.57	8.10	--	6.47	
A-19	09/11/06	14.57	8.63	0.03	5.96	
A-19	12/11/06	14.57	7.65	--	6.92	
A-19	03/26/07	14.57	7.89	--	6.68	
A-19	06/18/07	14.57	8.36	--	6.21	
A-19	09/25/07	14.57	8.64	--	5.93	
A-19	12/10/07	14.57	7.82	--	6.75	
A-19	03/03/08	14.57	7.95	--	6.62	
A-19	06/02/08	14.57	9.84	--	4.73	
A-19	09/04/08	14.57	8.30	--	6.27	
A-19	12/04/08	14.57	8.99	--	5.58	
A-19	03/04/09	14.57	7.89	--	6.68	
A-19	06/01/09	14.57	10.47	--	4.10	
A-19	09/21/09	14.57	8.53	--	6.04	
A-19	11/16/09	14.57	7.87	--	6.70	
A-19	03/08/10	14.57	7.45	--	7.12	
A-19	06/07/10	14.57	7.19	--	7.38	
A-19	09/09/10	14.57	8.41	--	6.16	
A-19	11/15/10	14.57	7.94	--	6.63	
A-19	03/01/11	14.57	7.72	--	6.85	
A-19	05/23/11	14.57	7.82	--	6.75	
A-19	08/29/11	14.57	8.39	--	6.18	
A-19	12/01/11	14.57	8.14	--	6.43	
A-19	03/01/12	14.57	7.82	--	6.75	
A-19	05/30/12	14.57	7.75	--	6.82	
A-19	08/25/12	14.57	7.88	--	6.69	
A-19	11/07/12	14.57	7.22	--	7.35	
A-19	02/27/13	14.57	7.68	--	6.89	
A-19	04/08/13	14.57	7.68	--	6.89	
A-19	07/29/13	14.57	7.93	--	6.64	
A-19	10/02/13	14.57	7.78	--	6.79	
A-19	01/21/14	14.57	8.86	--	5.71	
A-19	04/22/14	14.57	7.72	--	6.85	
A-19	07/15/14	14.57	8.01	--	6.56	
A-19	03/17/15	14.57	7.61	--	6.96	
A-19	09/28/15	14.57	8.16	--	6.41	
A-19	03/29/16	14.57	7.19	--	7.38	
A-19	10/11/16	14.57	8.35	--	6.22	
A-19	03/28/17	14.57	7.29	--	7.28	
A-19	10/10/17	14.57	8.34	--	6.23	
A-19	03/28/18	14.57	7.76	--	6.81	
A-19	10/02/18	14.57	8.30	--	6.27	
A-19	04/02/19	14.57	7.76	--	6.81	
A-19	10/01/19	14.57	8.25	--	6.32	
A-20	02/11/02	10.30	7.16	--	3.14	
A-20	05/20/02	10.30	9.76	--	0.54	
A-20	08/27/02	10.30	5.19	--	5.11	
A-20	11/04/02	10.30	8.39	--	1.91	
A-20	02/18/03	10.30	7.38	--	2.92	
A-20	06/09/03	10.30	7.95	--	2.35	
A-20	09/15/03	14.19	8.25	--	5.94	
A-20	11/18/03	14.19	7.70	--	6.49	
A-20	02/24/04	14.19	7.29	0.02	6.92	
A-20	05/10/04	14.19	7.99	--	6.20	
A-20	08/24/04	14.19	8.18	--	6.01	
A-20	12/13/04	14.19	7.65	--	6.54	
A-20	03/08/05	14.19	7.89	--	6.30	
A-20	06/06/05	14.19	7.81	--	6.38	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-20	09/19/05	14.19	8.25	0.01	5.95	
A-20	10/12/05	14.19	8.12	--	6.07	
A-20	12/12/05	14.19	8.00	--	6.19	
A-20	03/13/06	14.19	7.25	--	6.94	
A-20	06/05/06	14.19	7.72	--	6.47	
A-20	09/11/06	14.19	8.22	--	5.97	
A-20	12/11/06	14.19	7.28	--	6.91	
A-20	03/26/07	14.19	7.51	--	6.68	
A-20	06/18/07	14.19	7.98	--	6.21	
A-20	09/25/07	14.19	8.19	--	6.00	
A-20	12/10/07	14.19	7.45	--	6.74	
A-20	03/03/08	14.19	7.55	--	6.64	
A-20	06/02/08	14.19	8.48	--	5.71	
A-20	09/04/08	14.19	7.92	--	6.27	
A-20	12/04/08	14.19	7.99	--	6.20	
A-20	03/04/09	14.19	7.19	--	7.00	
A-20	06/01/09	14.19	8.38	--	5.81	
A-20	09/21/09	14.19	8.11	--	6.08	
A-20	11/16/09	14.19	7.43	--	6.76	
A-20	03/08/10	14.19	7.15	--	7.04	
A-20	06/07/10	14.19	7.54	--	6.65	
A-20	09/09/10	14.19	8.03	--	6.16	
A-20	11/15/10	14.19	7.51	--	6.68	
A-20	03/01/11	14.19	7.34	--	6.85	
A-20	05/23/11	14.19	7.45	--	6.74	
A-20	08/29/11	14.19	8.03	--	6.16	
A-20	12/01/11	14.19	7.70	--	6.49	
A-20	03/01/12	14.19	7.41	--	6.78	
A-20	05/30/12	14.19	7.30	--	6.89	
A-20	08/25/12	14.19	7.46	--	6.73	
A-20	11/07/12	14.19	6.61	--	7.58	
A-20	02/27/13	14.19	7.21	--	6.98	
A-20	04/08/13	14.19	6.96	--	7.23	
A-20	07/29/13	14.19	7.46	--	6.73	
A-20	10/02/13	14.19	7.40	--	6.79	
A-20	01/21/14	14.19	7.77	--	6.42	
A-20	04/22/14	14.19	7.38	--	6.81	
A-20	07/15/14	14.19	7.66	--	6.53	
A-20	03/17/15	14.19	7.27	--	6.92	
A-20	09/28/15	14.19	7.81	--	6.38	
A-20	03/29/16	14.19	6.96	--	7.23	
A-20	10/11/16	14.19	7.97	--	6.22	
A-20	03/28/17	14.19	7.11	--	7.08	
A-20	10/10/17	14.19	7.93	--	6.26	
A-20	03/28/18	14.19	7.40	--	6.79	
A-20	10/02/18	14.19	7.96	--	6.23	
A-20	04/02/19	14.19	7.45	--	6.74	
A-20	10/01/19	14.19	8.17	--	6.02	
A-21	02/11/02	10.40	7.18	--	3.22	
A-21	05/20/02	10.40	9.88	Sheen	0.52	
A-21	08/27/02	10.40	8.28	--	2.12	
A-21	11/04/02	10.40	8.50	--	1.90	
A-21	02/18/03	10.40	7.47	--	2.93	
A-21	06/09/03	10.40	8.01	--	2.39	
A-21	09/15/03	14.35	8.65	--	5.70	
A-21	11/18/03	14.35	7.86	--	6.49	
A-21	02/24/04	14.35	7.43	--	6.92	
A-21	05/10/04	14.35	8.10	--	6.25	
A-21	08/24/04	14.35	8.29	--	6.06	
A-21	12/13/04	14.35	7.75	--	6.60	
A-21	03/08/05	14.35	8.00	--	6.35	
A-21	06/06/05	14.35	7.90	--	6.45	
A-21	09/19/05	14.35	8.24	--	6.11	
A-21	12/12/05	14.35	8.15	--	6.20	
A-21	03/13/06	14.35	7.38	--	6.97	
A-21	06/05/06	14.35	7.21	--	7.14	
A-21	09/11/06	14.35	8.31	--	6.04	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-21	12/11/06	14.35	7.44	--	6.91	
A-21	03/26/07	14.35	7.64	--	6.71	
A-21	06/18/07	14.35	8.15	--	6.20	
A-21	09/25/07	14.35	8.30	--	6.05	
A-21	12/10/07	14.35	7.62	--	6.73	
A-21	03/03/08	14.35	7.67	--	6.68	
A-21	06/02/08	14.35	8.18	--	6.17	
A-21	09/04/08	14.35	8.09	--	6.26	
A-21	12/04/08	14.35	8.07	--	6.28	
A-21	03/04/09	14.35	7.51	--	6.84	
A-21	06/01/09	14.35	8.03	--	6.32	
A-21	09/21/09	14.35	8.27	--	6.08	
A-21	11/16/09	14.35	7.68	--	6.67	
A-21	03/08/10	14.35	7.26	--	7.09	
A-21	06/07/10	14.35	7.66	--	6.69	
A-21	09/09/10	14.35	8.19	--	6.16	
A-21	11/15/10	14.35	7.73	--	6.62	
A-21	03/01/11	14.35	7.42	--	6.93	
A-21	05/23/11	14.35	7.56	--	6.79	
A-21	08/29/11	14.35	8.11	--	6.24	
A-21	12/01/11	14.35	7.81	--	6.54	
A-21	03/01/12	14.35	7.53	--	6.82	
A-21	05/30/12	14.35	7.37	--	6.98	
A-21	08/25/12	14.35	7.49	--	6.86	
A-21	11/07/12	14.35	7.04	--	7.31	
A-21	02/27/13	14.35	7.32	--	7.03	
A-21	04/08/13	14.35	7.23	--	7.12	
A-21	07/29/13	14.35	7.59	--	6.76	
A-21	10/02/13	14.35	7.57	--	6.78	
A-21	01/21/14	14.35	8.71	--	5.64	
A-21	04/22/14	14.35	7.59	--	6.76	
A-21	07/15/14	14.35	7.82	--	6.53	
A-21	03/17/15	14.35	7.4	--	6.95	
A-21	09/28/15	14.35	7.91	--	6.44	
A-21	03/29/16	14.35	6.94	--	7.41	
A-21	10/11/16	14.35	8.11	--	6.24	
A-21	03/28/17	14.35	7.11	--	7.24	
A-21	10/10/17	14.35	8.08	--	6.27	
A-21	03/28/18	14.35	7.48	--	6.87	
A-21	10/02/18	14.35	8.06	--	6.29	
A-21	04/02/19	14.35	7.54	--	6.81	
A-21	10/01/19	14.35	7.96	--	6.39	
A-22	09/21/01	10.69	--	--	--	
A-22					Destroyed	
A-22R	02/11/02	10.22	7.10	0.13	3.22	
A-22R	05/20/02	10.22	9.72	0.08	0.56	
A-22R	08/27/02	10.22	8.20	0.16	2.15	
A-22R	11/04/02	10.22	8.30	0.15	2.04	
A-22R	02/18/03	10.22	7.14	0.02	3.10	
A-22R	06/09/03	10.22	7.82	--	2.40	
A-22R	09/15/03	14.11	8.40	0.01	5.72	
A-22R	11/18/03	14.11	7.70	0.05	6.45	
A-22R	02/24/04	14.11	7.01	Sheen	7.10	
A-22R	05/10/04	14.11	7.68	<0.01	6.43	
A-22R	08/24/04	14.11	7.90	0.18	6.35	
A-22R	12/13/04	14.11	7.40	Sheen	6.71	
A-22R	03/08/05	14.11	7.08	--	7.03	
A-22R	06/06/05	14.11	7.21	--	6.90	
A-22R	09/19/05	14.11	8.11	0.01	6.01	
A-22R	10/12/05	14.11	8.22	0.20	6.05	
A-22R	12/12/05	14.11	7.87	--	6.24	
A-22R	03/13/06	14.11	7.15	--	6.96	
A-22R	06/05/06	14.11	7.75	--	6.36	
A-22R	09/11/06	14.11	8.16	--	5.95	
A-22R	12/11/06	14.11	7.14	--	6.97	
A-22R	03/26/07	14.11	7.34	--	6.77	
A-22R	06/18/07	14.11	7.86	--	6.25	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-22R	12/10/07	14.11	7.38	--	6.73	
A-22R	03/03/08	14.11	7.47	--	6.64	
A-22R	06/02/08	14.11	8.90	--	5.21	
A-22R	09/04/08	14.11	--	--	--	Not Measured-Sock in well
A-22R	12/04/08	14.11	--	--	--	Not Measured-Sock in well
A-22R	03/04/09	14.11	--	--	--	Not Measured-Sock in well
A-22R	06/01/09	14.11	--	--	--	Not Measured-Sock in well
A-22R	09/21/09	14.11	--	--	--	Not Measured-Sock in well
A-22R	11/16/09	14.11	7.36	--	6.75	
A-22R	03/08/10	14.11	6.95	--	7.16	
A-22R	06/07/10	14.11	7.52	--	6.59	
A-22R	09/09/10	14.11	7.94	--	6.17	
A-22R	11/15/10	14.11	7.92	--	6.19	
A-22R	03/01/11	14.11	7.21	--	6.90	
A-22R	05/23/11	14.11	7.35	--	6.76	
A-22R	08/29/11	14.11	7.87	--	6.24	
A-22R	12/01/11	14.11	7.75	--	6.36	
A-22R	03/01/12	14.11	7.37	--	6.74	
A-22R	05/30/12	14.11	7.48	--	6.63	
A-22R	08/25/12	14.11	7.62	--	6.49	
A-22R	11/07/12	14.11	7.18	--	6.93	
A-22R	02/27/13	14.11	7.38	--	6.73	
A-22R	04/08/13	14.11	7.31	--	6.80	
A-22R	07/29/13	14.11	7.64	--	6.47	
A-22R	10/02/13	14.11	7.01	--	7.10	
A-22R	01/21/14	14.11	7.63	--	6.48	
A-22R	04/22/14	14.11	7.11	--	7.00	
A-22R	07/15/14	14.11	7.46	--	6.65	
A-22R	03/17/15	14.11	7.04	--	7.07	
A-22R	09/28/15	14.11	7.52	--	6.59	
A-22R	03/29/16	14.11	6.59	--	7.52	
A-22R	10/11/16	14.11	7.92	--	6.19	
A-22R	03/28/17	14.11	6.67	--	7.44	
A-22R	10/10/17	14.11	7.82	--	6.29	
A-22R	03/28/18	14.11	7.31	--	6.8	
A-22R	10/02/18	14.11	7.79	--	6.32	
A-22R	04/02/19	14.11	7.17	--	6.94	
A-22R	10/01/19	14.11	7.74	--	6.37	
A-23	06/14/01	--	--	--	--	
A-23						Destroyed during construction activities
A-23R	02/11/02	11.73	8.53	--	3.20	
A-23R	05/20/02	11.73	10.23	--	1.50	
A-23R	08/27/02	11.73	6.63	--	5.10	
A-23R	11/04/02	11.73	9.81	--	1.92	
A-23R	02/18/03	11.73	8.75	--	2.98	
A-23R	06/09/03	11.73	9.35	--	2.38	
A-23R	09/15/03	15.57	10.03	--	5.54	
A-23R	11/18/03	15.57	7.85	--	7.72	
A-23R	02/24/04	15.57	8.05	--	7.52	
A-23R	05/10/04	15.57	8.69	--	6.88	
A-23R	08/24/04	15.57	7.69	--	7.88	
A-23R	12/13/04	15.57	9.22	--	6.35	
A-23R	03/08/05	15.57	9.38	--	6.19	
A-23R	06/07/05	15.57	9.35	--	6.22	
A-23R	09/20/05	15.57	9.68	--	5.89	
A-23R	12/12/05	15.57	9.20	--	6.37	
A-23R	03/13/06	15.57	8.69	--	6.88	
A-23R	06/08/06	15.57	9.13	--	6.44	
A-23R	09/11/06	15.57	10.03	--	5.54	
A-23R	12/11/06	15.57	8.72	--	6.85	
A-23R	03/26/07	15.57	8.94	--	6.63	
A-23R	06/18/07	15.57	9.37	--	6.20	
A-23R	09/25/07	--	--	--	--	Not Measured-Inaccessible
A-23R	12/10/07	15.57	8.91	--	6.66	
A-23R	03/03/08	15.57	9.00	--	6.57	
A-23R	06/02/08	15.57	9.22	--	6.35	
A-23R	09/04/08	15.57	--	--	--	Not Measured-Inaccessible
A-23R	12/04/08	15.57	9.34	--	6.23	

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-23R	03/04/09	15.57	9.81	--	5.76	
A-23R	06/01/09	15.57	9.26	--	6.31	
A-23R	09/21/09	15.57	9.51	--	6.06	
A-23R	11/16/09	15.57	8.94	--	6.63	
A-23R	03/08/10	15.57	8.48	--	7.09	
A-23R	06/07/10	15.57	8.95	--	6.62	
A-23R	09/09/10	15.57	9.45	--	6.12	
A-23R	11/16/10	15.57	9.01	--	6.56	
A-23R	03/01/11	15.57	8.68	--	6.89	
A-23R	05/24/11	15.57	8.85	--	6.72	
A-23R	08/29/11	15.57	9.41	--	6.16	
A-23R	12/01/11	15.57	9.09	--	6.48	
A-23R	03/01/12	15.57	8.79	--	6.78	
A-23R	05/30/12	15.57	8.73	--	6.84	
A-23R	08/25/12	15.57	--	--	--	Inaccessible due to site access issues
A-23R	11/07/12	15.57	8.52	--	7.05	
A-23R	02/27/13	15.57	8.45	--	7.12	
A-23R	04/08/13	15.57	8.63	--	6.94	
A-23R	07/29/13	15.57	8.92	--	6.65	
A-23R	10/02/13	15.57	8.81	--	6.76	
A-23R	01/21/14	15.57	9.16	--	6.41	
A-23R	04/22/14	15.57	5.74	--	9.83	
A-23R	07/15/14	15.57	9.11	--	6.46	
A-23R	03/17/15	15.57	6.33	--	9.24	
A-23R	09/28/15	15.57	9.19	--	6.38	
A-23R	03/29/16	15.57	8.33	--	7.24	
A-23R	10/11/16	15.57	9.28	--	6.29	
A-23R	03/28/17	15.57	8.30	--	7.27	
A-23R	10/10/17	15.57	9.34	--	6.23	
A-23R	03/28/18	15.57	8.79	--	6.78	
A-23R	10/02/18	15.57	9.21	--	6.36	
A-23R	--	15.57	--	--	--	Not Measured-Inaccessible
A-23R	10/03/19	15.57	9.23	--	6.34	Gauged when accessed for sampling
A-24	10/06/00	--	--	--	--	
A-24						Destroyed during construction activities
A-25	02/11/02	10.12	6.78	--	3.34	
A-25	05/20/02	10.12	8.56	--	1.56	
A-25	08/27/02	10.12	7.99	--	2.13	
A-25	11/04/02	10.12	8.18	--	1.94	
A-25	02/18/03	10.12	7.08	--	3.04	
A-25	06/09/03	10.12	8.71	--	1.41	
A-25	09/15/03	13.90	8.05	--	5.85	
A-25	11/18/03	13.90	7.50	Sheen	6.40	
A-25	02/24/04	13.90	7.00	--	6.90	
A-25	05/10/04	13.90	7.75	--	6.15	
A-25	08/24/04	13.90	7.82	--	6.08	
A-25	12/13/04	13.90	7.46	--	6.44	
A-25	03/08/05	13.90	7.70	--	6.20	
A-25	06/06/05	13.90	7.53	--	6.37	
A-25	09/19/05	13.90	8.07	0.01	5.84	
A-25	10/12/05	13.90	7.95	--	5.95	
A-25	12/12/05	13.90	7.79	--	6.11	
A-25	03/13/06	13.90	6.98	--	6.92	
A-25	06/05/06	13.90	7.43	--	6.47	
A-25	09/11/06	13.90	8.10	--	5.80	
A-25	12/11/06	13.90	7.05	--	6.85	
A-25	12/10/07	13.90	7.23	--	6.67	
A-25	03/03/08	13.90	7.36	--	6.54	
A-25	03/04/09	13.90	7.37	--	6.53	
A-25	06/01/09	13.90	7.81	--	6.09	
A-25	09/21/09	13.90	8.00	--	5.90	
A-25	11/16/09	13.90	7.16	--	6.74	
A-25	03/08/10	13.90	6.83	--	7.07	
A-25	06/07/10	13.90	7.36	--	6.54	
A-25	09/09/10	13.90	7.97	--	5.93	
A-25	11/15/10	13.90	7.44	Sheen	6.46	
A-25	03/01/11	13.90	7.04	--	6.86	
A-25	05/23/11	13.90	7.18	--	6.72	

Appendix D
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Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-25	08/29/11	13.90	7.81	--	6.09	
A-25	12/01/11	13.90	7.52	--	6.38	
A-25	03/01/12	13.90	7.75	--	6.15	
A-25	05/30/12	13.90	7.30	--	6.60	
A-25	08/25/12	13.90	7.56	--	6.34	
A-25	11/07/12	13.90	7.11	--	6.79	
A-25	02/27/13	13.90	7.18	--	6.72	
A-25	04/08/13	13.90	7.08	--	6.82	
A-25	07/29/13	13.90	7.52	--	6.38	
A-25	10/02/13	13.90	7.23	--	6.67	
A-25	01/21/14	13.90	7.51	--	6.39	
A-25	04/22/14	13.90	7.03	--	6.87	
A-25	07/15/14	13.90	7.51	--	6.39	
A-25	03/17/15	13.90	6.87	--	7.03	
A-25	09/29/15	13.90	7.55	--	6.35	
A-25	03/29/16	13.90	6.36	--	7.54	
A-25	10/11/16	13.90	7.77	--	6.13	
A-25	03/28/17	13.90	6.30	--	7.60	
A-25	10/10/17	13.90	7.75	--	6.15	
A-25	03/28/18	13.90	7.10	--	6.80	
A-25	10/02/18	13.90	7.69	--	6.21	
A-25	04/02/19	13.90	7.06	--	6.84	
A-25	10/01/19	13.90	7.67	--	6.23	
A-26	03/27/01	--	--	--	--	
A-26						Destroyed during construction activities of utility trench
A-26R	02/11/02	10.39	7.13	0.02	3.28	
A-26R	05/20/02	10.39	9.79	--	0.60	
A-26R	08/27/02	10.39	8.23	0.02	2.18	
A-26R	11/04/02	10.39	8.41	0.04	2.01	
A-26R	02/18/03	10.39	7.29	--	3.10	
A-26R	06/09/03	10.39	7.92	--	2.47	
A-26R	09/15/03	14.19	8.31	--	5.88	
A-26R	11/18/03	14.19	7.64	Sheen	6.55	
A-26R	02/24/04	14.19	7.17	--	7.02	
A-26R	05/10/04	14.19	7.93	--	6.26	
A-26R	08/24/04	14.19	8.10	--	6.09	
A-26R	12/13/04	14.19	7.55	--	6.64	
A-26R	03/08/05	14.19	7.80	--	6.39	
A-26R	06/06/05	14.19	7.18	--	7.01	
A-26R	09/19/05	14.19	8.25	0.01	5.95	
A-26R	10/12/05	14.19	8.20	--	5.99	
A-26R	12/12/05	14.19	7.98	--	6.21	
A-26R	03/13/06	14.19	7.21	--	6.98	
A-26R	06/05/06	14.19	7.66	--	6.53	
A-26R	09/11/06	14.19	8.25	--	5.94	
A-26R	12/11/06	14.19	7.22	--	6.97	
A-26R	12/10/07	14.19	7.48	--	6.71	
A-26R	03/03/08	14.19	7.58	--	6.61	
A-26R	03/04/09	14.19	7.56	--	6.63	
A-26R	06/01/09	14.19	--	--	--	Not Measured-Inaccessible
A-26R	09/21/09	14.19	8.21	--	5.98	
A-26R	11/16/09	14.19	7.48	--	6.71	
A-26R	03/08/10	14.19	7.04	--	7.15	
A-26R	06/07/10	14.19	7.57	--	6.62	
A-26R	09/09/10	14.19	8.17	--	6.02	
A-26R	11/15/10	14.19	7.69	--	6.50	
A-26R	03/01/11	14.19	7.28	--	6.91	
A-26R	05/23/11	14.19	7.40	--	6.79	
A-26R	08/29/11	14.19	7.99	--	6.20	
A-26R	12/01/11	14.19	7.81	--	6.38	
A-26R	03/01/12	14.19	7.47	--	6.72	
A-26R	05/30/12	14.19	7.55	--	6.64	
A-26R	08/25/12	14.19	7.73	--	6.46	
A-26R	11/07/12	14.19	7.37	--	6.82	
A-26R	02/27/13	14.19	7.42	--	6.77	
A-26R	04/08/13	14.19	7.34	--	6.85	
A-26R	07/29/13	14.19	7.69	--	6.50	
A-26R	10/02/13	14.19	7.41	--	6.78	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-26R	01/21/14	14.19	7.69	--	6.50	
A-26R	04/22/14	14.19	7.23	--	6.96	
A-26R	07/15/14	14.19	7.71	--	6.48	
A-26R	03/17/15	14.19	7.09	--	7.1	
A-26R	09/28/15	14.19	7.62	--	6.57	
A-26R	03/29/16	14.19	6.56	--	7.63	
A-26R	10/11/16	14.19	7.99	--	6.20	
A-26R	03/28/17	14.19	6.62	--	7.57	
A-26R	10/10/17	14.19	7.93	--	6.26	
A-26R	03/28/18	14.19	7.36	--	6.83	
A-26R	10/02/18	14.19	7.91	--	6.28	
A-26R	04/02/19	14.19	7.25	--	6.94	
A-26R	10/01/19	14.19	7.85	--	6.34	
A-27	02/11/02	13.45	10.05	--	3.40	
A-27	05/20/02	13.45	12.84	--	0.61	
A-27	08/27/02	13.45	11.31	--	2.14	
A-27	11/04/02	13.45	11.46	--	1.99	
A-27	02/18/03	13.45	10.32	--	3.13	
A-27	06/09/03	13.45	10.97	--	2.48	
A-27	09/15/03	17.22	11.38	--	5.84	
A-27	11/18/03	17.22	10.75	--	6.47	
A-27	02/24/04	17.22	10.15	--	7.07	
A-27	05/10/04	17.22	8.00	--	9.22	
A-27	08/24/04	17.22	11.15	--	6.07	
A-27	12/13/04	17.22	7.80	--	9.42	
A-27	03/08/05	17.22	10.83	--	6.39	
A-27	06/06/05	17.22	10.80	--	6.42	
A-27	09/19/05	17.22	11.32	--	5.90	
A-27	12/12/05	17.22	11.01	--	6.21	
A-27	03/13/06	17.22	10.17	--	7.05	
A-27	06/05/06	17.22	10.69	--	6.53	
A-27	09/11/06	17.22	11.30	--	5.92	
A-27	12/11/06	17.22	10.16	--	7.06	
A-27	03/26/07	17.22	10.41	--	6.81	
A-27	06/18/07	17.22	11.00	--	6.22	
A-27	09/24/07	17.22	11.20	--	6.02	
A-27	12/10/07	17.22	10.41	--	6.81	
A-27	03/03/08	17.22	10.54	--	6.68	
A-27	06/02/08	17.22	11.06	--	6.16	
A-27	09/04/08	17.22	11.50	--	5.72	
A-27	12/04/08	17.22	11.05	--	6.17	
A-27	03/04/09	17.22	10.64	--	6.58	
A-27	06/01/09	17.22	10.87	--	6.35	
A-27	09/21/09	17.22	11.25	--	5.97	
A-27	11/16/09	17.22	10.50	--	6.72	
A-27	03/08/10	17.22	10.01	--	7.21	
A-27	06/07/10	17.22	10.54	--	6.68	
A-27	09/09/10	17.22	11.19	--	6.03	
A-27	11/15/10	17.22	10.61	--	6.61	
A-27	03/01/11	17.22	10.20	--	7.02	
A-27	05/23/11	17.22	10.30	--	6.92	
A-27	08/29/11	17.22	11.03	--	6.19	
A-27	12/01/11	17.22	10.72	--	6.50	
A-27	03/01/12	17.22	10.44	--	6.78	
A-27	05/30/12	17.22	10.47	--	6.75	
A-27	08/25/12	17.22	10.78	--	6.44	
A-27	11/07/12	17.22	10.33	--	6.89	
A-27	02/27/13	17.22	10.28	--	6.94	
A-27	04/08/13	17.22	10.24	--	6.98	
A-27	06/21/13	17.22	10.68	--	6.54	Baseline monitoring event
A-27	07/29/13	17.22	10.69	--	6.53	
A-27	08/26/13	17.22	10.71	--	6.51	Two-month monitoring event
A-27	10/02/13	17.22	10.40	--	6.82	
A-27	01/21/14	17.22	10.63	--	6.59	
A-27	04/22/14	17.22	10.11	--	7.11	
A-27	07/15/14	17.22	10.68	--	6.54	
A-27	03/17/15	17.22	9.96	--	7.26	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-27	09/28/15	17.22	10.68	--	6.54	
A-27	03/29/16	17.22	9.37	--	7.85	
A-27	10/11/16	17.22	10.99	--	6.23	
A-27	03/28/17	17.22	9.36	--	7.86	
A-27	10/10/17	17.22	10.95	--	6.27	
A-27	03/28/18	17.22	10.23	--	6.99	
A-27	10/02/18	17.22	10.92	--	6.30	
A-27	04/02/19	17.22	10.23	--	6.99	
A-27	10/01/19	17.22	10.86	--	6.36	
A-28	06/14/01	--	--	--	--	
A-28						Destroyed during construction activities
A-28R	02/11/02	11.19	7.72	--	3.47	
A-28R	05/20/02	11.19	9.51	--	1.68	
A-28R	08/27/02	11.19	8.97	--	2.22	
A-28R	11/04/02	11.19	9.20	--	1.99	
A-28R	02/18/03	11.19	8.20	--	2.99	
A-28R	06/09/03	11.19	8.67	--	2.52	
A-28R	09/15/03	14.93	9.05	--	5.88	
A-28R	11/18/03	14.93	8.45	--	6.48	
A-28R	02/24/04	14.93	7.91	--	7.02	
A-28R	05/10/04	14.93	8.66	--	6.27	
A-28R	08/24/04	14.93	7.90	--	7.03	
A-28R	12/13/04	14.93	8.58	--	6.35	
A-28R	03/08/05	14.93	8.67	--	6.26	
A-28R	06/06/05	14.93	8.47	--	6.46	
A-28R	09/19/05	14.93	8.99	--	5.94	
A-28R	12/12/05	14.93	7.71	--	7.22	
A-28R	03/13/06	14.93	7.79	--	7.14	
A-28R	06/05/06	14.93	9.13	--	5.80	
A-28R	09/11/06	14.93	9.00	--	5.93	
A-28R	12/11/06	14.93	7.89	--	7.04	
A-28R	03/26/07	14.93	8.05	--	6.88	
A-28R	06/18/07	14.93	8.64	--	6.29	
A-28R	09/24/07	14.93	8.81	--	6.12	
A-28R	12/10/07	14.93	8.01	--	6.92	
A-28R	03/03/08	14.93	8.17	--	6.76	
A-28R	06/02/08	14.93	8.64	--	6.29	
A-28R	09/04/08	14.93	8.73	--	6.20	
A-28R	12/04/08	14.93	8.69	--	6.24	
A-28R	03/04/09	14.93	8.29	--	6.64	
A-28R	06/01/09	14.93	8.51	--	6.42	
A-28R	09/21/09	14.93	8.92	--	6.01	
A-28R	11/16/09	14.93	8.21	--	6.72	
A-28R	03/08/10	14.93	7.61	--	7.32	
A-28R	06/07/10	14.93	8.14	--	6.79	
A-28R	09/09/10	14.93	8.73	--	6.20	
A-28R	11/15/10	14.93	8.22	--	6.71	
A-28R	03/01/11	14.93	7.80	--	7.13	
A-28R	05/23/11	14.93	7.89	--	7.04	
A-28R	08/29/11	14.93	8.70	--	6.23	
A-28R	12/01/11	14.93	8.32	--	6.61	
A-28R	03/01/12	14.93	7.95	--	6.98	
A-28R	05/30/12	14.93	8.04	--	6.89	
A-28R	08/25/12	14.93	8.35	--	6.58	
A-28R	11/07/12	14.93	7.89	--	7.04	
A-28R	02/27/13	14.93	7.78	--	7.15	
A-28R	04/08/13	14.93	7.67	--	7.26	
A-28R	07/29/13	14.93	8.20	--	6.73	
A-28R	10/02/13	14.93	7.88	--	7.05	
A-28R	01/21/14	14.93	8.20	--	6.73	
A-28R	04/22/14	14.93	7.59	--	7.34	
A-28R	07/15/14	14.93	8.35	--	6.58	
A-28R	03/17/15	14.93	7.26	--	7.67	
A-28R	09/28/15	14.93	8.33	--	6.60	
A-28R	03/29/16	14.93	6.91	--	8.02	
A-28R	10/11/16	14.93	8.66	--	6.27	
A-28R	03/28/17	14.93	6.90	--	8.03	
A-28R	10/10/17	14.93	8.63	--	6.30	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
A-28R	03/28/18	14.93	7.78	--	7.15	
A-28R	10/02/18	14.93	8.61	--	6.32	
A-28R	04/02/19	14.93	7.67	--	7.26	
A-28R	10/01/19	14.93	8.50	--	6.43	
A-29	03/27/01	--	--	--	--	
A-29						Destroyed during construction activities of utility trench
A-29R	02/11/02	10.12	6.78	--	3.34	
A-29R	05/20/02	10.12	8.53	--	1.59	
A-29R	08/27/02	10.12	7.92	--	2.20	
A-29R	11/04/02	10.12	8.09	--	2.03	
A-29R	02/18/03	10.12	7.05	--	3.07	
A-29R	02/19/03	10.12	7.05	--	3.07	
A-29R	06/09/03	10.12	7.61	--	2.51	
A-29R	09/15/03	13.85	8.00	--	5.85	
A-29R	11/18/03	13.85	7.50	--	6.35	
A-29R	02/24/04	13.85	6.97	--	6.88	
A-29R	05/10/04	13.85	7.66	--	6.19	
A-29R	08/24/04	13.85	7.43	--	6.42	
A-29R	12/13/04	13.85	7.46	--	6.39	
A-29R	03/08/05	13.85	7.65	--	6.20	
A-29R	06/06/05	13.85	7.51	--	6.34	
A-29R	09/19/05	13.85	8.02	--	5.83	
A-29R	12/12/05	13.85	7.75	--	6.10	
A-29R	03/13/06	13.85	--	--	--	Not Measured-Inaccessible
A-29R	06/05/06	13.85	7.44	--	6.41	
A-29R	09/11/06	13.85	8.00	--	5.85	
A-29R	12/11/06	13.85	7.07	--	6.78	
A-29R	03/26/07	13.85	7.25	--	6.60	
A-29R	06/18/07	13.85	7.58	--	6.27	
A-29R	09/24/07	13.85	8.03	--	5.82	
A-29R	12/10/07	13.85	7.21	--	6.64	
A-29R	06/02/08	13.85	8.46	--	5.39	
A-29R	09/04/08	13.85	7.82	--	6.03	
A-29R	12/04/08	13.85	7.78	--	6.07	
A-29R	05/23/11	13.85	7.22	--	6.63	
3	02/11/02	9.78	5.71	--	4.07	Casing Damaged
3	05/20/02	9.78	7.97	--	1.81	Casing Damaged
3	08/27/02	9.78	7.57	--	2.21	Casing Damaged
3	11/04/02	9.78	7.82	--	1.96	Casing Damaged
3	02/18/03	9.78	6.02	--	3.76	Casing Damaged
3	06/09/03	9.78	7.16	--	2.62	Casing Damaged
3	06/11/03	--	--	--	--	
3						Abandoned
4	02/11/02	7.97	3.86	--	4.11	
4	05/20/02	7.97	6.07	--	1.90	
4	08/27/02	7.97	5.17	--	2.80	
4	11/04/02	7.97	5.40	--	2.57	
4	02/18/03	7.97	3.78	--	4.19	
4	02/19/03	7.97	3.78	--	4.19	
4	06/09/03	7.97	4.75	--	3.22	
4	09/15/03	11.01	5.37	--	5.64	Casing Broken
4	11/18/03	11.01	4.33	--	6.68	Casing Broken
4	02/24/04	11.01	3.91	--	7.10	Casing Broken
4	05/10/04	11.01	4.75	--	6.26	Casing Broken
4	08/24/04	11.01	4.94	--	6.07	Casing Broken
4	12/13/04	11.01	4.17	--	6.84	Casing Broken
4	03/08/05	11.01	3.80	--	7.21	Casing Broken
4	06/06/05	11.01	4.63	--	6.38	Casing Broken
4	09/19/05	11.01	--	--	--	Not Measured-Casing Broken
4	12/12/05	11.01	4.76	--	6.25	Casing Broken
4	03/13/06	11.01	3.82	--	7.19	Casing Broken
4	06/05/06	11.01	--	--	--	Not Measured-Casing Broken
4	09/11/06	11.01	--	--	--	Not Measured-Casing Broken
4	12/11/06	11.01	--	--	--	Not Measured-Casing Broken
5	02/11/02	8.30	3.73	--	4.57	Casing Damaged
5	05/20/02	8.30	5.89	--	2.41	Casing Damaged
5	08/27/02	8.30	5.40	--	2.90	Casing Damaged
5	11/04/02	8.30	5.74	--	2.56	Casing Damaged

Appendix D
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 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
5	02/18/03	8.30	4.20	--	4.10	Casing Damaged
5	06/11/03	--	--	--	--	
5	Abandoned					
6	02/11/02	9.15	4.50	--	4.65	
6	05/20/02	9.15	6.88	--	2.27	
6	08/27/02	9.15	6.65	--	2.50	
6	11/04/02	9.15	6.99	--	2.16	
6	02/18/03	9.15	5.14	--	4.01	
6	06/09/03	9.15	6.24	--	2.91	
6	09/15/03	12.76	6.95	--	5.81	
6	11/18/03	12.76	5.56	--	7.20	
6	02/24/04	12.76	5.31	--	7.45	
6	05/10/04	12.76	6.24	--	6.52	
6	08/24/04	12.76	6.41	--	6.35	
6	12/13/04	12.76	4.28	--	8.48	
6	03/08/05	12.76	6.28	--	6.48	
6	06/06/05	12.76	5.94	--	6.82	
6	09/19/05	12.76	6.87	--	5.89	
6	12/12/05	12.76	6.13	--	6.63	
6	03/13/06	12.76	5.13	--	7.63	
6	06/05/06	12.76	5.68	--	7.08	
6	09/11/06	12.76	6.78	--	5.98	
6	12/11/06	12.76	5.52	--	7.24	
7	01/13/97	9.09	3.90	--	5.19	
7	10/06/00	9.09	6.80	--	2.29	
7	12/18/00	9.09	6.02	--	3.07	
7	03/27/01	9.09	6.44	--	2.65	
7	06/14/01	9.09	6.49	--	2.60	
7	09/21/01	9.09	6.91	--	2.18	
7	02/11/02	9.09	5.23	--	3.86	
7	05/20/02	9.09	7.31	--	1.78	
7	08/27/02	9.09	6.85	--	2.24	
7	11/04/02	9.09	7.07	--	2.02	
7	02/18/03	9.09	7.74	--	1.35	
7	06/09/03	9.09	6.45	--	2.64	
7	09/15/03	12.72	7.04	--	5.68	
7	11/18/03	12.72	6.11	--	6.61	
7	02/24/04	12.72	5.96	--	6.76	
7	05/10/04	12.72	6.62	--	6.10	
7	08/24/04	12.72	6.56	--	6.16	
7	12/13/04	12.72	6.00	--	6.72	
7	03/08/05	12.72	5.66	--	7.06	
7	06/06/05	12.72	6.45	--	6.27	
7	09/19/05	12.72	7.04	--	5.68	
7	12/12/05	12.72	6.69	--	6.03	
7	03/13/06	12.72	5.07	--	7.65	
7	06/05/06	12.72	7.40	--	5.32	
7	09/11/06	12.72	6.98	--	5.74	
7	12/11/06	12.72	5.62	--	7.10	
8	02/11/02	9.42	5.20	--	4.22	
8	05/20/02	9.42	7.52	--	1.90	Casing Tilted
8	08/27/02	9.42	7.12	--	2.30	Casing Tilted
8	11/04/02	9.42	7.25	--	2.17	Casing Tilted
8	02/18/03	9.42	5.79	--	3.63	Casing Tilted
8	06/11/03	--	--	--	--	
8	Abandoned					
9	02/11/02	9.36	4.26	--	5.10	
9	05/20/02	9.36	6.76	--	2.60	
9	08/27/02	9.36	6.38	--	2.98	
9	11/04/02	9.36	7.00	--	2.36	
9	02/18/03	9.36	4.94	--	4.42	
9	06/09/03	9.36	6.11	--	3.25	
9	09/15/03	12.89	6.96	--	5.93	
9	11/18/03	12.89	5.51	--	7.38	
9	02/24/04	12.89	5.19	--	7.70	
9	05/10/04	12.89	6.18	--	6.71	
9	08/24/04	12.89	3.46	--	9.43	

Appendix D
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 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
9	12/13/04	12.89	5.48	--	7.41	
9	03/08/05	12.89	6.36	--	6.53	
9	06/06/05	12.89	5.82	--	7.07	
9	09/19/05	12.89	6.87	--	6.02	
9	12/12/05	12.89	6.15	--	6.74	
9	03/13/06	12.89	5.02	--	7.87	
9	06/05/06	12.89	5.51	--	7.38	
9	09/11/06	12.89	6.80	--	6.09	
9	12/11/06	12.89	4.79	--	8.10	
10	02/11/02	9.57	4.39	--	5.18	
10	05/20/02	9.57	6.98	--	2.59	
10	08/27/02	9.57	6.95	--	2.62	
10	11/04/02	9.57	7.29	--	2.28	
10	02/18/03	9.57	5.05	--	4.52	
10	06/09/03	9.57	6.34	--	3.23	
10	09/15/03	13.20	7.21	--	5.99	
10	11/18/03	13.20	5.62	--	7.58	
10	02/24/04	13.20	5.21	--	7.99	
10	05/10/04	13.20	6.47	--	6.73	
10	08/24/04	13.20	6.61	--	6.59	
10	12/13/04	13.20	5.48	--	7.72	
10	03/08/05	13.20	6.41	--	6.79	
10	06/06/05	13.20	6.09	--	7.11	
10	09/19/05	13.20	7.17	--	6.03	
10	12/12/05	13.20	6.29	--	6.91	
10	03/13/06	13.20	5.15	--	8.05	
10	06/05/06	13.20	5.70	--	7.50	
10	09/11/06	13.20	7.06	--	6.14	
10	12/11/06	13.20	4.88	--	8.32	
11	02/11/02	8.57	3.01	--	5.56	
11	05/20/02	8.57	5.61	--	2.96	
11	08/27/02	8.57	5.76	--	2.81	
11	11/04/02	8.57	6.03	--	2.54	
11	02/18/03	8.57	3.57	--	5.00	
11	06/09/03	8.57	4.98	--	3.59	
11	09/15/03	12.08	6.00	--	6.08	
11	11/18/03	12.08	2.38	--	9.70	
11	02/24/04	12.08	3.70	--	8.38	
11	05/10/04	12.08	5.07	--	7.01	
11	08/24/04	12.08	5.02	--	7.06	
11	12/13/04	12.08	4.12	--	7.96	
11	03/08/05	12.08	4.99	--	7.09	
11	06/06/05	12.08	4.74	--	7.34	
11	09/19/05	12.08	5.93	--	6.15	
11	12/12/05	12.08	4.95	--	7.13	
11	03/13/06	12.08	3.64	--	8.44	
11	06/05/06	12.08	4.32	--	7.76	
11	09/11/06	12.08	5.82	--	6.26	
11	12/11/06	12.08	3.91	--	8.17	
11	06/21/13	12.08	4.57	--	7.51	Baseline monitoring event
11	07/29/13	12.08	4.99	--	7.09	
11	08/26/13	12.08	4.99	--	7.09	Two-month monitoring event
11	10/02/13	12.08	3.96	--	8.12	
11	01/21/14	12.08	4.60	--	7.48	
11	04/22/14	12.08	3.29	--	8.79	
11	07/15/14	12.08	4.90	--	7.18	
11	03/17/15	12.08	2.41	--	9.67	
11	09/28/15	12.08	5.15	--	6.93	
11	03/29/16	12.08	2.91	--	9.17	
11	10/11/16	12.08	5.03	--	7.05	
11	03/28/17	12.08	2.58	--	9.50	
11	10/10/17	12.08	5.19	--	6.89	
11	03/28/18	12.08	3.94	--	8.14	
11	10/02/18	12.08	5.32	--	6.76	
11	04/02/19	12.08	4.33	--	7.75	
11	10/01/19	12.08	5.02	--	7.06	
12	02/11/02	9.06	3.57	0.04	5.52	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
12	05/20/02	9.06	6.14	0.04	2.95	Casing Damaged
12	08/27/02	9.06	3.41	0.01	5.66	Casing Damaged
12	11/04/02	9.06	3.80	0.01	5.27	Casing Damaged
12	02/18/03	9.06	0.80	Sheen	8.26	Casing Damaged
12	06/09/03	9.06	2.99	Sheen	6.07	Casing Damaged
12	09/15/03	9.79	--	--	--	Not Measured-Not Located
12	11/18/03	9.79	--	--	--	Not Measured-surface water covering well
12	02/24/04	9.79	1.20	0.03	8.61	
12	05/10/04	9.79	2.80	--	6.99	
12	08/24/04	9.79	2.51	Sheen	7.28	
12	12/13/04	9.79	1.12	--	8.67	
12	03/08/05	9.79	2.87	--	6.92	
12	06/06/05	9.79	5.16	--	4.63	
12	09/19/05	9.79	3.49	0.01	6.31	
12	12/12/05	9.79	2.40	--	7.39	
12	03/13/06	9.79	1.00	--	8.79	
12	06/05/06	9.79	1.27	--	8.52	
12	09/11/06	9.79	3.63	--	6.16	
12	12/11/06	9.79	1.31	--	8.48	
12	03/26/07	9.79	1.40	--	8.39	
12	06/18/07	9.79	2.74	--	7.05	
12	09/24/07	9.79	3.43	--	6.36	
12	12/10/07	9.79	1.88	Sheen	7.91	
12	03/03/08	9.79	2.04	Sheen	7.75	
12	06/02/08	9.79	2.98	--	6.81	
12	09/04/08	9.79	3.74	--	6.05	
12	12/04/08	9.79	2.79	Sheen	7.00	
12	03/04/09	9.79	2.25	Sheen	7.54	
12	06/01/09	9.79	2.31	Sheen	7.48	
12	09/21/09	9.79	3.30	Sheen	6.49	
12	11/16/09	9.79	1.62	Sheen	8.17	
12	03/08/10	9.79	1.34	Sheen	8.45	
12	06/07/10	9.79	1.62	Sheen	8.17	
12	09/09/10	9.79	3.28	Sheen	6.51	
12	11/15/10	9.79	1.92	--	7.87	
12	03/01/11	9.79	1.35	Sheen	8.44	
12	05/23/11	9.79	2.15	Sheen	7.64	
12	08/29/11	9.79	3.03	0.03	6.78	
12	12/01/11	9.79	2.13	--	7.66	
12	03/01/12	9.79	1.65	Sheen	8.14	
12	05/30/12	9.79	1.63	Sheen	8.16	
12	08/25/12	9.79	2.89	--	6.90	
12	11/07/12	9.79	1.46	--	8.33	
12	02/27/13	9.79	1.43	--	8.36	
12	04/08/13	9.79	0.24	--	9.55	
12	06/21/13	9.79	2.84	--	6.95	Baseline monitoring event
12	07/29/13	9.79	3.95	--	5.84	
12	08/26/13	9.79	1.91	--	7.88	Two-month monitoring event
12	10/02/13	9.79	1.14	--	8.65	
12	01/21/14	9.79	2.11	--	7.68	
12	04/22/14	9.79	0.88	Sheen	8.91	
12	07/15/14	9.79	2.61	--	7.18	
12	03/17/15	9.79	0.07	--	9.72	
12	09/28/15	9.79	2.55	--	7.24	
12	03/30/16	9.79	0.70	--	9.09	Gauged on March 30, 2016
12	10/11/16	9.79	2.18	--	7.61	
12	03/28/17	9.79	0.12	--	9.67	
12	10/10/17	9.79	2.57	--	7.22	
12	03/28/18	9.79	1.44	--	8.35	
12	10/02/18	9.79	2.79	--	7.00	
12	04/02/19	9.79	1.95	--	7.84	
12	10/01/19	9.79	2.09	--	7.70	
13	02/11/02	9.77	5.06	--	4.71	
13	05/20/02	9.77	7.30	--	2.47	
13	08/27/02	9.77	7.15	--	2.62	
13	11/04/02	--	--	--	--	Not Measured-Recently destroyed
13	06/11/03	--	--	--	--	
13						Abandoned

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
14	06/11/03	--	--	--	--	
14					Abandoned	
15	02/11/02	8.69	3.45	--	5.24	Casing Damaged
15	05/20/02	8.69	6.12	--	2.57	Casing Broken
15	08/27/02	8.69	5.94	--	2.75	Casing Broken
15	11/04/02	8.69	6.25	--	2.44	Casing Broken
15	02/18/03	8.69	3.71	--	4.98	Casing Broken
15	06/11/03	--	--	--	--	
15					Abandoned	
16	02/11/02	9.73	4.50	--	5.23	
16	05/20/02	9.73	7.12	--	2.61	
16	08/27/02	9.73	7.14	--	2.59	
16	11/04/02	9.73	7.46	--	2.27	
16	02/18/03	9.73	5.12	--	4.61	
16	06/09/03	9.73	6.51	--	3.22	
16	09/15/03	13.29	7.37	--	5.92	
16	11/18/03	13.29	5.60	--	7.69	
16	02/24/04	13.29	5.46	--	7.83	
16	05/10/04	13.29	6.42	--	6.87	
16	08/24/04	13.29	6.81	--	6.48	
16	12/13/04	13.29	5.94	--	7.35	
16	03/08/05	13.29	6.51	--	6.78	
16	06/06/05	13.29	6.24	--	7.05	
16	09/19/05	13.29	7.30	--	5.99	
16	12/12/05	13.29	6.46	--	6.83	
16	03/13/06	13.29	5.20	--	8.09	
16	06/05/06	13.29	5.76	--	7.53	
16	09/11/06	13.29	7.21	--	6.08	
16	12/11/06	13.29	4.88	--	8.41	
17	02/11/02	11.48	6.39	--	5.09	
17	05/20/02	11.48	8.61	--	2.87	
17	08/27/02	11.48	8.68	--	2.80	
17	11/04/02	11.48	9.06	--	2.42	
17	02/18/03	11.48	6.92	--	4.56	
17	06/09/03	11.48	7.95	--	3.53	
17	09/15/03	15.06	8.89	--	6.17	
17	11/18/03	15.06	8.51	--	6.55	
17	02/24/04	15.06	6.45	--	8.61	
17	05/10/04	15.06	7.90	--	7.16	
17	08/24/04	15.06	8.45	--	6.61	
17	12/13/04	15.06	7.83	--	7.23	
17	03/08/05	15.06	7.81	--	7.25	
17	06/06/05	15.06	7.73	--	7.33	
17	09/19/05	15.06	8.75	--	6.31	
17	12/12/05	15.06	8.03	--	7.03	
17	03/13/06	15.06	6.57	--	8.49	
17	06/05/06	15.06	6.22	--	8.84	
17	09/11/06	15.06	8.68	--	6.38	
17	12/11/06	15.06	6.53	--	8.53	
19	02/11/02	9.13	3.75	--	5.38	
19	05/20/02	9.13	6.10	--	3.03	
19	08/27/02	9.13	6.28	--	2.85	
19	11/04/02	9.13	6.66	--	2.47	
19	02/18/03	9.13	4.33	--	4.80	
19	06/09/03	9.13	5.41	--	3.72	
19	09/15/03	12.74	6.51	--	6.23	
19	11/18/03	12.74	3.67	--	9.07	
19	02/24/04	12.74	4.25	--	8.49	
19	05/10/04	12.74	5.48	--	7.26	
19	08/24/04	12.74	5.87	--	6.87	
19	12/13/04	12.74	5.15	--	7.59	
19	03/08/05	12.74	5.45	--	7.29	
19	06/06/05	12.74	5.24	--	7.50	
19	09/19/05	12.74	6.36	--	6.38	
19	12/12/05	12.74	5.60	--	7.14	
19	03/13/06	12.74	4.02	--	8.72	
19	06/05/06	12.74	4.89	--	7.85	

Appendix D
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Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
19	09/11/06	12.74	6.31	--	6.43	
19	12/11/06	12.74	3.78	--	8.96	
20	02/11/02	8.88	3.15	--	5.73	
20	05/20/02	8.88	5.67	--	3.21	
20	08/27/02	8.88	5.91	--	2.97	
20	11/04/02	8.88	6.32	--	2.56	
20	02/18/03	8.88	3.77	--	5.11	
20	06/09/03	8.88	5.04	--	3.84	
20	09/15/03	12.49	6.16	--	6.33	
20	11/18/03	12.49	5.10	--	7.39	
20	02/24/04	12.49	3.81	--	8.68	
20	05/10/04	12.49	5.12	--	7.37	
20	08/24/04	12.49	5.45	--	7.04	
20	12/13/04	12.49	4.64	--	7.85	
20	03/08/05	12.49	5.11	--	7.38	
20	06/06/05	12.49	4.90	--	7.59	
20	09/19/05	12.49	6.08	--	6.41	
20	12/12/05	12.49	5.32	--	7.17	
20	03/13/06	12.49	3.64	--	8.85	
20	06/05/06	12.49	4.44	--	8.05	
20	09/11/06	12.49	5.98	--	6.51	
20	12/11/06	12.49	3.47	--	9.02	
21	02/11/02	9.42	3.58	--	5.84	
21	05/20/02	9.42	6.18	--	3.24	
21	08/27/02	9.42	6.43	--	2.99	
21	11/04/02	9.42	6.81	--	2.61	
21	02/18/03	9.42	4.18	--	5.24	
21	06/09/03	9.42	5.56	--	3.86	
21	09/15/03	13.04	6.68	--	6.36	
21	11/18/03	13.04	5.03	--	8.01	
21	02/24/04	13.04	4.30	--	8.74	
21	05/10/04	13.04	6.56	--	6.48	
21	08/24/04	13.04	6.04	--	7.00	
21	12/13/04	13.04	5.02	--	8.02	
21	03/08/05	13.04	5.62	--	7.42	
21	06/06/05	13.04	5.43	--	7.61	
21	09/19/05	13.04	6.63	--	6.41	
21	12/12/05	13.04	5.70	--	7.34	
21	03/13/06	13.04	4.19	--	8.85	
21	06/05/06	13.04	4.96	--	8.08	
21	09/11/06	13.04	6.50	--	6.54	
21	12/11/06	13.04	3.99	--	9.05	
22	02/11/02	9.57	3.72	--	5.85	
22	05/20/02	9.57	6.21	--	3.36	
22	08/27/02	9.57	6.55	--	3.02	
22	11/04/02	9.57	6.89	--	2.68	
22	02/18/03	9.57	4.27	--	5.30	
22	06/09/03	9.57	5.60	--	3.97	
22	09/15/03	13.19	6.75	--	6.44	
22	11/18/03	13.19	5.07	--	8.12	
22	02/24/04	13.19	4.39	--	8.80	
22	05/10/04	13.19	5.75	--	7.44	
22	08/24/04	13.19	6.23	--	6.96	
22	12/13/04	13.19	5.04	--	8.15	
22	03/08/05	13.19	5.77	--	7.42	
22	06/06/05	13.19	5.55	--	7.64	
22	09/19/05	13.19	6.75	--	6.44	
22	12/12/05	13.19	5.80	--	7.39	
22	03/13/06	13.19	4.35	--	8.84	
22	06/05/06	13.19	5.04	--	8.15	
22	09/11/06	13.19	6.66	--	6.53	
22	12/11/06	13.19	4.11	--	9.08	
23	02/11/02	8.94	3.51	--	5.43	
23	05/20/02	8.94	5.93	--	3.01	
23	08/27/02	8.94	5.93	--	3.01	
23	11/04/02	8.94	6.29	--	2.65	
23	02/18/03	8.94	4.04	--	4.90	

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 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
23	06/09/03	8.94	5.26	--	3.68	
23	09/15/03	12.55	6.19	--	6.36	
23	11/18/03	12.55	6.11	--	6.44	
23	02/24/04	12.55	4.20	--	8.35	
23	05/10/04	12.55	5.35	--	7.20	
23	08/24/04	12.55	5.78	--	6.77	
23	12/13/04	12.55	4.73	--	7.82	
23	03/08/05	12.55	5.37	--	7.18	
23	06/06/05	12.55	5.16	--	7.39	
23	09/19/05	12.55	6.46	--	6.09	
23	12/12/05	12.55	5.40	--	7.15	
23	03/13/06	12.55	4.03	--	8.52	
23	06/05/06	12.55	4.79	--	7.76	
23	09/11/06	12.55	6.13	--	6.42	
23	12/11/06	12.55	4.01	--	8.54	
24	06/11/03	--	--	--	--	
24					Abandoned	
25	02/11/02	9.48	3.76	--	5.72	
25	05/20/02	9.48	6.19	--	3.29	
25	08/27/02	9.48	6.33	--	3.15	
25	11/04/02	9.48	6.74	--	2.74	Casing Tilted
25	02/18/03	9.48	4.13	--	5.35	Casing Tilted
25	06/11/03	--	--	--	--	
25					Abandoned	
26	02/11/02	9.43	3.70	--	5.73	
26	05/20/02	9.43	--	--	--	Not Measured-Dry
26	08/27/02	9.43	6.02	--	3.41	
26	11/04/02	9.43	5.97	--	3.46	
26	02/18/03	9.43	5.11	--	4.32	
26	06/09/03	9.43	6.02	--	3.41	
26	09/15/03	13.87	6.01	--	7.86	
26	11/18/03	13.87	4.32	--	9.55	
26	02/24/04	13.87	5.14	--	8.73	
26	05/10/04	13.87	6.05	--	7.82	
26	08/24/04	13.87	5.19	--	8.68	
26	12/13/04	13.87	5.99	--	7.88	
26	03/08/05	13.87	6.02	--	7.85	
26	06/06/05	13.87	6.02	--	7.85	
26	09/19/05	13.87	4.51	--	9.36	
26	12/12/05	13.87	6.05	--	7.82	
26	03/13/06	13.87	5.00	--	8.87	
26	06/05/06	13.87	5.78	--	8.09	
26	09/11/06	13.87	7.01	--	6.86	
26	12/11/06	13.87	4.81	--	9.06	
27	02/11/02	9.20	3.57	--	5.63	
27	05/20/02	9.20	6.00	--	3.20	
27	08/27/02	9.20	6.21	--	2.99	
27	11/04/02	9.20	6.63	--	2.57	
27	02/18/03	9.20	4.03	--	5.17	
27	06/09/03	9.01	5.22	--	3.79	
27	09/15/03	12.65	6.36	--	6.29	
27	11/18/03	12.65	5.84	--	6.81	
27	02/24/04	12.65	4.04	--	8.61	
27	05/10/04	12.65	5.31	--	7.34	
27	08/24/04	12.65	5.71	--	6.94	
27	12/13/04	12.65	4.91	--	7.74	
27	03/08/05	12.65	5.28	--	7.37	
27	06/06/05	12.65	5.13	--	7.52	
27	09/19/05	12.65	6.22	--	6.43	
27	12/12/05	12.65	5.40	--	7.25	
27	03/13/06	12.65	3.82	--	8.83	
27	06/05/06	12.65	4.66	--	7.99	
27	09/11/06	12.65	6.16	--	6.49	
27	12/11/06	12.65	3.60	--	9.05	
MW-1	02/11/02	9.37	4.60	--	4.77	
MW-1	05/20/02	9.37	6.75	--	2.62	
MW-1	08/27/02	9.37	6.51	--	2.86	

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-1	11/04/02	9.37	6.90	--	2.47	
MW-1	02/18/03	9.37	5.10	--	4.27	
MW-1	06/09/03	9.37	5.94	--	3.43	
MW-1	09/15/03	13.21	6.72	--	6.49	
MW-1	11/18/03	13.21	5.91	--	7.30	
MW-1	02/24/04	13.21	5.05	--	8.16	
MW-1	05/10/04	13.21	6.06	--	7.15	
MW-1	08/24/04	13.21	6.45	--	6.76	
MW-1	12/13/04	13.21	5.63	--	7.58	
MW-1	03/08/05	13.21	6.09	--	7.12	
MW-1	06/06/05	13.21	6.93	--	6.28	
MW-1	09/19/05	13.21	6.74	--	6.47	
MW-1	12/12/05	13.21	6.16	--	7.05	
MW-1	03/13/06	13.21	4.96	--	8.25	
MW-1	06/05/06	13.21	5.72	--	7.49	
MW-1	09/11/06	13.21	6.72	--	6.49	
MW-1	12/11/06	13.21	5.20	--	8.01	
MW-1	03/26/07	13.21	5.24	--	7.97	
MW-1	06/18/07	13.21	5.98	--	7.23	
MW-1	09/25/07	13.21	6.72	--	6.49	
MW-1	12/10/07	13.21	5.34	--	7.87	
MW-1	03/03/08	13.21	5.70	--	7.51	
MW-1	06/02/08	13.21	6.30	--	6.91	
MW-1	09/04/08	13.21	6.48	--	6.73	
MW-1	12/04/08	13.21	6.33	--	6.88	
MW-1	03/04/09	13.21	--	--	--	Not Measured-Inaccessible
MW-1	06/01/09	13.21	6.00	--	7.21	
MW-1	09/21/09	13.21	6.75	--	6.46	
MW-1	11/16/09	13.21	5.62	--	7.59	
MW-1	03/08/10	13.21	5.05	--	8.16	
MW-1	06/07/10	13.21	5.48	--	7.73	
MW-1	09/09/10	13.21	6.55	--	6.66	
MW-1	11/15/10	13.21	5.71	--	7.50	
MW-1	03/01/11	13.21	4.97	--	8.24	
MW-1	05/23/11	13.21	5.04	--	8.17	
MW-1	08/29/11	13.21	6.35	--	6.86	
MW-1	12/01/11	13.21	5.80	--	7.41	
MW-1	03/01/12	13.21	5.59	--	7.62	
MW-1	05/30/12	13.21	5.55	--	7.66	
MW-1	08/25/12	13.21	6.25	--	6.96	
MW-1	11/07/12	13.21	5.58	--	7.63	
MW-1	02/27/13	13.21	5.24	--	7.97	
MW-1	04/08/13	13.21	5.12	--	8.09	
MW-1	07/29/13	13.21	6.19	--	7.02	
MW-1	10/02/13	13.21	5.83	--	7.38	
MW-1	01/21/14	13.21	5.96	--	7.25	
MW-1	04/22/14	13.21	5.05	--	8.16	
MW-1	07/15/14	13.21	5.90	--	7.31	
MW-1	03/17/15	13.21	4.73	--	8.48	
MW-1	09/28/15	13.21	6.30	--	6.91	
MW-1	03/29/16	13.21	4.18	--	9.03	
MW-1	10/11/16	13.21	6.35	--	6.86	
MW-1	03/28/17	13.21	3.67	--	9.54	
MW-1	10/10/17	13.21	6.03	--	7.18	
MW-1	03/28/18	13.21	5.08	--	8.13	
MW-1	10/02/18	13.21	6.44	--	6.77	
MW-1	04/02/19	13.21	6.35	--	6.86	
MW-1	10/01/19	13.21	6.21	--	7.00	
MW-2	02/11/02	11.33	6.13	--	5.20	
MW-2	05/20/02	11.33	8.40	--	2.93	
MW-2	08/27/02	11.33	8.50	--	2.83	
MW-2	11/04/02	11.33	8.85	--	2.48	
MW-2	02/18/03	11.33	6.10	--	5.23	
MW-2	06/09/03	11.33	7.68	--	3.65	
MW-2	09/15/03	15.22	8.71	--	6.51	
MW-2	11/18/03	15.22	7.60	--	7.62	
MW-2	02/24/04	15.22	6.56	--	8.66	

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Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-2	05/10/04	15.22	7.78	--	7.44	
MW-2	08/24/04	15.22	8.33	--	6.89	
MW-2	12/13/04	15.22	7.69	--	7.53	
MW-2	03/08/05	15.22	7.72	--	7.50	
MW-2	06/06/05	15.22	7.61	--	7.61	
MW-2	09/19/05	15.22	8.58	--	6.64	
MW-2	12/12/05	15.22	7.86	--	7.36	
MW-2	03/13/06	15.22	6.38	--	8.84	
MW-2	06/05/06	15.22	7.39	--	7.83	
MW-2	09/11/06	15.22	8.50	--	6.72	
MW-2	12/11/06	15.22	6.37	--	8.85	
MW-2	03/26/07	15.22	6.71	--	8.51	
MW-2	06/18/07	15.22	7.68	--	7.54	
MW-2	09/24/07	15.22	8.84	--	6.38	
MW-2	12/10/07	15.22	6.85	--	8.37	
MW-2	03/03/08	15.22	7.14	--	8.08	
MW-2	06/02/08	15.22	7.91	--	7.31	
MW-2	09/04/08	15.22	8.33	--	6.89	
MW-2	12/04/08	15.22	8.01	--	7.21	
MW-2	03/04/09	15.22	7.43	--	7.79	
MW-2	06/01/09	15.22	7.54	--	7.68	
MW-2	09/21/09	15.22	8.52	--	6.70	
MW-2	11/16/09	15.22	7.28	--	7.94	
MW-2	03/08/10	15.22	6.42	--	8.80	
MW-2	06/07/10	15.22	7.00	--	8.22	
MW-2	09/09/10	15.22	8.26	--	6.96	
MW-2	11/15/10	15.22	7.21	--	8.01	
MW-2	03/01/11	15.22	6.26	--	8.96	
MW-2	05/23/11	15.22	6.39	--	8.83	
MW-2	08/29/11	15.22	8.01	--	7.21	
MW-2	12/01/11	15.22	7.56	--	7.66	
MW-2	03/01/12	15.22	7.03	--	8.19	
MW-2	05/30/12	15.22	6.97	--	8.25	
MW-2	08/25/12	15.22	7.88	--	7.34	
MW-2	11/07/12	15.22	7.34	--	7.88	
MW-2	02/27/13	15.22	6.59	--	8.63	
MW-2	04/08/13	15.22	6.36	--	8.86	
MW-2	07/29/13	15.22	7.82	--	7.40	
MW-2	10/02/13	15.22	7.44	--	7.78	
MW-2	01/21/14	15.22	7.55	--	7.67	
MW-2	04/22/14	15.22	6.21	--	9.01	
MW-2	07/15/14	15.22	7.47	--	7.75	
MW-2	03/17/15	15.22	5.35	--	9.87	
MW-2	09/28/15	15.22	7.99	--	7.23	
MW-2	03/29/16	15.22	5.29	--	9.93	
MW-2	10/11/16	15.22	8.20	--	7.02	
MW-2	03/28/17	15.22	4.51	--	10.71	
MW-2	10/10/17	15.22	8.12	--	7.1	
MW-2	03/28/18	15.22	6.47	--	8.75	
MW-2	10/02/18	15.22	8.29	--	6.93	
MW-2	04/02/19	15.22	6.81	--	8.41	
MW-2	10/01/19	15.22	8.08	--	7.14	
MW-3	02/11/02	7.49	1.82	--	5.67	
MW-3	05/20/02	7.49	4.27	--	3.22	
MW-3	08/27/02	7.49	4.50	--	2.99	
MW-3	11/04/02	7.49	4.92	--	2.57	
MW-3	02/18/03	7.49	2.38	--	5.11	
MW-3	06/09/03	7.49	3.67	--	3.82	
MW-3	09/15/03	11.39	4.81	--	6.58	
MW-3	11/18/03	11.39	2.97	--	8.42	
MW-3	02/24/04	11.39	2.45	--	8.94	
MW-3	05/10/04	11.39	3.64	--	7.75	
MW-3	08/24/04	11.39	4.14	--	7.25	
MW-3	12/13/04	11.39	3.22	--	8.17	
MW-3	03/08/05	11.39	3.70	--	7.69	
MW-3	06/06/05	11.39	3.51	--	7.88	
MW-3	09/19/05	11.39	4.65	--	6.74	

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Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-3	12/12/05	11.39	3.81	--	7.58	
MW-3	03/13/06	11.39	2.43	--	8.96	
MW-3	06/05/06	11.39	3.05	--	8.34	
MW-3	09/11/06	11.39	4.58	--	6.81	
MW-3	12/11/06	11.39	2.00	--	9.39	
MW-3	03/26/07	11.39	2.46	--	8.93	
MW-3	06/18/07	11.39	3.81	--	7.58	
MW-3	09/24/07	11.39	4.58	--	6.81	
MW-3	12/10/07	11.39	2.53	--	8.86	
MW-3	03/03/08	11.39	3.10	--	8.29	
MW-3	06/02/08	11.39	3.88	--	7.51	
MW-3	09/04/08	11.39	4.27	--	7.12	
MW-3	12/04/08	11.39	3.99	--	7.40	
MW-3	03/04/09	11.39	3.28	--	8.11	
MW-3	06/01/09	11.39	3.48	--	7.91	
MW-3	09/21/09	11.39	4.51	--	6.88	
MW-3	11/16/09	11.39	2.97	--	8.42	
MW-3	03/08/10	11.39	2.32	--	9.07	
MW-3	06/07/10	11.39	2.86	--	8.53	
MW-3	09/09/10	11.39	4.23	--	7.16	
MW-3	11/15/10	11.39	2.99	--	8.40	
MW-3	03/01/11	11.39	1.86	--	9.53	
MW-3	05/23/11	11.39	2.03	--	9.36	
MW-3	08/29/11	11.39	4.02	--	7.37	
MW-3	12/01/11	11.39	3.27	--	8.12	
MW-3	03/01/12	11.39	2.99	--	8.40	
MW-3	05/30/12	11.39	2.93	--	8.46	
MW-3	08/25/12	11.39	3.90	--	7.49	
MW-3	11/07/12	11.39	3.10	--	8.29	
MW-3	02/27/13	11.39	2.23	--	9.16	
MW-3	04/08/13	11.39	2.04	--	9.35	
MW-3	07/29/13	11.39	3.78	--	7.61	
MW-3	10/02/13	11.39	3.06	--	8.33	
MW-3	01/21/14	11.39	3.43	--	7.96	
MW-3	04/22/14	11.39	2.06	--	9.33	
MW-3	07/15/14	11.39	3.51	--	7.88	
MW-3	03/17/15	11.39	1.30	--	10.09	
MW-3	09/28/15	11.39	4.02	--	7.37	
MW-3	03/29/16	11.39	1.47	--	9.92	
MW-3	10/11/16	11.39	4.01	--	7.38	
MW-3	03/28/17	11.39	0.65	--	10.74	
MW-3	10/10/17	11.39	4.09	--	7.30	
MW-3	03/28/18	11.39	2.44	--	8.95	
MW-3	10/02/18	11.39	4.48	--	6.91	
MW-3	04/02/19	11.39	2.88	--	8.51	
MW-3	10/01/19	11.39	4.00	--	7.39	
MW-4	02/11/02	10.44	5.24	--	5.20	
MW-4	05/20/02	10.44	7.60	--	2.84	
MW-4	08/27/02	10.44	7.40	--	3.04	
MW-4	11/04/02	10.44	7.90	0.15	2.66	
MW-4	02/18/03	10.44	5.79	--	4.65	
MW-4	06/09/03	10.44	6.81	--	3.63	
MW-4	09/15/03	14.69	7.70	0.01	7.00	
MW-4	11/18/03	14.69	6.71	Sheen	7.98	
MW-4	02/24/04	14.69	5.82	Sheen	8.87	
MW-4	05/10/04	14.69	6.93	Sheen	7.76	
MW-4	08/24/04	14.69	7.24	--	7.45	
MW-4	12/13/04	14.69	6.45	Sheen	8.24	
MW-4	03/08/05	14.69	6.94	--	7.75	
MW-4	06/06/05	14.69	6.71	--	7.98	
MW-4	09/19/05	14.69	7.67	--	7.02	
MW-4	12/12/05	14.69	6.97	--	7.72	
MW-4	03/13/06	14.69	5.77	--	8.92	
MW-4	06/05/06	14.69	6.42	--	8.27	
MW-4	09/11/06	14.69	7.61	--	7.08	
MW-4	12/11/06	14.69	5.81	--	8.88	
MW-4	03/26/07	14.69	5.96	--	8.73	

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Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-4	06/18/07	14.69	6.99	--	7.70	
MW-4	09/25/07	14.69	7.46	--	7.23	
MW-4	12/10/07	14.69	5.93	--	8.76	
MW-4	03/03/08	14.69	6.44	--	8.25	
MW-4	06/02/08	14.69	7.37	--	7.32	
MW-4	09/04/08	14.69	7.20	--	7.49	
MW-4	12/04/08	14.69	7.77	--	6.92	
MW-4	03/04/09	14.69	6.68	--	8.01	
MW-4	06/01/09	14.69	6.78	--	7.91	
MW-4	09/21/09	14.69	7.56	--	7.13	
MW-4	11/16/09	14.69	6.34	--	8.35	
MW-4	03/08/10	14.69	5.86	--	8.83	
MW-4	06/07/10	14.69	6.27	--	8.42	
MW-4	09/09/10	14.69	7.40	--	7.29	
MW-4	11/15/10	14.69	6.39	--	8.30	
MW-4	03/01/11	14.69	5.70	--	8.99	
MW-4	05/23/11	14.69	5.74	--	8.95	
MW-4	08/29/11	14.69	7.25	--	7.44	
MW-4	12/01/11	14.69	6.52	--	8.17	
MW-4	03/01/12	14.69	6.38	--	8.31	
MW-4	05/30/12	14.69	6.33	--	8.36	
MW-4	08/25/12	14.69	7.05	--	7.64	
MW-4	11/07/12	14.69	6.31	--	8.38	
MW-4	02/27/13	14.69	6.02	--	8.67	
MW-4	04/08/13	14.69	5.74	--	8.95	
MW-4	07/29/13	14.69	7.02	--	7.67	
MW-4	10/02/13	14.69	6.53	--	8.16	
MW-4	01/21/14	14.69	6.75	--	7.94	
MW-4	04/22/14	14.69	5.84	--	8.85	
MW-4	07/15/14	14.69	6.85	--	7.84	
MW-4	03/17/15	14.69	5.21	--	9.48	
MW-4	09/28/15	14.69	7.05	--	7.64	
MW-4	03/29/16	14.69	4.31	--	10.38	
MW-4	10/11/16	14.69	7.21	--	7.48	
MW-4	03/28/17	14.69	4.55	--	10.14	
MW-4	10/10/17	14.69	7.16	--	7.53	
MW-4	03/28/18	14.69	5.93	--	8.76	
MW-4	10/02/18	14.69	7.40	--	7.29	
MW-4	04/02/19	14.69	6.26	--	8.43	
MW-4	10/01/19	14.69	7.14	--	7.55	
MW-5	02/11/02	7.10	1.50	--	5.60	
MW-5	05/20/02	7.10	4.06	--	3.04	
MW-5	08/27/02	7.10	4.23	--	2.87	
MW-5	11/04/02	7.10	4.63	--	2.47	
MW-5	02/18/03	7.10	1.98	--	5.12	
MW-5	06/09/03	7.10	3.47	--	3.63	
MW-5	09/15/03	11.13	4.49	--	6.64	
MW-5	11/18/03	11.13	2.81	--	8.32	
MW-5	02/24/04	11.13	2.11	--	9.02	
MW-5	05/10/04	11.13	3.50	--	7.63	
MW-5	08/24/04	11.13	3.71	--	7.42	
MW-5	12/13/04	11.13	2.75	--	8.38	
MW-5	03/08/05	11.13	3.53	--	7.60	
MW-5	06/06/05	11.13	3.22	--	7.91	
MW-5	09/19/05	11.13	4.33	--	6.80	
MW-5	12/12/05	11.13	3.43	--	7.70	
MW-5	03/13/06	11.13	2.10	--	9.03	
MW-5	06/05/06	11.13	2.59	--	8.54	
MW-5	09/11/06	11.13	4.33	--	6.80	
MW-5	12/11/06	11.13	1.70	--	9.43	
MW-5	03/26/07	11.13	2.22	--	8.91	
MW-5	06/18/07	11.13	--	--	--	Not Measured-No Access due to construction
MW-5	09/24/07	11.13	4.28	--	6.85	
MW-5	12/10/07	11.13	2.06	--	9.07	
MW-5	03/03/08	11.13	2.81	--	8.32	
MW-5	06/02/08	11.13	3.36	--	7.77	
MW-5	09/04/08	11.13	3.91	--	7.22	

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Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-5	12/04/08	11.13	3.64	--	7.49	
MW-5	03/04/09	11.13	2.98	--	8.15	
MW-5	06/01/09	11.13	3.21	--	7.92	
MW-5	09/21/09	11.13	4.23	--	6.90	
MW-5	11/16/09	11.13	2.50	--	8.63	
MW-5	03/08/10	11.13	2.11	--	9.02	
MW-5	06/07/10	11.13	2.55	--	8.58	
MW-5	09/09/10	11.13	3.93	--	7.20	
MW-5	11/15/10	11.13	2.55	--	8.58	
MW-5	03/01/11	11.13	1.63	--	9.50	
MW-5	05/23/11	11.13	2.00	--	9.13	
MW-5	08/29/11	11.13	3.82	--	7.31	
MW-5	12/01/11	11.13	2.80	--	8.33	
MW-5	03/01/12	11.13	2.66	--	8.47	
MW-5	05/30/12	11.13	2.73	--	8.40	
MW-5	08/25/12	11.13	3.54	--	7.59	
MW-5	11/07/12	11.13	2.56	--	8.57	
MW-5	02/27/13	11.13	2.20	--	8.93	
MW-5	04/08/13	11.13	1.69	--	9.44	
MW-5	07/29/13	11.13	3.41	--	7.72	
MW-5	10/02/13	11.13	2.51	--	8.62	
MW-5	01/21/14	11.13	3.11	--	8.02	
MW-5	04/22/14	11.13	1.79	--	9.34	
MW-5	07/15/14	11.13	3.29	--	7.84	
MW-5	03/17/15	11.13	1.04	--	10.09	
MW-5	09/28/15	11.13	3.65	--	7.48	
MW-5	03/29/16	11.13	1.26	--	9.87	
MW-5	10/11/16	11.13	3.56	--	7.57	
MW-5	03/28/17	11.13	0.96	--	10.17	
MW-5	10/10/17	11.13	3.70	--	7.43	Biofilm
MW-5	03/28/18	11.13	2.31	--	8.82	
MW-5	10/02/18	11.13	3.88	--	7.25	
MW-5	04/02/19	11.13	2.71	--	8.42	
MW-5	10/01/19	11.13	3.53	--	7.60	
MW-6	02/11/02	11.15	6.35	--	4.8	
MW-6	05/20/02	11.15	8.48	--	2.67	
MW-6	08/27/02	11.15	8.45	--	2.7	
MW-6	11/04/02	11.15	8.80	--	2.35	
MW-6	02/18/03	11.15	6.85	--	4.30	
MW-6	06/09/03	11.15	7.74	--	3.41	
MW-6	09/15/03	15.17	8.65	--	6.52	
MW-6	11/18/03	15.17	7.60	--	7.57	
MW-6	02/24/04	15.17	6.61	--	8.56	
MW-6	05/10/04	15.17	7.76	--	7.41	
MW-6	08/24/04	15.17	8.28	--	6.89	
MW-6	12/13/04	15.17	7.67	--	7.50	
MW-6	03/08/05	15.17	7.70	--	7.47	
MW-6	06/06/05	15.17	7.55	--	7.62	
MW-6	09/19/05	15.17	8.48	--	6.69	
MW-6	12/12/05	15.17	7.89	--	7.28	
MW-6	03/13/06	15.17	6.46	--	8.71	
MW-6	06/05/06	15.17	7.25	--	7.92	
MW-6	09/11/06	15.17	8.43	--	6.74	
MW-6	12/11/06	15.17	6.50	--	8.67	
MW-6	03/26/07	15.17	6.61	--	8.56	
MW-6	06/18/07	15.17	7.76	--	7.41	
MW-6	09/24/07	15.17	8.43	--	6.74	
MW-6	12/10/07	15.17	6.93	--	8.24	
MW-6	03/03/08	15.17	7.09	--	8.08	
MW-6	06/02/08	15.17	7.88	--	7.29	
MW-6	09/04/08	15.17	8.19	--	6.98	
MW-6	12/04/08	15.17	7.95	--	7.22	
MW-6	03/04/09	15.17	7.41	--	7.76	
MW-6	06/01/09	15.17	7.54	--	7.63	
MW-6	09/21/09	15.17	8.42	--	6.75	
MW-6	11/16/09	15.17	7.30	--	7.87	
MW-6	03/08/10	15.17	6.45	--	8.72	

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-6	06/07/10	15.17	7.09	--	8.08	
MW-6	09/09/10	15.17	8.10	--	7.07	
MW-6	11/15/10	15.17	7.21	--	7.96	
MW-6	03/01/11	15.17	6.24	--	8.93	
MW-6	05/23/11	15.17	6.42	--	8.75	
MW-6	08/29/11	15.17	7.92	--	7.25	
MW-6	12/01/11	15.17	7.45	--	7.72	
MW-6	03/01/12	15.17	6.97	--	8.20	
MW-6	05/30/12	15.17	6.91	--	8.26	
MW-6	08/25/12	15.17	7.09	--	8.08	
MW-6	11/07/12	15.17	7.12	--	8.05	
MW-6	02/27/13	15.17	6.59	--	8.58	
MW-6	04/08/13	15.17	6.22	--	8.95	
MW-6	07/29/13	15.17	7.34	--	7.83	
MW-6	10/02/13	15.17	6.98	--	8.19	
MW-6	01/21/14	15.17	7.21	--	7.96	
MW-6	04/22/14	15.17	6.71	--	8.46	
MW-6	07/15/14	15.17	7.39	--	7.78	
MW-6	03/17/15	15.17	5.72	--	9.45	
MW-6	09/28/15	15.17	7.68	--	7.49	
MW-6	03/29/16	15.17	5.38	--	9.79	
MW-6	10/11/16	15.17	7.94	--	7.23	
MW-6	03/28/17	15.17	4.97	--	10.20	
MW-6	10/10/17	15.17	7.89	--	7.28	
MW-6	03/28/18	15.17	6.93	--	8.24	
MW-6	10/02/18	15.17	8.00	--	7.17	
MW-6	04/02/19	15.17	6.77	--	8.40	
MW-6	10/01/19	15.17	7.81	--	7.36	
MW-7	02/11/02	6.78	1.49	--	5.29	
MW-7	05/20/02	6.78	3.91	--	2.87	
MW-7	08/27/02	6.78	4.03	--	2.75	
MW-7	11/04/02	6.78	4.44	--	2.34	
MW-7	02/18/03	6.78	1.82	Sheen	4.96	
MW-7	06/09/03	6.78	3.29	--	3.49	
MW-7	09/15/03	10.62	4.30	--	6.32	
MW-7	11/18/03	10.62	2.83	--	7.79	
MW-7	02/24/04	10.62	2.16	--	8.46	
MW-7	05/10/04	10.62	3.32	--	7.30	
MW-7	08/24/04	10.62	3.31	--	7.31	
MW-7	12/13/04	10.62	2.27	--	8.35	
MW-7	03/08/05	10.62	3.23	--	7.39	
MW-7	06/06/05	10.62	3.03	--	7.59	
MW-7	09/19/05	10.62	4.16	Sheen	6.46	
MW-7	12/12/05	10.62	3.17	--	7.45	
MW-7	03/13/06	10.62	1.88	--	8.74	
MW-7	06/05/06	10.62	2.34	--	8.28	
MW-7	09/11/06	10.62	4.10	--	6.52	
MW-7	12/11/06	10.62	1.72	--	8.90	
MW-7	03/26/07	10.62	2.00	--	8.62	
MW-7	06/18/07	10.62	3.34	--	7.28	
MW-7	09/24/07	10.62	4.00	--	6.62	
MW-7	12/10/07	10.62	1.12	Sheen	9.50	
MW-7	03/03/08	10.62	2.49	Sheen	8.13	
MW-7	06/02/08	10.62	3.41	Sheen	7.21	
MW-7	09/04/08	10.62	3.60	--	7.02	
MW-7	12/04/08	10.62	3.36	--	7.26	
MW-7	03/04/09	10.62	2.90	--	7.72	
MW-7	06/01/09	10.62	3.08	Sheen	7.54	
MW-7	09/21/09	10.62	1.91	--	8.71	
MW-7	11/16/09	10.62	2.54	Sheen	8.08	
MW-7	03/08/10	10.62	2.31	--	8.31	
MW-7	06/07/10	10.62	2.67	--	7.95	
MW-7	09/09/10	10.62	3.79	--	6.83	
MW-7	11/15/10	10.62	2.58	--	8.04	
MW-7	03/01/11	10.62	2.51	--	8.11	
MW-7	05/23/11	10.62	2.24	--	8.38	
MW-7	08/29/11	10.62	3.87	--	6.75	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-7	12/01/11	10.62	2.67	--	7.95	
MW-7	03/01/12	10.62	2.80	--	7.82	
MW-7	05/30/12	10.62	2.82	--	7.80	
MW-7	08/25/12	10.62	3.35	--	7.27	
MW-7	11/07/12	10.62	2.23	--	8.39	
MW-7	02/27/13	10.62	2.33	--	8.29	
MW-7	04/08/13	10.62	1.88	--	8.74	
MW-7	06/21/13	10.62	3.10	--	7.52	Baseline monitoring event
MW-7	07/29/13	10.62	3.16	--	7.46	
MW-7	08/26/13	10.62	2.82	--	7.80	Two-month monitoring event
MW-7	10/02/13	10.62	2.08	--	8.54	
MW-7	01/21/14	10.62	2.78	--	7.84	
MW-7	04/22/14	10.62	1.45	--	9.17	
MW-7	07/15/14	10.62	3.02	--	7.60	
MW-7	03/17/15	10.62	0.76	--	9.86	
MW-7	09/28/15	10.62	3.59	--	7.03	
MW-7	03/29/16	10.62	1.10	--	9.52	
MW-7	10/11/16	10.62	2.95	--	7.67	
MW-7	03/28/17	10.62	0.70	--	9.92	
MW-7	10/10/17	10.62	3.49	--	7.13	
MW-7	03/28/18	10.62	2.06	--	8.56	
MW-7	10/02/18	10.62	3.50	--	7.12	
MW-7	04/02/19	10.62	2.52	--	8.10	
MW-7	10/01/19	10.62	3.18	--	7.44	
MW-8	02/11/02	6.42	1.38	--	5.04	
MW-8	05/20/02	6.42	3.87	0.01	2.56	
MW-8	08/27/02	6.42	5.83	--	0.59	
MW-8	11/04/02	6.42	4.23	--	2.19	
MW-8	02/18/03	6.42	1.37	--	5.05	
MW-8	06/09/03	6.42	3.33	--	3.09	
MW-8	09/15/03	10.63	4.10	--	6.53	
MW-8	11/18/03	10.63	2.25	--	8.38	
MW-8	02/24/04	10.63	2.15	--	8.48	
MW-8	05/10/04	10.63	3.37	--	7.26	
MW-8	08/24/04	10.63	3.51	--	7.12	
MW-8	12/13/04	10.63	2.40	--	8.23	
MW-8	03/08/05	10.63	3.25	--	7.38	
MW-8	06/06/05	10.63	3.01	--	7.62	
MW-8	09/19/05	10.63	4.05	--	6.58	
MW-8	12/12/05	10.63	3.20	--	7.43	
MW-8	03/13/06	10.63	2.22	--	8.41	
MW-8	06/05/06	10.63	2.59	--	8.04	
MW-8	09/11/06	10.63	3.96	--	6.67	
MW-8	12/11/06	10.63	1.81	--	8.82	
MW-8	03/26/07	10.63	4.01	--	6.62	
MW-8	06/18/07	10.63	4.55	--	6.08	
MW-8	09/24/07	10.63	5.05	--	5.58	
MW-8	12/10/07	10.63	4.18	--	6.45	
MW-8	03/03/08	10.63	4.25	--	6.38	
MW-8	06/02/08	10.63	4.65	--	5.98	
MW-8	09/04/08	10.63	4.69	--	5.94	
MW-8	12/04/08	10.63	--	--	--	Not Measured-Inaccessible
MW-8	03/04/09	10.63	3.36	--	7.27	
MW-8	06/01/09	10.63	3.67	--	6.96	
MW-8	09/21/09	10.63	4.42	--	6.21	
MW-8	11/16/09	10.63	2.85	--	7.78	
MW-8	03/08/10	10.63	2.65	--	7.98	
MW-8	06/07/10	10.63	3.10	--	7.53	
MW-8	09/09/10	10.63	4.29	--	6.34	
MW-8	11/15/10	10.63	3.12	--	7.51	
MW-8	03/01/11	10.63	2.22	--	8.41	
MW-8	05/23/11	10.63	2.76	--	7.87	
MW-8	08/29/11	10.63	4.22	--	6.41	
MW-8	12/01/11	10.63	3.11	--	7.52	
MW-8	03/01/12	10.63	3.18	--	7.45	
MW-8	05/30/12	10.63	3.27	--	7.36	
MW-8	08/25/12	10.63	4.02	--	6.61	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-8	11/07/12	10.63	2.93	--	7.70	
MW-8	02/27/13	10.63	2.98	--	7.65	
MW-8	04/08/13	10.63	2.41	--	8.22	
MW-8	07/29/13	10.63	3.98	--	6.65	
MW-8	10/02/13	10.63	2.86	--	7.77	
MW-8	01/21/14	10.63	3.56	--	7.07	
MW-8	04/22/14	10.63	2.68	--	7.95	
MW-8	07/15/14	10.63	3.83	--	6.80	
MW-8	03/17/15	10.63	1.62	--	9.01	
MW-8	09/28/15	10.63	3.99	--	6.64	
MW-8	03/29/16	10.63	1.95	--	8.68	
MW-8	10/11/16	10.63	4.05	--	6.58	
MW-8	03/28/17	10.63	1.55	--	9.08	
MW-8	10/10/17	10.63	4.23	--	6.40	
MW-8	03/28/18	10.63	3.05	--	7.58	
MW-8	10/02/18	10.63	4.29	--	6.34	
MW-8	04/02/19	10.63	3.36	--	7.27	
MW-8	10/01/19	10.63	4.06	--	6.57	
MW-9	02/11/02	6.14	2.03	0.02	4.13	
MW-9	05/20/02	6.14	4.16	0.01	1.99	
MW-9	08/27/02	6.14	5.85	0.01	0.30	
MW-9	11/04/02	6.14	4.07	0.01	2.08	
MW-9	02/18/03	6.14	2.35	0.01	3.8	
MW-9	06/09/03	6.14	3.53	--	2.61	
MW-9	09/15/03	9.75	3.99	Sheen	5.76	
MW-9	11/18/03	9.75	2.95	Sheen	6.80	
MW-9	02/24/04	9.75	2.41	Sheen	7.34	
MW-9	05/10/04	9.75	3.36	--	6.39	
MW-9	08/24/04	9.75	3.46	--	6.29	
MW-9	12/13/04	9.75	2.73	--	7.02	
MW-9	03/08/05	9.75	3.24	--	6.51	
MW-9	06/06/05	9.75	3.13	--	6.62	
MW-9	09/19/05	9.75	3.91	--	5.84	
MW-9	12/12/05	9.75	3.27	--	6.48	
MW-9	03/13/06	9.75	2.30	--	7.45	
MW-9	06/05/06	9.75	2.74	--	7.01	
MW-9	09/11/06	9.75	3.85	--	5.90	
MW-9	12/11/06	9.75	2.09	--	7.66	
MW-9	03/26/07	9.75	2.44	--	7.31	
MW-9	06/18/07	9.75	2.44	--	7.31	
MW-9	09/24/07	9.75	3.88	--	5.87	
MW-9	12/10/07	9.75	2.24	Sheen	7.51	
MW-9	03/03/08	9.75	2.82	Sheen	6.93	
MW-9	06/02/08	9.75	3.52	--	6.23	
MW-9	09/04/08	9.75	3.54	--	6.21	
MW-9	12/04/08	9.75	3.34	--	6.41	
MW-9	03/04/09	9.75	2.89	--	6.86	
MW-9	06/01/09	9.75	3.19	--	6.56	
MW-9	09/21/09	9.75	3.76	Sheen	5.99	
MW-9	11/16/09	9.75	2.63	--	7.12	
MW-9	03/08/10	9.75	2.31	Sheen	7.44	
MW-9	06/07/10	9.75	2.72	Sheen	7.03	
MW-9	09/09/10	9.75	3.69	Sheen	6.06	
MW-9	11/15/10	9.75	2.71	Sheen	7.04	
MW-9	03/01/11	9.75	2.39	Sheen	7.36	
MW-9	05/23/11	9.75	2.58	Sheen	7.17	
MW-9	08/29/11	9.75	3.57	--	6.18	
MW-9	12/01/11	9.75	2.90	--	6.85	
MW-9	03/01/12	9.75	2.96	--	6.79	
MW-9	05/30/12	9.75	2.66	--	7.09	
MW-9	08/25/12	9.75	3.28	--	6.47	
MW-9	11/07/12	9.75	2.49	--	7.26	
MW-9	02/27/13	9.75	2.71	--	7.04	
MW-9	04/08/13	9.75	2.02	--	7.73	
MW-9	06/21/13	9.75	3.01	--	6.74	Baseline monitoring event
MW-9	07/29/13	9.75	3.19	--	6.56	
MW-9	08/26/13	9.75	3.11	--	6.64	Two-month monitoring event

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-9	10/02/13	9.75	2.40	--	7.35	
MW-9	01/21/14	9.75	2.85	--	6.90	
MW-9	04/22/14	9.75	2.07	--	7.68	
MW-9	07/15/14	9.75	3.06	--	6.69	
MW-9	03/17/15	9.75	0.87	--	8.88	
MW-9	09/28/15	9.75	3.20	--	6.55	
MW-9	03/29/16	9.75	1.28	--	8.47	
MW-9	10/11/16	9.75	3.29	--	6.46	
MW-9	03/28/17	9.75	1.09	--	8.66	
MW-9	10/10/17	9.75	3.39	--	6.36	
MW-9	03/28/18	9.75	2.40	--	7.35	
MW-9	10/02/18	9.75	3.49	--	6.26	
MW-9	04/02/19	9.75	2.60	--	7.15	
MW-9	10/01/19	9.75	3.24	--	6.51	
MW-10D	03/27/01	--	--	--	--	Not Measured-Damaged
MW-10D	09/24/07	9.75	3.88	--	5.87	
MW-10D						Destroyed during construction activities in 2000
MW-11D	02/11/02	6.81	3.75	--	3.06	
MW-11D	05/20/02	6.81	5.27	0.02	1.56	
MW-11D	08/27/02	6.81	4.70	0.01	2.12	
MW-11D	11/04/02	6.81	4.93	--	1.88	
MW-11D	02/18/03	6.81	3.59	--	3.22	
MW-11D	06/09/03	6.81	4.55	--	2.26	
MW-11D	09/15/03	10.78	4.91	--	5.87	
MW-11D	11/18/03	10.78	4.28	--	6.50	
MW-11D	02/24/04	10.78	3.71	--	7.07	
MW-11D	05/10/04	10.78	4.35	--	6.43	
MW-11D	08/24/04	10.78	4.13	--	6.65	
MW-11D	12/13/04	10.78	4.26	--	6.52	
MW-11D	03/08/05	10.78	4.58	--	6.20	
MW-11D	06/06/05	10.78	4.43	--	6.35	
MW-11D	09/19/05	10.78	4.89	--	5.89	
MW-11D	12/12/05	10.78	4.64	--	6.14	
MW-11D	03/13/06	10.78	3.84	--	6.94	
MW-11D	06/05/06	10.78	4.31	--	6.47	
MW-11D	09/11/06	10.78	4.91	--	5.87	
MW-11D	12/11/06	10.78	3.63	--	7.15	
MW-12	02/11/02	--	--	--	--	
MW-12						Destroyed during construction activities
MW-12R	02/11/02	11.15	6.12	--	5.03	
MW-12R	05/20/02	11.15	8.36	--	2.79	
MW-12R	08/27/02	11.15	8.19	--	2.96	
MW-12R	11/04/02	11.15	8.56	--	2.59	
MW-12R	02/18/03	11.15	7.85	--	3.30	
MW-12R	06/09/03	11.15	7.67	--	3.48	
MW-12R	09/15/03	15.47	8.45	--	7.02	
MW-12R	11/18/03	15.47	7.87	--	7.60	
MW-12R	02/24/04	15.47	6.98	--	8.49	
MW-12R	05/10/04	15.47	7.79	--	7.68	
MW-12R	08/24/04	15.47	8.11	--	7.36	
MW-12R	12/13/04	15.47	7.54	--	7.93	
MW-12R	03/08/05	15.47	7.93	--	7.54	
MW-12R	06/06/05	15.47	6.41	--	9.06	
MW-12R	09/19/05	15.47	8.41	--	7.06	
MW-12R	12/12/05	15.47	7.92	--	7.55	
MW-12R	03/13/06	15.47	6.85	--	8.62	
MW-12R	06/05/06	15.47	7.43	--	8.04	
MW-12R	09/11/06	15.47	8.39	--	7.08	
MW-12R	12/11/06	15.47	6.95	--	8.52	
MW-12R	03/26/07	15.47	7.02	--	8.45	
MW-12R	06/18/07	15.47	7.84	--	7.63	
MW-12R	09/25/07	15.47	8.38	--	7.09	
MW-12R	12/10/07	15.47	7.02	--	8.45	
MW-12R	03/03/08	15.47	7.11	--	8.36	
MW-12R	06/02/08	15.47	7.98	--	7.49	
MW-12R	09/04/08	15.47	8.13	--	7.34	
MW-12R	12/04/08	15.47	7.98	--	7.49	
MW-12R	03/04/09	15.47	7.54	--	7.93	

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-12R	06/01/09	15.47	7.71	--	7.76	
MW-12R	09/21/09	15.47	8.39	--	7.08	
MW-12R	11/16/09	15.47	7.40	--	8.07	
MW-12R	03/08/10	15.47	6.86	--	8.61	
MW-12R	06/07/10	15.47	7.23	--	8.24	
MW-12R	09/09/10	15.47	8.22	--	7.25	
MW-12R	11/15/10	15.47	7.40	--	8.07	
MW-12R	03/01/11	15.47	6.76	--	8.71	
MW-12R	05/23/11	15.47	6.87	--	8.60	
MW-12R	08/29/11	15.47	8.07	--	7.40	
MW-12R	12/01/11	15.47	7.51	--	7.96	
MW-12R	03/01/12	15.47	7.31	--	8.16	
MW-12R	05/30/12	15.47	7.30	--	8.17	
MW-12R	08/25/12	15.47	7.89	--	7.58	
MW-12R	11/07/12	15.47	7.34	--	8.13	
MW-12R	02/27/13	15.47	7.02	--	8.45	
MW-12R	04/08/13	15.47	6.88	--	8.59	
MW-12R	07/29/13	15.47	7.84	--	7.63	
MW-12R	10/02/13	15.47	7.42	--	8.05	
MW-12R	01/21/14	15.47	7.70	--	7.77	
MW-12R	04/22/14	15.47	6.90	--	8.57	
MW-12R	07/15/14	15.47	7.73	--	7.74	
MW-12R	03/17/15	15.47	6.49	--	8.98	
MW-12R	09/28/15	15.47	7.96	--	7.51	
MW-12R	03/29/16	15.47	5.98	--	9.49	
MW-12R	10/11/16	15.47	8.04	--	7.43	
MW-12R	03/28/17	15.47	5.81	--	9.66	
MW-12R	10/10/17	15.47	8.05	--	7.42	
MW-12R	03/28/18	15.47	7.00	--	8.47	
MW-12R	10/02/18	15.47	8.22	--	7.25	
MW-12R	04/02/19	15.47	7.30	--	8.17	
MW-12R	10/01/19	15.47	8.00	--	7.47	
MW-13	02/11/02	--	--	--	--	
MW-13						Destroyed during construction activities
MW-13R	02/11/02	10.99	5.95	--	5.04	
MW-13R	05/20/02	10.99	8.08	--	2.91	
MW-13R	08/27/02	10.99	7.93	--	3.06	
MW-13R	11/04/02	10.99	8.30	--	2.69	
MW-13R	02/18/03	10.99	6.55	--	4.44	
MW-13R	06/09/03	10.99	7.37	--	3.62	
MW-13R	09/15/03	15.15	8.19	--	6.96	
MW-13R	11/18/03	15.15	7.56	--	7.59	
MW-13R	02/24/04	15.15	6.50	--	8.65	
MW-13R	05/10/04	15.15	7.45	--	7.70	
MW-13R	08/24/04	15.15	8.13	--	7.02	
MW-13R	12/13/04	15.15	7.10	--	8.05	
MW-13R	03/08/05	15.15	7.62	--	7.53	
MW-13R	06/06/05	15.15	7.37	--	7.78	
MW-13R	09/19/05	15.15	8.22	--	6.93	
MW-13R	12/12/05	15.15	7.61	--	7.54	
MW-13R	03/13/06	15.15	6.50	--	8.65	
MW-13R	06/05/06	15.15	7.03	--	8.12	
MW-13R	09/11/06	15.15	8.13	--	7.02	
MW-13R	12/11/06	15.15	6.60	--	8.55	
MW-13R	03/26/07	15.15	6.60	--	8.55	
MW-13R	06/18/07	15.15	7.53	--	7.62	
MW-13R	09/25/07	15.15	8.10	--	7.05	
MW-13R	12/10/07	15.15	6.74	--	8.41	
MW-13R	03/03/08	15.15	7.45	--	7.70	
MW-13R	06/02/08	15.15	7.70	--	7.45	
MW-13R	09/04/08	15.15	7.86	--	7.29	
MW-13R	12/04/08	15.15	7.72	--	7.43	
MW-13R	03/04/09	15.15	7.30	--	7.85	
MW-13R	06/01/09	15.15	7.43	--	7.72	
MW-13R	09/21/09	15.15	8.12	--	7.03	
MW-13R	11/16/09	15.15	7.07	--	8.08	
MW-13R	03/08/10	15.15	6.57	--	8.58	
MW-13R	06/07/10	15.15	6.95	--	8.20	

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-13R	09/09/10	15.15	7.94	--	7.21	
MW-13R	11/15/10	15.15	7.12	--	8.03	
MW-13R	03/01/11	15.15	6.42	--	8.73	
MW-13R	05/23/11	15.15	6.52	--	8.63	
MW-13R	08/29/11	15.15	7.79	--	7.36	
MW-13R	12/01/11	15.15	7.21	--	7.94	
MW-13R	03/01/12	15.15	6.99	--	8.16	
MW-13R	05/25/12	--	--	--	--	
MW-13R						Abandoned on 5/25/2012
MW-14	02/11/02	7.55	1.65	--	5.90	
MW-14	05/20/02	7.55	4.46	--	3.09	
MW-14	08/27/02	7.55	4.58	--	2.97	
MW-14	11/04/02	7.55	5.95	--	1.60	
MW-14	02/18/03	7.55	2.60	--	4.95	
MW-14	06/09/03	7.55	3.86	--	3.69	
MW-14	09/15/03	11.44	5.11	--	6.33	
MW-14	11/18/03	11.44	3.30	--	8.14	
MW-14	02/24/04	11.44	2.55	--	8.89	
MW-14	05/10/04	11.44	3.92	--	7.52	
MW-14	08/24/04	11.44	4.23	--	7.21	
MW-14	12/13/04	11.44	3.28	--	8.16	
MW-14	03/08/05	11.44	3.71	--	7.73	
MW-14	06/06/05	11.44	3.37	--	8.07	
MW-14	09/19/05	11.44	4.79	--	6.65	
MW-14	12/12/05	11.44	3.72	--	7.72	
MW-14	03/13/06	11.44	2.40	--	9.04	
MW-14	06/05/06	11.44	3.07	--	8.37	
MW-14	09/11/06	11.44	4.90	--	6.54	
MW-14	12/11/06	11.44	2.02	--	9.42	
MW-14	03/26/07	11.44	2.61	--	8.83	
MW-14	06/18/07	11.44	3.91	--	7.53	
MW-14	09/24/07	11.44	4.64	--	6.80	
MW-14	12/10/07	11.44	2.44	--	9.00	
MW-14	03/03/08	11.44	3.19	--	8.25	
MW-14	06/02/08	11.44	3.82	--	7.62	
MW-14	09/04/08	11.44	4.22	--	7.22	
MW-14	12/04/08	11.44	4.04	--	7.40	
MW-14	03/04/09	11.44	3.37	--	8.07	
MW-14	06/01/09	11.44	3.61	--	7.83	
MW-14	09/21/09	11.44	4.59	--	6.85	
MW-14	11/16/09	11.44	2.82	--	8.62	
MW-14	03/08/10	11.44	2.48	--	8.96	
MW-14	06/07/10	11.44	2.99	--	8.45	
MW-14	09/09/10	11.44	4.33	--	7.11	
MW-14	11/15/10	11.44	3.01	--	8.43	
MW-14	03/01/11	11.44	2.03	--	9.41	
MW-14	05/23/11	11.44	2.36	--	9.08	
MW-14	08/29/11	11.44	4.20	--	7.24	
MW-14	12/01/11	11.44	3.17	--	8.27	
MW-14	03/01/12	11.44	3.05	--	8.39	
MW-14	05/30/12	11.44	3.09	--	8.35	
MW-14	08/25/12	11.44	4.04	--	7.40	
MW-14	11/07/12	11.44	2.92	--	8.52	
MW-14	02/27/13	11.44	2.66	--	8.78	
MW-14	04/08/13	11.44	2.18	--	9.26	
MW-14	07/29/13	11.44	3.90	--	7.54	
MW-14	10/02/13	11.44	3.08	--	8.36	
MW-14	01/21/14	11.44	5.59	--	5.85	
MW-14	04/22/14	11.44	2.19	--	9.25	
MW-14	07/15/14	11.44	3.71	--	7.73	
MW-14	03/17/15	11.44	1.47	--	9.97	
MW-14	09/28/15	11.44	4.06	--	7.38	
MW-14	03/29/16	11.44	1.67	--	9.77	
MW-14	10/11/16	11.44	4.01	--	7.43	
MW-14	03/28/17	11.44	1.42	--	10.02	
MW-14	10/10/17	11.44	4.01	--	7.43	No LNAPL/sheen
MW-14	03/28/18	11.44	2.69	--	8.75	
MW-14	10/02/18	11.44	4.36	--	7.08	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-14	04/02/19	11.44	3.11	--	8.33	
MW-14	10/01/19	11.44	3.98	--	7.46	
MW-15	02/11/02	9.03	3.94	--	5.09	
MW-15	05/20/02	9.03	6.18	--	2.85	
MW-15	08/27/02	9.03	6.10	--	2.93	
MW-15	11/04/02	9.03	6.48	--	2.55	
MW-15	02/18/03	9.03	4.50	--	4.53	
MW-15	06/09/03	9.03	5.49	--	3.54	
MW-15	09/15/03	12.86	6.35	--	6.51	
MW-15	11/18/03	12.86	5.49	--	7.37	
MW-15	02/24/04	12.86	4.67	--	8.19	
MW-15	05/10/04	12.86	5.56	Sheen	7.30	
MW-15	08/24/04	12.86	6.10	--	6.76	
MW-15	12/13/04	12.86	4.34	--	8.52	
MW-15	03/08/05	12.86	5.58	--	7.28	
MW-15	06/06/05	12.86	5.42	--	7.44	
MW-15	09/19/05	12.86	6.34	--	6.52	
MW-15	12/12/05	12.86	5.63	--	7.23	
MW-15	03/13/06	12.86	4.33	--	8.53	
MW-15	06/05/06	12.86	5.15	--	7.71	
MW-15	09/11/06	12.86	6.30	--	6.56	
MW-15	12/11/06	12.86	4.43	--	8.43	
MW-15	03/26/07	12.86	4.60	--	8.26	
MW-15	06/18/07	12.86	5.61	--	7.25	
MW-15	06/02/08	12.86	5.80	--	7.06	
MW-15	09/04/08	12.86	6.02	--	6.84	
MW-15	12/04/08	12.86	5.82	--	7.04	
MW-16	02/11/02	11.19	6.19	--	5.00	
MW-16	05/20/02	11.19	8.23	--	2.96	
MW-16	08/27/02	11.19	8.32	--	2.87	
MW-16	11/04/02	11.19	8.72	--	2.47	
MW-16	02/18/03	11.19	7.65	--	3.54	
MW-16	06/09/03	11.19	7.46	--	3.73	
MW-16	09/15/03	15.23	8.55	--	6.68	
MW-16	11/18/03	15.23	7.69	--	7.54	
MW-16	02/24/04	15.23	6.40	--	8.83	
MW-16	05/10/04	15.23	7.60	--	7.63	
MW-16	08/24/04	15.23	8.21	--	7.02	
MW-16	12/13/04	15.23	7.80	--	7.43	
MW-16	03/08/05	15.23	7.55	--	7.68	
MW-16	06/06/05	15.23	7.38	--	7.85	
MW-16	09/19/05	15.23	8.40	--	6.83	
MW-16	12/12/05	15.23	7.69	--	7.54	
MW-16	03/13/06	15.23	6.16	--	9.07	
MW-16	06/05/06	15.23	7.22	--	8.01	
MW-16	09/11/06	15.23	8.32	--	6.91	
MW-16	12/11/06	15.23	6.40	--	8.83	
MW-16	03/26/07	15.23	6.53	--	8.70	
MW-16	06/18/07	15.23	7.60	--	7.63	
MW-16	09/24/07	15.23	8.36	--	6.87	
MW-16	12/10/07	15.23	6.85	--	8.38	
MW-16	03/03/08	15.23	6.95	--	8.28	
MW-16	06/02/08	15.23	7.62	--	7.61	
MW-16	09/04/08	15.23	8.07	--	7.16	
MW-16	12/04/08	15.23	7.82	--	7.41	
MW-16	03/04/09	15.23	7.47	--	7.76	
MW-16	06/01/09	15.23	7.37	--	7.86	
MW-16	09/21/09	15.23	8.33	--	6.90	
MW-16	11/16/09	15.23	7.30	--	7.93	
MW-16	03/08/10	15.23	6.34	--	8.89	
MW-16	06/07/10	15.23	6.87	--	8.36	
MW-16	09/09/10	15.23	8.04	--	7.19	
MW-16	11/15/10	15.23	7.14	--	8.09	
MW-16	03/01/11	15.23	6.12	--	9.11	
MW-16	05/23/11	15.23	6.22	--	9.01	
MW-16	08/29/11	15.23	7.97	--	7.26	
MW-16	12/01/11	15.23	7.45	--	7.78	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-16	03/01/12	15.23	6.81	--	8.42	
MW-16	05/30/12	15.23	6.71	--	8.52	
MW-16	08/25/12	15.23	7.57	--	7.66	
MW-16	11/07/12	15.23	7.20	--	8.03	
MW-16	02/27/13	15.23	6.18	--	9.05	
MW-16	04/08/13	15.23	6.28	--	8.95	
MW-16	07/29/13	15.23	7.31	--	7.92	
MW-16	10/02/13	15.23	7.21	--	8.02	
MW-16	01/21/14	15.23	7.19	--	8.04	
MW-16	04/22/14	15.23	6.12	--	9.11	
MW-16	07/15/14	15.23	7.22	--	8.01	
MW-16	03/17/15	15.23	5.78	--	9.45	
MW-16	09/28/15	15.23	7.71	--	7.52	
MW-16	03/29/16	15.23	5.02	--	10.21	
MW-16	10/11/16	15.23	8.06	--	7.17	
MW-16	03/28/17	15.23	4.66	--	10.57	
MW-16	10/10/17	15.23	7.89	--	7.34	
MW-16	03/28/18	15.23	6.28	--	8.95	
MW-16	10/02/18	15.23	8.06	--	7.17	
MW-16	04/02/19	15.23	6.60	--	8.63	
MW-16	10/01/19	15.23	7.87	--	7.36	
MW-17	02/11/02	11.43	6.13	--	5.30	
MW-17	05/20/02	11.43	8.38	--	3.05	
MW-17	08/27/02	11.43	8.50	--	2.93	
MW-17	11/04/02	11.43	8.91	--	2.52	
MW-17	02/18/03	11.43	6.70	--	4.73	
MW-17	06/09/03	11.43	7.71	--	3.72	
MW-17	09/15/03	15.38	8.71	--	6.67	
MW-17	11/18/03	15.38	11.83	--	3.55	
MW-17	02/24/04	15.38	7.20	--	8.18	
MW-17	05/10/04	15.38	7.77	--	7.61	
MW-17	08/24/04	15.38	8.36	--	7.02	
MW-17	12/13/04	15.38	7.85	--	7.53	
MW-17	03/08/05	15.38	7.65	--	7.73	
MW-17	06/06/05	15.38	7.55	--	7.83	
MW-17	09/19/05	15.38	8.56	--	6.82	
MW-17	12/12/05	15.38	7.85	--	7.53	
MW-17	03/13/06	15.38	6.30	--	9.08	
MW-17	06/05/06	15.38	7.44	--	7.94	
MW-17	09/11/06	15.38	8.52	--	6.86	
MW-17	12/11/06	15.38	6.49	--	8.89	
MW-17	05/23/11	15.38	6.30	--	9.08	
MW-17	08/29/11	15.38	6.30	--	9.08	
MW-18	02/11/02	11.29	5.97	--	5.32	
MW-18	05/20/02	11.29	8.20	--	3.09	
MW-18	08/27/02	11.29	7.34	--	3.95	
MW-18	11/04/02	11.29	8.73	--	2.56	
MW-18	02/18/03	11.29	6.45	--	4.84	
MW-18	06/09/03	11.29	7.59	--	3.70	
MW-18	09/15/03	15.49	8.65	--	6.84	
MW-18	11/18/03	15.49	7.68	--	7.81	
MW-18	02/24/04	15.49	6.38	--	9.11	
MW-18	05/10/04	15.49	7.65	--	7.84	
MW-18	08/24/04	15.49	8.17	--	7.32	
MW-18	12/13/04	15.49	7.61	--	7.88	
MW-18	03/08/05	15.49	7.47	--	8.02	
MW-18	06/06/05	15.49	7.41	--	8.08	
MW-18	09/19/05	15.49	8.43	--	7.06	
MW-18	12/12/05	15.49	7.70	--	7.79	
MW-18	03/13/06	15.49	6.23	--	9.26	
MW-18	06/05/06	15.49	7.31	--	8.18	
MW-18	09/11/06	15.49	8.34	--	7.15	
MW-18	12/11/06	15.49	6.34	--	9.15	
MW-18	03/26/07	15.49	6.59	--	8.90	
MW-18	06/18/07	15.49	7.66	--	7.83	
MW-18	09/24/07	15.49	8.40	--	7.09	
MW-18	12/10/07	15.49	6.68	--	8.81	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-18	03/03/08	15.49	6.98	--	8.51	
MW-18	06/02/08	15.49	7.70	--	7.79	
MW-18	09/04/08	15.49	8.11	--	7.38	
MW-18	12/04/08	15.49	7.84	--	7.65	
MW-18	03/04/09	15.49	7.34	--	8.15	
MW-18	06/01/09	15.49	7.36	--	8.13	
MW-18	09/21/09	15.49	8.40	--	7.09	
MW-18	11/16/09	15.49	7.18	--	8.31	
MW-18	03/08/10	15.49	6.23	--	9.26	
MW-18	06/07/10	15.49	6.89	--	8.60	
MW-18	09/09/10	15.49	8.11	--	7.38	
MW-18	11/15/10	15.49	7.12	--	8.37	
MW-18	03/01/11	15.49	6.11	--	9.38	
MW-18	05/23/11	15.49	6.25	--	9.24	
MW-18	08/29/11	15.49	7.87	--	7.62	
MW-18	12/01/11	15.49	7.38	--	8.11	
MW-18	03/01/12	15.49	6.88	--	8.61	
MW-18	05/30/12	15.49	6.75	--	8.74	
MW-18	08/25/12	15.49	--	--	--	Inaccessible due to truck parked on top
MW-18	11/07/12	15.49	7.21	--	8.28	
MW-18	02/27/13	15.49	6.43	--	9.06	
MW-18	04/08/13	15.49	6.39	--	9.10	
MW-18	07/29/13	15.49	7.63	--	7.86	
MW-18	10/02/13	15.49	7.39	--	8.10	
MW-18	01/21/14	15.49	7.35	--	8.14	
MW-18	04/22/14	15.49	0.20	--	15.29	
MW-18	07/15/14	15.49	7.31	--	8.18	
MW-18	03/17/15	15.49	5.62	--	9.87	
MW-18	09/28/15	15.49	7.84	--	7.65	
MW-18	03/29/16	15.49	5.06	--	10.43	
MW-18	10/11/16	15.49	8.14	--	7.35	
MW-18	03/28/17	15.49	4.49	--	11	
MW-18	10/10/17	15.49	7.99	--	7.50	
MW-18	03/28/18	15.49	6.33	--	9.16	
MW-18	10/02/18	15.49	8.17	--	7.32	
MW-18	04/02/19	15.49	6.67	--	8.82	
MW-18	10/01/19	15.49	7.97	--	7.52	
MW-19	02/11/02	7.16	1.63	--	5.53	
MW-19	05/20/02	7.16	4.08	Sheen	3.08	
MW-19	08/27/02	7.16	4.25	--	2.91	
MW-19	11/04/02	7.16	4.65	--	2.51	
MW-19	02/18/03	7.16	2.14	--	5.02	
MW-19	06/09/03	7.16	3.45	--	3.71	
MW-19	09/15/03	11.39	4.50	--	6.89	
MW-19	11/18/03	11.39	2.51	--	8.88	
MW-19	02/24/04	11.39	2.36	--	9.03	
MW-19	05/10/04	11.39	3.41	--	7.98	
MW-19	08/24/04	11.39	8.13	--	3.26	
MW-19	12/13/04	11.39	2.98	--	8.41	
MW-19	03/08/05	11.39	3.40	--	7.99	
MW-19	06/06/05	11.39	3.24	--	8.15	
MW-19	09/19/05	11.39	--	--	--	Not Measured-Inaccessible, under pipe stockpile
MW-19	12/12/05	11.39	--	--	--	Not Measured-Inaccessible, under pipe stockpile
MW-19	03/13/06	11.39	--	--	--	Not Measured-Inaccessible, under pipe stockpile
MW-19	06/05/06	11.39	2.91	--	8.48	
MW-19	09/11/06	11.39	4.72	--	6.67	
MW-19	12/11/06	11.39	2.00	--	9.39	
MW-19	03/26/07	11.39	2.22	--	9.17	
MW-19	06/18/07	11.39	3.56	--	7.83	
MW-19	09/24/07	11.39	4.31	--	7.08	
MW-19	12/10/07	11.39	2.38	--	9.01	
MW-19	03/03/08	11.39	2.98	--	8.41	
MW-19	06/02/08	11.39	3.67	--	7.72	
MW-19	09/04/08	11.39	3.98	--	7.41	
MW-19	12/04/08	11.39	3.68	--	7.71	
MW-19	03/04/09	11.39	3.03	--	8.36	
MW-19	06/01/09	11.39	3.23	--	8.16	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-19	09/21/09	11.39	4.23	--	7.16	
MW-19	11/16/09	11.39	2.85	--	8.54	
MW-19	03/08/10	11.39	2.25	--	9.14	
MW-19	06/07/10	11.39	2.67	--	8.72	
MW-19	09/09/10	11.39	3.97	--	7.42	
MW-19	11/15/10	11.39	2.75	--	8.64	
MW-19	03/01/11	11.39	1.82	--	9.57	
MW-19	05/23/11	11.39	2.02	--	9.37	
MW-19	08/29/11	11.39	3.77	--	7.62	
MW-19	12/01/11	11.39	3.03	--	8.36	
MW-19	03/01/12	11.39	2.82	--	8.57	
MW-19	05/30/12	11.39	2.79	--	8.60	
MW-19	08/25/12	11.39	3.62	--	7.77	
MW-19	11/07/12	11.39	2.77	--	8.62	
MW-19	02/27/13	11.39	2.18	--	9.21	
MW-19	04/08/13	11.39	1.82	--	9.57	
MW-19	06/21/13	11.39	3.05	--	8.34	Baseline monitoring event
MW-19	07/29/13	11.39	3.56	--	7.83	
MW-19	08/26/13	11.39	3.45	--	7.94	Two-month monitoring event
MW-19	10/02/13	11.39	2.72	--	8.67	
MW-19	01/21/14	11.39	3.12	--	8.27	
MW-19	04/22/14	11.39	1.81	--	9.58	
MW-19	07/15/14	11.39	3.30	--	8.09	
MW-19	03/17/15	11.39	1.11	--	10.28	
MW-19	09/28/15	11.39	3.69	--	7.70	
MW-19	03/29/16	11.39	1.18	--	10.21	
MW-19	10/11/16	11.39	3.59	--	7.80	
MW-19	03/28/17	11.39	0.65	--	10.74	
MW-19	10/10/17	11.39	3.69	--	7.70	
MW-19	03/28/18	11.39	2.22	--	9.17	
MW-19	10/02/18	11.39	3.81	--	7.58	
MW-19	04/02/19	11.39	2.59	--	8.80	
MW-19	10/01/19	11.39	3.54	--	7.85	
MW-20	02/11/02	7.37	1.73	--	5.64	
MW-20	05/20/02	7.37	4.25	--	3.12	
MW-20	08/27/02	7.37	4.31	--	3.06	
MW-20	11/04/02	7.37	4.04	--	3.33	
MW-20	02/18/03	7.37	--	--	--	Not Measured-Overflowed when well cap removed
MW-20	06/09/03	7.37	--	--	--	Not Measured-Overflowed when well cap removed
MW-20	09/15/03	11.72	--	--	--	Not Measured-Overflowed when well cap removed
MW-20	11/18/03	11.72	--	--	--	Not Measured-Overflowed when well cap removed
MW-20	02/24/04	11.72	--	--	--	Not Measured-Overflowed when well cap removed
MW-20	05/10/04	11.72	--	--	--	Not Measured-Overflowed when well cap removed
MW-20	08/24/04	11.72	4.04	--	7.68	
MW-20	12/13/04	11.72	2.29	--	9.43	
MW-20	03/08/05	11.72	3.64	--	8.08	
MW-20	06/06/05	11.72	3.43	--	8.29	
MW-20	09/19/05	11.72	4.55	--	7.17	
MW-20	12/12/05	11.72	3.67	--	8.05	
MW-20	03/13/06	11.72	2.21	--	9.51	
MW-20	06/05/06	11.72	3.00	--	8.72	
MW-20	09/11/06	11.72	4.49	--	7.23	
MW-20	12/11/06	11.72	2.36	--	9.36	
MW-20	03/26/07	11.72	2.49	--	9.23	
MW-20	06/18/07	11.72	4.44	--	7.28	
MW-20	09/24/07	11.72	4.61	--	7.11	
MW-20	12/10/07	11.72	2.56	--	9.16	
MW-20	03/03/08	11.72	2.97	--	8.75	
MW-20	06/02/08	11.72	3.90	--	7.82	
MW-20	09/04/08	11.72	4.14	--	7.58	
MW-20	12/04/08	11.72	3.89	--	7.83	
MW-20	03/04/09	11.72	4.99	--	6.73	
MW-20	06/01/09	11.72	3.46	--	8.26	
MW-20	09/21/09	11.72	4.42	--	7.30	
MW-20	11/16/09	11.72	2.91	--	8.81	
MW-20	03/08/10	11.72	2.40	--	9.32	
MW-20	06/07/10	11.72	2.76	--	8.96	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-20	09/09/10	11.72	4.22	--	7.50	
MW-20	11/15/10	11.72	3.03	--	8.69	
MW-20	03/01/11	11.72	2.18	--	9.54	
MW-20	05/23/11	11.72	2.11	--	9.61	
MW-20	08/29/11	11.72	4.05	--	7.67	
MW-20	12/01/11	11.72	3.08	--	8.64	
MW-20	03/01/12	11.72	3.09	--	8.63	
MW-20	05/30/12	11.72	2.89	--	8.83	
MW-20	08/25/12	11.72	3.88	--	7.84	
MW-20	11/07/12	11.72	2.98	--	8.74	
MW-20	02/27/13	11.72	2.60	--	9.12	
MW-20	04/08/13	11.72	2.23	--	9.49	
MW-20	07/29/13	11.72	4.93	--	6.79	
MW-20	10/02/13	11.72	4.64	--	7.08	
MW-20	01/21/14	11.72	3.44	--	8.28	
MW-20	04/22/14	11.72	2.33	--	9.39	
MW-20	07/15/14	11.72	3.51	--	8.21	
MW-20	03/17/15	11.72	1.49	--	10.23	
MW-20	09/28/15	11.72	3.95	--	7.77	
MW-20	03/29/16	11.72	1.65	--	10.07	
MW-20	10/11/16	11.72	3.87	--	7.85	
MW-20	03/28/17	11.72	0.98	--	10.74	
MW-20	10/10/17	11.72	4.03	--	7.69	
MW-20	03/28/18	11.72	2.69	--	9.03	
MW-20	10/02/18	11.72	4.25	--	7.47	
MW-20	04/02/19	11.72	3.25	--	8.47	
MW-20	10/01/19	11.72	3.97	--	7.75	
MW-21	02/11/02	10.53	3.80	0.46	7.10	
MW-21	05/20/02	10.53	5.98	0.43	4.89	
MW-21	08/27/02	10.53	3.95	0.43	6.92	
MW-21	11/04/02	10.53	4.95	0.01	5.59	Product recovery pump in well
MW-21	02/18/03	10.53	3.59	0.01	6.95	Product recovery pump in well
MW-21	06/09/03	10.53	3.53	Sheen	7.00	Product recovery pump in well
MW-21	09/15/03	9.41	3.98	0.01	5.44	Product recovery pump in well
MW-21	11/18/03	9.41	3.08	Sheen	6.33	Product recovery pump in well
MW-21	02/24/04	9.41	2.47	Sheen	6.94	Product recovery pump in well
MW-21	05/10/04	9.41	3.65	Sheen	5.76	Product recovery pump in well
MW-21	08/24/04	9.41	3.81	Sheen	5.60	Product recovery pump in well
MW-21	12/13/04	9.41	3.24	Sheen	6.17	
MW-21	03/08/05	9.41	3.72	--	5.69	
MW-21	06/06/05	9.41	3.58	Sheen	5.83	
MW-21	09/19/05	9.41	4.19	--	5.22	
MW-21	12/12/05	9.41	4.04	--	5.37	
MW-21	03/13/06	9.41	2.48	--	6.93	
MW-21	06/05/06	9.41	3.27	--	6.14	
MW-21	09/11/06	9.41	3.90	0.08	5.57	
MW-21	12/11/06	9.41	2.34	0.04	7.10	
MW-21	03/26/07	9.41	2.87	--	6.54	
MW-21	06/18/07	9.41	3.75	--	5.66	
MW-21	09/24/07	9.41	3.81	Sheen	5.60	
MW-21	12/10/07	9.41	2.14	--	7.27	
MW-21	03/03/08	9.41	3.18	--	6.23	
MW-21	06/02/08	9.41	3.63	Sheen	5.78	
MW-21	09/04/08	9.41	3.60	--	5.81	
MW-21	12/04/08	9.41	3.48	Sheen	5.93	
MW-21	03/04/09	9.41	2.84	Sheen	6.57	
MW-21	06/01/09	9.41	3.34	--	6.07	
MW-21	09/21/09	9.41	3.74	Sheen	5.67	
MW-21	11/16/09	9.41	2.59	--	6.82	
MW-21	03/08/10	9.41	2.23	--	7.18	
MW-21	06/07/10	9.41	--	--	--	Not Measured
MW-21	09/09/10	9.41	3.66	--	5.75	
MW-21	11/15/10	9.41	2.79	--	6.62	
MW-21	03/01/11	9.41	2.21	--	7.20	
MW-21	05/23/11	9.41	2.47	--	6.94	
MW-21	08/29/11	9.41	3.53	--	5.88	
MW-21	12/01/11	9.41	2.77	Sheen	6.64	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-21	03/01/12	9.41	2.27	Sheen	7.14	
MW-21	05/30/12	9.41	2.86	--	6.55	
MW-21	08/25/12	9.41	3.20	--	6.21	
MW-21	11/07/12	9.41	2.53	--	6.88	
MW-21	02/27/13	9.41	2.61	--	6.80	
MW-21	04/08/13	9.41	1.99	--	7.42	
MW-21	07/29/13	9.41	3.31	--	6.10	
MW-21	10/02/13	9.41	2.49	--	6.92	
MW-21	01/21/14	9.41	3.02	--	6.39	
MW-21	04/22/14	9.41	2.37	--	7.04	
MW-21	07/15/14	9.41	3.12	--	6.29	
MW-21	03/17/15	9.41	1.74	--	7.67	
MW-21	09/28/15	9.41	3.23	--	6.18	
MW-21	03/29/16	9.41	1.62	--	7.79	
MW-21	10/11/16	9.41	3.00	--	6.41	
MW-21	03/28/17	9.41	1.28	--	8.13	
MW-21	10/10/17	9.41	3.41	--	6.00	
MW-21	03/28/18	9.41	2.49	--	6.92	
MW-21	10/02/18	9.41	3.41	--	6.00	
MW-21	04/02/19	9.41	2.65	--	6.76	
MW-21	10/01/19	9.41	3.25	--	6.16	
MW-22	02/11/02	12.39	7.18	--	5.21	
MW-22	05/20/02	12.39	9.44	--	2.95	
MW-22	08/27/02	12.39	9.55	--	2.84	
MW-22	11/04/02	12.39	9.91	--	2.48	
MW-22	02/18/03	12.39	7.75	--	4.64	
MW-22	06/09/03	12.39	8.71	--	3.68	
MW-22	09/15/03	16.32	9.75	--	6.57	
MW-22	11/18/03	16.32	8.55	--	7.77	
MW-22	02/24/04	16.32	7.56	--	8.76	
MW-22	05/10/04	16.32	8.76	--	7.56	
MW-22	08/24/04	16.32	9.25	--	7.07	
MW-22	12/13/04	16.32	8.70	--	7.62	
MW-22	03/08/05	16.32	8.72	--	7.60	
MW-22	06/06/05	16.32	8.58	--	7.74	
MW-22	09/19/05	16.32	9.61	--	6.71	
MW-22	12/12/05	16.32	8.90	--	7.42	
MW-22	03/13/06	16.32	4.37	--	11.95	
MW-22	06/05/06	16.32	8.31	--	8.01	
MW-22	09/11/06	16.32	9.54	--	6.78	
MW-22	12/11/06	16.32	7.44	--	8.88	
MW-22	03/26/07	16.32	7.68	--	8.64	
MW-22	06/18/07	16.32	8.78	--	7.54	
MW-22	09/24/07	16.32	9.55	--	6.77	
MW-22	12/10/07	16.32	7.84	--	8.48	
MW-22	03/03/08	16.32	8.12	--	8.20	
MW-22	06/02/08	16.32	8.85	--	7.47	
MW-22	09/04/08	16.32	9.22	--	7.10	
MW-22	12/04/08	16.32	9.00	--	7.32	
MW-22	03/04/09	16.32	8.43	--	7.89	
MW-22	06/01/09	16.32	8.56	--	7.76	
MW-22	09/21/09	16.32	9.51	--	6.81	
MW-22	11/16/09	16.32	8.31	--	8.01	
MW-22	03/08/10	16.32	7.40	--	8.92	
MW-22	06/07/10	16.32	8.00	--	8.32	
MW-22	09/09/10	16.32	9.22	--	7.10	
MW-22	11/15/10	16.32	8.20	--	8.12	
MW-22	03/01/11	16.32	7.18	--	9.14	
MW-22	05/23/11	16.32	7.35	--	8.97	
MW-22	08/29/11	16.32	9.01	--	7.31	
MW-22	12/01/11	16.32	8.48	--	7.84	
MW-22	03/01/12	16.32	7.98	--	8.34	
MW-22	05/30/12	16.32	7.92	--	8.40	
MW-22	08/25/12	16.32	8.79	--	7.53	
MW-22	11/07/12	16.32	8.24	--	8.08	
MW-22	02/27/13	16.32	7.42	--	8.90	
MW-22	04/08/13	16.32	7.28	--	9.04	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-22	07/29/13	16.32	8.59	--	7.73	
MW-22	10/02/13	16.32	8.29	--	8.03	
MW-22	01/21/14	16.32	8.39	--	7.93	
MW-22	04/22/14	16.32	7.22	--	9.10	
MW-22	07/15/14	16.32	8.45	--	7.87	
MW-22	03/17/15	16.32	6.65	--	9.67	
MW-22	09/28/15	16.32	8.88	--	7.44	
MW-22	03/29/16	16.32	6.41	--	9.91	
MW-22	10/12/16	16.32	9.04	--	7.28	Re-gauged on 10/12/16
MW-22	03/28/17	16.32	5.87	--	10.45	
MW-22	10/10/17	16.32	9.05	--	7.27	
MW-22	03/28/18	16.32	7.46	--	8.86	
MW-22	10/02/18	16.32	9.22	--	7.10	
MW-22	04/02/19	16.32	7.81	--	8.51	
MW-22	10/01/19	16.32	8.98	--	7.34	
MW-23	11/18/03	14.15	7.66	Sheen	6.49	
MW-23	02/24/04	14.15	7.18	Sheen	6.97	
MW-23	05/10/04	14.15	7.89	<0.01	6.26	
MW-23	08/24/04	14.15	8.89	--	5.26	
MW-23	12/13/04	14.15	7.49	Sheen	6.66	
MW-23	03/08/05	14.15	7.57	Sheen	6.58	
MW-23	06/06/05	14.15	7.72	Sheen	6.43	
MW-23	09/19/05	14.15	8.17	0.17	6.12	
MW-23	10/12/05	14.15	8.10	Sheen	6.05	
MW-23	12/12/05	14.15	7.93	--	6.22	
MW-23	03/13/06	14.15	7.17	--	6.98	
MW-23	06/05/06	14.15	7.62	--	6.53	
MW-23	09/11/06	14.15	8.22	0.02	5.95	
MW-23	12/11/06	14.15	7.17	--	6.98	
MW-23	03/26/07	14.15	7.41	--	6.74	
MW-23	06/18/07	14.15	7.90	--	6.25	
MW-23	09/25/07	14.15	8.14	Sheen	6.01	
MW-23	12/10/07	14.15	7.38	Sheen	6.77	
MW-23	03/03/08	14.15	7.49	Sheen	6.66	
MW-23	06/02/08	14.15	8.71	Sheen	5.44	
MW-23	09/04/08	14.15	8.04	--	6.11	
MW-23	12/04/08	14.15	8.05	--	6.10	
MW-23	03/04/09	14.15	7.48	--	6.67	
MW-23	06/01/09	14.15	7.98	--	6.17	
MW-23	09/21/09	14.15	8.13	--	6.02	
MW-23	11/16/09	14.15	7.50	Sheen	6.65	
MW-23	03/08/10	14.15	7.01	--	7.14	
MW-23	06/07/10	14.15	7.49	Sheen	6.66	
MW-23	09/09/10	14.15	8.02	Sheen	6.13	
MW-23	11/15/10	14.15	7.60	--	6.55	
MW-23	03/01/11	14.15	7.26	Sheen	6.89	
MW-23	05/23/11	14.15	7.38	Sheen	6.77	
MW-23	08/29/11	14.15	7.91	Sheen	6.24	
MW-23	12/01/11	14.15	7.58	--	6.57	
MW-23	03/01/12	14.15	7.35	--	6.80	
MW-23	05/30/12	14.15	7.29	--	6.86	
MW-23	08/25/12	14.15	7.41	--	6.74	
MW-23	11/07/12	14.15	7.19	--	6.96	
MW-23	02/27/13	14.15	7.23	--	6.92	
MW-23	04/08/13	14.15	7.15	--	7.00	
MW-23	07/29/13	14.15	7.47	--	6.68	
MW-23	10/02/13	14.15	7.34	--	6.81	
MW-23	01/21/14	14.15	7.72	--	6.43	
MW-23	04/22/14	14.15	7.25	--	6.90	
MW-23	07/15/14	14.15	7.60	--	6.55	
MW-23	03/17/15	14.15	7.11	--	7.04	
MW-23	09/29/15	14.15	7.65	--	6.50	
MW-23	03/29/16	14.15	6.69	--	7.46	
MW-23	10/11/16	14.15	7.88	--	6.27	
MW-23	03/28/17	14.15	6.80	--	7.35	
MW-23	10/10/17	14.15	7.89	--	6.26	
MW-23	03/28/18	14.15	7.29	--	6.86	

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-23	10/02/18	14.15	7.81	--	6.34	
MW-23	04/02/19	14.15	7.25	--	6.90	
MW-23	10/01/19	14.15	7.75	--	6.40	
MW-24	11/18/03	14.34	7.65	Sheen	6.69	
MW-24	02/24/04	14.34	7.07	Sheen	7.27	
MW-24	05/10/04	14.34	7.73	0.02	6.63	
MW-24	08/24/04	14.34	7.90	0.10	6.52	
MW-24	12/13/04	14.34	7.47	Sheen	6.87	
MW-24	03/08/05	14.34	7.57	Sheen	6.77	
MW-24	06/06/05	14.34	7.24	0.02	7.12	
MW-24	09/19/05	14.34	8.39	0.29	6.18	
MW-24	10/12/05	14.34	8.45	0.47	6.27	
MW-24	12/12/05	14.34	8.01	0.11	6.42	
MW-24	03/13/06	14.34	7.19	--	7.15	
MW-24	06/05/06	14.34	7.59	--	6.75	
MW-24	09/11/06	14.34	8.31	0.20	6.19	
MW-24	12/11/06	14.34	7.37	--	6.97	
MW-24	03/26/07	14.34	7.42	--	6.92	
MW-24	06/18/07	14.34	7.89	--	6.45	
MW-24	09/25/07	14.34	8.00	Sheen	6.34	
MW-24	12/10/07	14.34	7.42	--	6.92	
MW-24	03/03/08	14.34	7.51	Sheen	6.83	
MW-24	06/02/08	14.34	8.92	--	5.42	
MW-24	09/04/08	14.34	7.99	--	6.35	
MW-24	12/04/08	14.34	7.96	--	6.38	
MW-24	03/04/09	14.34	7.51	--	6.83	
MW-24	06/01/09	14.34	7.87	Sheen	6.47	
MW-24	09/21/09	14.34	8.09	--	6.25	
MW-24	11/16/09	14.34	7.46	Sheen	6.88	
MW-24	03/08/10	14.34	7.03	--	7.31	
MW-24	06/07/10	14.34	7.51	Sheen	6.83	
MW-24	09/09/10	14.34	8.01	Sheen	6.33	
MW-24	11/15/10	14.34	7.61	Sheen	6.73	
MW-24	03/01/11	14.34	7.26	Sheen	7.08	
MW-24	05/23/11	14.34	7.37	--	6.97	
MW-24	08/29/11	14.34	7.92	Sheen	6.42	
MW-24	12/01/11	14.34	7.73	--	6.61	
MW-24	03/01/12	14.34	7.39	--	6.95	
MW-24	05/30/12	14.34	7.41	--	6.93	
MW-24	08/25/12	14.34	7.59	--	6.75	
MW-24	11/07/12	14.34	7.26	--	7.08	
MW-24	02/27/13	14.34	7.34	--	7.00	
MW-24	04/08/13	14.34	7.27	--	7.07	
MW-24	07/29/13	14.34	7.58	--	6.76	
MW-24	10/02/13	14.34	7.34	--	7.00	
MW-24	01/21/14	14.34	7.66	--	6.68	
MW-24	04/22/14	14.34	7.20	--	7.14	
MW-24	07/15/14	14.34	7.59	--	6.75	
MW-24	03/17/15	14.34	7.06	--	7.28	
MW-24	09/29/15	14.34	7.65	--	6.69	
MW-24	03/29/16	14.34	6.61	--	7.73	
MW-24	10/11/16	14.34	7.91	--	6.43	
MW-24	03/28/17	14.34	6.71	--	7.63	
MW-24	10/10/17	14.34	7.88	--	6.46	
MW-24	03/28/18	14.34	7.30	--	7.04	
MW-24	10/02/18	14.34	7.80	--	6.54	
MW-24	04/02/19	14.34	7.22	--	7.12	
MW-24	10/01/19	14.34	7.76	--	6.58	
MW-25	11/18/03	13.05	7.50	Sheen	5.55	
MW-25	02/24/04	13.05	6.48	Sheen	6.57	
MW-25	05/10/04	13.05	7.61	--	5.44	
MW-25	08/24/04	13.05	7.11	--	5.94	
MW-25	12/13/04	13.05	7.49	--	5.56	
MW-25	03/08/05	13.05	7.61	--	5.44	
MW-25	06/06/05	13.05	7.47	--	5.58	
MW-25	09/19/05	13.05	7.93	--	5.12	
MW-25	12/12/05	13.05	7.71	--	5.34	

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
MW-25	03/13/06	13.05	7.02	--	6.03	
MW-25	06/05/06	13.05	7.38	--	5.67	
MW-25	09/11/06	13.05	7.88	--	5.17	
MW-25	12/11/06	13.05	7.03	--	6.02	
MW-25	06/18/07	13.05	6.77	--	6.28	
MW-25	03/03/08	13.05	7.28	--	5.77	
MW-25	06/02/08	13.05	7.71	--	5.34	
MW-25	09/04/08	13.05	7.33	--	5.72	
MW-25	12/04/08	13.05	--	--	--	Not Measured
MW-25	06/01/09	13.05	7.60	--	5.45	
MW-25	06/07/10	13.05	7.31	--	5.74	
MW-25	05/23/11	13.05	7.13	--	5.92	
MW-25	04/22/14	13.05	7.09	--	5.96	
MW-25	03/17/15	13.05	6.92	--	6.13	
MW-25	09/29/15	13.05	7.49	--	5.56	
MW-25	03/29/16	13.05	6.38	--	6.67	
MW-25	10/11/16	13.05	7.65	--	5.40	
MW-25	03/28/17	13.05	6.44	--	6.61	
MW-25	10/10/17	13.05	7.65	--	5.40	
MW-25	03/28/18	13.05	7.03	--	6.02	
MW-25	10/02/18	13.05	7.68	--	5.37	
MW-25	04/02/19	13.05	7.07	--	5.98	
MW-25	10/01/19	13.05	7.54	--	5.51	
E-1	02/11/02	9.04	3.65	--	5.39	
E-1	05/20/02	9.04	4.59	--	4.45	
E-1	08/27/02	9.04	--	--	--	Not Measured-Dry
E-1	11/04/02	--	--	--	--	Not Measured-Dry/Damaged
E-1	06/11/03	--	--	--	--	Not Measured-Damaged
E-1	05/30/12	13.05	7.12	--	5.93	
E-1					Abandoned	
SF-01	12/18/00	--	--	--	--	
SF-01					Abandoned	
SF-01R	02/11/02	10.68	7.11	--	3.57	
SF-01R	05/20/02	10.68	9.07	Sheen	1.61	
SF-01R	08/27/02	10.68	8.44	0.01	2.25	
SF-01R	11/04/02	10.68	9.63	--	1.05	
SF-01R	02/18/03	10.68	7.72	--	2.96	
SF-01R	06/09/03	10.68	8.30	--	2.38	
SF-01R	09/15/03	14.74	8.60	--	6.14	
SF-01R	11/18/03	14.74	7.45	--	7.29	
SF-01R	02/24/04	14.74	7.76	--	6.98	
SF-01R	05/10/04	14.74	8.11	--	6.63	
SF-01R	08/24/04	14.74	8.49	--	6.25	
SF-01R	12/13/04	14.74	--	--	--	Inaccessible, under construction trailer
SF-01R	03/08/05	14.74	8.16	--	6.58	
SF-01R	06/06/05	14.74	8.16	--	6.58	
SF-01R	09/19/05	14.74	--	--	--	Inaccessible, under construction trailer
SF-01R	12/12/05	14.74	8.39	--	6.35	
SF-01R	03/13/06	14.74	7.70	--	7.04	
SF-01R	06/05/06	14.74	8.09	--	6.65	
SF-01R	09/11/06	14.74	8.60	--	6.14	
SF-01R	12/11/06	14.74	7.73	--	7.01	
SH-02	02/11/02				Destroyed during construction activities	
SH-02R	02/11/02	9.35	5.45	--	3.90	
SH-02R	05/20/02	9.35	6.49	--	2.86	
SH-02R	08/27/02	9.35	6.27	--	3.08	
SH-02R	11/04/02	9.35	6.62	--	2.73	
SH-02R	02/18/03	9.35	4.85	--	4.50	
SH-02R	06/09/03	9.35	4.75	--	4.60	
SH-02R	09/15/03	13.40	6.50	--	6.90	
SH-02R	11/18/03	13.40	6.03	--	7.37	
SH-02R	02/24/04	13.40	4.62	--	8.78	
SH-02R	05/10/04	13.40	5.88	--	7.52	
SH-02R	08/24/04	13.40	6.21	--	7.19	
SH-02R	12/13/04	13.40	5.14	--	8.26	
SH-02R	03/08/05	13.40	5.90	--	7.50	
SH-02R	06/06/05	13.40	5.72	--	7.68	

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
SH-02R	09/19/05	13.40	6.56	--	6.84	
SH-02R	12/12/05	13.40	5.94	--	7.46	
SH-02R	03/13/06	13.40	4.80	--	8.60	
SH-02R	06/05/06	13.40	5.41	--	7.99	
SH-02R	09/11/06	13.40	6.54	--	6.86	
SH-02R	12/11/06	13.40	4.82	--	8.58	
SH-02R	03/26/07	13.40	4.98	--	8.42	
SH-02R	06/18/07	13.40	5.94	--	7.46	
SH-02R	09/25/07	13.40	6.54	--	6.86	
SH-02R	12/10/07	13.40	5.13	--	8.27	
SH-02R	03/03/08	13.40	5.45	--	7.95	
SH-02R	06/02/08	13.40	6.10	--	7.30	
SH-02R	09/04/08	13.40	6.19	--	7.21	
SH-02R	12/04/08	13.40	6.08	--	7.32	
SH-02R	03/04/09	13.40	5.63	--	7.77	
SH-02R	06/01/09	13.40	5.79	--	7.61	
SH-02R	09/21/09	13.40	6.49	--	6.91	
SH-02R	11/16/09	13.40	5.37	--	8.03	
SH-02R	03/08/10	13.40	4.88	--	8.52	
SH-02R	06/07/10	13.40	5.25	--	8.15	
SH-02R	09/09/10	13.40	6.31	--	7.09	
SH-02R	11/15/10	13.40	5.42	--	7.98	
SH-02R	03/01/11	13.40	4.71	--	8.69	
SH-02R	05/23/11	13.40	4.78	--	8.62	
SH-02R	08/29/11	13.40	6.16	--	7.24	
SH-02R	12/01/11	13.40	5.50	--	7.90	
SH-02R	03/01/12	13.40	5.34	--	8.06	
SH-02R	05/30/12	13.40	5.32	--	8.08	
SH-02R	08/25/12	13.40	6.03	--	7.37	
SH-02R	11/07/12	13.40	5.37	--	8.03	
SH-02R	02/27/13	13.40	5.01	--	8.39	
SH-02R	04/08/13	13.40	4.77	--	8.63	
SH-02R	07/29/13	13.40	5.98	--	7.42	
SH-02R	10/02/13	13.40	5.54	--	7.86	
SH-02R	01/21/14	13.40	5.76	--	7.64	
SH-02R	04/22/14	13.40	4.76	--	8.64	
SH-02R	07/15/14	13.40	5.78	--	7.62	
SH-02R	03/17/15	13.40	4.43	--	8.97	
SH-02R	09/28/15	13.40	6.00	--	7.40	
SH-02R	03/29/16	13.40	3.96	--	9.44	
SH-02R	10/11/16	13.40	6.11	--	7.29	
SH-02R	03/28/17	13.40	3.65	--	9.75	
SH-02R	10/10/17	13.40	6.09	--	7.31	
SH-02R	03/28/18	13.40	4.92	--	8.48	
SH-02R	10/02/18	13.40	6.27	--	7.13	
SH-02R	04/02/19	13.40	5.20	--	8.20	
SH-02R	10/01/19	13.40	6.02	--	7.38	
SH-04	02/11/02	13.45	9.40	--	4.05	
SH-04	05/20/02	13.45	11.24	--	2.21	
SH-04	08/27/02	13.45	11.02	--	2.43	
SH-04	11/04/02	13.45	9.31	--	4.14	
SH-04	02/18/03	13.45	9.80	--	3.65	
SH-04	06/09/03	13.45	10.41	--	3.04	
SH-04	09/15/03	17.41	11.15	--	6.26	
SH-04	11/18/03	17.41	7.61	--	9.80	
SH-04	02/24/04	17.41	6.62	--	10.79	
SH-04	05/10/04	17.41	11.40	--	6.01	
SH-04	08/24/04	17.41	10.88	--	6.53	
SH-04	12/13/04	17.41	10.68	--	6.73	
SH-04	03/08/05	17.41	10.33	--	7.08	
SH-04	06/06/05	17.41	10.23	--	7.18	
SH-04	09/19/05	17.41	11.03	--	6.38	
SH-04	12/12/05	17.41	10.53	--	6.88	
SH-04	03/13/06	17.41	9.22	--	8.19	
SH-04	06/05/06	17.41	10.05	--	7.36	
SH-04	09/11/06	17.41	11.00	--	6.41	
SH-04	12/11/06	17.41	9.50	--	7.91	

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
SH-05	10/27/93	8.77	6.66	--	2.11	
SH-05	01/19/94	8.77	5.92	--	2.85	
SH-05	06/07/94	8.77	6.30	--	2.47	
SH-05	08/17/94	8.77	6.58	--	2.19	
SH-05	11/21/94	8.77	6.03	--	2.74	
SH-05	03/07/96	8.77	4.67	--	4.10	
SH-05	01/13/97	8.77	3.84	--	4.93	
SH-05	10/06/00	8.77	5.23	--	3.54	
SH-05	12/18/00	8.77	5.80	--	2.97	
SH-05	03/27/01					Destroyed during construction activities
SH-05R	05/20/02	9.83	8.07	Sheen	1.76	
SH-05R	08/27/02	9.83	7.59	--	2.24	
SH-05R	11/04/02	9.83	7.81	Sheen	2.02	
SH-05R	02/18/03	9.83	7.60	--	2.23	
SH-05R	06/09/03	9.83	7.29	--	2.54	
SH-05R	09/15/03	13.89	7.42	Sheen	6.47	
SH-05R	11/18/03	13.89	7.21	Sheen	6.68	
SH-05R	02/24/04	13.89	6.41	--	7.48	
SH-05R	05/10/04	13.89	7.33	--	6.56	
SH-05R	08/24/04	13.89	7.60	--	6.29	
SH-05R	12/13/04	13.89	7.15	--	6.74	
SH-05R	03/08/05	13.89	7.62	--	6.27	
SH-05R	06/06/05	13.89	7.24	--	6.65	
SH-05R	09/19/05	13.89	7.80	--	6.09	
SH-05R	12/12/05	13.89	7.49	--	6.40	
SH-05R	03/13/06	13.89	6.38	--	7.51	
SH-05R	06/05/06	13.89	7.10	--	6.79	
SH-05R	09/11/06	13.89	7.72	--	6.17	
SH-05R	12/11/06	13.89	6.61	--	7.28	
SH-05R	03/26/07	13.89	6.82	--	7.07	
SH-05R	06/18/07	13.89	7.43	--	6.46	
SH-05R	09/25/07	13.89	7.72	--	6.17	
SH-05R	12/10/07	13.89	6.70	--	7.19	
SH-05R	03/03/08	13.89	7.01	--	6.88	
SH-05R	06/02/08	13.89	7.50	--	6.39	
SH-05R	09/04/08	13.89	7.55	--	6.34	
SH-05R	12/04/08	13.89	7.12	--	6.77	
SH-05R	03/04/09	13.89	7.02	--	6.87	
SH-05R	06/01/09	13.89	7.36	--	6.53	
SH-05R	09/21/09	13.89	7.73	--	6.16	
SH-05R	11/16/09	13.89	6.93	--	6.96	
SH-05R	03/08/10	13.89	6.47	--	7.42	
SH-05R	06/07/10	13.89	6.63	--	7.26	
SH-05R	09/09/10	13.89	7.58	--	6.31	
SH-05R	11/16/10	13.89	7.04	--	6.85	
SH-05R	03/01/11	13.89	6.58	--	7.31	
SH-05R	05/23/11	13.89	6.74	--	7.15	
SH-05R	08/29/11	13.89	7.52	--	6.37	
SH-05R	12/01/11	13.89	7.09	--	6.80	
SH-05R	03/01/12	13.89	6.89	--	7.00	
SH-05R	05/30/12	13.89	6.91	--	6.98	
SH-05R	08/25/12	13.89	7.29	--	6.60	
SH-05R	11/07/12	13.89	6.79	--	7.10	
SH-05R	02/27/13	13.89	6.77	--	7.12	
SH-05R	04/08/13	13.89	5.59	--	8.30	
SH-05R	07/29/13	13.89	7.25	--	6.64	
SH-05R	10/02/13	13.89	6.82	--	7.07	
SH-05R	01/21/14	13.89	7.18	--	6.71	
SH-05R	04/22/14	13.89	6.59	--	7.30	
SH-05R	07/15/14	13.89	7.17	--	6.72	
SH-05R	03/17/15	13.89	6.30	--	7.59	
SH-05R	09/28/15	13.89	7.23	--	6.66	
SH-05R	03/29/16	13.89	--	--	--	Inaccessible
SH-05R	10/11/16	13.89	7.38	--	6.51	
SH-05R	03/28/17	13.89	5.76	--	8.13	
SH-05R	10/10/17	13.89	7.49	--	6.40	
SH-05R	03/28/18	13.89	6.65	--	7.24	

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
SH-05R	10/02/18	13.89	7.40	--	6.49	
SH-05R	04/02/19	13.89	6.75	--	7.14	
SH-05R	10/01/19	13.89	7.33	--	6.56	
MW-07	01/13/97	7.66	--	--	--	
MW-07						Destroyed during construction activities
MW-07R	02/11/02	9.93	4.95	--	4.98	
MW-07R	05/20/02	9.93	7.29	--	2.64	
MW-07R	08/27/02	9.93	7.17	--	2.76	
MW-07R	11/04/02	9.93	7.53	--	2.40	
MW-07R	02/18/03	--	--	--	--	Not Measured-Inaccessible; covered with asphalt
MW-07R	06/09/03	--	--	--	--	Not Measured-Inaccessible; covered with asphalt
MW-07R	06/11/03	--	--	--	--	Not Measured-Located & cleaned out
MW-07R	09/15/03	13.92	8.40	--	5.52	
MW-07R	11/18/03	13.92	8.17	--	5.75	
MW-07R	02/24/04	13.92	5.64	--	8.28	
MW-07R	05/10/04	13.92	6.70	--	7.22	
MW-07R	08/24/04	13.92	6.95	--	6.97	
MW-07R	12/13/04	13.92	6.43	--	7.49	
MW-07R	03/08/05	13.92	6.67	--	7.25	
MW-07R	06/06/05	13.92	6.48	--	7.44	
MW-07R	09/19/05	13.92	7.35	--	6.57	
MW-07R	12/12/05	13.92	6.71	--	7.21	
MW-07R	03/13/06	13.92	5.59	--	8.33	
MW-07R	06/05/06	13.92	7.20	--	6.72	
MW-07R	09/11/06	13.92	7.30	--	6.62	
MW-07R	12/11/06	13.92	5.50	--	8.42	
MW-07R	03/26/07	13.92	5.84	--	8.08	
MW-07R	06/18/07	13.92	6.80	--	7.12	
MW-07R	09/25/07	13.92	7.27	--	6.65	
MW-07R	12/10/07	13.92	5.60	--	8.32	
MW-07R	03/03/08	13.92	6.20	--	7.72	
MW-07R	06/02/08	13.92	6.88	--	7.04	
MW-07R	09/04/08	13.92	6.94	--	6.98	
MW-07R	12/04/08	13.92	7.84	--	6.08	
MW-07R	03/04/09	13.92	6.30	--	7.62	
MW-07R	06/01/09	13.92	6.57	--	7.35	
MW-07R	09/21/09	13.92	7.24	--	6.68	
MW-07R	11/16/09	13.92	6.04	--	7.88	
MW-07R	03/08/10	13.92	5.63	--	8.29	
MW-07R	06/07/10	13.92	6.04	--	7.88	
MW-07R	09/09/10	13.92	7.05	--	6.87	
MW-07R	11/15/10	13.92	6.11	--	7.81	
MW-07R	03/01/11	13.92	5.43	--	8.49	
MW-07R	05/23/11	13.92	5.66	--	8.26	
MW-07R	08/29/11	13.92	6.97	--	6.95	
MW-07R	12/01/11	13.92	6.24	--	7.68	
MW-07R	03/01/12	13.92	6.10	--	7.82	
MW-07R	05/30/12	13.92	6.12	--	7.80	
MW-07R	08/25/12	13.92	--	--	--	Not Measured
MW-07R	11/07/12	13.92	6.02	--	7.90	
MW-07R	02/27/13	13.92	5.84	--	8.08	
MW-07R	04/08/13	13.92	5.49	--	8.43	
MW-07R	07/29/13	13.92	6.70	--	7.22	
MW-07R	10/02/13	13.92	6.06	--	7.86	
MW-07R	01/21/14	13.92	6.49	--	7.43	
MW-07R	04/22/14	13.92	5.56	--	8.36	
MW-07R	07/15/14	13.92	6.60	--	7.32	
MW-07R	03/17/15	13.92	5.06	--	8.86	
MW-07R	09/28/15	13.92	6.73	--	7.19	
MW-07R	03/29/16	13.92	4.75	--	9.17	
MW-07R	10/11/16	13.92	6.86	--	7.06	
MW-07R	03/28/17	13.92	4.54	--	9.38	
MW-07R	10/10/17	13.92	6.95	--	6.97	
MW-07R	03/28/18	13.92	5.75	--	8.17	
MW-07R	10/02/18	13.92	7.05	--	6.87	
MW-07R	04/02/19	13.92	6.09	--	7.83	
MW-07R	10/01/19	13.92	6.84	--	7.08	
TMW-B1	09/09/10	--	--	--	--	Not Measured-SPH recovery unit in well

Appendix D
 Historical Groundwater Elevation Data
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
TMW-B1	05/23/11	--	7.37	--	--	Not Measured-SPH recovery unit in well
TMW-B1	12/01/11	--	8.17	--	--	Not Measured-SPH recovery unit in well
TMW-B1	03/01/12	--	7.75	--	--	Not Measured-SPH recovery unit in well
TMW-B1	08/25/12	--	8.37	--	--	Not Measured
TMW-B1	07/29/13	--	7.80	--	--	
TMW-B1	10/02/13	--	7.47	--	--	
TMW-B1	01/21/14	--	7.78	--	--	
TMW-B1	04/22/14	--	6.99	--	--	
TMW-B1	07/15/14	--	--	--	--	See SW/KH notes
TMW-B1	03/17/15	--	6.57	--	--	
TMW-B1	09/28/15	--	8.26	--	--	
TMW-B1	03/29/16	--	6.12	--	--	
TMW-B1	10/11/16	--	8.49	--	--	
TMW-B1	03/28/17	--	5.88	--	--	
TMW-B1	10/10/17	--	8.49	--	--	
TMW-B1	03/28/18	--	7.28	--	--	
TMW-B1	10/02/18	--	8.60	--	--	
TMW-B1	04/02/19	--	7.53	--	--	
TMW-B1	10/01/19	--	8.42	--	--	
TMW-1	06/21/13	--	3.44	--	--	Baseline monitoring event
TMW-1	07/29/13	--	3.72	--	--	
TMW-1	08/26/13	--	3.74	--	--	Two-month monitoring event
TMW-1	10/02/13	--	2.97	--	--	
TMW-1	01/21/14	--	3.48	--	--	
TMW-1	04/22/14	--	2.09	--	--	
TMW-1	07/15/14	--	--	--	--	Not done due to no TOC elev datum
TMW-1	03/17/15	--	1.65	--	--	
TMW-1	09/29/15	--	4.06	--	--	
TMW-1	03/29/16	--	1.69	--	--	
TMW-1	10/11/16	--	3.95	--	--	
TMW-1	03/28/17	--	1.23	--	--	
TMW-1	10/10/17	--	4.10	--	--	
TMW-1	03/28/18	--	2.72	--	--	
TMW-1	10/02/18	--	4.21	--	--	
TMW-1	04/02/19	--	3.06	--	--	
TMW-1	10/01/19	--	3.95	--	--	
TMW-2	06/21/13	--	3.83	--	--	Baseline monitoring event
TMW-2	07/29/13	--	3.94	--	--	
TMW-2	08/26/13	--	3.91	--	--	Two-month monitoring event
TMW-2	10/02/13	--	3.15	--	--	
TMW-2	01/21/14	--	3.63	--	--	
TMW-2	04/22/14	--	2.36	--	--	
TMW-2	07/15/14	--	--	--	--	Not done due to no TOC elev datum
TMW-2	03/17/15	--	1.68	--	--	
TMW-2	10/01/15	--	4.16	--	--	
TMW-2	03/29/16	--	1.84	--	--	
TMW-2	10/11/16	--	4.01	--	--	
TMW-2	03/28/17	--	1.41	--	--	
TMW-2	10/10/17	--	4.15	--	--	
TMW-2	03/28/18	--	2.86	--	--	
TMW-2	10/02/18	--	4.30	--	--	
TMW-2	04/02/19	--	3.2	--	--	
TMW-2	10/01/19	--	4.02	--	--	
TMW-3	06/21/13	--	3.81	--	--	Baseline monitoring event
TMW-3	07/29/13	--	3.91	--	--	
TMW-3	08/26/13	--	3.88	--	--	Two-month monitoring event
TMW-3	10/02/13	--	3.14	--	--	
TMW-3	01/21/14	--	3.76	--	--	
TMW-3	04/22/14	--	2.41	--	--	
TMW-3	07/15/14	--	--	--	--	Not done due to no TOC elev datum
TMW-3	03/17/15	--	1.67	--	--	
TMW-3	09/30/15	--	4.21	--	--	
TMW-3	03/29/16	--	2.20	--	--	
TMW-3	10/11/16	--	4.02	--	--	
TMW-3	03/28/17	--	1.66	--	--	
TMW-3	10/10/17	--	4.21	--	--	
TMW-3	03/28/18	--	3.01	--	--	

Appendix D
Historical Groundwater Elevation Data
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Measured	Casing Elevation ¹ (feet NAVD88)	Depth to Groundwater (feet BTOC)	Separate Phase Hydrocarbons (feet)	Groundwater Elevation ^{1, 2} (feet NAVD88)	Comments
TMW-3	10/02/18		4.31	--	--	
TMW-3	04/02/19	--	3.42	--	--	
TMW-3	10/01/19	--	4.01	--	--	
TMW-4	06/21/13	--	3.50	--	--	Baseline monitoring event
TMW-4	07/29/13	--	3.75	--	--	
TMW-4	08/26/13	--	3.80	--	--	Two-month monitoring event
TMW-4	10/02/13	--	2.99	--	--	
TMW-4	01/21/14	--	3.45	--	--	
TMW-4	04/22/14	--	2.20	--	--	
TMW-4	07/15/14	--	--	--	--	Not done due to no TOC elev datum
TMW-4	03/17/15	--	1.3	--	--	
TMW-4	09/30/15	--	3.89	--	--	
TMW-4	03/29/16	--	1.22	--	--	
TMW-4	10/11/16	--	3.71	--	--	
TMW-4	03/28/17	--	1.37	--	--	
TMW-4	10/10/17	--	3.95	--	--	
TMW-4	03/28/18	--	2.75	--	--	
TMW-4	10/02/18	--	4.01	--	--	
TMW-4	04/02/19	--	2.90	--	--	
TMW-4	10/01/19	--	3.76	--	--	
TMW-5	06/21/13	--	3.24	--	--	Baseline monitoring event
TMW-5	07/29/13	--	3.31	--	--	
TMW-5	08/26/13	--	3.39	--	--	Two-month monitoring event
TMW-5	10/02/13	--	2.80	--	--	
TMW-5	01/21/14	--	3.22	--	--	
TMW-5	04/22/14	--	2.42	--	--	
TMW-5	07/15/14	--	--	--	--	Not done due to no TOC elev datum
TMW-5	03/17/15	--	1.84	--	--	
TMW-5	09/30/15	--	3.71	--	--	
TMW-5	03/29/16	--	1.57	--	--	
TMW-5	10/11/16	--	3.76	--	--	
TMW-5	03/28/17	--	1.30	--	--	
TMW-5	10/10/17	--	3.75	--	--	
TMW-5	03/28/18	--	2.67	--	--	
TMW-5	10/02/18	--	3.93	--	--	
TMW-5	04/02/19	--	2.82	--	--	
TMW-5	10/01/19	--	3.75	--	--	
TMW-6	06/21/13	--	2.93	--	--	Baseline monitoring event
TMW-6	07/29/13	--	2.91	--	--	
TMW-6	08/26/13	--	2.92	--	--	Two-month monitoring event
TMW-6	10/02/13	--	2.12	--	--	
TMW-6	01/21/14	--	2.74	--	--	
TMW-6	04/22/14	--	1.72	--	--	
TMW-6	07/15/14	--	--	--	--	Not done due to no TOC elev datum
TMW-6	03/17/15	--	1.48	--	--	
TMW-6	09/30/15	--	3.21	--	--	
TMW-6	03/29/16	--	1.00	--	--	
TMW-6	10/11/16	--	3.12	--	--	
TMW-6	03/28/17	--	0.68	--	--	
TMW-6	10/10/17	--	3.24	--	--	
TMW-6	03/28/18	--	1.81	--	--	
TMW-6	10/02/18	--	3.17	--	--	
TMW-6	04/02/19	--	2.00	--	--	
TMW-6	10/01/19	--	3.01	--	--	

Notes:

Highlighted = data from most recent monitoring event

-- = not measured/not applicable

BTOC = below top of casing (TOC); depth to groundwater measured from TOC

SPH = separate phase hydrocarbons

Wells MW-10D and MW-11D were deep wells, screened from 30 to 35 feet below grade

* Well MW-9

1. Prior to the September 2003 monitoring event, TOC elevations were relative to National Geodetic Vertical Datum (N.G.V.D.) 1929 TIDAL 2 (survey benchmark elev=10.617). All TOC elevations were resurveyed in July 2003, relative to North American Vertical Datum1988 (NAVD88) with modified benchmark elevations to account for shifts from February 2001

2. Groundwater elevation corrected for separate phase hydrocarbon thickness using the specific gravity of diesel (0.8), when present.

APPENDIX E

Historical Groundwater Analytical Results



Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
A-5	02/14/02	<0.25	2.3	--	<0.5	--	0.00055	0.0017	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-5	05/22/02	<0.25	2.0	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-5	08/29/02	<0.25	1.2	--	<0.5	--	0.0017	0.00062	<0.0005	0.00099	--	--	--	--	--	--	--	--	--	--	--	
A-5	11/06/02	<0.25	1.2	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-5	02/20/03	<0.25	<0.25	--	<0.5	--	0.00086	0.0019	<0.0005	0.001	--	--	--	--	--	--	--	--	--	--	--	
A-5	06/10/03	0.26	0.40	--	<0.25	--	<0.0005	0.00067	<0.0005	0.0007	--	--	--	--	--	--	--	--	--	--	--	
A-5	09/17/03	<0.25	0.60	--	<0.50	--	0.0042	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-5	11/20/03	<0.25	0.53	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-5	02/26/04	<0.25	3.3	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-5	05/12/04	0.27	0.43	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.00057	--	--	--	--	--	--	--	--	--	--	--	
A-5	08/25/04	<0.25	1.1	--	<0.50	--	0.0029	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-5	12/14/04	<0.25	0.43	--	<0.50	--	0.021	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--	--	
A-5	03/10/05	0.43	5.2	--	<0.50	--	0.12	0.0025	<0.001	0.0012	--	--	--	--	--	--	--	--	--	--	--	
A-5	06/07/05	0.54	2.4	--	1.7	--	0.12	0.0028	<0.001	0.0013	--	--	--	--	--	--	--	--	--	--	--	
A-5	09/20/05	0.37	1.2	--	<0.50	--	0.037	0.0017	<0.001	0.0011	--	--	--	--	--	--	--	--	--	--	--	
A-5	12/13/05	0.44	0.31	--	<0.50	--	0.049	0.0021	<0.0005	0.0013	--	--	--	--	--	--	--	--	--	--	--	
A-5	03/15/06	0.36	0.45	--	<0.50	--	0.052	0.0017	<0.001	0.0017	--	--	--	--	--	--	--	--	--	--	--	
A-5	06/08/06	0.91	0.55	--	<0.50	--	0.099	0.0036	0.00076	0.0034	--	--	--	--	--	--	--	--	--	--	--	
A-5	09/12/06	0.46	0.43	--	<0.50	--	0.031	0.0016	<0.001	0.0014	--	--	--	--	--	--	--	--	--	--	--	
A-5	12/12/06	0.7	0.53	--	<0.50	--	0.079	0.0028	<0.001	0.0025	--	--	--	--	--	--	--	--	--	--	--	
A-5	03/27/07	1.4	--	--	--	--	0.19	0.0045	0.0014	0.0050	--	--	0.8	--	--	--	--	--	--	--	--	
A-5	06/19/07	1.1	1.9	--	<0.50	--	0.09	0.0027	0.00072	0.0039	--	--	--	--	--	--	--	--	--	--	--	
A-5	09/24/07	0.72	--	--	--	--	0.039	0.0019	<0.0005	0.0018	--	--	2.70	--	--	--	--	--	--	--	--	
A-5	12/11/07	0.31	--	--	--	--	0.017	0.00096	<0.0005	0.00088	--	--	1.46	--	--	--	--	--	--	--	--	
A-5	03/04/08	1.4	--	--	--	--	0.12	0.0040	<0.0010	0.0040	--	--	0.10	--	--	--	--	--	--	--	--	
A-5	06/03/08	0.85	--	--	--	--	0.048	<0.0015	<0.0015	0.0029	--	--	1.90	--	--	--	--	--	--	--	--	
A-5	09/08/08	1.5	--	--	--	--	0.15	0.0032	0.0031	0.0076	--	--	1.13	--	--	--	--	--	--	--	--	
A-5	12/05/08	0.64	--	--	--	--	0.089	<0.0010	<0.0010	0.0038	--	--	0.41	--	--	--	--	--	--	--	--	
A-5	03/04/09	<0.25	--	--	--	--	0.0011	<0.0010	0.002	0.0071	--	--	0.41	--	--	--	--	--	--	--	--	
A-5	06/03/09	0.45	--	--	--	--	0.022	<0.0010	<0.0010	0.0027	--	--	0.61	--	--	--	--	--	--	--	--	
A-5	09/22/09	0.75	--	--	--	--	0.063	0.0012	0.0041	0.021	--	--	0.69	--	--	--	--	--	--	--	--	
A-5	11/17/09	0.43	--	--	--	--	0.011	<0.0010	<0.0010	0.0038	--	--	0.24	--	--	--	--	--	--	--	--	
A-5	03/08/10	0.34	--	--	--	--	0.0059	<0.0010	0.0012	0.0051	--	--	0.61	--	--	--	--	--	--	--	--	
A-5	06/09/10	<0.25	--	--	--	--	0.0063	<0.0010	<0.0010	0.0019	--	--	0.00	--	--	--	--	--	--	--	--	
A-5	09/10/10	0.80	--	--	--	--	0.031	0.0017	0.0047	0.025	--	--	3.32	--	--	--	--	--	--	--	--	
A-5	11/16/10	0.35	--	--	--	--	0.0025	<0.0010	0.0011	0.0086	--	--	0.30	--	--	--	--	--	--	--	--	
A-5	03/02/11	0.34	--	--	--	--	0.0042	<0.0010	<0.0010	0.0019	--	--	0.00	--	--	--	--	--	--	--	--	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
A-5	05/25/11	0.39	--	--	--	--	0.0078	0.00057	<0.0005	0.0014	--	--	1.28	--	--	--	--	--	--	--	--	
A-5	08/30/11	0.47	--	--	--	--	0.0027	0.00070	<0.0005	0.0013	--	--	0.58	--	--	--	--	--	--	--	--	
A-5	12/02/11	0.29	--	--	--	--	0.0017	<0.0010	<0.0010	<0.0020	--	--	1.41	--	--	--	--	--	--	--	--	
A-5	03/02/12	<0.25	--	--	--	--	0.00094	<0.0005	<0.0005	<0.0005	--	--	0.37	--	--	--	--	--	--	--	--	
A-5	06/01/12	<0.25	--	--	--	--	0.012	<0.0010	<0.0010	0.0010	--	--	0.00	--	--	--	--	--	--	--	--	
A-5 (DUP)	06/01/12	<0.25	--	--	--	--	0.011	<0.0010	<0.0010	0.0010	--	--	--	--	--	--	--	--	--	--	--	Duplicate of A-5
A-5	08/25/12	0.57	--	--	--	--	0.02	<0.0010	<0.0010	0.0014	--	--	--	--	--	--	--	--	--	--	--	
A-5	11/08/12	0.27	--	--	--	--	0.028	<0.001	<0.001	0.0011	--	--	--	--	--	--	--	--	--	--	--	
A-5	02/28/13	0.66	--	--	--	--	0.062	0.0017	<0.0005	0.0013	--	--	--	--	--	--	--	--	--	--	--	
A-5	04/10/13	0.46	--	--	--	--	0.014	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--	--	
A-5	07/29/13	0.54	--	--	--	--	0.033	0.0022	<0.0005	0.0022	--	--	--	--	--	--	--	--	--	--	--	
A-5	10/03/13	0.47	--	--	--	--	0.049	0.0014	<0.001	0.0016	--	--	0.00	--	--	--	--	--	--	--	--	
A-5	01/21/14	0.51	--	--	--	--	0.051	0.0012	<0.001	<0.001	--	--	6.00	--	--	--	--	--	--	--	--	
A-5	04/23/14	0.60	--	--	--	--	0.025	0.0015	<0.0005	0.0011	--	--	--	--	--	--	--	--	--	--	--	
A-5	07/15/14	0.61	--	--	--	--	0.017	0.0011	<0.0005	0.00095	--	--	0.37	--	--	--	--	--	--	--	--	
A-5	03/18/15	0.40	--	--	--	--	0.0045	0.0013	<0.0005	0.0012	--	--	--	--	--	--	--	--	--	--	--	
A-5	10/02/15	0.495	--	--	--	--	0.00161	<0.005	<0.001	<0.003	--	--	0.10	--	--	--	--	--	--	--	--	
A-5 (DUP)	10/02/15	0.553	--	--	--	--	0.00168	<0.005	<0.001	<0.003	--	--	--	--	--	--	--	--	--	--	--	Duplicate of A-5
A-5	03/29/16	0.413	--	--	--	--	0.00809	<0.005	<0.001	<0.003	--	--	0.33	--	--	--	--	--	--	--	--	
A-5	10/13/16	0.498	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	0.57	--	--	--	--	--	--	--	--	
A-5	03/29/17	0.277	--	--	--	--	0.00508	<0.001	<0.001	<0.003	--	--	0.27	--	--	--	--	--	--	--	--	
A-5	10/11/17	0.576	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.53	--	--	--	--	--	--	--	--	
A-5	03/28/18	1.04	--	--	--	--	0.00814	0.00201	<0.001	<0.003	--	--	0.13	--	--	--	--	--	--	--	--	
A-5	10/02/18	0.905 B	--	--	--	--	0.0014	0.00171	<0.001	<0.003	--	--	0.09	--	--	--	--	--	--	--	--	
A-5	04/03/19	0.591	--	--	--	--	0.00169	0.00145	<0.00100	<0.00300	--	--	0.10	--	--	--	--	--	--	--	--	
A-5	10/03/19	0.355	--	--	--	--	<0.00100	0.00141	<0.00100	<0.00300	--	--	0.17	--	--	--	--	--	--	--	--	
A-8	02/14/02	<0.25	1.6	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-8	05/22/02	<0.25	0.51	--	<0.5	--	<0.0005	0.00058	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-8	08/28/02	<0.25	<0.5	--	<0.5	--	<0.0005	0.0014	<0.0005	0.00066	--	--	--	--	--	--	--	--	--	--	--	
A-8	11/06/02	<0.25	0.43	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-8	02/20/03	<0.25	<0.25	--	<0.5	--	<0.0005	0.00083	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-8	06/10/03	<0.25	<0.25	--	<0.25	--	<0.0005	0.00056	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-8	09/17/03	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-8	11/20/03	<0.25	1.4	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-8	02/26/04	0.35	1.0000	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-8	05/12/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-8	08/25/04	<0.25	4.9	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--	--	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
A-8	12/14/04	<0.25	1.7	--	<0.50	--	0.00056	0.00052	<0.0005	0.00094	--	--	--	--	--	--	--	--	--	--	--	
A-8	03/10/05	<0.25	2.1	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.00055	--	--	--	--	--	--	--	--	--	--	--	
A-8	06/07/05	<0.25	1.2	--	1.5	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-8	09/20/05	<0.25	3.5	--	0.83	--	0.0012	<0.001	<0.001	0.0012	--	--	--	--	--	--	--	--	--	--	--	
A-8	12/13/05	<0.25	0.54	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.0011	--	--	--	--	--	--	--	--	--	--	--	
A-8	03/15/06	<0.25	0.55	--	<0.50	--	<0.0010	<0.0010	<0.0010	0.0010	--	--	--	--	--	--	--	--	--	--	--	
A-8	06/08/06	<0.25	0.47	--	<0.50	--	<0.0010	<0.0010	<0.0010	0.0010	--	--	--	--	--	--	--	--	--	--	--	
A-8	09/12/06	<0.25	0.76	--	<0.50	--	<0.0010	<0.0010	<0.0010	0.0011	--	--	--	--	--	--	--	--	--	--	--	
A-8	12/12/06	0.27	0.87	--	<0.50	--	<0.0010	0.0011	<0.0010	0.0015	--	--	--	--	--	--	--	--	--	--	--	
A-8	06/19/07	<0.25	2.4	--	0.58	--	<0.0010	<0.0010	<0.0010	0.0010	--	--	--	--	--	--	--	--	--	--	--	
A-8	06/03/08	<0.30	0.46	--	<0.50	--	<0.0015	<0.0015	<0.0015	<0.0015	--	--	--	--	--	--	--	--	--	--	--	
A-8	06/03/09	<0.25	1.6	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	0.55	--	--	--	--	--	--	--	--	
A-8	06/09/10	<0.25	0.45	--	<0.50	--	0.0054	<0.0010	<0.0010	<0.0010	--	--	0.00	--	--	--	--	--	--	--	--	
A-8	05/25/11	<0.25	1.2	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	1.32	--	--	--	--	--	--	--	--	
A-8	06/01/12	<0.50	0.90	--	<0.50	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	0.00	--	--	--	--	--	--	--	--	
A-8	04/10/13	0.25	--	<0.25	<0.50	--	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--	--	
A-8	04/23/14	<0.25	1.5	<0.25	<0.50	<0.50	<0.0005	0.00061	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-8	10/02/15	0.382	--	4.97	--	0.475	<0.001	<0.005	<0.001	<0.003	--	--	0.37	--	--	--	--	--	--	--	--	
A-8	10/13/16	0.341	--	0.498	--	<0.50	<0.001	<0.005	<0.001	<0.003	--	--	0.63	--	--	--	--	--	--	--	--	
A-8	10/11/17	0.143 B	--	0.438	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.48	--	--	--	--	--	--	--	--	
A-8	10/02/18	0.196	--	0.472	--	<0.25	<0.001	<0.001	<0.001	<0.003	--	--	0.07	--	--	--	--	--	--	--	--	
A-8	10/02/19	<0.100	--	0.794	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.13	--	--	--	--	--	--	--	--	
A-10	02/14/02	<0.25	9.2	--	<0.5	--	<0.0005	0.00062	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-10	05/22/02	0.31	8.8	--	<0.5	--	<0.0005	0.00086	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-10	08/28/02	0.30	15	--	<0.5	--	<0.001	<0.001	<0.001	<0.001	--	--	1.40	5.7	--	--	16	<0.25	30.00	0.6		
A-10	11/06/02	0.37	13	--	<0.50	--	<0.0005	0.00057	<0.0005	<0.0005	--	--	2.00	5.9	--	--	15	<0.25	10.00	0.3		
A-10	02/20/03	<0.25	6.0	--	<0.5	--	0.0013	<0.0005	<0.0005	0.00055	--	--	2.70	1.0	--	--	22	6.1	86	<0.1		
A-10	06/10/03	0.45	19	--	<0.25	--	<0.001	<0.001	<0.001	<0.001	--	--	1.40	1.60	--	--	17.00	0.54	63.00	0.1		
A-10	09/17/03	0.68	30	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.70	3.20	--	--	47.00	<0.25 c	12.00	0.6		
A-10	11/20/03	1.1	89	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.40	0.10	--	--	4.90	<0.25 c	3.70	0.3		
A-10	02/26/04	<0.25	35	--	0.74	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.50	0.24	--	--	5.10	<0.25 b	61.00	0.2		
A-10	05/12/04	<0.25	3.5	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.60	--*d	--	--	30.00	<0.25	10.00	<0.10		
A-10	08/25/04	<0.25	5.1	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.65	0.75	--	--	6.20	<0.25	57.00	0.12		
A-10	12/14/04	<0.25	1.1	--	<0.50	--	0.0030	<0.001	<0.001	<0.001	--	--	2.50	0.093	--	--	<0.050	<0.25	8.80	<0.10		
A-10	03/10/05	<0.25	4.6	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.58	6.60	--	--	12.00	<0.25	260.00	<0.10		
A-10	06/07/05	0.30	68	--	2.1	--	0.00069	<0.0005	<0.0005	<0.0005	--	--	1.51	1.00	--	--	3.40	<0.25	480.00	16		
A-10	09/20/05	0.60	1.5	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.10	2.40	--	--	5.60	<0.25	320.00	0.23		

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
A-10	12/13/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.20	0.067	--	--	<0.050	14.00	56.00	<0.10	
A-10	03/15/06	<0.25	1.7	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.00050	--	--	2.20	2.50	--	--	42.00	<0.25	60.00	0.18	
A-10	06/08/06	<0.25	0.66	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.00050	--	--	1.00	1.60	--	--	7.80	<0.25	4.30	0.22	
A-10	09/12/06	<0.25	0.65	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.00050	--	--	1.60	1.40	--	--	15.00	<0.25	140.00	0.18	
A-10	12/12/06	<0.25	0.98	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.00	0.088	--	--	2.00	<0.25	7.90	<0.10	
A-10	06/19/07	<0.25	1.2	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.70	--	--	--	--	--	--	--	
A-10	06/03/09	<0.25	2.4	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.40	--	--	--	--	--	--	--	
A-10	06/09/10	<0.25	0.56	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	--	--	--	--	--	--	--	
A-10	05/25/11	<0.25	0.80	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.97	--	--	--	--	--	--	--	
A-10	06/01/12	<0.25	0.62	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	--	--	--	--	--	--	--	
A-10	04/10/13	<0.25	--	0.36	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
A-10	04/23/14	<0.25	0.27	<0.25	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
A-10	10/02/15	<0.100	--	0.723	--	<0.25	<0.001	<0.005	<0.001	<0.003	--	--	0.43	--	--	--	--	--	--	--	
A-10	10/13/16	<0.100	--	0.640	--	<0.500	<0.001	<0.005	<0.001	<0.003	--	--	0.61	--	--	--	--	--	--	--	
A-10	10/10/17	<0.100	--	1.15	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.50	--	--	--	--	--	--	--	
A-10	10/02/18	<0.1	--	1.38	--	0.261	<0.001	<0.001	<0.001	<0.003	--	--	0.04	--	--	--	--	--	--	--	
A-10	10/02/19	<0.100	--	0.441	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.13	--	--	--	--	--	--	--	
A-12	12/12/06	<0.25	0.98	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
A-12	06/03/08	<0.25	0.63	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
A-12	05/25/11	<0.025	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
A-14R	02/14/02	<0.25	<0.25	--	<0.5	--	0.00061	0.0021	<0.0005	<0.0005	0.005*	--	--	--	--	--	--	--	--	--	
A-14R	05/22/02	<0.25	<0.5	--	<0.5	--	0.00053	0.0021	<0.0005	0.00054	0.02*	--	--	--	--	--	--	--	--	--	
A-14R	08/28/02	<0.25	<0.5	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	1.50	0.034	--	--	0.7	9.5	290.00	<0.1	
A-14R	11/06/02	<0.25	<0.25	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	2.30	0.054	--	--	0.4	5.7	290.00	0.1	
A-14R	02/20/03	<0.25	<0.25	--	<0.25	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	2.90	0.26	--	--	<0.2	2.4	300	<0.1	
A-14R	06/10/03	<0.25	<0.25	--	<0.25	--	<0.0005	<0.0005	<0.0005	<0.0005	0.02	--	2.00	0.21	--	--	2.20	6.00	220.00	0.3	
A-14R	09/17/03	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.025*	--	1.90	2.40	--	--	3.40	0.86 a	240.00	0.2	
A-14R	11/20/03	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.032*	--	1.80	0.45	--	--	2.40	0.63 c	250.00	<0.1	
A-14R	02/26/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.018*	--	1.40	3.30	--	--	0.31	0.69 b	190.00	0.1	
A-14R	05/12/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.30	1.40	--	--	<0.050	3.00	130.00	<0.10	
A-14R	08/25/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	3.22	4.30	--	--	0.66	0.42	200.00	<0.10	
A-14R	12/14/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0072*	--	3.00	3.50	--	--	1.00	<0.25	230.00	<0.10	
A-14R	03/10/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.15	1.30	--	--	2.40	<0.25	290.00	<0.10	
A-14R	06/07/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.00	0.28	--	--	0.16	0.36	220.00	<0.2	
A-14R	09/20/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
A-14R	12/13/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.10	1.60	--	--	3.70	<0.25	150.00	<0.10	
A-14R	03/15/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.10	0.82	--	--	0.14	<0.25	80.00	<0.10	

Appendix E
 Historical Groundwater Analytical Results
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
A-14R	06/08/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.40	1.50	--	--	0.53	<0.25	38.00	<0.10	
A-14R	09/12/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.00	0.19	--	--	0.80	<0.25	110.00	<0.10	
A-14R	12/12/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	
A-14R	06/19/07	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.90	--	--	--	--	--	--	--	
A-14R	12/12/07	--	--	--	--	--	--	--	--	--	--	--	2.90	1.2	--	--	0.76	<0.25	99.00	<0.10	
A-14R	06/03/08	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.90	--	--	--	--	--	--	--	
A-14R	06/03/09	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.00	--	--	--	--	--	--	--	
A-14R	06/09/10	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.00	--	--	--	--	--	--	--	
A-14R	05/25/11	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.05	--	--	--	--	--	--	--	
A-14R	06/01/12	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.00	--	--	--	--	--	--	--	
A-14R	04/10/13	<0.25	--	<0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	
A-14R	04/23/14	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	
A-14R	10/01/15	<0.100	--	<0.100	--	<0.25	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.35	--	--	--	--	--	--	--	
A-14R	10/13/16	<0.100	--	<0.250	--	<0.500	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.69	--	--	--	--	--	--	--	
A-14R	10/10/17	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	0.63	--	--	--	--	--	--	--	
A-14R	10/02/18	<0.1	--	<0.2	--	<0.25	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	0.16	--	--	--	--	--	--	--	
A-14R	10/02/19	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200	0.15	--	--	--	--	--	--	--	
A-18	05/25/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	
A-19	05/25/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	
A-20	05/25/11	2.5	--	--	--	--	<0.0010	<0.0010	0.037	0.013	--	--	--	--	--	--	--	--	--	--	
A-21	02/14/02	<0.25	<0.25	--	<0.5	--	<0.0005	0.0010	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--	
A-21	05/22/02	<0.25	<0.5	--	<0.5	--	0.00061	0.0017	<0.0005	0.00057	<0.005*	--	--	--	--	--	--	--	--	--	
A-21	08/29/02	<0.25	0.76	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	2.10	0.31	--	--	33.00	<0.25	41.00	0.3	
A-21	11/06/02	<0.25	0.37	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	1.60	0.64	--	--	32.00	<0.25	32.00	<0.1	
A-21	02/19/03	<0.25	<0.5	--	<0.5	--	0.0013	0.0018	<0.0005	0.00061	<0.005*	--	1.90	1.60	--	--	28.00	<0.25	2.90	0.1	
A-21	06/10/03	0.25	<0.25	--	<0.25	--	0.0082	0.00058	<0.0005	<0.0005	0.062*	--	1.30	2.80	--	--	31.00	<0.25	0.30	0.2	
A-21	09/16/03	<0.25	<0.25	--	<0.50	--	0.0034	<0.0005	<0.0005	<0.0005	0.0085*	--	1.60	4.10	--	--	33.00	<0.25 b	5.30	0.7	
A-21	11/19/03	0.47	<0.25	--	<0.50	--	0.061	0.0019	<0.0005	0.0029	0.0067*	--	1.70	5.60	--	--	26.00	<0.25 b	16.00	0.2	
A-21	02/25/04	0.63	<0.50	--	<0.50	--	0.013	0.00066	0.045	0.0016	<0.0050*	--	2.10	2.60	--	--	31.00	<0.25 b	1.20	0.4	
A-21	05/12/04	0.50	<0.25	--	<0.50	--	0.0019	<0.0005	0.0042	0.00072	<0.0050*	--	0.80	1.80	--	--	33.00	<0.25	0.79	<0.10	
A-21	08/25/04	0.26	<0.25	--	<0.50	--	0.0015	<0.0005	<0.0005	0.0015	<0.0050*	--	1.44	5.80	--	--	16.00	<0.25	2.40	0.11	
A-21	12/14/04	0.99	<0.25	--	<0.50	--	0.061	0.0025	0.022	0.0083	<0.0050*	--	2.72	11.00	--	--	4.60	<0.25	0.74	0.12	
A-21	03/10/05	1.5	0.26	--	<0.50	--	0.024	0.0021	0.0025	0.011	0.020*	--	1.50	8.50	--	--	19.00	<0.25	0.79	<0.10	
A-21	06/07/05	1.2	0.35	--	<0.50	--	0.0076	0.00084	0.00077	0.0043	<0.0050*	--	1.50	3.80	--	--	3.30	<0.25	<0.50	0.7	
A-21	09/20/05	1.3	<0.25	--	<0.50	--	0.011	0.0012	0.00066	0.0048	<0.0050*	--	2.60	6.10	--	--	27.00	<0.25	<0.50	<0.10	
A-21	12/13/05	1.6	<0.25	--	<0.50	--	0.017	0.0016	0.0015	0.0052	<0.0050*	--	2.50	7.50	--	--	30.00	<0.25	<0.50	<0.10	
A-21	03/15/06	0.97	<0.25	--	<0.50	--	0.0098	0.00097	0.0023	0.0033	<0.0050*	--	2.50	3.20	--	--	32.00	<0.25	<0.50	<0.10	

Appendix E
 Historical Groundwater Analytical Results
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
A-21	06/08/06	0.82	<0.25	--	<0.50	--	0.0023	0.00059	<0.0005	0.0019	<0.0050*	--	2.80	2.20	--	--	33.00	<0.25	<0.50	<0.10	
A-21	09/12/06	0.85	<0.25	--	<0.50	--	0.0019	<0.0005	<0.0005	0.0016	<0.0050*	--	2.60	2.90	--	--	31.00	<0.25	<0.50	<0.10	
A-21	12/12/06	0.85	<0.25	--	<0.50	--	0.0071	<0.0005	0.0021	0.0014	<0.0050*	--	3.10	3.20	--	--	46.00	<0.25	130.00	0.11	
A-21	03/27/07	0.28	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	3.80	--	--	--	--	--	--	--	
A-21	06/19/07	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	2.10	0.19	--	--	24	<0.25	120	0.13	
A-21	09/25/07	<0.25	--	--	--	--	0.0040	<0.0005	<0.0005	<0.0005	--	--	3.00	--	--	--	--	--	--	--	
A-21	12/11/07	0.51	--	--	--	--	0.0062	<0.0005	0.026	0.0020	--	--	1.70	--	--	--	--	--	--	--	
A-21	03/04/08	<0.25	--	--	--	--	<0.0005	<0.0005	0.0051	<0.0005	--	--	0.30	--	--	--	--	--	--	--	
A-21	06/04/08	<0.25	--	--	--	--	<0.0005	<0.0005	0.00075	<0.0005	<0.0050	--	1.60	0.11	--	--	20.00	0.27	150.00	0.14	
A-21	09/08/08	0.41	--	--	--	--	<0.0005	0.00074	0.0018	0.00053	--	--	1.71	--	--	--	--	--	--	--	
A-21	12/04/08	0.96	--	--	--	--	<0.0010	<0.0010	0.15	<0.0010	--	--	0.72	--	--	--	--	--	--	--	
A-21	03/04/09	0.48	--	--	--	--	0.0075	<0.0005	0.0068	0.021	--	--	0.37	--	--	--	--	--	--	--	
A-21	06/02/09	0.46	--	--	--	--	0.0027	<0.00050	0.0023	0.0059	0.0087	--	0.20	0.028	--	--	8.00	<0.25	320.00	<0.10	
A-21	09/22/09	0.27	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.56	--	--	--	--	--	--	--	
A-21	11/17/09	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.39	--	--	--	--	--	--	--	
A-21	03/08/10	<0.25	--	--	--	--	0.0026	<0.0005	0.0019	0.0046	--	--	0.85	--	--	--	--	--	--	--	
A-21	06/08/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.33	0.015	--	--	0.72	0.28	85.00	<0.10	
A-21	09/10/10	<0.25	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	3.49	--	--	--	--	--	--	--	
A-21	11/16/10	0.82	--	--	--	--	<0.0010	<0.0010	0.056	0.011	--	--	0.33	--	--	--	--	--	--	--	
A-21	03/02/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.50	--	--	--	--	--	--	--	
A-21	05/24/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.54	0.038	--	--	0.19	0.50	25.00	0.10	
A-21	08/30/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.38	--	--	--	--	--	--	--	
A-21	12/02/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0010	--	--	0.70	--	--	--	--	--	--	--	
A-21	03/02/12	1.7	--	--	--	--	<0.0010	<0.0010	0.16	0.026	--	--	0.29	--	--	--	--	--	--	--	
A-21	05/30/12	1.5	--	--	--	--	<0.0010	<0.0010	0.027	<0.0010	<0.0050	--	0.00	<0.010	--	--	9.60	<0.25	940.00	0.15	
A-21	08/25/12	1.6	--	--	--	--	<0.0010	<0.0010	0.024	<0.0010	--	--	--	--	--	--	--	--	--	--	
A-21	11/08/12	0.53	--	--	--	--	<0.0005	<0.0005	0.0011	0.0015	--	--	--	--	--	--	--	--	--	--	
A-21	02/28/13	0.44	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
A-21	04/10/13	0.58	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	<0.010	--	--	--	<0.25	920	<0.10	
A-21	07/29/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
A-21	10/03/13	<0.25	--	--	--	--	<0.001	<0.001	<0.001	<0.001	--	--	0.00	--	--	--	--	--	--	--	
A-21	01/21/14	<0.25	--	--	--	--	<0.001	<0.001	<0.001	<0.001	--	--	3.53	--	--	--	--	--	--	--	
A-21	04/23/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	0.013	--	--	0.62	<0.25	250	<0.10	
A-21	07/15/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.39	--	--	--	--	--	--	--	
A-21	03/18/15	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.03	0.050	--	--	4.2	<2.5	1,500	<0.10	
A-21	10/01/15	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	0.00526	0.00402	0.30	0.0590	--	--	73.9	<0.1	41.0	0.0780	
A-21	03/31/16	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	0.96	0.0189	--	--	0.378 J5	0.295	42.8	<0.05	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
A-21	10/13/16	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.82	--	--	--	--	--	--	--	--	
A-21	03/29/17	0.135	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	4.82	--	--	--	--	--	--	--	--	
A-21	10/13/17	0.142	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	0.62	--	--	--	--	--	--	--	--	
A-21	03/29/18	0.12 B	--	--	--	--	0.00153	<0.001	<0.001	<0.003	--	--	2.01	--	--	--	--	--	--	--	--	
A-21	10/04/18	0.113 B	--	--	--	--	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	0.06	--	--	--	--	--	--	--	--	
A-21	04/03/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	3.01	--	--	--	--	--	--	--	--	
A-21	10/04/19	0.206 B	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	0.00212	<0.00200	0.16	--	--	--	--	--	--	--	--	
A-22R	05/25/11	27	--	--	--	--	3.4	0.086	3.0	1.7	--	--	--	--	--	--	--	--	--	--	--	
A-23R	02/14/02	0.26	2.1	--	<0.5	--	0.060	0.0010	0.0099	0.0072	0.72*a	--	--	--	--	--	--	--	--	--	--	
A-23R	05/20/02	0.74	6.9	--	<0.5	--	0.15	<0.001	0.088	0.0067	0.095*a	--	--	--	--	--	--	--	--	--	--	
A-23R	08/28/02	0.62	2.1	--	<0.5	--	0.20	0.0035	0.021	0.0075	0.23*	--	2.40	4.10	--	--	13.00	<0.25	270.00	0.20		
A-23R	11/05/02	0.74	1.7	--	<0.5	--	0.22	<0.0015	0.0059	0.014	0.18*	--	2.40	3.60	--	--	11.00	<0.25	200.00	1.60		
A-23R	02/19/03	0.71	2.3	--	<0.5	--	0.26	0.0033	0.0054	0.0059	0.049*	--	3.00	6.10	--	--	12.00	<0.25	120.00	<0.1		
A-23R	06/10/03	<0.25	1.8	--	<0.25	--	0.0073	<0.001	0.0028	<0.001	<0.005*	--	1.80	1.80	--	--	30.00	<0.25	300.00	0.20		
A-23R	09/16/03	0.70	1.3	--	<0.50	--	0.043	0.0029	0.057	0.0018	0.38*	--	1.40	7.60	--	--	12.00	<0.25 b	100.00	0.90		
A-23R	11/19/03	1.0	0.78	--	<0.50	--	0.08	0.0037	0.069	0.0035	0.13*	--	1.50	8.70	--	--	7.80	<0.25 b	26.00	0.80		
A-23R	02/25/04	1.6	0.78	--	<0.50	--	0.26	0.0072	0.061	0.015	0.081*	--	1.70	13.00	--	--	14.00	<0.25 b	17.00	0.70		
A-23R	05/12/04	0.28	0.45	--	<0.50	--	0.020	0.00075	0.0022	0.00082	<0.0050*	--	4.70	5.30	--	--	23.00	<0.25	80.00	<1.0		
A-23R	08/25/04	2.3	0.35	--	<0.50	--	0.46	0.012	0.074	0.020	0.012*	--	1.80	10.00	--	--	11.00	<0.25	31.00	0.34		
A-23R	12/14/04	2	0.65	--	<0.50	--	0.37	0.0084	0.041	0.013	0.018*	--	2.20	12.00	--	--	9.80	<0.25	6.40	0.25		
A-23R	03/10/05	0.60	0.31	--	<0.50	--	0.035	0.0011	0.0045	0.0014	0.035*	--	1.10	7.30	--	--	30.00	<0.25	220.00	0.20		
A-23R	06/07/05	0.33	<0.25	--	<0.50	--	0.0080	<0.0005	0.0012	<0.0005	0.013*	--	1.50	5.60	--	--	28.00	<0.25	200.00	1.90		
A-23R	09/20/05	<0.25	<0.25	--	<0.50	--	0.00060	<0.0005	<0.0005	<0.0005	0.0096*a	--	1.50	2.60	--	--	34.00	<0.25	270.00	<0.10		
A-23R	12/14/05	0.37	<0.25	--	<0.50	--	0.019	0.00056	0.00065	0.00058	0.032*	--	0.80	5.30	--	--	25.00	<0.25	50.00	0.17		
A-23R	03/15/06	1.1	<0.25	--	<0.50	--	0.34	0.0033	<0.0025	0.0051	<0.0050*	--	0.80	13.00	--	--	27.00	<0.25	21.00	0.28		
A-23R	06/08/06	0.34	<0.25	--	<0.50	--	0.033	<0.0005	<0.0005	0.031	0.0081*	--	0.70	4.00	--	--	38.00	<0.25	150.00	0.19		
A-23R	09/12/06	0.42	<0.25	--	<0.50	--	0.010	<0.0005	0.032	0.0013	0.035*	--	1.40	3.60	--	--	33.00	<0.25	100.00	<0.10		
A-23R	12/12/06	2.1	<0.25	--	<0.50	--	0.52	0.0066	0.053	0.021	<0.0050*	--	2.80	16.00	--	--	24.00	<0.25	4.20	0.31		
A-23R	03/27/07	0.86	--	--	--	--	0.17	0.0019	0.0019	0.0045	--	--	1.10	--	--	--	--	--	--	--		
A-23R	06/19/07	0.44	--	--	--	--	0.021	0.00058	0.010	0.0013	0.0076*	--	1.40	3.00	--	--	32.00	<0.25	180.00	0.11		
A-23R	09/24/07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
A-23R	12/11/07	0.79	--	--	--	--	0.095	0.0025	0.0050	0.0026	--	--	2.73	--	--	--	--	--	--	--	--	
A-23R	03/04/08	<0.25	--	--	--	--	0.00097	<0.0005	<0.0005	<0.0005	--	--	3.20	--	--	--	--	--	--	--	--	
A-23R	06/05/08	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	2.40	2.60	--	--	44.00	<0.25	440.00	<0.10		
A-23R	12/05/08	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.33	--	--	--	--	--	--	--	--	
A-23R	03/04/09	<0.25	--	--	--	--	0.00073	<0.0005	0.0022	0.013	--	--	0.35	--	--	--	--	--	--	--	--	
A-23R	06/02/09	<0.25	--	--	--	--	0.0013	<0.00050	0.0021	0.0059	<0.0050*	--	0.60	2.10	--	--	22.00	<0.25	290.00	<0.10		

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
A-23R	09/21/09	<0.25	--	--	--	--	<0.00050	<0.00050	<0.00050	<0.00050	--	--	0.77	--	--	--	--	--	--	--	--	
A-23R	11/16/09	<0.25	--	--	--	--	<0.0005	<0.0005	0.001	<0.0005	--	--	1.29	--	--	--	--	--	--	--	--	
A-23R	03/08/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.86	--	--	--	--	--	--	--	--	
A-23R	06/08/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	0.89	1.10	--	--	39.00	<0.25	450.00	<0.10	--	
A-23R	09/09/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.54	--	--	--	--	--	--	--	--	
A-23R	11/16/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.96	--	--	--	--	--	--	--	--	
A-23R	03/01/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	--	--	--	--	--	--	--	--	
A-23R	05/24/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050***	--	0.59	1.00	--	--	44.00	<0.25	450.00	0.10	--	
A-23R	08/29/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.55	--	--	--	--	--	--	--	--	
A-23R	12/01/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0010	--	--	1.15	--	--	--	--	--	--	--	--	
A-23R	03/01/12	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.47	--	--	--	--	--	--	--	--	
A-23R	05/30/12	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050***	--	0.00	<0.010	--	--	86.00	<0.25	470.00	<0.10	--	
A-23R	11/07/12	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	<0.010	--	--	11	<0.25 °c	1,000	<0.10	--	
A-23R	02/27/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	--	--	--	--	--	--	--	--	
A-23R	04/08/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	<0.0050	--	--	--	--	--	--	--	--	--	
A-23R	07/29/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
A-23R	10/02/13	<0.25	--	--	--	--	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--	--	
A-23R	01/21/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	4.28	--	--	--	--	--	--	--	--	
A-23R	04/22/14	<0.25	--	--	--	--	<0.001	<0.001	<0.001	<0.001	<0.0050	<0.0050	--	0.018	--	--	18	<0.25	1,900	<0.10	--	
A-23R	07/15/14	<0.25	--	--	--	--	0.00092	<0.0005	<0.0005	<0.0005	--	--	0.88	--	--	--	--	--	--	--	--	
A-23R	09/28/15	<0.100	--	--	--	--	0.00109	<0.005	<0.001	<0.003	--	--	0.12	3.55	--	--	4.87 T8	<0.1 T8	23.7	<0.05	--	
A-23R	10/11/16	<0.100	--	--	--	--	0.00109	<0.005	<0.001	<0.003	--	--	0.26	--	--	--	--	--	--	--	--	
A-23R	10/10/17	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.51	--	--	--	--	--	--	--	--	
A-23R	10/02/18	0.119 B	--	--	--	--	0.00299	<0.001	<0.001	<0.003	--	--	0.12	--	--	--	--	--	--	--	--	
A-23R	10/03/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.11	--	--	--	--	--	--	--	--	
A-25	06/16/11	4.1	--	--	--	--	0.27	0.038	0.28	0.19	--	--	--	--	--	--	--	--	--	--	--	
A-26R	05/25/11	22	--	--	--	--	4	0.095	1.6	0.75	--	--	--	--	--	--	--	--	--	--	--	
A-27	02/14/02	2.9	11	--	<0.5	--	0.13	0.014	0.096	0.25	--	--	--	--	--	--	--	--	--	--	--	
A-27	05/22/02	3.3	8.2	--	<0.5	--	0.20	0.016	0.14	0.38	--	--	--	--	--	--	--	--	--	--	--	
A-27	08/29/02	3.8	8.1	--	<0.5	--	0.24	0.016	0.14	0.29	--	--	2.30	7.50	--	--	24.00	<0.25	0.29	0.20	--	
A-27	11/06/02	3.2	8.000	--	<0.5	--	0.16	0.016	0.065	0.14	--	--	0.70	5.20	--	--	26.00	<0.25	<0.25	<0.25	0.20	
A-27	02/19/03	3.1	6.8	--	<0.5	--	0.17	0.017	0.052	0.13	--	--	3.20	6.60	--	--	19.00	<0.25	<0.25	<0.1	--	
A-27	06/10/03	3.7	4.5	--	<0.25	--	0.14	0.013	0.11	0.23	--	--	1.20	10.00	--	--	19.00	<0.25	0.77	0.10	--	
A-27	09/16/03	4.5	5.6	--	<0.50	--	0.27	0.02	0.18	0.38	--	--	1.00	8.60	--	--	51.00	<0.25 b	0.59	0.70	--	
A-27	11/19/03	5.9	5.3	--	<0.50	--	0.25	0.023	0.13	0.33	--	--	1.10	8.90	--	--	19.00	<0.25 b	0.33	<0.1	--	
A-27	02/25/04	4.4	16	--	<0.50	--	0.15	0.016	0.18	0.30	--	--	1.90	12.00	--	--	27.00	<0.25 b	<0.25	0.30	--	
A-27	05/11/04	4.6	5.2	--	<0.50	--	0.16	0.017	0.23	0.38	--	--	0.70	8.40	--	--	25.00	<0.25	<0.50	<0.10	--	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
A-27	08/25/04	4.7	2.5	--	<0.50	--	0.25	0.018	0.17	0.24	--	--	1.68	12.00	--	--	22.00	<0.25	<0.50	0.13	
A-27	12/14/04	4.5	4.4	--	<0.50	--	0.11	0.012	0.099	0.14	--	--	1.32	12.00	--	--	10.00	<0.25	<0.50	0.12	
A-27	03/10/05	5.8	4.7	--	<0.50	--	0.14	0.015	0.16	0.22	--	--	1.62	12.00	--	--	18.00	<0.25	0.78	<0.10	
A-27	06/07/05	4.5	7.8	--	<0.50	--	0.17	0.014	0.24	0.34	--	--	1.00	7.00	--	--	19.00	<0.25	<0.50	0.30	
A-27	09/20/05	6.3	2.3	--	<0.50	--	0.25	0.019	0.18	0.22	--	--	3.10	10.00	--	--	29.00	<0.25	0.84	0.16	
A-27	12/13/05	3.7	0.83	--	<0.50	--	0.13	0.012	0.083	0.095	--	--	2.30	16.00	--	--	24.00	<0.25	<0.50	<0.10	
A-27	03/15/06	4.4	1.3	--	<0.50	--	0.13	0.017	0.19	0.24	--	--	2.30	15.00	--	--	14.00	<0.25	<0.50	0.16	
A-27	06/08/06	4.5	1.1	--	<0.50	--	0.19	0.016	0.23	0.28	--	--	1.20	13.00	--	--	25.00	<0.25	0.51	0.15	
A-27	09/12/06	3.4	0.82	--	<0.50	--	0.17	0.011	0.12	0.12	--	--	1.90	12.00	--	--	19.00	<0.25	<0.50	0.23	
A-27	12/12/06	3.7	0.90	--	<0.50	--	0.11	0.0096	0.10	0.12	--	--	1.00	13.00	--	--	24.00	<0.25	<0.50	<0.10	
A-27	03/27/07	3.2	--	--	--	--	0.063	0.0078	0.047	0.050	--	--	1.40	--	--	--	--	--	--	--	
A-27	06/19/07	2.6	--	--	--	--	0.073	0.0064	0.047	0.053	--	--	2.40	11.00	--	--	7.50	<0.25	<1.0	0.10	
A-27	09/24/07	2.7	--	--	--	--	0.10	0.0072	0.035	0.040	--	--	1.50	--	--	--	--	--	--	--	
A-27	12/11/07	4.7	--	--	--	--	0.16	0.011	0.17	0.13	--	--	1.50	--	--	--	--	--	--	--	
A-27	03/04/08	4.0	--	--	--	--	0.10	0.011	0.14	0.11	--	--	1.80	--	--	--	--	--	--	--	
A-27	06/04/08	2.5	--	--	--	--	0.093	0.0063	0.022	0.041	--	--	2.00	9.90	--	--	10.00	<0.25	<0.50	0.13	
A-27	09/08/08	3.5	--	--	--	--	0.16	0.0091	0.067	0.047	--	--	1.85	--	--	--	--	--	--	--	
A-27	12/04/08	3.1	--	--	--	--	0.13	0.0075	0.091	0.046	--	--	0.39	--	--	--	--	--	--	--	
A-27	03/04/09	2.5	--	--	--	--	0.098	0.0080	0.07	0.043	--	--	0.39	--	--	--	--	--	--	--	
A-27	06/02/09	3.1	--	--	--	--	0.048	0.0065	0.11	0.05	--	--	0.63	6.5	--	--	13	<0.25	1.2	<0.10	
A-27	09/22/09	2.9	--	--	--	--	0.054	0.0064	0.099	0.037	--	--	0.45	--	--	--	--	--	--	--	
A-27	11/16/09	3.0	--	--	--	--	0.035	0.0051	0.0921	0.035	--	--	0.46	--	--	--	--	--	--	--	
A-27	03/09/10	2.4	--	--	--	--	0.024	0.0043	0.089	0.036	--	--	1.32	--	--	--	--	--	--	--	
A-27	06/08/10	2.5	--	--	--	--	0.021	0.0041	0.088	0.031	--	--	0.00	3.90	--	--	12.00	<0.25	2.10	<0.10	
A-27	09/09/10	3.4	--	--	--	--	0.035	0.0054	0.12	0.034	--	--	0.47	--	--	--	--	--	<0.50	--	
A-27	11/16/10	2.1	--	--	--	--	0.014	0.0034	0.070	0.022	--	--	0.34	--	--	--	--	--	--	--	
A-27	03/02/11	2.3	--	--	--	--	0.014	0.0024	0.051	0.016	--	--	0.00	--	--	--	--	--	--	--	
A-27	05/24/11	1.7	--	--	--	--	0.0092	0.0017	0.023	0.0096	--	--	0.27	3.30	--	--	8.80	<0.25	2.20	0.10	
A-27	08/30/11	2.1	--	--	--	--	0.026	0.0021	0.022	0.011	--	--	0.36	--	--	--	--	--	--	--	
A-27	12/02/11	2.2	--	--	--	--	0.016	0.0026	0.030	0.0094	--	--	0.77	--	--	--	--	--	--	--	
A-27	03/01/12	1.4	--	--	--	--	0.012	0.0018	0.035	0.0077	--	--	0.32	--	--	--	--	--	--	--	
A-27	05/30/12	1.6	--	--	--	--	0.015	0.0016	0.038	0.0066	--	--	0.00	2.60	--	--	21.00	<0.25	1.10	<0.10	
A-27	08/25/12	1.5	--	--	--	--	0.029	0.0018	0.0027	0.0048	--	--	--	--	--	--	--	--	--	--	
A-27	11/08/12	1.2	--	--	--	--	0.025	0.0022	0.0093	0.0068	--	--	--	--	--	--	--	--	--	--	
A-27	02/28/13	1.6	--	--	--	--	0.038	0.0019	0.057	0.0078	--	--	--	--	--	--	--	--	--	--	
A-27	04/10/13	1.3	--	--	--	--	0.035	0.0018	0.041	0.0053	--	--	--	3.9	--	--	21	<0.25 °c	3.3	<0.10	
A-27	06/21/13	1.0	0.40 K	--	--	--	0.053	0.0024	0.043	0.0083	--	--	--	--	--	--	--	<0.25 °c	2.7	<0.10	Baseline monitoring event

Appendix E
 Historical Groundwater Analytical Results
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
A-27	07/30/13	1.8	--	--	--	--	0.073	0.0039	0.051	0.017	--	--	--	6.2	16	3.6	--	16	<0.50	<0.10		
A-27 (DUP)	07/30/13	1.5	--	--	--	--	0.058	0.0033	0.040	0.015	--	--	--	--	--	--	--	--	--	--	--	Duplicate of A-27
A-27	08/26/13	1.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Two-month monitoring event
A-27	08/26/13	2.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Duplicate of A-27
A-27	10/02/13	1.9	--	--	--	--	0.066	0.0041	0.038	0.021	--	--	0.00	7.4	14	3.6	--	<0.50 °c	<0.50	<0.10		
A-27	01/22/14	2.6	--	--	--	--	0.078	0.0042	0.061	0.062	--	--	7.32	--	--	--	--	--	--	<0.50	<0.10	
A-27	04/22/14	2.9	--	--	--	--	0.062	0.0023	0.074	0.078	--	--	--	2.9	--	--	2.4	<0.25	4.2	<0.10		
A-27	07/15/14	1.8	--	--	--	--	0.051	0.0021	0.012	0.016	--	--	0.36	5.7	18	16	--	--	0.34 J	<0.10		
A-27	03/18/15	2.3	--	--	--	--	0.072	0.0019	0.072	0.010	--	--	0.33	6.7	--	--	17	<0.25	3.1	<0.10	Surrogate recovery above lab limits	
A-27	09/29/15	1.68	--	--	--	--	0.0609	<0.005	0.00988	0.00742	--	--	0.29	3.86	--	--	22.8 T8	<0.10	9.30	<0.05		
A-27	03/31/16	2.55	--	--	--	--	0.131	<0.005	0.142	0.0142	--	--	0.36	4.98	--	--	25.7	<0.10	7.57	<0.05 J3 J6		
A-27	10/14/16	1.42	--	--	--	--	0.0670	<0.005	0.0101	0.00490	--	--	0.29	2.02	--	--	24.3	<0.10	105	<0.05		
A-27	03/29/17	2.81	--	--	--	--	0.144	0.00320	0.159	0.0204	--	--	0.23	--	--	--	--	--	--	--	--	
A-27	10/12/17	1.08	--	--	--	--	0.0598	<0.00100	0.0114	<0.00300	--	--	0.73	1.47	--	--	19.3 T8	<0.100	74.0	<0.0500		
A-27	03/29/18	1.29	--	--	--	--	0.0259	<0.001	0.00882	<0.003	--	--	0.11	--	--	--	--	--	--	--	--	
A-27	10/04/18	0.949	--	--	--	--	0.0259	<0.001	<0.001	<0.003	--	--	0.12	1.64	--	--	10.7 T8	<0.1	236	<0.05		
A-27	04/03/19	0.869	--	--	--	--	0.00859	<0.00100	0.0116	<0.00300	--	--	0.08	--	--	--	--	--	292	--	--	
A-27	10/04/19	1.32	--	--	--	--	0.0217	0.00104	0.00201	0.00407	--	--	0.18	2.65	--	--	<1.25 T8	<0.100	6.65	<0.0500		
A-28R	02/14/02	5.3	2.7	--	<0.5	--	0.66	0.027	0.42	0.20	0.035*	--	--	--	--	--	--	--	--	--	--	
A-28R	05/22/02	3.1	6.7	--	<0.5	--	0.14	0.010	0.20	0.092	0.05*	--	--	--	--	--	--	--	--	--	--	
A-28R	08/29/02	4.0	6.0	--	<0.5	--	0.15	0.019	0.23	0.078	0.032*	--	3.60	6.20	--	--	45.00	<0.25	0.73	0.30		
A-28R	11/06/02	3.4	1.8	--	<0.5	--	0.47	0.015	0.053	0.050	0.028*	--	2.20	5.90	--	--	46.00	<0.25	0.57	<0.1		
A-28R	02/19/03	3.5	4.6	--	<0.5	--	0.46	0.015	0.051	0.050	0.013*	--	3.00	6.30	--	--	48.00	<0.25	0.56	<0.1		
A-28R	06/10/03	3.7	2.9	--	<0.25	--	0.31	0.0081	0.085	0.051	0.064*	--	1.20	6.10	--	--	42.00	<0.25	<0.25	<0.1		
A-28R	09/16/03	3.8	2.0	--	<0.50	--	1.0	0.013	0.075	0.048	0.17*	--	0.90	10b	--	--	58.00	<0.25 b	0.41	0.50		
A-28R	11/19/03	4.9	<0.25	--	<0.50	--	0.58	0.012	0.059	0.064	0.11*	--	1.20	9.90	--	--	47.00	<0.25 b	0.25	<0.1		
A-28R	02/25/04	5.1	1.7	--	<0.50	--	0.63	0.0093	0.19	0.076	0.0080*	--	1.80	9.60	--	--	46.00	<0.25 b	<0.25	1.40		
A-28R	05/12/04	6.5	2.6	--	<0.50	--	0.96	0.012	0.20	0.058	<0.0050*	--	1.90	11.00	--	--	47.00	<0.25	<0.50	<0.10		
A-28R	08/25/04	5.9	0.88	--	<0.50	--	2.1	0.018	0.050	0.053	0.043*	--	0.50	12.00	--	--	38.00	<0.25	--*b	--*b		
A-28R	12/14/04	7.6	3.0	--	<0.50	--	1.4	0.015	0.073	0.062	0.025*	--	1.72	12.00	--	--	22.00	<0.25	<0.50	0.12		
A-28R	03/10/05	10	0.76	--	<0.50	--	1.9	0.019	0.077	0.064	0.0078*	--	3.32	14.00	--	--	42.00	<0.25	<0.50	<0.10		
A-28R	06/07/05	6.4	1.2	--	<0.50	--	2.1	0.015	0.069	0.048	0.0068*	--	1.00	13.00	--	--	35.00	<0.25	<0.50	0.70		
A-28R	09/20/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
A-28R	12/13/05	5.4	<0.25	--	<0.50	--	0.93	0.011	0.033	0.036	0.012*	--	0.89	15.00	--	--	28.00	<0.25	<0.50	0.13		
A-28R	03/15/06	4.6	<0.25	--	<0.50	--	0.80	0.012	0.11	0.035	<0.0050*	--	0.89	15.00	--	--	45.00	<0.25	1.30	<0.10		
A-28R	06/08/06	4.2	0.49	--	0.73	--	0.87	0.013	0.070	0.035	0.019*	--	0.80	13.00	--	--	34.00	<0.25	<0.50	--		
A-28R	09/12/06	5.2	<0.25	--	<0.50	--	1.0	0.015	0.048	0.036	0.016*	--	1.10	16.00	--	--	35.00	<0.25	<0.50	<0.10		

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
A-28R	12/12/06	4.0	0.57	--	<0.50	--	0.3	0.0095	0.027	0.028	<0.0050*	--	1.70	13.00	--	--	25.00	<0.25	<0.50	<0.10	
A-28R	03/27/07	5.5	--	--	--	--	0.71	0.014	0.062	0.022	--	--	3.20	--	--	--	--	--	--	--	
A-28R	06/19/07	5.3	--	--	--	--	0.59	0.018	0.058	0.041	<0.0050	--	3.20	12.00	--	--	32.00	<0.25	2.50	<0.10	
A-28R	09/24/07	3.9	--	--	--	--	0.53	0.015	0.041	0.035	--	--	2.90	--	--	--	--	--	--	--	
A-28R	12/11/07	2.1	--	--	--	--	0.088	0.0044	0.013	0.015	--	--	2.60	--	--	--	--	--	--	--	
A-28R	03/04/08	3.6	--	--	--	--	0.27	0.0087	0.044	0.022	--	--	0.80	--	--	--	--	--	--	--	
A-28R	06/04/08	2.2	--	--	--	--	0.095	0.0049	0.0060	0.012	<0.0050	--	2.30	7.00	--	--	18.00	<0.25	<0.50	<0.10	
A-28R	12/04/08	1.4	--	--	--	--	0.026	0.0022	0.011	0.0075	--	--	0.36	--	--	--	--	--	--	--	
A-28R	03/04/09	1.4	--	--	--	--	0.12	0.0060	0.057	0.029	--	--	0.44	--	--	--	--	--	--	--	
A-28R	06/02/09	2.1	--	--	--	--	0.055	0.0020	0.016	0.0069	<0.0050	--	0.46	2.30	--	--	15.00	<0.25	2.80	0.18	
A-28R	09/22/09	2.3	--	--	--	--	0.1	0.0026	0.038	0.016	--	--	0.55	--	--	--	--	--	--	--	
A-28R	11/16/09	1.7	--	--	--	--	0.080	0.002	0.039	0.017	--	--	0.52	--	--	--	--	--	--	--	
A-28R	03/09/10	7.3	--	--	--	--	0.65	0.0079	0.32	0.092	--	--	0.50	--	--	--	--	--	--	--	
A-28R	06/08/10	2.2	--	--	--	--	0.14	0.0018	0.045	0.013	<0.0050	--	0.00	2.40	--	--	31.00	<0.25	18.00	0.29	
A-28R	09/10/10	2.4	--	--	--	--	0.12	0.0020	0.041	0.011	--	--	3.81	--	--	--	--	--	--	--	
A-28R	11/16/10	1.8	--	--	--	--	0.077	0.0017	0.047	0.013	--	--	0.79	--	--	--	--	--	--	--	
A-28R	03/02/11	2.8	--	--	--	--	0.15	0.0029	0.083	0.016	--	--	0.00	--	--	--	--	--	--	--	
A-28R	05/24/11	3.5	--	--	--	--	0.21	0.0029	0.091	0.015	<0.0050	--	0.00	3.60	--	--	39.00	<0.25	1.60	0.13	
A-28R	08/30/11	3.7	--	--	--	--	0.14	0.0026	0.061	0.011	--	--	0.31	--	--	--	--	--	--	--	
A-28R	12/02/11	3.6	--	--	--	--	0.074	0.0022	0.056	0.0092	--	--	0.30	--	--	--	--	--	--	--	
A-28R	03/02/12	2.6	--	--	--	--	0.086	0.0022	0.075	0.012	--	--	2.47	--	--	--	--	--	--	--	
A-28R	05/30/12	2.7	--	--	--	--	0.065	0.0017	0.050	0.0085	<0.0050	--	0.00	2.00	--	--	42.00	<0.25	<0.50	0.11	
A-28R	08/25/12	1.8	--	--	--	--	0.030	0.00089	0.010	0.0031	--	--	--	--	--	--	--	--	--	--	
A-28R	11/08/12	0.81	--	--	--	--	0.015	<0.0005	0.0066	0.0013	--	--	--	--	--	--	--	--	--	--	
A-28R	02/28/13	2.6	--	--	--	--	0.062	<0.0025	0.044	0.0059	--	--	--	--	--	--	--	--	--	--	
A-28R	04/10/13	3.2	--	--	--	--	0.035	0.0013	0.030	0.0042	<0.0050	--	--	2.5	--	--	37	<0.25 °c	7.9	<0.10	
A-28R	07/29/13	2.5	--	--	--	--	0.043	0.0018	0.019	0.0034	--	--	--	--	--	--	--	--	--	--	
A-28R	10/02/13	1.4	--	--	--	--	0.015	<0.001	0.0043	0.0026	--	--	0.00	--	--	--	--	--	--	--	
A-28R	01/22/14	1.4	--	--	--	--	0.17	0.0027	0.0060	0.0033	--	--	5.55	--	--	--	--	--	--	--	
A-28R	04/22/14	2.2	--	--	--	--	0.062	0.0022	0.016	0.0025	<0.0050	--	--	4.3	--	--	47	0.45	2.2	<0.10	
A-28R	07/15/14	1.7	--	--	--	--	0.043	0.0016	0.0062	0.0020	--	--	0.20	--	--	--	--	--	--	--	
A-28R	03/18/15	3.0	--	--	--	--	0.042	0.0035	0.016	0.0055	--	--	0.22	7.5	--	--	44	<0.25	4.4	<0.10	Surrogate recovery above lab limits
A-28R	09/29/15	1.85	--	--	--	--	0.0205	<0.005	0.00431	<0.003	--	--	0.30	4.15	--	--	71.3 T8	<0.10	<5.0	<0.05	
A-28R	03/31/16	3.37	--	--	--	--	0.160	<0.005	0.0202	0.00467	--	--	0.41	5.11	--	--	45.5	<0.10	<5.0	<0.05	
A-28R	10/14/16	3.65	--	--	--	--	0.208	0.00979	0.0106	0.00704	<0.002	<0.002	0.38	9.23	--	--	32.9	<0.10	<5.0	<0.05	
A-28R	03/29/17	3.87	--	--	--	--	0.113	0.00481	0.0217	0.00608	--	--	0.19	--	--	--	--	--	--	--	
A-28R	10/13/17	4.67	--	--	--	--	0.850	0.0177	0.0277	0.0161	<0.00200	<0.00100	0.63	13.6	--	--	37.7 T8	<0.100	<5.00	<0.0500	

Appendix E
 Historical Groundwater Analytical Results
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
A-28R	03/29/18	6.93	--	--	--	--	0.466	0.0103	0.0282	0.00879	--	--	4.61	--	--	--	--	--	--	--	
A-28R	10/04/18	7.86	--	--	--	--	0.534	0.0173	0.0284	0.0146	<0.002	<0.002	0.14	14.7	--	--	31.1 T8	<0.1	<5.0	<0.05	
A-28R	04/03/19	6.24	--	--	--	--	0.127	0.0069	0.294	0.023	--	--	0.09	--	--	--	--	--	--	--	
A-28R	10/04/19	8.86	--	--	--	--	0.544	0.0128	0.240	0.0265	<0.00200	<0.00200	0.28	15.5	--	--	32.5 T8	<0.100	<5.00	<0.0500	
A-29R	05/25/11	5.6	--	--	--	--	2.3	0.018	<0.015	0.024	--	--	--	--	--	--	--	--	--	--	
11	06/24/13	<0.25	0.30	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	<0.25	2.5	<0.10	Baseline monitoring event
11	07/30/13	<0.25	--	--	--	--	--	--	--	--	--	--	--	0.42	1.0	<0.30	--	<0.25	0.88	<0.10	
11	08/26/15	<0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	0.71	--
11	10/03/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.69	0.046	5.2	0.78	--	1.2 °c	560	<0.10	
11	01/22/14	0.75	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	9.20	--	--	--	--	--	120	<0.10	
11	04/21/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	1.1	580	<0.10	
11	07/14/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.07	0.47	1.6	0.55	--	--	200	<0.10	
11	03/18/15	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	10.87	<0.010	--	--	<0.050	0.43	450	<0.10	
11	09/29/15	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	3.59	0.0747	--	--	0.518	0.438	310	<0.05	
11	03/30/16	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	7.15	<0.010	--	--	<0.050	0.332	1,120	<0.05	
11	10/14/16	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	7.40	--	--	--	--	--	548	--	
11	03/29/17	<0.100	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	6.58	--	--	--	--	--	1,010	--	
11	10/13/17	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	4.84	--	--	--	--	--	428	--	
11	03/29/18	<0.1	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	7.24	--	--	--	--	--	222	--	
11	10/03/18	<0.1	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	2.37	--	--	--	--	--	423	--	
11	04/03/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	7.62	--	--	--	--	--	90	--	
11	10/03/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	3.30	--	--	--	--	--	175	--	
12	06/24/13	4.1	5.3 K	--	--	--	0.037	0.045	0.13	0.53	--	--	--	--	--	--	--	<0.25	<0.50	<0.10	Baseline monitoring event
12	08/26/13	9.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Two-month monitoring event
12	10/03/13	2.7	--	--	--	--	0.0020	0.0057	0.043	0.18	--	--	0.00	2.2	39	35	--	1.1 °c	5,500	<0.10	
12	01/22/14	4.2	--	--	--	--	0.0067	0.015	0.027	0.34	--	--	3.42	--	--	--	--	--	3,000	<0.10	
12	04/21/14	2.6	--	--	--	--	0.015	0.014	0.088	0.15	--	--	--	--	--	--	--	<0.25	1,700	0.22	
12	07/14/14	4.7	--	--	--	--	0.019	0.026	0.17	0.22	--	--	0.20	11	31	38	--	--	1,100	<0.10	
12	03/18/15	1.8	--	--	--	--	0.0059	0.0012	0.003	0.024	--	--	0.23	2.2	--	--	5.5	<0.25	940	<0.10	
12	09/29/15	3.32	--	9.85	--	0.732	0.0435	0.0217	0.191	0.0609	0.0508	0.00280	0.14	3.01	--	--	1.34 T8	<0.10	550	0.499	
12	03/30/16	0.725	--	--	--	--	0.00441	<0.005	0.0140	0.00511	--	--	0.29	0.473	--	--	2.32	<0.10	1,550	<0.05	
12	10/14/16	1.62	--	0.713	--	<0.500	0.00363	0.00950	0.0721	0.0306	0.0187	0.00336	0.87	--	--	--	--	--	791	--	
12	04/20/17	1.83	--	--	--	--	0.0244	<0.010	0.138	<0.030	--	--	0.31	--	--	--	--	--	2,740	--	
12	10/13/17	2.19 B	--	4.59	--	<0.250	0.0110	<0.0100	0.101	0.0317	0.146	0.00182	0.46	--	--	--	--	--	901	--	
12	03/29/18	1.05	--	--	--	--	0.00197	<0.001	0.00228	0.00365	--	--	0.10	--	--	--	--	--	627	--	
12	10/04/18	2.68	--	0.772	--	<0.25	0.033	0.012	0.181	<0.03	0.024	0.00272	0.26	--	--	--	--	--	152	--	
12	04/03/19	1.23	--	--	--	--	0.00225	0.00150	0.0185	0.0175	--	--	0.02	--	--	--	--	--	254	--	

Appendix E
 Historical Groundwater Analytical Results
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
12	10/03/19	1.36	--	1.41	--	<0.250	0.00435	0.00295	0.0226	0.0109	0.00951	0.00334	0.12	--	--	--	--	--	125	--	
MW-1	02/13/02	<0.25	2.0	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--	
MW-1	05/21/02	<0.25	1.9	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--	
MW-1	08/28/02	<0.25	1.0	--	<0.5	--	0.0013	0.0067	0.00052	0.0016	<0.005*	--	3.20	4.00	--	--	12.00	<0.25	1.20	0.20	
MW-1	11/05/02	<0.25	0.87	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	0.021*	--	1.90	3.60	--	--	85.00	<0.25	0.99	1.30	
MW-1	02/19/03	<0.25	1.9	--	<0.5	--	<0.0005	0.00058	<0.0005	<0.0005	<0.005*	--	3.60	4.90	--	--	16.00	<0.25	11.00	0.10	
MW-1	06/10/03	<0.25	1.1	--	<0.25	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	1.30	7.60	--	--	28.00	<0.25	6.40	<0.1	
MW-1	09/16/03	<0.25	<0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.40	5.60	--	--	25.00	<0.25 b	5.20	<0.1	
MW-1	11/19/03	<0.25	<0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.90	3.80	--	--	15.00	<0.25 b	0.50	<0.1	
MW-1	02/25/04	<0.25	1.3	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.20	2.60	--	--	21.00	<0.25 b	17.00	0.20	
MW-1	05/11/04	<0.25	0.87	--	<0.50	--	<0.0005	0.00068	<0.0005	<0.0005	<0.0050*	--	1.80	1.60	--	--	27.00	<0.25	11.00	<0.10	
MW-1	08/25/04	0.83	0.40	--	<0.50	--	<0.0005	<0.0005	0.00065	<0.0005	<0.0050*	--	2.38	1.60	--	--	18.00	<0.25	2.80	<0.10	
MW-1	12/15/04	<0.25	0.38	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	3.20	1.40	--	--	4.30	0.72	26.00	<0.10	
MW-1	03/09/05	<0.25	0.63	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	3.40	1.50	--	--	19.00	<0.25	9.80	<0.10	
MW-1	06/08/05	<0.25	0.80	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	3.00	0.82	--	--	11.00	<0.25	15.00	<0.2	
MW-1	09/21/05	<0.25	0.40	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	3.50	0.68	--	--	51.00	<0.25	52.00	<0.10	
MW-1	12/14/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.20	1.10	--	--	18.00	<0.25	21.00	<0.10	
MW-1	03/14/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.10	0.16	--	--	20.00	<0.25	21.00	<0.10	
MW-1	06/07/06	<0.25	0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.80	0.14	--	--	23.00	<0.25	86.00	<0.10	
MW-1	09/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0052*	--	2.20	2.50	--	--	24.00	<0.25	15.00	<0.10	
MW-1	12/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.60	0.22	--	--	6.60	1.00	49.00	<0.10	
MW-1	06/20/07	<0.25	0.75	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	3.40	--	--	--	--	--	--	--	
MW-1	03/04/08	--	--	--	--	--	--	--	--	--	--	--	1.20	--	--	--	--	--	26.00	--	
MW-1	06/05/08	<0.25	0.32	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.0013	<0.0050	--	2.70	--	--	--	--	<0.25	41.00	--	
MW-1	06/01/09	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.68	--	--	--	--	--	--	--	
MW-1	06/08/10	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.00	--	--	--	--	--	--	--	
MW-1	05/23/11	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.12	--	--	--	--	--	--	--	
MW-1	06/01/12	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.00	--	--	--	--	--	--	--	
MW-1	04/09/13	<0.25	--	<0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	
MW-1	04/23/14	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	
MW-1	10/01/15	<0.100	--	1.38	--	0.708	<0.01	<0.005	<0.001	<0.003	<0.002	<0.002	0.19	--	--	--	--	--	--	--	
MW-1	10/12/16	<0.100	--	<0.250	--	<0.500	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.34	--	--	--	--	--	--	--	
MW-1	10/12/17	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	0.77	--	--	--	--	--	--	--	
MW-1	10/03/18	<0.1	--	<0.2	--	<0.25	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	0.14	--	--	--	--	--	--	--	
MW-1	10/02/19	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200	0.16	--	--	--	--	--	--	--	
MW-2	02/13/02	<0.25	0.71	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--	
MW-2	05/21/02	<0.25	0.66	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-2	08/29/02	<0.25	0.91	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	2.10	0.69	--	--	1.60	<0.25	9.80	<0.1	
MW-2	11/05/02	<0.25	0.73	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	1.90	1.20	--	--	5.10	<0.25	9.60	<0.1	
MW-2	02/19/03	<0.25	0.74	--	<0.5	--	<0.0005	0.00062	<0.0005	<0.0005	0.028*	--	2.10	0.031	--	--	1.60	<0.25	55.00	<0.1	
MW-2	06/10/03	<0.25	0.61	--	<0.25	--	<0.0005	0.00071	<0.0005	<0.0005	0.026*a	--	1.40	0.059	--	--	1.60	<0.25	25.00	0.30	
MW-2	09/16/03	<0.25	<0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.062*	--	1.40	1.10	--	--	12.00	<0.25 b	21.00	0.60	
MW-2	11/19/03	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.021*	--	6.40	0.13	--	--	0.40	<0.25 b	8.30	<0.1	
MW-2	02/25/04	<0.25	<0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.030*	--	4.30	0.079	--	--	0.75	0.67 b	17.00	0.20	
MW-2	05/11/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.70	0.24	--	--	0.18	0.64	25.00	<0.10	
MW-2	08/25/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.02	0.11	--	--	0.063	<0.25	21.00	<0.10	
MW-2	12/14/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.72	0.093	--	--	<0.050	<0.25	11.00	<0.10	
MW-2	03/10/05	<0.25	0.29	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.00	0.23	--	--	0.32	0.34	31.00	<0.10	
MW-2	06/07/05	<0.25	0.91	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.036*	--	1.00	0.44	--	--	0.059	0.26	21.00	<0.2	
MW-2	09/20/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.70	0.033	--	--	<0.050	<0.25	25.00	<0.10	
MW-2	12/13/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.024*	--	3.00	0.71	--	--	1.60	<0.25	4.50	<0.10	
MW-2	03/15/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.80	<0.010	--	--	<0.050	0.54	17.00	<0.10	
MW-2	06/08/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0063*	--	1.20	0.013	--	--	<0.050	0.35	10.00	<0.10	
MW-2	09/12/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.50	0.49	--	--	<0.050	<0.25	13.00	<0.10	
MW-2	12/12/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.20	0.018	--	--	0.068	0.91	14.00	<0.10	
MW-2	06/19/07	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.80	--	--	--	--	--	--	--	
MW-2	03/04/08	--	--	--	--	--	--	--	--	--	--	--	3.20	--	--	--	--	--	19.00	--	
MW-2	06/04/08	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.90	--	--	--	--	0.97	12.00	--	
MW-2	06/03/09	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	4.27	--	--	--	--	--	--	--	
MW-2	06/08/10	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.063	--	1.71	--	--	--	--	--	--	--	
MW-2	05/23/11	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	3.30	--	--	--	--	--	--	0.0050	
MW-2	05/31/12	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.83	--	--	--	--	--	--	0.0050	
MW-2	04/09/13	<0.25	--	<0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	<0.10	
MW-2	04/22/14	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	<0.10	
MW-2	09/30/15	<0.100	--	<0.100	--	<0.25	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	1.02	0.276	--	--	0.115 T8	<0.10	6.98	<0.05	
MW-2	10/12/16	<0.100	--	<0.250	--	<0.500	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	1.42	--	--	--	--	--	--	--	
MW-2	10/11/17	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	2.66	--	--	--	--	--	--	--	
MW-2	10/03/18	<0.1	--	<0.2	--	<0.25	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	3.14	--	--	--	--	--	--	--	
MW-2	10/03/19	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200	1.37	--	--	--	--	--	--	--	
MW-3	02/13/02	<0.25	1.8	--	<0.5	--	0.011	0.0015	0.0045	0.011	<0.005*	--	--	--	--	--	--	--	--	--	
MW-3	05/20/02	0.38	1.9	--	<0.5	--	0.052	0.0028	0.025	0.020	0.01*	--	--	--	--	--	--	--	--	--	
MW-3	08/28/02	0.62	2.5	--	<0.5	--	0.11	0.0071	0.021	0.030	<0.005*	--	2.60	4.60	--	--	11.00	<0.25	19.00	0.20	
MW-3	11/06/02	0.63	1.1	--	<0.5	--	0.14	0.0053	0.021	0.015	0.006*	--	2.90	0.88	--	--	0.80	<0.25	9.20	0.20	
MW-3	02/19/03	<0.25	1.8	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	0.014*	--	8.60	0.017	--	--	0.20	6.10	84.00	0.20	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-3	06/11/03	<0.25	1.3	--	<0.25	--	<0.0005	<0.0005	<0.0005	<0.0005	0.019*	--	6.54	0.022	--	--	0.40	8.50	130.00	0.20	
MW-3	09/17/03	<0.25	1.4	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.042*	--	6.50	0.028	--	--	0.80	8.20	160.00	<0.1	
MW-3	11/20/03	<0.25	2.4	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0063*	--	7.80	<0.01	--	--	<0.2	17.00	66.00	0.20	
MW-3	02/25/04	<0.25	1.2	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.025*	--	2.80	<0.01	--	--	<0.050	6.70	35.00	0.20	
MW-3	05/11/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	8.40	<0.010	--	--	<0.050	7.70	59.00	<0.10	
MW-3	08/25/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0051*	--	1.80	<0.010	--	--	<0.050	7.00	66.00	<0.10	
MW-3	12/15/04	<0.25	0.33	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.018*	--	7.60	0.059	--	--	<0.050	6.50	50.00	<0.10	
MW-3	03/09/05	<0.25	<0.25	--	<0.50	--	0.0010	<0.0005	<0.0005	<0.0005	<0.0050*	--	4.43	1.80	--	--	<0.050	3.50	51.00	<0.10	
MW-3	06/08/05	<0.25	<0.25	--	<0.50	--	0.0011	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.98	3.30	--	--	<0.050	4.20	37.00	<0.2	
MW-3	09/21/05	<0.25	<0.25	--	<0.50	--	0.00094	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.90	4.30	--	--	0.064	3.40	47.00	<0.10	
MW-3	12/14/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.80	0.80	--	--	<0.050	1.60	72.00	<0.10	
MW-3	03/14/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	3.10	0.23	--	--	<0.050	7.50	22.00	<0.10	
MW-3	06/07/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.80	0.30	--	--	<0.050	4.60	21.00	<0.10	
MW-3	09/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.60	2.40	--	--	<0.050	0.40	30.00	<0.10	
MW-3	12/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	0.80	0.25	--	--	0.064	2.80	28.00	<0.10	
MW-3	06/20/07	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	2.20	--	--	--	--	--	--	--	
MW-3	06/05/08	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	2.00	--	--	--	--	3.40	15.00	--	
MW-3	06/01/09	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	4.84	--	--	--	--	--	--	--	
MW-3	06/09/10	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	0.0011	0.0053	<0.0050	--	3.24	--	--	--	--	--	--	--	
MW-3	05/23/11	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	5.29	--	--	--	--	--	--	--	
MW-3	05/31/12	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.34	--	--	--	--	--	--	--	
MW-3	04/09/13	<0.25	--	<0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	
MW-3	04/22/14	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	
MW-3	10/01/15	<0.100	--	0.143	--	<0.25	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	2.76	--	--	--	--	--	--	--	
MW-3	10/12/16	<0.100	--	<0.250	--	<0.500	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	3.86	--	--	--	--	--	--	--	
MW-3	10/11/17	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	4.49	--	--	--	--	--	--	--	
MW-3	10/03/18	<0.1	--	<0.2	--	<0.25	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	2.95	--	--	--	--	--	--	--	
MW-3	10/02/19	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	0.00743	<0.00200	4.44	--	--	--	--	--	--	--	
MW-4	02/14/02	0.78	280	--	<50	--	0.30	0.0072	0.0023	0.0082	--	--	--	--	--	--	--	--	--	--	
MW-4	05/21/02	1.5	8.6	--	<0.5	--	0.43	0.023	0.034	0.13	--	--	--	--	--	--	--	--	--	--	
MW-4	08/28/02	3.3	30	--	2.6	--	1.1	0.016	0.016	0.024	--	--	1.00	5.10	--	--	86.00	<0.25	2.90	--	
MW-4	11/05/02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-4	02/19/03	3.1	31	--	<0.5	--	0.056	0.0017	0.014	0.020	--	--	2.00	1.80	--	--	120.00	<0.25	270.00	--	
MW-4	06/10/03	0.39	12	--	<0.25	--	0.031	0.0012	0.0091	0.0096	--	--	0.90	4.90	--	--	36.00	<0.25	8.40	0.60	
MW-4	09/16/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-4	11/19/03	0.25	19	--	<0.50	--	0.033	<0.001	0.0042	0.0069	--	--	1.40	1.90	--	--	31.00	<0.25 b	49.00	0.60	
MW-4	02/25/04	0.36	15	--	<0.50	--	0.035	0.0014	0.0056	0.0094	--	--	2.20	1.20	--	--	32.00	<0.25 b	1.00	0.30	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO	DRO	DRO, SGC	HO	HO, SGC	Benzene	Toluene	Ethylbenzene	Xylenes	Total Lead	Dissolved Lead	Dissolved Oxygen	Methane	Total Iron	Dissolved Iron	Ferrous Iron	Nitrate	Sulfate	Sulfide	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-4	05/12/04	0.33	7.4	--	<0.50	--	0.012	<0.001	0.0048	0.0058	--	--	0.89	4.90	--	--	37.00	<0.25	5.30	<0.10	
MW-4	08/26/04	<0.50	5.1	--	<0.50	--	0.014	<0.0025	0.0039	0.0069	--	--	2.32	1.40	--	--	26.00	<0.25	6.40	0.42	
MW-4	12/15/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-4	03/09/05	<2.0	11	--	<0.50	--	<0.01	<0.01	<0.01	0.013	--	--	1.37	1.00	--	--	31.00	<0.25	110.00	0.33	
MW-4	06/08/05	<1.0	16	--	1.1	--	<0.005	<0.005	<0.005	<0.005	<0.0050	--	1.50	1.60	--	--	46.00	<0.25	11.00	0.50	
MW-4	09/21/05	<2.0	19	--	2.1	--	<0.010	<0.010	<0.010	<0.010	--	--	1.30	7.00	--	--	54.00	<0.25	0.52	23.00	
MW-4	12/14/05	<0.50	6.2	--	0.81	--	0.012	<0.0025	0.0032	0.0084	--	--	2.40	6.60	--	--	19.00	<0.25	33.00	0.38	
MW-4	03/14/06	<0.40	3.9	--	0.69	--	0.0063	<0.0020	0.0020	0.0062	--	--	2.40	4.20	--	--	11.00	<0.25	1.90	0.53	
MW-4	06/07/06	<0.50	4.5	--	<0.50	--	0.0037	<0.0025	<0.0025	<0.0025	--	--	3.20	7.10	--	--	8.30	<0.25	<0.50	0.54	
MW-4	09/13/06	<0.50	2.7	--	<0.50	--	0.0034	<0.0025	<0.0025	0.0029	--	--	2.80	7.60	--	--	15.00	<0.25	<0.50	0.85	
MW-4	12/13/06	<0.25	3.7	--	0.62	--	0.0012	<0.0005	<0.0005	0.0023	--	--	2.90	2.30	--	--	8.70	<0.25	31.00	<0.10	
MW-4	06/20/07	<0.25	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	1.80	--	--	--	--	--	--	--	
MW-4	06/05/08	<0.25	1.2	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	2.60	--	--	--	--	--	--	--	
MW-4	06/01/09	<0.25	2.1	--	0.61	--	<0.0005	<0.0005	<0.0005	0.00080	--	--	0.26	--	--	--	--	--	--	--	
MW-4	06/08/10	<0.25	0.86	--	<0.50	--	<0.0005	0.00057	<0.0005	0.0018	--	--	0.00	--	--	--	--	--	--	--	
MW-4	05/23/11	<0.25	1.6	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	0.25	--	--	--	--	--	--	--	
MW-4	06/01/12	<0.50	2.0	--	<0.50	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	0.00	--	--	--	--	--	--	--	
MW-4	04/09/13	<0.50 O	--	0.92	<0.50	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	--	--	--	--	--	--	--	--	
MW-4	04/23/14	<0.25	5.3	1.7	0.90	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-4	09/30/15	<0.100	--	5.02	--	0.916	<0.001	<0.0005	<0.001	<0.003	--	--	0.41	--	--	--	--	--	--	--	
MW-4	10/12/16	0.285	--	1.27	--	<0.500	<0.001	<0.005	<0.001	<0.003	--	--	0.62	--	--	--	--	--	--	--	
MW-4	10/11/17	0.225 B	--	4.55	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.59	--	--	--	--	--	--	--	
MW-4	10/04/18	0.198	--	0.973	--	<0.25	<0.001	<0.001	<0.001	<0.003	--	--	0.08	--	--	--	--	--	--	--	
MW-4	10/03/19	<0.100	--	1.44	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.21	--	--	--	--	--	--	--	
MW-5	02/13/02	<0.25	<0.25	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--	
MW-5	05/21/02	<0.25	<0.5	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	0.01*	--	--	--	--	--	--	--	--	--	
MW-5	08/29/02	<0.25	1.2	--	<0.5	--	<0.0005	0.0018	<0.0005	0.00063	<0.005*	--	1.40	0.17	--	--	0.30	<0.25	11.00	0.20	
MW-5	11/05/02	<0.25	1.6	--	<0.5	--	0.0055	0.0016	<0.0005	0.00056	<0.005*	--	4.10	6.40	--	--	13.00	1.10	250.00	0.30	
MW-5	02/20/03	<0.25	<0.25	--	<0.5	--	<0.0005	0.00066	<0.0005	<0.0005	<0.005*	--	2.00	0.073	--	--	<0.2	<0.25	6.20	<0.1	
MW-5	06/11/03	<0.25	0.36	--	<0.25	--	<0.0005	0.00079	<0.0005	<0.0005	<0.005*	--	1.60	2.50	--	--	0.60	<0.25	8.20	0.10	
MW-5	09/16/03	<0.25	<0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.011*	--	1.20	4.70	--	--	3.10	<0.25 b	5.60	0.10	
MW-5	11/20/03	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0086*	--	4.90	<0.01	--	--	0.30	<0.25 b	4.70	0.20	
MW-5	02/24/04	<0.25	<0.50	--	<0.50	--	<0.0005	0.0014	<0.0005	<0.0005	<0.0050*	--	3.10	0.33	--	--	0.062	<0.25 b	5.80	0.10	
MW-5	05/11/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.90	0.61	--	--	1.50	0.27	3.00	<0.10	
MW-5	08/26/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.22	<0.010	--	--	<0.050	1.80	7.60	<0.10	
MW-5	12/15/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	12.19	<0.010	--	--	<0.050	0.27	4.30	<0.10	
MW-5	03/09/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.11*	--	6.22	0.020	--	--	<0.050	<0.25	15.00	<0.10	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-5	06/08/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.50	<0.010	--	--	<0.050	<0.25	11.00	<0.2	
MW-5	09/21/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.90	0.080	--	--	0.077	<0.25	8.90	<0.10	
MW-5	12/14/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.20	<0.010	--	--	<0.050	<0.25	9.80	--*d	
MW-5	03/14/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.012*	--	2.20	<0.010	--	--	<0.050	0.55	3.20	<0.10	
MW-5	06/07/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0099*	--	2.00	<0.010	--	--	<0.050	1.10	4.50	<0.10	
MW-5	09/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.013*	--	2.10	0.34	--	--	<0.050	<0.25	6.60	<0.10	
MW-5	12/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0088*	--	2.30	<0.010	--	--	<0.050	0.30	3.80	<0.10	
MW-5	06/20/07	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-5	06/04/08	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0094	--	2.40	--	--	--	--	--	--	--	
MW-5	06/02/09	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.00078	<0.0050	--	4.34	--	--	--	--	--	--	--	
MW-5	06/08/10	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.84	--	--	--	--	--	--	--	
MW-5	05/24/11	<0.25	<0.25	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	--	5.26	--	--	--	--	--	--	--	
MW-5	05/31/12	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	2.33	--	--	--	--	--	--	--	
MW-5	04/09/13	<0.25	--	<0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0073	--	--	--	--	--	--	--	--	--	
MW-5	04/21/14	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	
MW-5	10/01/15	<0.100	--	0.371	--	<0.25	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.45	--	--	--	--	--	--	--	
MW-5	10/12/16	<0.100	--	<0.250	--	<0.500	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.40	--	--	--	--	--	--	--	
MW-5	10/13/17	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	0.59	--	--	--	--	--	--	--	
MW-5	10/03/18	<0.1	--	<0.2	--	<0.25	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	0.13	--	--	--	--	--	--	--	
MW-5	10/01/19	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200	1.46	--	--	--	--	--	--	--	
MW-6	02/13/02	0.97	1.1	--	<0.5	--	0.014	0.0007	<0.0005	0.00065	<0.005*	--	--	--	--	--	--	--	--	--	
MW-6	05/22/02	1.1	2.5	--	<0.5	--	0.035	0.0012	0.0024	0.00072	<0.005*	--	--	--	--	--	--	--	--	--	
MW-6	08/29/02	0.58	6.4	--	<0.5	--	0.0014	<0.001	<0.001	<0.001	<0.005*	--	1.20	0.72	--	--	4.10	<0.25	11.00	0.10	
MW-6	11/05/02	0.59	7.3	--	<0.5	--	0.064	<0.001	<0.001	0.0016	0.02*	--	1.70	1.70	--	--	10.00	<0.25	5.60	0.70	
MW-6	02/19/03	0.54	1.7	--	<0.5	--	0.0062	<0.0005	<0.0005	<0.0005	<0.005*	--	3.30	1.20	--	--	7.30	<0.25	62.00	0.10	
MW-6	06/10/03	0.70	1.9	--	<0.25	--	0.025	0.0011	0.00052	0.00051	<0.005*	--	2.00	0.87	--	--	5.90	<0.25	17.00	0.20	
MW-6	09/16/03	0.68	<0.50	--	<0.50	--	<0.0005	<0.0005	0.00053	<0.0005	0.019*	--	2.30	1.60	--	--	41.00	<0.25 b	2.90	1.00	
MW-6	11/19/03	0.44	1.6	--	<0.50	--	0.0095	0.00067	<0.0005	0.00051	<0.0050*	--	5.10	1.70	--	--	5.40	<0.25 b	19.00	<0.1	
MW-6	02/25/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.40	<0.01	--	--	0.49	2.8b	24.00	<0.1	
MW-6	05/11/04	1.0	0.67	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.20	0.39	--	--	5.10	<0.25	12.00	<0.10	
MW-6	08/25/04	<0.25	0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.26	0.59	--	--	4.90	<0.25	8.70	0.18	
MW-6	12/14/04	0.82	0.81	--	<0.50	--	0.0080	<0.0005	<0.0005	<0.0005	0.011*	--	1.45	2.80	--	--	2.50	<0.25	9.90	<0.10	
MW-6	03/10/05	1.0	0.42	--	<0.50	--	0.0011	<0.0005	<0.0005	<0.0005	<0.0050*	--	0.70	0.85	--	--	1.90	<0.25	20.00	0.15	
MW-6	06/07/05	0.92	<0.25	--	<0.50	--	0.0014	<0.0005	<0.0005	<0.0005	<0.0050*	--	3.80	0.38	--	--	0.86	0.56	19.00	0.20	
MW-6	09/20/05	0.91	<0.25	--	<0.50	--	<0.0005	<0.0005	0.00062	<0.0005	<0.0050*	--	0.90	1.50	--	--	2.50	<0.25	6.00	0.18	
MW-6	12/13/05	1.2	0.38	--	<0.50	--	0.0032	<0.0005	0.00050	<0.0005	<0.0050*	--	1.00	1.90	--	--	2.60	<0.25	10.00	0.26	
MW-6	03/15/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.00	0.057	--	--	0.30	<0.25	17.00	<0.10	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-6	06/08/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.90	0.22	--	--	5.90	<0.25	7.30	0.39	
MW-6	09/12/06	0.71	<0.25	--	<0.50	--	<0.0005	0.00055	<0.0005	<0.0005	<0.0050*	--	1.60	0.98	--	--	2.50	<0.25	3.10	0.33	
MW-6	12/12/06	<0.25	<0.25	--	<0.50	--	<0.0005	0.00055	<0.0005	<0.0005	<0.0050*	--	2.00	0.032	--	--	1.60	0.91	49.00	<0.10	
MW-6	03/27/07	0.81	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.30	--	--	--	--	--	--	--	
MW-6	06/19/07	0.73	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.40	0.40	--	--	4.40	<0.25	15.00	0.21	
MW-6	09/24/07	0.55	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	3.40	--	--	--	--	--	--	--	
MW-6	12/11/07	0.54	--	--	--	--	0.0014	<0.0005	<0.0005	<0.0005	--	--	3.16	--	--	--	--	--	--	--	
MW-6	03/04/08	0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.50	--	--	--	--	--	--	--	
MW-6	06/04/08	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	2.90	0.38	--	--	0.70	<0.25	11.00	0.13	
MW-6	09/08/08	0.51	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.89	--	--	--	--	--	--	--	
MW-6	12/04/08	0.43	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.33	--	--	--	--	--	--	--	
MW-6	03/04/09	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.57	--	--	--	--	--	--	--	
MW-6	06/02/09	0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	0.0025	<0.0050	--	1.37	0.096	--	--	0.30	3.30	24.00	<0.10	
MW-6	09/21/09	0.33	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.28	--	--	--	--	--	--	--	
MW-6	11/17/09	0.31	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.46	--	--	--	--	--	--	--	
MW-6	03/09/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	0.00095	--	--	1.33	--	--	--	--	--	--	--	
MW-6	06/08/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.080	0.036	--	--	0.22	0.41	11.00	<0.10	
MW-6	09/09/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.40	--	--	--	--	--	4.80	--	
MW-6	11/15/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.42	--	--	--	--	--	--	--	
MW-6	03/02/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.20	--	--	--	--	--	--	--	
MW-6	05/24/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.86	0.010	--	--	<0.050	0.68	10.00	0.10	
MW-6	08/30/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.32	--	--	--	--	--	--	--	
MW-6	12/01/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0010	--	--	0.90	--	--	--	--	--	--	--	
MW-6	03/01/12	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.69	--	--	--	--	--	--	--	
MW-6	05/31/12	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.00	<0.010	--	--	<0.050	2.10	18.00	<0.10	
MW-6	08/25/12	0.27	--	--	--	--	<0.00050	<0.00050	<0.00050	<0.00050	--	--	--	--	--	--	--	--	--	--	
MW-6	11/08/12	0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-6	02/28/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-6	04/09/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	<0.010	--	--	<0.050	0.92 °c	15	<0.10	
MW-6	07/29/13	0.30	--	--	--	--	<0.0005	<0.0005	<0.0005	0.00059	--	--	--	--	--	--	--	--	--	--	
MW-6	10/02/13	0.69	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	10.68	--	--	--	--	--	--	--	
MW-6	01/22/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	8.95	--	--	--	--	--	--	--	
MW-6	04/22/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	<0.010	--	--	<0.050	1.6	23	<0.10	
MW-6	07/15/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.51	--	--	--	--	--	--	--	
MW-6	09/29/15	0.259	--	--	--	--	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.36	0.123	--	--	0.203 T8	<0.1	9.64	<0.05	
MW-6	10/12/16	0.294	--	--	--	--	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.78	--	--	--	--	--	--	--	
MW-6	10/12/17	0.311	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	1.14	--	--	--	--	--	--	--	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
MW-6	10/03/18	0.389 B	--	--	--	--	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	0.36	--	--	--	--	--	--	--	--	
MW-6	10/03/19	0.249	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200	0.15	--	--	--	--	--	--	--	--	
MW-7	02/14/02	13	7.5	--	<0.5	--	0.20	0.24	0.57	1.8	0.035*	--	--	--	--	--	--	--	--	--	--	
MW-7	05/21/02	6.6	11	--	<0.5	--	0.16	0.089	0.43	0.66	0.04*	--	--	--	--	--	--	--	--	--	--	
MW-7	08/29/02	2.9	5.7	--	<0.5	--	0.12	0.042	0.24	0.11	0.047*	--	1.40	14.00	--	--	9.80	<0.25	20.00	0.40		
MW-7	11/05/02	0.90	5.9	--	<0.5	--	0.021	0.0022	0.004	0.0066	0.041*	--	3.00	14.00	--	--	8.90	<0.25	7.00	0.50		
MW-7	02/20/03	9.7	11	--	<0.5	--	0.12	0.13	0.33	1.4	0.11*a	--	2.50	13.00	--	--	13.00	<0.25	21.00	1.10		
MW-7	06/11/03	5.7	8.7	--	<0.25	--	0.13	0.092	0.26	0.52	0.081*a	--	2.00	17.00	--	--	12.00	<0.25	1.10	0.50		
MW-7	09/17/03	1.4	12	--	<0.50	--	0.078	0.031	0.15	0.089	0.11*a	--	1.10	14.00	--	--	2.70	<0.25 c	3.00	1.10		
MW-7	11/20/03	0.26	0.79	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.035	0.019*a	--	2.40	0.98	--	--	0.90	1.3 c	19.00	<0.1		
MW-7	02/26/04	15	21	--	<0.50	--	0.11	0.34	0.63	3.8	0.034*a	--	6.20	18.00	--	--	27.00	<0.25 b	59.00	0.90		
MW-7	05/11/04	6.3	11	--	<0.50	--	0.059	0.15	0.31	1.3	0.0083*a	--	1.00	14.00	--	--	16.00	<0.25	12.00	0.15		
MW-7	08/26/04	7.1	20	--	<0.50	--	0.054	0.22	0.34	1.7	0.067*a	--	3.80	15.00	--	--	13.00	<0.25	9.20	0.47		
MW-7	12/15/04	18	4.4	--	<0.50	--	0.14	0.37	0.53	3.0	0.19*a	--	1.30	10.00	--	--	20.00	3.20	68.00	0.19		
MW-7	03/09/05	3.5	2.1	--	<0.50	--	0.045	0.034	0.090	0.27	0.079*a	--	1.45	18.00	--	--	9.30	<0.25	4.50	0.45		
MW-7	06/08/05	2.9	2.3	--	<0.50	--	0.054	0.050	0.11	0.44	0.069*a	--	10.50	17.00	--	--	8.70	<0.25	1.40	0.40		
MW-7	09/20/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled	
MW-7	09/21/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled	
MW-7	12/14/05	8.8	0.59	--	<0.50	--	0.16	0.19	0.31	1.5	0.042*a	--	1.70	22.00	--	--	19.00	<0.25	75.00	0.16		
MW-7	03/14/06	15	0.50	--	<0.50	--	0.12	0.26	0.50	3.6	0.026*	--	1.70	18.00	--	--	9.70	<0.25	19.00	0.36		
MW-7	06/07/06	17	0.85	--	<0.50	--	0.12	0.35	0.69	4.5	0.023*	--	1.60	19.00	--	--	2.70	<0.25	17.00	0.43		
MW-7	09/13/06	2.4	0.32	--	<0.50	--	0.050	0.055	0.19	0.39	0.021*a	--	2.00	17.00	--	--	1.80	<0.25	2.10	0.17		
MW-7	12/13/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled	
MW-7	03/27/07	13	--	--	--	--	0.091	0.22	0.60	2.5	--	--	1.90	--	--	--	--	--	--	--		
MW-7	06/20/07	6.6	--	--	--	--	0.027	0.06	0.19	1.1	0.030*	--	1.00	23.00	--	--	2.90	<0.25	8.30	0.45		
MW-7	09/24/07	6.6	--	--	--	--	0.023	0.094	0.27	2.0	--	--	2.60	--	--	--	--	--	--	--		
MW-7	12/11/07	27	--	--	--	--	0.031	0.33	0.87	6.6	--	--	3.22	--	--	--	--	--	--	--		
MW-7	03/04/08	19	--	--	--	--	0.032	0.19	0.66	3.8	--	--	1.30	--	--	--	--	--	13.00	--		
MW-7	06/04/08	6.4	--	--	--	--	<0.01	0.088	0.30	0.77	0.019***	--	1.30	19.00	--	--	0.15	<0.25	2.30	0.63		
MW-7	09/08/08	15	--	--	--	--	0.015	0.064	0.35	2.6	--	--	0.73	--	--	--	--	--	--	--		
MW-7	12/05/08	8.7	--	--	--	--	0.019	0.046	0.33	1.5	--	--	0.40	--	--	--	--	--	--	--		
MW-7	03/04/09	5.7	--	--	--	--	0.014	0.073	0.25	1.4	--	--	0.70	--	--	--	--	--	--	--		
MW-7	06/02/09	5.5	--	--	--	--	0.014	0.029	0.15	0.89	0.0072*	--	0.37	25.00	--	--	2.80	<0.25	21.00	0.42		
MW-7	09/21/09	6.1	--	--	--	--	0.0072	0.03	0.18	1.1	--	--	0.54	--	--	--	--	--	--	--		
MW-7	11/17/09	18	--	--	--	--	<0.020	0.16	0.54	4.3	--	--	0.64	--	--	--	--	--	--	--		
MW-7	03/09/10	5.8	--	--	--	--	0.013	0.047	0.20	0.9	--	--	0.18	--	--	--	--	--	--	--		
MW-7	06/09/10	4.9	--	--	--	--	0.0075	0.058	0.25	1.2	0.0064*	--	0.00	27.00	--	--	1.10	1.60	1.60	0.44		

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-7	09/09/10	1.9	<0.25	--	<0.50	--	0.0036	0.0082	0.041	0.23	--	--	0.25	--	--	--	--	<0.25	3.60	--	
MW-7	11/15/10	8.8	--	--	--	--	0.012	0.10	0.34	2.1	--	--	0.47	--	--	--	--	--	--	--	
MW-7	03/01/11	4.9	--	--	--	--	0.0051	0.055	0.11	0.77	--	--	0.00	--	--	--	--	--	--	--	
MW-7	05/24/11	5.0	--	--	--	--	0.0062	0.050	0.14	0.66	0.0082***	--	0.00	3.50	--	--	1.80	0.46	5.10	0.55	
MW-7	08/29/11	2.3	--	--	--	--	0.0022	0.0055	0.026	0.16	--	--	0.44	--	--	--	--	--	--	--	
MW-7	12/01/11	5.2	--	--	--	--	<0.0005	0.026	0.036	0.83	--	--	0.42	--	--	--	--	--	--	--	
MW-7	03/01/12	6.0	<0.25	--	<0.50	--	0.011	0.0987	0.24	0.90	--	--	0.25	--	--	--	--	--	--	--	
MW-7	05/31/12	8.8	--	--	--	--	0.02	0.14	0.36	1.9	0.0063***	--	0.00	14.00	--	--	1.50	<0.25	2.40	0.70	
MW-7	08/25/12	1.8	--	--	--	--	0.0024	0.0062	0.030	0.16	--	--	--	--	--	--	--	--	--	--	
MW-7	11/08/12	2.4	--	--	--	--	0.0028	0.028	0.072	0.55	--	--	--	--	--	--	--	--	--	--	
MW-7	02/28/13	1.3	--	--	--	--	<0.0015	0.0070	0.0070	0.19	--	--	--	--	--	--	--	--	--	--	
MW-7	04/09/13	8.1	--	--	--	--	<0.005	0.070	0.25	1.4	0.0097	0.0097	--	3.7	--	--	3.3	<0.25 °c	4.7	0.054 J	
MW-7	04/09/13	5.7	--	--	--	--	0.0071	0.072	0.24	1.2	--	--	--	--	--	--	--	--	--	--	
MW-7	06/21/13	4.0	0.27 K	--	--	--	0.0059	0.064	0.28	1.1	--	--	--	--	--	--	--	<0.25 °c	3.2	<0.10	Baseline monitoring event
MW-7	07/30/13	7.2	--	--	--	--	0.016	0.11	0.29	1.6	--	--	--	20	4.6	<0.30	--	<0.25	4.1	<0.10	
MW-7	08/26/13	7.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Two-month monitoring event
MW-7	10/03/13	2.8	--	--	--	--	0.016	0.033	0.15	0.54	--	--	0.00	20	170	140	--	0.81 °c	3,100	<0.10	
MW-7	01/22/14	2.1	--	--	--	--	0.014	0.010	0.13	0.17	--	--	5.11	--	--	--	--	--	2,100	0.23	
MW-7	04/21/14	1.9	--	--	--	--	0.013	0.0093	0.11	0.2	<0.0050	<0.0050	--	7.9	--	--	15	0.29	1,200	0.18	
MW-7 (DUP)	04/21/14	2.4	--	--	--	--	0.015	0.012	0.13	0.25	--	--	--	--	--	--	--	--	--	--	Duplicate of MW-7
MW-7	07/14/14	1.5	--	--	--	--	0.012	0.0012	0.073	0.021	--	--	1.80	24	3.7	5.8	--	--	1,000	<0.10	
MW-7	03/17/15	1.6	--	--	--	--	0.0043	0.0061	0.050	0.13	--	--	0.10	3.3	--	--	3.6	<0.25	750	0.16	
MW-7 (DUP)	03/17/15	2.1	--	--	--	--	0.0059	0.0078	0.068	0.17	--	--	--	--	--	--	--	--	--	--	Duplicate of MW-7
MW-7	09/30/15	1.02	--	--	--	--	0.00844	<0.005	0.0328	0.0335	0.00580	0.00381	0.21	12.1	--	--	19.7 T8	<0.10	932	<0.05	
MW-7	03/30/16	0.519	--	--	--	--	0.00212	<0.005	0.0203	0.0144	--	--	0.45	2.08	--	--	9.61	<0.10	1,250	<0.05	
MW-7 (DUP)	03/30/16	0.799	--	--	--	--	0.00211	<0.005	0.0272	0.0267	--	--	--	--	--	--	--	--	--	--	Duplicate of MW-7
MW-7	10/13/16	1.87	--	--	--	--	0.00538	<0.005	0.0690	0.0819	0.00555	0.00434	0.26	--	--	--	--	--	963	--	
MW-7 (DUP)	10/13/16	1.88	--	--	--	--	0.00557	<0.005	0.0705	0.0825	0.00539	0.00706	0.26	--	--	--	--	--	976	--	Duplicate of MW-7
MW-7	04/20/17	1.25	--	--	--	--	0.00118	0.00455	0.0644	0.0999	--	--	0.23	--	--	--	--	--	1,830	--	
MW-7	10/12/17	1.03	--	--	--	--	0.00362	0.00205	0.0331	0.0268	0.00488	0.00313	0.45	--	--	--	--	--	96.7	--	
MW-7 (DUP)	10/12/17	1.03	--	--	--	--	0.00307	0.00202	0.0359	0.0287	0.00448	0.00287	0.45	--	--	--	--	--	953	--	Duplicate of MW-7
MW-7	03/29/18	1.15	--	--	--	--	0.00117	0.00187	0.0216	0.0324	--	--	0.11	--	--	--	--	--	803	--	
MW-7 (DUP)	03/29/18	1.24	--	--	--	--	0.00111	0.00191	0.0257	0.0399	--	--	--	--	--	--	--	--	--	--	Duplicate of MW-7
MW-7	10/04/18	1.49	--	--	--	--	0.0049	0.00211	0.0202	0.0142	0.00818	0.00449	0.10	--	--	--	--	--	1,670	--	
MW-7 (DUP)	10/04/18	1.45	--	--	--	--	0.00354	0.00207	0.0189	0.0160	0.00741	0.00581	--	--	--	--	--	--	--	--	Duplicate of MW-7
MW-7	04/03/19	0.451	--	--	--	--	<0.00100	<0.00100	0.00142	<0.00300	--	--	0.01	--	--	--	--	--	763	--	
MW-7 (DUP)	04/03/19	0.251	--	--	--	--	<0.00100	<0.00100	0.00116	<0.00300	--	--	0.01	--	--	--	--	--	--	--	Duplicate of MW-7

Appendix E
 Historical Groundwater Analytical Results
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-7	10/03/19	1.83	--	--	--	--	0.00213	0.00397	0.0413	0.0193	0.00326	0.00226	0.05	--	--	--	--	--	400	--	
MW-7 (DUP)	10/03/19	1.74	--	--	--	--	0.00215	0.00399	0.0385	0.0194	0.00333	0.00237	0.05	--	--	--	--	--	379	--	Duplicate of MW-7
MW-8	02/14/02	<0.25	8.1	--	<5.0	--	<0.0005	0.00086	<0.0005	<0.0005	0.03*	--	--	--	--	--	--	--	--	--	
MW-8	08/29/02	<0.25	7.5	--	<0.5	--	<0.0005	0.00082	<0.0005	<0.0005	0.017*	--	6.20	0.90	--	--	2.30	<0.25	3.70	0.20	
MW-8	11/05/02	<0.25	1.7	--	1.2	--	<0.0005	<0.0005	<0.0005	<0.0005	0.012*	--	2.10	5.50	--	--	3.40	<0.25	7.50	0.10	
MW-8	02/20/03	<0.25	6.6	--	<0.5	--	<0.0005	0.00055	<0.0005	0.0024	0.029*	--	2.90	0.56	--	--	0.50	0.69	7.60	0.30	
MW-8	06/11/03	<0.25	3.8	--	<0.25	--	0.0013	<0.001	<0.001	<0.001	0.012*	--	1.56	18.00	--	--	0.30	<0.25	<0.25	0.40	
MW-8	09/17/03	<0.25	3.3	--	0.77	--	<0.0005	<0.0005	<0.0005	<0.0005	0.030*	--	2.50	11.00	--	--	6.10	<0.25 c	6.70	0.40	
MW-8	11/20/03	<0.25	2.5	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	<0.0050*	--	1.70	<0.010	--	--	<0.2	2.4 c	11.00	0.10	
MW-8	02/26/04	<0.25	2.7	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.016*	--	2.30	<0.01	--	--	0.57	1.2 b	4.40	0.20	
MW-8	05/11/04	<0.25	1.5	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	3.10	0.19	--	--	0.12	<0.25	5.30	<0.10	
MW-8	08/26/04	<0.25	1.0	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	3.32	0.36	--	--	<0.050	2.20	11.00	<0.10	
MW-8	12/15/04	<0.25	1.5	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	0.0071*	--	2.30	<0.010	--	--	<0.050	5.80	15.00	<0.10	
MW-8	03/09/05	<0.25	1.6	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0094*	--	2.22	<0.010	--	--	<0.050	1.20	7.30	<0.10	
MW-8	06/08/05	<0.25	1.8	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.014*	--	6.50	0.018	--	--	<0.050	2.30	7.40	<0.2	
MW-8	09/21/05	<0.25	0.97	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.011*	--	2.10	4.40	--	--	0.51	<0.25	11.00	<0.10	
MW-8	12/14/05	<0.25	1.1	--	0.58	--	<0.001	<0.001	<0.001	0.0013	0.0060*	--	2.50	4.00	--	--	<0.050	2.20	11.00	<0.10	
MW-8	03/14/06	<0.25	0.54	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.011*	--	2.50	<0.010	--	--	<0.050	1.60	6.40	<0.10	
MW-8	06/07/06	<0.25	0.88	--	0.61	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0093*	--	1.30	0.53	--	--	<0.050	1.10	6.00	<0.10	
MW-8	09/13/06	<0.25	0.35	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.012*	--	1.60	7.10	--	--	0.068	<0.25	5.00	<0.10	
MW-8	12/13/06	<0.25	0.82	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0060*	--	3.10	<0.010	--	--	<0.050	7.30	41.00	<0.10	
MW-8	06/20/07	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.029	--	2.20	--	--	--	--	--	--	--	
MW-8	06/04/08	<0.25	0.37	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	0.064	--	2.50	--	--	--	--	--	--	--	
MW-8	06/02/09	<0.25	0.52	--	<0.50	--	<0.00050	<0.00050	<0.00050	<0.00050	0.020	--	1.52	--	--	--	--	--	--	--	
MW-8	06/09/10	<0.25	0.82	--	0.65	--	<0.0005	<0.0005	<0.0005	<0.0005	0.013	--	1.55	--	--	--	--	--	--	--	
MW-8	05/24/11	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.020	--	0.85	--	--	--	--	--	--	--	
MW-8	05/31/12	<0.25	<0.25	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	0.032	--	0.79	--	--	--	--	--	--	--	
MW-8	04/10/13	<0.25	--	<0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.046	--	--	--	--	--	--	--	--	--	
MW-8	04/24/14	<0.25	0.49	<0.25	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	0.027	--	--	--	--	--	--	--	--	--	
MW-8	09/29/15	<0.100	--	1.75	--	2.07	<0.001	<0.005	<0.001	<0.003	0.00676	<0.002	2.06	--	--	--	--	--	--	--	
MW-8	10/13/16	<0.100	--	0.385	--	<0.500	<0.001	<0.005	<0.001	<0.003	0.0183	<0.002	0.25	--	--	--	--	--	--	--	
MW-8	10/12/17	<0.100	--	0.390	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	0.0180	<0.00100	0.54	--	--	--	--	--	--	--	
MW-8	10/03/18	<0.1	--	<0.2	--	<0.25	<0.001	<0.001	<0.001	<0.003	0.00275	<0.002	0.12	--	--	--	--	--	--	--	
MW-8	10/02/19	<0.100	--	0.328	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	0.00579	<0.00200	0.31	--	--	--	--	--	--	--	
MW-9	06/11/03	6.0	13	--	<0.50	--	0.0031	0.036	0.076	0.60	0.022*	--	2.10	6.60	--	--	15.00	<0.25	2.00	0.70	
MW-9	09/17/03	5.3	39	--	0.72	--	0.026	0.027	0.09	0.45	0.0095*	--	2.10	9.80	--	--	19.00	<0.25 c	1.50	0.70	
MW-9	11/20/03	8.5	19	--	<0.50	--	<0.005	0.018	0.14	1.1	0.0096*	--	1.60	2.20	--	--	14.00	<0.25 c	66.00	0.30	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-9	02/26/04	4.1	28	--	<0.50	--	0.022	0.0072	0.025	0.47	0.0083*	--	1.10	15.00	--	--	12.00	<0.25 b	8.10	0.80	
MW-9	05/11/04	4.1	5.8	--	<0.50	--	0.0023	0.0093	0.081	0.44	<0.0050*	--	0.90	4.10	--	--	0.25	<0.25	0.62	0.12	
MW-9	08/26/04	4.2	6.2	--	<0.50	--	0.0066	0.025	0.13	0.43	0.0099*	--	1.80	8.20	--	--	15.00	<0.25	1.00	0.41	
MW-9	12/15/04	5.4	7.6	--	<0.50	--	<0.0025	0.011	0.12	0.39	0.0094*	--	1.76	5.30	--	--	29.00	10.00	180.00	<0.10	
MW-9	03/09/05	4.5	3.5	--	<0.50	--	0.0037	0.0047	0.042	0.18	0.021*	--	4.70	4.30	--	--	7.20	<0.25	4.40	0.30	
MW-9	06/08/05	3.2	3.9	--	<0.50	--	0.0035	0.0087	0.069	0.17	0.0076*	--	4.50	6.50	--	--	8.40	<0.25	6.10	0.30	
MW-9	09/21/05	2.3	2.6	--	<0.50	--	0.007	0.0077	0.033	0.12	0.0076*	--	1.70	11.00	--	--	14.00	<0.25	1.90	0.21	
MW-9	12/14/05	4.7	1.2	--	<0.50	--	0.0078	0.010	0.12	0.38	0.0095*	--	3.30	10.00	--	--	9.10	<0.25	17.00	0.11	
MW-9	03/14/06	2.4	1.4	--	<0.50	--	0.0024	0.0034	0.018	0.12	0.013*	--	3.30	12.00	--	--	3.40	<0.25	1.40	0.51	
MW-9	06/07/06	<0.25	1.0	--	<0.50	--	0.0011	0.023	0.049	0.21	0.021*	--	0.90	4.60	--	--	5.60	<0.25	0.94	0.13	
MW-9	09/13/06	1.8	0.46	--	<0.50	--	0.0044	0.016	0.063	0.064	0.010*	--	1.90	7.40	--	--	7.50	<0.25	<0.50	<0.10	
MW-9	12/13/06	2.6	3.8	--	<0.50	--	<0.0025	<0.0025	0.024	0.19	0.025*	--	2.40	0.72	--	--	3.60	0.27	12.00	0.19	
MW-9	03/27/07	1.5	--	--	--	--	0.16	0.0013	0.0051	0.026	--	--	2.90	--	--	--	--	--	--	--	
MW-9	06/20/07	2.0	--	--	--	--	0.066	0.015	0.051	0.12	0.017	--	2.90	3.50	--	--	6.00	<0.25	<0.50	0.42	
MW-9	09/24/07	1.7	--	--	--	--	0.0036	0.0072	0.029	0.093	--	--	2.50	--	--	--	--	--	--	--	
MW-9	12/11/07	2.9	--	--	--	--	<0.0025	<0.0025	0.057	0.55	--	--	1.76	--	--	--	--	--	--	--	
MW-9	03/04/08	3.0	--	--	--	--	0.0096	<0.0015	0.016	0.15	--	--	1.50	--	--	--	--	--	--	--	
MW-9	06/04/08	2.0	--	--	--	--	0.0019	0.0073	0.039	0.089	0.0088	--	1.80	3.50	--	--	7.90	<0.25	0.80	0.40	
MW-9	09/08/08	2.4	--	--	--	--	0.0022	0.020	0.077	0.16	--	--	1.25	--	--	--	--	--	--	--	
MW-9	12/05/08	0.93	--	--	--	--	<0.0015	<0.0015	<0.0015	0.052	--	--	0.47	--	--	--	--	--	--	--	
MW-9	03/04/09	0.42	--	--	--	--	<0.0010	<0.0010	0.0040	0.031	--	--	0.32	--	--	--	--	--	--	--	
MW-9	06/02/09	1.2	--	--	--	--	<0.00050	<0.00050	0.0041	0.032	0.0099	--	0.51	0.57	--	--	1.50	<0.25	10.00	<0.10	
MW-9	09/22/09	1.2	--	--	--	--	0.0060	0.0018	0.0068	0.033	--	--	1.16	--	--	--	--	--	--	--	
MW-9	11/17/09	<0.25	--	--	--	--	<0.0005	0.00050	<0.0005	0.0043	--	--	0.48	--	--	--	--	--	--	--	
MW-9	03/09/10	<0.25	--	--	--	--	0.00092	0.00050	0.00055	0.00071	--	--	0.48	--	--	--	--	--	--	--	
MW-9	06/09/10	0.3	--	--	--	--	0.0014	<0.0005	0.00081	0.0058	<0.0050	--	0.00	7.50	--	--	2.90	<0.25	4.80	0.49	
MW-9	09/09/10	0.48	--	--	--	--	0.0058	0.0014	0.0061	0.025	--	--	0.37	--	--	--	--	--	2.00	--	
MW-9	11/15/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	0.00085	--	--	0.39	--	--	--	--	--	--	--	
MW-9	03/01/11	<0.25	--	--	--	--	0.014	<0.0005	<0.0005	0.00085	--	--	0.00	--	--	--	--	--	--	--	
MW-9	05/24/11	<0.25	--	--	--	--	0.0043	<0.0005	<0.0005	0.00085	0.0093	--	0.00	18.00	--	--	<0.050	<0.25	3.60	0.10	
MW-9	08/29/11	0.28	--	--	--	--	0.0067	<0.0005	0.00078	0.0038	--	--	0.27	--	--	--	--	--	--	--	
MW-9	12/01/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	0.0024	--	--	0.66	--	--	--	--	--	--	--	
MW-9	03/01/12	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.35	--	--	--	--	--	--	--	
MW-9	05/31/12	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	0.012	--	0.00	0.13	--	--	<0.050	0.38	5.30	<0.10	
MW-9	08/25/12	0.67	--	--	--	--	<0.00050	<0.00050	0.00062	0.0057	--	--	--	--	--	--	--	--	--	--	
MW-9	11/08/12	<0.25	--	--	--	--	<0.001	<0.001	<0.001	0.0029	--	--	--	--	--	--	--	--	--	--	
MW-9	02/28/13	<0.25	--	--	--	--	0.0012	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO	DRO	DRO, SGC	HO	HO, SGC	Benzene	Toluene	Ethylbenzene	Xylenes	Total Lead	Dissolved Lead	Dissolved Oxygen	Methane	Total Iron	Dissolved Iron	Ferrous Iron	Nitrate	Sulfate	Sulfide	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
MW-9	04/10/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	6.1	--	--	<0.050	0.88 °c	3.2	<0.10		
MW-9	06/24/13	0.33	0.37	--	--	--	0.014	<0.0005	<0.0005	0.0035	--	--	--	--	--	--	--	<0.25	5.3	0.11	Baseline monitoring event	
MW-9	07/30/13	0.27	--	--	--	--	0.0017	<0.0005	0.00071	0.006	--	--	--	14	2.0	<0.30	--	<0.25	72	0.077 J		
MW-9	08/26/13	0.42	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Two-month monitoring event	
MW-9	10/03/13	0.3	--	--	--	--	0.0056	<0.0005	<0.0005	0.0092	--	--	0.00	18	3.8	1.5	--	<0.50 °c	8.6	<0.10		
MW-9	01/22/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	0.0013	--	--	9.46	--	--	--	--	--	--	26	<0.10	
MW-9	04/21/14	<0.25	--	--	--	--	0.017	<0.0005	<0.0005	<0.0005	<0.0050	--	--	24	--	--	0.45	<0.25	300	<0.10		
MW-9	07/14/14	<0.25	--	--	--	--	0.010	<0.0005	<0.0005	0.00072	--	--	0.24	21	1.5	1.2	--	--	99	<0.10		
MW-9	03/18/15	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.99	2.9	--	--	<0.050	0.57	190	<0.10		
MW-9	09/30/15	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	0.00323	<0.002	0.09	5.40	--	--	0.207 T8	<0.1	27.8	<0.05		
MW-9	03/30/16	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	3.76	<0.010	--	--	<0.050	0.585	86.3	<0.05		
MW-9	10/13/16	0.784	--	--	--	--	<0.001	<0.005	0.00182	0.0116	0.00276	<0.002	0.24	--	--	--	--	--	39.2	--		
MW-9	03/29/17	0.113	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	5.09	--	--	--	--	--	89.7	--		
MW-9 (DUP)	03/29/17	0.147	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	--	--	--	--	--	--	--	--		
MW-9	10/12/17	0.667	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	0.0123	<0.00100	0.53	--	--	--	--	--	18 P1	--		
MW-9	03/28/18	<0.1	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	4.67	--	--	--	--	--	47.5	--		
MW-9	10/04/18	0.769	--	--	--	--	<0.001	<0.001	<0.001	<0.003	0.00808	<0.002	0.11	--	--	--	--	--	7.13	--		
MW-9	04/03/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	3.96	--	--	--	--	--	5.2	--		
MW-9	10/02/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	0.00435	<0.00200	0.15	--	--	--	--	--	6.77	--		
MW-12	06/19/01	<0.05	1.6	--	<0.5	--	<0.001	<0.001	<0.001	<0.003	<0.004	--	--	--	--	--	--	--	--	--		
MW-12	06/20/01	<0.06	1.7	--	<0.5	--	<0.001	<0.001	<0.001	<0.003	<0.004	--	--	--	--	--	--	--	--	--		
MW-12		Destroyed during construction activities																				
MW-12R	02/14/02	<0.25	1.4	--	<0.5	--	0.014	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--		
MW-12R	05/21/02	<0.25	2.5	--	<0.5	--	0.08	0.0013	<0.0005	0.00066	<0.005*	--	--	--	--	--	--	--	--	--		
MW-12R	08/28/02	<0.25	2.1	--	<0.5	--	0.028	0.0059	<0.0005	0.0015	<0.005*	--	--	--	--	--	--	--	--	--		
MW-12R	11/05/02	<0.25	1.3	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--		
MW-12R	02/19/03	0.26	2.5	--	<0.5	--	0.19	0.0012	<0.001	<0.001	<0.005*	--	--	--	--	--	--	--	--	--		
MW-12R	06/10/03	0.41	1.3	--	<0.25	--	0.11	0.00055	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--		
MW-12R	09/16/03	<0.25	0.67	--	<0.50	--	0.0021	<0.0005	<0.0005	<0.0005	0.013*	--	--	--	--	--	--	--	--	--		
MW-12R	11/19/03	0.42	<0.25	--	<0.50	--	0.26	<0.001	<0.001	<0.001	0.0078	--	--	--	--	--	--	--	--	--		
MW-12R	02/25/04	0.26	1.8	--	<0.50	--	0.099	0.00050	<0.0005	0.00076	0.010*	--	--	--	--	--	--	--	--	--		
MW-12R	05/12/04	0.56	0.74	--	<0.50	--	0.20	<0.001	<0.001	<0.001	<0.0050*	--	--	--	--	--	--	--	--	--		
MW-12R	08/26/04	0.35	0.50	--	<0.50	--	0.089	<0.001	<0.001	<0.001	<0.0050*	--	--	--	--	--	--	--	--	--		
MW-12R	12/15/04	<0.25	0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--		
MW-12R	03/09/05	<0.25	0.39	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--		
MW-12R	06/08/05	<0.25	0.39	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--		

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-12R	09/21/05	0.26	0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-12R	03/14/06	<0.25	<0.25	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-12R	06/07/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-12R	09/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-12R	12/13/06	<0.25	0.27	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-12R	12/14/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-12R	06/20/07	<0.25	--	--	--	--	<0.0005	0.0010	<0.0005	<0.0005	<0.0050	--	--	--	--	<0.0005	--	--	--	--	--
MW-12R	06/05/08	<0.25	0.78	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	--	--	--	--	--	--	--	--	--	--
MW-12R	06/01/09	<0.25	0.32	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.36	--	--	--	--	--	--	--	--
MW-12R	06/08/10	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.19	--	--	--	--	--	--	--	--
MW-12R	05/23/11	<0.25	0.41	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	--	0.55	--	--	--	--	--	--	0.0050	--
MW-12R	06/01/12	<0.25	<0.25	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	--	0.00	--	--	--	--	--	--	0.0050	--
MW-12R	04/09/13	<0.25	--	<0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	<0.10	--
MW-12R	04/23/14	<0.25	0.49	<0.25	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	<0.10	--
MW-12R	09/30/15	<0.100	--	2.41	--	1.07	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.41	4.05	--	--	2.1 T8	<0.1	5.55	<0.05	--
MW-12R	10/12/16	<0.100	--	<0.250	--	<0.500	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.61	--	--	--	--	--	--	--	--
MW-12R	10/11/17	<0.100	--	0.216	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	0.65	--	--	--	--	--	--	--	--
MW-12R	10/04/18	<0.1	--	<0.2	--	<0.25	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	0.08	--	--	--	--	--	--	--	--
MW-12R	10/03/19	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200	0.13	--	--	--	--	--	--	--	--
MW-13	06/19/01	<0.05	1.3	--	<0.5	--	<0.001	<0.001	<0.001	<0.003	<0.004	--	--	--	--	--	--	--	--	--	--
MW-13		Destroyed during construction activities																			
MW-13R	02/14/02	<0.25	3.2	--	<0.5	--	0.056	<0.0005	<0.0005	0.00075	<0.005*	--	--	--	--	--	--	--	--	--	--
MW-13R	05/21/02	<0.25	3.5	--	<0.5	--	0.0025	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--	--
MW-13R	08/28/02	<0.25	2.4	--	<0.5	--	<0.0005	0.0019	<0.0005	0.00070	<0.005*	--	--	--	--	--	--	--	--	--	--
MW-13R	11/05/02	<0.25	2.0	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--	--
MW-13R	02/19/03	<0.25	1.7	--	<0.5	--	0.00078	0.0032	<0.0005	0.00083	<0.005*	--	--	--	--	--	--	--	--	--	--
MW-13R	06/10/03	<0.25	0.76	--	<0.25	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--	--
MW-13R	09/16/03	<0.25	1.4	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0078*	--	--	--	--	--	--	--	--	--	--
MW-13R	11/19/03	<0.25	<0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0066	--	--	--	--	--	--	--	--	--	--
MW-13R	02/25/04	<0.25	<0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.012*	--	--	--	--	--	--	--	--	--	--
MW-13R	05/12/04	<0.25	0.61	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-13R	08/26/04	<0.25	0.49	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-13R	12/15/04	<0.25	0.91	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-13R	03/09/05	<0.25	0.35	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-13R	06/08/05	<0.25	0.49	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--
MW-13R	09/21/05	<0.25	0.39	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-13R	03/14/06	<0.25	<0.25	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	<0.0050*	--	--	--	--	--	--	--	--	--	--

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-13R	06/07/06	<0.25	<0.25	--	<0.50	--	<0.005	<0.005	<0.005	<0.005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-13R	09/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-13R	12/13/06	<0.25	0.33	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0077*	--	--	--	--	--	--	--	--	--	--
MW-13R	12/14/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	--	--	--	--	--	--	--	--	--
MW-13R	06/20/07	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	--
MW-13R	06/05/08	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	--
MW-13R	06/01/09	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.49	--	--	--	--	--	--	--	--
MW-13R	06/08/10	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.00	--	--	--	--	--	--	--	--
MW-13R	05/23/11	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.18	--	--	--	--	--	--	0.0050	--
MW-13R	Abandoned on 5/25/2012																				
MW-14	02/13/02	2.5	37	--	<5.0	--	0.010	0.0085	0.18	0.22	--	--	--	--	--	--	--	--	--	--	--
MW-14	05/21/02	2.9	23	--	1.0	--	0.0093	0.0057	0.18	0.15	--	--	--	--	--	--	--	--	--	--	--
MW-14	08/29/02	2.9	28	--	<0.5	--	0.017	0.0073	0.21	0.14	--	--	2.20	5.90	--	--	20.00	<0.25	52.00	0.70	--
MW-14	11/05/02	2.0	28	--	0.91	--	0.060	0.0059	0.12	0.076	--	--	2.40	11.00	--	--	23.00	<0.25	39.00	0.80	--
MW-14	02/20/03	3.4	18	--	<0.5	--	0.056	0.0062	0.14	0.11	--	--	1.90	3.50	--	--	20.00	<0.25	35.00	0.80	--
MW-14	06/11/03	3.1	28	--	<0.5	--	0.059	0.0098	0.23	0.13	--	--	1.50	2.90	--	--	19.00	<0.25	4.30	0.40	--
MW-14	09/16/03	<1.0	15	--	<0.50	--	0.13	<0.005	0.019	0.022	--	--	1.30	0.86	--	--	15.00	<0.25 b	0.89	0.50	--
MW-14	11/20/03	<2.0	29	--	0.7	--	0.12	<0.01	0.020	0.031	--	--	3.70	0.57	--	--	4.90	0.57 c	31.00	<0.1	--
MW-14	02/24/04	2.4	21	--	<0.50	--	0.061	0.014	0.25	0.20	--	--	4.30	2.40	--	--	19.00	<0.25 b	0.60	0.60	--
MW-14	05/11/04	2.7	27	--	<0.50	--	0.053	0.0092	0.21	0.16	--	--	0.10	2.30	--	--	19.00	<0.25	<0.50	<0.10	--
MW-14	08/26/04	2.3	11	--	0.53	--	0.024	<0.0025	0.16	0.19	--	--	1.01	2.90	--	--	13.00	<0.25	47.00	0.38	--
MW-14	12/15/04	1.2	9.6	--	<0.50	--	0.0084	<0.005	0.010	0.0055	--	--	2.88	4.50	--	--	0.13	4.80	110.00	<0.10	--
MW-14	03/09/05	4.2	7.7	--	<0.50	--	0.0053	0.0094	0.18	0.099	--	--	2.99	6.80	--	--	12.00	0.62	41.00	0.30	--
MW-14	06/08/05	3.1	8.8	--	<0.50	--	0.0043	0.0069	0.17	0.11	--	--	2.00	4.30	--	--	15.00	<0.25	18.00	0.40	--
MW-14	09/21/05	1.6	10	--	1.1	--	0.012	0.0048	0.077	0.068	--	--	2.00	7.60	--	--	19.00	<0.25	8.20	0.36	--
MW-14	12/14/05	3.1	2.0	--	<0.50	--	0.0059	0.0075	0.12	0.068	--	--	2.10	8.90	--	--	9.50	<0.25	21.00	<0.10	--
MW-14	03/14/06	0.79	2.1	--	<0.50	--	<0.0025	<0.0025	0.023	0.030	--	--	2.10	1.50	--	--	7.90	<0.25	33.00	0.12	--
MW-14	06/07/06	0.84	3.0	--	<0.50	--	<0.0025	<0.0025	0.061	0.033	--	--	1.50	1.50	--	--	11.00	<0.25	16.00	1.10	--
MW-14	09/13/06	2.4	1.8	--	<0.50	--	<0.0025	0.0060	0.1	0.056	--	--	1.80	6.80	--	--	14.00	<0.25	1.70	0.22	--
MW-14	12/13/06	1.1	1.4	--	<0.50	--	<0.0025	<0.0025	0.044	0.029	--	--	2.20	2.20	--	--	5.80	0.36	25.00	<0.10	--
MW-14	03/27/07	1.3	--	--	--	--	0.0057	<0.0025	0.049	0.024	--	--	2.70	--	--	--	--	--	--	--	--
MW-14	06/20/07	1.5	--	--	--	--	<0.0025	0.0039	0.087	0.046	--	--	3.40	2.90	--	--	7.50	<0.25	4.90	0.79	--
MW-14	09/24/07	2.5	--	--	--	--	0.0024	0.0077	0.15	0.13	--	--	3.10	--	--	--	--	--	--	--	--
MW-14	12/11/07	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.76	--	--	--	--	--	--	--	--
MW-14	03/04/08	0.43	--	--	--	--	<0.0015	<0.0015	0.019	0.0073	--	--	1.10	--	--	--	--	--	--	--	--
MW-14	06/04/08	<0.30	--	--	--	--	<0.0015	<0.0015	<0.015	<0.015	--	--	2.70	2.00	--	--	3.40	<0.25	8.90	0.58	--
MW-14	09/08/08	2.5	--	--	--	--	0.0024	0.0070	0.17	0.075	--	--	0.69	--	--	--	--	--	--	--	--

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-14	12/05/08	<0.50	--	--	--	--	<0.0025	<0.0025	0.0047	0.0036	--	--	0.45	--	--	--	--	--	--	--	
MW-14	03/04/09	<0.25	--	--	--	--	0.0011	<0.0010	0.0011	0.0038	--	--	0.81	--	--	--	--	--	--	--	
MW-14	06/02/09	<0.25	--	--	--	--	<0.0010	<0.0010	<0.0010	0.0018	--	--	0.89	0.15	--	--	0.12	2.50	34.00	<0.10	
MW-14	09/21/09	0.56	--	--	--	--	<0.0025	<0.0025	0.044	0.013	--	--	0.92	--	--	--	--	--	--	--	
MW-14	11/17/09	<0.50	--	--	--	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	1.01	--	--	--	--	--	--	--	
MW-14	03/08/10	<0.25	--	--	--	--	0.0010	<0.0010	0.0010	0.0021	--	--	0.32	--	--	--	--	--	--	--	
MW-14	06/08/10	<0.25	--	--	--	--	<0.0005	<0.0005	0.0011	0.0014	--	--	0.25	0.72	--	--	0.18	<0.25	8.50	<0.10	
MW-14	09/09/10	0.5	--	--	--	--	0.0013	0.0018	0.031	0.036	--	--	0.32	--	--	--	--	--	--	--	
MW-14	11/15/10	<0.25	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	0.35	--	--	--	--	--	--	--	
MW-14	03/01/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.020	--	--	--	--	--	--	--	
MW-14	05/24/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	0.18	--	--	0.10	0.25	14.00	0.10	
MW-14	08/29/11	0.41	--	--	--	--	<0.0010	0.0011	0.019	0.026	--	--	0.19	--	--	--	--	--	--	--	
MW-14	12/01/11	<0.25	--	--	--	--	<0.0010	<0.0010	<0.0010	0.0032	--	--	0.31	--	--	--	--	--	--	--	
MW-14	03/01/12	<0.25	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	1.10	--	--	--	--	--	--	--	
MW-14	05/31/12	<0.25	--	--	--	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	0.00	0.086	--	--	<0.050	<0.25	10.00	<0.10	
MW-14	08/25/12	<0.25	--	--	--	--	<0.00050	<0.00050	0.0028	0.0017	--	--	--	--	--	--	--	--	--	--	
MW-14	11/08/12	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	0.0041	--	--	--	--	--	--	--	--	--	--	
MW-14	02/28/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-14	04/09/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	0.25	--	--	<0.050	0.46 °c	9.2	<0.10	
MW-14	07/30/13	<0.25	--	--	--	--	<0.0005	0.00058	0.011	0.0092	--	--	--	--	--	--	--	--	--	--	
MW-14	10/03/13	<0.25	--	--	--	--	<0.001	<0.001	0.0034	0.022	--	--	0.00	--	--	--	--	--	--	--	
MW-14	01/22/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	5.98	--	--	--	--	--	--	--	
MW-14	04/21/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	0.23	--	--	<0.050	<0.25	8.8	<0.10	
MW-14	07/15/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.37	--	--	--	--	--	--	--	
MW-14	10/01/15	0.299	--	--	--	--	<0.001	<0.005	0.00106	0.0192	--	--	0.81	3.47	--	--	8.61 T8	<0.1	<5	<0.05	
MW-14	10/11/16	1.11	--	--	--	--	<0.001	<0.005	0.0257	0.0309	--	--	0.73	--	--	--	--	--	--	--	
MW-14	10/11/17	0.416	--	--	--	--	<0.00100	<0.00100	0.00251	0.00387	--	--	0.70	--	--	--	--	--	--	--	
MW-14	10/03/18	0.65	--	--	--	--	<0.001	0.00116	<0.001	0.00549	--	--	0.13	--	--	--	--	--	--	--	
MW-14	10/01/19	0.526	--	--	--	--	<0.00100	0.00109	<0.00100	0.00649	--	--	0.08	--	--	--	--	--	--	--	
MW-16	02/13/02	<0.25	<0.25	--	<0.5	--	0.0013	0.0037	<0.0005	0.0011	--	--	--	--	--	--	--	--	--	--	
MW-16	05/21/02	<0.25	<0.5	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-16	08/29/02	<0.25	<0.5	--	<0.5	--	<0.0005	0.0022	<0.0005	0.00069	--	--	--	--	--	--	--	--	--	--	
MW-16	11/05/02	<0.25	0.29	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-16	02/19/03	<0.25	<0.25	--	<0.5	--	<0.0005	0.0018	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-16	06/10/03	<0.25	<0.25	--	<0.25	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-16	09/16/03	<0.25	<0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-16	11/19/03	<0.25	<0.25	--	<0.50	--	<0.0005	0.0013	<0.0005	0.00062	--	--	--	--	--	--	--	--	--	--	

Appendix E
 Historical Groundwater Analytical Results
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
MW-16	02/25/04	<0.25	<0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	05/11/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	08/26/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	12/15/04	<0.25	<0.25	--	<0.50	--	0.029	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	03/10/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	06/07/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	09/20/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	12/13/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	03/15/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	06/08/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	09/12/06	<0.25	<0.25	--	<0.50	--	<0.0005	0.00062	0.0012	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	12/12/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	06/19/07	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	06/04/08	0.39	0.43	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	--	--	--	--	--	--	--	--	--	
MW-16	06/03/09	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.48	--	--	--	--	--	--	--	--	
MW-16	06/09/10	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.0012	--	--	1.11	--	--	--	--	--	--	--	--	
MW-16	05/23/11	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.34	--	--	--	--	--	--	--	--	
MW-16	05/31/12	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.020	--	--	--	--	--	--	--	--	
MW-16	04/09/13	<0.25	--	<0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	04/22/14	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-16	09/30/15	<0.100	--	<0.100	--	<0.25	<0.001	<0.005	<0.001	<0.003	--	--	0.48	--	--	--	--	--	--	--	--	
MW-16	10/12/16	<0.100	--	<0.250	--	<0.500	<0.001	<0.005	<0.001	<0.003	--	--	0.88	--	--	--	--	--	--	--	--	
MW-16	10/13/17	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.79	--	--	--	--	--	--	--	--	
MW-16	10/03/18	<0.1	--	<0.2	--	<0.25	<0.001	<0.001	<0.001	<0.003	--	--	0.27	--	--	--	--	--	--	--	--	
MW-16	10/04/19	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.24	--	--	--	--	--	--	--	--	
MW-17	05/23/11	0.3	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-18	02/13/02	7.6	0.77	--	<0.5	--	1.8	0.067	0.29	0.34	--	--	--	--	--	--	--	--	--	--	--	
MW-18	05/21/02	1.2	0.30	--	<0.5	--	0.25	0.016	0.068	0.068	--	--	--	--	--	--	--	--	--	--	--	
MW-18	08/29/02	1.6	<0.5	--	<0.5	--	0.45	0.014	0.032	0.044	--	--	--	--	--	--	--	--	--	--	--	
MW-18	11/05/02	1.1	<0.25	--	<0.5	--	<0.3	0.010	0.011	0.031	--	--	--	--	--	--	--	--	--	--	--	
MW-18	02/19/03	<0.25	<0.25	--	<0.5	--	0.0035	0.0047	<0.0005	0.0016	--	--	--	--	--	--	--	--	--	--	--	
MW-18	06/10/03	<0.25	<0.25	--	<0.25	--	0.022	0.0016	<0.0005	0.0040	--	--	--	--	--	--	--	--	--	--	--	
MW-18	09/16/03	<0.25	<0.50	--	<0.50	--	0.036	0.0019	<0.0005	0.0075	--	--	--	--	--	--	--	--	--	--	--	
MW-18	11/19/03	<0.25	<0.25	--	<0.50	--	0.0042	<0.0005	<0.0005	0.0015	--	--	--	--	--	--	--	--	--	--	--	
MW-18	02/25/04	0.58	<0.25	--	<0.50	--	0.11	0.0048	0.00087	0.026	--	--	--	--	--	--	--	--	--	--	--	
MW-18	05/11/04	1.1	<0.25	--	<0.50	--	0.25	0.0073	0.0016	0.037	--	--	--	--	--	--	--	--	--	--	--	
MW-18	08/26/04	<0.25	<0.25	--	<0.50	--	0.003	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
MW-18	12/15/04	0.84	<0.25	--	<0.50	--	0.14	0.0060	0.0019	0.029	--	--	--	--	--	--	--	--	--	--	--	
MW-18	03/10/05	0.84	<0.25	--	<0.50	--	0.25	0.0049	0.0020	0.021	--	--	--	--	--	--	--	--	--	--	--	
MW-18	06/07/05	0.68	<0.25	--	<0.50	--	0.17	0.0039	0.0019	0.0098	--	--	--	--	--	--	--	--	--	--	--	
MW-18	09/20/05	4.0	<0.25	--	<0.50	--	0.74	0.021	0.0091	0.090	--	--	--	--	--	--	--	--	--	--	--	
MW-18	12/13/05	2.3	<0.25	--	<0.50	--	0.45	0.015	0.0067	0.033	--	--	--	--	--	--	--	--	--	--	--	
MW-18	03/15/06	4.9	<0.25	--	<0.50	--	1.2	0.035	0.025	0.12	--	--	--	--	--	--	--	--	--	--	--	
MW-18	06/08/06	1.2	<0.25	--	<0.50	--	0.15	0.011	0.011	0.034	--	--	--	--	--	0.034	--	--	--	--	--	
MW-18	09/12/06	0.35	<0.25	--	<0.50	--	0.023	0.0021	0.0022	0.0047	--	--	--	--	--	--	--	--	--	--	--	
MW-18	12/12/06	0.28	<0.25	--	<0.50	--	0.023	0.0018	0.0019	0.0060	--	--	--	--	--	--	--	--	--	--	--	
MW-18	03/27/07	0.78	--	--	--	--	0.022	0.0029	0.0051	0.012	--	--	3.20	--	--	--	--	--	--	--	--	
MW-18	06/19/07	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-18	09/24/07	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	3.20	--	--	--	--	--	--	--	--	
MW-18	12/11/07	<0.25	--	--	--	--	0.011	0.0075	<0.0005	0.0032	--	--	3.40	--	--	--	--	--	--	--	--	
MW-18	03/04/08	0.29	--	--	--	--	0.0090	0.0016	0.00050	0.00088	--	--	1.50	--	--	--	--	--	--	--	--	
MW-18	06/04/08	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	3.10	--	--	--	--	--	--	--	--	
MW-18	09/08/08	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.26	--	--	--	--	--	--	--	--	
MW-18	12/04/08	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.21	--	--	--	--	--	--	--	--	
MW-18	03/04/09	<0.25	--	--	--	--	0.00080	<0.0005	<0.0005	<0.0005	--	--	0.94	--	--	--	--	--	--	--	--	
MW-18	06/03/09	<0.25	--	--	--	--	0.00061	<0.0005	<0.0005	<0.0005	--	--	0.47	--	--	--	--	--	--	--	--	
MW-18	09/22/09	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.63	--	--	--	--	--	--	--	--	
MW-18	11/17/09	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	8.07	--	--	--	--	--	--	--	--	
MW-18	03/09/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	0.0011	--	--	0.90	--	--	--	--	--	--	--	--	
MW-18	06/08/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	--	--	--	--	--	--	--	--	
MW-18	09/10/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	3.84	--	--	--	--	--	--	--	--	
MW-18	11/16/10	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.59	--	--	--	--	--	--	--	--	
MW-18	03/02/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.030	--	--	--	--	--	--	--	--	
MW-18	05/23/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	--	--	--	--	--	--	--	--	
MW-18	08/30/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.28	--	--	--	--	--	--	--	--	
MW-18	12/02/11	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0010	--	--	0.57	--	--	--	--	--	--	--	--	
MW-18	03/02/12	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.57	--	--	--	--	--	--	--	--	
MW-18	05/31/12	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	--	--	--	--	--	--	--	--	
MW-18	11/08/12	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-18	02/28/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-18	04/09/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-18	07/29/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-18	10/02/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	--	--	--	--	--	--	--	--	
MW-18	01/22/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	5.50	--	--	--	--	--	--	--	--	

Appendix E
 Historical Groundwater Analytical Results
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
MW-18	04/22/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-18	07/15/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.15	--	--	--	--	--	--	--	--	
MW-18	03/18/15	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.23	--	--	--	--	--	--	--	--	
MW-18	09/30/15	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	0.47	--	--	--	--	--	--	--	--	
MW-18	03/29/16	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	0.65	--	--	--	--	--	--	--	--	
MW-18	10/12/16	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	0.67	--	--	--	--	--	--	--	--	
MW-18	03/29/17	<0.100	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	0.17	--	--	--	--	--	--	--	--	
MW-18	10/12/17	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.73	--	--	--	--	--	--	--	--	
MW-18	03/29/18	0.13 B	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	1.89	--	--	--	--	--	--	--	--	
MW-18	10/03/18	<0.1	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	0.15	--	--	--	--	--	--	--	--	
MW-18	04/03/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.1	--	--	--	--	--	--	--	--	
MW-18	10/03/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.13	--	--	--	--	--	--	--	--	
MW-19	02/13/02	29	6.8	--	<2.5	--	0.057	0.73	0.58	6.5	--	--	--	--	--	--	--	--	--	--	--	
MW-19	05/21/02	30	7.7	--	<0.5	--	0.049	0.65	0.53	6.5	--	--	--	--	--	--	--	--	--	--	--	
MW-19	08/29/02	13	11	--	<0.5	--	0.14	0.29	0.20	2.1	--	--	0.90	13.00	--	--	19.00	<0.25	<0.25	0.60		
MW-19	11/05/02	8.2	3.0	--	<0.5	--	0.21	0.37	0.16	1.7	--	--	2.70	10.00	--	--	19.00	<0.25	<0.25	0.40		
MW-19	02/20/03	38	19	--	<0.5	--	0.091	1.2	0.80	8.0	--	--	3.20	13.00	--	--	43.00	<0.25	23.00	0.50		
MW-19	06/11/03	32	15	--	<1.0	--	0.042	0.38	0.80	6.7	--	--	0.50	16.00	--	--	37.00	<0.25	11.00	0.40		
MW-19	09/16/03	4.2	12	--	<0.50	--	0.19	0.043	0.19	1.1	--	--	1.40	18.00	--	--	30.00	<0.25 b	5.20	0.70		
MW-19	11/20/03	22	10	--	<0.50	--	0.11	0.67	0.75	6.1	--	--	4.80	18.00	--	--	49.00	<0.25 c	10.00	0.50		
MW-19	02/24/04	19	14	--	<0.50	--	<0.015	0.49	0.63	4.7	--	--	2.10	20.00	--	--	39.00	<0.25 b	1.80	0.60		
MW-19	05/11/04	27	13	--	<0.50	--	<0.025	0.22	0.87	7.2	--	--	0.60	17.00	--	--	30.00	<0.25	0.98	0.24		
MW-19	08/26/04	22	0.72	--	<0.50	--	0.042	0.26	0.64	4.6	--	--	2.83	15.00	--	--	15.00	<0.25	<0.50	0.20		
MW-19	12/15/04	15	7.6	--	<0.50	--	0.039	0.12	0.37	2.7	--	--	3.89	21.00	--	--	44.00	<0.25	31.00	0.22		
MW-19	03/09/05	27	9.1	--	<0.50	--	0.073	0.18	0.56	3.4	--	--	3.42	22.00	--	--	25.00	<0.25	5.30	0.26		
MW-19	06/08/05	17	6.3	--	<0.50	--	0.071	0.17	0.61	2.8	--	--	0.89	15.00	--	--	18.00	<0.25	12.00	0.60		
MW-19	09/20/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled	
MW-19	12/14/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled	
MW-19	03/14/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled	
MW-19	06/07/06	14	1.4	--	<0.50	--	<0.010	0.043	0.29	1.4	--	--	1.70	18.00	--	--	7.90	<0.25	<0.50	0.55		
MW-19	09/13/06	11	0.50	--	<0.50	--	0.032	0.047	0.41	1.1	--	--	2.10	19.00	--	--	10.00	<0.25	<0.50	1.30		
MW-19	12/13/06	8.0	1.4	--	<0.50	--	0.016	0.052	0.3	1.4	--	--	3.90	19.00	--	--	30.00	<0.25	16.00	0.43		
MW-19	03/27/07	13	--	--	--	--	<0.010	0.047	0.35	1.8	--	--	2.50	--	--	--	--	--	--	--		
MW-19	06/20/07	12	--	--	--	--	0.05	0.092	0.29	1.2	--	--	1.90	23.00	--	--	9.30	<0.25	<0.50	0.19		
MW-19	09/24/07	10	--	--	--	--	0.13	0.11	0.42	1.3	--	--	3.70	--	--	--	--	--	--	--		
MW-19	12/11/07	12	--	--	--	--	0.11	0.14	0.40	1.9	--	--	2.13	--	--	--	--	--	--	--		
MW-19	03/04/08	17	--	--	--	--	0.15	0.28	0.52	2.4	--	--	1.90	--	--	--	--	--	--	--		

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-19	06/04/08	11	--	--	--	--	0.070	0.023	0.45	1.0	--	--	3.40	21.00	--	--	7.00	<0.25	0.86	0.46	
MW-19	09/08/08	5.3	--	--	--	--	0.078	0.0063	0.12	0.29	--	--	1.02	--	--	--	--	--	--	--	
MW-19	12/05/08	7.8	--	--	--	--	0.071	0.047	0.38	0.73	--	--	0.27	--	--	--	--	--	--	--	
MW-19	03/04/09	9.4	--	--	--	--	0.076	0.13	0.43	1.4	--	--	0.52	--	--	--	--	--	--	--	
MW-19	06/02/09	13	--	--	--	--	0.071	0.13	0.43	1.6	--	--	0.37	28.00	--	--	6.30	<0.25	<0.50	0.18	
MW-19	09/21/09	8.4	--	--	--	--	0.052	0.0097	0.32	0.29	--	--	0.35	--	--	--	--	--	--	--	
MW-19	11/17/09	7.4	--	--	--	--	0.023	0.049	0.34	1.2	--	--	0.86	--	--	--	--	--	--	--	
MW-19	03/08/10	10	--	--	--	--	0.017	0.11	0.46	1.8	--	--	0.69	--	--	--	--	--	--	--	
MW-19	06/08/10	12	--	--	--	--	0.042	0.17	0.55	1.6	--	--	0.00	27.00	--	--	10.00	<0.25	<0.50	<0.10	
MW-19	09/09/10	7.3	0.71	--	<0.50	--	0.039	0.020	0.42	0.18	--	--	0.41	--	--	--	--	<0.25	39.00	--	
MW-19	11/15/10	4.5	--	--	--	--	0.039	0.18	0.44	0.13	--	--	0.35	--	--	--	--	--	--	--	
MW-19	03/01/11	9.6	--	--	--	--	0.039	0.13	0.34	0.88	--	--	0.00	--	--	--	--	--	--	--	
MW-19	05/24/11	7.4	--	--	--	--	0.0028	0.011	0.17	0.38	--	--	0.69	28.00	--	--	1.70	<0.25	3.80	0.11	
MW-19	08/29/11	7.0	--	--	--	--	0.012	0.015	0.15	0.066	--	--	0.21	--	--	--	--	--	--	--	
MW-19	12/01/11	7.5	--	--	--	--	0.059	0.034	0.22	0.30	--	--	0.41	--	--	--	--	--	--	--	
MW-19	03/01/12	6.4	--	--	--	--	0.15	0.064	0.34	0.44	--	--	0.26	--	--	--	--	--	--	--	
MW-19	05/31/12	8.3	--	--	--	--	0.079	0.073	0.48	0.81	--	--	0.00	13.00	--	--	10.00	<0.25	<0.50	0.21	
MW-19	08/25/12	5.2	--	--	--	--	0.054	0.0076	0.27	0.089	--	--	--	--	--	--	--	--	--	--	
MW-19	11/08/12	4.7	--	--	--	--	0.042	0.0096	0.28	0.18	--	--	--	--	--	--	--	--	--	--	
MW-19	02/28/13	8.1	--	--	--	--	0.045	0.13	0.44	0.77	--	--	--	--	--	--	--	--	--	--	
MW-19	04/09/13	6.9	--	--	--	--	0.029	0.15	0.32	0.57	--	--	--	27	--	--	7.5	<0.25 °c	<0.50	<0.10	
MW-19	06/21/13	2.8	1.1 K	--	--	--	0.019	0.017	0.31	0.081	--	--	--	--	--	--	--	<0.25 °c	<0.50	0.13	Baseline monitoring event
MW-19	07/30/13	4.4	--	--	--	--	0.0086	0.0051	0.16	0.013	--	--	--	--	--	--	--	--	--	--	
MW-19	08/26/13	2.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Two-month monitoring event
MW-19	10/03/13	3.2	--	--	--	--	0.0076	0.0023	0.046	0.0020	--	--	0.00	--	--	--	--	--	--	--	
MW-19	01/22/14	2.2	--	--	--	--	0.021	0.00065	0.029	<0.0005	--	--	7.20	--	--	--	--	--	620	<0.10	
MW-19	04/21/14	2.1	--	--	--	--	0.0066	0.0039	0.16	0.0064	--	--	--	28	--	--	30	<0.25	190	0.23	
MW-19	07/15/14	4.2	--	--	--	--	0.0059	0.010	0.21	0.15	--	--	0.46	30	8.3	7.6	--	--	<0.50	<0.10	
MW-19 (DUP)	07/15/14	4.4	--	--	--	--	0.0052	0.0097	0.20	0.15	--	--	--	--	--	--	--	--	--	--	Duplicate of MW-19
MW-19	03/17/15	4.3	--	--	--	--	0.0049	0.014	0.14	0.18	--	--	0.05	30	--	--	8.7	<0.25	1.9	<0.10	
MW-19	09/30/15	2.02	--	--	--	--	0.00341	<0.005	0.0157	<0.003	--	--	0.20	7.96	--	--	11.0 T8	<0.10	<5	<0.05	
MW-19	03/30/16	1.69	--	--	--	--	<0.001	<0.005	0.0365	0.0591	--	--	0.28	16.60	--	--	45.1	<0.10	170	<0.05	
MW-19	10/11/16	1.98	--	--	--	--	0.00527	<0.005	0.0119	0.00806	--	--	0.76	--	--	--	--	--	<5.0	--	
MW-19	03/28/17	3.12	--	--	--	--	<0.005	<0.005	0.0483	0.239	--	--	0.15	--	--	--	--	--	200	--	
MW-19	10/13/17	1.91	--	--	--	--	<0.00100	0.00157	0.00731	0.00979	--	--	0.63	--	--	--	--	--	<5.0	--	
MW-19	03/29/18	2.31	--	--	--	--	<0.001	0.00299	0.0678	0.136	--	--	0.13	--	--	--	--	--	<5.0	--	
MW-19	10/03/18	<0.1	--	--	--	--	0.00101	0.00158	0.00583	<0.003	--	--	0.14	--	--	--	--	--	28.3	--	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
MW-19	04/02/19	0.810	--	--	--	--	0.00180	<0.00100	<0.00100	<0.00300	--	--	0.06	--	--	--	--	--	--	1,310	--	
MW-19	10/02/19	1.23	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.24	--	--	--	--	--	--	130	--	
MW-20	02/13/02	<0.25	0.64	--	<0.5	--	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--	--	
MW-20	05/20/02	<0.25	1.3	--	<0.5	--	0.018	0.0012	0.0048	0.014	--	--	--	--	--	--	--	--	--	--	--	
MW-20	08/29/02	0.6	1.1	--	<0.5	--	0.057	0.0065	0.021	0.084	--	--	2.60	12	--	--	5.4	<0.25	7.90	0.3		
MW-20	11/06/02	<0.25	0.81	--	<0.5	--	0.0023	0.00053	<0.0005	<0.0005	--	--	5.70	0.10	--	--	4.2	<0.25	610.00	0.3		
MW-20	02/19/03	<0.25	<0.25	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-20	06/11/03	<0.25	0.68	--	<0.25	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	15.00	<0.01	--	--	7.30	<0.25	2200.00	0.2		
MW-20	09/17/03	<0.25	<0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	14.00	<0.010	--	--	2.00	<0.25 c	1800.00	0.5		
MW-20	11/20/03	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.00072	--	--	13.00	0.15	--	--	1.70	<0.25 c	1900.00	<0.1		
MW-20	02/25/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	14.00	0.026	--	--	0.34	<0.25 b	2100.00	--^		
MW-20	05/11/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	7.50	0.048	--	--	0.29	<0.25	2100.00	<0.10		
MW-20	08/26/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.00	16.00	--	--	140.00	<0.25	970.00	<0.10		
MW-20	12/15/04	<0.25	0.30	--	<0.50	--	0.0013	<0.0005	<0.0005	<0.0005	--	--	3.34	0.71	--	--	27.00	<0.25	550.00	0.28		
MW-20	03/09/05	<0.25	<0.25	--	<0.50	--	0.00074	<0.0005	<0.0005	<0.0005	--	--	2.82	0.25	--	--	18.00	<0.25	470.00	<0.10		
MW-20	06/08/05	<0.25	0.55	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.50	10.00	--	--	18.00	<0.25	480.00	0.20		
MW-20	09/21/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-20	12/14/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	3.20	0.28	--	--	15.00	<0.25	250.00	0.21		
MW-20	03/14/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	3.20	0.98	--	--	5.50	<0.25	56.00	<0.10		
MW-20	06/07/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.00	15.00	--	--	7.40	<0.25	68.00	<0.10		
MW-20	09/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.50	23.00	--	--	17.00	<0.25	110.00	<0.10		
MW-20	12/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.30	3.3	--	--	2.30	<0.25	69.00	<0.10		
MW-20	06/20/07	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	4.10	--	--	--	--	--	--	--	--	
MW-20	06/05/08	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.30	--	--	--	--	--	--	--	--	
MW-20	06/01/09	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.40	--	--	--	--	--	--	--	--	
MW-20	06/09/10	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	0.00054	0.0028	--	--	0.00	--	--	--	--	--	--	--	--	
MW-20	05/23/11	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	--	--	--	--	--	--	--	--	
MW-20	05/31/12	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	--	--	--	--	--	--	--	--	
MW-20	04/09/13	<0.25	--	<0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-20	04/22/14	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	--	
MW-20	10/01/15	<0.100	--	0.378	--	<0.25	<0.001	<0.005	<0.001	<0.003	--	--	0.22	--	--	--	--	--	--	--	--	
MW-20	10/12/16	<0.100	--	<0.250	--	<0.500	<0.001	<0.005	<0.001	<0.003	--	--	0.23	--	--	--	--	--	--	--	--	
MW-20	10/12/17	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.70	--	--	--	--	--	--	--	--	
MW-20	10/03/18	<0.1	--	<0.2	--	<0.25	<0.001	<0.001	<0.001	<0.003	--	--	0.11	--	--	--	--	--	--	--	--	
MW-20	10/02/19	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.20	--	--	--	--	--	--	--	--	
MW-21	02/19/03	--	--	--	--	--	--	--	--	--	--	--	6.90	0.061	--	--	1.9	<0.25	1400	<0.1		
MW-21	06/10/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-21	06/11/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-21	09/17/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-21	11/20/03	0.97	19	--	<0.50	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	0.90	0.013	--	--	2.80	<0.25 c	17.00	0.5	
MW-21	02/26/04	2.3	35	--	<0.50	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	1.00	12.00	--	--	17.00	<0.25 b	12.00	0.9	
MW-21	05/11/04	1.2	29	--	<0.50	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	1.80	4.70	--	--	12.00	<0.25	0.92	<0.10	
MW-21	08/26/04	4.3	33	--	<0.50	--	<0.001	<0.001	0.0013	0.0014	--	--	2.80	2.00	--	--	1.80	<0.25	<0.50	0.13	
MW-21	12/15/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-21	03/09/05	2.4	140	--	<5.0	--	<0.0015	<0.0015	0.0016	<0.0015	--	--	0.99	4.30	--	--	9.80	<0.25	<0.50	<0.10	
MW-21	06/08/05	1.8	31	--	0.50	--	<0.002	<0.002	0.0026	<0.002	--	--	3.50	1.80	--	--	11.00	<0.25	1.20	0.5	
MW-21	09/21/05	1.7	46	--	3.3	--	<0.0010	<0.0010	0.0013	<0.0010	--	--	2.40	15.00	--	--	7.20	<0.25	<0.50	0.14	
MW-21	12/14/05	1.0	6.1	--	0.54	--	<0.002	<0.002	0.0027	<0.002	--	--	1.20	18.00	--	--	0.19	<0.25	5.30	0.18	
MW-21	03/14/06	<0.25	33	--	3.1	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.20	<0.010	--	--	0.10	<0.25	3.20	<0.10	
MW-21	06/07/06	0.77	18	--	1.2	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	1.20	1.70	--	--	9.90	<0.25	2.30	0.37	
MW-21	09/13/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-21	12/13/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-21	03/27/07	<0.50	9.6	--	0.75	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	0.90	--	--	--	--	--	--	--	
MW-21	06/20/07	<0.50	8.5	--	0.66	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	2.10	9.10	--	--	4.20	<0.25	<0.50	<0.10	
MW-21	09/24/07	0.36	4.3	--	0.52	--	<0.0015	<0.0015	0.0018	<0.0015	--	--	2.50	--	--	--	--	--	--	--	
MW-21	12/11/07	<0.25	34	--	2.5	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	2.60	--	--	--	--	--	--	--	
MW-21	03/04/08	<0.50	12	--	0.92	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	2.50	--	--	--	--	--	--	--	
MW-21	06/04/08	<0.30	4.7	--	<0.50	--	<0.0015	<0.0015	<0.0015	<0.0015	--	--	2.80	14.00	--	--	7.40	<0.25	<0.50	0.13	
MW-21	09/08/08	0.98	3.8	--	<0.50	--	<0.0015	0.0015	0.0049	0.0028	--	--	0.77	--	--	--	--	--	--	--	
MW-21	12/05/08	<1.0	4.8	--	<0.50	--	<0.0050	<0.0050	<0.0050	<0.0050	--	--	1.24	--	--	--	--	--	--	--	
MW-21	03/04/09	<0.50	6.4	--	0.89	--	<0.0025	<0.0025	<0.0025	0.0034	--	--	0.84	--	--	--	--	--	--	--	
MW-21	06/02/09	0.7	2.9	--	0.68	--	<0.0010	<0.0010	0.0016	<0.0010	--	--	1.29	7.10	--	--	4.00	<0.25	3.90	0.23	
MW-21	09/22/09	1.7	4.7	--	<0.50	--	<0.0025	<0.0025	0.0029	<0.0025	--	--	0.79	--	--	--	--	--	--	--	
MW-21	11/17/09	<0.25	0.87	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.17	--	--	--	--	--	--	--	
MW-21	03/09/10	<0.25	1.1	--	<0.50	--	0.0014	<0.0010	<0.0010	<0.0005	--	--	1.03	--	--	--	--	--	--	--	
MW-21	09/10/10	0.6	3.7	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	--	--	--	--	--	--	--	--	
MW-21	11/15/10	<0.25	0.49	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.72	--	--	--	--	--	--	--	
MW-21	03/01/11	<0.25	1.2	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.11	--	--	--	--	--	--	--	
MW-21	05/23/11	<0.25	1.2	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.41	0.85	--	--	0.11	ND	4.30	0.10	
MW-21	08/29/11	0.35	3.7	--	0.98	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	0.55	--	--	--	--	--	--	--	
MW-21	12/01/11	<0.25	1.7	--	--	--	<0.0010	<0.0010	<0.0010	<0.0020	--	--	1.16	--	--	--	--	--	--	--	
MW-21	03/01/12	<0.25	0.51	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	0.79	--	--	--	--	--	--	--	
MW-21	05/31/12	<0.25	6.1	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	0.00	0.24	--	--	0.092	<0.25	5.70	0.22	
MW-21	08/25/12	0.56	1.8	--	0.59	--	<0.0025 o	<0.0025 o	<0.0025 o	<0.0025 o	--	--	--	--	--	--	--	--	--	--	

Appendix E
 Historical Groundwater Analytical Results
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-21	11/08/12	<0.25	--	0.29	<0.50	--	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--	
MW-21	02/28/13	<0.25	--	0.90	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-21	04/10/13	<0.25	--	0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	0.62	--	--	<0.050	0.70 °c	4.2	<0.10	
MW-21	07/30/13	0.32	2.9	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-21	10/03/13	<0.25	--	0.62	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.00	--	--	--	--	--	--	--	
MW-21	01/22/14	<0.25	2.3	--	0.77	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	8.32	--	--	--	--	--	--	--	
MW-21	04/24/14	<0.25	0.74	0.28	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	0.20	--	--	<0.050	<0.25	7.8	<0.10	
MW-21	07/14/14	<0.25	1.4	0.58	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.29	--	--	--	--	--	--	--	
MW-21	03/18/15	<0.25	--	<0.25	--	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	--	--	4.6	0.55	--	--	<0.050	0.28	2.0	<0.10	
MW-21	09/30/15	<0.100	--	3.12	--	1.59	<0.001	<0.005	<0.001	<0.003	--	--	0.28	2.51	--	--	4.36 T8	0.107	<5.0	0.081	
MW-21	03/30/16	<0.100	--	1.00	--	0.537	<0.001	<0.005	<0.001	<0.003	--	--	1.85	0.0797	--	--	<0.05	0.605	<5.0	<0.05	
MW-21	10/13/16	0.244	--	1.64	--	<0.500	<0.001	<0.005	<0.001	<0.003	--	--	0.34	--	--	--	--	--	--	--	
MW-21	03/29/17	<0.100	--	0.354	--	<0.500	<0.001	<0.001	<0.001	<0.003	--	--	3.25	--	--	--	--	--	--	--	
MW-21	10/12/17	0.168 B	--	1.68	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.63	--	--	--	--	--	--	--	
MW-21	03/28/18	<0.1	0.624	--	0.31	--	<0.001	<0.001	<0.001	<0.003	--	--	0.77	--	--	--	--	--	--	--	
MW-21	10/03/18	0.444	--	7.03	--	0.757	<0.001	<0.001	<0.001	<0.003	--	--	0.08	--	--	--	--	--	--	--	
MW-21	04/03/19	0.165 B	--	0.967	--	0.271 B	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.5	--	--	--	--	--	--	--	
MW-21	10/02/19	<0.100	--	1.15	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.14	--	--	--	--	--	--	--	
MW-21 (DUP)	10/02/19	<0.100	--	1.21	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.14	--	--	--	--	--	--	--	Duplicate of MW-21
MW-22	02/13/02	0.96	9.2	--	<0.5	--	0.012	0.0053	0.017	0.0097	--	--	--	--	--	--	--	--	--	--	
MW-22	05/21/02	1.1	7.7	--	<0.5	--	0.16	0.049	0.023	0.030	--	--	--	--	--	--	--	--	--	--	
MW-22	08/29/02	1.4	2.4	--	<0.5	--	0.50	0.0093	0.044	0.0066	--	--	0.70	2.4	--	--	9.1	<0.25	2.20	0.2	
MW-22	11/05/02	0.49	1.7	--	<0.5	--	0.14	0.0031	0.025	<0.001	--	--	1.60	1.1	--	--	5.6	<0.25	99.00	0.2	
MW-22	02/19/03	<0.25	9.1	--	<0.5	--	<0.001	<0.001	<0.001	<0.001	--	--	2.10	<0.01	--	--	4.7	<0.25	120	0.1	
MW-22	06/10/03	<0.25	7.4	--	0.87a	--	<0.001	<0.001	<0.001	<0.001	--	--	1.30	0.087	--	--	5.00	0.64	110.00	0.5	
MW-22	09/16/03	<0.25	2.7	--	<0.50	--	0.0018	<0.0005	<0.0005	<0.0005	--	--	2.40	2.0	--	--	55.00	<0.25 b	230.00	1.6	
MW-22	11/19/03	<0.50	8.4	--	<0.50	--	<0.0025	<0.0025	<0.0025	<0.0025	--	--	6.60	0.056	--	--	2.30	<0.25 b	100.00	0.4	
MW-22	02/25/04	<0.25	6.4	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	--	--	8.20	<0.01	--	--	2.40	0.38 b	43.00	0.4	
MW-22	05/11/04	<0.25	2.0	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	--	--	5.10	<0.010	--	--	0.48	0.87	36.00	<0.10	
MW-22	08/25/04	<0.25	0.61	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	--	--	2.72	1.4	--	--	2.70	0.33	59.00	--*b	
MW-22	12/14/04	<0.25	1.1	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.35	3.2	--	--	5.50	1.20	65.00	<0.10	
MW-22	03/10/05	<0.25	2.2	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	1.40	0.38	--	--	9.20	0.49	23.00	0.61	
MW-22	06/07/05	<0.25	3.0	--	<0.50	--	0.0049	<0.001	<0.001	<0.001	--	--	4.20	0.53	--	--	6.30	<0.25	25.00	0.7	
MW-22	09/20/05	0.40	2.9	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	--	--	3.70	0.86	--	--	27.00	<0.25	24.00	0.16	
MW-22	12/13/05	<0.25	0.71	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	--	--	2.10	3.8	--	--	12.00	<0.25	25.00	3.0	
MW-22	03/15/06	<0.25	2.4	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.10	0.033	--	--	4.40	<0.25	14.00	<0.10	
MW-22	06/08/06	<0.25	0.89	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.60	0.62	--	--	4.50	<0.25	17.00	0.19	

Appendix E
 Historical Groundwater Analytical Results
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-22	09/12/06	<0.25	0.45	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.60	2.2	--	--	4.50	<0.25	19.00	0.11	
MW-22	12/12/06	<0.25	1.4	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	--	--	0.90	0.010	--	--	2.20	<0.25	7.3	<0.10	
MW-22	06/19/07	<0.25	1.1	--	<0.50	--	0.0094	<0.0005	<0.0005	<0.0005	--	--	1.80	--	--	--	--	--	--	--	
MW-22	06/04/08	<0.25	0.77	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.60	--	--	--	--	--	--	--	
MW-22	06/03/09	<0.25	1.8	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.50	--	--	--	--	--	--	--	
MW-22	06/09/10	<0.25	1.2	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.0011	--	--	0.00	--	--	--	--	--	--	--	
MW-22	09/09/10	--	--	--	--	--	--	--	--	--	--	--	0.36	--	--	--	--	--	<0.50	--	
MW-22	05/23/11	<0.25	2.7	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	--	--	0.00	--	--	--	--	--	--	--	
MW-22	05/31/12	<1.0	2.1	--	0.73	--	<0.0050	<0.0050	<0.0050	<0.0050	--	--	0.00	--	--	--	--	--	--	--	
MW-22	04/09/13	<0.25	--	0.97	<0.50	--	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--	
MW-22	04/22/14	<0.25	2.9	0.38	<0.50	<0.50	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	--	--	--	
MW-22	09/30/15	<0.100	--	0.911	--	<0.25	<0.001	<0.005	<0.001	<0.003	--	--	0.36	--	--	--	--	--	--	--	
MW-22	10/12/16	<0.100	--	<0.250	--	<0.500	<0.001	<0.005	<0.001	<0.003	--	--	0.84	--	--	--	--	--	--	--	
MW-22	10/11/17	<0.100	--	0.256	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.71	--	--	--	--	--	--	--	
MW-22	10/03/18	<0.1	--	<0.2	--	<0.25	<0.001	<0.001	<0.001	<0.003	--	--	0.11	--	--	--	--	--	--	--	
MW-22	10/03/19	0.826	--	0.258	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.10	--	--	--	--	--	--	--	
MW-23	11/19/03	5.3	1.4	--	<0.50	--	0.87	0.016	0.098	0.23	--	--	--	--	--	--	--	--	--	--	
MW-23	02/25/04	3.3	0.85	--	<0.50	--	0.91	0.011	0.046	0.030	0.0052*	--	1.60	12	--	--	15	<0.25 b	13.00	0.4	
MW-23	05/12/04	4.2	1.3	--	<0.50	--	1.1	0.013	0.046	0.048	<0.0050*	--	1.80	13	--	--	19	<0.25	3.60	0.16	
MW-23	08/26/04	5.3	0.72	--	<0.50	--	1.1	0.023	0.20	0.17	0.014*	--	1.41	10	--	--	14	<0.25	21.00	0.11	
MW-23	12/14/04	--	--	--	--	--	--	--	--	--	--	--	2.30	16	--	--	1.2	<0.25	<0.50	0.25	
MW-23	03/08/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-23	06/07/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-23	09/20/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-23	12/13/05	6.3	<0.25	--	<0.50	--	1.3	0.014	0.048	0.044	<0.0050*	--	--	--	--	--	--	--	--	--	
MW-23	03/15/06	7.0	0.28	--	<0.50	--	1.4	0.015	0.19	0.21	<0.0050*	--	2.30	17	--	--	20	<0.25	<0.50	0.23	
MW-23	06/08/06	5.2	1.3	--	<0.50	--	1.4	0.014	0.11	0.11	<0.0050*	--	1.10	18	--	--	18	<0.25	<0.50	0.20	
MW-23	09/12/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-23	12/12/06	8.1	<0.25	--	<0.50	--	1.8	0.02	0.11	0.16	<0.0050*	--	1.90	27	--	--	27	<0.25	<0.50	0.24	
MW-23	03/27/07	8.4	--	--	--	--	1.8	0.019	0.16	0.16	--	--	2.40	--	--	--	--	--	--	--	
MW-23	06/19/07	8.7	--	--	--	--	1.8	0.021	0.23	0.23	<0.0050	--	1.20	13	--	--	18	<0.25	<1.0	0.19	
MW-23	09/25/07	6.9	--	--	--	--	1.5	0.021	0.085	0.11	--	--	2.90	--	--	--	--	--	--	--	
MW-23	12/11/07	9.1	--	--	--	--	1.3	0.022	0.053	0.097	--	--	2.77	--	--	--	--	--	--	--	
MW-23	03/04/08	7.8	--	--	--	--	1.5	0.018	0.089	0.10	--	--	2.40	--	--	--	--	--	--	--	
MW-23	06/04/08	19	--	--	--	--	2.4	0.061	0.59	3.2	<0.0050	--	1.70	12	--	--	63	<0.25	1.0	0.48	
MW-23	09/08/08	6.4	--	--	--	--	0.79	0.014	0.07	0.038	--	--	--	--	--	--	--	--	--	--	
MW-23	12/04/08	5.4	--	--	--	--	0.52	0.0088	0.091	0.063	--	--	0.53	--	--	--	--	--	--	--	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-23	03/04/09	4.8	--	--	--	--	0.81	0.012	0.27	0.11	--	--	0.80	--	--	--	--	--	--	--	
MW-23	06/02/09	5.7	--	--	--	--	0.21	0.0061	0.17	0.054	<0.0050	--	0.42	9.5	--	--	17	<0.25	57	0.92	
MW-23	09/21/09	5.9	--	--	--	--	0.64	0.013	0.26	0.025	--	--	0.60	--	--	--	--	--	--	--	
MW-23	11/16/09	6.2	--	--	--	--	0.80	0.017	0.45	0.036	--	--	0.43	--	--	--	--	--	--	--	
MW-23	03/08/10	4.8	--	--	--	--	0.25	0.0077	0.19	0.031	--	--	0.26	--	--	--	--	--	--	--	
MW-23	06/08/10	5.5	--	--	--	--	0.39	0.0082	0.17	0.025	<0.0050	--	0.15	11.00	--	--	22.00	<0.25	4.20	0.52	
MW-23	09/10/10	4.9	--	--	--	--	0.21	0.0044	0.11	0.019	--	--	3.49	--	--	--	--	--	--	--	
MW-23	11/16/10	4.5	--	--	--	--	0.37	0.010	0.23	0.02	--	--	0.46	--	--	--	--	--	--	--	
MW-23	03/02/11	5.0	--	--	--	--	0.21	0.0060	0.15	0.023	--	--	0.00	--	--	--	--	--	--	--	
MW-23	05/24/11	6.0	--	--	--	--	0.32	0.0053	0.16	0.027	<0.0050	--	0.33	14.00	--	--	31.00	<0.25	0.80	0.10	
MW-23	08/30/11	6.0	--	--	--	--	0.15	0.0030	0.093	0.015	--	--	1.10	--	--	--	--	--	--	--	
MW-23	12/02/11	5.3	--	--	--	--	0.29	0.0076	0.13	0.017	--	--	0.89	--	--	--	--	--	--	--	
MW-23	03/02/12	4.0	--	--	--	--	0.12	0.0029	0.13	0.027	--	--	0.65	--	--	--	--	--	--	--	
MW-23	05/30/12	4.5	--	--	--	--	0.087	<0.0025	0.14	0.022	<0.0050	--	0.00	5.50	--	--	41.00	<0.25	74.00	0.38	
MW-23	08/25/12	2.6	--	--	--	--	0.050	<0.0025	0.059	0.0046	--	--	--	--	--	--	--	--	--	--	
MW-23	11/08/12	2.3	--	--	--	--	0.021	<0.001	0.065	0.0038	--	--	--	--	--	--	--	--	--	--	
MW-23	02/28/13	2.6	--	--	--	--	0.034	<0.0025	0.16	0.010	--	--	--	--	--	--	--	--	--	--	
MW-23	04/10/13	0.54	--	--	--	--	0.015	<0.001	0.015	0.0013	<0.0050	--	--	1.9	--	--	92	<0.25	1,000	<0.10	
MW-23	07/29/13	1.7	--	--	--	--	0.0097	<0.001	0.025	0.0011	--	--	--	--	--	--	--	--	--	--	
MW-23	10/02/13	0.39	--	--	--	--	0.015	<0.001	0.0019	<0.001	--	--	0.00	--	--	--	--	--	--	--	
MW-23	01/21/14	0.27	--	--	--	--	0.011	<0.001	<0.001	<0.001	--	--	5.42	--	--	--	--	--	--	--	
MW-23	04/23/14	1.7	--	--	--	--	0.039	<0.001	<0.001	0.0026	<0.0050	--	--	3.1	--	--	23	<0.25	470	<0.10	
MW-23	07/15/14	2.5	--	--	--	--	0.11	0.0020	0.063	0.0071	--	--	0.30	--	--	--	--	--	--	--	
MW-23	03/18/15	2.1	--	--	--	--	0.056	0.0013	0.028	0.0039	--	--	--	--	--	--	--	--	--	--	Surrogate recovery above lab limits
MW-23 (DUP)	03/18/15	1.4	--	--	--	--	0.045	0.0011	0.024	0.0029	--	--	0.07	6.5	--	--	9.5	<0.25	260	0.15	
MW-23	10/01/15	1.68	--	--	--	--	0.0873	<0.005	0.00684	0.00331	--	--	0.19	6.03	--	--	6.48 T8	<0.10	58.3	<0.05	
MW-23	03/31/16	1.39	--	--	--	--	0.0139	<0.005	0.0180	<0.003	--	--	0.36	6.08	--	--	7.93	<0.10	26.0	<0.05	
MW-23 (DUP)	03/31/16	1.36	--	--	--	--	0.0121	<0.005	0.0157	<0.003	--	--	--	--	--	--	--	--	--	--	
MW-23	10/14/16	1.63	--	--	--	--	0.0852	<0.005	<0.001	<0.003	<0.002	<0.002	0.70	5.36	--	--	15.4	<0.10	42.3	<0.05	
MW-23	03/29/17	0.433	--	--	--	--	0.00210	<0.001	<0.001	<0.003	--	--	0.20	--	--	--	--	--	--	--	
MW-23 (DUP)	03/29/17	0.489	--	--	--	--	0.00248	0.001	<0.001	<0.003	--	--	--	--	--	--	--	--	--	--	
MW-23	10/11/17	1.73	--	--	--	--	0.0665	0.00106	0.0134	<0.00300	<0.00200	<0.00100	0.56	8.26	--	--	4.89 T8	<0.100	<5.00	<0.0500	
MW-23	03/28/18	2.06	--	--	--	--	0.06	0.00154	0.00648	<0.003	--	--	0.28	--	--	--	--	--	--	--	
MW-23	10/04/18	2.61	--	--	--	--	0.307	0.00449	0.0011	<0.003	<0.002	<0.002	0.05	13.8	--	--	5.22 T8	<0.1	<5.0	<0.05	
MW-23	04/03/19	1.74	--	--	--	--	0.240	0.00369	0.00231	0.00760	--	--	0.09	--	--	--	--	--	--	--	
MW-23 (DUP)	04/03/19	1.65	--	--	--	--	0.255	0.00397	0.00245	0.00630	--	--	0.09	--	--	--	--	--	--	--	Duplicate of MW-23
MW-23	10/04/19	3.17	--	--	--	--	0.360	0.00797	0.00370	0.00539	<0.00200	<0.00200	0.22	18.7	--	--	14.9 T8	<0.100	<5.00	<0.0500	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-24	11/19/03	34	6.4	--	0.54	--	2.8	0.54	1.4	6.0	--	--	--	--	--	--	--	--	--	--	
MW-24	02/25/04	26	3.0	--	<0.50	--	4.3	0.085	1.0	3.3	<0.0050*	--	1.70	15	--	--	22	<0.25 b	6.40	0.3	
MW-24	05/12/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-24	08/26/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-24	12/14/04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-24	03/08/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-24	06/07/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-24	09/20/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-24	12/13/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-24	12/14/05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-24	03/15/06	26	0.34	--	<0.50	--	4.4	0.064	0.88	4.2	0.0069	--	--	25	--	--	46	<0.25	<0.50	0.23	
MW-24	06/08/06	21	<0.25	--	<0.50	--	1.5	0.039	0.86	4.9	0.0068	--	1.60	7.6	--	--	9.1	<0.25	<0.50	0.42	
MW-24	09/12/06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-24	12/12/06	20	1.1	--	<0.50	--	1.5	0.037	0.69	3.2	0.0078*	--	2.30	16	--	--	3.2	<0.25	<0.50	0.31	
MW-24	03/27/07	27	--	--	--	--	3.4	0.062	1.3	4.6	--	--	2.20	--	--	--	--	--	--	--	
MW-24	06/19/07	31	--	--	--	--	3.0	0.063	1.0	5.7	0.022	--	1.40	15	--	--	68	<0.25	<0.50	1.7	
MW-24	09/25/07	16	--	--	--	--	2.0	0.036	0.79	2.3	--	--	2.30	--	--	--	--	--	--	--	
MW-24	12/11/07	40	--	--	--	--	1.5	0.066	1.8	9.2	--	--	1.19	--	--	--	--	--	--	--	
MW-24	03/04/08	41	--	--	--	--	1.8	0.052	1.4	7.7	--	--	2.20	--	--	--	--	--	--	--	
MW-24	06/04/08	5.5	--	--	--	--	1.2	0.013	0.027	0.027	<0.0050	--	2.10	15	--	--	17	<0.25	7.4	0.85	
MW-24	09/08/08	46	--	--	--	--	3.5	0.081	1.9	7.3	--	--	1.38	--	--	--	--	--	--	--	
MW-24	12/05/08	32	--	--	--	--	2.4	0.061	1.6	4.3	--	--	0.33	--	--	--	--	--	--	--	
MW-24	03/04/09	26	--	--	--	--	2.3	0.056	1.5	5.3	--	--	0.83	--	--	--	--	--	--	--	
MW-24	06/02/09	37	--	--	--	--	2.5	0.064	1.7	4.4	0.0062	--	0.46	12	--	--	37	<0.25	<0.50	<0.10	
MW-24	09/21/09	28	--	--	--	--	1.6	0.042	1.3	4.2	--	--	0.77	--	--	--	--	--	--	--	
MW-24	11/16/09	20	--	--	--	--	1.1	0.027	0.94	2.7	--	--	0.78	--	--	--	--	--	--	--	
MW-24	03/08/10	31	--	--	--	--	2.5	0.058	1.6	5.1	--	--	0.29	--	--	--	--	--	--	--	
MW-24	06/08/10	37	--	--	--	--	3.1	0.084	2.2	7.1	0.019	--	0.00	12.00	--	--	35.00	<0.25	<0.50	0.23	
MW-24	09/10/10	28	--	--	--	--	2.4	0.066	1.8	4.3	--	--	3.70	--	--	--	--	--	--	--	
MW-24	11/16/10	26	--	--	--	--	1.3	0.051	1.5	5.8	--	--	0.47	--	--	--	--	--	--	--	
MW-24	03/02/11	26	--	--	--	--	2.2	0.057	1.3	4.8	--	--	0.00	--	--	--	--	--	--	--	
MW-24	05/24/11	11	--	--	--	--	1.2	0.028	0.51	1.3	<0.0050	--	0.53	12.00	--	--	26.00	<0.25	0.78	0.11	
MW-24	08/30/11	30	--	--	--	--	2	0.057	1.4	4.2	--	--	0.39	--	--	--	--	--	--	--	
MW-24	12/02/11	18	--	--	--	--	0.37	0.016	0.42	2.56	--	--	0.48	--	--	--	--	--	--	--	
MW-24	03/02/12	8.7	--	--	--	--	0.53	0.014	0.25	1.1	--	--	1.52	--	--	--	--	--	--	--	
MW-24	05/30/12	7.3	--	--	--	--	0.39	0.013	0.3	0.88	<0.0050	--	0.00	7.50	--	--	31.00	<0.25	2.40	0.15	
MW-24	08/25/12	11	--	--	--	--	0.56	<0.020 V	0.41	1.4	--	--	--	--	--	--	--	--	--	--	

Appendix E
Historical Groundwater Analytical Results
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Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-24 (DUP)	08/25/12	8.0	--	--	--	--	0.41	<0.015 V	0.30	1.1	--	--	--	--	--	--	--	--	--	--	Duplicate of MW-24
MW-24	11/08/12	20	--	--	--	--	1.7	0.057	1.4	4.1	--	--	--	--	--	--	--	--	--	--	
MW-24	11/08/12	19	--	--	--	--	1.7	0.057	1.4	4.2	--	--	--	--	--	--	--	--	--	--	
MW-24	02/28/13	6.6	--	--	--	--	0.29	<0.01	0.39	0.84	--	--	--	--	--	--	--	--	--	--	
MW-24	02/28/13	9.0	--	--	--	--	0.48	0.016	0.59	1.3	--	--	--	--	--	--	--	--	--	--	
MW-24	04/10/13	20	--	--	--	--	1.1	0.048	0.22	3.8	--	--	--	19	--	--	35	<0.25	1.0	<0.10	
MW-24	04/10/13	23	--	--	--	--	1.2	0.061	1.7	4.1	0.01	--	--	--	--	--	--	--	--	--	
MW-24	07/29/13	27	--	--	--	--	1.1	0.059	2.1	4.7	--	--	--	--	--	--	--	--	--	--	
MW-24	10/02/13	33	--	--	--	--	1.1	0.072	2.6	6.3	--	--	0.00	--	--	--	--	--	--	--	
MW-24 (DUP)	10/02/13	29	--	--	--	--	1.4	0.076	2.5	5.6	--	--	--	--	--	--	--	--	--	--	Duplicate of MW-24
MW-24	01/22/14	3.1	--	--	--	--	0.088	0.0034	0.18	0.33	--	--	--	--	--	--	--	--	--	--	
MW-24 (DUP)	01/22/14	2.2	--	--	--	--	0.056	0.0026	0.12	0.2	--	--	0.00	--	--	--	--	--	--	--	Duplicate of MW-24
MW-24	04/23/14	23	--	--	--	--	1.0	0.051	1.7	3.6	0.0085	--	--	13	--	--	52	0.95	2.3	<0.10	
MW-24 (DUP)	04/23/14	24	--	--	--	--	1.0	0.048	1.7	3.7	--	--	--	--	--	--	--	--	--	--	Duplicate of MW-24
MW-24	07/15/14	24	--	--	--	--	1.1	0.055	1.7	3.7	--	--	0.20	--	--	--	--	--	--	--	
MW-24 (DUP)	07/15/14	22	--	--	--	--	1.1	0.05	1.7	3.6	--	--	--	--	--	--	--	--	--	--	Duplicate of MW-24
MW-24	03/18/15	28	--	--	--	--	1.4	0.066	1.8	2.6	--	--	0.18	23	--	--	40	<0.25	1.2	<0.10	
MW-24	10/01/15	13.6	--	--	--	--	0.641	<0.100	1.13	1.80	0.00282	<0.002	0.29	10.4	--	--	31.3 T8	<0.10	<5.0	<0.05	
MW-24 (DUP)	10/01/15	14.5	--	--	--	--	0.637	0.0264	0.934	1.51	0.00249	<0.002	--	--	--	--	--	--	--	--	Duplicate of MW-24
MW-24	03/31/16	3.44	--	--	--	--	0.136	0.00605	0.106	0.115	--	--	0.45	9.40	--	--	12.6	<0.10	<5.0	<0.05	
MW-24	10/14/16	5.28	--	--	--	--	0.106	<0.05	0.201	0.280	0.00390	<0.002	0.30	2.53	--	--	6.23	<0.10	<5.0	<0.05	
MW-24 (DUP)	10/14/16	5.59	--	--	--	--	0.113	<0.05	0.206	0.287	0.00404	<0.002	--	--	--	--	--	--	--	--	Duplicate of MW-24
MW-24	03/29/17	12.8	--	--	--	--	0.160	<0.100	0.446	0.452	--	--	3.51	--	--	--	--	--	--	--	
MW-24	10/11/17	7.22	--	--	--	--	0.649	0.0260	0.773	0.732	0.00281	<0.00100	0.58	14.4	--	--	22.9 T8	<0.100	<5.00	<0.0500	
MW-24 (DUP)	10/11/17	7.12	--	--	--	--	0.649	0.0252	0.735	0.641	0.00266 B	<0.00100	0.58	13.3	--	--	25.7 T8	<0.100	<5.00	<0.0500	Duplicate of MW-24
MW-24	03/28/18	10.5	--	--	--	--	0.829	0.023	1.04	0.612	--	--	0.11	--	--	--	--	--	--	--	
MW-24 (DUP)	03/28/18	9.3	--	--	--	--	0.591	0.0260	0.869	0.535	--	--	--	--	--	--	--	--	--	--	Duplicate of MW-24
MW-24	10/04/18	10.4	--	--	--	--	0.337	0.0168	0.643	0.208	<0.002	<0.002	0.11	12.9	--	--	15.7 T8	<0.1	<5.0	<0.05	
MW-24 (DUP)	10/04/18	10.8	--	0.568	--	<0.25	0.378	0.0173	0.815	0.259	<0.002	<0.002	--	--	--	--	--	--	--	--	Duplicate of MW-24
MW-24	04/03/19	13.6	--	--	--	--	0.719	0.0274	1.23	0.309	--	--	0.09	--	--	--	--	--	--	--	
MW-24	10/04/19	10.3	--	--	--	--	0.581	0.0173	0.643	0.112	<0.00200	<0.00200	0.76	19.6	--	--	53.0 T8	<0.100	<5.00	<0.0500	
MW-25	11/20/03	<0.25	1.3	--	<0.50	--	0.0061	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	--	--	--	
MW-25	02/26/04	0.38	8.9	--	<0.50	--	0.0011	<0.0005	0.0027	<0.0005	0.012*	--	1.30	1.5	--	--	27	<0.25 b	120.00	0.9	
MW-25	05/12/04	<0.25	1.6	--	<0.50	--	<0.0005	<0.0005	0.0034	<0.0005	<0.0050*	--	1.90	2.0	--	--	12	<0.25	140.00	0.10	
MW-25	08/26/04	<0.25	0.27	--	<0.50	--	0.013	<0.0005	<0.0005	<0.0005	0.034*a	--	1.78	1.7	--	--	5.4	<0.25	380.00	0.13	
MW-25	12/14/04	<0.25	1.4	--	<0.50	--	0.0035	<0.001	<0.001	<0.001	<0.0050*	--	2.10	0.40	--	--	2.7	<0.25	370.00	<0.10	
MW-25	03/10/05	0.31	3.7	--	<0.50	--	0.0014	<0.0005	0.00064	<0.0005	<0.0050*	--	2.10	2.0	--	--	3.5	<0.25	180.00	0.21	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
MW-25	06/07/05	0.40	3.2	--	<0.50	--	<0.001	<0.001	0.0014	<0.001	<0.0050*	--	1.75	2.2	--	--	4.7	<0.25	160.00	0.7	
MW-25	09/20/05	0.30	1.4	--	<0.50	--	0.0016	<0.0005	<0.0005	<0.0005	0.059*a	--	1.30	0.91	--	--	1.8	<0.25	270.00	0.12	
MW-25	12/13/05	<0.25	1.2	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	<0.0050*	--	2.50	1.8	--	--	1.8	<0.25	140.00	0.23	
MW-25	03/15/06	<0.25	1.0	--	<0.50	--	0.0019	<0.001	<0.001	<0.001	<0.0050*	--	2.50	0.92	--	--	4.6	<0.25	210.00	0.38	
MW-25	06/08/06	<0.25	1.4	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.20	1.9	--	--	6.5	<0.25	120.00	0.13	
MW-25	09/12/06	<0.25	0.31	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.80	0.84	--	--	5.9	<0.25	250.00	<0.10	
MW-25	12/12/06	<0.25	0.86	--	<0.50	--	0.0052	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.10	1.6	--	--	15	<0.25	400.00	<0.10	
MW-25	06/19/07	<0.50	1.6	--	<0.50	--	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050	--	2.10	--	--	--	--	--	--	--	
MW-25	06/04/08	<0.25	0.26	--	<0.50	--	0.0020	<0.0005	<0.0005	<0.0005	<0.0050	--	2.40	--	--	--	--	--	--	--	
MW-25	06/03/09	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.62	--	--	--	--	--	--	--	
MW-25	06/09/10	<0.25	0.32	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	<0.0050	--	0.00	--	--	--	--	--	--	--	
MW-25	05/25/11	<0.50	1.4	--	<0.50	--	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050	--	1.17	--	--	--	--	--	--	--	
MW-25	06/01/12	<0.25	<0.25	--	<0.50	--	0.0011	<0.0010	<0.0010	<0.0010	<0.0050	--	0.00	--	--	--	--	--	--	--	
MW-25	04/10/13	<0.25	--	<0.25	<0.50	--	0.0013	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	
MW-25	04/23/14	<0.25	0.65	0.25	<0.50	<0.50	0.0014	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	
MW-25	10/02/15	<0.100	--	1.19	--	1.19	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.19	--	--	--	--	--	--	--	
MW-25	10/13/16	<0.100	--	<0.250	--	<0.500	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.62	--	--	--	--	--	--	--	
MW-25	10/11/17	0.110	--	1.60	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	0.46	--	--	--	--	--	--	--	
MW-25	10/02/18	<0.1	--	0.669	--	<0.25	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	0.12	--	--	--	--	--	--	--	
MW-25	10/03/19	<0.100	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200	0.16	--	--	--	--	--	--	--	
MW-26	10/25/11	<0.25		<0.25		<0.50	<0.00050	<0.00050	<0.00050	<0.00050	--	--	--	--	--	--	--	--	--	--	
SH-02	12/20/00	0.078	<0.25	--	<0.5	--	0.001	<0.001	<0.001	<0.003	0.015**	--	--	5.40	--	--	0.86	0.040	14.00	0.32	
SH-02		Destroyed during construction activities																			
SH-02R	02/13/02	<0.25	0.56	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--	
SH-02R	05/21/02	<0.25	2.4	--	<0.5	--	0.037	<0.0005	<0.0005	<0.0005	0.005*	--	--	--	--	--	--	--	--	--	
SH-02R	08/28/02	<0.25	4.3	--	<0.5	--	0.087	0.0038	0.00061	0.0023	0.006*	--	1.50	4.90	--	--	17.00	<0.25	3.80	<0.1	
SH-02R	11/05/02	<0.25	1.1	--	<0.5	--	0.016	<0.0005	<0.0005	<0.0005	0.005*	--	2.10	6.10	--	--	20.00	<0.25	13.00	<0.1	
SH-02R	02/19/03	<0.25	<0.5	--	<0.5	--	<0.0005	0.00086	<0.0005	<0.0005	<0.005*	--	2.50	0.29	--	--	2.40	0.33	10.00	0.60	
SH-02R	06/10/03	<0.25	0.97	--	<0.25	--	<0.0005	0.00051	<0.0005	<0.0005	0.0059*	--	1.30	1.40	--	--	5.10	<0.25	6.80	0.30	
SH-02R	09/16/03	<0.25	3.0	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.010*	--	1.90	5.20	--	--	19.00	<0.25 b	5.10	0.40	
SH-02R	11/19/03	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.10	1.50	--	--	4.60	0.34 b	7.10	0.20	
SH-02R	02/25/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	3.40	5.00	--	--	14.00	0.46 b	5.20	0.40	
SH-02R	05/12/04	<0.25	0.74	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.00	3.20	--	--	7.40	<0.25	4.40	<0.10	
SH-02R	08/26/04	<0.25	0.58	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.24	2.10	--	--	3.80	<0.25	5.80	<0.10	
SH-02R	12/15/04	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.98	0.092	--	--	0.055	0.44	100.00	<0.10	
SH-02R	03/09/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.59	0.38	--	--	1.50	<0.25	380.00	<0.10	
SH-02R	06/08/05	<0.25	0.31	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.00	1.20	--	--	0.11	<0.25	110.00	<0.2	

Appendix E
Historical Groundwater Analytical Results
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Well ID	Date Sampled	GRO	DRO	DRO, SGC	HO	HO, SGC	Benzene	Toluene	Ethylbenzene	Xylenes	Total Lead	Dissolved Lead	Dissolved Oxygen	Methane	Total Iron	Dissolved Iron	Ferrous Iron	Nitrate	Sulfate	Sulfide	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
SH-02R	09/21/05	<0.25	0.58	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.50	4.40	--	--	0.72	<0.25	31.00	<0.10	
SH-02R	12/14/05	<0.25	0.30	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0078*	--	0.70	2.20	--	--	0.28	<0.25	11.00	<0.10	
SH-02R	03/14/06	<0.25	0.30	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0072*	--	0.70	0.42	--	--	1.40	<0.25	25.00	<0.10	
SH-02R	06/07/06	<0.25	0.59	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050*	--	0.90	3.10	--	--	4.40	<0.25	20.00	<0.10	
SH-02R	09/13/06	<0.25	<0.25	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050*	--	1.70	3.90	--	--	5.50	<0.25	24.00	<0.10	
SH-02R	12/13/06	<0.25	0.49	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	0.90	0.38	--	--	1.30	0.34	10.00	<0.10	
SH-02R	06/20/07	<0.25	0.77	--	<0.50	--	<0.0010	<0.0010	<0.0010	0.0016	<0.0050	--	2.00	--	--	--	--	--	--	--	
SH-02R	06/05/08	<0.25	0.28	--	<0.50	--	<0.0005	<0.0005	<0.0005	0.00073	<0.0050	--	3.10	--	--	--	--	--	--	--	
SH-02R	06/01/09	<0.25	0.37	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.25	--	--	--	--	--	--	--	
SH-02R	06/08/10	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.24	--	--	--	--	--	--	--	
SH-02R	05/23/11	<0.25	0.29	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	--	0.41	--	--	--	--	--	--	0.0050	
SH-02R	06/01/12	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.00	--	--	--	--	--	--	0.0050	
SH-02R	04/09/13	<0.25	--	<0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	<0.10	
SH-02R	04/23/14	<0.25	0.28	<0.25	<0.50	<0.50	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	<0.10	
SH-02R	09/30/15	<0.100	--	1.00	--	0.298	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.38	4.26	--	--	3.88	<0.1	<5	<0.05	
SH-02R	10/12/16	<0.100	--	<0.250	--	<0.500	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.61	--	--	--	--	--	--	--	
SH-02R	10/11/17	0.145 B	--	0.331	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	0.61	--	--	--	--	--	--	--	
SH-02R	10/04/18	0.129	--	0.594	--	<0.25	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	0.08	--	--	--	--	--	--	--	
SH-02R	10/03/19	<0.100	--	0.565	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200	0.17	--	--	--	--	--	--	--	
SH-05	12/20/00	<0.05	1.0	--	<0.5	--	<0.001	<0.001	<0.003	<0.001	0.017**	--	--	0.010	--	--	1.80	0.14	6.00	<0.01	
SH-05R	05/21/02	0.71	11	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	--	--	--	--	--	--	--	--	
SH-05R	08/28/02	0.77	10	--	<0.5	--	<0.0005	0.0015	<0.0005	<0.0005	0.006*	--	1.40	1.00	--	--	11.00	<0.25	1.40	0.50	
SH-05R	11/05/02	1.4	7.1	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	0.008*	--	1.50	1.20	--	--	17.00	<0.25	6.30	<0.1	
SH-05R	02/19/03	0.8	6.8	--	<0.5	--	<0.001	0.0016	<0.001	<0.001	<0.005*	--	2.60	2.90	--	--	32.00	<0.25	28.00	<0.1	
SH-05R	06/10/03	1.1	45	--	<0.25	--	<0.0005	<0.0005	<0.0005	<0.0005	0.04*	--	1.40	1.50	--	--	33.00	<0.25	2.80	0.60	
SH-05R	09/16/03	<0.25	23	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.074*	--	1.20	1.60	--	--	41.00	<0.25 b	0.46	0.90	
SH-05R	11/19/03	0.62	19	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.075*	--	3.10	1.60	--	--	36.00	<0.25 b	71.00	0.50	
SH-05R	02/25/04	<0.25	5.3	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.50	0.56	--	--	0.087	0.76 b	120.00	0.20	
SH-05R	05/12/04	0.43	4.3	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.12	2.10	--	--	16.00	<0.25	4.60	<0.10	
SH-05R	08/26/04	0.63	3.0	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.96	2.00	--	--	6.40	<0.25	0.63	<0.10	
SH-05R	12/15/04	0.30	10	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0056*	--	2.80	3.70	--	--	26.00	<0.25	26.00	<0.10	
SH-05R	03/09/05	0.78	4.3	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.56	3.40	--	--	2.00	<0.25	7.50	<0.10	
SH-05R	06/08/05	0.32	4.0	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.50	3.80	--	--	19.00	<0.25	30.00	<0.2	
SH-05R	09/21/05	0.61	2.8	--	1.0	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	0.80	3.10	--	--	9.10	<0.25	<0.50	<0.10	
SH-05R	12/14/05	0.78	1.3	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.30	5.40	--	--	23.00	<0.25	16.00	<0.10	
SH-05R	03/14/06	<0.25	1.4	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0074*	--	2.30	0.11	--	--	0.087	<0.25	35.00	<0.10	
SH-05R	06/07/06	<0.25	1.4	--	<0.50	--	<0.001	<0.001	<0.001	<0.001	<0.0050*	--	1.20	1.90	--	--	8.40	0.34	21.00	<0.10	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
SH-05R	09/13/06	0.34	0.56	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.40	2.20	--	--	7.40	<0.25	<0.50	<0.10	
SH-05R	12/13/06	<0.50	1.9	--	<0.50	--	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050*	--	2.70	0.14	--	--	0.11	2.10	100.00	<0.10	
SH-05R	06/20/07	0.59	1.8	--	<0.50	--	<0.0005	0.00058	<0.0005	<0.0005	<0.0050	--	0.90	--	--	--	--	--	--	--	
SH-05R	06/05/08	<0.25	1.7	--	<0.50	--	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	--	2.90	--	--	--	--	--	--	--	
SH-05R	06/01/09	0.36	0.99	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.01	--	--	--	--	--	--	--	
SH-05R	06/08/10	<0.25	0.28	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	0.00	--	--	--	--	--	--	--	
SH-05R	05/23/11	<0.25	1.4	--	<0.50	--	<0.0025	<0.0025	<0.0025	<0.0025	<0.0050	--	1.39	--	--	--	--	--	--	0.0050	
SH-05R	10/01/15	<0.100	--	1.80	--	0.320	<0.001	<0.005	<0.001	0.003	<0.002	<0.002	0.42	--	--	--	--	--	--	--	
SH-05R	10/12/16	0.257	--	0.543	--	<0.500	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.61	--	--	--	--	--	--	--	
SH-05R	10/11/17	0.267 B	--	0.586	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	0.73	--	--	--	--	--	--	--	
SH-05R	10/04/18	0.242	--	0.7	--	<0.25	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	0.07	--	--	--	--	--	--	--	
SH-05R	10/03/19	<0.100	--	0.391	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200	0.13	--	--	--	--	--	--	--	
MW-07R	02/13/02	<0.25	1.2	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	0.035*	--	--	--	--	--	--	--	--	--	
MW-07R	05/21/02	<0.25	2.1	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	0.005*	--	--	--	--	--	--	--	--	--	
MW-07R	08/28/02	<0.25	2.4	--	<0.5	--	<0.0005	0.0028	<0.0005	0.0012	0.006*	--	1.60	0.17	--	--	6.90	<0.25	9.00	0.10	
MW-07R	11/05/02	<0.25	3.7	--	<0.5	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.005*	--	1.60	0.16	--	--	12.00	<0.25	2.70	<0.1	
MW-07R	02/19/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-07R	06/10/03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Not Sampled
MW-07R	09/16/03	<0.25	1.9	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.045*	--	1.40	0.26	--	--	26.00	<0.25 b	9.10	1.60	
MW-07R	11/19/03	<0.25	2.1	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.020*	--	2.20	0.017	--	--	4.90	0.77 b	14.00	0.30	
MW-07R	02/25/04	<0.25	<0.50	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.10	<0.01	--	--	1.80	0.42 b	5.70	0.30	
MW-07R	05/12/04	<0.25	0.48	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.49	<0.010	--	--	2.20	0.74	3.40	<0.10	
MW-07R	08/26/04	<0.25	0.42	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.05	0.011	--	--	0.12	<0.25	12.00	<0.10	
MW-07R	12/15/04	<0.25	0.85	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0076*	--	2.00	0.034	--	--	1.40	0.36	10.00	<0.10	
MW-07R	03/09/05	<0.25	0.54	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.15	0.030	--	--	4.20	<0.25	120.00	<0.10	
MW-07R	06/08/05	<0.25	0.46	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.98	<0.010	--	--	0.25	0.89	5.70	<0.2	
MW-07R	09/21/05	<0.25	0.70	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.80	0.13	--	--	<0.050	<0.25	15.00	<0.10	
MW-07R	12/14/05	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.50	<0.010	--	--	<0.050	0.29	5.70	<0.10	
MW-07R	03/14/06	<0.25	0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.50	0.23	--	--	2.30	0.51	8.90	<0.10	
MW-07R	06/07/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	2.20	<0.010	--	--	0.28	2.40	3.90	<0.10	
MW-07R	09/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	0.0065	--	1.20	0.26	--	--	3.40	<0.25	8.50	<0.10	
MW-07R	12/13/06	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050*	--	1.90	<0.010	--	--	<0.050	1.90	23.00	<0.10	
MW-07R	06/20/07	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.70	--	--	--	--	--	--	--	
MW-07R	06/05/08	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.90	--	--	--	--	--	--	--	
MW-07R	06/01/09	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.29	--	--	--	--	--	--	--	
MW-07R	06/08/10	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.11	--	--	--	--	--	--	--	
MW-07R	05/23/11	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	3.20	--	--	--	--	--	--	0.0050	

Appendix E
 Historical Groundwater Analytical Results
 Kinder Morgan Liquids Terminals, LLC
 Harbor Island Terminal
 2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments	
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058											
MW-07R	06/01/12	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	1.03	--	--	--	--	--	--	--	0.0050	
MW-07R	04/09/13	<0.25	--	<0.25	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	<0.10	
MW-07R	04/23/14	<0.25	<0.25	--	<0.50	--	<0.0005	<0.0005	<0.0005	<0.0005	<0.0050	--	--	--	--	--	--	--	--	--	<0.10	
MW-07R	10/01/15	<0.100	--	2.61	--	0.373	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.37	1.54	--	--	11.8 T8	<0.1	<5	<0.05		
MW-07R	10/12/16	<0.100	--	0.280	--	<0.500	<0.001	<0.005	<0.001	<0.003	<0.002	<0.002	0.58	--	--	--	--	--	--	--		
MW-07R	10/11/17	0.423	--	<0.200	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00100	0.67	--	--	--	--	--	--	--		
MW-07R	10/04/18	<0.1	--	<0.2	--	<0.25	<0.001	<0.001	<0.001	<0.003	<0.002	<0.002	0.05	--	--	--	--	--	--	--		
MW-07R	10/03/19	<0.100	--	0.229	--	<0.250	<0.00100	<0.00100	<0.00100	<0.00300	<0.00200	<0.00200	0.13	--	--	--	--	--	--	--		
TMW-B1	10/29/09	5.7	<0.25	--	<0.50	--	0.12	0.0070	0.058	0.15	--	--	--	--	--	--	--	--	--	--		
TMW-B1	06/09/10	--	--	--	--	--	--	--	--	--	--	--	1.06	--	--	--	--	--	3.60	--		
TMW-B1	09/09/10	--	--	--	--	--	--	--	--	--	--	--	0.25	--	--	--	--	--	<0.50	--		
TMW-B1	05/25/11	9.1	--	--	--	--	0.024	<0.0050	0.24	0.56	--	--	1.51	--	--	--	--	--	--	--		
TMW-B1	12/02/11	6.6	--	--	--	--	0.091	<0.0050	0.15	0.26	--	--	0.33	--	--	--	--	--	--	--		
TMW-B1	03/01/12	8.0	--	--	--	--	0.079	<0.0025	0.28	0.55	--	--	0.30	--	--	--	--	--	--	--		
TMW-B1	11/08/12	3.7	--	--	--	--	0.16	0.010	0.019	0.036	--	--	--	--	--	--	--	--	--	--		
TMW-B1	02/28/13	14	--	--	--	--	0.026	<0.01	0.50	0.87	--	--	--	--	--	--	--	--	--	--		
TMW-B1	10/02/13	5.8	--	--	--	--	0.039	<0.005	0.16	0.24	--	--	0.00	--	--	--	--	--	--	--		
TMW-B1	09/29/15	7.22	--	--	--	--	0.0355	<0.01	0.213	0.106	--	--	0.33	--	--	--	--	--	--	--		
TMW-B1	10/14/16	7.03	--	--	--	--	0.0227	<0.05	0.0690	<0.03	--	--	0.23	9.42	--	--	15.2	<0.10	<5.0	<0.05		
TMW-B1	10/12/17	6.71	--	--	--	--	0.0304	0.00266	0.0738	0.0276	--	--	0.62	11.4	--	--	12.7 T8	<0.100	<5.00	<0.0500		
TMW-B1	10/04/18	6.36	--	--	--	--	0.0827	0.00427	0.0428	0.01	--	--	0.14	6.6	--	--	8.34 T8	<0.1	<5.0	<0.05		
TMW-B1	10/04/19	5.68	--	--	--	--	0.0599	0.00758	0.0259	0.00913	--	--	0.08	6.57	--	--	<1.25 T8	<0.100	<5.00	<0.0500		
TMW-1	06/21/13	<0.25	<0.25	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	0.41 °c	11	<0.10	Baseline monitoring event	
TMW-1	07/30/13	<0.25	--	--	--	--	--	--	--	--	--	--	--	0.075	10	<0.30	--	0.28	1,900	<0.10		
TMW-1	08/26/13	<0.25	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Two-month monitoring event	
TMW-1	10/03/13	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	2.92	0.081	13	5.2	--	<0.50 °c	980	<0.10		
TMW-1	01/22/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	9.27	--	--	--	--	--	450	<0.10		
TMW-1	04/21/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	--	--	--	--	--	<0.25	670	<0.10		
TMW-1	07/14/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.87	<0.010	4.0	3.1	--	--	650	<0.10		
TMW-1	03/17/15	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	5.42	0.040	--	--	0.65	0.32	640	<0.10		
TMW-1	09/29/15	2.03	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	1.80	<0.010	--	--	1.40 T8	0.571	1,090	<0.05		
TMW-1	03/30/16	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	6.11	<0.010	--	--	1.74	<0.10	816	<0.05		
TMW-1	10/12/16	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	4.86	--	--	--	--	--	314	--		
TMW-1	03/28/17	<0.100	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	6.65	--	--	--	--	--	511	--		
TMW-1	10/13/17	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.73	--	--	--	--	--	851	--		
TMW-1	03/29/18	<0.1	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	8.20	--	--	--	--	--	667	--		
TMW-1	10/03/18	<0.1	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	1.92	--	--	--	--	--	810	--		

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
TMW-1	04/02/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	6.77	--	--	--	--	--	627	--	
TMW-1	10/02/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	3.94	--	--	--	--	--	641	--	
TMW-2	06/21/13	0.25	0.28	--	--	--	0.0075	0.00097	<0.0005	0.00068	--	--	--	--	--	--	--	<0.25 °c	0.83	<0.10	Baseline monitoring event
TMW-2	07/30/13	0.26	--	--	--	--	--	--	--	--	--	--	--	17	29	1.2	--	<0.25	6.4	<0.10	
TMW-2	08/26/13	0.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Two-month monitoring event
TMW-2	10/03/13	0.50	--	--	--	--	0.013	0.00074	<0.0005	0.0024	--	--	0.00	15	160	110	--	<0.50 °c	2,000	<0.10	
TMW-2	01/22/14	0.28	--	--	--	--	0.011	<0.0005	<0.0005	<0.0005	--	--	6.12	--	--	--	--	--	3,000	<0.10	
TMW-2	04/21/14	<0.25	--	--	--	--	<0.001	<0.001	<0.001	<0.001	--	--	--	--	--	--	--	<0.25	2,600	<0.10	
TMW-2	07/14/14	<0.25	--	--	--	--	0.0028	<0.0005	<0.0005	<0.0005	--	--	0.10	7.1	68	67	--	--	2,700	<0.10	
TMW-2	03/17/15	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.24	2.7	--	--	16	<0.25	1,500	<0.10	
TMW-2	10/01/15	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	0.34	0.0843	--	--	34.8 T8	<0.10	1,810	<0.05	
TMW-2	03/30/16	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	0.32	6.71	--	--	9.26	<0.10	1,340	<0.05	
TMW-2	10/12/16	<0.100	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	0.23	--	--	--	--	--	1,200	--	
TMW-2	03/28/17	<0.100	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	0.41	--	--	--	--	--	1,480	--	
TMW-2	10/13/17	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.56	--	--	--	--	--	1,390	--	
TMW-2	03/29/18	<0.1	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	0.08	--	--	--	--	--	1,250	--	
TMW-2	10/03/18	<0.1	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	0.12	--	--	--	--	--	1,730	--	
TMW-2	04/02/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.09	--	--	--	--	--	1,480	--	
TMW-2	10/02/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.22	--	--	--	--	--	1,370	--	
TMW-3	06/24/13	0.86	0.85	--	--	--	<0.0005	0.00052	<0.0005	0.00087	--	--	--	--	--	--	--	<0.25	4.4	<0.10	Baseline monitoring event
TMW-3	07/30/13	0.98	--	--	--	--	--	--	--	--	--	--	--	2.6	10	<0.30	--	<0.25	3.1	<0.10	
TMW-3	08/26/13	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Two-month monitoring event
TMW-3	10/03/13	0.92	--	--	--	--	0.00057	0.0018	0.0076	0.0072	--	--	0.00	3.8	43	18	--	<0.50 °c	1,100	<0.10	
TMW-3	01/22/14	0.75	--	--	--	--	<0.001	0.0022	<0.001	<0.001	--	--	0.00	--	--	--	--	--	3,800	<0.10	
TMW-3	04/24/14	0.51	--	--	--	--	<0.0005	0.0046	0.0011	<0.0005	--	--	--	--	--	--	--	<0.25	2,500	<0.10	
TMW-3	07/14/14	<0.25	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.27	1.3	19	17	--	--	3,100	<0.10	
TMW-3	03/18/15	0.62	--	--	--	--	<0.0005	<0.0005	<0.0005	<0.0005	--	--	0.07	1.3	--	--	9.3	<0.25	1,300	<0.10	
TMW-3	09/30/15	0.358	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	0.17	0.890	--	--	13.4 T8	<0.10	984	<0.05	
TMW-3	03/30/16	0.266	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	0.38	0.494	--	--	5.5	<0.10	1,380	<0.05	
TMW-3	10/12/16	0.607	--	--	--	--	<0.001	<0.005	<0.001	<0.003	--	--	0.24	--	--	--	--	--	1,190	--	
TMW-3	03/29/17	0.170	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	0.23	--	--	--	--	--	1,800	--	
TMW-3	10/12/17	0.610	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.54	--	--	--	--	--	1,320	--	
TMW-3	03/29/18	0.309	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	0.12	--	--	--	--	--	1,150	--	
TMW-3	10/04/18	1.15	--	--	--	--	<0.001	<0.001	0.0012	<0.003	--	--	0.24	--	--	--	--	--	1,220	--	
TMW-3	04/03/19	0.553	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.01	--	--	--	--	--	909	--	
TMW-3	10/03/19	0.955	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.16	--	--	--	--	--	513	--	
TMW-4	06/24/13	4.9	2.5 Z	--	--	--	0.17	0.084	0.23	0.95	--	--	--	--	--	--	--	<0.25	32	0.11	Baseline monitoring event

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington



Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
TMW-4	07/30/13	5.1	--	--	--	--	--	--	--	--	--	--	--	13	24	5.0	--	0.48	1.4	0.11	
TMW-4	08/26/13	9.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Two-month monitoring event
TMW-4	10/03/13	4.7	--	--	--	--	0.13	0.12	0.29	1.3	--	--	0.00	16	410	17	--	0.36 J*	2,800	<0.10	
TMW-4	01/22/14	6.0	--	--	--	--	0.21	0.070	0.40	0.99	--	--	0.00	--	--	--	--	--	2,800	<0.10	
TMW-4	04/24/14	4.0	--	--	--	--	0.16	0.044	0.39	0.84	--	--	--	--	--	--	--	<0.25	1,400	<0.10	
TMW-4	07/14/14	5.6	--	--	--	--	0.19	0.016	0.38	0.35	--	--	0.12	7.9	130	130	--	--	940	<0.10	
TMW-4	03/18/15	7.5	--	--	--	--	0.21	0.019	0.53	0.38	--	--	0.08	7.5	--	--	30	<0.25	410	<0.10	
TMW-4	09/30/15	3.49	--	--	--	--	0.107	<0.125	0.455	<0.075	--	--	0.12	1.12	--	--	43.4 T8	<0.10	374	<0.05	
TMW-4	03/30/16	2.23	--	--	--	--	0.0471	<0.005	0.343	0.0141	--	--	1.01	1.96	--	--	5.01	<0.10	1,940	<0.05	
TMW-4	10/14/16	3.13	--	--	--	--	0.0250	<0.025	0.211	<0.015	--	--	0.67	--	--	--	--	--	936	--	
TMW-4	03/29/17	3.48	--	--	--	--	0.0139	0.00301	0.194	0.00977	--	--	0.18	--	--	--	--	--	1,880	--	
TMW-4	10/12/17	3.52	--	--	--	--	0.0345	0.0430	0.308	0.117	--	--	0.39	--	--	--	--	--	494	--	
TMW-4	03/29/18	3.85	--	--	--	--	0.00497	0.00913	0.282	0.0439	--	--	0.05	--	--	--	--	--	741	--	
TMW-4	10/04/18	6.35	--	--	--	--	0.0103	0.0451	0.435	0.341	--	--	0.13	--	--	--	--	--	1,360	--	
TMW-4	04/03/19	3.07	--	--	--	--	<0.0100	<0.0100	0.257	<0.0300	--	--	0.07	--	--	--	--	--	696	--	
TMW-4	10/03/19	6.02	--	--	--	--	0.00347	0.0532	0.263	0.337	--	--	0.10	--	--	--	--	--	446	--	
TMW-5	06/21/13	1.3	0.65 K	--	--	--	0.10	0.0097	0.022	0.02	--	--	--	--	--	--	--	<0.25 °c	4.3	<0.10	Baseline monitoring event
TMW-5	07/30/13	4.3	--	--	--	--	--	--	--	--	--	--	--	7.6	11	<0.30	--	<0.25	0.67	0.25	
TMW-5	08/26/13	4.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Two-month monitoring event
TMW-5	10/03/13	1.9	--	--	--	--	0.044	0.0063	0.00380	0.0088	--	--	0.00	5.6	39	16	--	<0.50 °c	2,500	0.10	
TMW-5	01/22/14	1.9	--	--	--	--	0.0039	0.0031	0.00120	0.0023	--	--	7.18	--	--	--	--	--	2,600	0.10	
TMW-5	04/24/14	1.4	--	--	--	--	<0.0015	0.0026	0.0017	0.0021	--	--	--	--	--	--	--	<0.25	4,000	<0.10	
TMW-5	07/14/14	1.4	--	--	--	--	0.01	0.0016	<0.0005	0.00062	--	--	0.09	2.4	8.0	0.82	--	--	1,300	<0.10	
TMW-5	03/18/15	3.0	--	--	--	--	0.046	0.0069	0.016	0.016	--	--	0.04	8.9	--	--	0.069	<0.25	700	0.20	
TMW-5	09/30/15	1.20	--	--	--	--	0.00943	<0.005	<0.001	<0.003	--	--	0.09	2.00	--	--	43.1 T8	<0.10	734	6.72	
TMW-5	03/30/16	0.865	--	--	--	--	0.0220	<0.005	0.00831	<0.003	--	--	0.27	4.12	--	--	2.21	<0.10	1,500	<0.05	
TMW-5	10/12/16	1.27	--	--	--	--	0.00812	<0.005	<0.001	<0.003	--	--	0.17	--	--	--	--	--	765	--	
TMW-5	03/29/17	1.53	--	--	--	--	0.01580	0.00107	0.0053	<0.003	--	--	0.28	--	--	--	--	--	1,730	--	
TMW-5	10/12/17	1.06	--	--	--	--	0.00928	0.00139	<0.00100	<0.00300	--	--	0.38	--	--	--	--	--	686	--	
TMW-5	03/29/18	1.42	--	--	--	--	<0.001	<0.001	0.00304	<0.003	--	--	0.09	--	--	--	--	--	727	--	
TMW-5	10/04/18	0.99	--	--	--	--	<0.001	<0.001	<0.001	<0.003	--	--	0.09	--	--	--	--	--	1,210	--	
TMW-5	04/03/19	1.04	--	--	--	--	<0.00100	<0.00100	0.00200	<0.00300	--	--	0.01	--	--	--	--	--	832	--	
TMW-5	10/02/19	<0.100	--	--	--	--	<0.00100	<0.00100	<0.00100	<0.00300	--	--	0.29	--	--	--	--	--	581	--	
TMW-6	06/24/13	4.9	1.8 Z	--	--	--	0.067	0.0099	0.1500	0.55	--	--	--	--	--	--	--	<0.25	16	0.14	Baseline monitoring event
TMW-6	07/30/13	7.8	--	--	--	--	--	--	--	--	--	--	--	5.4	13	2.4	--	<0.25	5.0	0.14	
TMW-6	08/26/13	8.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	Two-month monitoring event
TMW-6	10/03/13	5.4	--	--	--	--	0.028	0.010	0.18000	0.42	--	--	0.00	5.6	290	250	--	<0.50 °c	1,700	<0.10	

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
Site-Specific Cleanup Levels:		1.0	10	10	10	10	0.071	200	29.0	N/A	0.0058										
TMW-6	01/22/14	7.0	--	--	--	--	0.06	0.010	0.28000	0.53	--	--	3.60	--	--	--	--	--	2,300	<0.10	
TMW-6	04/24/14	5.1	--	--	--	--	0.015	0.0036	0.19000	0.37	--	--	--	--	--	--	--	<0.25	1,800	<0.10	
TMW-6	07/14/14	3.9	--	--	--	--	0.064	0.0047	0.1600	0.21	--	--	0.22	6.5	100	98	--	--	1,600	<0.10	
TMW-6	03/18/15	5.0	--	--	--	--	0.003	0.0028	0.15	0.12	--	--	0.09	0.54	--	--	2.0	<0.25	1,000	<0.10	
TMW-6	09/30/15	5.09	--	--	--	--	0.00287	<0.005	0.133	0.189	--	--	0.19	1.15	--	--	41.7 T8	<0.10	1,400	<0.05	
TMW-6	03/30/16	2.00	--	--	--	--	<0.001	<0.005	0.05630	0.0546	--	--	0.66	0.254	--	--	14.9	<0.10	1,560	<0.05	
TMW-6	10/12/16	5.82	--	--	--	--	0.00278	0.00667	0.26700	0.392	--	--	0.27	--	--	--	--	--	1,530	--	
TMW-6	04/20/17	3.85	--	--	--	--	<0.010	<0.010	0.12400	0.144	--	--	0.36	--	--	--	--	--	1,770	--	
TMW-6	10/12/17	9.33	--	--	--	--	<0.0100	0.0109	0.5790	0.526	--	--	0.54	--	--	--	--	--	1,400	--	
TMW-6	03/28/18	9.31	--	--	--	--	<0.001	0.00212	0.286	0.27	--	--	0.08	--	--	--	--	--	796	--	
TMW-6	10/03/18	9.79	--	--	--	--	0.00157	0.00623	0.548	0.374	--	--	0.07	--	--	--	--	--	1,250	--	
TMW-6	04/03/19	4.77	--	--	--	--	<0.00100	<0.00100	0.289	0.413	--	--	0.05	--	--	--	--	--	344	--	
TMW-6	10/02/19	11.6	--	--	--	--	<0.00100	0.00486	0.640	1.09	--	--	0.13	--	--	--	--	--	416	--	

Notes:

Highlighted = data from most recent monitoring event

-- = Sample not analyzed for this parameter

< = Denotes compound was not detected at designated detection limit.

Bold = Concentration detected above the Site-Specific Cleanup Level

mg/L = milligrams per liter (parts per million [ppm])

N/A = not applicable

^ = Analysis could not be run due to excess particulate matter.

* = Also tested for Dissolved Lead (EPA-200.8), results are below detection limit of 0.0050 ppm.

*a = Also tested for Dissolved Lead (EPA-200.8), results are at or above detection limit of 0.0050 ppm.

*b = Lab did not receive sample container to run analysis.

*c = The laboratory analyzed nitrate samples using preserved samples. Concentrations may be biased high due to possible oxidation of nitrite to nitrate

*d = Lab received broken volatile organic analyzer (VOA), not able to run analysis.

** = Also tested for Dissolved Lead (EPA-7421), results are below detection limit of 0.004 ppm.

*** = Also tested for Dissolved Lead (EPA-SW6020), results are below detection limit of 0.0050 ppm.

a = Insulating oil range hydrocarbons were reported for MW-22 at concentration of 0.87 ppm.

b = The lab analyzed these samples for nitrate only, using sulfuric acid preserved samples (submitted for nitrate analysis). Holding time for preserved samples for nitrate analysis is 28 days. The lab analyzed these for nitrate because non-preserved samples were received outside of 48 hours.

c = The lab analyzed these samples for nitrate and sulfate together, using non-preserved samples (submitted for sulfate analysis). Holding time for non-preserved samples for nitrate analysis is 48 hours and for sulfate analysis is 28 days. These samples were received within the 48-hour holding time.

o = Reporting Limits were increased due to sample foaming.

B = The same analyte is found in the associated blank.

V = Reporting Limits were increased due to high concentration of target analytes.

K = DRO concentration may include contributions from lighter-end hydrocarbons that elute in the DRO range.

Z = DRO concentration may include contributions from lighter-end and heavier-end hydrocarbons that elute in the DRO range

1. Total Petroleum Hydrocarbons (TPH) as gasoline range organics (GRO) - Analysis by Washington Method WTPH-G prior to 5/20/98; analysis by Northwest Method NWTPH-Gx from 5/20/98 through present.

2. Total Petroleum Hydrocarbons (TPH) as diesel range organics (DRO) and heavy oil range organics (HO) - Analysis by Washington Method WTPH-D+ extended prior to 5/20/98; analysis by Northwest Method NWTPH-Dx from 5/20/98 through present.

Appendix E
Historical Groundwater Analytical Results
Kinder Morgan Liquids Terminals, LLC
Harbor Island Terminal
2720 13th Avenue Southwest, Seattle, Washington

Well ID	Date Sampled	GRO mg/L	DRO mg/L	DRO, SGC mg/L	HO mg/L	HO, SGC mg/L	Benzene mg/L	Toluene mg/L	Ethylbenzene mg/L	Xylenes mg/L	Total Lead mg/L	Dissolved Lead mg/L	Dissolved Oxygen mg/L	Methane mg/L	Total Iron mg/L	Dissolved Iron mg/L	Ferrous Iron mg/L	Nitrate mg/L	Sulfate mg/L	Sulfide mg/L	Comments
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Site-Specific Cleanup Levels: 1.0 10 10 10 10 0.071 200 29.0 N/A 0.0058

3. Benzene, Toluene, Ethylbenzene, and Xylene (BTEX) Compounds - Analysis by EPA Method 8020 prior to 5/20/98; analysis by EPA Method 8260B from 5/20/98 through present.

J3 = The associated batch quality control (QC) was outside the established quality control range for precision.

J5 = The sample matrix interfered with the ability to make any accurate determination; spike value is high.

J6 = The sample matrix interfered with the ability to make any accurate determination; spike value is low.

J = Estimated value between the method reporting limit (MRL) and the detection limit

P1 = Relative percent difference value not applicable for sample concentrations less than 5 times the reporting limit.

T8 = Sample was received by the lab outside the hold time for the analyte; value should be considered a minimum.

SGC = A silica gel wash as performed on the solvent extract before analysis. Silica gel cleanup was completed for samples with TPH-DRO and TPH-HO detections above the method reporting limit. All samples analyzed since September 2015 were performed with SGC for all TPH-DRO and TPH-HO analysis.

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A decorative graphic consisting of three thin orange lines. One line is horizontal, extending across the width of the page. Two other lines are diagonal, starting from the bottom left and extending towards the top right, intersecting the horizontal line.