

October 2023  
SeaPort Seattle Terminal  
(Former ARCO/BP Harbor Island Terminal)  
Cleanup Site ID 4426  
Consent Decree No. 00-2-05714-8SEA

## 2023 Third Quarter Progress Report/ Second Quarter Groundwater Performance Monitoring Report

**Submitted to**

Washington State Department of Ecology  
Northwest Regional Office  
15700 Dayton Avenue North  
Shoreline, Washington 98133

**Prepared for**

TLP Management Services LLC  
1670 Broadway  
Suite 3100  
Denver, Colorado 80202

**Prepared by**

TechSolve Environmental, Inc.  
7518 NE 169<sup>th</sup> Street  
Kenmore, Washington 98028  
[www.techsolveinc.com](http://www.techsolveinc.com)

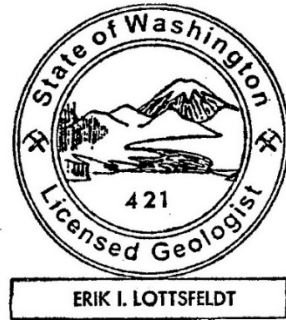


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Erik I. Lottsfeldt, LG  
Project Geologist/Project Manager  
TechSolve Environmental, Inc.



Larry E. Roberts, LG, LHG  
Principal, WA Licensed Geologist/Hydrogeologist  
TechSolve Environmental, Inc.



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## ACRONYMS AND ABBREVIATIONS

AG&M	ARCADIS Geraghty & Miller
ARCO	Atlantic Richfield Company
BP	British Petroleum West Coast Products Company
CAP	Cleanup Action Plan
CCR	Construction Completion Report
CUL	cleanup level
Ecology	Washington State Department of Ecology
EDR	Engineering Design Report
GPM	gallons per minute
GWCMCP	Groundwater Compliance Monitoring and Contingency Program
IHS	indicator hazardous substance
KCDNRP	King County Department of Natural Resources and Parks
LNAPL	light non-aqueous phase liquid
MNA	Monitored Natural Attenuation
NAVD88	North American Vertical Datum of 1988
NGVD29	National Geodetic Vertical Datum of 1929
O&M	operation and maintenance
POC	point of compliance
SVE	soil vapor extraction
TechSolv	TechSolv Consulting Group, Inc. (predecessor of TechSolve Environmental, Inc.)
TechSolve	TechSolve Environmental, Inc.
TPH	total petroleum hydrocarbons
TPH-D	total petroleum hydrocarbons as diesel
TPH-G	total petroleum hydrocarbons as gasoline
TPH-O	total petroleum hydrocarbons as oil



## EXECUTIVE SUMMARY

This report summarizes the operation of remediation systems during the Third Quarter 2023 (July through September) and the Second Quarter 2023 Groundwater Monitoring Event (April through June) at the SeaPort Seattle Terminal (the Site). The Site is located on Harbor Island at 1652 SW Lander Street in Seattle, Washington.

There were no anomalous conditions noted in the remediation systems during the third quarter. One monitoring well, GM-14S, showed elevated concentrations of dissolved-phase Indicator Hazardous Substances (IHSs) above cleanup levels (CULs) during the second quarter groundwater performance monitoring. Concentrations of IHSs in other wells were below the CULs.

In accordance with Washington State Department of Ecology (Ecology) Consent Decree No. 00-2-05714-8SEA (Ecology 2000b), the Fourth Quarter Progress Report/Third Quarter Groundwater Monitoring Report will be the next report submitted to Ecology. That report will be submitted to Ecology by January 15, 2024.



## 1 INTRODUCTION

TechSolve Environmental, Inc. (TechSolve) is submitting this report on behalf of TLP Management Services LLC to summarize the Second Quarter 2023 Groundwater Monitoring event and operation and maintenance of the waterfront remediation system during the Third Quarter 2023 (July through September) for the SeaPort Seattle Terminal (the Site) (Figure 1). The Site is located on Harbor Island at 1652 SW Lander Street in Seattle, Washington, and is the location of the former Atlantic Richfield Company (ARCO)/British Petroleum West Coast Products Company (BP) Terminal site. These two summary reports are combined based upon an Ecology recommendation (Ecology 2004a). This progress report satisfies reporting requirements pursuant to Ecology Consent Decree No. 00-2-05714-8SEA (Ecology 2000b).



## 2 REMEDIATION SYSTEM OPERATIONS

Remediation systems were installed and completed at the Site in accordance with specifications of the Engineering Design Report (EDR) prepared by TechSolv Consulting Group, Inc. (TechSolv), predecessor of TechSolve Environmental, Inc., and ARCADIS Geraghty & Miller (AG&M) (TechSolv and AG&M 2000), and the Site Cleanup Action Plan (CAP) (Ecology 1999). A waterfront groundwater/light non-aqueous phase liquid (LNAPL) remediation system has operated at the site since 1992 (an interim system and the final system) to remove free-phase LNAPL and dissolved petroleum hydrocarbons from groundwater at Plant 1 (Figure 1), as further detailed below.

### 2.1 Waterfront System Operations

Installation, startup, and testing of the final waterfront remediation system was completed in 2002 and 2003. An interim recovery system was installed along the waterfront in 1992 and operated until the installation of the final system. Standard operation of the final system began once testing demonstrated that the system operated as designed. System construction and operation and maintenance (O&M) are detailed in the Construction Completion Report (CCR) (TechSolv 2003a) and in the Final O&M Manual (TechSolv 2003b), which were approved by Ecology (Ecology 2004b). The O&M Manual is updated as practices or procedures change or as systems are altered. Operation of various portions of the remediation systems have been ongoing since startup and have been modified/revised as needed, as discussed in the following sections.

O&M activities are conducted on the recovery systems to ensure they operate as designed and in accordance with applicable operating limits. These activities include, but are not limited to:

- weekly checks of groundwater recovery system pumping rates;
- weekly inspections of system components and waste storage containers for integrity per the requirements of Washington Administrative Code (WAC) 173-303-320;
- monthly sampling of recovered groundwater influent and effluent streams to ensure compliance with King County Department of Natural Resources and Parks (KCDNRP) Discharge Permit 7592-05 for discharge A43262;
- monthly monitoring and calculation of system LNAPL recovery rates; and
- monthly sampling of system flow rates and hydrocarbon concentrations.

Additional maintenance activities are conducted as needed to maintain system operational integrity and to ensure discharges are within permitted ranges.



Operation of waterfront air sparging and soil vapor extraction (SVE) systems were discontinued in May 2008, as the bulk of available hydrocarbons had been recovered (TechSolv 2009). The results of monitoring showed that operation of these portions of the recovery system have achieved their recovery objectives.

Combined LNAPL recovery (free-phase, residual, and dissolved-phase) from final SVE and groundwater/LNAPL recovery systems is approximately 14,559 gallons (October 2002 to September 2023) (Table 1). The interim systems, operated from 1992 through 2002, recovered an additional 15,223 gallons of LNAPL, for a total combined LNAPL recovery of 29,782 gallons. The majority of LNAPL recovered by final remediation systems was from enhanced biodegradation, calculated from carbon dioxide concentrations in SVE vapor.

Groundwater/LNAPL recovery system data presented in Table 1 show that influent concentrations of dissolved benzene, diesel, and gasoline in recovered groundwater (i.e., untreated water pumped from recovery wells screened in the shallow groundwater) have decreased over time. During 2023, influent concentrations of dissolved benzene, diesel, and gasoline were all below the surface water cleanup levels (CULs). The data included in Table 1 also show that measurable volumes of recovered free-phase LNAPL have not been generated since 2008, which was the last time sufficient LNAPL was recovered to warrant offsite shipment. These data correspond with the absence of recoverable free-phase LNAPL per the frequent monitoring of the system recovery wells other than minor amounts of sheen detected in two of the recovery wells (RW-2 and RW-4). The monitoring results indicate that the recovery system has captured the available free-phase LNAPL, and that operation of the recovery system should be discontinued and the efforts for continued protection of the waterfront should be focused on monitoring of the waterfront wells (TechSolve 2022d).

Effluent discharges from the groundwater/LNAPL recovery system to the sanitary sewer have been within KCDNRP's permitted ranges in 2023 (Table 1). Average monthly effluent flow rates ranged from 0.51 to 2.20 gallons per minute (GPM) in 2023. These rates are below KCDNRP's maximum permitted flow of 17.5 GPM and are consistent with past rates that have decreased over time.

Maintenance and repair of remediation systems and wells are conducted to maintain integrity, effective operation, capture, and hydraulic control along the waterfront. Notable activities conducted in the third quarter of 2023 included the following:

- cleanout and service of treatment system process equipment;
- piping and system back flushing and preventative maintenance to maintain conveyance piping and pumping from the recovery wells; and
- yearly change out and calibration of the sanitary discharge flow meter.





The data collected indicate that the system continues to operate as designed and in accordance with permit requirements.

### **2.1.1 Recovery Well Monitoring**

Monitoring of the recovery wells for free-phase LNAPL, sheen, and concentrations of dissolved-phase Indicator Hazardous Substances (IHSs) is voluntarily conducted semi-annually and was conducted in June 2023, as detailed in the Second Quarter 2023 Progress Report (TechSolve 2023b). This monitoring has shown that no recoverable LNAPL remains and that dissolved-phase IHSs in shallow groundwater are not likely to cause exceedances of IHS CULs at the deeper points of compliance (POCs) monitoring wells. These POCs are located along the waterfront and are screened at depths where the groundwater and surface water exchange is occurring (i.e., below the base of the subsurface waterfront barriers of sheet piling and seawalls, as detailed in the RI/FS). The next round of recovery well sampling is scheduled to be completed in the fourth quarter of 2023, and the results will be presented in the subsequent quarterly progress report to be submitted in January 2024.

The trends in the monitoring results from the waterfront recovery wells and compliance monitoring wells support the conclusion that the cleanup objectives for the Site have been achieved and have been detailed in the Annual Site Reports since 2019 (TechSolve 2020, 2021, 2022c, and 2023a). The data included in these reports document attainment of the Site cleanup objectives and show that moving to compliance monitoring exclusively is appropriate and consistent with the Consent Decree. Discussions with Ecology to further evaluate this transition are ongoing and additional monitoring activities of waterfront temporary piezometers are currently being conducted to support this monitoring transition, per Ecology's request (Ecology 2023).

## **2.2 Inland System Operations**

An inland SVE system operated from 2008 through 2014 to improve soil and groundwater conditions along the southern boundary of Plant 1. The SVE system was decommissioned in 2018 following completion of the cleanup goals and has been discussed in the Annual Site Reports cited in the previous section. The in-ground SVE piping and control manifold for this system remain onsite as a contingency in case operation of the system is warranted in the future.

Groundwater monitoring data collected along Plant 1's southern boundary indicate the system improved groundwater conditions in this area of the Site, as discussed in Section 3.



### 2.3 Containment Boom Monitoring

Oil sorbent booms have been maintained on the West Duwamish Waterway adjacent to Plant 1 to contain oil sheens that have historically appeared on surface water. One boom, the Northern Warehouse Boom, is currently maintained in the waterway adjacent to the warehouse (Figure 2). Boom locations have been selected to best contain occasional sheens historically observed on the West Duwamish Waterway directly adjacent to the Site. The boom and the waterway are monitored weekly, at a minimum, for boom integrity and for the presence of oil sheens and augmented by checks made by Terminal personnel. Booms are replaced as necessary based on their condition. The Northern Warehouse Boom was last replaced on June 7, 2023.

No sheens on surface water have been observed within the Northern Warehouse Boom during the third quarter 2023. Use of the Southern Warehouse Boom was discontinued in the second quarter of 2022, following notification to Ecology (TechSolve 2022b), as no sheen had been observed in that area since August 2019. The Southern Warehouse Boom will be reinstalled and maintained if sheens are detected at this location in the future. Waterway sheen monitoring results will continue to be evaluated throughout the remainder of 2023 per Ecology's request (Ecology 2023).



### 3 SUMMARY OF GROUNDWATER PERFORMANCE MONITORING PROGRAM

The Second Quarter 2023 Groundwater Monitoring Event was conducted in accordance with requirements of the Consent Decree, CAP, and Groundwater Compliance Monitoring and Contingency Program (GWCMCP) (TechSolv 1999). The monitoring also includes revisions requested by Ecology that are included in the EDR and detailed below. The current groundwater monitoring schedule is summarized in Table 3. Plant 1 monitoring well locations are shown on Figure 2. The Second Quarter Groundwater Monitoring event was conducted on June 28, 2023.

Wells monitored on a semi-annual basis are sampled in the first and third quarter, which typically correspond with seasonal groundwater highs and lows, respectively. As such, Wells AR-03, GM-15S, GM-16S, GM-17S, MW-1-T9, MW-2-T9, and MW-3-T9 were not sampled in the second quarter of 2023. During this quarter, these wells were monitored for water levels only. These wells will next be sampled in the third quarter of 2023.

Well GM-14S was historically used to monitor for sheens on groundwater, as discussed below. As sheens are no longer detected in groundwater at GM-14, quarterly groundwater monitoring for dissolved-phase IHSs was initiated at this well in 2007.

Overall, second quarter 2023 groundwater elevations (Table 3) were lower than elevations measured in the first quarter of 2023. These data indicate that the seasonal groundwater high occurred in late 2022 to early 2023, corresponding with historic trends showing groundwater elevations rising to seasonal highs in the winter and spring and falling to seasonal lows in the summer and autumn.

The water level elevations listed in Table 3 are now shown relative to the North American Vertical Datum of 1988 (NAVD88), whereas elevations listed in previous reports were relative to the older National Geodetic Vertical Datum of 1929 (NGVD29). The NAVD88 elevations listed are approximately 3.3 feet higher than the previously NGVD29 elevations. The change in datum was made following a 2021 survey of wells to the current NAVD88 datum, conducted as part of a 2021 Hydraulic Investigation (TechSolve 2022a).

Second Quarter 2023 Groundwater Monitoring Event samples were submitted to ALS Laboratories of Everett, Washington (Ecology Accreditation #C601) for laboratory analysis of IHSs identified in the CAP. The IHSs include total petroleum hydrocarbons (TPH) as gasoline (TPH-G), TPH as diesel (TPH-D), TPH as oil (TPH-O), and benzene.

Petroleum hydrocarbon monitoring results for the Second Quarter 2023 Groundwater Monitoring Event are included in Table 4 and Figure 2. The only detection of an IHS above a CUL was benzene in Well GM-14S. Concentrations from all other samples analyzed were below associated CULs. The benzene concentrations detected in Well GM-14S are similar to concentrations previously



detected and are on a decreasing trend. Further evaluations of data trends will be presented in the 2023 Annual Site Report, in accordance with Consent Decree requirements.

Three wells (GM-11S, GM-12S, and GM-13S) have been examined monthly for the presence of free-phase LNAPL and sheens (Table 5). Historically, gauging for LNAPL at Plant 1 was conducted at four wells; however, gauging of Well GM-14S was discontinued in 2004, with concurrence from Ecology (Ecology 2004c), and converted to a monitoring well in 2007, as it has been free of LNAPL since 1999.

No sheen or measurable LNAPL were detected in Wells GM-11S, GM-12S, and GM-13S in 2023. Historic sheen monitoring data and trend analysis were presented in the 2022 Annual Site Report (TechSolve 2023a). Overall, LNAPL and sheen monitoring indicate that these wells meet the GWCMCP LNAPL performance standard of no measurable LNAPL. These three wells will continue to be gauged for sheen and LNAPL for the remainder of 2023, until Ecology concurs that the GWCMCP product performance standard has been met.



#### 4 SUMMARY OF DATA VALIDATION

Laboratory analytical results were reported with associated laboratory quality assurance/quality control (QA/QC) data. Analytical reports were reviewed, and the data were validated. During this quarter, limited data were qualified with a UJ qualifier (the associated result is undetected at an approximate quantitation limit) or J qualifier (the associated result is an estimated value).

A summary of data qualified during validation, qualifiers assigned, and reasons for data qualification, are provided in Table 6. All laboratory reports are retained by TechSolve.



## 5 ADDITIONAL ACTIVITIES

Eleven temporary piezometers that were installed and sampled as part of the Hydraulic Evaluation (TechSolve 2022a) were resampled in August 2023 to monitor the shallow groundwater along the waterfront, as requested by Ecology (Ecology 2023). The monitoring was requested to support continuing evaluation and discussions with Ecology for discontinuing the waterfront active remediation and moving forward towards Site closure with groundwater monitoring (Techsolve 2022d). The piezometers were sampled for dissolved-phase IHSs (benzene, TPH-G, TPH-D, and TPH-O), as well as monitored natural attenuation (MNA) parameters (methane, total sulfate, total nitrate, total chloride, alkalinity, manganese, hardness, and ferrous iron). These results will be presented to Ecology following completion of four quarters of sampling (the last sampling is scheduled for April 2024).



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## **TABLES**

1. Waterfront Groundwater System Petroleum Hydrocarbon Recovery Rates
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Table 2. Groundwater Performance Monitoring Schedule  
 Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Analyses Conducted by Quarter				
Well	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
<b>Plant 1</b>				
MW-1-T9	Benzene, TPH-G, TPH-D, TPH-O	(1)	Benzene, TPH-G, TPH-D, TPH-O	(1)
MW-2-T9	Benzene, TPH-G, TPH-D, TPH-O	(1)	Benzene, TPH-G, TPH-D, TPH-O	(1)
MW-3-T9	Benzene, TPH-G, TPH-D, TPH-O	(1)	Benzene, TPH-G, TPH-D, TPH-O	(1)
GM-14S	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O
GM-15S	Benzene, TPH-G, TPH-D, TPH-O	(1)	Benzene, TPH-G, TPH-D, TPH-O	(1)
GM-16S	Benzene, TPH-G, TPH-D, TPH-O		Benzene, TPH-G, TPH-D, TPH-O	
GM-17S	Benzene, TPH-G, TPH-D, TPH-O		Benzene, TPH-G, TPH-D, TPH-O	
<b>GM-24S</b>	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O
AR-03	Benzene, TPH-G, TPH-D, TPH-O	(1)	Benzene, TPH-G, TPH-D, TPH-O	(1)
<b>AMW-01</b>	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O, cPAHs
AMW-02	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O, cPAHs
AMW-03	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O, cPAHs
AMW-04	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O, cPAHs
AMW-05	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O	Benzene, TPH-G, TPH-D, TPH-O, cPAHs

**Plant 2**

All Plant 2 monitoring has been discontinued.

- Notes: Field Duplicate and QA/QC samples collected from wells highlighted in bold.  
 TPH-G - Gasoline Range organics utilizing NWTPH-Gx method  
 TPH-D - Diesel Range Organics utilizing NWTPH-Dx  
 TPH-O - Extended Range Organics (Motor Oil) utilizing NWTPH-Dx  
 Benzene is analyzed for utilizing EPA 8021 or 8260B.  
 cPAHs - Carcinogenic Polycyclic Aromatic Hydrocarbons utilizing EPA 8270SIM  
 Field Parameters (pH, Temperature, Conductivity, Turbidity, Water Level, & Product Level) are recorded from all wells sampled  
 (1) - If a groundwater cleanup level exceedance occurs in first or third quarter in any of these highlighted wells, all (1) wells will be sampled the following quarter. Wells exceeding cleanup levels will continue quarterly monitoring until four consecutive quarters below cleanup level are achieved.

Table 3. Groundwater Performance Monitoring Groundwater Elevations  
 Second Quarter 2023  
 Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TOC Elevation (ft NAVD88)	Depth to Water (ft below TOC)	Groundwater Elevation (ft NAVD88)
<b>Plant 1</b>				
GM-14S	6/28/2023	11.77	4.59	7.18
GM-16S	6/28/2023	11.99	4.96	7.03
GM-17S	6/28/2023	12.56	4.91	7.65
GM-24S	6/28/2023	11.11	3.69	7.42
AMW-01	6/28/2023	12.17	9.39	2.78
AMW-02	6/28/2023	15.36	13.23	2.13
AMW-03	6/28/2023	15.29	13.06	2.23
AMW-04	6/28/2023	11.42	7.31	4.11
AMW-05	6/28/2023	11.05	7.24	3.81

Definitions:

ft	Feet
NAVD88	North American Vertical Datum of 1988
TOC	Top of casing

Table 4. Summary of Analytical Results for Groundwater - TPH-G, TPH-D, TPH-O, and Benzene  
 Second Quarter 2023  
 Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	TPH-G NWTPH-Gx (µg/L)	TPH-D NWTPH-Dx (µg/L)	TPH-O NWTPH-Dx (µg/L)	Benzene EPA 8260 (µg/L)
<b>Plant 1</b>					
GM-14S	6/28/2023	970	2,000	ND	<b>700</b>
GM-24S	6/28/2023	190 J	ND UJ	ND	ND
AMW-01	6/28/2023	ND	ND	ND	ND
AMW-02	6/28/2023	ND	ND	760	6.9 J
AMW-03	6/28/2023	ND	ND	ND	ND
AMW-04	6/28/2023	ND	ND	ND	ND
AMW-05	6/28/2023	ND	ND	ND	ND
Cleanup Level		1,000	10,000	10,000	71
Method Reporting Limit		50	250	750	0.5

Notes:

Values in **bold** exceed the cleanup level.

Definitions:

EPA 8260	EPA method of analysis for volatile organic compounds in water.
µg/L	Micrograms per liter.
ND	Constituent not detected above listed method reporting limit.
TPH	Total petroleum hydrocarbons.
TPH-D	Total petroleum hydrocarbons as diesel.
TPH-G	Total petroleum hydrocarbons as gasoline.
TPH-O	Total petroleum hydrocarbons as oil.
NWTPH-Dx	Northwest TPH method for analysis of diesel in water - extended.
NWTPH-Gx	Northwest TPH method for analysis of gasoline in water - extended.
J	Estimated value.
UJ	Not detected at an estimated value.

Table 5. Summary of Free Product Measurement Results for Groundwater  
 2023 Monitoring Data  
 Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Well	Date	Free Product (feet)
<b>Plant 1</b>		
GM-11S	1/26/2023	None
GM-11S	2/23/2023	None
GM-11S	3/23/2023	None
GM-11S	4/20/2023	None
GM-11S	5/25/2023	None
GM-11S	6/22/2023	None
GM-11S	7/20/2023	None
GM-11S	8/31/2023	None
GM-11S	9/21/2023	None
GM-12S	1/26/2023	None
GM-12S	2/23/2023	None
GM-12S	3/23/2023	None
GM-12S	4/20/2023	None
GM-12S	5/25/2023	None
GM-12S	6/22/2023	None
GM-12S	7/20/2023	None
GM-12S	8/31/2023	None
GM-12S	9/21/2023	None
GM-13S	1/26/2023	None
GM-13S	2/23/2023	None
GM-13S	3/23/2023	None
GM-13S	4/20/2023	None
GM-13S	5/25/2023	None
GM-13S	6/22/2023	None
GM-13S	7/20/2023	None
GM-13S	8/31/2023	None
GM-13S	9/21/2023	None
Cleanup Level		No Sheen

Notes: Values in **bold** exceed the cleanup level.

Table 6. Summary of Data Validation Results  
 Groundwater Performance Monitoring  
 Second Quarter 2023  
 Site: Seaport Seattle Terminal (Former ARCO/BP Harbor Island Terminal)

Sample ID	Constituent	Qualifier	Reason
P1-GWAMW-02-223	Benzene	J	Benzene was detected in the Rinsate-1-223 at a concentration of 0.71 µg/L. Sample P1-GWAMW-02-223 contained a benzene concentration of 6.9 µg/L. This result is qualified as an estimated value (J) and may be biased high. In other samples, the benzene results are not qualified as benzene was either undetected or was detected at a much higher concentration and, therefore, unlikely to have been affected by the detection in the Rinsate sample.
P1-GWMW-24S-223 P1-GWMW-224S-223	Gasoline	J	The relative percent difference (RPD) for this Field Duplicate pair exceeds the control limit. These results are, therefore, qualified as estimated values (J).
P1-GWMW-24S-223	Gasoline	J	The RPD for the Matrix Spike/Matrix Spike Duplicate prepared from this sample exceeds the control limit. This result is, therefore, qualified as an estimated value (J).
P1-GWMW-24S-223	Diesel	UJ	The RPD for the Laboratory Duplicate prepared from this sample exceeds the control limit. Therefore, this sample result is qualified as undetected at an estimated reporting limit (UJ).

Definitions:

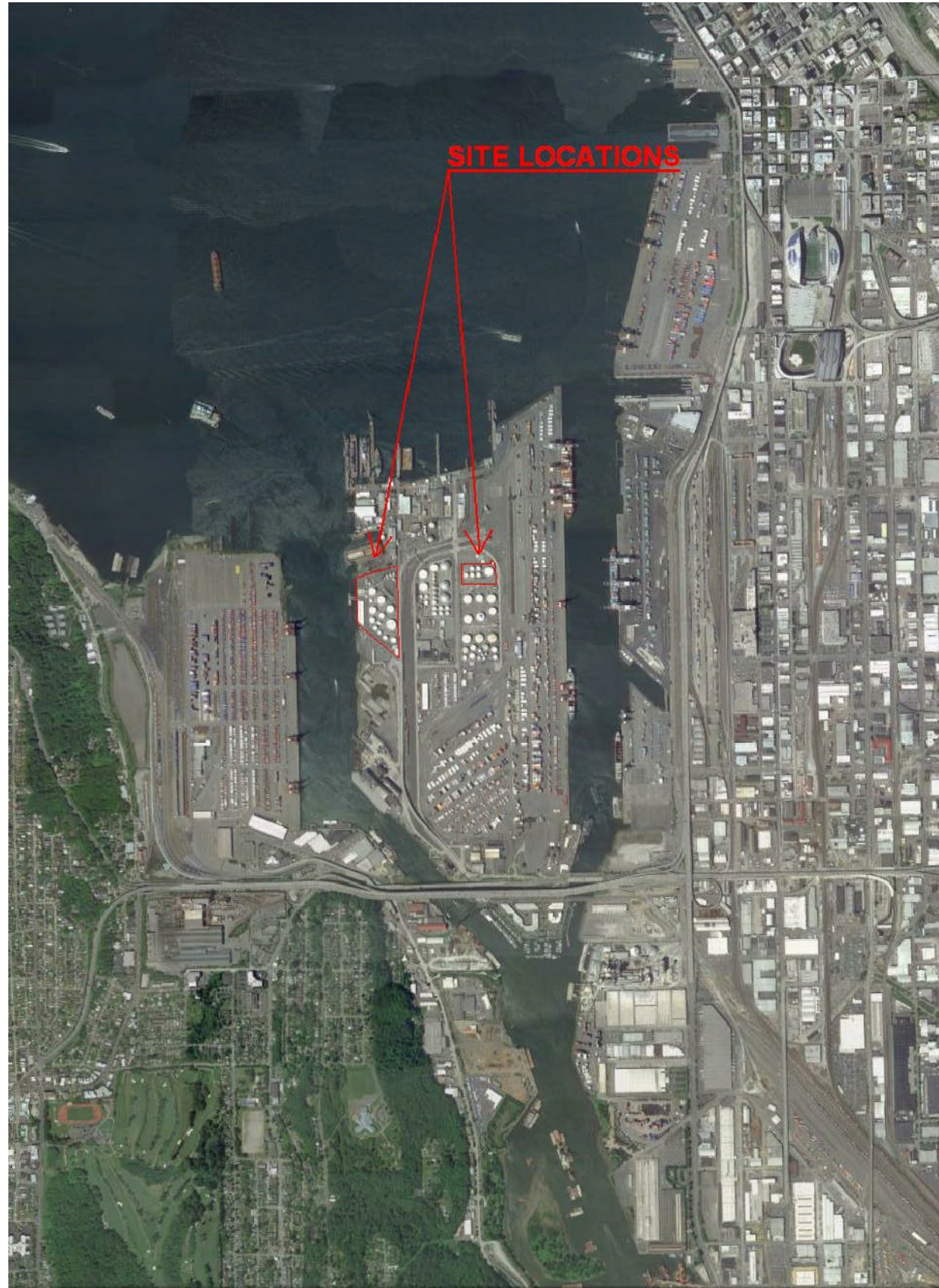
- U The analyte was not detected at or above the quantitation limit.
- J The associated value is approximate.
- UJ The analyte was not detected at or above the quantitation limit, which is approximate.
- R The sample results are unusable. The analyte may or may not be present.

## FIGURES

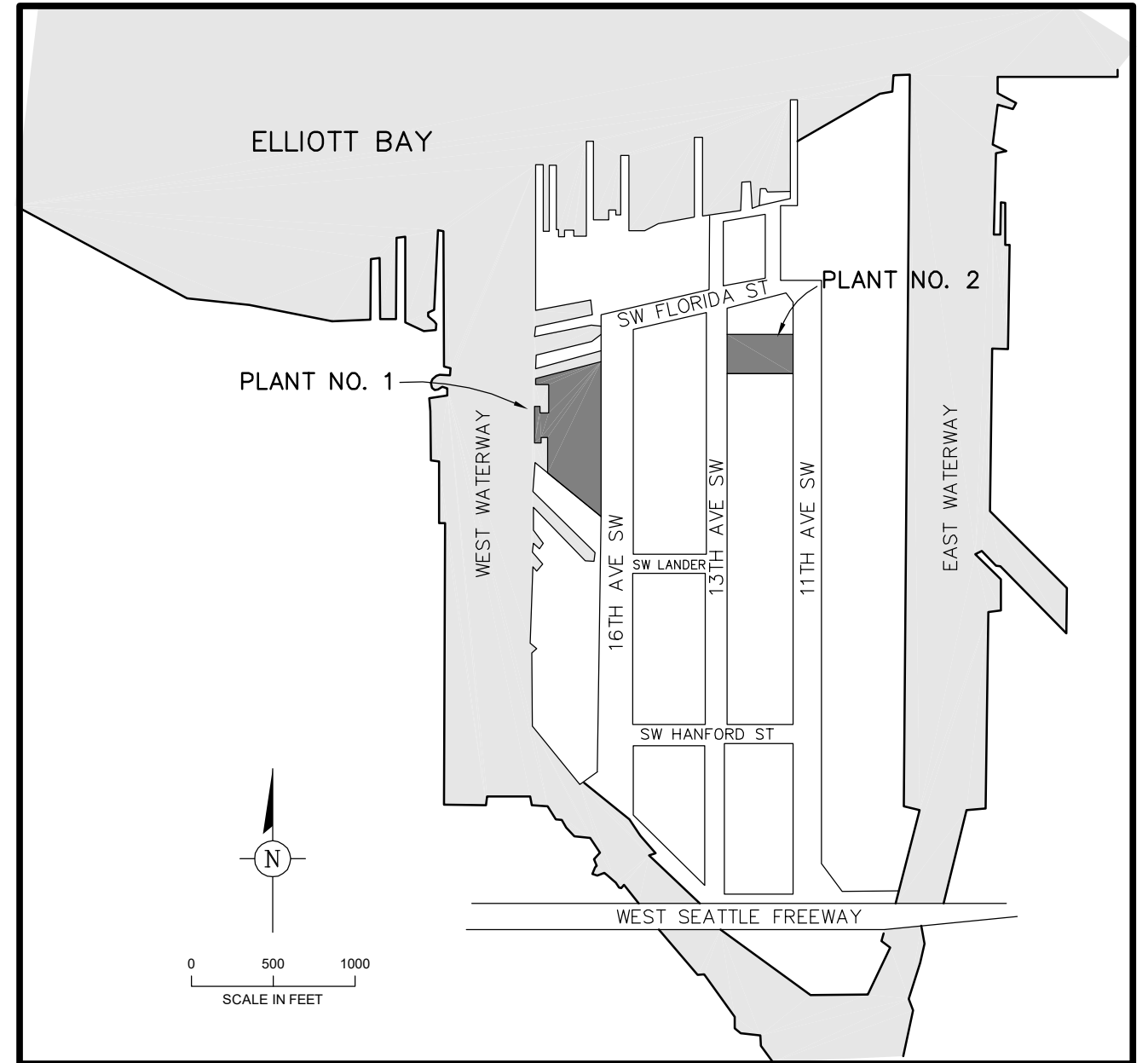
1. Site Location Map
2. Plant 1 Second Quarter 2023 Groundwater Monitoring Analytical Results & Contours





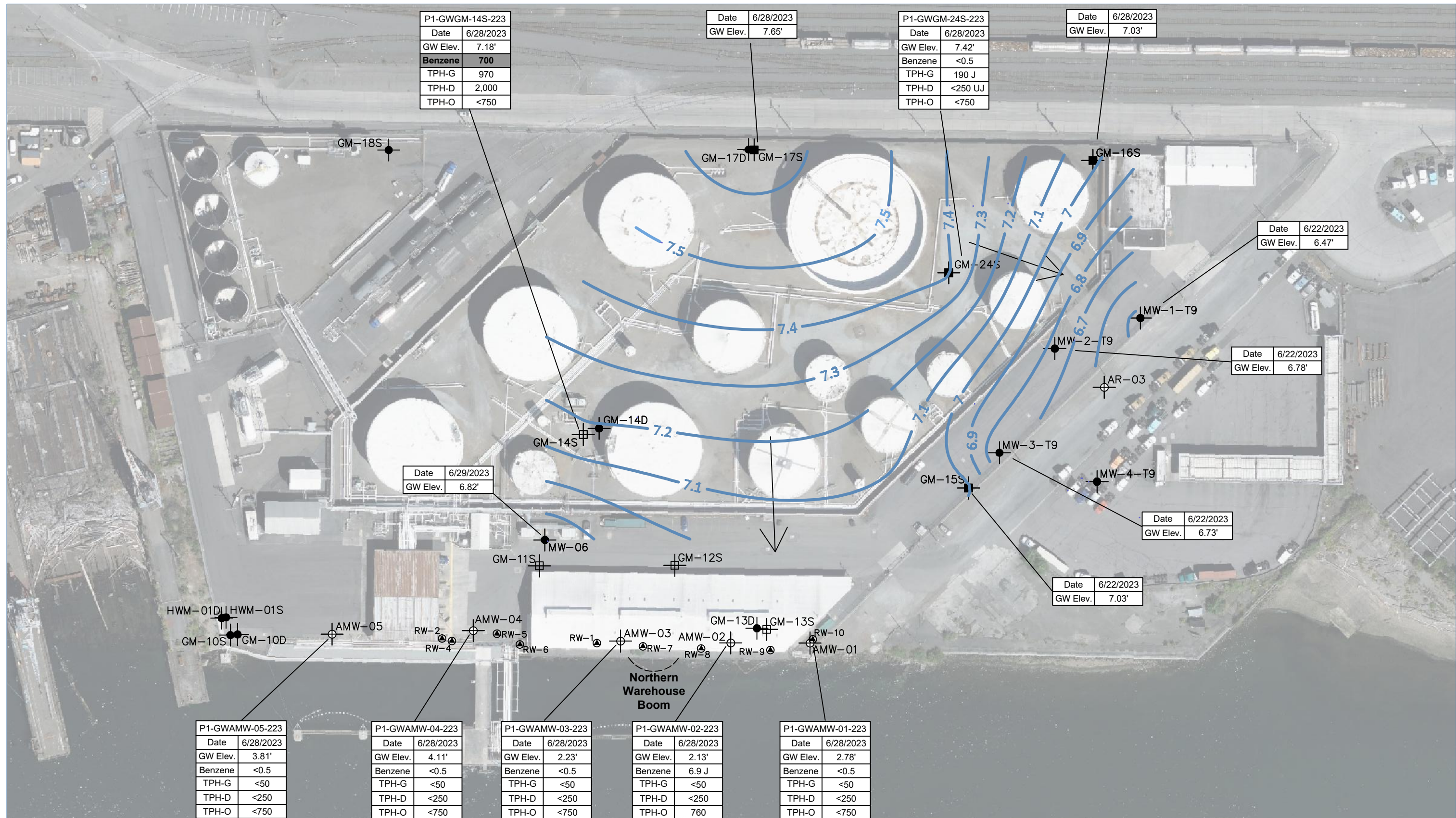


AREA PLAN



SITE PLAN





P1-GWGM-14S-223	
Date	6/28/2023
GW Elev.	7.18'
<b>Benzene</b>	<b>700</b>
TPH-G	970
TPH-D	2,000
TPH-O	<750

Date	6/28/2023
GW Elev.	7.65'

P1-GWGM-24S-223	
Date	6/28/2023
GW Elev.	7.42'
Benzene	<0.5
TPH-G	190 J
TPH-D	<250 UJ
TPH-O	<750

Date	6/28/2023
GW Elev.	7.03'

Date	6/22/2023
GW Elev.	6.47'

Date	6/22/2023
GW Elev.	6.78'

Date	6/22/2023
GW Elev.	6.73'

Date	6/22/2023
GW Elev.	7.03'

Date	6/29/2023
GW Elev.	6.82'

P1-GWAMW-05-223	
Date	6/28/2023
GW Elev.	3.81'
Benzene	<0.5
TPH-G	<50
TPH-D	<250
TPH-O	<750

P1-GWAMW-04-223	
Date	6/28/2023
GW Elev.	4.11'
Benzene	<0.5
TPH-G	<50
TPH-D	<250
TPH-O	<750

P1-GWAMW-03-223	
Date	6/28/2023
GW Elev.	2.23'
Benzene	<0.5
TPH-G	<50
TPH-D	<250
TPH-O	<750

P1-GWAMW-02-223	
Date	6/28/2023
GW Elev.	2.13'
Benzene	6.9 J
TPH-G	<50
TPH-D	<250
TPH-O	760

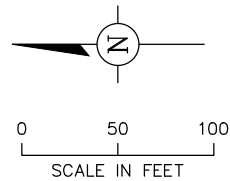
P1-GWAMW-01-223	
Date	6/28/2023
GW Elev.	2.78'
Benzene	<0.5
TPH-G	<50
TPH-D	<250
TPH-O	<750

**LEGEND**

- GM-16S Monitoring Well
- AMW-01 Performance/Confirmation Well
- GM-13D Performance Well
- GM-13S Product Performance Well
- RW-5 Recovery Well
- Groundwater Flow Direction
- Groundwater Contour (Feet NAVD88)

Sample ID	CUL
Date	Date Sample Collected
GW Elev.	Groundwater Elevation in Feet NAVD88
Benzene	Benzene (EPA 8260) in µg/L
TPH-G	Total Petroleum Hydrocarbons as Gasoline (NWTTPH-GX) in µg/L
TPH-D	Total Petroleum Hydrocarbons as Diesel (NWTTPH-DX) in µg/L
TPH-O	Total Petroleum Hydrocarbons as Oil (NWTTPH-DX) in µg/L

Notes: **Bold** - Detected concentration exceeds site specific cleanup level  
 < = Not detected at listed laboratory reporting limit



**TECHSOLVE**  
 ENVIRONMENTAL

7518 N.E. 169th Street  
 Kenmore, WA 98028  
 P:(425) 402-8277 F:(425) 402-7917

**Plant 1 Second Quarter 2023  
 GW Monitoring Analytical Results & Contours**

SeaPort Seattle Terminal (Former ARCO/BP Harbor Island Terminal)  
 1652 Southwest Lander Street  
 Seattle, WA 98134

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