

State of Oregon
Department of Environmental Quality

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To: Shore Terminals/NuStar Facility File ECSI #5130

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Subject: **Source Control Decision**
Shore Terminals LLC, Portland Facility
ECSI #5130

Manager reviewed:
PFD; NWR PCS

1.0 Introduction

This report presents the basis for the Oregon Department of Environmental Quality's (DEQ) Source Control Decision at the Shore Terminals LLC Portland, Facility site (Shore Terminals), Environmental Cleanup Site Information (ECSI) number 5130, located at 9420 Northwest St. Helens Road (also known as U.S. Highway 30) in Portland and within the Portland Harbor Superfund Site (PHSS) (Figure 1 in Attachment 1). To prepare this Source Control Decision, DEQ reviewed reports and other supporting documents prepared for Shore Terminals as part of the Source Control Agreement between the Shore Terminals and DEQ (LQVC-NWR-08-14) and the Voluntary Cleanup Program (VCP) agreement between Shore Terminals and DEQ (ECVC-NWR-01-15), signed December 22, 2011. Shore Terminals source control evaluations for individual potential contaminant pathways were completed in accordance with the 2005 Environmental Protection Agency (EPA)/DEQ Portland Harbor Joint Source Control Strategy, also known as the JSCS.

Based on DEQ's review of individual pathway source control evaluations and supporting documents, DEQ concludes the groundwater, overwater activities and stormwater pathways do not pose a significant current or likely future threat to the Willamette River. Remedial actions have been implemented which have reduced concentrations of PHSS Contaminants of Concern (COC) in groundwater but concentrations for some COCs remain above PHSS Clean Up Levels (CULs). Groundwater monitoring in the northern facility area (the dual phase extraction area) will need to continue for these contaminants under the site's current groundwater monitoring plan, with future modifications to consider Portland Harbor RAO achievement as a data quality objective. If DEQ receives a request to modify the groundwater monitoring program in this area DEQ will consider this request with input from EPA.

2.0 Site Description and History

A detailed summary of site history, previous environmental investigations, and source control evaluations can be found in the following documents:

- *Riverbank Source Control Pathway: Summary of Supporting Information* (Cascadia, 2020a)
- *Groundwater Pathway Source Control Evaluation* (GeoEngineers, 2022)
- *Overwater Pathway Source Control Evaluation* (GeoEngineers, 2023b)
- *Response to (EPA, DEQ and Five Tribes) Comments on the Groundwater Pathway Source Control Evaluation* (GeoEngineers, 2023c)
- *WR-209 Source Control Measures* (GeoEngineers, 2023a)
- *Stormwater Pathway Source Control Evaluation* (GeoEngineers, 2023d)

2.1 Site Description

The Facility is an approximately 29-acre bulk petroleum storage terminal located on the western bank of the Willamette River near River Mile 5 (RM5). The Facility is divided into two areas (Northern Facility Area and Southern Facility Area) with five aboveground storage tank (AST) fields within these areas (Tank Fields 1 through 5). The location and layout of the Shore Terminals Facility are presented in Figures 1 through 5 in Attachment 1.

The Northern Facility Area is approximately 21 acres in size and consists of three tank fields (Tank Fields 1 through 3), the Loading Rack, and the P-2 dock for offloading/loading bulk fuel products as well as shop and office buildings.

The Southern Facility Area is approximately 8 acres in size and consists of two tank fields (Tank Fields 4 and 5), a dock for offloading/loading bulk fuel products, and a small office building. The location, contents, and capacity of each tank at the Facility are listed in Table 1 of the *Groundwater Pathway Source Control Evaluation*.

The Facility is bounded by St. Helens Road (Highway 30) on the west, by the Willamette River on the east, and is bisected by north-south-running railroad tracks that are operated by Portland & Western Railroad (PNWR) and occupy an easement on Oregon Department of Transportation (ODOT) property. The area is zoned Heavy Industrial.

A concrete revetment wall extends approximately 580 feet along the riverbank from the northern boundary of the Facility to the southern edge of Shop Building 5 (Figure 3, Attachment 1). The revetment wall allowed the ground surface in the area of Tank Field 1 to be raised to its current grade, provides slope stability, and prevents erosion from river action. Construction details for the revetment wall are provided in the *Revetment Wall Construction Detail Memorandum* (Cascadia, 2020b). South of the revetment wall, the riverbank is armored with riprap that extends to the southern Facility boundary.

2.2 Regulatory Framework

The Shore Terminals Facility was evaluated under the Source Control Agreement (LQVC-NWR-08-14) and the VCP Agreement (ECVC-NWR-01-15) between Shore Terminals and DEQ. As described in the Source Control Agreement, the 1997 Facility Record of Decision (ROD), and VCP Agreement, the portion of the Facility subject to source control evaluation is the portion above the ordinary line of high water of the Willamette River.

2.3 Site History

The *Groundwater Pathway Source Control Evaluation* (GeoEngineers, 2022) and the *Stormwater Pathway Source Control Evaluation* (GeoEngineers, 2023d) reports present descriptions of operations and associated potential areas of concern for the Shore Terminals Facility. A summary of the Shore Terminals Facility information presented in the source control evaluation reports is presented below.

2.3.1 Facility Development and Use

Based on historical records, the first ASTs in the Northern Facility Area were likely in place by 1926. Tank Fields 1 and 2 were constructed by 1948, and Tank Field 3 was constructed in approximately 1952. After 1952, additional tanks were added in Tank Fields 1 through 3 until the current configuration was reached by about 1966. The P-3 dock in the Southern Facility Area is believed to have been constructed about the same time as Tank Field 4 in 1979. Tank Field 5 was constructed in 2007.

Prior to 2003, customers were able to load product onto trucks at a southern Loading Rack in Tank Field 4. The above ground piping was reconfigured in 2003 allowing fuel product from Tank Fields 4 and 5 to be delivered to customers via the Loading Rack located at the Northern Facility Area and the below grade piping is no longer in use.

2.3.2 Ownership History

The Southern Facility Area was owned by Time Oil Company until it was acquired by Shore Terminals in September 1999. The Northern Facility Area was owned by ExxonMobil and its predecessors from approximately 1928 until December 2001, when the product storage and transfer facilities were sold to Shore Terminals. As of 2024, Shore Terminals is an affiliate of Sunoco.

2.4 Current Site Use

The Facility is an active bulk petroleum and renewable fuels terminal. The Facility receives, delivers, blends, and stores a variety of virgin (i.e., non-recycled) petroleum products such as fuel oils, gasoline, diesel, ethanol, renewables, and biodiesel. Customers' petroleum product is delivered to and transferred from the Facility via marine vessels, rail cars, trucks, and pipelines.

Several companies operate in leased spaces or in the rights-of-way at the Shore Terminals Facility:

- **Cowlitz Clean Sweep (CCS).** CCS is a spill response and industrial cleaning services division of PNE Corporation that leases and operates a warehouse structure (Building 8) at the northeast corner of the Northern Facility Area (formerly occupied by Clean Rivers Cooperative).
- **Olympic Pipeline Company (OPLC).** A pipeline operated by OPLC delivers refined petroleum products, such as gasoline, diesel, and jet fuel, from the Cherry Point, Washington refinery to facilities operated by Shore Terminals and other bulk terminals to the south. OPLC maintains a switching station (the OPLC Switching Station) on a 1/2-acre parcel in the Northern Facility Area under a lease agreement with Shore Terminals. The OPLC Switching Station includes two 2,000-barrel ASTs that are used to store mixed-grade product shipped via the OPLC pipeline.
- **Kinder Morgan.** Kinder Morgan owns and operates a refined petroleum pipeline located west of the railroad, that runs from the Portland area to Eugene. Shore Terminals uses the pipeline to deliver product to the Kinder Morgan Portland Pump Station (located several miles southeast of Shore Terminals Facility). Occasionally the Shore Terminals Facility receives customers' product via the Kinder Morgan pipeline.

Figure 2 in Attachment 1 depicts the site features located in the Northern Facility Area and the Southern Facility Area.

2.5 Potential Sources of Contamination

The historical research conducted for the Feasibility Study and supplemental preliminary assessment identified past activities and features that may be areas of concern as contaminant sources at the Shore Terminals Facility. Potential sources of contamination included:

- Tanker Truck Loading Rack;
- Overhead Pipe Rack;
- Heating oil tank at Terminal Office Building;
- Former Heating oil tank at Operator's Office;
- Tank Fields 1 through 5;
- Rail Car Loading/Unloading Area;
- Hazardous and Non-Hazardous Waste Storage Areas;
- P-3 Marine Loading Dock;
- P-2 Marine Loading Dock;
- P-2 Oil-Water Separator;
- P-3 Oil-Water Separator;
- Building 5 (Maintenance Shop);
- Former Yard 4 Truck Loading Rack;
- Olympic Pipeline Company leasehold; and
- Kinder Morgan pump/manifold area between Tank Fields 1 and 2.

2.6 Chemicals of Interest

Shore Terminals identified chemicals of interest (COIs) for source control evaluation by considering near shore sediment data and upland potential sources.

The petroleum fuel products handled at the Facility consist of hydrocarbon fractions derived from the distillation of crude oil. Polycyclic aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), fuel additives, biodiesel and oxygenates are components of petroleum hydrocarbon and renewable fuel products also handled at the Facility.

Near Shore Sediment Data Screening As reported in DEQ's 2016 Portland Harbor Upland Source Control Summary Report, the sediment area of potential concern in the site's vicinity was found to have elevated concentrations (relative to preliminary remediation goals) of aluminum, barium, cobalt, copper, iron, lead, manganese, mercury, nickel, vanadium, zinc, PAHs, polychlorinated biphenyls (PCBs), delta-hexachlorocyclohexane (delta lindane), dichlorodiphenyltrichloroethane (DDT) and its degradates dichlorophenyldichloroethylene (DDE) and dichlorodiphenyldichloroethane (DDD) (collectively DDx), 1,1-dichloroethene (DCE), 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, benzene, cis-1,2-dichloroethane, cyanide, ethylbenzene, isopropyl benzene, xylenes, toluene, trichloroethane, carbon disulfide, and gasoline range hydrocarbons. Of these analytes, copper, lead, mercury, zinc, PAHs, PCBs, lindane, and DDx, have 2017 EPA Portland Harbor ROD Table 17 Riverbank soil/Sediment CULs.

Soil, Groundwater, and Stormwater Solids Data. COIs for the Shore Terminals Facility were developed based on historical research, previous site investigations, and routine groundwater monitoring. The investigations described below included analyses for each of these COI, summarized as follows:

- Soil: Upland soils were analyzed for metals, total petroleum hydrocarbons (TPH), VOCs, PAHs, pesticides, and semi-volatile organic compounds (SVOCs).
- Groundwater: Groundwater samples were analyzed for metals, VOCs, PAHs, ethanol, pesticides, and TPH.
- Stormwater Solids: Stormwater solids samples were analyzed for metals, PCBs, PAHs, pesticides, VOCs, and TPH.
- Stormwater: Stormwater samples were analyzed for TPH, ethanol, VOCs, PAHs, and metals.

2.7 Potentially Complete Pathways

Potential contaminant transport pathways evaluated at Shore Terminals include releases during overwater activities, stormwater, stormwater conveyance as a preferential groundwater migration pathway, riverbank erosion, and groundwater migration.

Overwater Activities – Overwater activities including fuel handling occur at the P-2 and P-3 marine loading docks. This pathway is considered potentially complete and was evaluated in the *Over Water Pathway Source Control Evaluation* (GeoEngineers, 2023b).

Stormwater Pathway – The stormwater drainage system at the site is divided into six drainage areas that convey stormwater to either the owned outfall WR-78, which drains the Northern Facility, outfall WR-152, which drains Tank Field 5, infiltration into the ground, or discharge to the City of Portland sanitary sewer from the P-3 oil-water separator. This complete pathway is evaluated in the *Stormwater Pathway Source Control Evaluation* (GeoEngineers, 2023d).

WR-209 Stormwater Conveyance as a Preferential Groundwater Migration Pathway – The invert depth of unclaimed WR-209 stormwater conveyance system is lower than seasonal water table elevations resulting in dry weather flow from groundwater intrusion. This pathway was carried forward for further evaluation in *Summary of Outfall WR-209 Investigations and Sampling* (Cascadia, 2020c); and *WR-209 Source Control Measures* (GeoEngineers, 2023a).

Riverbank Erosion Pathway – The site is adjacent to the river; therefore, this pathway is considered complete and was carried forward for further evaluation as described in the *Riverbank Source Control Pathway: Summary of Supporting Information* (Cascadia, 2020a). DEQ recognizes that the EPA has taken over regulatory oversight of the Shore Terminals riverbank erosion pathway. This pathway is evaluated in only a general way in this Source Control Decision.

Groundwater Pathway - Groundwater monitoring performed as part of the remedial investigation determined that groundwater beneath Shore Terminals flows to the Willamette River. Constituents present in groundwater have the potential to migrate to the river. This pathway was carried forward for further evaluation, including a porewater evaluation in *Groundwater Pathway Source Control Evaluation* (GeoEngineers, 2022).

3.0 Regulatory History

Environmental investigations and remedial actions began at the Facility in the 1960s. In 1991, ExxonMobil requested DEQ oversight of its remediation activities, and a voluntary letter agreement was executed. Following a 1996 Feasibility Study and a 1997 ROD by DEQ (the 1997 Facility ROD; DEQ, 1997), a Voluntary Cleanup Agreement between DEQ and ExxonMobil was finalized in May 2002 (ECVC-NWR-01-15).

After the sale of the property by ExxonMobil to Shore Terminals, Shore Terminals entered into a voluntary agreement for source control measures with the DEQ on October 13, 2009 (LQVC-NWR-08-14) and then agreed to comply with the ExxonMobil VCP agreement on December 22, 2011.

3.1 Stormwater Permits

Stormwater discharges are permitted under a National Pollutant Discharge Elimination System (NPDES) Industrial Stormwater Discharge Permit 1200-Z. The current site NPDES 1200-Z Permit (No. 109938) was issued in March 2021 and is in effect from July 2021 to June 2026. In 2023, the City of Portland issued sampling waivers for both outfalls (WR-78 and WR-152) because the outfalls consistently met the NPDES 1200-Z Permit criteria. As a result, the outfalls

do not need to be monitored for compliance until the final year of the permit (July 1, 2025 to June 30, 2026).

3.2 Hazardous Waste Generator

The site address is identified as a hazardous waste generator under EPA identification number ORD000618017.

3.3 Air Quality Permits

The Shore Terminals Facility operates under a Title V permit (permit number 26-2029-TV-01).

4.0 Hazardous Substance Releases, Investigations and Removal Actions

Section 2.5 of the *Groundwater Pathway Source Control Evaluation* presents a list of known and potential hazardous substance releases that have occurred across the Shore Terminals Facility along with localized removal actions to address them. A summary of this information is presented in the following sections.

4.1 Northern Facility Releases

The Northern Facility Area was owned by ExxonMobil and its predecessors from approximately 1928 until December 2001, when Shore Terminals purchased the facility. Historical records detailing information about the releases prior to the 2001 sale of the property to Shore Terminals are limited. Shore Terminals does not know the number of historical releases at the former Exxon Mobil tract prior to ownership; however, historical records indicated at least nine recorded releases from tanks prior to 2001.

1960s through 1970s River Sheens – In the mid- to late- 1960s, petroleum hydrocarbon sheens were reported on the surface of the Willamette River. The sheens appear to have originated from surface spills, tank cleaning waste disposal, and subsurface leaks within the north and center tank fields. Starting in the mid-1970s, sheens were noted further south on the river, near the south end of the center tank fields.

As an interim remedial measure around 1980, a 1,270-foot-long subsurface slurry wall was constructed extending from the south boundary of the Northern Facility Area to the northern edge of Shop Building 5 (Figure 2, Attachment 1). The subsurface slurry wall prevents historical fuel and contaminated groundwater from Tank Fields 2 and 3 from reaching the river. The subsurface slurry wall was supported by the operation of eight product recovery/groundwater extraction wells upgradient of the subsurface slurry wall. Operation of the dual-phase groundwater extraction/product recovery pumps ended when product could no longer be effectively recovered. Project details from this time period are unknown or are limited.

AST Cleaning – Prior to the early 1970s, periodic cleaning of the ASTs resulted in discharge of sludges or residual product onto surface soils within the north and center tank fields (presumed to be Tank Field 1 and Tank Field 2, respectively).

Tank 3510 Release – Gasoline was released from Tank 3510 to soil within the Tank Field 1 concrete containment area on February 22, 2006. Soil samples were collected to delineate the extent of gasoline impacts. Remediation activities included free-phase gasoline removal, shallow soil excavation, and the operation of an upland soil vapor extraction (SVE) system, (separate from the existing top of bank air sparge/soil vapor extraction [AS/SVE] system), for a period of six months. The spill response activities are documented in the *Immediate Response Report – Shore Terminals Portland Facility* (Ash Creek, 2006). Groundwater monitoring of wells in the release area indicates that the remedial activities successfully addressed the gasoline release impacts.

Tank 8006 – Pitting was observed in the base of Tank 8006 in Tank Field 3 during maintenance activities in 2007. Soil samples collected near the tank indicated gasoline impacts in the soil were limited to an area near the base of Tank 8006. Tank 8006 is approximately 200 feet from the river and is within the concrete containment area of Tank Field 3. Impacts to groundwater were not observed (Ash Creek, 2008a). No removal actions were performed.

Tanker Truck Loading Rack – In June 2008, a small quantity of gasoline was released at Bay 3 (Figure 5, Attachment 1) of the Loading Rack. Contaminated soil was not removed. Monitoring wells in this area are gauged at least monthly. Separate phase hydrocarbons (SPH) are sometimes observed in two of the three deeper aquifer monitoring wells located within the gasoline release area. SPH is removed when present. Dissolved TPH and VOCs are monitored in other wells near the Loading Rack and may exceed Site ROD requirements in the shallow and deep aquifers, yet the dissolved contamination appears to be residual and does not migrate (as discussed later in this SCD document).

Underground Heating Oil Tank – In July and August 2011, a 1,000-gallon heating oil underground storage tank (UST) was decommissioned in-place at the Shore Terminals Facility. The tank is located west of the railroad tracks, 15 feet away from the nearest building, and about 450 feet west of the Willamette River. DEQ closed its file on this project in a letter dated September 19, 2011, using DEQ's Soil Matrix Generic Remedy rules as the basis for its closure decision. The UST was pumped dry, cleaned and abandoned in-place by filling with concrete slurry. Soil beneath the tank was characterized to a depth of 17.5 feet below ground surface (bgs). No groundwater was encountered beneath the tank pit at the maximum depth explored of 19 feet bgs. Soil sampled at 17.5 feet was below detection limits for TPH as diesel (TPH Dx). One soil sample collected from a depth of 17.0 feet bgs contained 63 milligrams per kilogram (mg/Kg) TPH Dx. A sample adjacent to the UST from a depth of 7.0 feet bgs contained 2,420 mg/Kg TPH Dx. It was estimated that the volume of soil beneath the UST with possible TPH Dx contamination is 58 cubic yards. No soil was excavated from beneath the UST nor was remediation performed.

Ethanol Release – An 18,000-gallon ethanol release from a buried pipe at the southwest corner of Tank Field 1 occurred in 2011. Groundwater was impacted by the release resulting in a breakdown of mobile and residual hydrocarbons accelerating remediation in Tank Field 1. Methane was generated by the ethanol release and vapor intrusion mitigation was implemented in buildings in the Dual-Phase Extraction (DPE) Treatment area.

B99 Biodiesel Release – On June 1, 2020, approximately 1,300 gallons of B99 Biodiesel (a blend of 99 percent biodiesel and 1 percent diesel) was released to the ground surface due to a malfunctioning pump located between Tank Field 1 and Tank Field 2. Although approximately 62 cubic yards of impacted soil was removed from the site, some impacted soil could not be removed without compromising the stability of product transfer appurtenances in the release area.

1995 Olympic Pipe Line Company Release – On November 12, 1995, less than 250 gallons of jet fuel and/or diesel fuel was spilled at the OPLC leasehold. An estimated 95 percent of the fuel was recovered using sorbent materials, a vacuum truck, and excavation of 115 tons of impacted soils.

2000 Olympic Pipe Line Company Release – In February 2000, petroleum-impacted soil was found beneath the southern AST at the OPLC leasehold. A small quantity (less than 2 cubic yards) of impacted soil was removed

4.2 Southern Facility Releases

Tank 3204 – In September 1988, approximately 1,000 gallons of gasoline were released when Tank 3204 was overfilled inside Tank Field 4. Approximately 175 cubic yards of soil were removed, aerated, and placed on site.

Vapor Recovery Unit – In July 1992, approximately 250 gallons of gasoline were released from a failed gasket in the hydrocarbon Vapor Recovery Unit (VRU) inside Tank Field 4. Approximately 125 cubic yards of soil were removed, aerated and placed on site. In 1997, a SVE system was installed and operated until vapors no longer contained detectable concentrations of petroleum hydrocarbons.

2006-2007 Riverbank Sheen – On November 28, 2006, an approximately 30-foot-long petroleum hydrocarbon sheen was observed near the riprap shoreline of the Willamette River at the south end of the Facility, near the P-3 Dock. The sheen was contained with a sorbent boom and the riprap was pressure-washed to remove residual hydrocarbons in July 2007. A sheen was observed again on December 16, 2007, and was contained with sorbent booms. Additional subsurface investigations of adjacent upland areas completed in 2008 did not identify the source of the shoreline sheen and sheen has not been observed since the December 2007 event.

4.3 Site Investigation Soil Sampling

Soil samples have been collected from the Shoreline Terminals site since at least 1988 to characterize potential sources and/or releases. The *Groundwater Pathway Source Control Evaluation* identified the following soil remediation activities and samples that were collected during site investigations noted above:

- In 1988, a petroleum release was identified at Tank Field 4 during ownership by Time Oil Company. Approximately 175 cubic yards of petroleum-contaminated soil was removed, aerated, and placed back on site during remediation activities. No detailed Shore Terminals records exist from this event.

- Following the 1992 Tank Field 4 Vapor Recovery Unit release, soil samples were collected after the initial remediation efforts to define the extent of the impacts.
- In response to the 1995 Olympic Pipeline Company release, soil samples were collected from the excavation and demonstrated adequacy of cleanup.
- In February 2000, soil samples were collected from three soil borings near the southern AST at the Olympic Pipeline Company to evaluate a fuel release.
- Soil samples were collected to delineate the impacts from the Tank 3510 (Tank Field 1) release in 2006.
- Five soil borings (SB-1 through SB-5) were advanced near the top of the riverbank at the P-3 Dock to assess the potential source of the 2006/2007 river sheen. During the 2008 additional riverbank investigation, six soil borings (CB-6 through SB-11) were advanced and soil samples were collected upland of the P-3 Dock.
- Soil samples were collected from beneath the unused heating oil tank near the Terminal Operators' Office (immediately west of the railroad and west of Tank Field 2).
- Soil samples were collected near the footprint of Tank 8006 (Tank Field 3), after pitting was observed in the base of the tank during maintenance activities in 2007.
- Approximately 62 cubic yards of contaminated soil (between Tank Fields 1 and 2) was removed during the B99 Biodiesel remediation activities in 2020. Leachability testing of soil samples containing the B99 Biodiesel demonstrated that the product contained a leachable fraction of diesel. Most of the impacted soil was removed during the immediate response action; however, even with the use of temporary pipe and foundation support structures, some soil containing B99 Biodiesel could not be removed without compromising the stability of the many pumps and piping support foundations present in the release area.

Additional subsurface investigations have occurred prior to approximately year 2000, but due to inadequate details, those events are not included in the source control evaluation reports.

4.4 Groundwater Investigations

Groundwater samples have been collected during remedial investigations, remediation performance monitoring, routine monitoring events, and a focused porewater investigation.

- In the early to mid-1970s, a series of extraction wells were installed in the Northern Facility Area (Tank Fields 1 and 2) to recover contaminated groundwater and SPH from the subsurface and to prevent their migration to the river. The wells were abandoned once SPH recovery became inefficient.

- In 1977, fourteen 10-inch-diameter wells were constructed adjacent to the river at the northeastern end of the Facility (wells W-1 through W-14) and were also used to extract SPH and groundwater. Because the recovered fluid was determined to be primarily river water, use of these extraction wells was discontinued.
- In the early 1980s, a 1,270-foot-long subsurface slurry wall and eight additional 10-inch-diameter groundwater extraction wells (W-15 through W-22) located upgradient of the subsurface slurry wall were installed to remove and prevent migration of SPH and petroleum-impacted groundwater to the Willamette River in the area of Tank Fields 1, 2 and 3.
- In January 1989, four monitoring wells (MW-1 through MW-4) were installed along the perimeter of Tank Field 4 as part of the 1988 Tank Field 4 investigation.
- In 1992, four monitoring wells (VRUMW-1 and VO-1 through VO-3) were installed by the Time Oil Company in the Southern Facility Area as part of the 1992 Tank Field 4 investigation. These wells were used for SVE.
- In 1997, an SVE system and an additional SVE well (VRUMW-2) were installed by the Time Oil Company south of Tank Field 4. The SVE system operated for 2 months until May 1997 when effluent vapors no longer contained detectable concentrations of petroleum hydrocarbons.
- In response to the Tank Field 1, Tank 3510 release in 2006, seven groundwater monitoring wells (AC-1 through AC-7) were installed.
- During the Riverbank Investigation in response to the 2006 petroleum sheen between Tank Fields 4 and 5 (near the P-3 dock), groundwater samples were collected from five soil borings (SB-1 through SB-5) in search of the source of the riverbank sheen.
- During the 2008 additional riverbank investigation between Tank Fields 4 and 5, groundwater samples were collected from six additional soil borings (SB-6 through SB-11) to search for the source of the riverbank sheen.
- Three wells (AC-8 through AC-10) were installed near the upland Loading Rack to investigate a 2008 gasoline release.

Groundwater monitoring has been continuous at the site since the 1990s.

- The current and on-going groundwater monitoring program consists of gauging 67 monitoring wells and sampling 48 wells semi-annually or annually. A list of monitoring wells is shown in Attachment 2. Groundwater samples are analyzed for TPH as gasoline (TPHg), TPHd, and TPH as heating oil (TPHo), and benzene, toluene, ethylbenzene and total xylenes (BTEX), methyl tert-butyl ether (MTBE), ethanol, PAHs, metals (arsenic, copper, and lead), and select wells are analyzed for C10-C12 aliphatic-range petroleum hydrocarbons.

Porewater investigation

- A 2021 porewater investigation was conducted to assess attenuation of COIs in groundwater migrating from the top of the riverbank to nearshore discharge points in the former DPE Treatment Area. The results are presented in Attachment 3. Groundwater quality from top of bank wells was compared to porewater samples and evaluated for natural attenuation.
- Prior to initiating the porewater sampling program, groundwater samples were collected from five monitoring wells located at the top of the bank in the former DPE Treatment Area and analyzed for PAHs, TPHg, TPHd, TPHo, BTEX, organochlorine pesticides, dioxin/furans, and PCB congeners.
- Samples were collected via passive porewater sampling devices (PSDs), deployed at five porewater stations and five monitoring wells also within the former DPE Treatment Area in June 2021. The samples were analyzed for PAHs, dissolved metals (arsenic, copper, lead, and zinc), TPHg, BTEX, C10-C12 aliphatic-range petroleum hydrocarbons, and organochlorine pesticides.

4.5 Presence of Separate Phase Hydrocarbons

In the mid- to late- 1960s, petroleum hydrocarbon sheens were reported on the Willamette River. The sheens appear to have originated from surface spills and subsurface leaks within Tank Field 1 and Tank Field 2. A series of extraction wells were installed to recover SPH from the subsurface and limit migration to the river. In the early 1980s, a subsurface slurry wall and eight additional groundwater extraction wells located upgradient of the subsurface slurry wall were installed to prevent migration of SPH and petroleum-impacted groundwater to the Willamette River from Tank Fields 1, 2 and 3. The 1,270-foot-long slurry wall did not extend to the north property boundary due to subsurface utilities which limited trenching. The slurry wall location is shown on Figure 2 in Attachment 1.

In Tank Field 1, SPH is being removed intermittently from six monitoring wells in the Shallow Sand unit since 2004 using a bailer, sorbent device, or peristaltic pump. SPH has been primarily observed in wells AC-6, KWM17, and W-15, approximately 300 to 400 feet from the river, but has not been detected in respective downgradient wells. SPH in the Shallow Sand unit does not appear to present a risk to the river based on its limited volume and extent, it is being removed to the extent practicable, and long-term monitoring data show that the SPH is not migrating.

At the Tanker Truck Loading Rack, SPH has been intermittently identified in wells AC-8, AC-9, and AC-10 in the Deep Sand unit and is removed when present. The extent of SPH in this area has not changed appreciably since a gasoline release occurred in 2008, indicating the SPH is non-mobile and residual. Given that the Willamette River is more than 700 feet from the Loading Rack area, the SPH in this area does not appear to present a risk to the river.

On November 28, 2006, a petroleum sheen was observed near the shoreline of the Willamette River at the south end of the Facility (Figure 4 in Attachment 1) between Tank Fields 4 and 5.

The sheen extended for a length of about 30 feet along the riprap bank around the P-3 Dock. The sheen was remediated using a sorbent boom. Investigations to evaluate the source of the sheen were performed in 2006 and 2007. Soil and groundwater samples from five borings (SB-1 through SB-5) advanced at the top of the riverbank were collected to assess if the sheen was originating from an upland source. Results of the assessment did not identify an upland source (Ash Creek, 2007). In July 2007, the riverbank riprap armor was pressure-washed to remove residual hydrocarbons on the riverbank (Ash Creek, 2008a). No sheen was observed in the area between December 2006 and December 2007; however, a limited area of sheen on the river was again noted on December 16, 2007, and was contained via booms.

In January 2008, an additional investigation was completed to further assess a potential source of the sheen near the P-3 Dock. During that investigation, six monitoring wells were gauged for the presence/absence of SPH, and six push-probe explorations (SB-6 through SB-11) were completed for soil/groundwater sampling. Low concentrations of petroleum constituents were detected in soil and groundwater samples collected from borings SB-6 and SB-7; however, no SPH was observed in the groundwater monitoring wells and the analytical data collected from the borings did not suggest the presence of residual SPH (Ash Creek, 2008b). The sheen has not been observed since December 2007.

4.6 Tank Field 1 Groundwater Remedial Actions

To further address the contaminated-groundwater flow pathway in the riverfront area downgradient of Tank Field 1, between the north terminal property boundary and the north end of the groundwater cut off slurry wall (the “gap”), the previous groundwater extraction remediation system was modified to be an “Air Sparging Curtain”. This gap is referred to as the DPE Treatment Area.

This AS/SVE system in the DPE Treatment Area was constructed as required by the DEQ 1997 ROD to address groundwater contamination and began operation in 2000 (Figure 3 in Attachment 1). Originally it included 8 AS wells (AS-01 through AS-08) and 21 SVE wells (KVE-01 through KVE-21) to remove petroleum constituents and ethanol from the subsurface. This AS/SVE system operated for 16 years and removed 151,900 pounds TPHg, 5 pounds BTEX, and 4,950 pounds ethanol from the subsurface (per the site Air Contaminant Discharge Permit [No. 26-0062]).

In 2009, an *Updated Focused Feasibility Study* (AME, 2009) was submitted to DEQ recommending modified dual phase (soil vapor and groundwater) extraction to augment the AS/SVE system in the DPE Treatment Area. The DPE design was developed in response to DEQ’s conclusion that the AS/SVE system was not sufficiently preventing the migration of petroleum-related constituents to the Willamette River north of the slurry wall.

The soil vapor and groundwater extraction system operated from early 2011 through December 2012, and as a vapor-only extraction system from January 1 through February 5, 2013. Due to design limitations and fouling, the DPE system was unable to consistently operate at design rates and was not considered efficient to operate.

In an effort to optimize contaminant removal from groundwater in the DPE Treatment area, the DPE system was converted into a groundwater-only extraction system in 2013. The sum of remediation system modifications removed an additional 7,200 pounds TPHg, 1.7 pounds BTEX, and 1,425 pounds ethanol. In March 2016, it was determined that contaminant recovery efficiency was declining after 16 years of remediation and that the system piping was failing. DEQ approved the shutting down of the system following the failure of system piping in 2016. The mechanical groundwater extraction/AS/SVE system has been inactive since 2016 in favor of monitored natural attenuation of COIs from select monitoring wells in the DPE Treatment area. Since the 2016 system shut down, DEQ has not noted COI concentration rebounds in groundwater.

5.0 Source Control Evaluation

Because the site is located within the PHSS study area, upland source control investigations were guided by the 2005 EPA/DEQ JSCS. The objective of a source control evaluation is to identify potential sources of contamination at the site and determine if additional characterization or source control measures are needed to prevent impacts to the Willamette River. DEQ determined that the groundwater, stormwater, overwater and riverbank erosion pathways are potentially complete contaminant transport pathways. The remainder of this decision document presents DEQ's findings regarding these pathways. Oversight of the riverbank erosion pathway was transferred to EPA (DEQ, 2019) and is being evaluated as part of the in-water design work for the B1a project Area.

5.1 Groundwater Source Control Evaluation

Groundwater at the Facility was divided into two areas for the source control evaluation; the Southern Facility area and Northern Facility area and is encountered in two sand units identified as the Deep Sand and Shallow Sand units. Additional details and supporting figures are presented in Section 4 of the *Groundwater Pathway Source Control Evaluation*.

Groundwater beneath the Southern Facility is first encountered in the Shallow Sand unit. Depths to groundwater typically range from 13 to 23 feet bgs and groundwater generally flows to the northeast. The Shallow Sand unit groundwater risk to the Willamette River was evaluated in the Southern Facility Area using wells MW-1 through MW-4, VRUMW-1, VRUMW-2, and VO-1.

Groundwater beneath the Northern Facility is encountered in both the Deep Sand and Shallow Sands units. Groundwater elevations beneath the central portion of the Facility indicate that the shallow groundwater movement is impeded by the slurry wall, which is keyed into the silty-clay aquitard layer. Groundwater elevations north of the slurry wall indicate that groundwater from the Shallow Sand unit flows beneath the toe of the revetment wall and discharges near the DPE Treatment Area. The Shallow Sand unit is only encountered east of the railroad tracks that bisect the Northern Facility Area. Groundwater in the Shallow Sand unit is observed at depths ranging between approximately 5 and 25 feet bgs and generally flows to the northeast toward the Willamette River. The Shallow Sand unit groundwater risk to the Willamette River was evaluated in the Northern Facility Area using wells close to the river and located in the DPE Treatment Area (i.e., EX-07L, KMW29, KMW30, KMW31, KMW32, KMW33, KMW37,

MW47, MW48, and MW49). Additionally, porewater samples (PW-1 through PW-5) were collected in sediments adjacent to the former DPE Treatment area to assess the risk of contaminants in the shallow groundwater discharging to the Willamette River.

West of the railroad tracks, groundwater is encountered in the Deep Sand unit only, which is unconfined in the Northern Facility area due to structural and stratigraphic dip. Depths to groundwater in the unconfined Deep Sand unit range from 21 and 70 feet bgs and groundwater generally flows to the northeast. The Deep Sand unit groundwater risk to the Willamette River was evaluated in the Northern Facility Area using wells located near the Loading Rack (i.e., AC-8, AC-9, AC-10, KMW3, KMW10, KMW13 through KMW16, KMW23 through KMW27, MW38, MW39, and MW43 through MW46). Monitoring well MW46 is the well closest to the river.

5.1.1 Groundwater Pathway Screening

Groundwater data were screened to evaluate the potential for chemicals in groundwater to discharge to the river at concentrations that could cause adverse effects. Chemical testing included petroleum hydrocarbons, VOCs, PAHs, PCBs, organochlorine pesticides, dioxins and furans, and metals. Not all chemicals that are groundwater contaminants of concern for the PHSS were analyzed: rather, as summarized above, select analyses were conducted based on the potential sources of contamination on site. Chemicals not analyzed on the Shore Terminals site but are on the Portland Harbor ROD Table 17 list of groundwater COCs are limited to cadmium, chlorobenzene, chromium, cyanide, 1-1 DCE, cis-1,2-DCE, 2,4-dichlorophenoxyacetic acid, manganese, vanadium, pentachlorophenol, perchlorate, tetrachloroethylene, trichloroethylene, 2,4,5-trichlorophenol (silvex), and vinyl chloride. There are no known or suspected sources of these chemicals on the Shore Terminals site. Source control COIs at the Shore Terminals site were limited to the contaminants associated with known or suspected sources of contamination.

The groundwater pathway screening involved evaluating site concentrations relative to PHSS CULs listed in Table 17 of the Portland Harbor ROD. For all detected chemicals not identified in Table 17, results were considered against the lowest value from screening level values (SLVs) listed in either:

1. Portland Harbor Joint Source Control SLVs listed in Table 3-1 of the Portland Harbor JSCS (Note: EPA revised the National Recommended Water Quality Criteria [NRWQC] values in 2015 and DEQ revised the Ambient Water Quality Criteria [AWQC] values in 2014. The current values were used in the screening.)
2. Toxicity Reference Values (TRVs) for Transition Zone Water (TZW) and Surface Water contaminants of potential concern (COPCs) from Tables 6-43 and 6-65 of the Portland Harbor Baseline Ecological Risk Assessment (BERA) were used as SLVs when lower than the Table 3-1 value.

Groundwater results from monitoring dating back to 1990 are tabulated in Appendix L of the *Groundwater Pathway Source Control Evaluation*. The screening of the groundwater samples

dating back to 1990 representing the Shallow and Deep Sand units and the porewater samples identified the following contaminants as COPCs.

- TPHs – C10 to C12 aliphatics,
- VOCs – benzene, toluene, ethylbenzene, xylenes
- Metals - arsenic, copper, and lead
- PAHs - cPAHs, benzo(a)anthracene, benzo(a)pyrene, beno(b)fluoranthene, benzo(k)fluoranthene, chrysene, benzo(a,h)anthracene, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, naphthalene, pyrene, phenanthrene.

As discussed in Section 4.3.5 of the *Groundwater Pathway Source Control Evaluation*, sporadic low level detections of hexachlorobenzene, chlordane isomers, and DDX were detected in either the riverbank wells or porewater during the 2021 porewater investigation, some of which were slightly above PHSS CUL; however, based on the site Conceptual Site Model (CSM), upland groundwater monitoring, low level of detection, and nature of the sporadic detections, these constituents were not identified as COPCs and not evaluated below.

5.1.2 Groundwater Pathway Weight of Evidence

Chemicals identified above with concentrations that have exceeded either the PHSS CUL or JSCS SLV are further evaluated by chemical group below using weight-of-evidence approach to determine the potential for discharge to the Willamette River at concentrations that could cause adverse effects or represent a recontamination concern. The *Groundwater Pathway Source Control Evaluation* focused on data collected in the four most recent monitoring events prior to 2022, which ranged between 2018-2021 depending on the well location (see Attachment 4). Data collected during the 2021 porewater/monitoring well investigation (see Attachment 3) and four most recent semi-annual (2023 through 2024) monitoring events (see Attachment 5) are focused on in the evaluation below. Results from groundwater monitoring dating back to 1990 are tabulated in Appendix L of the *Groundwater Pathway Source Control Evaluation*.

C10-C12 aliphatics

Northern Facility

During the 2021 porewater investigation C10-C12 aliphatics were detected above PHSS CULs in three of the selected top-of-riverbank wells (KMW29, KMW31, and KMW36) at concentrations ranging from 62 to 241 micrograms per liter ($\mu\text{g/L}$) but were not detected in any of the porewater samples. Detection limits ($50 \mu\text{g/L}$) were above the PHSS CUL and slightly elevated from typically achievable limits in water samples.

During the Deep Sand Unit recent semi-annual monitoring, C10-C12 aliphatics were not analyzed. TPHd was sampled and used as a surrogate. TPHd was detected in AC-10, KMW13, MW38, MW39, and MW43, located near the Loading Rack. Concentrations range from 0.0908 to 0.659 milligrams per liter (mg/L). However, TPHd has consistently not been detected or has been detected at low concentrations in Deep Sand Unit wells closer to the Willamette River (KMW10, MW41B, MW45 and MW46) indicating the TPH plume in the Deep Sand unit beneath the Loading Dock area is stable and not migrating towards the Willamette River.

During the DPE Treatment Area recent semi-annual groundwater monitoring, all wells except for KMW33 contained concentrations of C10-C12 aliphatics greater than the PHSS CUL of 2.6 µg/L. Detection concentrations ranged from 1.01 to 33.8 µg/L and a maximum exceedance ratio of 13.

A detailed evaluation of TPH concentration in the Northern Facility is presented in Section 4 of the *Groundwater Pathway Source Control Evaluation* which presents a compelling evaluation that, based on the porewater study, an attenuation factor from 5 to 15 is present for TPH between the top of the riverbank wells and porewater. Given the lack of detection in the porewater samples, generally low and decreasing concentrations detected in the riverbank wells, and observed attenuation, DEQ does not consider C10-C12 aliphatics in Northern Facility groundwater to pose a recontamination risk or poses a significant risk to remedial action objectives (RAO) achievement. However, C10-C12 aliphatics should continue to be monitored in this area under the site's long-term monitoring program to confirm concentrations are stable or decreasing. Future modifications of the long-term monitoring program will need to consider Portland Harbor RAO achievement as a data quality objective.

Southern Facility

C10–C12 aliphatic hydrocarbons were not detected above the PHSS CUL in Southern Facility groundwater and are not considered COPCs for further evaluation. No additional source control action is necessary for C10-C12 aliphatics in the Southern Facility.

Benzene, Toluene, Ethylbenzene, and Total Xylenes

Northern Facility

During the 2021 porewater investigation, BTEX were not detected or were detected at concentrations below the PHSS CUL.

During the Deep Sand Unit recent semi-annual monitoring, BTEX concentrations exceed their respective PHSS CUL, in the Loading Rack but do not extend riverward beyond the ODOT property. Benzene is consistently detected at concentrations that exceed the PHSS CUL in groundwater collected from MW-44, but concentrations are variable and trend with fluctuations in water table elevation. Toluene, ethylbenzene, and total xylenes are often detected in MW-44 at concentrations that exceed the PHSS CULs during relatively low-water table conditions but are non-detect or detected at concentrations below the respective PHSS CULs during relatively high-water table conditions. BTEX are consistently non-detect in downgradient Deep Sand Unit wells MW-10 and MW-46. Overall, BTEX have been present in the Loading Rack area for more than 20 years and have not migrated beyond the current extent.

During the DPE Treatment Area recent semi-annual groundwater monitoring, concentrations of toluene, ethylbenzene, and total xylenes were detected but did not exceed PHSS CULs. The majority of the benzene concentrations detected in the groundwater of the DPE Treatment Area wells did not exceed PHSS CULs, with the exception of low-level benzene detections in

KMW29, KMW32, KMW37, and MW-48. The highest detected value observed was 1.48 µg/L at KMW32 with an exceedance ratio of 3.

Given the limited detections of benzene detections above the PHSS CUL in groundwater monitoring wells, and lack of detections in the porewater samples, DEQ does not believe benzene in Northern Facility groundwater poses a recontamination risk or poses a significant risk to RAO achievement. However, benzene should continue to be monitored in this area under the site's long-term monitoring program to confirm concentrations are stable or decreasing. Future modifications of the long-term monitoring program will need to consider Portland Harbor RAO achievement as a data quality objective. No additional source control action is necessary for toluene, ethylbenzene, or total xylenes in the Northern Facility.

Southern Facility

Concentrations of toluene, ethylbenzene, and total xylenes detected in the groundwater did not exceed PHSS CULs in the Southern Facility wells. Benzene was detected above its PHSS CUL in MW-2 with a reported concentration of 0.52 µg/L in 2012; however, concentrations have not been detected above the PHSS CUL of 0.44 µg/L in any subsequent sampling or in any other Southern Facility Area wells indicating benzene in the Southern Facility is not likely to recontaminate future sediment remedial measures, or impede the Portland Harbor ROD RAOs. No additional source control action is necessary for benzene, toluene, ethylbenzene, or total xylenes in the Southern Facility.

Metals - arsenic, copper, and lead

Northern Facility

Dissolved arsenic was detected in porewater and groundwater above the PHSS CUL of 0.018 µg/L during the 2021 porewater investigation. Porewater concentrations were higher than top-of-riverbank 2021 groundwater concentrations, ranging from 10.1 to 22.3 µg/L in porewater and 0.33 to 4.55 µg/L in groundwater. This may indicate arsenic concentrations in the porewater are influenced by sediment redox conditions down gradient of the riverbank wells in the DPE Treatment Area. During the Deep Sand Unit wells recent semi-annual monitoring, arsenic in wells ranged in concentrations from <1 to 69.2 µg/L and are highest near the Loading Rack (KMW13, MW38, and MW39) decreasing as groundwater approaches the Willamette River. During the DPE Treatment Area recent semi-annual groundwater monitoring, arsenic concentration ranged from <1.00 to 22.0 µg/L. The observed concentrations are below the ecological SLV of 150 µg/L, however, some are in the higher range of concentrations observed in shallow groundwater at PHSS. The higher concentrations observed in the Northern Facility are likely the result of changes in groundwater redox conditions associated with the petroleum releases. DEQ does not believe arsenic in Northern Facility groundwater poses a recontamination risk or poses a significant risk to RAO achievement. However, given the localized elevated concentrations detected in upland groundwater, arsenic should continue to be monitored in this area under the site's long-term monitoring program to confirm concentrations are stable or decreasing. Future modifications of the long-term monitoring program will need to consider Portland Harbor RAO achievement as a data quality objective.

Copper was not detected above the PHSS CUL of 2.74 µg/L in any porewater or riverbank groundwater samples during the 2021 porewater investigation. Similarly, during the Deep Sand Unit wells recent semi-annual monitoring, copper was not detected above the PHSS CUL. During the DPE Treatment Area recent semi-annual groundwater monitoring, copper concentrations slightly exceeded the PHSS CUL of 2.74 µg/L in two Shallow Sand Unit wells, twice at EX-07L and once at KMW32 with a maximum concentration of 3.27 µg/L resulting in an exceedance ratio of 1.2. The data do not indicate the presence of a plume that is likely to recontaminate future sediment remedial measures or impact the protectiveness of the remedy. No source control action is necessary for copper in the Northern Facility.

Lead was not detected above the PHSS CUL of 0.54 µg/L in porewater samples but was in riverbank well samples collected during the 2021 porewater investigation. Concentrations were detected above the PHSS CUL in two wells, KMW29 and KMW 31, with concentrations in groundwater ranging from 0.03 to 1.78 µg/L resulting in an exceedance ratio of 3. During the Deep Sand Unit recent semi-annual monitoring events, lead concentrations ranged from <0.2 to 14 µg/L. Wells with concentrations greater than the PHSS CUL (KMW13, KMW26, MW38, MW39 and MW46) were limited to the Loading Rack area and do not extend beyond the ODOT property. During the DPE Treatment Area recent semi-annual monitoring, lead concentrations greater than the PHSS CUL were sporadic and limited in the Shallow Sand Unit (KMW29, KMW31, KMW32, and KMW37) ranging from <0.2 to 2.37 µg/L. The maximum detected concentration during recent groundwater monitoring events was detected in KMW37 and had exceedance factor of 4. The data do not indicate the presence of a plume that is likely to recontaminate future sediment remedial measures or impact the protectiveness of the remedy. No source control action is necessary for lead in the Northern Facility.

Southern Facility

Of the total and dissolved metals analyzed, only concentrations of dissolved arsenic were greater than the PHSS CUL of 0.018 µg/L. Dissolved arsenic concentrations ranged in the Shallow Sand Unit wells in the Southern Facility Area from non-detect to 2.43 µg/L, which is below the ecological SLV of 150 µg/L, is in the lower range of concentrations observed in shallow groundwater at PHSS and is indicative to DEQ of naturally occurring levels. The data do not indicate the presence of a plume that is likely to recontaminate future sediment remedial measures or impact the protectiveness of the remedy. No source control action is necessary for arsenic, or any other metal, in the Southern Facility.

Polycyclic Aromatic Hydrocarbons

Northern Facility

During the 2021 porewater investigation, PAHs were detected above PHSS CULs in both riverbank wells and porewater samples. In riverbank wells, benzo(a)anthracene, chrysene, benzo(a)pyrene, and carcinogenic PAHs (cPAHs) exceeded the respective PHSS CULs, with maximum concentrations of individual PAHs ranging from 0.001 to 0.828 µg/L, and 0.00149 µg/L for cPAHs. Resulting in a maximum individual PAH exceedance ratio of 8 and a maximum cPAH exceedance ratio of 12. In porewater samples, acenaphthene, benzo(a)anthracene,

benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, fluorene, phenanthrene, pyrene and cPAHs exceeded the respective PHSS CULs, with maximum concentrations of an individual PAHs ranging from 0.00025 to 48.9 ug/L, and cPAH of 0.065 ug/L. Resulting in a maximum individual PAH exceedance ratio of 292 and a maximum cPAH exceedance ratio of 541. The increased concentrations of PAHs observed in porewater samples relative to the riverbank groundwater monitoring wells may indicate porewater is being impacted more by localized sediment contamination than by the groundwater to surface water contaminant pathway.

During the Deep Sand unit recent semi-annual monitoring, concentrations of 2-methylnaphthalene consistently exceeded the PHSS CULs in groundwater collected from monitoring wells KMW13 and MW39, located near the upland Loading Rack area, with a maximum detected value of 147 µg/L and maximum exceedance ratio of 70. Additionally, sporadic detections of benzo(a)anthracene, benzo(a)pyrene benzo(a,h)anthracene, chrysene, benzo(b)fluoranthene, benzo(k)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene, naphthalene and/or cPAHs exceeded the respective PHSS CULs in wells KMW10, KMW16, MW38, MW41B, MW45, and MW46. However, individual PAHs decrease in concentration with distance from the Loading Rack area and were not detected at down gradient (and partially cross-gradient) well MW-46, located 125 feet from the Willamette River.

During the DPE Treatment Area recent semi-annual groundwater monitoring, concentrations of detected PAHs only exceeded the PHSS CUL in two samples. Fluorene exceeded the PHSS CUL of 3.9 µg/L at KMW29 and KWM33 with a maximum detected value of 4.07 µg/L, resulting in an exceedance ratio of 1.04. Method detection limits are greater than the respective PHSS CULs for several PAHs but are consistent with levels typically achieved for the analytical method ranging between <0.0160 to <2.83 µg/L. Given the limited detections of PAHs above the PHSS CUL in groundwater riverbank monitoring wells, and the increased concentration detected in the porewater samples, DEQ does not believe PAHs in Northern Facility groundwater poses a recontamination risk or poses a significant risk to RAO achievement. However, PAHs should continue to be monitored in this area under the site's long-term monitoring program to confirm concentrations are stable or decreasing. Future modifications of the long-term monitoring program will need to consider Portland Harbor RAO achievement as a data quality objective.

Southern Facility

Benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a, h)anthracene, indeno(1,2,3,-cd)pyrene, and cPAHs have been detected at concentrations that exceed the respective PHSS CUL sporadically in the Shallow Sand Unit of the Southern Facility Area. However, detections are sporadic, and PAHs were not detected in any of the Southern Facility riverbank wells during most recent monitoring, which occurred in October 2021. The data do not indicate the presence of a plume that is likely to recontaminate future sediment remedial measures or impact the protectiveness of the remedy. No source control action is necessary for PAHs in the Southern Facility.

A detailed weight of evidence evaluation is presented in Section 4.7 (for the Northern Facility) and Section 5.3.4 (for the Southern Facility) of the *Groundwater Pathway Source Control Evaluation*.

5.1.3 Groundwater Pathway Lines of Evidence Evaluation

In alignment with Section 5.2 of the JSCS, which describes factors that need to be considered in evaluating groundwater, a lines-of-evidence evaluation is needed in consideration of the following site-specific factors:

1. Nature and extent of groundwater COPCs in each affected water-bearing zone – The nature and extent of site-related groundwater contamination have been defined as described above and in Sections 4.4 and 5.3 of the *Groundwater Pathway Source Control Evaluation*. Several contaminants have been detected above PHSS CULs in upland wells and/or porewater samples but based on the available data and the evaluation presented in the *Groundwater Source Control Evaluation* DEQ does not believe they pose a recontamination risk or pose a significant risk to RAO achievement. However, C10-C12 aliphatics, benzene, arsenic and PAHs should continue to be monitored in the Northern Facility Area under the site’s long-term monitoring program to confirm concentrations are stable or decreasing. Future modifications of the long-term monitoring program will need to consider Portland Harbor RAO achievement as a data quality objective.
2. Potential presence of non-aqueous phase liquid or sheen - SPH has been detected in the Shallow and the Deep Sand units. Monitoring and removal of SPH in the Shallow Sand Unit has occurred since 2004. The SPH in the Shallow Sand Unit is limited in volume and extent, has been removed to the extent practicable, and long-term monitoring data show that the SPH is not migrating; therefore, the SPH in the Shallow Sand Unit does not appear to present a risk to the river. SPH has been intermittently identified in the Deeper Sand Unit in the Loading Rack area and has been removed when present. The extent of SPH in this area has not changed since the release occurred in 2008, indicating that SPH in the Deep Sand Unit is not mobile and does not present a risk to the river.
3. Presence of bioaccumulative chemicals - Potential bioaccumulative chemicals detected above PHSS CULs in monitoring well data include arsenic, copper, lead and PAHs.
4. Magnitude of groundwater quality exceedance –Exceedance ratios in site-wide monitoring from select monitoring events are presented in Tables 17 through 19 of the *Groundwater Source Control Evaluation*. Maximum exceedance ratios for detected concentrations from the most recent reported sampling event, October 1, 2024, are as follows:
 - DPE Treatment Areas Riverbank Wells
 - Benzene – 1.4x (0.65 µg/L at MW29)
 - C10-C12 – 10x (27.9 µg/L at KMW29)
 - Fluorene – 1.04x (4.07 µg/L at KMW29)
 - Arsenic – 777x (14 µg/L at KMW29)
 - Lead – 1.09x (0.591 µg/L at KMW31)

- Deep Zone Monitoring Well MW46 (closest to river)
 - Arsenic – 145x (2.62 µg/L at MW46)
 - Southern Facility Riverbank Wells (Not currently in semi-annual monitoring. Most recent sampling event occurred on October 7, 2020)
 - Arsenic – 135x (2.43 µg/L at MW-2)
5. Regional background concentrations for naturally occurring chemicals – Concentrations of copper and lead were generally consistent with regional background concentrations, as determined by Deep Sand Unit monitoring wells upgradient of the tank areas (KMW24 through KMW26). Background concentrations of arsenic are observed at concentrations up to 10 ug/L based on upgradient wells KMW24 through KMW26. Arsenic concentrations in groundwater are generally consistent with background in most areas of the site, except in the Deep Sand Unit in the Loading Rack Area and in riverbank well KMW-29. The dissolved arsenic concentrations detected above background in these two areas are likely attributable to historical petroleum releases that occurred at the Facility and localized redox conditions that may secondarily mobilize naturally occurring arsenic as discussed in the *2016 Portland Harbor Remedial Investigation Report*.
6. Estimate of potential contaminant loading – A mass loading assessment was conducted to estimate the recontamination risk from the Northern Facility Area groundwater to adjacent sediments (Appendix Q of the *Groundwater Pathway Source Control Evaluation*). Potential contaminant loading to the Willamette River is anticipated to be minimal given the physical properties of the contaminants detected and the infrequent CUL exceedances.
7. Potential hydraulic connection between site groundwater and surface water/sediments – Groundwater in the Shallow Sand Unit can migrate through the 1-foot-thick gap beneath the revetment wall and discharge into adjacent sediments. While a formal discharge zone mapping/analysis was not completed, a mass flux evaluation was conducted to evaluate how far groundwater from the Shallow Sand Unit in the Northern Facility Area extends into the Willamette River (Appendix Q of the *Groundwater Pathway Source Control Evaluation*). Shallow groundwater is estimated to discharge to the Willamette River nearshore, likely within 100 feet of the riverbank bottom.
8. Potential for groundwater discharge to result in an accumulation in sediment above protective concentrations – To the extent that groundwater contaminants are currently present above PHSS CULs in site groundwater, they are not expected to reach or accumulate in sediment at concentrations of concern.

Based on these results, DEQ concludes that monitoring of arsenic, benzene, C10-C12 aliphatics and PAHs should continue at the Northern Facility Dual Phase Extraction area, but no additional source control actions are needed to address the groundwater pathway at this time.

5.2 Stormwater Source Control Evaluation

When stormwater is a potential pathway to mobilize contamination from the site to the river, source control determinations support the following findings:

1. Existing and potential facility-related contaminant sources have been identified and characterized.
2. Contaminant sources were removed or are being controlled to the extent feasible.
3. Performance monitoring conducted after source control measures were implemented supports the conclusion that the measures are effective.
4. Adequate measures are in place to ensure source control and good stormwater management measures occur in the future.

As detailed in the *Stormwater Pathway Source Control Evaluation* (GeoEngineers, 2023d) and supporting reports, investigation of the stormwater collection and conveyance system was undertaken at the site, in accordance with DEQ's 2009 *Guidance for Evaluating the Stormwater Pathway at Upland Sites*.

5.2.1 Stormwater Sampling COIs.

Site stormwater was analyzed for the following list of contaminants:

- Dissolved metals (aluminum, arsenic, barium, cadmium, chromium, copper, iron, manganese, mercury, silver, and zinc)
- TPH
- VOCs
- PCBs
- Phthalates
- PAHs
- Organochlorine Pesticides
- Total suspended solids (TSS)

Due to the lack of elevated sediment contaminant concentrations observed in the Portland Harbor Remedial Investigation/Feasibility Study; Portland Harbor Pre-Remedial Design Investigation and Baseline Sampling datasets offshore of the Site; and no historical sources of these contaminants on the site, the following contaminants with surface water CULs on Table 17 of the 2017 EPA ROD were not evaluated: mecoprop (MCP), pentachlorophenol, dioxins/furans and tributyltin.

5.2.2 Stormwater System Configuration

The stormwater conveyance system divides the Shore Terminals property into six drainage areas. These drainage areas either infiltrate into the ground, discharge to the Willamette River, or

discharge into the City of Portland sewer system. The locations and features of the stormwater conveyance system are shown on Figures 6 through 9 in Attachment 1.

Drainage Areas

Descriptions of the six drainage areas within the Shore Terminals property are provided below.

- Upper Terminal Drainage Area encompasses the part of the Northern Facility Area west of the ODOT property and the PNWR short line railroad. Approximately 0.2 acre of the area is pervious and the remaining 3.5 acres are impervious. Stormwater in the impervious areas drains to catch basins and is conveyed via below-grade piping to the P-2 oil-water separator for treatment.
- P-2 Drainage Area encompasses the part of the Northern Facility east of the ODOT property and the PNWR short line, which includes Tank Fields 1 through 3; the P-2 Dock; the Railcar Loading/Unloading Area; the Hazardous/Non-Hazardous Waste Storage Area; the OPLC and Kinder Morgan pump/manifold area; and the P-2 oil-water separator. Approximately 5.4 acres of the P-2 Drainage Area are pervious and the remaining 9.3 acres of the area are impervious. Stormwater in the impervious areas drains to catch basins and is conveyed via below-grade piping to the P-2 oil-water separator for treatment. The treated stormwater is discharged to outfall WR-78 under Shore Terminals' NPDES 1200-Z permit.
- Tank Field 4 Drainage Area encompasses Tank Field 4, part of the Terminal Yard (including the P-3 oil-water separator), and the P-3 Dock in the Southern Facility Area. Approximately 2.1 acres of the Tank Field 4 Drainage Area are pervious and the remaining 1.8 acres of the area are impervious. Stormwater in the impervious areas is conveyed via below-grade piping to the P-3 oil-water separator for treatment. The treated stormwater discharges to the City of Portland's sanitary sewer system.
- Tank Field 5 Drainage Area encompasses Tank Field 5 and the gravel portion of the Terminal Yard. Tank Field 5 was constructed in 2007, and the base of the tank field is completely lined. Stormwater in the tank field collects in catch basins that discharge to a Contech StormFilter® stormwater treatment system located in a subsurface vault. Pumps must be manually activated to remove the treated water from the vault for discharge to Outfall WR-152 under Shore Terminals' NPDES 1200-Z permit.
- Olympic Pipeline Company Drainage Area encompasses the OPLC Switching Station and OPLC office. Approximately 50% of the basin is impervious. Stormwater collects in the AST and operations containment areas and discharges to the OPLC oil-water separator. Treated water then accumulates in a concrete sump, which is periodically inspected by OPLC staff. If no impacts are observed, the water is pumped to a bioswale for percolation into soil. If stormwater cannot adequately percolate, an overflow weir is located at the end of the swale. This weir is sampled under NPDES permit (No. 112103) for the OPLC facility. Under DEQ oversight, improvements were made to the bioswale in 2021 to lessen stormwater runoff leaving the bioswale. However, during heavy rains,

stormwater runoff from Highway 30 can enter the bioswale and overwhelm the improved system. When this occurs, OPLC stormwater may overflow from the bioswale and discharge to the railroad ditch leading to the WR-209 conveyance line intake.

- Southern Drainage Area is 2.8 acres of undeveloped and densely vegetated land. The undeveloped land is composed of an approximately 0.8-acre hillside that slopes eastward from Highway 30 and 2 flat acres located between the slope and the ODOT property. Most, if not all, of the rainfall likely infiltrates into the ground in the Southern Drainage Area; however, the drainage area also receives stormwater from a culvert that runs beneath Highway 30. The culvert collects stormwater that drains from Forest Park, Highway 30, Germantown Road, and residential areas west of Highway 30 and discharges overland to the railroad ditch leading to the WR-209 conveyance line intake.

Outfalls

Seven stormwater outfalls are or were present at the Facility boundary with the Willamette River. Two actively discharge Facility stormwater (WR-78 and WR-152), two discharge stormwater from off-site properties (WR-202 and WR-209) and three are abandoned (WR-589, OF-23, and OF-23A). Descriptions of the outfalls are provided below.

- Outfall WR-78 is an 18-inch-diameter steel pipe that discharges stormwater from the Northern Facility Area (Figure 6 in Attachment 1). The stormwater flows to an oil-water separator, referred to as the P-2 oil-water separator, prior to discharge to the Willamette River. Prior to 2007, discharge from the outfall was regulated under NPDES1300-J Permit number 57374 issued to Shore Terminals. Since 2007, the outfall has been regulated under NPDES 1200-Z Permit number 109938 issued to Shore Terminals.
- Outfall WR-152 is a 6-inch-diameter lined corrugated metal pipe that discharges stormwater from Tank Field 5 (Figure 7 in Attachment 1). The stormwater runs through a Contech StormFilter® stormwater treatment system prior to discharge. Since 1999, the outfall has been regulated under NPDES 1200-Z Permit 109938 issued to Shore Terminals.
- Outfall WR-209 is a 24-inch-diameter concrete pipe that runs beneath Tank Field 3 and discharges stormwater from the WR-209 ditch located on property owned by ODOT and leased to PNWR (Figure 6 in Attachment 1). Ownership of the outfall and conveyance line has not been determined. Stormwater from the Shore Terminals Facility does not discharge to the WR-209 conveyance line. A catch basin located within the driveway into the Facility historically discharged to the hillside above the WR-209 ditch; however, the catch basin was abandoned in May 2020.
- Outfall WR-202 is a 48-inch-diameter corrugated steel pipe that discharges stormwater from off-site sources: the ExxonMobil Lube Plant, the ODOT right-of-way at Highway 30, and the residential area west of Highway 30 (Figure 6 in Attachment 1). No catch basins or conveyance lines from the Facility are connected to Outfall WR-202.

- Outfall WR-589 was a 4-inch-diameter corrugated steel pipe that discharged stormwater from two Facility catch basins and from roof drains of Building 8 and the attached Shop Building. At the end of 2017, Outfall WR-589 was decommissioned, and the conveyance system was reconfigured to discharge to the P-2 oil-water separator, which discharges to Outfall WR-78. The former location of Outfall WR-589 is shown on Figure 6 in Attachment 1.
- Outfall OF-23 and Outfall OF-23A are abandoned combined sewer outfalls owned by the City of Portland. The outfalls were decommissioned in approximately 1992, prior to Shore Terminals' ownership of the Facility. The former locations of Outfall OF-23 and Outfall OF-23A are shown on Figure 6 in Attachment 1.

5.2.3 Stormwater Pathway Investigation and Evaluation

The stormwater source control evaluation was presented in the 2023 *Stormwater Pathway Source Control Evaluation*. The evaluation included the documentation of the stormwater collection and treatment system, review of stormwater data collected under NPDES permits, screening of solids collected from the catch basins, and screening of stormwater samples. The source control evaluation focused mainly on the Shore Terminals-owned outfalls (WR-78 and WR-152). Additional investigation and evaluation were completed for WR-209 to determine configuration of the conveyance line, evaluate groundwater intrusion, and assess the quality of stormwater entering the pipe at the ODOT property/railroad leased area and discharge at the outfall.

Catch Basin Sampling. A composite stormwater solids sample was collected from catch basins PS01A and PS12 in November 2012 to evaluate the quality of sediment captured in the P-2 oil-water separator. Catch basins PS01A and PS12 are located immediately upstream of the P-2 oil-water separator, which discharges to the river at outfall WR-78. Stormwater solids samples were collected from these catch basins because the volume of solids in the P-2 oil-water separator was insufficient for sampling. Catch basin PS01A receives stormwater from most of Tank Field 1 and from the Terminal Yard adjacent to Building 8. Catch basin PS12 receives stormwater from parts of Tank Fields 1, 2, and 3, the Loading Rack area, and parts of the Terminal Yard. The stormwater solids samples were analyzed for metals, PCBs, PAHs, phthalate esters, organochlorine pesticides, total organic carbon, BTEX, TPHg, TPHd, TPHo, cadmium, and zinc. Total PAHs, cPAHs, bis(2-ethylhexyl) phthalate (BEHP), and TPHd exceed PHSS CULs for Riverbank Soil/Sediment. Detected concentrations fall in the flat portion of the curve for all compounds except for total PAHs, which fall in the knee of the curve. Screening tables and a comparison to the DEQ stormwater curves are presented in Table 7 and Attachment G of *Stormwater Pathway Source Control Evaluation*, which are included in Attachment 6.

Stormwater Sampling. Stormwater sampling at outfalls WR-78 and WR-152 was conducted in accordance with DEQ's *Guidance for Evaluating the Stormwater Pathway at Upland Sites* (2009). Four sampling events occurred between November 2011 and November 2012. The stormwater samples were analyzed for TSS, metals, PCBs, organochlorine pesticides, VOCs, phthalates, PAHs, TPHd, TPHo, TPHg, and SVOCs. Following implementation of best management practices (BMPs) and source control measures discussed below, three additional sampling events were completed between April 2022 and April 2023 in which samples were

analyzed for arsenic, aluminum, zinc, DDx compounds, BEHP, and PAHs. Screening tables and a comparison to the DEQ stormwater rank order curves are presented in Tables 2 through 10 and Attachment G of *Stormwater Pathway Source Control Evaluation*, which are included as Attachments 7, 8 and 9. Stormwater data are also collected under the site's NPDES 1200-Z permit which are presented in Attachment C of the *Stormwater Pathway Source Control Evaluation*.

Outfall WR-78

During the 2011-2012 sampling events at WR-78, several PAHs, cPAHs, DDT, DDD, DDx, total chlordanes, BEHP, arsenic, copper and zinc were detected at concentrations above surface water PHSS CULs. The detected concentrations for arsenic, copper, zinc, and BEHP were within the typical range for industrial discharge in Portland Harbor. DDD, DDT, and total chlordanes were detected in just one stormwater sample with concentrations of 0.0064 µg/L, 0.0083 µg/L, and 0.056 µg/L, respectively. Out of the four samples analyzed for total PAH concentrations, two fell on the flat part of the curve, one fell in the knee of the curve, and one fell toward the top of the curve.

During the 2022-2023 sampling event, detected concentrations of arsenic, zinc, DDD, DDE and DDT exceeded PHSS CULs for surface water. Arsenic and zinc concentrations remained in the range of typical stormwater at industrial sites in PHSS and at the lower end of these concentration ranges based on rank order curves shown in Attachment 8. DDD/DDE/DDT were detected in all three samples at low concentrations ranging from 0.000066 to 0.0012 µg/L. DDx concentrations were lower than those observed in the 2011-2012 events. Additionally, DDE and DDT have been analyzed under the NPDES permit in multiple events with similar infrequent low-level detections. While curves are not available for DDx, the observed concentrations do not suggest to DEQ that stormwater at the site is atypically elevated or that a significant source is present that needs to be addressed through additional source control.

Outfall WR-152

During the 2011-2012 sampling events at WR-152, PAHs, cPAHs, DDD, DDT, DDx, total chlordanes, arsenic, and zinc were detected at concentrations above surface water PHSS CULs. The detected concentrations for arsenic, zinc, and total PAHs were within the typical range for industrial discharge in PHSS. DDD, DDT, and total chlordanes were detected in just one stormwater sample with concentrations of 0.0049 µg/L, 0.0092 µg/L, and 0.052 µg/L, respectively.

During the 2022-2023 sampling event, detected concentrations of arsenic, zinc, and DDT exceeded PHSS CULs for surface water. Arsenic and zinc concentrations remained in the range of typical stormwater at industrial sites in PHSS and at the lower end of these concentration ranges based on rank order curves shown in Attachment 9. DDT was detected in one sample at a low concentration of 0.000062 µg/L. DDx concentrations were lower than those observed in the 2011-2012 events. Additionally, DDE and DDT have been analyzed under the NPDES permit in multiple events with similar infrequent low-level detections. While curves are not available for DDx, the observed concentrations do not suggest to DEQ that stormwater at the site is atypically

elevated or that a significant source is present that needs to be addressed through additional source control.

WR-209 Investigation and Sampling. Numerous investigations and assessments of the conveyance line to Outfall WR-209 have been completed to understand the configuration of the conveyance line and assess the quality of stormwater discharge into and out of the outfall. Investigations determined that stormwater collects in a railroad ditch located in the Southern Drainage Area and discharges at Outfall WR-209 via a conveyance line that runs beneath Tank Field 3. WR-209 is an unclaimed asset and is not owned by Shore Terminals.

Stormwater samples were collected from the outfall in 2002, 2003, 2006, 2008, and 2009; and from the inlet in 2003, 2006, 2008, and 2009. Concentrations of petroleum constituents (e.g., benzene, toluene, ethylbenzene, MTBE, TPHg, and naphthalene) were often greater in the outfall stormwater samples compared to the respective inlet stormwater samples. Metals concentrations were comparable between the inlet and discharge samples.

Dry weather discharge was identified in 2002. Upon further investigation in 2015, it was concluded that groundwater was likely intruding into the conveyance line because the discharge at the outfall was a higher flow rate than at the inlet. However, comparison of the discharge sample results to groundwater analytical data showed that the petroleum hydrocarbon concentrations were greater in the discharge samples collected from Outfall WR-209 than in the groundwater samples collected from nearby wells. The *2015 Source Control Evaluation* determined legacy sediments and debris in the conveyance line were likely impacting the quality of the discharge (APEX, 2015). Additional dry weather samples were collected in 2017 from Outfall WR-209.

Two rounds of conveyance line sediment and debris cleanout were performed in September and October 2022, each followed by dry weather flow sample collection. Following the second cleanout, a video inspection was performed to document that legacy sediments had been successfully removed from the conveyance line. The analytical results for the post-cleanout dry weather flow samples were non-detect or below the respective screening levels except for chrysene (estimated 0.0247 µg/L), benzo(a)anthracene (estimated 0.198 µg/L), arsenic (10.1 µg/L), and manganese (1,320 µg/L). A summary of the assessments is detailed in the *WR-209 Source Control Measures, Geoengineers, Jan. 2023*.

5.2.4 Stormwater Source Control Measures and Treatment

Inactive Outfall Decommissioning. Outfall OF-23 and Outfall OF-23A were combined sewer outfalls owned by the City of Portland and decommissioned in approximately 1992. Outfall WR-589 was decommissioned in 2017, and the conveyance system was reconfigured to discharge to the P-2 oil-water separator. The outfall locations are shown on Figure 8 in Attachment 1.

Oil-Water Separators. Stormwater captured in all catch basins located within the Upper Terminal and P-2 Drainage Basins flow to the P-2 oil-water separator. The P-2 oil-water separator is a baffled gravity separator with oil skimmer that discharges the treated stormwater to the Willamette River via Outfall WR-78.

Stormwater captured in the Tank Field 4 Drainage Basin and the P-3 Dock Area flows to the P-3 oil-water separator. The P-3 oil-water separator is equipped with a coalescing plate to remove petroleum and sediment. Treated stormwater from the P-3 oil-water separator discharges to the City of Portland sanitary system.

Stormwater Filter Treatment System. Stormwater in Tank Field 5 collects in catch basins that discharge to a Contech StormFilter® stormwater treatment system located in a subsurface vault. The system includes a filter that removes both sediment and petroleum constituents from the stormwater. Treated stormwater discharges to the Willamette River at Outfall WR-152.

Best Management Practices. Source control BMPs implemented at the site include catch basin inserts, routine sweeping of paved areas, and the storage of materials and wastes in covered areas or containers to further reduce sources to stormwater. The catch basin filters are replaced annually, typically during the dry season. The oil-water separators and Contech StormFilter® stormwater treatment are cleaned annually, typically during the dry season. During the annual cleaning the condition of the filter cartridges of the Contech StormFilter® system are assessed and replaced, as needed based on the evaluation of the qualified third-party contractor completing the inspection and cleaning. Additional institutional BMPs include maintaining a pollution prevention team, training, good housekeeping, inspections, preventative maintenance, spill prevention and cleanup, and recordkeeping. Stormwater is impounded behind normally closed valves in AST and operations areas and released to the stormwater drainage system following observations of no sheen or other contaminants.

5.2.5 Stormwater Pathway Lines of Evidence Evaluation

In alignment with Section 5.3 of the JSCS, which describes appropriate approaches for screening of direct discharges, a weight-of-evidence evaluation was undertaken in consideration of the following site-specific factors:

1. Identification and characterization of potential sources of contaminants – Existing and potential facility-related stormwater contaminant sources were identified and characterized.
2. Magnitude of stormwater and stormwater solids exceedances at each sampling point and proximity of sampling points to the river – Stormwater and catch basin solids sampling results that exceeded the applicable PHSS CULs or JSCS SLVs were compared to DEQ charts from Appendix E: *Tools for Evaluating Stormwater Data*, which was updated in 2015. This tool was created by using contaminant concentration data from many of the stormwater and stormwater solids samples collected at Portland Harbor-area heavy industrial sites. These data were used to create a series of charts that plot rank-order samples against contaminant concentrations and are used to identify contaminant concentrations in samples that are atypically elevated. Concentrations falling within the upper/steeper portion of the curve are an indication that uncontrolled contaminant sources may be present at the site and that additional evaluation or source control measures may be needed. Concentrations that fall on the lower/flatter portion of the curve suggest that stormwater is not being unusually impacted by contaminants at the site and, while concentrations may exceed PHSS CULs or JSCS

SLVs, they are within the range found in stormwater or solids from active industrial sites in PHSS.

While select metals, DDx, select VOCs, and select PAHs were detected in one or more stormwater samples at concentrations that exceeded PHSS CULs or JSCS SLVs, all concentrations in recent detections were within the typical range for industrial discharge in the PHSS or considered to be insignificant.

3. Regional background soil concentrations of naturally occurring chemicals for evaluating stormwater solids – Concentration of antimony, cadmium, copper, lead, and zinc were detected in catch basin solids above regional soil background levels. Operation of the oil-water separators and Contech StormFilter® stormwater treatment are expected to continue managing any potential risk associated with stormwater solids at the site.
4. Presence of bioaccumulative chemicals – Several metals, BEHP, DDx, total chlordanes and PAHs were detected in site stormwater at concentrations above surface water PHSS CULs or JSCS SLVs. Concentrations plotted on the flat portion of the rank-order curves were low or sporadic indicating these contaminants are not atypically elevated in stormwater discharge from the site.
5. Site hydrology including site conditions, size of drainage and location, and estimated size of discharge – The stormwater conveyance system divides the 29-acre Shore Terminals property into six drainage areas (Upper Terminal Drainage Area; P-2 Drainage Area; Tank Field 4 Drainage Area; Tank Field 5 Drainage Area; Olympic Pipeline Company Drainage Area; and Southern Drainage Area). The Facility is graded to direct stormwater to catch basins that are conveyed to treatment systems prior to discharging to the Willamette River or the City of Portland sanitary sewer system. Additionally, the top of the riverbank is generally slightly higher than adjacent upland areas redirecting stormwater away from the Willamette River and berms have been constructed to control runoff and run-on.
6. Stormwater system design and management – As described in Section 5.2.1, the six drainage basins are managed by infiltration or stormwater treatment systems that discharge to the Willamette River or the City of Portland sanitary sewer system. Stormwater from the Upper Terminal Drainage Area and the P-2 Drainage Area flows to the P-2 oil-water separator prior to discharging to the Willamette River at Outfall WR-78. Stormwater from Tank Field 5 flows through the Contech StormFilter® stormwater treatment system prior to discharging to the Willamette River at Outfall WR-152. Outfall WR-78 and Outfall WR-152 are managed under an NPDES 1200-Z Permit. Stormwater from the Tank Field 4 Drainage Area either infiltrates or is treated at the P-3 oil-water separator prior to discharging to the City of Portland's sanitary sewer system. Approximately half of the Olympic Pipeline Company Drainage Area is impervious and stormwater discharges to the OPLC oil-water separator. The treated stormwater is inspected and, if no impacts are observed, the stormwater is pumped to a bioswale. Most, if not all, of the rainfall likely infiltrates to the ground in the Southern Drainage Area; however, the drainage area also receives stormwater from a 6-inch culvert that runs beneath Highway 30. The culvert discharges to a ditch with leads to the WR-209 conveyance line that in turn discharges at Outfall WR-209.

7. Estimate of potential contaminant loading to the river – Supported by low concentrations of detected contaminants and TSS in stormwater, pollutant loads in stormwater from the site are not significant and will continue to be minimized under regulation by the NPDES 1200-Z permit.

Based on the information provided in the *Stormwater Pathway Source Control Evaluation* report and supplemental reports, DEQ concludes no further source control actions are required to address the stormwater pathway.

5.3 Overwater Activities

The *Over Water Pathway Source Control Evaluation Report* (GeoEngineers 2023b) describes the facility-specific plans and BMPs in place for over water product transfer operations at the Facility and evaluates whether these measures adequately mitigate potential product releases to the Willamette River. Approximately 35 to 50 percent of the fuel product arrives at the Terminal via ship or barge at the docks, and approximately 1 to 6 percent leaves by ship or barge from the two docks.

The Northern Facility consists of Tank Fields 1 through 3 and the P-2 dock for offloading/loading bulk fuel products. The P-2 dock was built between 1923 and 1936. All liquids from the dock surface drain to catch basins and are piped upland to the 10,000-gallon P-2 oil-water separator for eventual release to the river via outfall WR-78, following satisfactory inspection.

The Southern Facility includes Tank Fields 4 and 5 and the P-3 dock for offloading/loading bulk fuel products. The P-3 dock was built in 1979. All liquids from the dock surface drain to catch basins and are piped to an upland 5,000-gallon steel sump for disposal to the City of Portland sanitary sewer following inspection.

Spill Prevention Planning and Stormwater Control. Shore Terminals maintains several plans, including a *Spill Prevention, Control, and Countermeasures (SPCC) plan*, a *Facility Response Plan (FRP)*, a *Storm Water Pollution Control Plan (SWPCP)*, and a *Dock Operations Manual* to provide clear prevention and response actions to mitigate the potential for releases impacting the environment. The plans include programs for mitigating the potential for a release at the docks and procedures for response actions should a spill occur.

Best Management Practices. The spill prevention plans also describe BMPs to prevent or reduce non-point sources to the Willamette River. These BMPs include structural and non-structural controls.

Conclusions and Recommendation. Shore Terminals maintains multiple detailed plans to prevent the release of contaminants to the Willamette River during its over water product transfer operations and ensures quick response times if a release does occur. The success of these plans is demonstrated by the limited number of releases that have occurred during the 23 years that Shore Terminals has been operating the Facility. A release of 75 gallons of jet fuel did reach the river from the P-3 dock approximately 20 years ago, but there has not been an over water release of

product reaching the river from this dock since that time. Additionally, one gallon of hydraulic fluid is the only release that reached the river from the P-2 dock overwater operations in the 23 years of Shore Terminals' operations at the Facility.

5.4 Riverbanks

A Riverbank Source Control Pathway: Summary of Supporting Information was prepared by Cascadia Associates, LLC, on behalf of Shore Terminals, to summarize information for DEQ in transitioning of riverbank oversight to the EPA. The document is dated April 13, 2020, with a revised version (to correct units in a data table) dated Oct. 12, 2023 (Cascadia, 2020a).

The Shore Terminal Facility has approximately 2,500 feet of Willamette River shoreline. The northern 580 feet of riverbank is protected by a concrete revetment. The remaining riverbank is armored with rock riprap. Shore Terminals was identified by the EPA as a "riverbank pending characterization" due to it being adjacent to an in-river sediment management area. Based on field observations and other lines of evidence, DEQ concluded that the riverbank is not erodible and does not present a source of potential recontamination to the Willamette River. Measures have been taken to prevent site stormwater from flowing over the bank to the river.

A sheen was observed along the shoreline adjacent to the P-3 dock once in November 2006 and again in December 2007. Despite top of bank and shoreline investigations, no source for the sheen was identified. The ripped riverbank in the sheen area was remediated via pressure washing in January 2007 with sorbent booms in river. No sheen has been observed since December 2007. Investigations using direct push borings, monitoring wells, and riverbank soil samples were completed in 2006, 2007 and 2012 and did not identify a source for the sheen. Three soil samples were collected from beneath the shoreline riprap immediately south of the P-3 dock in November 2012. Analysis of these soil samples did not identify COI that would present an unacceptable risk to the river or produce a sheen. No further investigation or source control measures were required by DEQ.

6.0 Summary of Source Control Decision

The Shore Terminals site has been adequately characterized. The contamination sources, and the nature and extent of contamination are understood. The overwater, groundwater and stormwater source control evaluations prepared by GeoEngineers on behalf of Shore Terminals present acceptable evaluations that generally follow the JSCS and allow DEQ to make this Source Control Decision.

The Source Control Decision review of migration pathways to the Willamette River identified the riverbank, overwater activities, groundwater migration and stormwater migration pathway as potentially complete pathways to the river for historical contamination at the site. Oversight of the riverbank erosion/leaching pathway has been transferred to EPA and this Source Control Decision does not make a determination for this pathway. DEQ will continue to support EPA in the assessment of this pathway through the B1a Project Area Remedial Design oversight.

DEQ's Source Control Decision for the remaining pathways is that the groundwater, stormwater and overwater pathways do not pose a significant current or likely future threat to the Willamette River.

While the risk of sediment recontamination above Portland Harbor remedial action levels is low for the groundwater pathway, DEQ has determined that concentrations of C10-C12 aliphatic hydrocarbons, benzene, PAHs, and arsenic could pose a risk to meeting RAO 4 and 8 goals if COC concentrations should increase in Northern Facility Area wells.

Monitoring in the Northern Facility Area will need to continue for these contaminants under the site's semi-annual groundwater monitoring plan. Future modifications of the monitoring program will need to consider Portland Harbor RAO achievement as a data quality objective and will be done in consultation with EPA. Data trends will be tracked to determine if source control measures are required to meet RAO 4 and 8 goals.

Attachments: Attachment 1: Site Location and Facility Features
Attachment 2: Current Groundwater Monitoring Program
Attachment 3: 2021 Porewater Sampling Locations and Data
Attachment 4: Groundwater Monitoring Sampling Results: 2019-2021
Attachment 5: Groundwater Monitoring Sampling Results: 2023-2024
Attachment 6: Stormwater Solids Data and Rank Order Curves
Attachment 7: Stormwater Data
Attachment 8: Stormwater Rank Order Curves – WR-78
Attachment 9: Stormwater Rank Order Curves – WR-152
Attachment 10: Contaminant Concentration Trend Plots–Former Dual Phase
Extraction Area Wells (2015-2024)

References:

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GeoEngineers, 2023a. WR-209 Source Control Measures. Shore Terminals LLC Portland Facility. January 20, 2023.

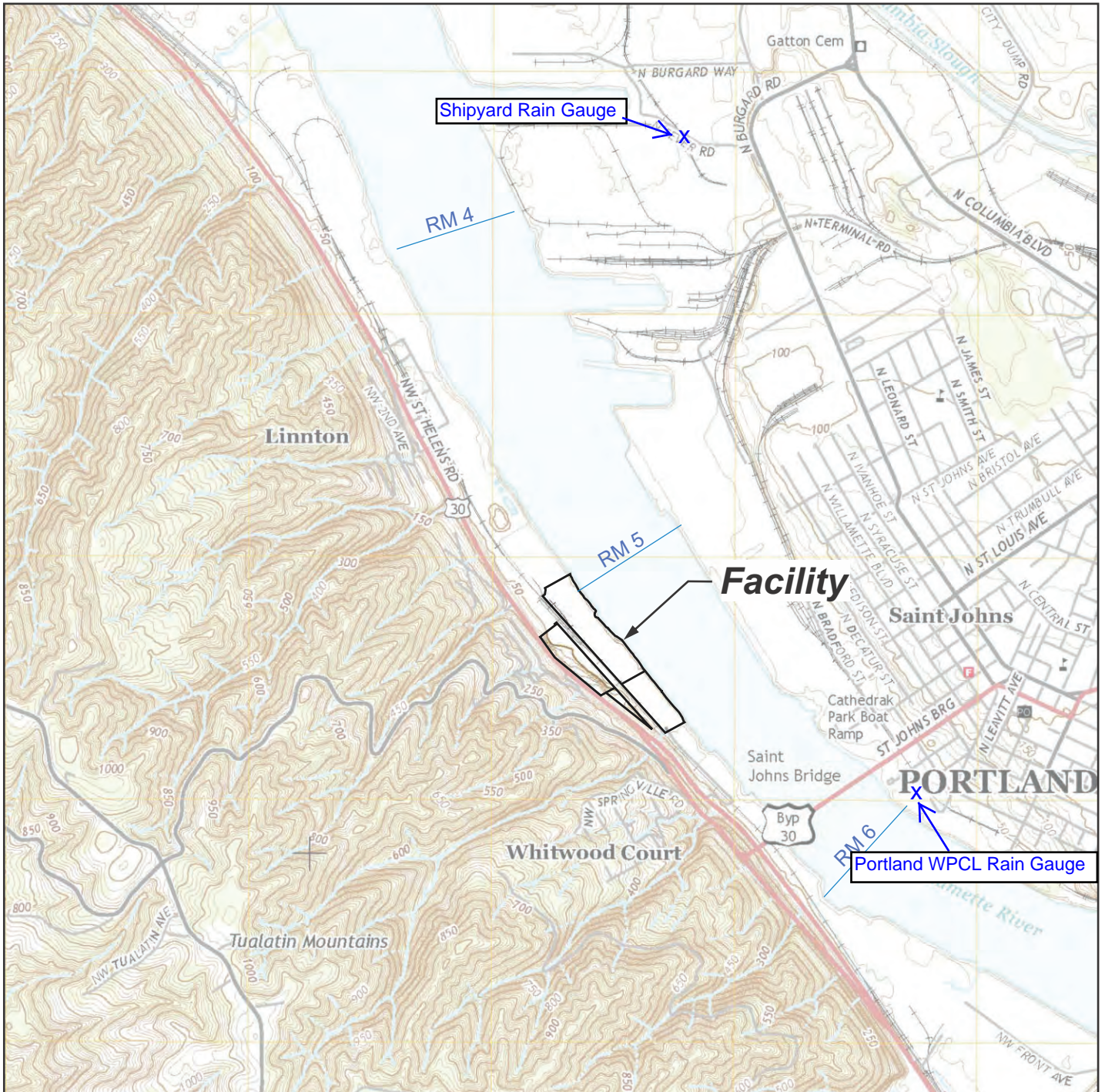
GeoEngineers, 2023b. Over Water Pathway Source Control Evaluation. Shore Terminals LLC Portland Facility. March 16, 2023.

GeoEngineers, 2023c. Response to Comments on the Groundwater Pathway Source Control Evaluation Report. Shore Terminals LLC Portland Facility. August 4, 2023.

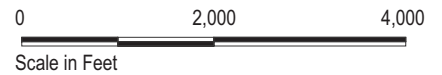
GeoEngineers, 2023d. Stormwater Pathway Source Control Evaluation. Shore Terminals LLC Portland Facility. November 20, 2023.

Attachment 1

Site Location and Facility Features



Base map prepared from USGS 7.5-minute quadrangle of Linnton, Oregon, dated 2014, as provided by Topozone.



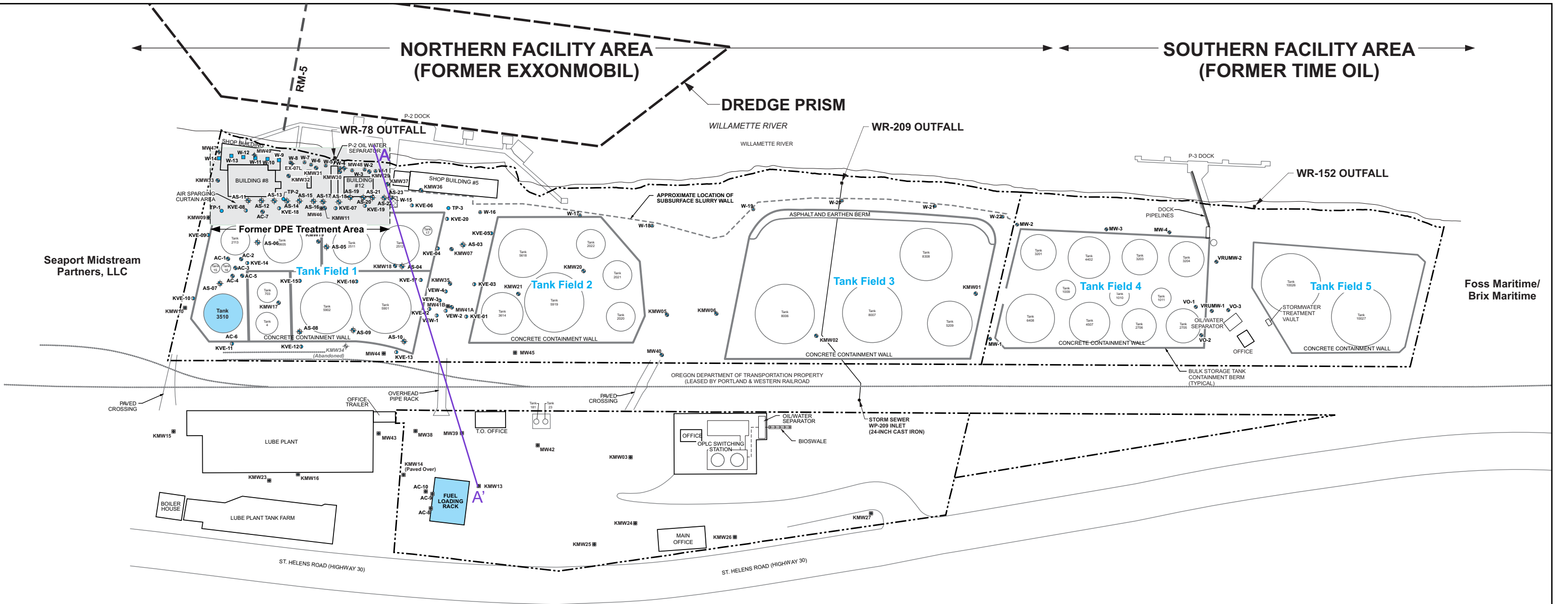
Facility Location Map

First Semi-Annual 2024 Groundwater Monitoring Report
Shore Terminals LLC Portland Facility
Portland, Oregon



Project Number	019001-010-16
August 2024	

Figure
1

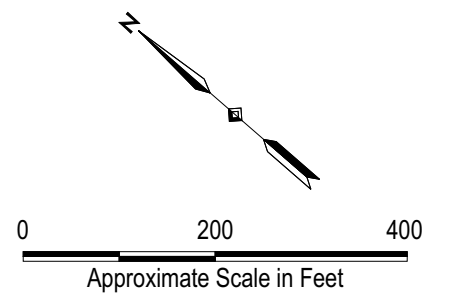


Legend:

- MW-1 Monitoring Well Location (Shallow Sand Unit)
- MW41B Monitoring Well Location (Deep Sand Unit)
- AS-05 Air Sparging Well Location
- KVE-01 Vapor Extraction Well Location
- W-1 Groundwater Extraction Well Location (Currently Used for Monitoring Only)
- DPW-10 Groundwater Extraction System Well Location (Currently Used for Monitoring Only)
- TP-1 Temporary Vapor Monitoring Well Location
- Property Boundary
- Cross Section A-A'

Tank 3510 and Loading Rack Locations

NOTE: AS/SVE System and Associated Above Ground Piping Were Removed in June 2018

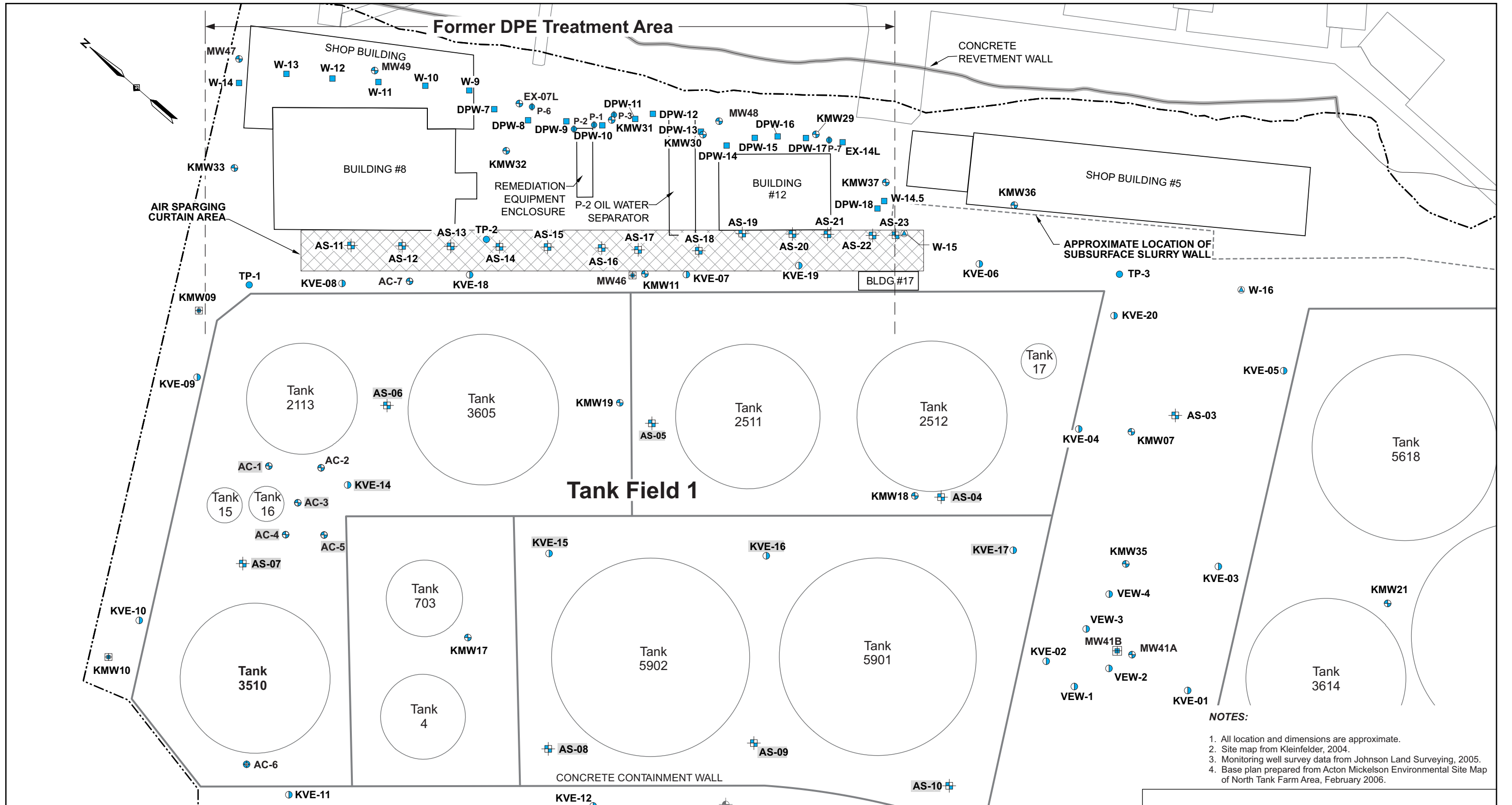


Facility Vicinity Plan

Groundwater Pathway Source Control Evaluation
Shore Terminals LLC Portland Facility
Portland, Oregon

NOTE: Base map prepared from a Site Map by Acton Mickelson Environmental, Inc., 11-29-2005, a Spill Prevention, Control, and Countermeasure Plan, Figure 2 (Site Plan) by Hart Crowser, Inc., 10-03, and a recent aerial photograph from Google.com.

	Project Number	019001-010-01	Figure
	February 2022		2



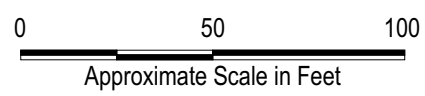
NOTES:

1. All location and dimensions are approximate.
2. Site map from Kleinfelder, 2004.
3. Monitoring well survey data from Johnson Land Surveying, 2005.
4. Base plan prepared from Acton Mickelson Environmental Site Map of North Tank Farm Area, February 2006.

Legend:

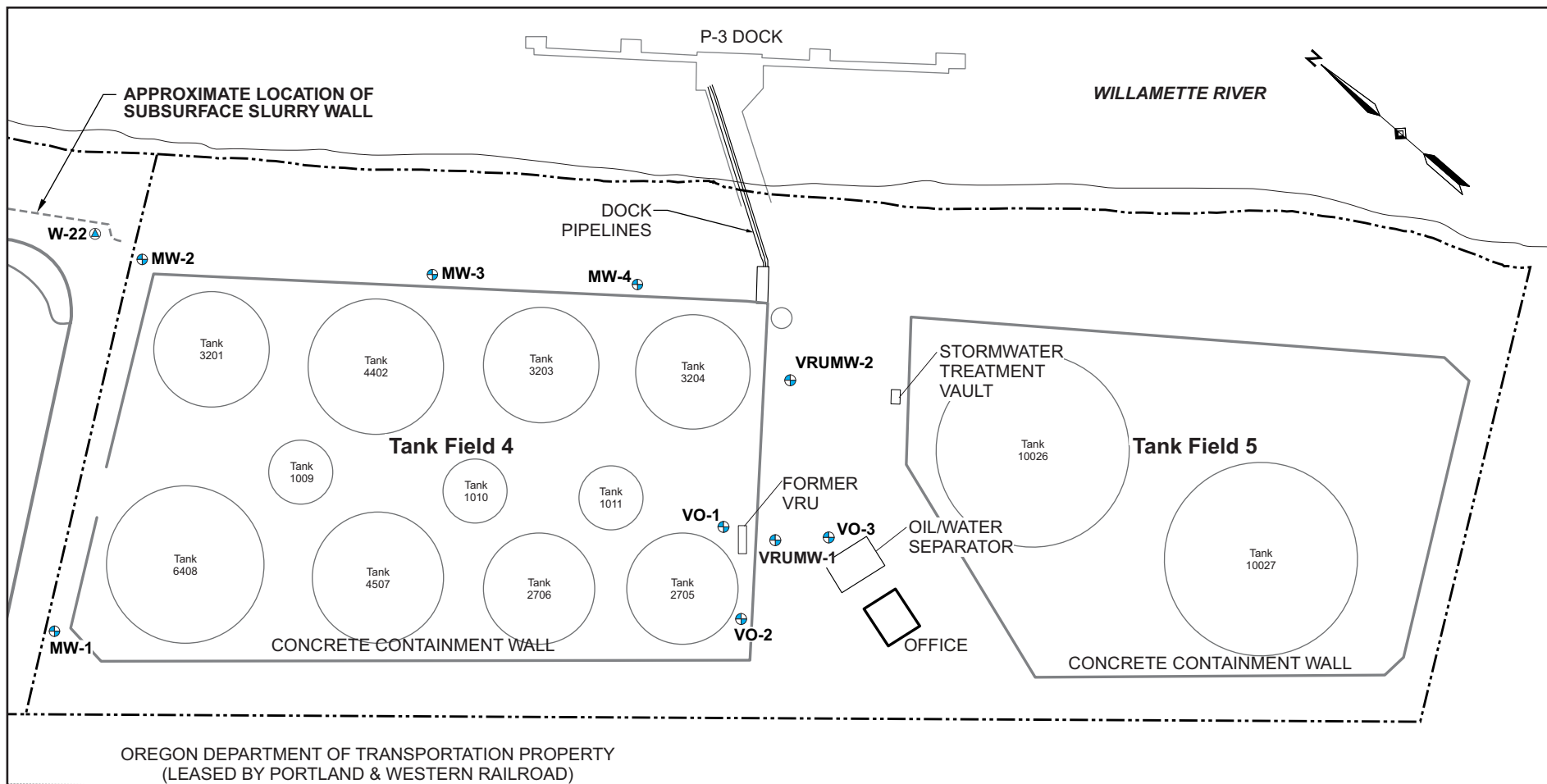
- MW47 Monitoring Well Location (Shallow Sand Unit)
- MW41B Monitoring Well Location (Deep Sand Unit)
- W-15 Groundwater Extraction Well Location (Currently Used for Monitoring Only)
- DPW-10 Groundwater Extraction System Well Location (Currently Used for Monitoring Only)
- Property Boundary
- TP-1 Temporary Vapor Monitoring Well Location
- P-1 Piezometer Location
- KVE-12 Vapor Extraction Well
- AS-08 Air Sparging Well
- AS-08 Wells Has Been Abandoned

NOTE:
Air Sparge/Soil Vapor Extraction (AS/SVE) wells not shown. AS/SVE System and Associated Above Ground Piping Were Removed in June 2018.

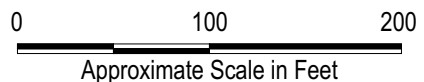


Tank Field Area 1
Groundwater Pathway Source Control Evaluation
Shore Terminals, LLC Portland Facility
Portland, Oregon

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OREGON DEPARTMENT OF TRANSPORTATION PROPERTY
(LEASED BY PORTLAND & WESTERN RAILROAD)

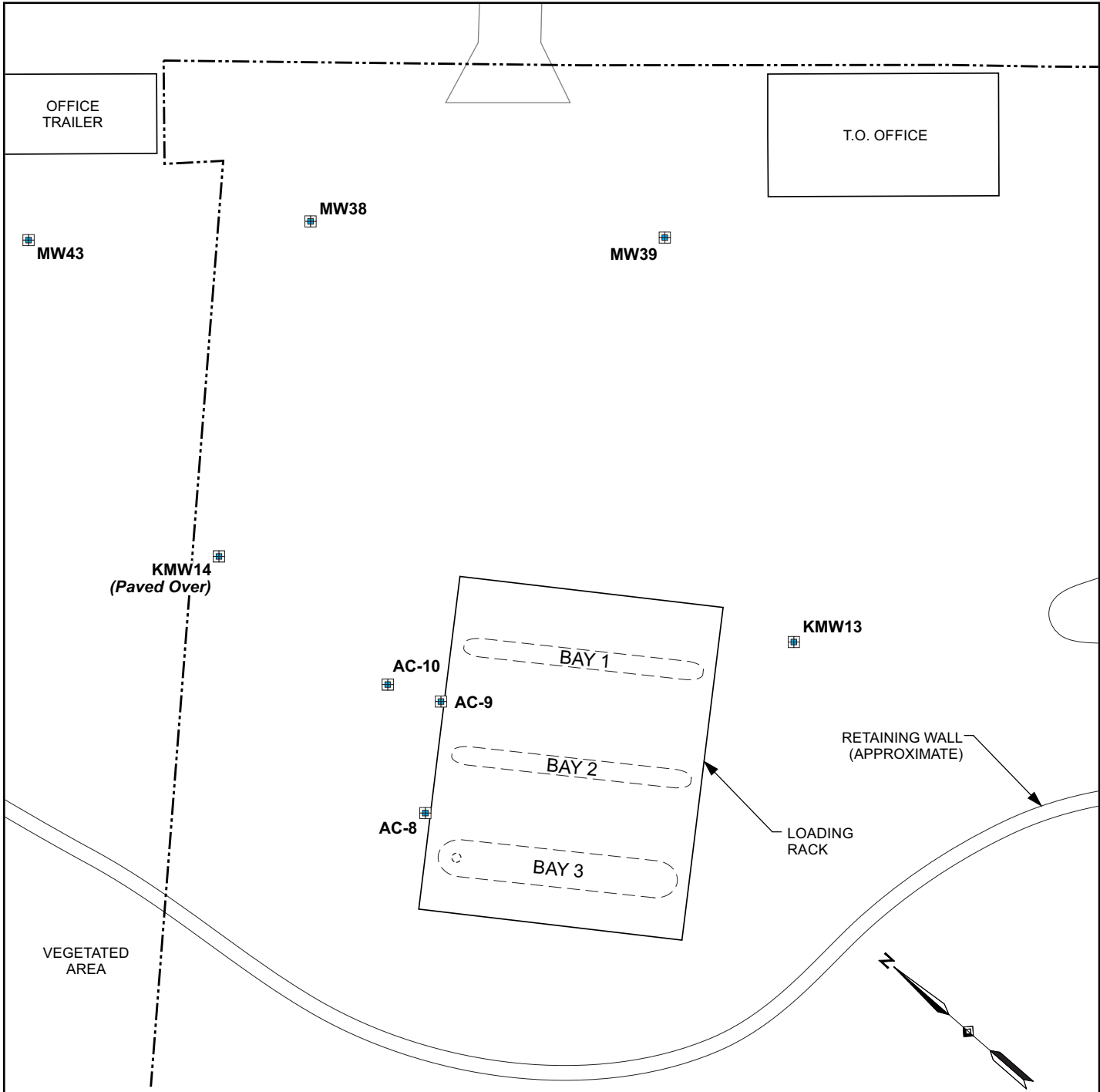


Legend:

- MW-1 Monitoring Well Location (Shallow Sand Unit)
- W-22 Groundwater Extraction Well Location (Currently Used for Monitoring Only)
- Property Boundary

NOTE: Base map prepared from a Site Map by Acton Mickelson Environmental, Inc., 11-29-2005, a Spill Prevention, Control, and Countermeasure Plan, Figure 2 (Site Plan) by Hart Crowser, Inc., 10-03, and a recent aerial photograph from Google.com.


Southern Facility Area (Former Time Oil)		
Groundwater Pathway Source Control Evaluation Shore Terminals LLC Portland Facility Portland, Oregon		
	Project Number 019001-010-01	Figure 4
April 2022		

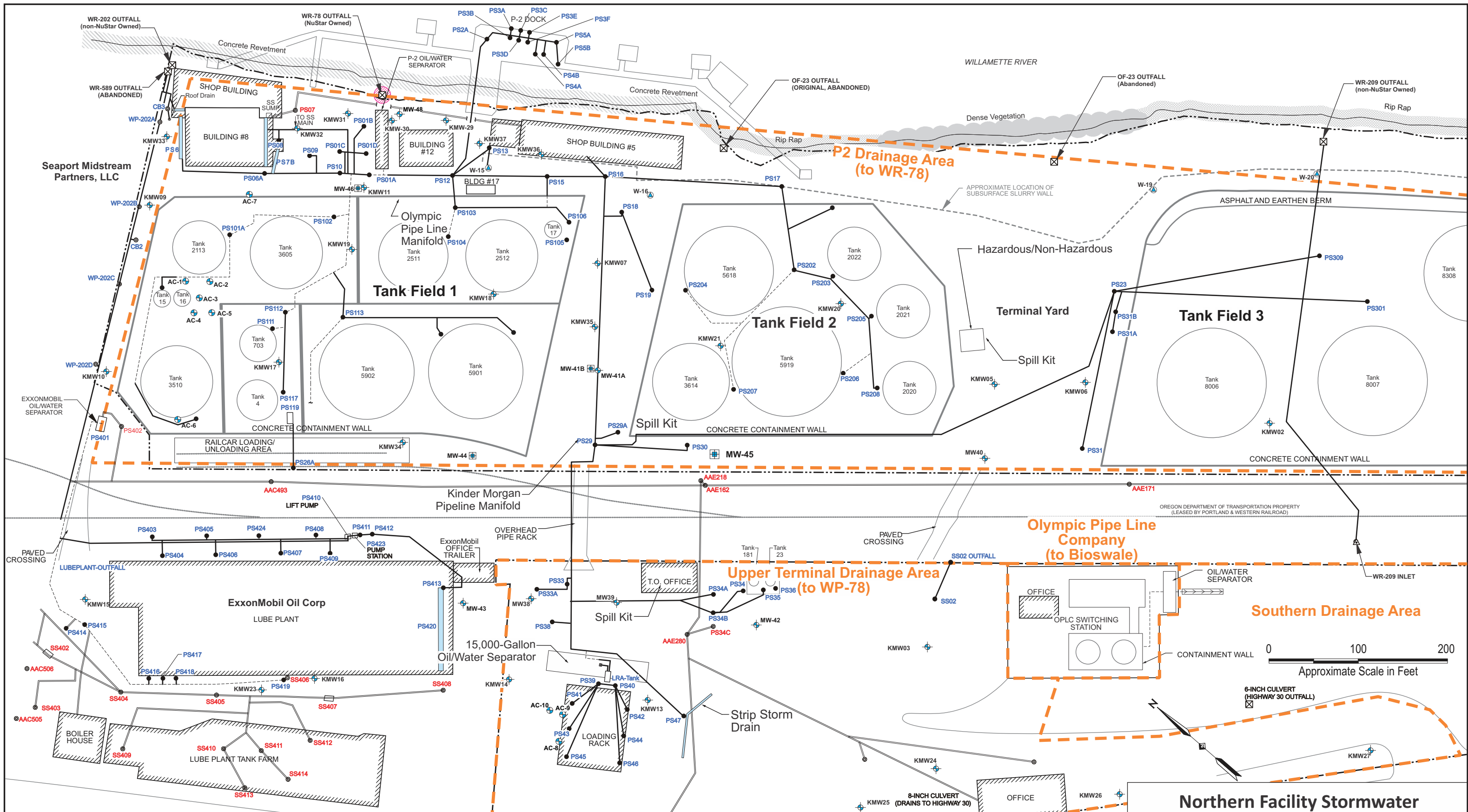


Legend:

KMW13  Monitoring Well Location (Deep Sand Unit)

NOTE: Base map prepared from a Site Map by Acton Mickelson Environmental, Inc., 11-29-2005, a Spill Prevention, Control, and Countermeasure Plan, Figure 2 (Site Plan) by Hart Crowser, Inc., 10-03, and a recent aerial photograph from Google.com.

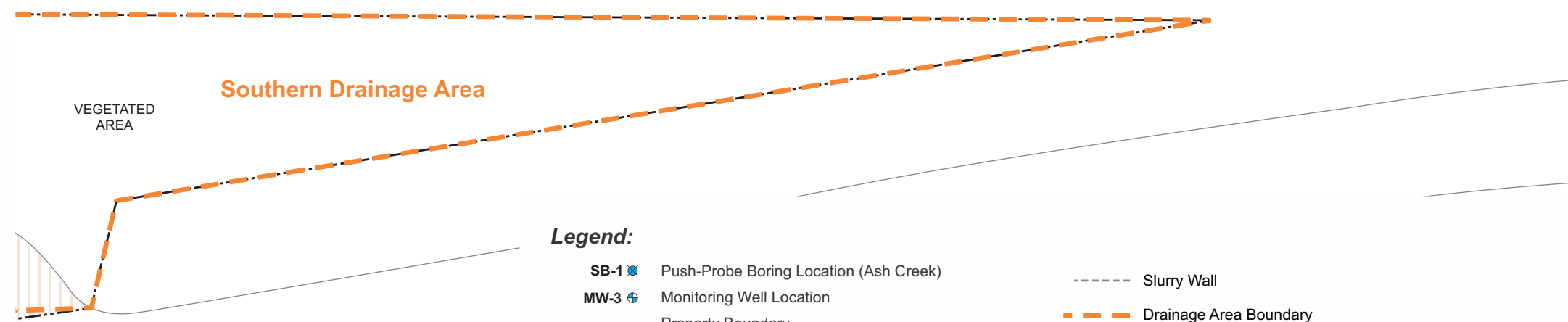
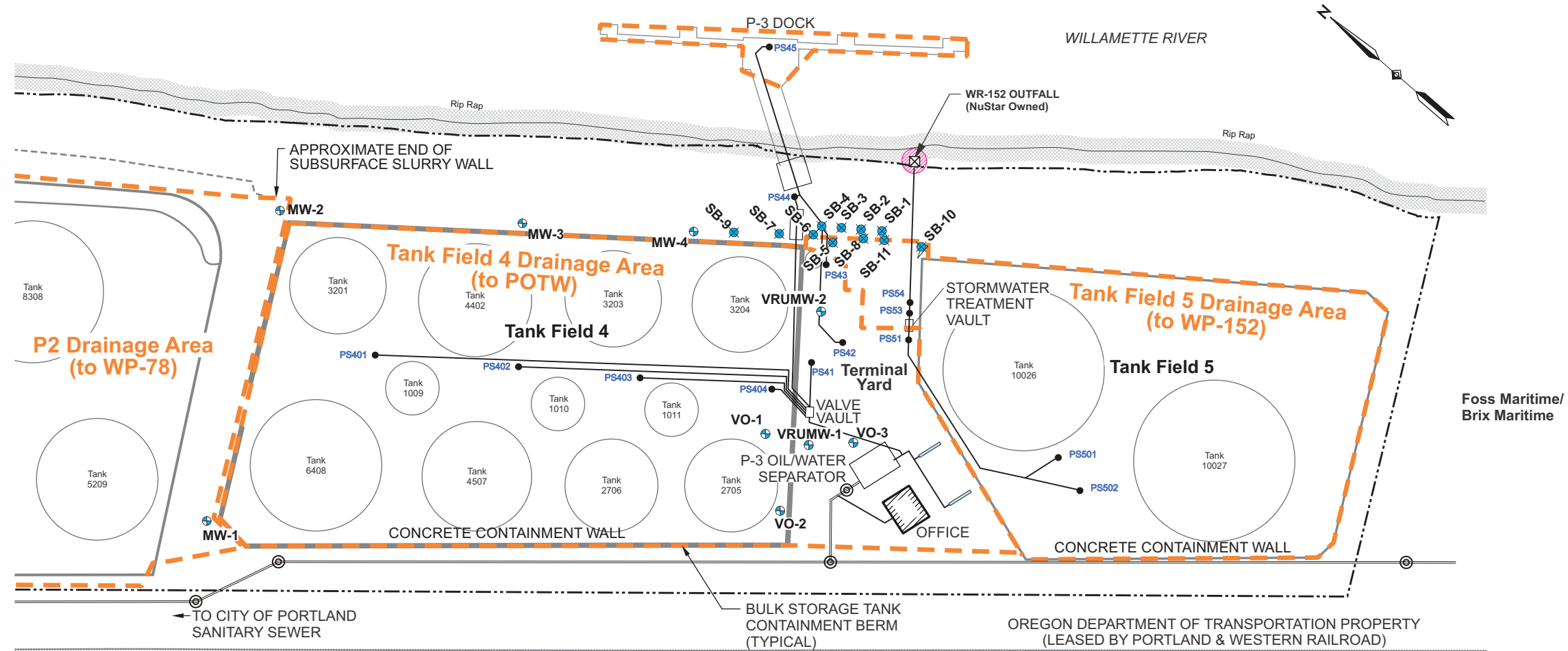
<h3>Loading Rack Area</h3> <p>Groundwater Pathway Source Control Evaluation Shore Terminals LLC Portland Facility Portland, Oregon</p>			
	Project Number	019001-010-01	Figure 5
	February 2022		



- Legend:**
- Stormwater Sampling Location
 - ⊕ MW-3 Monitoring Well Location (Time Oil or Ash Creek)
 - ⊕ KMW11 Monitoring Well Location (Exxon Mobil; Shallow Sand Unit)
 - ⊕ MW-41B Monitoring Well Location (Exxon Mobil; Deep Sand Unit)
 - ⊕ W-1 Groundwater Extraction Well Location (Exxon Mobil) (Currently Used for Monitoring Only)
 - Property Boundary
 - PS07 Catch Basin/Manhole Location Sanitary Sewer Line
 - PS34B Catch Basin/Manhole Location Storm Sewer Line
 - ⊠ Outfall
 - △ Inlet
 - Storm Sewer Line
 - - - Unconfirmed Underground Piping
 - Sanitary Sewer Line
 - Trench Drain
 - - - Slurry Wall
 - ▬ Bioswale
 - Drainage Area Boundary (Approximate)

Northern Facility Stormwater Conveyance System
 Stormwater Source Control Pathway Report
 Shore Terminals, LLC Portland Facility
 Portland, Oregon

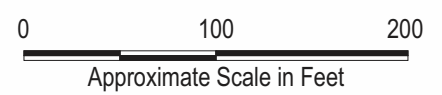
GEOENGINEERS	Project Number 019001-010-12	Figure 6
November 2023		



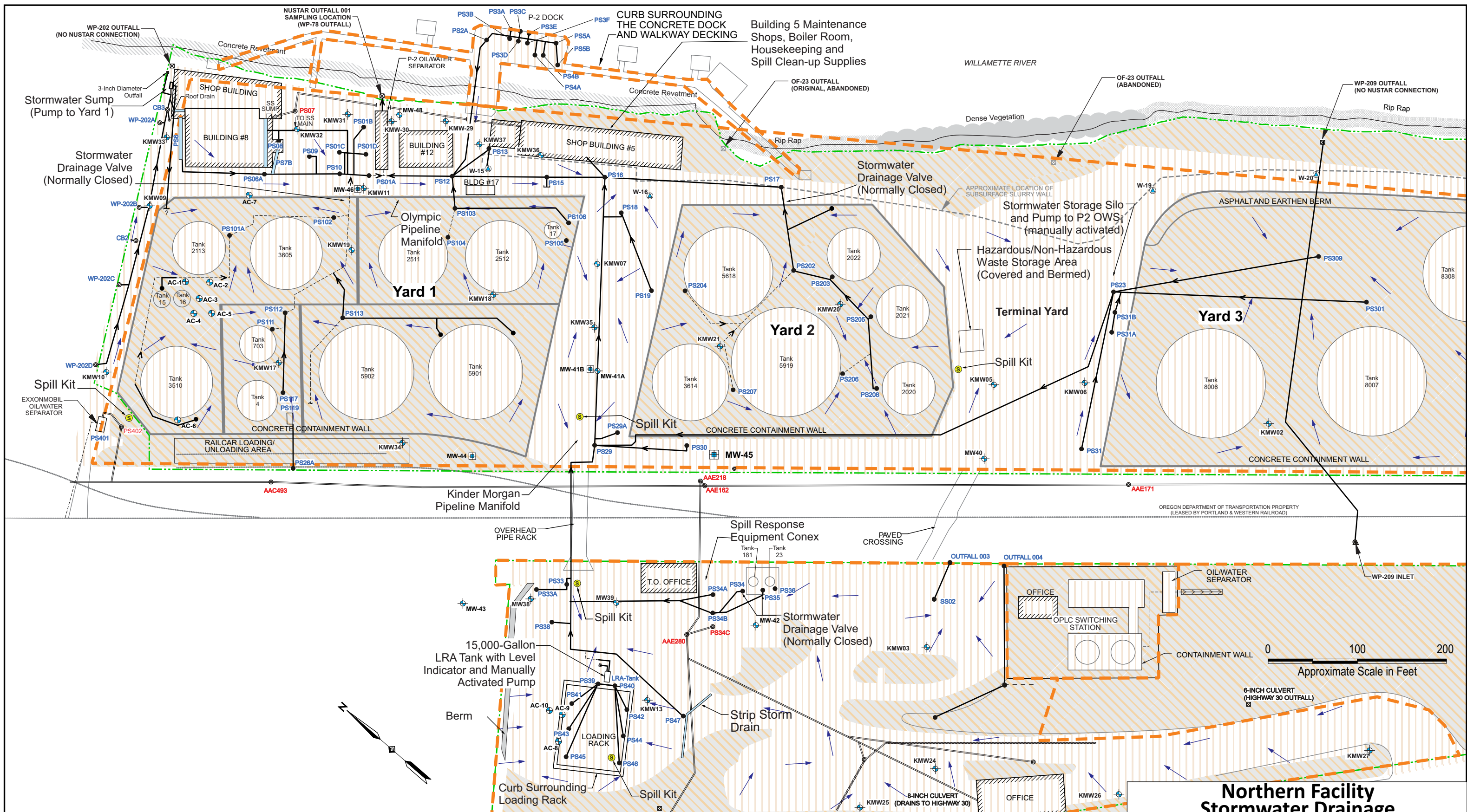
Legend:

- SB-1 Push-Probe Boring Location (Ash Creek)
- MW-3 Monitoring Well Location
- Property Boundary
- Catch Basin/Manhole Location Sanitary Sewer Line
- PS34B Catch Basin/Manhole Location Storm Sewer Line
- Outfall
- Storm Sewer Line
- Sanitary Sewer Line
- Trench Drain
- Slurry Wall
- Drainage Area Boundary
- Stormwater Sampling Location

NOTE: Base map prepared from a Site Map by Acton Mickelson Environmental, Inc., 11-29-2005, Facility Drainage Maps, Figure 2 (Site Plan) by Hart Crowser, Inc., 10-03, and a recent aerial photograph from Google.com.



Southern Facility Stormwater Conveyance System		
Stormwater Source Control Pathway Report Shore Terminals, LLC Portland Facility Portland, Oregon		
	Project Number 019001-010-12	Figure 7
November 2023		



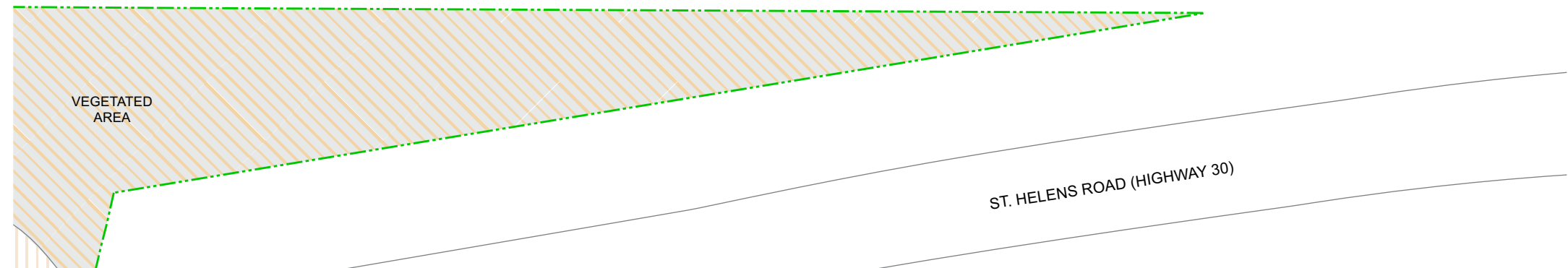
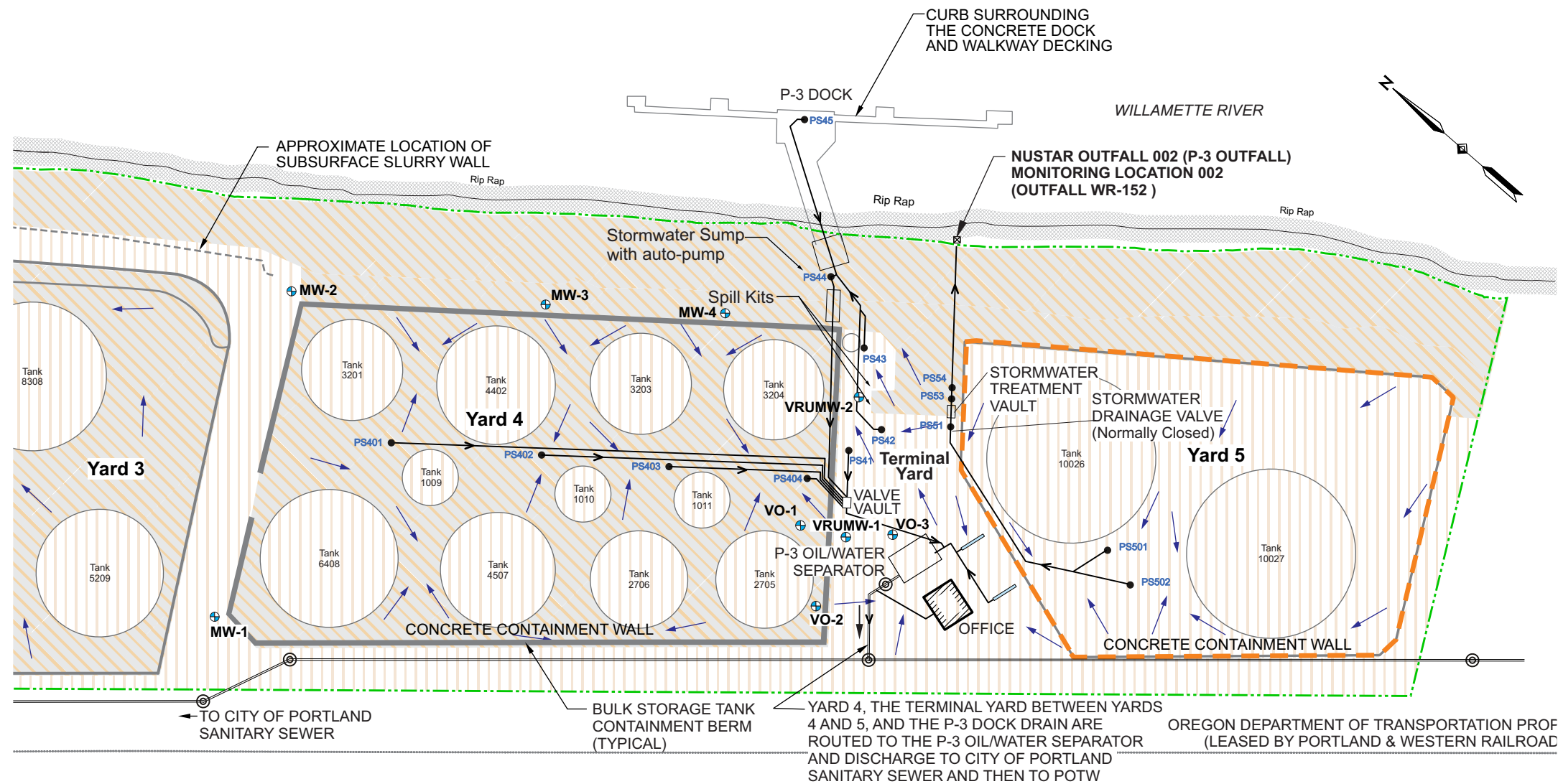
Legend:

Property Boundary	Outfall	Trench Drain	Monitoring Well Location (Time Oil or Ash Creek)
Catch Basin/Manhole Location Sanitary Sewer Line	Inlet	Slurry Wall	Monitoring Well Location (Exxon Mobil; Shallow Sand Unit)
Catch Basin/Manhole Location Storm Sewer Line	Storm Sewer Line and Flow	Impervious Area	Monitoring Well Location (Exxon Mobil; Deep Sand Unit)
Surface Water Flow	Unconfirmed Underground Piping	Pervious Area	Groundwater Extraction Well Location (Exxon Mobil) (Currently Used for Monitoring Only)
	Sanitary Sewer Line and Flow	Bioswale	Drainage Area Boundary
			Spill Kit (Spill Kit Content See Page 5-7 for description of spill kit contents.)
			French Drain

**Northern Facility
Stormwater Drainage**

Stormwater Pollution Control Plan
Shore Terminals LLC Portland Facility
Portland, Oregon

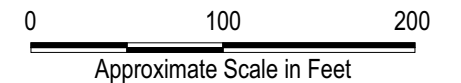
	Project Number	019001-010-03	Figure
		August 2022	8



Legend:

- - - - - Property Boundary
- PS07 Catch Basin/Manhole Location Sanitary Sewer Line
- PS34B Catch Basin/Manhole Location Storm Sewer Line
- Outfall
- Storm Sewer Line and Flow
- ⇨ Sanitary Sewer Line and Flow
- Trench Drain
- Slurry Wall
- Impervious Area
- Pervious Area
- Drainage Area Boundary
- Surface Water Flow
- ⊕ MW-3 Monitoring Well Location (Time Oil or Ash Creek)
- ⊕ KMW11 Monitoring Well Location (Exxon Mobil; Shallow Sand Unit)
- ⊕ MW-41B Monitoring Well Location (Exxon Mobil; Deep Sand Unit)
- ⊕ W-1 Groundwater Extraction Well Location (Exxon Mobil) (Currently Used for Monitoring Only)

NOTE: Base map prepared from a Site Map by Acton Mickelson Environmental, Inc., 11-29-2005, Facility Drainage Maps, Figure 2 (Site Plan) by Hart Crowser, Inc., 10-03, and a recent aerial photograph from Google.com.



Southern Facility Stormwater Drainage		
Stormwater Pollution Control Plan Shore Terminals LLC Portland Facility Portland, Oregon		
Project Number	019001-010-03	Figure
August 2022		9



Attachment 2

Current Groundwater Monitoring Program

Table 1**Groundwater Monitoring Schedule**

Shore Terminals—Portland

Portland, Oregon

Area	Well ID	Monitoring Schedule	Sampling Schedule	Field Parameters	TPHg (NWTPH-Gx)	TPHd and TPHo (NWTPH-Dx w/silica gel cleanup)	C10-C12 Aliphatic Range Hydrocarbons (EPA 8015C)	BTEX (EPA 8260B)	PAHs (EPA 8270 SIM)	Total As, Cu, Pb (EPA 6020)	Dissolved As, Cu, Pb (EPA 6020)
Tank 3510	AC-2	Semi-Annual	Semi-Annual	x	x	x		x			
Tank 3510	AC-6	Monthly**	Levels Only								
Tank 3510	AC-7	Semi-Annual	Semi-Annual	x	x	x		x			
Loading Rack	AC-8*	Monthly**/Semi-Annual	Semi-Annual	x	x	x		x			
Loading Rack	AC-9*	Monthly**/Semi-Annual	Semi-Annual	x	x	x		x			
Loading Rack	AC-10*	Monthly**/Semi-Annual	Semi-Annual	x	x	x		x			
DPE Treatment Area	EX-07L	Semi-Annual	Semi-Annual	x	x	x ¹	x	x	x ¹	x	x
	KMW01	Semi-Annual	Annual	x	x	x		x	x	x	x
	KMW02	Semi-Annual	Annual	x	x	x		x	x	x	x
	KMW03*	Semi-Annual	Levels Only								
	KMW05	Semi-Annual	Annual	x	x	x		x	x	x	x
	KMW06	Semi-Annual	Levels Only								
Tank Field 1	KMW07	Semi-Annual	Annual	x	x	x		x	x	x	x
	KMW09	Semi-Annual	Annual	x	x	x		x	x	x	x
	KMW10*	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
Tank Field 1	KMW11	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
Loading Rack	KMW13*	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
Loading Rack	KMW14*	None	None	Well KMW14 has been removed from the groundwater monitoring program. ⁵							
	KMW15*	Semi-Annual	Levels Only								
	KMW16*	Semi-Annual	Annual	x	x	x		x	x	x	x
	KMW17	Monthly**/Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
Tank Field 1	KMW18	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
Tank Field 1	KMW19	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
	KMW20	Semi-Annual	Annual	x	x	x		x	x	x	x
	KMW21	Semi-Annual	Annual	x	x	x		x	x	x	x
	KMW23*	Semi-Annual	Levels Only								
	KMW24*	Semi-Annual	Annual	x						x	x

Please refer to notes at end of table.

Table 1**Groundwater Monitoring Schedule**

Shore Terminals—Portland

Portland, Oregon

Area	Well ID	Monitoring Schedule	Sampling Schedule	Field Parameters	TPHg (NWTPH-Gx)	TPHd and TPHo (NWTPH-Dx w/silica gel cleanup)	C10-C12 Aliphatic Range Hydrocarbons (EPA 8015C)	BTEX (EPA 8260B)	PAHs (EPA 8270 SIM)	Total As, Cu, Pb (EPA 6020)	Dissolved As, Cu, Pb (EPA 6020)
	KMW25*	Semi-Annual	Levels Only								
	KMW26*	Semi-Annual	Annual	x						x	x
	KMW27*	Semi-Annual	Levels Only								
DPE Treatment Area	KMW29	Semi-Annual	Semi-Annual	x	x	x ¹	x	x	x ¹	x	x
DPE Treatment Area	KMW30	Semi-Annual	Semi-Annual	x	x	x ¹	x	x	x ¹	x	x
DPE Treatment Area	KMW31	Semi-Annual	Semi-Annual	x	x	x ¹	x	x	x ¹	x	x
DPE Treatment Area	KMW32	Monthly**/Semi-Annual	Semi-Annual	x	x	x ¹	x	x	x ¹	x	x
DPE Treatment Area	KMW33	Semi-Annual	Semi-Annual	x	x	x ¹	x	x	x ¹	x	x
	KMW34	None	None	Well KMW34 was abandoned in July 2009.							
Tank Field 1	KMW35	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
Slurry Wall Area	KMW36	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
DPE Treatment Area	KMW37	None	None	Well KMW37 was abandoned in February 2024							
Loading Rack	MW38*	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
Loading Rack	MW39*	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
Sitewide	MW40	Semi-Annual	Annual	x	x	x		x	x	x	x
	MW41A	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
	MW41B*	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
Loading Rack	MW42	Semi-Annual	Annual	x	x	x		x	x	x	x
Loading Rack	MW43	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
	MW44*	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
Loading Rack	MW45*	Semi-Annual	Annual	x	x	x		x	x	x	x
Loading Rack	MW46*	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
DPE Treatment Area	MW47	Semi-Annual	Semi-Annual	x	x	x ¹	x	x	x ¹	x	x
DPE Treatment Area	MW48	Semi-Annual	Semi-Annual	x	x	x ¹	x	x	x ¹	x	x
DPE Treatment Area	MW49	Semi-Annual	Semi-Annual	x	x	x ¹	x	x	x ¹	x	x

Please refer to notes at end of table.

Table 1**Groundwater Monitoring Schedule**

Shore Terminals—Portland

Portland, Oregon

Area	Well ID	Monitoring Schedule	Sampling Schedule	Field Parameters	TPHg (NWTPH-Gx)	TPHd and TPHo (NWTPH-Dx w/silica gel cleanup)	C10-C12 Aliphatic Range Hydrocarbons (EPA 8015C)	BTEX (EPA 8260B)	PAHs (EPA 8270 SIM)	Total As, Cu, Pb (EPA 6020)	Dissolved As, Cu, Pb (EPA 6020)
	W-01	None	None								
	W-02	None	None								
	W-03	None	None								
	W-04	None	None								
	W-05	None	None								
	W-06	None	None								
	W-07	None	None								
	W-08	None	None								
	W-09	None	None								
	W-10	None	None								
	W-11	None	None								
	W-12	None	None								
	W-13	None	None								
	W-14	None	None								
	W-14.5	None	None								
	W-15	None	None	Well W-15 was abandoned in February 2024							
Slurry Wall Area	W-16	Semi-Annual	Semi-Annual	x	x	x		x	x	x	x
	W-17	Semi-Annual	Levels Only								
	W-18	Semi-Annual	Levels Only								
Slurry Wall Area	W-19	Semi-Annual	Annual	x	x	x		x	x	x	x
Slurry Wall Area	W-20	Semi-Annual	Annual	x	x	x		x	x	x	x
	W-21	Semi-Annual	Levels Only								
Slurry Wall Area	W-22	Semi-Annual	Annual	x	x	x		x	x	x	x
Southern Facility	MW-1	Semi-Annual	Levels Only								
Southern Facility	MW-2	Semi-Annual	Levels Only								
Southern Facility	MW-3	Semi-Annual	Levels Only								
Southern Facility	MW-4	Semi-Annual	Levels Only								

Please refer to notes at end of table.

Table 1

Groundwater Monitoring Schedule

Shore Terminals—Portland

Portland, Oregon

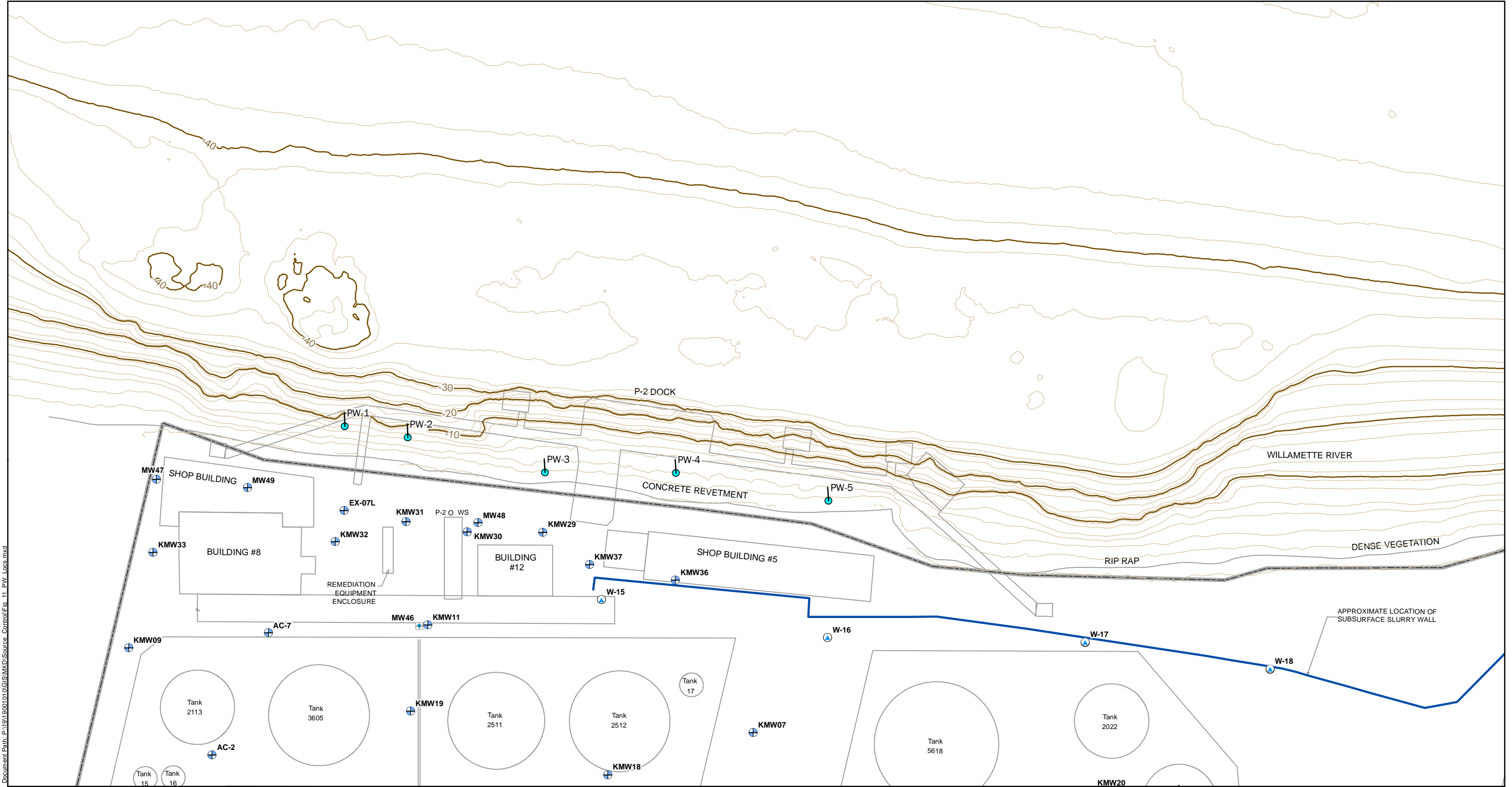
Area	Well ID	Monitoring Schedule	Sampling Schedule	Field Parameters	TPHg (NWTPH-Gx)	TPHd and TPHo (NWTPH-Dx w/silica gel cleanup)	C10-C12 Aliphatic Range Hydrocarbons (EPA 8015C)	BTEX (EPA 8260B)	PAHs (EPA 8270 SIM)	Total As, Cu, Pb (EPA 6020)	Dissolved As, Cu, Pb (EPA 6020)
Southern Facility	VRUMW-1	Semi-Annual	Levels Only								
Southern Facility	VRUMW-2	Semi-Annual	Levels Only								
Southern Facility	VO-1	Semi-Annual	Levels Only								
Southern Facility	VO-2	Semi-Annual	Levels Only								
Southern Facility	VO-3	Semi-Annual	Levels Only								

Notes:

1. Analysis includes glass filtration to remove particulate.
2. * = Well is screened in the Deep Sand unit.
3. ** = Monthly monitoring includes only gauging for only Separate Phase Hydrocarbons (SPH).
4. Semi-annual monitoring and sampling is typically performed in February and August. Annual sampling is typically performed in February.
5. Well KMW14 was paved over prior to the October 2017 monitoring event. In an email dated February 21, 2018, DEQ agreed that well KMW14 was not critical to monitoring the Loading Rack Area and that replacement of KMW14 was not required. Well KMW14 has been removed from the monitoring program.

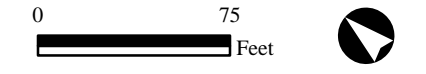
Attachment 3

2021 Porewater Sampling Locations and Data



Document Path: P:\19001-01-01\GIS\MapX\Source Control\Fig_11_PW_Loc.mxd

- MW47 Monitoring Well Location (Shallow Sand Unit)
- MW46 Monitoring Well Location (Deep Sand Unit)
- W-15 Groundwater Extraction Well Location (Currently Used for Monitoring Only)
- Property Line
- PW-1 Porewater Sampling Location
- 10 ft NAVD88 Contour
- 2 ft NAVD88 Contour



NOTE:
 Bathymetric data provided by DEA 07/25/18.
 NAVD88 = North American Vertical Datum of 1988.
 Base map prepared from a Site Map by Acton Mickelson Environmental, Inc., 11-29-2005, a Spill Prevention, Control, and Countermeasure Plan, Figure 2 (Site Plan) by Hart Crowser, Inc., 10-03, and a recent aerial photograph from Google.com.

Porewater Sampling Locations
 Groundwater Pathway Source Control Evaluation Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

Table 10

Porewater Analytical Data – TPHg, BTEX, and C10 - C12 Aliphatic-Range Hydrocarbons

Shore Terminals LLC - Portland Facility

Portland, Oregon

Sample ID	Field ID	Sample Date	TPHg Gasoline (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal			--	40	--	--	--	--
PHSS Cleanup Level			--	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV			--	1.2	9.8	7.3	200	--
PW-1	P19	7/26/2021	<0.10	<0.20	1.67	<0.50	<1.50	<50
PW-2	P17	7/26/2021	<0.10	<0.20	2.31	<0.50	<1.50	<50
PW-3	P27	7/26/2021	<0.10 T	<0.20 T	1.66 T	<0.50 T	<1.50 T	<50 T
PW-4	P13	7/26/2021	<0.10	<0.20	1.72	<0.50	<1.50	<50
PW-5	P28	7/26/2021	<0.10	<0.20	1.94	<0.50	<1.50	<50
KMW29	P18	7/26/2021	1.57 V-01	0.28 V-01	<1.00 V-01	<0.50 V-01	<1.50 V-01	241
KMW31	P14	7/26/2021	0.525 V-01	<0.20 V-01	<1.00 V-01	<0.50 V-01	<1.50 V-01	195
KMW32	P23	7/26/2021	<0.10 V-01	<0.20 V-01	<1.00 V-01	<0.50 V-01	<1.50 V-01	<50
KMW33	P21	7/26/2021	<0.10 V-01	<0.20 V-01	<1.00 V-01	<0.50 V-01	<1.50 V-01	<50
KMW36	P30	7/26/2021	0.522 V-01	<0.20 V-01	<1.00 V-01	<0.50 V-01	<1.50 V-01	62

Notes:

1. TPHg = Total petroleum hydrocarbons measured in the gasoline range
2. TPHd = Total petroleum hydrocarbons measured in the diesel range
3. TPHo = Total petroleum hydrocarbons measured in the heavy oil range
4. TPHg by Method NWTPH-Gx; benzene, toluene, ethylbenzene, xylenes analyzed by EPA Method 8260 B.
5. C10-C12 aliphatic range hydrocarbons by Washington Dept. of Ecology VPH method.
6. Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
7. PHSS Cleanup Levels = 2017 Portland Harbor Superfund Site Record of Decision Cleanup Levels.
8. Yellow highlighted cells indicate values that are equal to or exceeding 1997 Record of Decision (ROD) Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
- 9a. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
- 8b. Green highlighted cells indicate the method reporting limit is greater than the PHSS ROD Cleanup Level or the JSCS SLV (if there is no ROD Cleanup Level)
10. < = less than the laboratory reporting limit.
11. µg/L = microgram(s) per liter.
12. mg/L = milligram(s) per liter.
13. EPA = United States Environmental Protection Agency.
14. -- = Not applicable.

Quality Assurance/Quality Control Data Qualifiers

- T = Sample(s) analyzed outside of recommended temperature.
- V-01 = Sample aliquot taken from VOA vial with headspace (air bubble greater than 6 mm diameter).

Table 11

Porewater Analytical Data – PAHs

Shore Terminals LLC - Portland Facility

Portland, Oregon

Sample ID	Field ID	Sample Date	Dissolved Organic Carbon (mg/L)	Naphthalene	2-Methylnaphthalene	1-Methylnaphthalene	2-Ethylnaphthalene	1-Ethylnaphthalene	2,6-Dimethylnaphthalene	1,3-Dimethylnaphthalene
Concentrations in µg/L										
1997 Site ROD Cleanup Goal				347	--	--	--	--	--	--
PHSS Cleanup Level				12	--	--	--	--	--	--
Portland Harbor JSCS SLV				0.2	0.2	--	--	--	--	--
PW-1 (T)	19 Top	7/26/2021	17.2	0.0134	0.0026	0.0025	0.0018	0.00056	0.0021	0.0048
PW-1 (B)	19 Bottom	7/26/2021	22.6	0.0089	0.0034	0.0022	0.0019	0.00072	0.0021	0.0046
PW-1	NA	NA	19.9	0.0111	0.0030	0.0024	0.0018	0.00064	0.0021	0.0047
PW-2 (T)	17 Top	7/26/2021	15.7	0.0199	0.0045	0.0020	0.0022	0.0029	0.0018	0.0016
PW-2 (B)	17 Bottom	7/26/2021	24.5	0.0113	0.0031	0.0018	0.0027	0.00080	0.0021	0.0036
PW-2	NA	NA	20.1	0.0156	0.0038	0.0019	0.0024	0.00187	0.0020	0.0026
PW-3 (T)	27 Top	7/26/2021	14.7	0.0418	0.0120	0.0366	0.0124	0.0551	0.0060	0.0958
PW-3 (B)	27 Bottom	7/26/2021	28	0.0420	0.0110	0.0459	0.0194	0.0621	0.0068	0.0944
PW-3	NA	NA	21.35	0.0419	0.0115	0.0412	0.0159	0.05857	0.0064	0.0951
PW-4 (T)	13 Top	7/26/2021	20.2	0.1445	0.0200	0.0475	0.0152	0.2903	0.0427	7.23
PW-4 (B)	13 Bottom	7/26/2021	12	0.0548	0.0180	0.0691	0.0243	0.2501	0.0298	4.11
PW-4	NA	NA	16.1	0.0997	0.0190	0.0583	0.0198	0.27020	0.0363	5.67
PW-5 (T)	28 Top	7/26/2021	18.7	0.0388	0.0110	0.0065	0.0039	0.0039	0.0028	0.0027
PW-5 (B)	28 Bottom	7/26/2021	24.3	0.0436	0.0040	0.0036	0.0034	0.00084	0.0026	0.0048
PW-5	NA	NA	21.5	0.0412	0.0075	0.0051	0.0036	0.00239	0.0027	0.0038
KMW29 (T)	18 Top	7/26/2021	13	0.0097	0.0048	0.0342	0.2232	0.1284	2.05	2.79
KMW29 (B)	18 Bottom	7/26/2021	13	0.0200	0.0055	0.0945	0.5717	0.2291	3.96	5.81
KMW29	NA	NA	13	0.0148	0.0051	0.0643	0.3975	0.17871	3.00	4.30
KMW31 (T)	14 Top	7/26/2021	11.5	0.0199	0.0069	0.0513	0.1092	0.0518	1.06	0.9459
KMW31 (B)	14 Bottom	7/26/2021	11.1	0.0149	0.0103	0.6582	0.4643	0.2069	4.74	5.40
KMW31	NA	NA	11.1	0.0174	0.0086	0.3547	0.2868	0.12935	2.90	3.17
KMW32 (T)	23 Top	7/26/2021	10	0.0197	0.0041	0.0028	0.0029	0.0038	0.0010	0.0011
KMW32 (B)	23 Bottom	7/26/2021	11	0.0108	0.0025	0.0039	0.0030	0.0021	0.0023	0.0024
KMW32	NA	NA	11.1	0.0153	0.0033	0.0034	0.0030	0.00293	0.0016	0.0018
KMW33 (T)	21 Top	7/26/2021	9.6	0.0131	0.0062	0.0141	0.0153	0.1422	0.0025	0.0092
KMW33 (B)	21 Bottom	7/26/2021	20	0.0371	0.0252	0.0658	0.0381	1.10	0.0194	0.0840
KMW33	NA	NA	11.1	0.0251	0.0157	0.0400	0.0267	0.62348	0.0109	0.0466
KMW36 (T)	30 Top	7/26/2021	15.9	0.0117	0.0035	0.0083	0.0136	0.1262	0.0066	0.0168
KMW36 (B)	30 Bottom	7/26/2021	15.9	0.0202	0.0215	0.0430	0.0534	0.5124	0.0234	0.0554
KMW36	NA	NA	11.1	0.0160	0.0125	0.0257	0.0335	0.31932	0.0150	0.0361

Please refer to notes at end of table.

Table 11

Porewater Analytical Data – PAHs

Shore Terminals LLC - Portland Facility

Portland, Oregon

Sample ID	Field ID	Sample Date	2-Isopropynaphthalene	Acenaphthylene	1,2-Dimethylnaphthalene	1,8-Dimethylnaphthalene	Acenaphthene	2,3,5-Trimethylnaphthalene	Fluorene
			Concentrations in µg/L						
1997 Site ROD Cleanup Goal			--	--	--	--	--	--	--
PHSS Cleanup Level			--	--	--	--	23	--	--
Portland Harbor JSCS SLV			--	0.2	--	--	0.2	--	--
PW-1 (T)	19 Top	7/26/2021	0.00032	0.0034	0.0019	0.00040	0.0527	0.0015	0.0054
PW-1 (B)	19 Bottom	7/26/2021	0.00020	0.0037	0.0019	0.00059	0.0488	0.00088	0.0038
PW-1	NA	NA	0.00026	0.0035	0.0019	0.0005	0.0508	0.0012	0.0046
PW-2 (T)	17 Top	7/26/2021	0.00007	<0.0759	<0.01631	<0.01454	0.0228	0.00063	0.0056
PW-2 (B)	17 Bottom	7/26/2021	0.00019	<0.0759	0.0018	0.0010	0.0142	0.00069	0.0081
PW-2	NA	NA	0.00013	<0.0759	0.0018	0.0010	0.0185	0.0007	0.0069
PW-3 (T)	27 Top	7/26/2021	0.0013	0.0573	0.1003	0.0096	2.60	0.4791	0.0806
PW-3 (B)	27 Bottom	7/26/2021	0.0052	0.0660	0.1151	0.0154	3.68	0.6157	0.0585
PW-3	NA	NA	0.00326	0.0616	0.1077	0.0125	3.14	0.5474	0.0696
PW-4 (T)	13 Top	7/26/2021	0.0461	0.4224	0.5793	0.0460	48.9 E	1.52	16.0 E
PW-4 (B)	13 Bottom	7/26/2021	0.0489	0.2788	0.5387	0.0269	27.1 E	1.41	10.8
PW-4	NA	NA	0.04751	0.3506	0.5590	0.0365	38.0	1.47	13.4
PW-5 (T)	28 Top	7/26/2021	0.00010	0.0058	0.0032	<0.01454	0.0486	0.0010	0.0063
PW-5 (B)	28 Bottom	7/26/2021	0.00033	0.0041	0.0033	0.0006	0.0230	0.0020	0.0055
PW-5	NA	NA	0.00021	0.0050	0.0033	0.0006	0.0358	0.0015	0.0059
KMW29 (T)	18 Top	7/26/2021	0.1035	0.1616	0.5631	0.0246	0.3383	3.39	3.22
KMW29 (B)	18 Bottom	7/26/2021	0.0804	0.2505	1.50	0.0132	0.6896	2.39	4.37
KMW29	NA	NA	0.09198	0.2060	1.03	0.0189	0.5140	2.89	3.80
KMW31 (T)	14 Top	7/26/2021	0.0441	0.0659	0.2026	0.0308	0.3205	2.01	0.9162
KMW31 (B)	14 Bottom	7/26/2021	0.0768	0.2273	1.18	0.0173	1.14	3.35	3.03
KMW31	NA	NA	0.06043	0.1466	0.6924	0.0241	0.7294	2.68	1.98
KMW32 (T)	23 Top	7/26/2021	0.00015	0.0072	0.0096	0.0028	<0.141	0.0033	0.0187
KMW32 (B)	23 Bottom	7/26/2021	0.00056	0.0051	0.0067	0.0021	0.0120	0.0042	0.0134
KMW32	NA	NA	0.00035	0.0062	0.0082	0.0024	0.0120	0.0037	0.0160
KMW33 (T)	21 Top	7/26/2021	0.0130	0.1807	0.6044	0.0366	0.4574	2.18	2.56
KMW33 (B)	21 Bottom	7/26/2021	0.0601	0.7370	3.62	0.0522	1.17	3.17	4.87
KMW33	NA	NA	0.03655	0.4589	2.11	0.0444	0.8135	2.67	3.72
KMW36 (T)	30 Top	7/26/2021	0.0419	0.2027	0.8430	0.0291	0.3501	1.73	1.15
KMW36 (B)	30 Bottom	7/26/2021	0.0768	0.4580	1.95	0.0258	0.6375	2.30	1.57
KMW36	NA	NA	0.05932	0.3304	1.39	0.0274	0.4938	2.01	1.36

Please refer to notes at end of table.

Table 11

Porewater Analytical Data – PAHs

Shore Terminals LLC - Portland Facility

Portland, Oregon

Sample ID	Field ID	Sample Date	1-Methylfluorene	Phenanthrene	Anthracene	2-Methylphenanthrene	2-Methylanthracene	1-Methylphenanthrene	9-Methylanthracene
			Concentrations in µg/L						
1997 Site ROD Cleanup Goal			--	--	--	--	--	--	--
PHSS Cleanup Level			--	--	0.73	--	--	--	--
Portland Harbor JSCS SLV			--	--	--	--	--	--	--
PW-1 (T)	19 Top	7/26/2021	0.0029	0.0086	0.0019	0.0015	0.0008	0.0012	0.00079
PW-1 (B)	19 Bottom	7/26/2021	0.0012	0.0058	0.0005	0.00061	0.00047	0.00052	0.00033
PW-1	NA	NA	0.0020	0.0072	0.0012	0.00105	0.00066	0.00087	0.00056
PW-2 (T)	17 Top	7/26/2021	<0.0261	0.0053	0.0013	0.00069	0.00044	0.0005	<0.00452
PW-2 (B)	17 Bottom	7/26/2021	<0.0261	0.0058	<0.00842	0.00067	0.00047	0.00052	0.00027
PW-2	NA	NA	<0.0261	0.0056	0.0013	0.00068	0.00046	0.00051	0.00027
PW-3 (T)	27 Top	7/26/2021	0.1855	1.01	0.0301	0.0846	0.0165	0.0609	0.0103
PW-3 (B)	27 Bottom	7/26/2021	0.2890	2.64	0.0985	0.1467	0.0274	0.0974	0.0022
PW-3	NA	NA	0.2373	1.8278	0.0643	0.11565	0.02191	0.07917	0.00628
PW-4 (T)	13 Top	7/26/2021	1.27	21.1 E	0.6394	1.11	0.1573	0.5533	0.0098
PW-4 (B)	13 Bottom	7/26/2021	1.20	25.8 E	0.2861	1.22	0.1528	0.5548	0.0115
PW-4	NA	NA	1.24	23.4685	0.4628	1.16446	0.15504	0.55406	0.01065
PW-5 (T)	28 Top	7/26/2021	<0.0261	0.0142	0.0019	0.0016	0.00059	0.0010	<0.00452
PW-5 (B)	28 Bottom	7/26/2021	0.0022	0.0144	0.0013	0.0011	0.00049	0.00074	0.00041
PW-5	NA	NA	0.0022	0.0143	0.0016	0.00135	0.00054	0.00087	0.00041
KMW29 (T)	18 Top	7/26/2021	4.33	2.93	0.5355	0.9834	0.1279	0.5387	0.0055
KMW29 (B)	18 Bottom	7/26/2021	3.06	2.46	0.2751	0.4814	0.0548	0.2511	0.0058
KMW29	NA	NA	3.69	2.6918	0.4053	0.73239	0.09136	0.39490	0.00564
KMW31 (T)	14 Top	7/26/2021	2.55	0.5465	0.3997	0.4965	0.1552	0.2801	0.0103
KMW31 (B)	14 Bottom	7/26/2021	3.23	1.9423	0.4632	0.9806	0.1128	0.4180	0.0071
KMW31	NA	NA	2.89	1.2444	0.4314	0.73855	0.13397	0.34903	0.00869
KMW32 (T)	23 Top	7/26/2021	0.0416	0.0150	0.0281	0.0055	0.0129	0.0103	0.0064
KMW32 (B)	23 Bottom	7/26/2021	0.0302	0.0175	0.0441	0.0028	0.0099	0.0051	0.0057
KMW32	NA	NA	0.0359	0.0163	0.0361	0.00414	0.01141	0.00768	0.00603
KMW33 (T)	21 Top	7/26/2021	4.02	0.0920	0.6381	0.0037	0.1648	0.0669	0.0204
KMW33 (B)	21 Bottom	7/26/2021	4.60	0.1249	0.6443	0.0103	0.1661	0.0517	0.0151
KMW33	NA	NA	4.31	0.1084	0.6412	0.00698	0.16548	0.05930	0.01776
KMW36 (T)	30 Top	7/26/2021	3.01	0.0602	0.6794	0.0044	0.1670	0.0455	0.0201
KMW36 (B)	30 Bottom	7/26/2021	3.53	0.0664	0.8282	0.0029	0.1500	0.0441	0.0202
KMW36	NA	NA	3.27	0.0633	0.7538	0.00366	0.15850	0.04483	0.02015

Please refer to notes at end of table.

Table 11
Porewater Analytical Data – PAHs
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Sample ID	Field ID	Sample Date	2-Ethylanthracene	Fluoranthene	Pyrene	9.10-Dimethylanthracene	2-Tertbutylanthracene	1-Methylpyrene	Benz(a)anthracene
			Concentrations in µg/L						
1997 Site ROD Cleanup Goal			--	--	--	--	--	--	--
PHSS Cleanup Level			--	--	--	--	--	--	0.0012
Portland Harbor JSCS SLV			--	0.2	0.2	--	--	--	0.018
PW-1 (T)	19 Top	7/26/2021	0.0010	0.0145	0.0339	0.0526	0.00017	0.00075	0.0012
PW-1 (B)	19 Bottom	7/26/2021	0.0011	0.0046	0.0195	0.0058	0.00014	0.00029	0.00065
PW-1	NA	NA	0.0011	0.0096	0.0267	0.0292	0.00016	0.00052	0.0009
PW-2 (T)	17 Top	7/26/2021	0.0012	0.0025	0.0036	<0.05612	0.00022	<0.00511	<0.00476
PW-2 (B)	17 Bottom	7/26/2021	0.0013	0.0022	0.0104	0.0088	0.00015	<0.00511	0.00054
PW-2	NA	NA	0.0013	0.0023	0.0070	0.0088	0.00018	<0.00511	0.0005
PW-3 (T)	27 Top	7/26/2021	0.0275	0.2536	0.5206	0.0058	0.00056	0.0085	0.0145
PW-3 (B)	27 Bottom	7/26/2021	0.0618	0.7763	1.75	0.0090	0.00091	0.0180	0.0474
PW-3	NA	NA	0.0446	0.5149	1.13	0.0074	0.00074	0.0133	0.0310
PW-4 (T)	13 Top	7/26/2021	0.1170	5.51 E	12.6 E	0.0067	0.00064	0.0779	0.2605
PW-4 (B)	13 Bottom	7/26/2021	0.1309	5.86 E	8.87 E	0.0082	0.00091	0.0788	0.2677
PW-4	NA	NA	0.1240	5.68	10.7	0.0074	0.00077	0.07834	0.2641
PW-5 (T)	28 Top	7/26/2021	0.0010	0.0130	0.0214	0.0059	0.00026	0.00046	0.00067
PW-5 (B)	28 Bottom	7/26/2021	0.0014	0.0073	0.0167	0.0082	0.00010	<0.00511	0.00048
PW-5	NA	NA	0.0012	0.0101	0.0190	0.0071	0.00018	0.00046	0.0006
KMW29 (T)	18 Top	7/26/2021	0.0833	0.0678	0.1777	0.0061	0.00025	0.0105	0.0057
KMW29 (B)	18 Bottom	7/26/2021	0.0422	0.0675	0.1743	0.0105	0.00016	0.0089	0.0061
KMW29	NA	NA	0.0627	0.0677	0.1760	0.0083	0.00021	0.00970	0.0059
KMW31 (T)	14 Top	7/26/2021	0.0883	0.0405	0.1611	0.0091	0.00029	0.0129	0.0025
KMW31 (B)	14 Bottom	7/26/2021	0.1115	0.0520	0.2320	0.0136	0.00060	0.0126	0.0025
KMW31	NA	NA	0.0999	0.0462	0.1965	0.0113	0.00045	0.01277	0.0025
KMW32 (T)	23 Top	7/26/2021	0.0194	0.0090	0.0644	0.0066	0.0022	0.0099	0.00081
KMW32 (B)	23 Bottom	7/26/2021	0.0080	0.0059	0.1018	0.0065	0.00098	0.0166	0.0013
KMW32	NA	NA	0.0137	0.0074	0.0831	0.0065	0.00158	0.01326	0.0011
KMW33 (T)	21 Top	7/26/2021	0.0248	0.0427	0.1851	0.0130	0.00036	0.0084	0.0017
KMW33 (B)	21 Bottom	7/26/2021	0.0174	0.0385	0.1098	0.0138	0.00079	0.0106	0.0020
KMW33	NA	NA	0.0211	0.0406	0.1474	0.0134	0.00058	0.00951	0.0018
KMW36 (T)	30 Top	7/26/2021	0.0102	0.1040	0.2815	0.0048	0.00037	0.0112	0.0044
KMW36 (B)	30 Bottom	7/26/2021	0.0087	0.1067	0.2073	0.0061	0.00026	0.0098	0.0041
KMW36	NA	NA	0.0094	0.1054	0.2444	0.0055	0.00031	0.01048	0.0043

Please refer to notes at end of table.

Table 11

Porewater Analytical Data – PAHs

Shore Terminals LLC - Portland Facility

Portland, Oregon

Sample ID	Field ID	Sample Date	Chrysene	Benzo(b)fluoranthene	7.12-Methylbenz(a)anthracene	Benzo(k)fluoranthene	Benzo(e)pyrene	Benzo(a)pyrene	Perylene
			Concentrations in µg/L						
1997 Site ROD Cleanup Goal			--	--	--	--	--	--	--
PHSS Cleanup Level			0.0013	0.0012	--	0.0013	--	0.00012	--
Portland Harbor JSCS SLV			0.018	0.018	--	0.018	--	0.018	--
PW-1 (T)	19 Top	7/26/2021	0.0021	0.00026	<0.00177	0.00025	0.00031	<0.01244	0.0031
PW-1 (B)	19 Bottom	7/26/2021	0.0012	0.00025	<0.00177	0.00011	0.00019	<0.01244	0.0052
PW-1	NA	NA	0.0017	0.00026	<0.00177	0.00018	0.00025	<0.01244	0.0042
PW-2 (T)	17 Top	7/26/2021	0.00034	<0.00153	<0.00177	<0.00228	<0.00272	<0.01244	<0.00892
PW-2 (B)	17 Bottom	7/26/2021	0.00087	0.00032	0.00014	0.00014	0.00022	0.0010	0.00053
PW-2	NA	NA	0.0006	0.00032	0.00014	0.00014	0.00022	0.00101	0.0005
PW-3 (T)	27 Top	7/26/2021	0.0183	0.0020	<0.00177	0.0017	0.0017	<0.01244	0.00089
PW-3 (B)	27 Bottom	7/26/2021	0.0554	0.0054	0.00012	0.0049	0.0042	<0.01244	0.0017
PW-3	NA	NA	0.0369	0.0037	0.00012	0.00329	0.00293	<0.01244	0.0013
PW-4 (T)	13 Top	7/26/2021	0.2843	0.0178	0.00007	0.0194	0.0141	0.0233	0.0035
PW-4 (B)	13 Bottom	7/26/2021	0.2530	0.0289	<0.00177	0.0294	0.0199	0.0351	0.0050
PW-4	NA	NA	0.2686	0.0233	0.00007	0.0244	0.01702	0.02920	0.0042
PW-5 (T)	28 Top	7/26/2021	0.0012	0.00025	<0.00177	0.00029	0.00022	<0.01244	0.0019
PW-5 (B)	28 Bottom	7/26/2021	0.0010	0.00023	<0.00177	0.00017	0.00012	0.00062	0.0030
PW-5	NA	NA	0.0011	0.00024	<0.00177	0.00023	0.00017	0.00062	0.0024
KMW29 (T)	18 Top	7/26/2021	0.0065	0.00025	<0.00177	0.00020	0.00017	<0.01244	<0.00892
KMW29 (B)	18 Bottom	7/26/2021	0.0074	0.00038	<0.00177	0.00024	0.00024	0.00064	<0.00892
KMW29	NA	NA	0.0070	0.00031	<0.00177	0.00022	0.00021	0.00064	<0.00892
KMW31 (T)	14 Top	7/26/2021	0.0042	0.00018	<0.00177	<0.00228	0.00015	0.00050	<0.00892
KMW31 (B)	14 Bottom	7/26/2021	0.0044	0.00022	<0.00177	0.00012	0.00016	<0.01244	<0.00892
KMW31	NA	NA	0.0043	0.00020	<0.00177	0.00012	0.00016	0.00050	<0.00892
KMW32 (T)	23 Top	7/26/2021	0.0021	0.00019	<0.00177	<0.00228	0.00029	<0.01244	<0.00892
KMW32 (B)	23 Bottom	7/26/2021	0.0031	0.00019	<0.00177	<0.00228	0.00028	0.0008	<0.00892
KMW32	NA	NA	0.0026	0.00019	<0.00177	<0.00228	0.00028	0.00080	<0.00892
KMW33 (T)	21 Top	7/26/2021	0.0023	0.00015	<0.00177	<0.00228	<0.00272	<0.01244	<0.00892
KMW33 (B)	21 Bottom	7/26/2021	0.0029	0.00025	<0.00177	<0.00228	<0.00272	<0.01244	<0.00892
KMW33	NA	NA	0.0026	0.00020	<0.00177	<0.00228	<0.00272	<0.01244	<0.00892
KMW36 (T)	30 Top	7/26/2021	0.0062	0.00015	<0.00177	0.00016	0.00017	0.00056	<0.00892
KMW36 (B)	30 Bottom	7/26/2021	0.0066	0.00013	0.00013	0.00020	0.00030	0.0010	0.00041
KMW36	NA	NA	0.0064	0.00014	0.00013	0.00018	0.00023	0.00079	0.0004

Please refer to notes at end of table.

Table 11

Porewater Analytical Data – PAHs

Shore Terminals LLC - Portland Facility

Portland, Oregon

Sample ID	Field ID	Sample Date	Indeno(123-cd)pyrene	Dibenzo(ah)anthracene	Benzo(ghi)perylene	cPAH (BaP Equiv)
			Concentrations in µg/L			
1997 Site ROD Cleanup Goal			--	--	--	
PHSS Cleanup Level			0.0012	0.00012	--	0.00012
Portland Harbor JSCS SLV			0.018	0.018	0.2	
PW-1 (T)	19 Top	7/26/2021	0.00005 J	0.000050	<0.00382	0.00020
PW-1 (B)	19 Bottom	7/26/2021	<0.00155	0.000050	<0.00382	0.00014
PW-1	NA	NA	0.00005	0.00005	<0.00382	0.00017
PW-2 (T)	17 Top	7/26/2021	0.00010 J	<0.00045	<0.00382	0.000011
PW-2 (B)	17 Bottom	7/26/2021	<0.00155	0.000058	<0.00382	0.00115
PW-2	NA	NA	0.00010	0.00006	<0.00382	0.00058
PW-3 (T)	27 Top	7/26/2021	0.00016	0.00012	0.00045	0.00181
PW-3 (B)	27 Bottom	7/26/2021	0.00022	0.00015	0.0012	0.00551
PW-3	NA	NA	0.00019	0.00014	0.00081	0.00366
PW-4 (T)	13 Top	7/26/2021	0.00042	0.00025	0.0024	0.052
PW-4 (B)	13 Bottom	7/26/2021	0.00033	0.00025	0.0039	0.065
PW-4	NA	NA	0.00038	0.00025	0.00313	0.05852
PW-5 (T)	28 Top	7/26/2021	0.00012	0.000012 J	<0.00382	0.00012
PW-5 (B)	28 Bottom	7/26/2021	<0.00155	0.000047	<0.00382	0.00074
PW-5	NA	NA	0.00012	0.00003	<0.00382	0.00043
KMW29 (T)	18 Top	7/26/2021	<0.00155	0.000044	<0.00382	0.00064
KMW29 (B)	18 Bottom	7/26/2021	<0.00155	0.000059	<0.00382	0.00135
KMW29	NA	NA	<0.00155	0.00005	<0.00382	0.00099
KMW31 (T)	14 Top	7/26/2021	<0.00155	0.000048	<0.00382	0.00081
KMW31 (B)	14 Bottom	7/26/2021	<0.00155	0.000067	<0.00382	0.00034
KMW31	NA	NA	<0.00155	0.00006	<0.00382	0.00058
KMW32 (T)	23 Top	7/26/2021	0.00015	0.000019 J	<0.00382	0.00014
KMW32 (B)	23 Bottom	7/26/2021	<0.00155	0.000053	<0.00382	0.00101
KMW32	NA	NA	0.00015	0.00004	<0.00382	0.00057
KMW33 (T)	21 Top	7/26/2021	<0.00155	0.000043	<0.00382	0.00023
KMW33 (B)	21 Bottom	7/26/2021	<0.00155	0.000056	<0.00382	0.00028
KMW33	NA	NA	<0.00155	0.00005	<0.00382	0.00025
KMW36 (T)	30 Top	7/26/2021	<0.00155	0.000046	<0.00382	0.00107
KMW36 (B)	30 Bottom	7/26/2021	<0.00155	0.000050	0.00015	0.00149
KMW36	NA	NA	<0.00155	0.00005	0.00015	0.00128

Notes:

- < = less than the laboratory Estimated Quantitation Limit (EQL)
- 2a. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
- 2b. Green highlighted cells indicate the method reporting limit is greater than the PHSS ROD Cleanup Level or the JSCS SLV (if there is no ROD Cleanup Level)
- < = less than the laboratory reporting limit.
- µg/L = microgram(s) per liter.
- = Not applicable.
- Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
- PHSS Cleanup Levels = 2017 Portland Harbor Superfund Site Record of Decision Cleanup Levels.

Quality Assurance/Quality Control Data Qualifiers

J = Reported result is an estimated value.

Table 12**Porewater Analytical Data – Dissolved Metals**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Sample Id	Field ID	Sample Date	Arsenic	Copper	Zinc	Lead
			Concentrations in µg/L			
1997 Site ROD Cleanup Goal			5.0	12	–	3.2
PHSS Cleanup Level			0.018	2.74	36	0.54
Portland Harbor JSCS SLV			0.045	2.7	36	0.54
PW-1 (T)	19 Top	7/26/2021	17.2	0.72	0.9 J	0.02 J
PW-1 (B)	19 Bottom	7/26/2021	14.6	0.72	3.0	0.02 J
PW-1	NA	NA	15.9	0.72	1.95	0.02
PW-2 (T)	17 Top	7/26/2021	10.1	0.91	1.4 J	0.02 J
PW-2 (B)	17 Bottom	7/26/2021	10.8	0.73	1.7 J	0.02 J
PW-2	NA	NA	10.4	0.82	1.51	0.02
PW-3 (T)	27 Top	7/26/2021	14.8	0.70	1.5 J	0.03 J
PW-3 (B)	27 Bottom	7/26/2021	22.3	0.80	1.6 J	0.03 J
PW-3	NA	NA	18.6	0.75	1.53	0.03
PW-4 (T)	13 Top	7/26/2021	14.4	0.68	1.5 J	0.04 J
PW-4 (B)	13 Bottom	7/26/2021	21.4	0.77	3.1	0.04 J
PW-4	NA	NA	17.9	0.73	2.29	0.04
PW-5 (T)	28 Top	7/26/2021	16.2	0.74	2.1	0.03 J
PW-5 (B)	28 Bottom	7/26/2021	10.7	0.73	6.7	0.04 J
PW-5	NA	NA	13.4	0.74	4.43	0.03
KMW29 (T)	18 Top	7/26/2021	4.09	0.67	2.3	0.33
KMW29 (B)	18 Bottom	7/26/2021	8.33	1.05	2.5	0.76
KMW29	NA	NA	6.21	0.86	2.40	0.542
KMW31 (T)	14 Top	7/26/2021	1.34	0.69	2.4	0.26
KMW31 (B)	14 Bottom	7/26/2021	3.95	0.74	5.2	1.78
KMW31	NA	NA	2.64	0.71	3.76	1.02
KMW32 (T)	23 Top	7/26/2021	0.45	2.66	7.9	0.29
KMW32 (B)	23 Bottom	7/26/2021	0.33	2.65	8.6	0.28
KMM32	NA	NA	0.39	2.66	8.27	0.28
KMW33 (T)	21 Top	7/26/2021	0.16 J	0.62	1.9 J	0.03 J
KMW33 (B)	21 Bottom	7/26/2021	4.55	0.72	2.4	0.03 J
KMW33	NA	NA	2.36	0.67	2.16	0.03
KMW36 (T)	30 Top	7/26/2021	0.48	0.97	2.8	0.15 J
KMW36 (B)	30 Bottom	7/26/2021	0.51	0.97	1.8 J	0.15 J
KMW36	NA	NA	0.49	0.97	2.27	0.15

Notes:

- µg/L = Microgram(s) per liter.
- (T) = top sample interval of PSD; (B) bottom sample interval of PSD; an average concentration for each sample was calculated based on the average of the (T) and (B) sample results for each sample location.
- NA = Not applicable
- Yellow highlighted cells indicate values that are equal to or exceeding 1997 ROD Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
- Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
- Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
- PHSS Cleanup Levels = 2017 Portland Harbor Superfund Site Record of Decision Cleanup Levels.

Table 13

Porewater Analytical Data — Organochlorine Pesticides
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Sample Location	Field ID	Sample Date	Hexachlorobenzene	alpha-BHC	Lindane (gamma-BHC)	beta-BHC	delta-BHC	Heptachlor	Aldrin	Oxychlorane	cis-Heptachlor Epoxide	trans-Heptachlor Epoxide	trans-Chlordane (gamma)	cis-Chlordane (alpha)
Concentrations in µg/L														
1997 Site ROD Cleanup Goal			-	-	-	-	-	-	-	-	-	-	-	-
PHSS Cleanup Level			2.90E-05	-	-	-	-	-	7.70E-07	-	-	-	8.1E-05*	8.1E-05*
Portland Harbor JSCS SLV			-	-	-	-	-	-	-	-	-	-	-	-
PW-1	P19 Bottom	7/26/2021	6.47E-06 J, B	<3.20E-05	<4.71E-05	<4.25E-05	<6.04E-05	<7.79E-07	<4.30E-07	<1.25E-06	<2.13E-05	<7.93E-05	<5.97E-07	<5.22E-07
PW-2	P17 Bottom	7/26/2021	7.07E-06 J, B	<3.20E-05	<4.71E-05	<4.25E-05	<6.04E-05	<7.79E-07	<4.30E-07	<1.25E-06	<2.13E-05	<7.93E-05	<5.97E-07	<5.22E-07
PW-3	P27 Top	7/26/2021	6.43E-06 J, B	<3.20E-05	<4.71E-05	<4.25E-05	<6.04E-05	<7.79E-07	<4.30E-07	<1.25E-06	<2.13E-05	<7.93E-05	<5.97E-07	<5.22E-07
PW-4	P13 Top	7/26/2021	6.95E-06 J, B	<3.20E-05	<4.71E-05	<4.25E-05	<6.04E-05	<7.79E-07	<4.30E-07	<1.25E-06	<2.13E-05	<7.93E-05	<5.97E-07	<5.22E-07
PW-5	P28 Bottom	7/26/2021	6.25E-06 J, B	<3.20E-05	<4.71E-05	<4.25E-05	<6.04E-05	<7.79E-07	<4.30E-07	<1.25E-06	<2.13E-05	<7.93E-05	<5.97E-07	<5.22E-07
KMW29	P18 Top	7/26/2021	6.25E-06 J, B	<3.20E-05	<4.71E-05	<4.25E-05	<6.04E-05	<7.79E-07	<4.30E-07	<1.25E-06	<2.13E-05	<7.93E-05	<5.97E-07	<5.22E-07
KMW31	P14 Top	7/26/2021	7.58E-06 J, B	<3.20E-05	<4.71E-05	<4.25E-05	<6.04E-05	<7.79E-07	<4.30E-07	<1.25E-06	<2.13E-05	<7.93E-05	<5.97E-07	<5.22E-07
KMW32	P23 Top	7/26/2021	6.54E-06 J, B	<3.20E-05	<4.71E-05	<4.25E-05	<6.04E-05	<7.79E-07	<4.30E-07	<1.25E-06	<2.13E-05	<7.93E-05	<5.97E-07	<5.22E-07
KMW33	P21 Top	7/26/2021	<9.79E-06	<3.20E-05	<4.71E-05	<4.25E-05	<6.04E-05	<7.79E-07	<4.30E-07	<1.25E-06	<2.13E-05	<7.93E-05	<5.97E-07	<5.22E-07
KMW36	P30 Top	7/26/2021	8.07E-06 J, B	<3.20E-05	<4.71E-05	<4.25E-05	<6.04E-05	<7.79E-07	<4.30E-07	<1.25E-06	<2.13E-05	<7.93E-05	<5.97E-07	<5.22E-07

Please refer to notes at end of table.

Table 13

Porewater Analytical Data — Organochlorine Pesticides

Shore Terminals LLC - Portland Facility

Portland, Oregon

Sample Location	Field ID	Sample Date	trans-Nonachlor	Endosulfan I (alpha)	Dieldrin	Endrin	cis-Nonachlor	Endosulfan II (beta)	Endosulfan Sulfate	4,4'-Methoxychlor	Mirex	Endrin Aldehyde	Endrin Ketone	2,4'-DDE	4,4'-DDE
Concentrations in µg/L															
1997 Site ROD Cleanup Goal			-	-	-	-	-	-	-	-	-	-	-	-	-
PHSS Cleanup Level			-	-	-	-	-	-	-	-	-	-	-	-	-
Portland Harbor JSCS SLV			-	-	-	-	-	-	-	-	-	-	-	-	-
PW-1	P19 Bottom	7/26/2021	<9.88E-07	<1.96E-05	<8.92E-06	<5.42E-06	<3.74E-07	<4.02E-05	<4.64E-06	<3.61E-06	<1.42E-10	<1.43E-06	<1.42E-05	<4.73E-07	1.21E-06 J
PW-2	P17 Bottom	7/26/2021	<9.88E-07	<1.96E-05	<8.92E-06	<5.42E-06	<3.74E-07	<4.02E-05	<4.64E-06	<3.61E-06	<1.42E-10	<1.43E-06	<1.42E-05	<4.73E-07	<4.77E-07
PW-3	P27 Top	7/26/2021	<9.88E-07	<1.96E-05	<8.92E-06	<5.42E-06	<3.74E-07	<4.02E-05	<4.64E-06	<3.61E-06	<1.42E-10	<1.43E-06	<1.42E-05	<4.73E-07	1.83E-06 J
PW-4	P13 Top	7/26/2021	<9.88E-07	<1.96E-05	<8.92E-06	<5.42E-06	<3.74E-07	<4.02E-05	<4.64E-06	<3.61E-06	<1.42E-10	<1.43E-06	<1.42E-05	<4.73E-07	5.82E-06 J
PW-5	P28 Bottom	7/26/2021	<9.88E-07	<1.96E-05	<8.92E-06	<5.42E-06	<3.74E-07	<4.02E-05	<4.64E-06	<3.61E-06	<1.42E-10	<1.43E-06	<1.42E-05	<4.73E-07	<4.77E-07
KMW29	P18 Top	7/26/2021	<9.88E-07	<1.96E-05	<8.92E-06	<5.42E-06	<3.74E-07	<4.02E-05	<4.64E-06	<3.61E-06	<1.42E-10	<1.43E-06	<1.42E-05	<4.73E-07	<4.77E-07
KMW31	P14 Top	7/26/2021	1.15E-06 J	<1.96E-05	<8.92E-06	<5.42E-06	<3.74E-07	<4.02E-05	<4.64E-06	<3.61E-06	<1.42E-10	<1.43E-06	<1.42E-05	<4.73E-07	<4.77E-07
KMW32	P23 Top	7/26/2021	<9.88E-07	<1.96E-05	<8.92E-06	<5.42E-06	<3.74E-07	<4.02E-05	<4.64E-06	<3.61E-06	<1.42E-10	<1.43E-06	<1.42E-05	<4.73E-07	3.17E-06 J
KMW33	P21 Top	7/26/2021	<9.88E-07	<1.96E-05	<8.92E-06	<5.42E-06	<3.74E-07	<4.02E-05	<4.64E-06	<3.61E-06	<1.42E-10	<1.43E-06	<1.42E-05	<4.73E-07	<4.77E-07
KMW36	P30 Top	7/26/2021	<9.88E-07	<1.96E-05	<8.92E-06	<5.42E-06	<3.74E-07	<4.02E-05	<4.64E-06	<3.61E-06	<1.42E-10	<1.43E-06	<1.42E-05	<4.73E-07	<4.77E-07

Please refer to notes at end of table.

Table 13
Porewater Analytical Data — Organochlorine Pesticides
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Sample Location	Field ID	Sample Date	2,4'-DDD	4,4'-DDD	2,4'-DDT	4,4'-DDT	ΣDDE	ΣDDD	ΣDDT	DDx
			Concentrations in µg/L							
1997 Site ROD Cleanup Goal			--	--	--	--	--	--	--	--
PHSS Cleanup Level			--	--	--	--	1.80E-05	3.10E-05	2.20E-05	1.00E-03
Portland Harbor JSCS SLV			--	--	--	--	--	--	--	--
PW-1	P19 Bottom	7/26/2021	<9.68E-07	2.21E-06 J	<3.52E-07	<3.83E-07	1.45E-06	2.69E-06	3.68E-07	4.51E-06
PW-2	P17 Bottom	7/26/2021	<9.68E-07	<1.09E-06	<3.52E-07	<3.83E-07	4.75E-07	1.03E-06	3.68E-07	1.87E-06
PW-3	P27 Top	7/26/2021	<9.68E-07	5.37E-06 J	<3.52E-07	<3.83E-07	2.07E-06	5.86E-06	3.68E-07	8.29E-06
PW-4	P13 Top	7/26/2021	1.94E-05 J	2.57E-05 J	<3.52E-07	<3.83E-07	6.05E-06	4.51E-05	3.68E-07	5.15E-05
PW-5	P28 Bottom	7/26/2021	<9.68E-07	<1.09E-06	<3.52E-07	<3.83E-07	4.75E-07	1.03E-06	3.68E-07	1.87E-06
KMW29	P18 Top	7/26/2021	<9.68E-07	<1.09E-06	<3.52E-07	<3.83E-07	4.75E-07	1.03E-06	3.68E-07	1.87E-06
KMW31	P14 Top	7/26/2021	3.24E-06 J	3.02E-06 J	<3.52E-07	<3.83E-07	4.75E-07	6.26E-06	3.68E-07	7.11E-06
KMW32	P23 Top	7/26/2021	5.97E-05	2.86E-05 J	<3.52E-07	<3.83E-07	3.40E-06	8.83E-05	3.68E-07	9.21E-05
KMW33	P21 Top	7/26/2021	<9.68E-07	<1.09E-06	<3.52E-07	<3.83E-07	4.75E-07	1.03E-06	3.68E-07	1.87E-06
KMW36	P30 Top	7/26/2021	<9.68E-07	<1.09E-06	<3.52E-07	<3.83E-07	4.75E-07	1.03E-06	3.68E-07	1.87E-06

Notes:

- < = Concentration as reported by the analytical laboratory is less than the laboratory reporting limit.
- µg/L = microgram(s) per liter.
- Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
- Organochlorine Pesticides analyzed by EPA Method 1699.
- Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
- ΣDDD = Sum of the DDD isomers (2,4'-DDD + 4,4'-DDD). For isomers with at least one sample detection, concentrations below the DL were replaced with a value of 1/2 the DL.
- ΣDDE = Sum of the DDE isomers (2,4'-DDE + 4,4'-DDE). For isomers with at least one sample detection, concentrations below the DL were replaced with a value of 1/2 the DL.
- ΣDDT = Sum of the DDT isomers (2,4'-DDT + 4,4'-DDT). For isomers with at least one sample detection, concentrations below the DL were replaced with a value of 1/2 the DL.
- DDx = ΣDDD + ΣDDE + ΣDDT
- * ROD Cleanup Level is for Chlordanes

Attachment 4

Groundwater Monitoring Sampling Results: 2019-2021

Table 14**Groundwater Analytical Data – TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-
Tank Field 1											
KMW07	3/13/2019	0.18	0.126	<0.762	<0.152	0.24	<1.00	<0.500	<1.50	<1.00	-
	3/13/2019 DUP	0.23	0.116	0.0787 F-11	<0.152	0.23	<1.00	<0.500	<1.50	<1.00	-
	1/28/2020	4.30	4.18	0.0875 B, B-02,F-18	<0.150	0.894	0.732 J	11.7	1.09 J	2.26	-
	1/28/2020 DUP	4.30	4.17	0.094 B, B-02,F-18	<0.151	0.881	0.698 J	11.8	1.04 J	2.95	-
	3/25/2021	0.24	<0.10	0.112 F-11	<0.157	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/25/2021 DUP	0.22	<0.10	0.0953 F-11	<0.155	<0.20	<1.00	<0.50	<1.50	<1.00	-
KMW11	1/29/2020	ND	<0.10	<0.0748	<0.150	<0.20	<1.00	<0.50	<1.50	<1.00	-
	9/30/2020	ND	<0.10	<0.0748 Q-30	<0.15 Q-30	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/25/2021	0.57	0.376	0.111 F-13,F-20	<0.157	1.34	<1.00	<0.50	<1.50	<1.00	-
	10/6/2021	ND	<0.100	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	<1.00	-
KMW18	1/28/2020	ND	<0.10	<0.0769 B	<0.154	0.358	<1.00	<0.50	<1.50	<1.00	-
	1/28/2020 DUP	ND	<0.10	<0.0755 B	<0.151	0.322	<1.00	<0.50	<1.50	<1.00	-
	9/29/2020	0.27	0.157	0.0416 J	<0.152	2.08	3.69 J, Q-42	<0.50	<1.50	<1.00	-
	9/29/2020 DUP	0.36	0.239	0.0487 J	<0.150	1.58	33.9	<0.50	<1.50	<1.00	-
	3/23/2021	ND	<0.10	<0.0762	<0.152	0.15 J	<1.00	<0.50	<1.50	<1.00	-
	3/23/2021 DUP	ND	<0.10	<0.0755	<0.151	0.15 J	<1.00	<0.50	<1.50	<1.00	-
	10/7/2021	0.51	0.39	<0.0784	<0.157	2.27	36.5	<0.50	<1.50	<1.00	-
	10/7/2021 DUP	0.50	0.377	<0.0816	<0.163	2.13	37.7	<0.50	<1.50	<1.00	-

Please refer to notes at end of table.

Table 14**Groundwater Analytical Data – TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-
KMW19	1/28/2020	0.69	0.636	<0.0755 B	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	9/29/2020	0.60	0.444	<0.0762	0.117 J	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/23/2021	0.65	0.538	0.0396 J,F-18	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	10/6/2021	0.68	0.566	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
KMW35	1/28/2020	6.02	5.63	0.352 B,B-02,F-18	<0.150	0.536	<1.00	0.466 J	1.71	<1.00	-
	9/30/2020	6.01	5.49	0.44 F-18	<0.0762	0.684	0.556 J	0.707	1.88	<1.00	-
	3/25/2021	3.10	2.49	0.532 F-20	<0.157	0.233	<1.00	<0.50	<1.50	<1.00	-
	10/6/2021	3.55	2.74	0.735	<0.150	0.21	<1.00	<0.50	<1.50	<1.00	-
MW41A	1/28/2020	0.22	0.0821 J	0.101 B,B-02,F-13	<0.154	<0.20	<1.00	<0.50	<1.50	<1.00	-
	9/30/2020	0.90	0.0894 J	0.734 Q-30	<0.152 Q-30	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/25/2021	0.17	<0.10	0.0455 J	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	10/6/2021	0.37	0.126	0.17	<0.155	<0.20	<1.00	<0.50	<1.50	<1.00	-
Tank 3510											
AC2	1/30/2020	0.13	<0.10	0.152 J,F-13	<0.0762	<0.20	<1.00	<0.50	<1.50	<1.00	-
	9/30/2020	0.20	<0.10	<0.0762	0.113 J	<0.20	<1.00	<0.50	1.66	<1.00	-
	3/23/2021	ND	<0.10	<0.0748	<0.15	<0.20	<1.00	<0.50	<1.50	<1.00	-
	10/6/2021	ND	<0.100	<0.0792	<0.158	<0.20	<1.00	<0.50	<1.50	<1.00	-
AC-7	1/30/2020	0.55	0.268	0.243 B,B-02,F-13	<0.152	13.8	0.66 J	<0.50	<1.50	<1.00	-
	9/30/2020	NS	NS	NS	NS	NS	NS	NS	NS	NS	-
	3/24/2021	1.07	0.64	0.353 F-13F-20	<0.154	0.31	1.53	<0.50	1.18 J	<1.00	-
	10/5/2021	NS	NS	NS	NS	NS	NS	NS	NS	NS	-

Please refer to notes at end of table.

Table 14

Groundwater Analytical Data – TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-
Loading Rack											
AC-8	1/30/2020	7.12	6.97	<0.0748 B	0.116 J	2,040	19.6 J	86.5	47.6	<20.0	-
	1/30/2020 DUP	8.67	8.02	0.213 B,B-02,F-19	0.436 F-16	2,310	22.5	106	57.5	<20.0	-
	9/30/2020	2.44	2.38	<0.0755 Q-30	<0.151 Q-30	718	<20.0	6.60 J	<30.0	<20.0	-
	3/25/2021	1.49	1.28	0.0503 J	0.157	291	3.07 J	16.4	8.30	<5.00	-
	10/7/2021	7.90	7.6	<0.0784	0.264	2,050	<50.0	<25.0	<75.0	<50.0	-
AC-9	1/28/2020	Well was not sampled due to the presence of SPH or SPH sheen.									
	9/30/2020	Well was not sampled due to the presence of SPH or SPH sheen.									
	3/23/2021	Well was not sampled due to the presence of SPH or SPH sheen.									
	10/5/2021	Well was not sampled due to the presence of SPH or SPH sheen.									
AC-10*	1/28/2020	Well was not sampled due to the presence of SPH or SPH sheen.									
	9/30/2020	Well was not sampled due to the presence of SPH or SPH sheen.									
	3/23/2021	Well was not sampled due to the presence of SPH or SPH sheen.									
	10/5/2021	Well was not sampled due to the presence of SPH or SPH sheen.									
KMW13	1/30/2020	6.30	6.03	0.171 B,B-02,F-18	0.0969 J	100	10.4	291	632	<2.50	-
	10/1/2020	3.34	3.20	0.0622 J	<0.151	122	18.8	87.1	201	<5.00	-
	10/1/2020 DUP	4.31	4.14	0.0933 F-18	<0.151	145	22.8	179	234	<5.00	-
	3/25/2021	2.71	2.59	0.0439 J,F-18	<0.15	189	5.14	4.28	37.1	<1.00	-
	3/25/2021 DUP	2.68	2.56	0.0498 J,F-18	<0.15	186	5.26	4.34	38.5	<1.00	-
	10/7/2021	4.41	4.14	0.194	<0.150	59.9	15.8	14.8	176	<1.00	-
	10/7/2021 DUP	4.14	3.89	0.176	<0.151	62	14.9	16.1	161	<1.00	-
KMW14*	Well KMW14 has been removed from the groundwater monitoring program. ²³										

Please refer to notes at end of table.

Table 14**Groundwater Analytical Data – TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-
MW38*	6/25/2020	4.64	4.14	0.462	<0.0755	718	5.90	36	16.7	<5.0	-
	10/1/2020	0.52	0.399	0.041 J	<0.151	49.7	0.557 J	<0.50	1.97	<1.00	-
	3/25/2021	2.67	2.2	0.392	<0.154	277	2.19	0.711	12.7	<1.00	-
	10/7/2021	1.26	0.825	0.361	<0.150	47.7	<1.00	<0.50	3.34	<1.00	-
MW39*	1/30/2020	77.6	77.1	0.415 B,B-02,F-18	0.0795 J	23,800	129 J	1,140	510	<250	-
	10/1/2020	72.4	72.0	0.319 F-18	<0.151	27,700	<500	643	<750	<500	-
	3/25/2021	65.6	65.2	0.359 F-18	<0.15	21,200	101 J	256	163 J	<200	-
	10/7/2021	84.4	83.9	0.398	<0.150	22,000	542	536	1310	105	-
MW40	2/8/2018	0.62	<0.10	0.0682 J	0.50	<0.50	<0.50	<0.50	<1.50	<0.50	-
	3/13/2019	ND	<0.10	<0.0755	<0.151	2.85	<1.00	<0.500	<1.50	<1.00	-
	1/28/2020	ND	<0.10	<0.0748 B	<0.150	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/23/2021	ND	<0.10	<0.0762	<0.152	2.32	<1.00	<0.50	<1.50	0.59 J	-
MW41B*	1/28/2020	ND	<0.10	<0.0755 B	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	9/30/2020	ND	<0.10	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/25/2021	ND	<0.10	<0.0748	<0.15	<0.20	<1.00	<0.50	<1.50	<1.00	-
	10/6/2021	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	<1.00	-
MW43	1/30/2020	14.7	14.5	0.12 B,B-02,F-18	<0.154	2,150 Q-42	160	637	441	<20.0	-
	9/30/2020	10.3	10.1	0.172 F-18	<0.150	1,620	106	637	349	<25.0	-
	3/25/2021	10.9	10.6	0.213 F-18	<0.155	1,120	110	581	416	<20.0	-
	10/7/2021	15.4	14.9	0.419	<0.151	2,040	119	744	445	<10.0	-

Please refer to notes at end of table.

Table 14**Groundwater Analytical Data – TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-
MW44	1/30/2020	0.19	0.117	<0.0777 B	<0.155	12.2	<1.00	<0.50	<1.5	<1.00	-
	9/30/2020	2.99	2.88	<0.0762	<0.152	1,070	5.28 J	11.8	<15.0	<10.0	-
	3/25/2021	1.08	0.964	<0.0792	<0.158	283	0.971 J	0.306 J	<1.50	<1.00	-
	10/6/2021	4.33	4.17	0.087	<0.150	1,350	1.17	3.28	1.8	<1.00	-
MW45*	2/8/2018	0.42	<0.10	0.0395 J	0.333	<0.50	<0.50	<0.50	<1.5	0.806	-
	3/13/2019	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.5	<1.00	-
	1/30/2020	ND	<0.10	<0.0755 B	<0.151	<0.20	<1.00	<0.50	<1.50	0.961 J	-
	3/23/2021	ND	<0.10	<0.08	<0.16	<0.20	<1.00	<0.50	<1.50	0.68 J	-
MW46	1/29/2020	ND	<0.10	<0.0784	<0.157	<0.20	<1.00	<0.50	<1.50	<1.00	-
	9/29/2020	ND	<0.10	<0.0762 Q-30	<0.152 Q-30	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/25/2021	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	10/6/2021	ND	<0.100	<0.0792	<0.158	<0.20	<1.00	<0.50	<1.50	<1.00	-
DPE Treatment Area											
EX-07L	1/29/2020	ND	<0.10	<0.05	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	<19.8
	9/29/2020	ND	<0.10	<0.05	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	7.06
	3/24/2021	ND	<0.10	<0.05	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	1.18 J
	10/5/2021	ND	<0.100	<0.053	<0.25	<0.20	<1.00	<0.500	<1.50	<1.00	2.72 J
KMW29	1/29/2020	6.06	4.53	1.4	<0.25	0.575	1.50	0.648	3.02	<1.00	34.5
	9/29/2020	4.28	3.44	0.71 F-13	<0.25	0.824	1.60	0.884	3.16	<1.00	148
	3/24/2021	4.00	3.13	0.74 F-13	<0.25	0.20	<1.00	0.45 J	1.80	<1.00	35.3 J
	10/5/2021	4.47	3.61	0.68 F-13	<0.35	0.79	1.21	0.69	2.21	<1.00	31.9 J
KMW30	1/29/2020	ND	<0.10	<0.05	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	<20.0
	9/29/2020	2.28	1.73	0.42 F-13	<0.25	0.225	<1.00	0.777	<1.50	<1.00	68.2
	3/24/2021	0.33	0.128	0.076 F-13	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	8.80
	3/24/2021 DUP	0.29	0.139	<0.05	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	8.20 J
	10/5/2021	2.60	2.17	0.30 F-13	<0.25	0.32	<1.00	0.54	<1.50	<1.00	21.8 J

Please refer to notes at end of table.

Table 14**Groundwater Analytical Data – TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-
KMW31	1/29/2020	1.80	1.13	0.54	<0.25	0.119 J	<1.00	<0.50	1.94	<1.00	<20.0
	1/29/2020 DUP	1.83	1.12	0.58	<0.25	<0.10	<1.00	<0.50	2.0	<1.00	<20.0
	9/29/2020	1.46	0.966	0.37 F-13	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	55.6
	3/24/2021	1.68	1.19	0.36 F-13	<0.25	<0.20	<1.00	<0.50	1.02 J	<1.00	9.58 J
	10/5/2021	1.01	0.703	0.18	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	17.3 J
KMW32	1/29/2020	ND	<0.10	<0.05	<0.25	1.12	<1.00	<0.50	<1.50	<1.00	<20.0
	9/29/2020	0.21	<0.10	0.058	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	<5.9
	3/24/2021	ND	<0.10	<0.05	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	1.72 J
	3/24/2021 DUP	ND	<0.10	<0.05	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	1.64 J
	10/5/2021	ND	<0.100	<0.06	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	1.40 J
KMW33	1/29/2020	0.79	0.0577 J	0.61	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	<20.0
	9/29/2020	0.40	0.0653 J	0.21	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	7.41
	3/24/2021	0.31	<0.10	0.13	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	1.63 J
	10/6/2021	0.41	0.104	0.18	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	5.61 J
KMW37	1/29/2020	1.88	1.38	0.37	<0.25	0.521	<1.00	0.283 J	<1.50	0.629 J	<20.0
	9/30/2020	4.46	3.74	0.59	<0.25	1.37	1.23	0.746	2.00	1.93	164
	3/24/2021	3.56	2.89	0.54 F-13	<0.25	1.04	1.05	0.56	1.30 J	<1.00	20.1 J
	10/6/2021	4.57	3.97	0.47 F-13	<0.25	1.18	1.16	0.6	<1.50	2.11	28.9
MW47	1/29/2020	0.96	0.465	0.37	<0.25	<0.20	<1.00	<0.50	<1.50	0.543 J	30.7
	9/29/2020	0.86	0.36	0.37	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	24.7
	3/24/2021	1.18	0.61	0.44 F-13	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	26.4 J
	10/6/2021	0.80	0.361	0.29	<0.30	<0.20	<1.00	<0.50	<1.50	<1.00	17.4 J

Please refer to notes at end of table.

Table 14**Groundwater Analytical Data – TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-
MW48	1/29/2020	0.61	0.315	0.17	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	76.8
	1/29/2020 DUP	0.79	0.372	0.29	<0.25	<0.20	<1.00	<0.50	<1.50	<1.00	<20.0
	9/29/2020	0.44	0.204	0.11	<0.25	0.167 J	<1.00	<0.50	<1.50	<1.00	6.21 J
	9/29/2020 DUP	0.51	0.221	0.16	<0.25	0.174 J	<1.00	<0.50	<1.50	<1.00	7.09 J
	3/24/2021	0.47	0.185	0.13 F-13	<0.30	<0.20	<1.00	<0.50	<1.50	<1.00	5.40 J
	10/5/2021	0.63	0.365	0.14	<0.25	0.27	<1.00	<0.50	<1.50	<1.00	7.20 J
	10/5/2021 DUP	0.55	0.295	0.13	<0.25	0.26	<1.00	<0.50	<1.50	<1.00	5.80 J
MW49	1/29/2020	1.23	0.734	0.37	<0.25	0.125 J	<1.00	<0.50	<1.50	<1.00	<19.8
	9/29/2020	0.84	0.444	0.25	<0.30	0.29	0.598 J	<0.50	<1.50	<1.00	5.90
	3/24/2021	1.39	0.96	0.30 F-13	<0.25	0.26	<1.00	<0.50	0.84 J	<1.00	21.0 J
	10/6/2021	0.99	0.579	0.29	<0.25	0.28	<1.00	<0.50	<1.50	<1.00	9.39 J
Slurry Wall											
KMW36	1/30/2020	1.47	0.963	0.469 B,B-02,F-13	<0.150	<0.20	<1.00	<0.50	<1.50	<1.00	-
	9/30/2020	1.03	0.787	0.169 F-18,Q-30	<0.15 Q-30	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/24/2021	0.67	0.349	0.247 F-13,F-20	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	10/6/2021	1.30	0.821	0.404	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	-
W-16	1/29/2020	2.48	2.2	0.24 F-20	<0.150	0.985	1.22	0.669	1.89	5.04	-
	10/1/2020	0.49	0.225	0.186 F-11,F-20	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/25/2021	1.15	0.833	0.234 F-11,F-20	<0.158	0.223	<1.00	<0.50	<1.50	0.943 J	-
	10/6/2021	1.06	0.715	0.265	<0.150	<0.20	<1.00	<0.50	<1.50	<1.00	-
W-19	2/8/2018	1.00	0.0939 BJ	0.574	0.334	<0.50	<0.50	<0.50	<1.50	0.198 J	-
	3/15/2019	0.31	0.123	0.148 F-13	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	1/30/2020	0.57	0.214	0.319 F-13	<0.152	<0.20	<1.00	<0.50	<1.50	0.685 J	-
	3/25/2021	0.51	0.153	0.278 F-13,F-20	<0.15	<0.20	<1.00	<0.50	<1.50	0.721 J	-

Please refer to notes at end of table.

Table 14**Groundwater Analytical Data – TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-
W-20	2/8/2018	0.47	<0.10	0.0609 J	0.357	<0.50	<0.50	<0.50	<1.50	<0.50	-
	3/15/2019	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	1/30/2020	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/25/2021	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
W-22	2/8/2018	0.36	0.0583 BJ	0.0335 J	0.27	<0.50	<0.50	<0.50	<1.50	<0.50	-
	3/15/2019	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	1/30/2020	ND	<0.10	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/23/2021	ND	<0.10	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	<1.00	-
Site-Wide											
KMW01	2/9/2018	ND	<0.10	<0.10	<0.25	0.152 J	<0.50	<0.50	<1.5	<0.50	-
	3/15/2019	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	1/29/2020	ND	<0.10	<0.0748	<0.150	<0.20	<1.00	<0.50	<1.50	0.61 J	-
	3/23/2021	ND	<0.10	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	0.56 J	-
KMW02	1/29/2020	ND	<0.10	<0.0748	<0.150	<0.10	<0.50	<0.25	<0.75	<0.50	-
	10/1/2020	ND	<0.10	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/23/2021	0.17	<0.10	<0.0784	<0.157	<0.20	<1.00	<0.50	<1.50	<1.00	-
	10/7/2021	ND	<0.10	<0.0784	<0.157	<0.20	<1.00	<0.50	<1.50	<1.00	-
KMW05	2/8/2018	1.81	0.248 B	0.924	0.634	<0.50	<0.50	<0.50	<1.50	<0.50	-
	3/13/2019	1.52	0.313	0.886 F-13F-15	0.318 F-16	<0.20	<1.00	<0.50	<1.50	<1.00	-
	1/28/2020	2.37	0.537	1.24 F-15	0.595 F-16	0.151 J	<1.00	<0.50	<1.50	<1.00	-
	3/23/2021	1.00	0.5	0.42 F-13	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	-

Please refer to notes at end of table.

Table 14**Groundwater Analytical Data – TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-
KMW09	2/6/2018	0.21	<0.10	0.0695 J	0.0915 J	<0.50	<0.50	<0.50	<1.5	<0.50	-
	3/13/2019	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	1/29/2020	ND	<0.10	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/23/2021	ND	<0.10	<0.0748	<0.15	<0.20	<1.00	<0.50	<1.50	<1.00	-
KMW10	1/28/2020	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	9/29/2020	ND	<0.10	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/23/2021	ND	<0.10	<0.0748	<0.15	<0.20	<1.00	<0.50	<1.50	<1.00	-
	10/7/2021	ND	<0.100	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
KMW16*	2/9/2018	0.21	<0.10	0.0345 J	<0.25	0.178 J	<0.50	<0.50	<1.5	<0.50	-
	3/14/2019	0.12	0.0607 J	<0.0748	<0.150	<0.20	<1.00	<0.50	<1.50	<1.00	-
	1/30/2020	0.15	0.0903 J	<0.0748 B	<0.150	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/25/2021	0.22	0.106	<0.0748	<0.15	<0.20	<1.00	<0.50	<1.50	<1.00	-
KMW20	2/9/2018	0.21	<0.10	0.0347 J	<0.25	<0.50	<0.50	<0.50	<1.5	<0.50	-
	3/14/2019	ND	<0.10	<0.0748	<0.150	<0.20	<1.00	<0.50	<1.50	<1.00	-
	1/30/2020	ND	<0.10	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/23/2021	ND	<0.10	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	<1.00	-
KMW21	2/9/2018	0.77	0.0693 J	0.603	0.101 J	<0.50	<0.50	<0.50	<1.50	6.91	-
	3/14/2019	0.63	0.323	0.273 F-13	<0.150	<0.20	<1.00	<0.50	<1.50	4.41	-
	1/30/2020	0.95	0.397	0.516 F-13	<0.154	<0.20	<1.00	<0.50	<1.50	4.85	-
	3/23/2021	0.43	0.0975 J	0.261 F-13	<0.15	<0.20	<1.00	<0.50	<1.50	1.07	-

Please refer to notes at end of table.

Table 14**Groundwater Analytical Data – TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-
MW42	2/8/2018	0.43	0.0526 BJ	0.0429 J	0.331	<1.0	<1.0	<1.0	<1.50	<1.0	-
	3/14/2019	ND	<0.10	<0.0748	<0.150	<0.20	<1.00	<0.50	<1.50	<1.00	-
	1/30/2020	ND	<0.10	<0.0748 B	<0.150	<0.20	<1.00	<0.50	<1.50	<1.00	-
	3/25/2021	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
W-15	1/29/2020	2.59	1.72	0.74	<0.25	0.543	0.828 J	0.328 J	1.62	<1.00	<19.9
	9/30/2020	2.48	1.80	0.55	<0.25	0.465	0.942 J	0.319 J	1.98	<1.00	12.2
	3/24/2021	2.15	1.58	0.44 F-13	<0.25	0.43	0.6 J	0.25 J	1.42 J	<1.00	16.4 J
	10/6/2021	2.62	2.04	0.45 F-13	<0.25	0.39	<1.00	<0.50	2.2	<1.00	16.5 J
	10/6/2021 DUP	2.52	1.96	0.43 F-13	<0.25	0.41	<1.00	<0.50	2.32	<1.00	14.2 J
Southern Facility Area											
MW-1	2/2/2012	ND	<62.7	<19.7	<54.8	<0.0135	0.0343	0.13	0.05	<0.0862	-
	12/29/2020	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
	12/29/2020 DUP	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
MW-2	2/2/2012	ND	<62.7	<19.7	<54.8	0.52	0.04	0.0648	0.08	1.75	-
	12/29/2020	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	<40.6
	3/23/2021	ND	<0.10	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	<2.00
	10/7/2021	ND	<0.100	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	<0.94
MW-3	2/2/2012	ND	<62.7	<19.7	<54.4	0.0135	0.0343	0.0648	0.04	0.0862	-
	12/29/2020	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	<40.6
	3/23/2021	ND	<0.10	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	2.16 J
	10/7/2021	ND	<0.100	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	<0.94
	10/7/2021 DUP	ND	<0.100	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	NM
MW-4	2/2/2012	ND	<62.7	<19.7	<54.2	<0.0135	0.0343	0.0648	-	<0.0862	-
	12/29/2020	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	<40.7
	3/23/2021	ND	<0.10	<0.0748	<0.15	<0.20	<1.00	<0.50	<1.50	<1.00	<2.00
	10/7/2021	ND	<0.100	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	<0.94
VRUMW-1	2/2/2012	ND	<61.5	<19.7	<53.8	<0.0135	0.0343	0.09	-	<0.0862	-
	12/28/2020	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
VRUMW-2	2/2/2012	ND	<62.4	<19.7	<54.8	<0.0135	0.0343	0.09	-	3.82	-
	12/28/2020	ND	<0.10	<0.0748	<0.150	<0.20	<1.00	<0.50	<1.50	7.82	-

Table 14

Groundwater Analytical Data — TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-

Please refer to notes at end of table.

Table 14**Groundwater Analytical Data — TPH, C10 - C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	**Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	-	-	-	40	-	-	-	-	-
PHSS Cleanup Level		-	-	-	-	0.44	9.8	7.3	13	-	2.6
Portland Harbor JSCS SLV		-	-	-	-	1.2	9.8	7.3	200	37	-
VO-1	2/1/2012	ND	<61.6	<19.7	<53.9	<0.0135	0.0343	0.0648	0.11	<0.0862	-
	2/1/2012 DUP	ND	<62	<19.7	<54.2	<0.0135	0.0343	0.0648	0.12	<0.0862	-
	12/28/2020	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	-
VO-2	2/1/2012	ND	<61.2	<19.7	<53.8	<0.0135	0.0343	0.10	-	<0.0862	-
	12/28/2020	ND	<0.10	<0.0748	<0.150	<0.20	<1.00	<0.50	<1.50	<1.00	-
VO-3	2/2/2012	ND	<61.8	<19.7	<54.1	<0.0135	0.0343	0.10	-	<0.0862	-
	12/29/2020	ND	<0.10	<0.0748	<0.150	<0.20	<1.00	<0.50	<1.50	<1.00	-

Please refer to notes at end of table.

Table 14 Notes

Groundwater Analytical Data — TPH, C10-C12 Aliphatic Range Hydrocarbons, BTEX, and MTBE

Shore Terminals LLC - Portland Facility

Portland, Oregon

Notes:

1. TPH = Total petroleum hydrocarbons by northwest methods, with samples for diesel- and motor-oil-range analyses prepared by silica gel cleanup.
2. TPHg = Total petroleum hydrocarbons measured in the gasoline range
3. TPHd = Total petroleum hydrocarbons measured in the diesel range
4. TPHo = Total petroleum hydrocarbons measured in the heavy oil range
5. TPHg by Method NWTPH-Gx; TPHd and TPHo by NWTPH-Dx; benzene, toluene, ethylbenzene, xylenes, MTBE analyzed by EPA Method 8260 B.
6. Combined TPH = The sum of TPHg, TPHd, and TPHo. If a constituent is non-detect, half of the non-detect concentration is used to calculate the combined TPH concentration.
If TPHg, TPHd, and TPHo are all non-detect, ND is reported for Combined TPH.
7. Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
8. PHSS Cleanup Levels = 2017 Portland Harbor Superfund Site Record of Decision Cleanup Levels.
9. Yellow highlighted cells indicate values that are equal to or exceeding 1997 Record of Decision (ROD) Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
- 10a. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
- 10b. Green highlighted cells indicate the method reporting limit is greater than the PHSS ROD Cleanup Level or the JSCS SLV (if there is no ROD Cleanup Level)
11. < = less than the laboratory reporting limit.
12. µg/L = microgram(s) per liter.
13. mg/L = milligram(s) per liter.
14. EPA = United States Environmental Protection Agency.
15. MTBE = Methyl tertiary butyl ether.
16. NS = Not sampled
17. -- = Not applicable.
18. DUP = Field Duplicate.
19. * = Well is screened in Deep Sand unit.
20. ND = TPH not detected above method detection limits for TPHg, TPHd, or TPHo.
21. Well KMW14 was paved over prior to the October 2017 monitoring event. In an email dated February 21, 2018, DEQ agreed that well KMW14 was not critical to monitoring the Loading Rack Area and that replacement of KMW14 was not required. Well KMW14 has been removed from the monitoring program.

Quality Assurance/Quality Control Data Qualifiers

- J = Reported result is an estimated value.
- B = Reported analyte was present in the associated method blank.
- B-02 = Reported analyte was present in the associated method blank at a level between one-half the method reporting level (MRL) and the MRL.
- A-01 = Result for Diesel (Diesel Range Organics, C12-C18) is due to overlap from Gasoline or a Gasoline Range product.
- F-09 = Results in the gasoline range are primarily due to overlap from a heavier fuel hydrocarbon product.
- F-11 = The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component.
- F-13 = The chromatographic pattern does not resemble the fuel standard used for quantitation.
- F-15 = Results for diesel are estimated due to overlap from the reported oil result.
- F-16 = Results for oil are estimated due to overlap from the reported diesel result.
- F-18 = Result for Diesel (Diesel Range Organics, C12-C24) is due to overlap from Gasoline or a Gasoline Range product.
- F-19 = Results are Estimated due to the presence of multiple fuel products.
- F-20 = Result for Diesel is Estimated due to overlap from Gasoline Range Organics or other VOCs.

Table 15
Groundwater Analytical Data – PAHs
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																		
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	cPAHs
1997 Site ROD Cleanup Goal		-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-	
2017 PHSS Cleanup Level		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	0.00012	
Portland Harbor JSCS SLV		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2	
Tank Field 1																				
KMW07	2/8/2018	63.1	16.8	0.459	<0.05	0.0864	0.148	0.192	0.23	0.165	0.114	0.218	0.0388 J	0.381	0.655	0.145	6.51	0.513	0.324	0.26176
	2/08/2018 DUP	37.10	5.34	0.283	<0.05	0.0485 J	0.0169 J	0.0132 J	0.0232 B, J	0.0144 B, J	<0.05	0.0129 J	<0.05	0.0462 J	0.44	<0.05	3.36	0.165	0.0423 J	0.02484
	3/13/2019	3.27	0.108	<0.0706 R-02	<0.0323	0.0347	<0.0161	0.0193 B,B-02	0.0254 M-05	0.0256 J	0.0143 J	<0.0161	<0.0161	0.0257 J	0.0934	0.0175	0.231 M-02	0.0812	0.0231 J	0.02671
	3/13/2019 DUP	3.44	<0.258	<0.129	<0.129	<0.129	<0.0646	<0.0646 B	0.0417 J	<0.129	<0.0646	<0.0323	<0.0646	<0.0646	0.108 J	<0.0323	0.27 M-02	<0.258	<0.129	0.04794
	1/28/2020	20	1.43	0.353	<0.0721 R-02	0.0805	0.0279 M-05	0.0261	0.0337 M-05	0.027 J	0.0185 M-05	0.0272 M-05	0.00894 J	0.042	0.5	0.0287	1.64	0.247	0.0562	0.03815
	1/28/2020 DUP	19.8	1.82	0.394	<0.336	<0.336	0.109 J	<0.168	<0.168	<0.336	<0.168	<0.168	<0.168	<0.336	0.49	<0.168	<3.09 R-02	<0.671	<0.336	0.12934
	3/25/2021	0.132	<0.074	<0.0578 R-02	<0.037	<0.037	<0.0231 R-02	<0.0185	<0.0185	<0.037	<0.0185	<0.0185	<0.0185	<0.037	0.0569	<0.0185	<0.074	<0.074	<0.037	<0.0231
3/25/2021 DUP	0.109	<0.0707	<0.0353	<0.0353	<0.0353	<0.0177	<0.0177	<0.0177	<0.0353	<0.0177	<0.0177	<0.0177	<0.0353	0.0543	<0.0177	<0.0707	<0.0707	<0.0353	<0.0177	
KMW11	10/8/2019	<0.0698	<0.0698	<0.0349	<0.0349	<0.0349	<0.0174	<0.0174	<0.0174	<0.0349	<0.0174	<0.0174	<0.0174	<0.0349	<0.0349	<0.0174	<0.109 R-02	0.0361 J	<0.0349	<0.0174
	1/29/2020	<0.0644	<0.0644	<0.0322	<0.0322	0.0545	0.0173 M-05	0.0183	0.0218	0.0167 J	0.012 J	0.0144 J	<0.0161	0.0418	0.0167 J	0.0177	<0.0644	0.0384 J	0.0392	0.02613
	9/30/2020	<0.0651	<0.0651	<0.0508 R-02	<0.0325	0.0228 J	<0.0163	<0.0163	<0.0163	<0.0325	<0.0163	<0.0163	<0.0163	0.026 J	0.0285 J	<0.0163	<0.0651	0.0561 J	0.0305 J	<0.0163
	3/25/2021	1.23	<0.0704	0.492	<0.143 R-02	0.117	<0.0176	<0.0176	<0.0176	<0.0352	<0.0176	<0.0176	<0.0176	0.0334 J	0.314	<0.0176	<0.55 R-02	<0.0704	0.033 J	<0.0176
	10/6/2021	<0.0773	<0.0773	<0.0387	<0.0387	<0.0387	<0.0198	<0.0193	<0.0193	<0.0387	<0.0193	<0.0193	<0.0193	<0.0387	<0.0387	<0.0193	<0.0773	<0.0773	<0.0387	<0.0198
KMW18	1/28/2020	0.119	0.0426 J	<0.0322	<0.0322	0.0233 J	<0.0161	<0.0161	<0.0161	<0.0322	<0.0161	<0.0161	<0.0161	<0.0322	<0.0322	<0.0161	<0.0754 R-02	<0.0644	<0.0322	<0.0161
	1/28/2020 DUP	0.113	0.0417 J	<0.0321	<0.0321	0.0289 J	<0.0161	<0.0161	<0.0161	<0.0321	<0.0161	<0.0161	<0.0161	<0.0321	<0.0321	<0.0161	<0.0703 R-02	<0.0642	<0.0321	<0.0161
	9/29/2020	0.467	0.0577 J	<0.0325	<0.0325	<0.0406 R-02	<0.0163	<0.0163	<0.0163	<0.0325	<0.0163	<0.0163	<0.0163	<0.0325	0.0398	<0.0163	<0.16 R-02	<0.065	0.0191 J	<0.0163
	9/29/2020 DUP	0.595	0.0576 J	<0.0318	<0.0318	<0.0397 R-02	<0.0159	<0.0159	<0.0159	<0.0318	<0.0159	0.00874 J	<0.0159	0.0183 J	0.0457	<0.0159	<0.209 R-02	<0.0636	0.0223 J	0.01201
	3/23/2021	0.0574 J	<0.0646	<0.0323	<0.0323	<0.0323	<0.0162	<0.0162	<0.0162	<0.0323	<0.0162	<0.0162	<0.0162	<0.0323	<0.0323	<0.0162	<0.0646	<0.0646	<0.0323	<0.0162
	3/23/2021 DUP	0.0604 J	<0.0657	<0.0328	<0.0328	<0.0328	<0.0164	<0.0164	<0.0164	<0.0328	<0.0164	<0.0164	<0.0164	<0.0328	<0.0328	<0.0164	<0.0657	<0.0657	<0.0328	<0.0164
	10/7/2021	1.19	<0.0681	<0.0639	<0.0341	0.0656	<0.0170	0.0268	<0.0170	<0.0341	<0.0170	<0.0170	<0.0170	<0.0341	0.0703	<0.0170	<0.319	<0.0681	0.0362	<0.0170
10/7/2021 DUP	1.15	<0.0698	<0.0655	<0.0349	0.0655	<0.0175	<0.0175	<0.0175	<0.0349	<0.0175	<0.0175	<0.0175	<0.0349	0.065	<0.0175	<0.218	<0.0698	<0.0349	<0.0175	
KMW19	1/28/2020	0.158 J	<0.259	<0.138 R-02	<0.129	0.0746 J	<0.0647	<0.0647	<0.0647	<0.129	<0.0647	<0.0647	<0.0647	0.105 J	<0.129	<0.0647	<0.283 R-02	<0.259	0.133	<0.0647
	9/29/2020	0.139 J	<0.267	<0.134	<0.134	<0.134	<0.0668	<0.0668	<0.0668	<0.134	<0.0668	<0.0668	<0.0668	0.104 J	<0.134	<0.0668	<0.267	<0.267	0.124 J	<0.0668
	3/23/2021	0.106	<0.0741	0.0616	<0.0371	0.0412	0.0167 J	<0.0185	<0.0185	<0.0371	<0.0185	<0.0185	<0.0185	0.0801	0.0343 J	<0.0185	<0.22 R-02	<0.0741	0.088	0.01471
	10/6/2021	0.12	<0.0869	<0.0934	<0.0435	0.0456	0.0244	<0.0242	<0.0217	<0.0435	0.0239	<0.0217	<0.0217	0.0587	<0.0435	<0.0217	<0.163	<0.0869	0.0674	0.01910

Please refer to notes at end of table.

Table 15
Groundwater Analytical Data – PAHs
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																		
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	cPAHs
1997 Site ROD Cleanup Goal		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-	0.00012
Portland Harbor JSCS SLV		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2	-
KMW35	1/28/2020	266	38.6	<3.55 R-02	<1.22 R-02	<0.325	<0.162	<0.162	<0.162	<0.325	<0.162	<0.162	<0.162	<0.325	8.9	<0.162	<1.83 R-02	6.23	<0.325	<0.162
	9/30/2020	216	12.7	<4.21 R-02	<1.05 R-02	<0.674	<0.337	<0.337	<0.337	<0.674	<0.337	<0.337	<0.337	<0.674	8.75	<0.337	<1.35	5.38	<0.674	<0.337
	3/25/2021	73	0.802	<2.07 R-02	<0.586 R-02	<0.253 R-02	0.0133 J	0.0101 J	<0.0184	<0.0368	<0.0184	<0.0184	<0.0184	0.0336 J	4.16	<0.0184	<0.575 R-02	1.7	0.04	0.01520
	10/6/2021	130	<0.262	<2.79	<0.783	0.269	0.0223	<0.0247	0.0249	<0.0343	<0.0172	<0.0172	<0.0172	<0.0343	6.21	<0.0172	<0.630	3.87	0.0399	0.01974
MW41A	1/28/2020	3.57	<0.261	<0.408 R-02	<0.131	<0.131	0.0578 J	0.0898	0.115	0.0994 J	0.054 J	0.0597 J	<0.0653	0.104 J	0.605	0.0741	<0.261	0.177 J	0.11 J	0.12375
	9/30/2020	10.8	<0.264	<0.824 R-02	<0.303 R-02	<0.412 R-02	<0.0659	<0.0659	<0.0659	<0.132	<0.0659	<0.0659	<0.0659	0.0725 J	1.44	<0.0659	<0.264	0.717	0.089 J	<0.0659
	3/25/2021	2.02	<0.0702	<0.439 R-02	<0.143 R-02	<0.0323	0.0101 J	<0.0176	<0.0176	<0.0351	<0.0176	<0.0176	<0.0176	0.0342 J	0.783	<0.0176	<0.137 R-02	0.126	0.036	0.01254
	10/6/2021	4.92	<0.0731	<0.377	<0.114	<0.137	0.0238	<0.0207	<0.0183	<0.0366	0.0183	<0.0183	<0.0183	0.0521	0.786	<0.0183	<0.166	0.287	0.0603	0.01648
Loading Rack																				
KMW13*	1/30/2020	78.6	53.2	<0.695 R-02	<0.636	<0.636	<0.318	<0.318	<0.318	<0.636	<0.318	<0.318	<0.318	<0.636	0.767	<0.318	18.4	<1.27	<0.636	<0.318
	10/1/2020	83.6	74.0	<1.01 R-02	<0.644	<0.644	<0.322	<0.322	<0.322	<0.644	<0.322	<0.322	<0.322	<0.644	1.07	<0.322	22.2	0.749 J	<0.644	<0.322
	10/1/2020 DUP	86.2	77.1	<1.01 R-02	<0.648	<0.648	<0.324	<0.324	<0.324	<0.648	<0.324	<0.324	<0.324	<0.648	1.14	<0.324	22.0	0.77 J	<0.648	<0.324
	3/25/2021	23.6	3.74	<0.384 R-02	<0.0987 R-02	<0.0351	<0.0175	<0.0175	<0.0175	<0.0351	<0.0175	<0.0175	<0.0175	<0.0351	0.464	<0.0175	<0.768 R-02	0.44	0.0219 J	<0.0175
	10/7/2021	37.8	14.4	<0.451	<0.101	<0.0564	<0.0180	<0.0180	<0.0180	<0.0361	<0.0180	<0.0180	<0.0180	<0.0361	0.456	<0.0180	0.925	0.222	<0.0361	<0.0180
KMW14*	Well KMW14 has been removed from the groundwater monitoring program. ¹¹																			
MW38*	6/25/2020	47.4	25.7	<2.26	<0.226	<0.340	<0.0755	<0.0755	<0.0755	<0.0755	<0.0755	<0.0755	<0.0755	<0.0755	2.51	<0.0755	0.679	3.19	0.0994	<0.0755
	10/1/2020	4.38	0.261	<0.408 R-02	<0.131	<0.131	<0.0653	<0.0653	<0.0653	<0.131	<0.0653	<0.0653	<0.0653	<0.131	0.392	<0.0653	<0.261	0.634	0.119 J	<0.0653
	3/25/2021	27.8	0.204	1.45	<0.244 R-02	<0.278 R-02	0.0289 M-05	0.0169 J	<0.0178	<0.0355	<0.0178	0.0249	<0.0178	0.0435	1.59	<0.0178	<0.588 R-02	1.57	0.126	0.02360
	10/7/2021	8.4	1.33	<0.561	<0.112	<0.224	0.0247	0.0301	0.0189	<0.0359	<0.0180	0.0287	<0.0180	0.04	0.573	<0.0180	<0.281	0.805	0.127	0.03745
MW39*	1/30/2020	146	250	<3.26	<3.26	<3.26	<1.63	<1.63	<1.63	<3.26	<1.63	<1.63	<1.63	<3.26	2.91 J	<1.63	498	<6.52	<3.26	<1.63
	10/1/2020	94.8	164	<3.39	<3.39	<3.39	<1.69	<1.69	<1.69	<3.39	<1.69	<1.69	<1.69	<3.39	2.16 J	<1.69	326	<6.77	<3.39	<1.69
	3/25/2021	88.2	126	<1.43 R-02	<0.561 R-02	<0.199	<0.0997	<0.0997	<0.0997	<0.199	<0.0997	<0.0997	<0.0997	<0.199	2.06	<0.0997	278	1.85	<0.199	<0.0997
	10/7/2021	107	183	<2.14	<1.37	<1.37	<0.686	<0.686	<0.686	<1.37	<0.686	<0.686	<0.686	<1.37	1.97	<0.686	228	<2.74	<1.37	<0.686
MW40	2/8/2018	<0.25	<0.25	<0.05	<0.05	0.0172 J	<0.05	<0.05	0.00817 B, J	0.00631 B, J	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.05	<0.05	0.03607
	3/13/2019	<0.0634	<0.0634	<0.0317	<0.0317	0.0547	0.0094 J	<0.0159 B	0.0135 J	<0.0317	0.00836 J	0.00832 J	<0.0159	<0.0317	<0.0317	0.00793 J	<0.0634	<0.0634	0.0188 J	0.01275
	1/28/2020	<0.0652	<0.0652	<0.0326	<0.0326	0.0453	<0.0163	<0.0163	<0.0163	<0.0326	<0.0163	<0.0163	<0.0163	<0.0326	<0.0326	<0.0163	<0.0652	<0.0652	<0.0326	<0.0163
	3/23/2021	<0.0636	<0.0636	<0.0318	<0.0318	<0.0988 R-02	<0.0159	<0.0159	<0.0159	<0.0318	<0.0159	<0.0159	<0.0159	<0.0318	<0.0318	<0.0159	<0.0636	<0.0636	<0.0318	<0.0159

Please refer to notes at end of table.

Table 15
Groundwater Analytical Data – PAHs
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																		
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	cPAHs
1997 Site ROD Cleanup Goal		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-	0.00012
Portland Harbor JSCS SLV		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2	-
MW41B*	1/28/2020	<0.0668	<0.0668	<0.0334	0.0229 J	<0.0334	0.0842	0.158	0.261	0.171	0.0993 M-05	0.125	0.0365	0.148	<0.0334	0.169	0.0393 J	0.0502 J	0.153	0.22425
	9/30/2020	<0.0639	<0.0639	<0.0319	<0.0319	0.0172 J	0.0248	0.0419	0.0587	0.0439	0.0208 M-05	0.0315	0.00799 J	0.0427 Q-29	<0.0319	0.0367	<0.0639	<0.0639	0.0463	0.05711
	3/25/2021	<0.0646	<0.0646	<0.0323	<0.0323	<0.0327	0.0174 M-05	0.0339	0.0537	0.0375	0.0222 M-05	0.0258	<0.0161	0.0214 J	<0.0323	0.0412	0.0432 J	<0.0646	0.025 J	0.04841
	10/6/2021	<0.0663	<0.0663	<0.0331	<0.0331	<0.0331	<0.0166	<0.0204	<0.0166	<0.0331	<0.0166	<0.0166	<0.0166	<0.0331	<0.0331	<0.0166	<0.0663	<0.0663	<0.0331	<0.0204
MW43	1/30/2020	128	281	<0.646	<0.646	<0.646	<0.323	<0.323	<0.323	<0.646	<0.323	<0.323	<0.323	<0.646	<0.646	<0.323	133	<1.29	<0.646	<0.323
	9/30/2020	125	277	<0.683	<0.683	<0.683	<0.341	<0.341	<0.341	<0.683	<0.341	<0.341	<0.341	<0.683	<0.683	<0.341	80.0	<1.37	<0.683	<0.341
	3/25/2021	84	188	<0.383	<0.383	0.0179 J	<0.191	<0.191	<0.191	<0.383	<0.191	<0.191	<0.191	<0.383	<0.383	<0.191	73.5	<0.766	<0.383	<0.191
	10/7/2021	75.6	170	<0.415	<0.415	<0.415	<0.207	<0.207	<0.207	<0.415	<0.207	<0.207	<0.207	<0.415	<0.415	<0.207	59.6	<0.829	<0.415	<0.207
MW44*	1/30/2020	0.0499 J	<0.0842	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	0.0218 J	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0421	<0.0842	<0.0421	0.0327 J	0.03186
	9/30/2020	2.61	<0.0636	<0.0318	<0.0318	<0.0318	<0.0159	<0.0159	<0.0159	<0.0318	<0.0159	<0.0159	<0.0159	<0.0318	<0.0318	<0.0159	0.422	<0.0636	0.0322	<0.0159
	3/25/2021	1.11	<0.0716	<0.0358	<0.0358	<0.0326	<0.0179	0.00895 J	<0.0179	<0.0358	<0.0179	<0.0179	<0.0179	<0.0358	<0.0358	<0.0179	0.125	<0.0716	<0.0358	0.01351
	10/6/2021	7.11	<0.0728	0.0883	<0.0364	<0.0364	<0.0182	<0.0214	<0.0182	<0.0364	<0.0182	<0.0182	<0.0182	<0.0364	<0.0364	<0.0182	0.527	<0.0728	0.0419	<0.0182
MW45*	3/13/2019	<0.0643	<0.0643	<0.0322	<0.0322	<0.0322	<0.0161	<0.0161 B	0.0106 J	<0.0322	<0.00804	<0.00804	<0.0161	<0.0322	<0.0322	<0.0161	<0.0643	<0.0643	<0.0322	0.01197
	3/13/2019	<0.0643	<0.0643	<0.0322	<0.0322	<0.0322	<0.0161	<0.0161 B	0.0106 J	<0.0322	<0.0161	<0.00804	<0.0161	<0.0322	<0.0322	<0.0161	<0.0643	<0.0643	<0.0322	0.01237
	1/30/2020	<0.0665	<0.0665	<0.0333	<0.0333	<0.0333	0.0118 J	0.0244	0.0318	0.0246 J	0.0144 J	0.0173	<0.0166	0.0291 J	<0.0333	0.0164 J	<0.0665	<0.0665	0.0308 J	0.03284
	3/23/2021	<0.0652	<0.0652	<0.0326	<0.0326	<0.034	0.0171 M-05	0.0448	0.0672	<0.01	0.0277 M-05	0.0253 M-05	0.00856 J	0.0261 J	<0.0326	0.0452	0.0338 J	<0.0652	0.0289 J	0.06163
MW46*	1/29/2020	<0.0644	<0.0644	<0.0322	<0.0322	<0.0322	0.0318	0.0356	0.0451	0.0325	0.0234 M-05	0.0397	<0.0161	0.077	<0.0322	0.0261	0.0463 J	0.0698	0.0663	0.04944
	9/29/2020	<0.0653	<0.0653	<0.0327	<0.0327	<0.0327	0.00898 J	0.0135 J	0.0139 J	0.0163 J	<0.0163	<0.0163	<0.0163	0.0188 J	<0.0327	<0.0163	0.0437 J	<0.0653	0.018 J	0.01831
	3/25/2021	<0.0681	<0.0681	<0.034	<0.034	<0.146 R-02	0.0111 J	0.0166 J	0.0166 J	0.0183 J	0.00893 J	0.00851 J	0.00936 J	0.0183 J	<0.034	0.014 J	<0.0681	<0.0681	<0.034	0.02268
	10/6/2021	<0.0638	<0.0638	<0.0319	<0.0319	<0.0319	<0.0159	<0.0187	<0.0159	<0.0319	<0.0159	<0.0159	<0.0159	<0.0319	<0.0319	<0.0159	0.20	<0.0638	<0.0319	<0.0187
DPE Treatment Area																				
EX-07L	1/29/2020	NA	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.40	<0.040	<0.04	<0.04
	9/29/2020	<0.40	<0.40	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.40	<0.04	<0.04	<0.04
	3/24/2021	<0.10	<0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.10	<0.01	<0.01	<0.01
	10/5/2021	<0.10	<0.10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.10	<0.010	<0.010	<0.010

Please refer to notes at end of table.

Table 15
Groundwater Analytical Data – PAHs
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																		
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	cPAHs
1997 Site ROD Cleanup Goal		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-	0.00012
Portland Harbor JSCS SLV		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2	-
KMW29	1/29/2020	NA	NA	1.8	<0.040	0.12	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	3.9	<0.04	0.97	2.6	0.075	<0.04	
	9/29/2020	11	<0.40	2.0	<0.040	0.16	<0.04	<0.04	<0.04	<0.08	<0.04	<0.04	<0.04	0.62	4.1	<0.04	<0.04	2.2	0.081	<0.04
	3/24/2021	16	<0.10	1.4	<0.01	0.14	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.054	4.0	<0.01	<0.10	2.8	0.072	<0.01
	10/5/2021	13	<0.10	1.6	<0.010	0.13	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	0.051	3.1	<0.010	0.87	2.4	0.062	<0.010
KMW30	1/29/2020	NA	NA	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
	9/29/2020	20	<0.40	0.47	<0.04	0.053	<0.04	<0.04	<0.04	<0.08	<0.04	<0.04	<0.04	<0.04	0.82	<0.04	<0.40	0.67	<0.04	<0.04
	3/24/2021	2.9	<0.10	0.10	<0.01	0.015	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.013	0.18	<0.01	<0.10	0.069	0.015	<0.01
	3/24/2021 DUP	2.4	<0.10	0.093	<0.01	0.018	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.01	0.17	<0.01	<0.10	0.061	0.014	<0.01
10/5/2021	33	<1.0	0.75	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.10	<0.10	<0.10	<0.10	1.2	<0.10	<1.0	0.89	<0.10	<0.10	
KMW31	1/29/2020	NA	NA	0.48	<0.04	0.12	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.99	<0.04	0.44	0.91	0.048	<0.04	
	1/29/2020 DUP	NA	NA	0.47	<0.04	0.13	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	1.0	<0.04	0.45	0.96	0.05	<0.04	
	9/29/2020	6.7	<0.40	0.76	<0.04	0.21	<0.04	<0.04	<0.04	<0.08	<0.04	<0.04	<0.04	0.063	1.5	<0.04	<0.40	1.5	0.11	<0.04
	9/29/2020 DUP	6.9	<0.40	0.78	<0.04	0.21	<0.04	<0.04	<0.04	<0.08	<0.04	<0.04	<0.04	0.059	1.5	<0.04	<0.40	1.3	0.11	<0.04
	3/24/2021	17	<0.10	0.83	<0.01	0.13	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.053	1.5	<0.01	<0.10	1.4	0.09	<0.01
10/5/2021	2.0	<0.10	0.35	<0.010	0.13	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	0.05	0.70	<0.010	<0.10	0.20	0.089	<0.010	
KMW32	1/29/2020	NA	NA	0.51	<0.04	0.13	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	1.0	<0.04	0.41	0.96	0.05	<0.04	
	9/29/2020	<0.40	<0.40	<0.40	<0.04	<0.04	<0.04	<0.04	<0.04	<0.08	<0.04	<0.04	<0.04	<0.04	<0.04	<0.40	<0.04	<0.04	<0.04	<0.04
	3/24/2021	<0.10	<0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.01	<0.01	<0.10	<0.01	0.038	<0.01	<0.01
	3/24/2021 DUP	<0.10	<0.10	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.013	<0.01	<0.10	<0.01	0.045	<0.01	<0.01
10/5/2021	<0.10	<0.10	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.10	<0.010	0.047	<0.010	
KMW33	1/29/2020	NA	NA	0.67	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	2.5	<0.04	<0.40	0.29	0.094	<0.04	
	9/29/2020	<0.40	<0.40	0.11	<0.04	<0.04	<0.04	<0.04	<0.04	<0.08	<0.04	<0.04	<0.04	<0.04	<0.04	0.69	<0.04	0.079	<0.04	<0.04
	3/24/2021	<0.10	<0.10	0.11	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.024	0.46	<0.01	<0.10	<0.01	0.054	<0.01
	10/6/2021	<0.10	<0.10	0.56	<0.010	0.077	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	0.023	1.4	<0.010	<0.10	<0.010	0.058	<0.010
KMW37	1/29/2020	NA	NA	0.26	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.57	<0.04	<0.04	0.35	<0.04	<0.04	<0.04
	9/30/2020	<0.40	<0.40	0.35	<0.04	0.059	<0.04	<0.04	<0.04	<0.08	<0.04	<0.04	<0.04	0.065	0.61	<0.04	<0.04	0.57	0.086	<0.04
	3/24/2021	0.65	<0.10	0.85	<0.01	0.048	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.025	1.8	<0.01	<0.10	0.68	0.031	<0.01
	10/6/2021	0.24	<0.10	0.33	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	0.059	0.6	<0.010	<0.10	0.49	0.071	<0.010

Please refer to notes at end of table.

Table 15
Groundwater Analytical Data – PAHs
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																		
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	cPAHs
1997 Site ROD Cleanup Goal		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-	0.00012
Portland Harbor JSCS SLV		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2	-
MW47	1/29/2020	NA	NA	1.1	<0.04	0.079	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.06	2.2	<0.04	<0.04	0.06	0.059	<0.04
	9/29/2020	<0.40	<0.40	1.5	<0.04	0.088	<0.04	<0.04	<0.04	<0.08	<0.04	<0.04	<0.04	0.063	2.5	<0.04	<0.04	0.10	0.069	<0.04
	3/24/2021	0.11	<0.10	1	<0.01	0.048	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.048	2.0	<0.01	<0.10	0.056	0.041	<0.01
	10/6/2021	<0.10	<0.10	1.2	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	0.05	1.8	<0.010	<0.10	0.035	0.04	<0.010
MW48	1/29/2020	NA	NA	0.11	<0.04	0.045	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.045	0.25	<0.04	<0.04	0.51	0.055	<0.04
	1/29/2020 DUP	NA	NA	0.093	<0.04	0.049	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.051	0.25	<0.04	<0.04	0.52	0.061	<0.04
	9/29/2020	1.8	<0.40	0.079	<0.04	0.077	<0.04	<0.04	<0.04	<0.08	<0.04	<0.04	<0.04	0.042	0.18	<0.04	<0.04	0.40	0.062	<0.04
	9/29/2020 DUP	2.1	<0.40	0.079	<0.04	0.0787	<0.04	<0.04	<0.04	<0.08	<0.04	<0.04	<0.04	0.050	0.22	<0.04	<0.04	0.51	0.081	<0.04
	3/24/2021	2.9	<0.10	0.084	<0.01	0.036	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.030	0.22	<0.01	<0.10	0.27	0.039	<0.01
	10/5/2021	0.43	<0.10	0.075	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	0.049	0.10	<0.010	<0.10	<0.010	0.075	<0.010
10/5/2021 DUP	0.17	<0.10	0.066	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	0.05	0.068	<0.010	<0.10	<0.010	0.073	<0.010	
MW49	1/29/2020	NA	NA	0.78	<0.04	0.076	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.064	1.3	<0.04	<0.40	0.70	0.078	<0.04
	9/29/2020	<0.40	<0.40	0.5	<0.04	0.043	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.072	0.44	<0.04	<0.40	<0.04	0.089	<0.04
	3/24/2021	0.27	<0.10	1.1	<0.01	0.11	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.11	1.8	<0.01	<0.10	0.87	0.12	<0.01
	10/6/2021	<0.10	<0.10	0.64	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	0.086	0.69	<0.010	<0.10	0.15	0.082	<0.010
Slurry Wall																				
KMW36	1/30/2020	1.12	<0.255	<1.6 R-02	<0.638 R-02	<0.598 R-02	0.0413 J	0.0321 J	<0.0638	<0.128	<0.0638	0.042 J	<0.0638	0.27	1.94	<0.0638	<0.798 R-02	<0.255	0.324	0.04941
	9/30/2020	<0.255	<0.255	<1.59 R-02	<0.884 R-02	<0.771 R-02	<0.0637	<0.0637	<0.0637	<0.127	<0.0637	<0.0637	<0.0637	0.161 Q-29	1.84	<0.0637	<0.486 R-02	<0.255	0.202	<0.0637
	3/24/2021	0.198	<0.0636	<0.745 R-02	<0.298 R-02	<0.397 R-02	0.0207 M-05	0.0163	0.0159 M-05	<0.0318	<0.0159	0.025 M-05	<0.0159	0.12	1.11	<0.0159	<0.447 R-02	<0.0636	0.174	0.02260
	10/6/2021	<0.222	<0.0744	<1.67	<0.555	0.398	<0.0210	<0.0235	<0.0208	<0.0355	<0.0178	<0.0242	<0.0178	0.131	1.85	<0.0178	<0.653	<0.0711	0.171	<0.0242
W-16	1/29/2020	2.11	<0.259	<1.21 R-02	<0.364 R-02	<0.202 R-02	<0.0647	<0.0647	<0.0647	<0.129	<0.0647	<0.0647	<0.0647	0.109 J	2.02	<0.0647	<0.808 R-02	<0.259	0.119 J	<0.0647
	10/1/2020	0.202	<0.258	<0.605 R-02	<0.129	<0.129	<0.0645	<0.0645	<0.0645	<0.129	<0.0645	<0.0645	<0.0645	0.0661 J	0.921	<0.0645	<0.258	<0.258	0.106 J	<0.0645
	3/25/2021	0.418	<0.0717	0.825	<0.28 R-02	<0.341 R-02	<0.0179	<0.0179	<0.0179	<0.0358	<0.0179	<0.0179	<0.0179	0.0676	1.62	<0.0179	<0.347 R-02	<0.0717	0.121	<0.0179
	10/6/2021	0.287	<0.0704	<0.693	<0.198	<0.215	<0.0234	<0.0176	<0.0176	<0.0352	<0.0176	<0.0176	<0.0176	0.0704	1.27	<0.0176	<0.275	<0.215	0.0783	<0.0234
W-19	2/8/2018	0.52	0.0548 J	2.01	<0.05	0.537	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.119	1.22	<0.05	0.379	0.951	0.209	<0.05
	3/15/2019	0.241	0.062 J	1.44	<0.171 R-02	0.324	<0.0161	<0.0161	<0.0161	<0.0322	<0.0161	<0.0161	<0.0161	0.0744	0.372	<0.0161	<0.352 R-02	0.153	0.147	<0.0161
	1/30/2020	0.797	<0.257	<3.21 R-02	<0.482 R-02	0.699	<0.0642	<0.0642	<0.0642	<0.128	<0.0642	<0.0642	<0.0642	0.173	0.953	<0.0642	<0.522 R-02	1.25	0.24	<0.0642
	3/25/2021	0.144	<0.0728	1.89	<0.193 R-02	0.02 J	0.0132 J	<0.0182	<0.0182	<0.0364	<0.0182	0.0123 J	<0.0182	0.117	0.158	<0.0182	<0.341 R-02	0.141	0.173	0.01418

Please refer to notes at end of table.

Table 15
Groundwater Analytical Data – PAHs
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																		
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	cPAHs
1997 Site ROD Cleanup Goal		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-	0.00012
Portland Harbor JSCS SLV		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2	-
W-20	2/8/2018	<0.25	<0.25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.05	0.0122 J	<0.05
	3/15/2019	<0.0633	<0.0633	<0.0317	<0.0317	0.0269 J	<0.0158	<0.0158	<0.0158	<0.0317	<0.0158	<0.0158	<0.0158	<0.0317	<0.0317	<0.0158	0.0552 J	<0.0633	<0.0317	<0.0158
	1/30/2020	<0.0648	<0.0648	<0.0324	<0.0324	0.0222 J	<0.0162	<0.0162	<0.0162	<0.0324	<0.0162	<0.0162	<0.0162	<0.0324	<0.0324	<0.0162	<0.0648	<0.0648	0.0367	<0.0162
	3/25/2021	<0.071	<0.071	<0.0355	<0.0355	<0.032	<0.0178	<0.0178	<0.0178	<0.0355	<0.0178	<0.0178	<0.0178	<0.0355	<0.0355	<0.0178	<0.071	<0.071	<0.0355	<0.0178
W-22	2/8/2018	<0.25	<0.25	<0.05	<0.05	<0.05	<0.05	<0.05	0.00665 B, J	0.00547 B, J	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.05	<0.05	0.03592
	3/15/2019	<0.0692	<0.0692	<0.0346	<0.0346	<0.0346	<0.0173	<0.0173	<0.0173	<0.0346	<0.0173	<0.0173	<0.0173	<0.0346	<0.0346	<0.0173	0.0633 J	<0.0692	<0.0346	<0.0173
	1/30/2020	<0.0664	<0.0664	<0.0332	<0.0332	<0.0332	<0.0166	0.00858 J	0.00917 J	<0.0332	<0.0166	<0.0166	<0.0166	<0.0332	<0.0332	<0.0166	<0.0664	<0.0664	<0.0332	0.0129
	3/23/2021	<0.0639	<0.0639	<0.032	<0.032	<0.032	<0.016	<0.016	<0.016	<0.032	<0.016	<0.016	<0.016	<0.032	<0.032	<0.016	<0.0639	<0.0639	<0.032	<0.016
Site-Wide																				
KMW01	2/9/2018	<0.25	0.0105 J	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0299 J	<0.05	<0.05	<0.05
	3/15/2019	<0.0635	<0.0635	<0.0318	<0.0318	<0.0318	<0.0159	<0.0159	<0.0159	<0.0318	<0.0159	<0.0159	<0.0159	<0.0318	<0.0318	<0.0159	<0.0635	<0.0635	<0.0318	<0.0159
	1/29/2020	<0.0634	<0.0634	<0.0317	<0.0317	<0.0317	<0.0159	<0.0159	<0.0159	<0.0317	<0.0159	<0.0159	<0.0159	<0.0317	<0.0317	<0.0159	<0.0634	<0.0634	<0.0317	<0.0159
	3/23/2021	<0.0643	<0.0643	<0.0321	<0.0321	<0.0321	<0.0161	<0.0161	<0.0161	<0.0321	<0.0161	<0.0161	<0.0161	<0.0321	<0.0321	<0.0161	<0.0643	<0.0643	<0.0321	<0.0161
KMW02	1/29/2020	<0.0374	<0.0374	<0.0187	<0.0187	<0.0187	<0.0187	0.0165	<0.0280	<0.0187	<0.0280	<0.0187	<0.0187	<0.0187	<0.0187	<0.0187	<0.0374	<0.0187	<0.0187	0.02220
	10/1/2020	<0.0396	<0.0396	<0.0198	<0.0198	<0.0198	<0.0198	<0.0297	<0.0297	<0.0198	<0.0297	<0.0198	<0.0198	<0.0198	<0.0198	<0.0198	<0.0396	<0.0198	<0.0198	<0.0297
	3/23/2021	<0.0412	<0.0412	<0.0206	<0.0206	<0.0206	<0.0206	<0.0309	<0.0309	<0.0206	<0.0309	<0.0206	<0.0206	<0.0206	<0.0206	<0.0206	<0.0412	<0.0206	<0.0206	<0.0309
	10/7/2021	<0.0757 Q-30	<0.0757 Q-30	<0.0378	<0.0378	<0.0378	<0.0189	<0.0189	<0.0189	<0.0378	<0.0189	<0.0189	<0.0189	<0.0378	<0.0378	<0.0189	<0.0757 Q-30	<0.0757	<0.0378	<0.0309
KMW05	2/8/2018	2.49	0.0357 J	2.62	<0.05	0.45	0.0783	0.0485 J	0.0558	0.047 J	<0.05	0.179	0.0102 J	0.192	2.67	0.0289 J	0.511	0.739	0.631	0.07011
	3/13/2019	3.98	0.0559 J	<4.31 R-02	<0.702 R-02	<0.702 R-02	0.0511 M-05	0.0442 B,B-02	0.0371 M-05	0.0408	0.0155 J	0.0865 M-05	<0.0160	0.112	5.29	0.0266	<0.421 R-02	3.85	0.364	0.05890
	1/28/2020	59.6	<2.61	<6.26 R-02	<1.67 R-02	<1.3	<0.652	<0.652	<0.652	<1.3	<0.652	<0.652	<0.652	<1.3	6.99	<0.652	<3.26 R-02	6.35	0.671 J	<0.652
	3/23/2021	3.16	<0.145 R-02	<6.77 R-02	<1.21 R-02	<0.967 R-02	0.014 J	0.0116 J	<0.0193	<0.0387	<0.0193	0.0111 J	<0.0193	0.0551	8.4	<0.0193	<0.484 R-02	5.06	0.181	0.01794
KMW09	2/6/2018	<0.25	<0.25	<0.05	<0.05	<0.05	<0.05	<0.05	0.0028 B, J	0.00278 J	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0234 B, J	<0.05	<0.05	0.03553
	3/13/2019	<0.0651	<0.0651	<0.0326	<0.0326	0.0275 J	<0.0163	<0.0163 B	<0.0163	<0.0326	<0.0163	<0.00814	<0.0163	<0.0326	<0.0326	<0.0163	<0.0651	<0.0651	<0.0326	<0.0163
	1/29/2020	<0.064	<0.064	<0.032	<0.032	0.016 J	0.0184	0.018	0.0211	<0.032	0.00936 J	0.0163	<0.016	0.0313 J	<0.032	0.017	<0.064	<0.064	0.0318 J	0.025549
	3/23/2021	<0.0639	<0.0639	<0.0319	<0.0319	<0.0319	<0.016	<0.016	<0.016	<0.0319	<0.016	<0.016	<0.016	<0.0319	<0.0319	<0.016	<0.0639	<0.0639	<0.0319	<0.016

Please refer to notes at end of table.

Table 15
Groundwater Analytical Data – PAHs
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																		
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	cPAHs
1997 Site ROD Cleanup Goal		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-	0.00012
Portland Harbor JSCS SLV		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2	-
KMW10*	1/28/2020	<0.0639	<0.0639	<0.032	<0.032	0.0197 J	<0.016	0.0106 J	0.00919 J	<0.032	<0.016	<0.016	<0.016	<0.032	<0.032	<0.016	<0.0639	<0.0639	<0.032	0.01480
	9/29/2020	<0.0653	<0.0653	<0.0326	<0.0326	0.02 J	<0.0163	<0.0163	<0.0163	<0.0326	<0.0163	<0.0163	<0.0163	<0.0326	<0.0326	<0.0163	<0.0653	<0.0653	<0.0326	0.01312
	3/23/2021	<0.0631	<0.0631	<0.0316	<0.0316	0.0174 J	<0.0158	0.0107 J	0.00789 J	<0.0316	<0.0158	<0.0158	<0.0158	<0.0316	<0.0316	<0.0158	<0.0631	<0.0631	<0.0316	0.01473
	10/7/2021	<0.0671	<0.0671	<0.0336	<0.0336	<0.0336	<0.0168	<0.0168	<0.0168	<0.0336	<0.0168	<0.0168	<0.0168	<0.0336	<0.0336	<0.0168	<0.0671	<0.0671	<0.0336	<0.0168
KMW16*	2/9/2018	<0.25	<0.25	<0.05	<0.05	<0.05	0.0385 J	0.0458	0.0656	0.0562	0.0283 J	0.0586	0.00748 J	0.122	<0.05	0.0419 J	<0.25	0.0347 J	0.09	0.06456
	3/14/2019	<0.064	0.0441 J	<0.032	<0.032	<0.032	0.013 J	0.0204	0.025 M-05	0.0245 J	0.012 J	0.0139 J	<0.016	0.0255 J	<0.032	0.018	0.0599 J	<0.064	0.0261 J	0.02814
	1/30/2020	0.0334 J	0.0662	<0.032	<0.032	<0.032	0.0165	0.0186	0.02	<0.032	0.0121 J	0.0167	<0.016	0.0275 J	<0.032	0.0168	0.0468 J	<0.064	0.0285 J	0.02611
	3/25/2021	<0.068	<0.068	<0.034	<0.034	<0.034	0.0191	0.0404	0.0391	0.0298 J	0.0174 M-05	0.023	<0.017	0.0463	<0.034	0.0196	<0.068	<0.068	0.0455	0.051
KMW20	2/9/2018	<0.25	<0.25	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.25	<0.05	0.279	<0.05
	3/14/2019	<0.0657	0.0449 J	<0.0329	<0.0329	<0.0329	<0.0164	<0.0164	<0.0164	<0.0329	<0.0164	<0.0164	<0.0164	<0.0329	<0.0329	<0.0164	0.0898	<0.0657	0.0812	<0.0164
	1/30/2020	<0.0636	<0.0636	<0.0318	<0.0318	<0.0318	<0.0159	0.0132 J	0.0142 J	<0.0318	0.00808 J	0.0106 J	<0.0159	<0.0318	<0.0318	<0.0159	<0.0636	<0.0636	0.183	0.01792
	3/23/2021	0.0328 J	<0.0639	<0.032	<0.032	<0.032	<0.016	0.00799 J	<0.016	<0.032	<0.016	<0.016	<0.016	<0.032	<0.032	<0.016	0.139	<0.0639	0.0212 J	0.01127
KMW21	2/9/2018	<0.258	<0.258	1.69	<0.0515	<0.0515	<0.0515	<0.0515	<0.0515	<0.0515	<0.0515	<0.0515	<0.0515	0.0491 J	3.26	<0.0515	0.267	<0.0515	0.0495 J	<0.0515
	3/14/2019	0.516	0.0902	<2.63 R-02	<0.668 R-02	0.187	0.0145 J	<0.0162	<0.0162	<0.0324	<0.0162	0.0118 J	<0.0162	0.0607	6.23	<0.0162	<0.334 R-02	2.12	0.0662	0.01291
	1/30/2020	1.35	0.771	<4.92 R-02	<1.35 R-02	<0.369 R-02	<0.0656	<0.0656	<0.0656	<0.131	<0.0656	<0.0656	<0.0656	0.121 J	9.42	<0.0656	<0.533 R-02	7.5	0.137	<0.0656
	3/23/2021	<0.123 R-02	<0.0655	1/0/1900	<0.0717 R-02	<0.154 R-02	0.0152 J	<0.0164	<0.0164	<0.0328	<0.0164	0.00819 J	<0.0164	1/0/1900	1.22	<0.0164	<0.184 R-02	<0.102 R-02	0.0684	0.01232
MW42	2/8/2018	0.0098 J	<0.25	<0.05	<0.05	<0.05	<0.05	<0.05	0.0123 B, J	0.0113 B, J	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.0332 J	<0.05	<0.05	0.03648
	3/14/2019	<0.0638	<0.0638	<0.0319	<0.0319	<0.0319	0.011 J	0.0146 J	0.0158 J	0.0203 J	0.00925 J	<0.016	<0.016	<0.0319	<0.0319	0.0108 J	0.0395 J	<0.0638	<0.0319	0.02017
	1/30/2020	0.0355 J	0.0586 J	<0.032	<0.032	<0.032	0.0115 J	0.0203	0.0247	0.0262 J	0.0132 J	0.0132 J	<0.016	0.0302 J	<0.032	0.0149 J	0.0677	0.0348 J	0.0292 J	0.02766
	3/25/2021	<0.0653	<0.0653	<0.0327	0.0176 J	<0.383	0.0751	0.185	0.202	0.144	0.0972 M-05	0.115	0.0216	0.174	<0.0327	0.122	<0.0653	0.0625 J	0.165	0.23794
W-15	1/29/2020	NA	NA	0.51	<0.04	0.067	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	1.1	<0.04	<0.04	0.69	0.06	<0.04
	9/30/2020	<0.40	<0.40	0.81	<0.04	0.085	<0.04	<0.04	<0.04	<0.08	<0.04	<0.04	<0.04	0.050	1.6	<0.04	<0.04	1.10	0.11	<0.04
	3/24/2021	0.23	<0.10	0.60	<0.01	0.068	<0.01	<0.01	<0.01	<0.02	<0.01	<0.01	<0.01	0.041	1.3	<0.01	<0.10	0.78	0.081	<0.01
	10/6/2021	0.10	<0.10	0.33	<0.010	0.024	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	0.015	0.61	<0.010	<0.10	0.42	0.032	<0.010
	10/6/2021 DUP	0.19	<0.10	0.65	<0.010	0.064	<0.010	<0.010	<0.010	<0.020	<0.010	<0.010	<0.010	0.037	1.2	<0.010	<0.10	0.93	0.076	<0.010

Please refer to notes at end of table.

Table 15
Groundwater Analytical Data – PAHs
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																		
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	ΣPAHs
1997 Site ROD Cleanup Goal		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-	0.00012
Portland Harbor JSCS SLV		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2	-
Southern Facility Area																				
MW-1	2/2/2012	NM	NM	<0.0054	<0.00638	0.0095	0.0285	0.0381	0.0381	0.0381	0.019	0.0285	0.0095	0.0381	<0.00587	0.019	0.019	0.0095	0.0381	0.04980
	12/29/2020	<0.0649	<0.0649	<0.0324	<0.0324	<0.0324	<0.0162	<0.0162	<0.0162	<0.0324	<0.0162	<0.0162	<0.0162	<0.0324	<0.0324	<0.0162	<0.0649	<0.0649	<0.0324	<0.0162
	12/29/2020 DUP	<0.0646	<0.0646	<0.0323	<0.0323	<0.0323	<0.0161	<0.0161	<0.0161	<0.0323	<0.0161	<0.0161	<0.0161	<0.0323	<0.0323	<0.0161	<0.0646	<0.0646	<0.0323	<0.0161
MW-2	2/2/2012	NM	NM	0.124	<0.00639	<0.00353	0.00703	<0.0043	<0.00356	<0.00383	<0.00696	0.00303	<0.00473	0.0095	<0.00587	<0.00303	0.0095	0.0095	0.171	0.00686
	12/29/2020	<0.0651	<0.0651	<0.0325	<0.0325	<0.0325	<0.0163	<0.0163	<0.0163	<0.0325	<0.0163	<0.0163	<0.0163	<0.0325	<0.0325	<0.0163	<0.0651	<0.0651	0.081	<0.0163
	3/23/2021	<0.0649	<0.0649	0.0925	<0.0324	<0.0324	0.015 J	0.0227	0.0174	0.0191 J	<0.0162	0.0114 J	<0.0162	0.0255 J	<0.0324	0.0101 J	0.0998	<0.0649	0.0908	0.03030
	10/7/2021	<0.0685	<0.0685	<0.0342	<0.0342	<0.0342	<0.0171	<0.0171	<0.0171	<0.0342	<0.0171	<0.0171	<0.0171	<0.0342	<0.0342	<0.0171	<0.0685	<0.0685	0.0839	<0.0171
MW-3	2/2/2012	NM	NM	<0.0054	<0.00639	<0.00353	0.0286	0.019	0.019	0.019	0.019	0.019	0.019	0.019	<0.00587	0.019	0.019	0.0095	0.0286	0.02965
	12/29/2020	<0.0634	<0.0634	<0.0317	<0.0317	<0.0317	<0.0159	<0.0159	<0.0159	<0.0317	<0.0159	<0.0159	<0.0159	<0.0317	<0.0317	<0.0159	<0.0634	<0.0634	<0.0317	<0.0159
	3/23/2021	<0.0665	<0.0665	<0.0333	<0.0333	<0.0333	<0.0166	<0.0166	<0.0166	<0.0333	<0.0166	<0.0166	<0.0166	<0.0333	<0.0333	<0.0166	<0.0665	<0.0665	<0.0333	<0.0166
	10/7/2021	<0.0693	<0.0693	<0.0347	<0.0347	<0.0347	<0.0173	<0.0173	<0.0173	<0.0347	<0.0173	<0.0173	<0.0173	<0.0347	<0.0347	<0.0173	<0.0693	<0.0693	<0.0347	<0.0173
	10/7/2021	<0.0709	<0.0709	<0.0354	<0.0354	<0.0354	<0.0177	<0.0177	<0.0177	<0.0354	<0.0177	<0.0177	<0.0177	<0.0354	<0.0354	<0.0177	<0.0709	<0.0709	<0.0354	<0.0177
MW-4	2/2/2012	NM	NM	0.0095	<0.0064	<0.00354	0.0191	0.0095	0.0095	<0.00384	0.0095	0.0095	0.00474	0.0095	<0.00589	0.00304	0.0191	0.0095	0.0095	0.01418
	12/29/2020	<0.0641	<0.0641	<0.0321	<0.0321	<0.0321	<0.016	<0.016	<0.016	<0.0321	<0.016	<0.016	<0.016	<0.0321	<0.0321	<0.016	<0.0641	<0.0641	<0.0321	<0.016
	3/23/2021	<0.0658	<0.0658	<0.0329	<0.0329	0.0533	0.014 J	0.0181	0.0144 J	<0.0329	<0.0164	0.00945 J	<0.0164	0.0218 J	<0.0329	<0.0164	<0.0658	<0.0658	0.0218 J	0.02595
	10/7/2021	<0.0701	<0.0701	<0.0350	<0.0350	<0.0350	<0.0175	<0.0175	<0.0175	<0.0350	<0.0175	<0.0175	<0.0175	<0.0350	<0.0350	<0.0175	<0.0701	<0.0701	<0.0350	<0.0175
VRUMW-1	2/2/2012	NM	NM	0.0095	<0.00639	<0.00353	0.019	<0.0043	0.0095	0.0095	0.0095	0.0095	<0.00473	0.0095	<0.00587	0.0095	0.019	0.0095	0.019	0.00962
	12/28/2020	<0.0638	<0.0638	<0.0319	<0.0319	<0.0319	0.0195	0.0335	0.0299	0.0239 J	0.0128 J	0.0203	<0.016	0.0407	<0.0319	0.0187	<0.0638	<0.0638	0.0391	0.04339
VRUMW-2	2/2/2012	NM	NM	0.019	0.0095	0.0095	<0.00703	0.019	<0.00356	<0.00383	<0.00696	<0.00303	<0.00473	0.0095	0.019	<0.00303	0.019	0.0095	0.0095	0.02156
	12/28/2020	<0.0643	<0.0643	<0.0321	<0.0321	<0.0321	<0.0161	0.00964 J	<0.0161	<0.0321	<0.0161	<0.0161	<0.0161	<0.0321	<0.0321	<0.0161	<0.0643	<0.0643	<0.0321	0.01785
VO-1	2/1/2012	NM	NM	<0.0054	<0.00638	<0.00353	0.0095	<0.00429	<0.00356	<0.00383	<0.00695	0.00302	<0.00473	0.0095	<0.00587	<0.00303	0.143	0.0095	<0.0065	0.00710
	2/1/2012 DUP	NM	NM	<0.0054	<0.00639	<0.00353	0.0095	<0.0043	<0.00356	<0.00383	<0.00696	0.00303	<0.00473	<0.00354	<0.00587	<0.00303	0.162	0.0095	0.0095	0.00711
	12/28/2020	1.30	1.84	<0.0318	<0.0318	0.0159 J	<0.0159	<0.0159	<0.0159	<0.0318	<0.0159	<0.0159	<0.0159	<0.0318	<0.0318	<0.0159	0.368	<0.0637	0.0191 J	0.02401
VO-2	2/1/2012	NM	NM	<0.00539	<0.00637	<0.00352	0.00701	<0.00429	<0.00355	<0.00382	<0.00694	0.00302	<0.00472	<0.00363	<0.00586	<0.00302	0.019	0.0095	<0.00649	0.00684
	12/28/2020	<0.0632	<0.0632	<0.0316	<0.0316	<0.0316	<0.0158	<0.0158	<0.0158	<0.0316	<0.0158	<0.0158	<0.0158	<0.0316	<0.0316	<0.0158	<0.0632	<0.0632	<0.0316	0.02386
VO-3	2/2/2012	NM	NM	0.0095	<0.00639	<0.00353	0.019	<0.0043	0.0095	0.0095	0.0095	0.0095	<0.00473	0.0095	<0.00587	0.0095	0.019	0.0095	0.019	0.00962
	12/29/2020	<0.0646	<0.0646	<0.0323	<0.0323	<0.0323	<0.0162	0.0109 J	0.00888 J	<0.0323	<0.0162	<0.0162	<0.0162	<0.0323	<0.0323	<0.0162	<0.0646	<0.0646	<0.0323	0.01843

Please refer to notes at end of table.

Table 15 Notes

Groundwater Analytical Data – PAHs

Shore Terminals LLC - Portland Facility

Portland, Oregon

Notes:

1. PAH = Polycyclic aromatic hydrocarbons.
2. < = Concentration as reported by the analytical laboratory is less than the laboratory reporting limit.
3. µg/L = Microgram(s) per liter.
4. NA = Not analyzed .
5. DUP = Field Duplicate.
6. Yellow highlighted cells indicate values that are equal to or exceeding 1997 Record of Decision (ROD) Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
7. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
8. Green highlighted cells indicate the method reporting limit is greater than the PHSS ROD Cleanup Level or the JSCS SLV (if there is no ROD Cleanup Level)
9. Polycyclic aromatic hydrocarbons analyzed by EPA Method 8270C with selective ion monitoring.
10. * = Well is screened in Deep Sand unit.
11. Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
12. Well KMW14 was paved over prior to the October 2017 monitoring event. In an email dated February 21, 2018, DEQ agreed that well KMW14 was not critical to monitoring the Loading Rack Area and that replacement of KMW14 was not required. Well KMW14 has been removed from the monitoring program.

Quality Assurance/Quality Control Data Qualifiers

J = Reported result is an estimated value.

B = Reported analyte was present in the associated method blank.

M-05 = Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.

R-02 = The reporting limit for the analyte has been raised to account for interference from coeluting organic compounds present in the sample.

Table 16**Groundwater Analytical Data – Total and Dissolved Metals**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)							
		Total Arsenic	Total Copper	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal		--	--	--	--	5.0	12	3.2	--
PHSS Cleanup Level		--	--	--	--	0.018	2.74	0.54	36
Portland Harbor JSCS SLV		--	--	--	--	0.045	2.7	0.54	36
Tank Field 1									
KMW07	2/8/2018	41.0	1.31 J	1.98 J	NA	38.5	<5.00	1.59 J	NA
	2/08/2018 DUP	41.4	1.02 J	1.88 J	NA	39.3	<5.00	1.56 J	NA
	3/13/2019	4.91	0.971 J	0.325	NA	2.26	<1.00	0.178 J	NA
	3/13/2019 DUP	5.26	1.06	0.333	NA	2.40	<1.00	0.172 J	NA
	1/28/2020	23.1	0.88 J	1.57	NA	2.59	<1.00	1.14	NA
	1/28/2020 DUP	23.8	0.622 J	1.44	NA	26.1	<1.00	1.19	NA
	3/25/2021	5.22	1.49 J	0.315	NA	2.49	<2.00	<0.20	NA
	3/25/2021 DUP	4.89	1.43 J	0.293	NA	2.26	<2.00	<0.20	NA
KMW11	1/29/2020	1.76	6.69	4.72	NA	1.56	<1.00	<0.20 B	NA
	9/30/2020	5.10	1.43 J	0.136 J	<4.00	4.76	<2.00	<0.20	<4.00
	3/25/2021	3.77	1.95 J	0.35	NA	3.60	<2.00	0.224	NA
	10/6/2021	5.61	<2.00	0.204	NA	5.76	<2.00	<0.20	NA
KMW18	1/28/2020	17.6	3.00	0.837	NA	16.1	0.624 J	0.332	NA
	1/28/2020 DUP	17.3	2.76	0.84	NA	15.8	0.595 J	0.321	NA
	9/29/2020	7.19	<2.00	0.271	<4.00	6.81	<2.00	0.239	<4.00
	9/29/2020 DUP	6.87	1.16 J	0.276	<4.00	6.84	<2.00	0.195 J	<4.00
	3/23/2021	0.575 J	1.31 J	0.38	NA	<1.00	<2.00	<0.20	NA
	3/23/2021 DUP	0.627 J	1.31 J	0.384	NA	<1.00	<2.00	<0.20	NA
	10/7/2021	2.14	2.91	0.728	NA	1.71	<2.00	<0.20	NA
	10/7/2021 DUP	2.16	3.03	0.624	NA	1.69	<2.00	<0.20	NA

Please refer to notes at end of table.

Table 16

Groundwater Analytical Data – Total and Dissolved Metals

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)							
		Total Arsenic	Total Copper	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	--	5.0	12	3.2	--
<i>PHSS Cleanup Level</i>		--	--	--	--	0.018	2.74	0.54	36
<i>Portland Harbor JSCS SLV</i>		--	--	--	--	0.045	2.7	0.54	36
KMW19	1/28/2020	4.16	1.14	0.441	NA	4.33	<1.00	<0.20	NA
	9/29/2020	4.69	<2.00	0.217	3.05 J	4.62	<2.00	<0.20	<4.00
	3/23/2021	3.87	1.17 J	0.446	NA	4.07	<2.00	<0.20	NA
	10/6/2021	4.12	<2.00	0.258	NA	4.22	<2.00	<0.20	NA
KMW35	1/28/2020	9.69	0.82 J	2.88	NA	9.75	<1.00	2.30	NA
	9/30/2020	9.20	<2.00	3.12	<4.00	8.90	<2.00	2.69	<4.00
	3/25/2021	8.72	1.31 J	2.38	NA	8.78	<2.00 Q-42	1.89	NA
	10/6/2021	11.3	6.62	9.16	NA	11.3	<2.00	0.619	NA
MW41A	1/28/2020	3.57	0.695 J	0.325	NA	3.33	<1.00	0.226	NA
	9/30/2020	5.85	<2.00	0.505	<4.00	5.44	<2.00	0.502	<4.00
	3/25/2021	2.9	<2.00	0.175 J	NA	2.37	<2.00	0.158 J	NA
	10/6/2021	18.5	<2.00	0.995	NA	7.83	<2.00	0.511	NA
Loading Rack									
KMW13*	1/30/2020	13.0	1.76	2.3	NA	12.9	<1.00	0.777	NA
	10/1/2020	19.6	<2.00	1.66	<4.00	18.6	<2.00	1.37	<4.00
	3/25/2021	23.5	<2.00	0.351	NA	22.8	<2.00	0.17 J	NA
	3/25/2021 DUP	22.9	<2.00	0.347	NA	22.4	<2.00	0.17 J	NA
	10/7/2021	23.2	2.6	3.33	NA	26.3	<2.00	0.678	NA
KMW14*	Well KMW14 has been removed from the groundwater monitoring program. ¹²								

Please refer to notes at end of table.

Table 16

Groundwater Analytical Data – Total and Dissolved Metals

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)							
		Total Arsenic	Total Copper	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	--	5.0	12	3.2	--
<i>PHSS Cleanup Level</i>		--	--	--	--	0.018	2.74	0.54	36
<i>Portland Harbor JSCS SLV</i>		--	--	--	--	0.045	2.7	0.54	36
MW38*	6/25/2020	32.2	<1.00	2.98	NA	33.3	<0.001	<2.69	NS
	10/1/2020	19.9	<2.00	0.331	<4.00	20.0	<2.00	0.331	<4.00
	3/25/2021	29.1	<2.00	2.45	NA	29.7	<2.00	2.09	NA
	10/7/2021	28.0	<2.00	0.89	NA	27.9	<2.00	0.457	NA
MW39*	1/30/2020	62.1	1.72	1.74	NA	63.9	<1.00	1.57	NA
	10/1/2020	61.7	1.08 J	1.75	2.4 J	60.4	<2.00	1.40	<4.00
	3/25/2021	62.2	<2.00	1.19	NA	62.3	<2.00	0.97	NA
	10/7/2021	66.7	<2.00	1.04	NA	68.4	<2.00	1.08	NA
MW40	2/8/2018	1.44 J	0.863 J	0.281 J	NA	1.33 J	0.952 J	0.861 J	NA
	3/13/2019	0.705 J	<1.00	<0.20	NA	<1.00	<1.00	<0.20	NA
	1/28/2020	<1.00	0.517 J	<0.20	NA	<1.00	0.5 J	<0.20	NA
	3/23/2021	<1.00	<2.00	<0.20	NA	<1.00	<2.00	<0.20	NA
MW41B*	1/28/2020	1.15	0.921 J	0.363	NA	1.10	<1.00	<0.20	NA
	9/30/2020	0.96 J	<2.00	0.235	4.19	0.941 J	<2.00	<0.20	<4.00
	3/25/2021	1.04	<2.00	<0.20	NA	0.925 J	<2.00	<0.20	NA
	10/6/2021	1.30	<2.00	<0.200	NA	1.29	<2.00	<0.20	NA
MW43	1/30/2020	34.5	<1.00	1.04	NA	36.5	<1.00	1.00	NA
	9/30/2020	33.0	<2.00	0.517	<4.00	33.7	<2.00	0.413	2.61 J
	3/25/2021	36.0	<2.00	0.891	NA	35.0	<2.00	0.712	NA
	10/7/2021	34.8	<2.00	1.17	NA	35	<2.00	0.561	NA

Please refer to notes at end of table.

Table 16**Groundwater Analytical Data – Total and Dissolved Metals**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)							
		Total Arsenic	Total Copper	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	--	5.0	12	3.2	--
<i>PHSS Cleanup Level</i>		--	--	--	--	0.018	2.74	0.54	36
<i>Portland Harbor JSCS SLV</i>		--	--	--	--	0.045	2.7	0.54	36
MW44*	1/30/2020	9.56	<1.00	0.105 J	NA	8.77	0.565 J	<0.20	NA
	9/30/2020	9.62	<2.00	<0.20	<4.00	8.68	<2.00	<0.20	<4.00
	3/25/2021	9.13	<2.00	0.256	NA	8.22	<2.00	<0.20	NA
	10/6/2021	12.8	<2.00	<0.20	NA	12.9	<2.00	<0.20	NA
MW45*	2/8/2018	1.37 J	1.48 J	<2.00	NA	1.51 J	3.2 J	5.78	NA
	3/13/2019	0.639 J	1.29	0.101 J	NA	0.617 J	0.892	<0.20	NA
	1/30/2020	.513 J	1.63 J	0.11	2.76 J	<1.00	1.27	0.103	<4.00
	3/23/2021	0.64 J	2.21	0.261	NA	0.597 J	1.09 J	<0.20	NA
MW46*	1/29/2020	0.55 J	2.83	1.02	NA	0.575 J	1.51	<0.20 B	NA
	9/29/2020	2.59	1.19 J	0.311	2.76 J	2.72	<1.00	<0.10 B	<4.00
	3/25/2021	2.81	1.31 J	0.158 J	NA	2.68	<2.00	<0.20	NA
	10/6/2021	3.15	<2.00	0.202	NA	3.23	<2.00	<0.20	NA
DPE Treatment Area									
EX-07L	1/29/2020	<1.00	2.47	0.634	NA	<1.00	1.60	<0.20 B	NA
	9/29/2020	0.553 J	1.40 J	0.247	7.92	<1.00 Q-42	<2.00	0.132 J	9.79
	3/24/2021	<1.00	3.53	0.523	NA	<1.00	3.55	0.141 J	NA
	10/5/2021	<1.00	2.01	0.27	NA	<1.00	<2.00	<0.200	NA
KMW29	1/29/2020	13.8	1.24	0.801	NA	13	<1.00	0.645	NA
	9/29/2020	16.8	1.09 J	1.28	2.31 J	15.9	<2.00	1.11	<4.00
	3/24/2021	5.98	1.18 J	0.957	NA	4.82	<2.00	0.349	NA
	10/5/2021	16.2	<2.00	1.06	NA	16.7	<2.00	1.09	NA

Please refer to notes at end of table.

Table 16**Groundwater Analytical Data – Total and Dissolved Metals**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)							
		Total Arsenic	Total Copper	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal		--	--	--	--	5.0	12	3.2	--
PHSS Cleanup Level		--	--	--	--	0.018	2.74	0.54	36
Portland Harbor JSCS SLV		--	--	--	--	0.045	2.7	0.54	36
KMW30	1/29/2020	<1.00	1.55	0.121 J	NA	<1.00	1.37	0.144 J,B	NA
	9/29/2020	1.89	1.84 J	0.265	2.61 J	1.91	1.45 J	0.223	<4.00
	3/24/2021	1.27	2.28	0.128 J	NA	1.23	1.49 J	<0.20	NA
	3/24/2021 DUP	1.21	2.36	0.12 J	NA	1.20	2.45	<0.20	NA
	10/5/2021	4.85	<2.00	0.30	NA	4.46	<2.00	0.27	NA
KMW31	1/29/2020	2.79	2.41	1.26	NA	2.30	3.63	0.652	NA
	1/29/2020 DUP	2.98	2.39	1.23	NA	2.37	<1.00	0.649	NA
	9/29/2020	1.66	<2.00	0.954	<4.00	1.62	<2.00	0.874	<4.00
	3/24/2021	2.07	<2.00	0.417	NA	1.98	<2.00	0.351	NA
	10/5/2021	1.68	<2.00	0.715	NA	1.71	<2.00	0.663	NA
KMW32	1/29/2020	0.601 J	4.62	0.427	NA	0.611 J	3.31	0.116 J	NA
	9/29/2020	0.61 J	3.87	0.645	3.46 J	<1.00	1.90 J	0.25	<4.00
	3/24/2021	1.37	4.04	1.26	NA	1.44	2.0	0.95	NA
	3/24/2021 DUP	1.01	4.46	1.27	NA	1.50	2.13	0.98	NA
	10/5/2021	<1.00	6.28	0.593	NA	<1.00	2.93	0.478	NA
KMW33	1/29/2020	2.68	1.07	0.186 J	NA	2.42	<1.00	<0.20	NA
	9/29/2020	1.27	<2.00	<0.20	<4.00	1.42	<2.00	<0.20	<4.00
	3/24/2021	1.38	1.89 J	0.131 J	NA	1.46	<2.00	<0.20	NA
	10/6/2021	1.58	<2.00	<0.20	NA	1.58	<2.00	<0.20	NA

Please refer to notes at end of table.

Table 16**Groundwater Analytical Data – Total and Dissolved Metals**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)							
		Total Arsenic	Total Copper	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal		--	--	--	--	5.0	12	3.2	--
PHSS Cleanup Level		--	--	--	--	0.018	2.74	0.54	36
Portland Harbor JSCS SLV		--	--	--	--	0.045	2.7	0.54	36
KMW37	1/29/2020	15.3	4.64	0.934	NA	18.3	1.09	0.672	NA
	9/30/2020	31.5	4.80	2.56	2.71 J	31.5	<2.00	2.13	<4.00
	3/24/2021	27.4	<2.00	1.76	NA	27.4	<2.00	1.63	NA
	10/6/2021	23.8	<2.00	2.14	NA	23.8	<2.00	2.08	NA
MW47	1/29/2020	4.65	1.13	0.682	NA	3.72	<1.00	0.182 J	NA
	9/29/2020	1.78	<2.00	0.284	2.63 J	1.62	<2.00	0.188 J	<4.00
	3/24/2021	5.07	1.13 J	0.534	NA	4.91	<2.00	0.18 J	NA
	10/6/2021	2.39	<2.00	0.291	NA	2.30	<2.00	0.253	NA
MW48	1/29/2020	3.14	2.33	0.247	NA	2.57	0.811 J	<0.20 B	NA
	1/29/2020 DUP	3.17	1.88	0.261	NA	2.85	0.806 J	<0.20 B	NA
	9/29/2020	3.29	<2.00	<0.20	<4.00	3.20	<2.00	<0.20	<4.00
	9/29/2020 DUP	3.21	1.04 J	<0.20	<4.00	3.20	<2.00	<0.20	<4.00
	3/24/2021	1.55	<2.00	<0.20	NA	1.43	<2.00	<0.20	NA
	10/5/2021	2.71	2.74	1.39	NA	2.77	<2.00	<0.20	NA
MW49	1/29/2020	9.43	<1.00	0.588	NA	9.19	<1.00	0.219	NA
	9/29/2020	9.00	<2.00	0.296	<4.00	8.72	<2.00	0.311	<4.00
	3/24/2021	7.85	<2.00	0.423	NA	7.70	<2.00	0.56	NA
	10/6/2021	9.92	<2.00	0.378	NA	9.97	<2.00	0.416	NA

Please refer to notes at end of table.

Table 16**Groundwater Analytical Data – Total and Dissolved Metals**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)							
		Total Arsenic	Total Copper	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	--	5.0	12	3.2	--
<i>PHSS Cleanup Level</i>		--	--	--	--	0.018	2.74	0.54	36
<i>Portland Harbor JCSL SLV</i>		--	--	--	--	0.045	2.7	0.54	36
Slurry Wall									
KMW36	1/29/2020	1.09	<1.00	0.625	NA	0.949 J	<1.00	0.453	NA
	9/30/2020	<1.00	<2.00	0.275	2.08 J	<1.00	<2.00	0.279	<4.00
	3/24/2021	1.72	<2.00	0.411	NA	1.20	<2.00	0.123 J	NA
	10/6/2021	<1.00	<2.00	0.275	NA	<1.00	<2.00	<0.20	NA
W-16	1/29/2020	18.1	<1.00	1.42	NA	18.3	<1.00	1.10	NA
	10/1/2020	5.44	1.01 J	0.366	18.8	4.98	<2.00	0.218	12.9
	3/25/2021	4.13	<2.00	0.673	NA	3.65	<2.00	0.58	NA
	10/6/2021	5.55	<2.00	0.367	NA	5.53	<2.00	0.226	NA
W-19	2/8/2018	93	12.2	1.95 J	NA	12.0	0.858 J	<2.00	NA
	3/15/2019	4.8	<1.00	<0.20	NA	3.83	<1.00	<0.20	NA
	1/30/2020	16.7	<1.00	0.163 J	NA	12.6	<1.00	<0.20	NA
	3/25/2021	6.07	<2.00	<0.20	NA	2.74	<2.00	<0.20	NA
W-20	2/8/2018	26.6	1.93 J	0.602 J	NA	12.2	1.05 J	<2.00	NA
	3/15/2019	9.42	0.596 J	0.103 J	NA	0.986 J	<1.00	<0.20	NA
	1/30/2020	8.09	0.947 J	0.145 J	NA	1.54	<1.00	<0.20	NA
	3/25/2021	5.32	<2.00	0.147 J	NA	0.617 J	<2.00	<0.20	NA
W-22	2/8/2018	3.21	8.30	6.06	NA	1.18 J	1.18 J	0.687 J	NA
	3/15/2019	<1.00	0.966 J	0.286	NA	<1.00	0.795 J	<0.20	NA
	1/30/2020	<1.00	1.13	0.345	NA	<1.00	0.683 J	<0.20	NA
	3/23/2021	<1.00	1.2 J	0.263	NA	<1.00	<2.00	<0.20	NA

Please refer to notes at end of table.

Table 16**Groundwater Analytical Data – Total and Dissolved Metals**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)							
		Total Arsenic	Total Copper	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	--	5.0	12	3.2	--
<i>PHSS Cleanup Level</i>		--	--	--	--	0.018	2.74	0.54	36
<i>Portland Harbor JSCS SLV</i>		--	--	--	--	0.045	2.7	0.54	36
Site-Wide									
KMW01	02/09/2018	1.14 J	0.871 J	<2.00	NA	1.04 J	<5.00	<2.00	NA
	3/15/2019	2.26	<1.00	0.106 J	NA	1.29	<1.00	<0.20	NA
	1/29/2020	1.19	0.000536 J	0.113 J	NA	0.89 J	<1.00	<0.20	NA
	3/23/2021	<1.00	<2.00	0.14 J	NA	<1.00	<2.00	<0.20	NA
KMW02	1/29/2020	2.41	<1.00	<0.20	3.42	1.95	<1.00	<0.20	2.26
	10/1/2020	3.44	<2.00	<0.20	<4.00	3.19	<2.00	<0.20	2.23
	3/23/2021	1.82	<2.00	<0.20	3.5	0.697	<2.00	<0.20	3.15
	10/7/2021	3.52	<2.00	<0.20	<4.00	3.13	<2.00	<0.20	<4.00
KMW05	2/8/2018	2.17	<5.00	0.404 J	NA	2.23	<5.00	0.311 J	NA
	3/13/2019	1.35	0.51 J	0.335	NA	1.26	<1.00	0.126 J	NA
	1/28/2020	1.46	<1.00	0.223	NA	1.49	<1.00	0.108 J	NA
	3/23/2021	1.16	1.61 J	0.234	NA	1.10	<2.00	<0.20	NA
KMW09	2/6/2018	1.01 J	1.85 BJ	0.388 BJ	NA	1.08 J	1.89 J	0.325 J	NA
	3/13/2019	<1.00	1.32	0.109 J	NA	<1.00	0.75 J	<0.20	NA
	1/29/2020	<1.00	1.31	0.324	NA	<1.00	0.99 J	<0.20 B	NA
	3/23/2021	<1.00	1.92 J	<0.20	NA	<1.00	1.06 J,Q-42	<0.20	NA

Please refer to notes at end of table.

Table 16**Groundwater Analytical Data – Total and Dissolved Metals**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)							
		Total Arsenic	Total Copper	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal		--	--	--	--	5.0	12	3.2	--
PHSS Cleanup Level		--	--	--	--	0.018	2.74	0.54	36
Portland Harbor JSCS SLV		--	--	--	--	0.045	2.7	0.54	36
KMW10*	1/29/2020	1.16	1.03	0.529	NA	0.993 J	<1.00	<0.20	NA
	9/29/2020	1.09	<2.00	0.276	8.53	0.957 J	<2.00	<0.20	6.94
	3/23/2021	1.14	<2.00	0.174 J	NA	1.01	<2.00	<0.20	NA
	10/7/2021	1.43	<2.00	<0.20	NA	1.43	<2.00	<0.20	NA
KMW16*	2/9/2018	1.79 J	0.632 J	1.01 BJ	NA	1.75 J	<5.00	<2.00	NA
	3/14/2019	0.908 J	<1.00	0.106 J	NA	0.919 J	<1.00	<0.20	NA
	1/30/2020	0.882 J	<1.00	<0.20	NA	0.864 J	<1.00	<0.20	NA
	3/25/2021	0.789 J	<2.00	0.127 J	NA	0.829 J	<2.00	<0.20	NA
KMW20	2/9/2018	6.20	0.698 J	<2.00	NA	1.69 J	<5.00	0.281 J	NA
	3/14/2019	4.62	<1.00	0.317	NA	0.759 J	<1.00	<0.20	NA
	1/30/2020	8.74	<1.00	0.193 J	NA	1.03	<1.00	<0.20	NA
	3/23/2021	5.08	2.00	0.172 J	NA	1.67	<2.00	<0.20	NA
KMW21	2/9/2018	3.39	<5.00	<2.00	NA	2.69	<5.00	<2.00	NA
	3/14/2019	2.29	<1.00	<0.20	NA	2.14	<1.00	<0.20	NA
	1/30/2020	2.41	<1.00	<0.20	NA	1.98	<1.00	<0.20	NA
	3/23/2021	1.35	<2.00	<0.20	NA	0.727 J	1.74 J	<0.20	NA
KMW24*	2/9/2018	9.77	2.94 J	12.80	NA	7.80	0.55 J	<2.00	NA
	3/13/2019	6.87	0.774 J	3.26	NA	5.89	<1.00	<0.20	NA
	1/30/2020	7.18	0.632 J	1.57	NA	6.97	<1.00	<0.20	NA
	3/25/2021	7.13	<2.00	1.31	NA	6.90	<2.00	<0.20	NA

Please refer to notes at end of table.

Table 16

Groundwater Analytical Data – Total and Dissolved Metals

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)							
		Total Arsenic	Total Copper	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal		--	--	--	--	5.0	12	3.2	--
PHSS Cleanup Level		--	--	--	--	0.018	2.74	0.54	36
Portland Harbor JSCS SLV		--	--	--	--	0.045	2.7	0.54	36
KMW26*	2/9/2018	3.14	1.27 J	<2.00	NA	2.62	1.07 J	0.307 J	NA
	3/13/2019	1.99	0.912 J	0.169 J	NA	1.75	0.695 J	<0.20	NA
	1/30/2020	1.46	1.73	0.391	NA	1.19	1.15	0.112 J	NA
	3/25/2021	2.30	1.03 J	0.193 J	NA	2.36	1.32 J	<0.20	NA
MW42	2/8/2018	1.21 J	0.594 J	0.255 J	NA	1.12 J	0.72 J	<2.00	NA
	3/14/2019	1.24	0.986 J	0.135 J	NA	<1.00	<1.00	<0.20	NA
	1/30/2020	0.534 J	<1.00	<0.20	NA	<1.00	3.14	<0.20	NA
	3/25/2021	<1.00	1.65 J,Q-42	0.679	NA	<1.00	<2.00	<0.20	NA
W-15	1/29/2020	27	0.543 J	1.76	NA	27.6	<1.00	1.18	NA
	9/30/2020	22.7	<2.00	1.75	10.8	22.5	<2.00	1.28	<4.00
	3/24/2021	10.4	<2.00	2	NA	10.2	<2.00	1.41	NA
	10/6/2021	21.0	<2.00	1.33	NA	20.8	<2.00	1.07	NA
	10/6/2021 DUP	21.5	<10.0	3.35	NA	20.6	<2.00	1.21	NA
Southern Facility Area									
MW-1	2/2/2012	1.42	4.10	2.97	11.5	0.107	<0.018	<0.027	2.14
	12/29/2020	<1.00	<2.00	0.243	<4.00	<1.00	<2.00	<0.20	<4.00
	12/29/2020 DUP	<1.00	<2.00	0.307	<4.00	<1.00	<2.00	<0.20	<4.00
MW-2	2/2/2012	3.18	0.48	0.237	1.1	1.04	<0.018	<0.027	1.70
	12/29/2020	2.33	<2.00	<0.20	<4.00	2.33	<2.00	<0.20	<4.00
	3/23/2021	1.99	<2.00	0.159 J	NA	1.43	<2.00	<0.20	NA
	10/7/2021	2.35	<2.00	<0.20	NA	2.43	<2.00	<0.20	NA
MW-3	2/2/2012	0.199	0.33	0.046	0.51	0.14	<0.018	<0.027	2.00
	12/29/2020	<1.00	<2.00	<0.20	<4.00	<1.00	<2.00	<0.20	<4.00
	3/23/2021	<1.00	<2.00	<0.20	NA	<1.00	<2.00	<0.20	NA
	10/7/2021	<1.00	<2.00	<0.20	NA	<1.00	<2.00	<0.20	NA
	10/7/2021 DUP	<1.00	<2.00	<0.20	NA	<1.00	<2.00	<0.20	NA

Please refer to notes at end of table.

Table 16**Groundwater Analytical Data – Total and Dissolved Metals**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)							
		Total Arsenic	Total Copper	Total Lead	Total Zinc	Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal		--	--	--	--	5.0	12	3.2	--
PHSS Cleanup Level		--	--	--	--	0.018	2.74	0.54	36
Portland Harbor JSCS SLV		--	--	--	--	0.045	2.7	0.54	36
MW-4	2/2/2012	0.389	0.941	0.079	3.2	0.144	<0.018	<0.027	2.65
	12/29/2020	<1.00	<2.00	<0.20	<4.00	<1.00	<2.00	<0.20	<4.00
	3/23/2021	<1.00	<2.00	<0.20	NA	<1.00	<2.00	<0.20	NA
	10/7/2021	<1.00	<2.00	<0.20	NA	<1.00	<2.00	<0.20	NA
VRUMW-1	2/2/2012	1.03	0.48	0.119	2.52	0.764	<0.018	<0.027	2.08
	12/28/2020	1.00	<2.00	<0.20	2.14 J	0.886 J	<2.00	<0.20	<4.00
VRUMW-2	2/2/2012	0.701	0.861	0.166	3.08	0.399	0.42	<0.027	1.90
	12/28/2020	1.66	<2.00	0.23	5.84	1.44	<2.00	<0.20	<4.00
VO-1	2/1/2012	0.257	0.36	<0.014	1.1	<0.032	<0.018	<0.027	1.20
	2/1/2012 DUP	0.276	<0.151	<0.014	0.52	<0.032	<0.018	<0.027	2.55
	12/28/2020	0.541 J	<2.00	<0.20	<4.00	<1.00	<2.00	<0.20	<4.00
VO-2	2/2/2012	0.351	<0.151	<0.014	0.65	0.309	<0.018	<0.027	1.70
	12/28/2020	<1.00	<2.00	<0.20	<4.00	<1.00	<2.00	<0.20	<4.00
VO-3	2/2/2012	0.35	1.24	0.103	4.25	0.262	0.991	<0.027	5.00
	12/29/2020	<1.00	<2.00	0.12 J	<4.00	<1.00	<2.00	<0.20	<4.00

Notes:

- < = Concentration as reported by analytical laboratory is less than the laboratory reporting limit.
- µg/L = Microgram(s) per liter.
- EPA = United States Environmental Protection Agency.
- NS = Not sampled.
- NA = Not analyzed. Zinc is not a part of the approved monitoring program and is not typically included in the analysis suite; however, it was identified as a
- DUP = Field Duplicate.
- Yellow highlighted cells indicate values that are equal to or exceeding 1997 ROD Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
- Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
- Green highlighted cells indicate the method reporting limit is greater than the PHSS ROD Cleanup Level or the JSCS SLV (if there is no ROD Cleanup Level)
- * = Well is screened in Deep Sand unit.
- Data prior to December 22, 2011 were recorded and previously reported by ExxonMobil.
- Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
- Well KMW14 was paved over prior to the October 2017 monitoring event. In an email dated February 21, 2018, DEQ agreed that well KMW14 was not critical to monitoring the Loading Rack Area and that replacement of KMW14 was not required. Well KMW14 has been removed from the monitoring program.
- = Not applicable.

Quality Assurance/Quality Control Data Qualifiers: J = Reported result is an estimated value; B = Reported analyte was present in the associated method blank.

Table 17

Groundwater Analytical Data – Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal (µg/L)		1.0	40	-	-	-	-
PHSS Cleanup Level (µg/L)		-	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV (µg/L)		-	1.2	9.8	7.3	200	-
Tank Field 1							
KMW07	3/13/2019	-	-	-	-	-	NA
	3/13/2019 DUP	-	-	-	-	-	NA
	1/28/2020	4.30	2.03	-	1.60	-	NA
	1/28/2020 DUP	4.30	2.00	-	1.62	-	NA
	3/25/2021	-	-	-	-	-	NA
	3/25/2021 DUP	-	-	-	-	-	NA
KMW11	1/29/2020	-	-	-	-	-	NA
	9/30/2020	-	-	-	-	-	NA
	3/25/2021	-	3.05	-	-	-	NA
	10/6/2021	-	-	-	-	-	NA
KMW18	1/28/2020	-	-	-	-	-	NA
	1/28/2020 DUP	-	-	-	-	-	NA
	9/29/2020	-	4.73	-	-	-	NA
	9/29/2020 DUP	-	3.59	3.46	-	-	NA
	3/23/2021	-	-	-	-	-	NA
	3/23/2021 DUP	-	-	-	-	-	NA
	10/7/2021	-	-	-	-	-	NA
	10/7/2021 DUP	-	-	-	-	-	NA

Please refer to notes at end of table.

Table 17

Groundwater Analytical Data – Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal (µg/L)		1.0	40	-	-	-	-
PHSS Cleanup Level (µg/L)		-	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV (µg/L)		-	1.2	9.8	7.3	200	-
KMW19	1/28/2020	-	-	-	-	-	NA
	9/29/2020	-	-	-	-	-	NA
	3/23/2021	-	-	-	-	-	NA
	10/6/2021	-	-	-	-	-	NA
KMW35	1/28/2020	6.02	1.22	-	-	-	NA
	9/30/2020	6.01	1.55	-	-	-	NA
	3/25/2021	3.10	-	-	-	-	NA
	10/6/2021	3.55	-	-	-	-	NA
MW41A	1/28/2020	-	-	-	-	-	NA
	9/30/2020	-	-	-	-	-	NA
	3/25/2021	-	-	-	-	-	NA
	10/6/2021	-	-	-	-	-	NA
Tank 3510							
AC2	1/30/2020	-	-	-	-	-	NA
	9/30/2020	-	-	-	-	-	NA
	3/23/2021	-	-	-	-	-	NA
	10/6/2021	-	-	-	-	-	NA
AC-7	1/30/2020	-	31.4	-	-	-	NA
	9/30/2020	-	-	-	-	-	NA
	3/24/2021	1.07	-	-	-	-	NA
	10/5/2021	-	-	-	-	-	NA

Please refer to notes at end of table.

Table 17

Groundwater Analytical Data – Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal (µg/L)		1.0	40	--	--	--	--
PHSS Cleanup Level (µg/L)		--	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV (µg/L)		--	1.2	9.8	7.3	200	--
Loading Rack							
AC-8	1/30/2020	7.12	51.0	2.00	11.8	3.7	NA
	1/30/2020 DUP	8.67	57.8	2.30	14.5	4.4	NA
	9/30/2020	2.44	18.0	2.04	--	2.31	NA
	3/25/2021	1.49	7.28	--	2.25	--	NA
	10/7/2021	7.90	51.3	5.10	3.42	5.77	NA
AC-9	1/28/2020	Well was not sampled due to the presence of SPH or SPH sheen.					
	9/30/2020	Well was not sampled due to the presence of SPH or SPH sheen.					
	3/23/2021	Well was not sampled due to the presence of SPH or SPH sheen.					
	10/5/2021	Well was not sampled due to the presence of SPH or SPH sheen.					
AC-10*	1/28/2020	Well was not sampled due to the presence of SPH or SPH sheen.					
	9/30/2020	Well was not sampled due to the presence of SPH or SPH sheen.					
	3/23/2021	Well was not sampled due to the presence of SPH or SPH sheen.					
	10/5/2021	Well was not sampled due to the presence of SPH or SPH sheen.					
KMW13	1/30/2020	6.30	2.50	1.06	39.9	48.6	NA
	10/1/2020	3.34	3.05	1.92	11.9	15.5	NA
	10/1/2020 DUP	4.31	3.63	2.33	24.5	18.0	NA
	3/25/2021	2.71	4.73	--	--	2.85	NA
	3/25/2021 DUP	2.68	4.65	--	--	2.96	NA
	10/7/2021	4.41	1.50	1.61	2.03	13.5	NA
	10/7/2021 DUP	4.14	1.55	1.52	2.21	12.4	NA
KMW14*	Well KMW14 has been removed from the groundwater monitoring program. ²³						

Please refer to notes at end of table.

Table 17

Groundwater Analytical Data — Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal (µg/L)		1.0	40	-	-	-	-
PHSS Cleanup Level (µg/L)		-	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV (µg/L)		-	1.2	9.8	7.3	200	-
MW38*	6/25/2020	4.64	18.0	-	4.93	1.28	NA
	10/1/2020	-	1.24	-	-	-	NA
	3/25/2021	2.67	6.93	-	-	-	NA
	10/7/2021	1.26	1.19	-	-	-	NA
MW39*	1/30/2020	77.6	595	13.2	156	39.2	NA
	10/1/2020	72.4	693	51.0	88.1	57.7	NA
	3/25/2021	65.6	530	10.3	35.1	12.5	NA
	10/7/2021	84.4	550	55.3	73.4	101	NA
MW40	2/8/2018	-	-	-	-	-	NA
	3/13/2019	-	6.48	-	-	-	NA
	1/28/2020	-	-	-	-	-	NA
	3/23/2021	-	5.27	-	-	-	NA
MW41B*	1/28/2020	-	-	-	-	-	NA
	9/30/2020	-	-	-	-	-	NA
	3/25/2021	-	-	-	-	-	NA
	10/6/2021	-	-	-	-	-	NA
MW43	1/30/2020	14.7	53.8	16.3	87.3	33.9	NA
	9/30/2020	10.3	40.5	10.8	87.3	26.8	NA
	3/25/2021	10.9	28.0	11.2	79.6	32.0	NA
	10/7/2021	15.4	51.0	12.1	102	34.2	NA

Please refer to notes at end of table.

Table 17

Groundwater Analytical Data – Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal (µg/L)		1.0	40	-	-	-	-
PHSS Cleanup Level (µg/L)		-	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV (µg/L)		-	1.2	9.8	7.3	200	-
MW44	1/30/2020	-	27.7	-	-	-	NA
	9/30/2020	2.99	26.8	-	1.6	-	NA
	3/25/2021	1.08	7.08	-	-	-	NA
	10/6/2021	4.33	33.8	-	-	-	NA
MW45*	2/8/2018	-	-	-	-	-	NA
	3/13/2019	-	-	-	-	-	NA
	1/30/2020	-	-	-	-	-	NA
	3/23/2021	-	-	-	-	-	NA
MW46	1/29/2020	-	-	-	-	-	NA
	9/29/2020	-	-	-	-	-	NA
	3/25/2021	-	-	-	-	-	NA
	10/6/2021	-	-	-	-	-	NA
DPE Treatment Area							
EX-07L	1/29/2020	-	-	-	-	-	7.6
	9/29/2020	-	-	-	-	-	2.7
	3/24/2021	-	-	-	-	-	-
	10/5/2021	-	-	-	-	-	1.05
KMW29	1/29/2020	6.06	1.3	-	-	-	13.3
	9/29/2020	4.28	1.9	-	-	-	56.9
	3/24/2021	4.00	-	-	-	-	13.6
	10/5/2021	4.47	-	-	-	-	12.3
KMW30	1/29/2020	-	-	-	-	-	7.69
	9/29/2020	2.28	-	-	-	-	26.2
	3/24/2021	-	-	-	-	-	3.38
	3/24/2021 DUP	-	-	-	-	-	3.15
	10/5/2021	2.60	-	-	-	-	8.38

Please refer to notes at end of table.

Table 17

Groundwater Analytical Data – Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal (µg/L)		1.0	40	-	-	-	-
PHSS Cleanup Level (µg/L)		-	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV (µg/L)		-	1.2	9.8	7.3	200	-
KMW31	1/29/2020	1.80	-	-	-	-	7.69
	1/29/2020 DUP	1.83	-	-	-	-	7.69
	9/29/2020	1.46	-	-	-	-	21.4
	3/24/2021	1.68	-	-	-	-	3.68
	10/5/2021	1.01	-	-	-	-	6.65
KMW32	1/29/2020	-	2.5	-	-	-	7.69
	9/29/2020	-	-	-	-	-	2.27
	3/24/2021	-	-	-	-	-	-
	3/24/2021 DUP	-	-	-	-	-	-
	10/5/2021	-	-	-	-	-	-
KMW33	1/29/2020	-	-	-	-	-	7.69
	9/29/2020	-	-	-	-	-	2.85
	3/24/2021	-	-	-	-	-	-
	10/6/2021	-	-	-	-	-	2.16
KMW37	1/29/2020	1.88	1.2	-	-	-	7.69
	9/30/2020	4.46	3.1	-	-	-	63.1
	3/24/2021	3.56	2.4	-	-	-	7.73
	10/6/2021	4.57	2.7	-	-	-	11.1
MW47	1/29/2020	-	-	-	-	-	11.8
	9/29/2020	-	-	-	-	-	9.50
	3/24/2021	1.18	-	-	-	-	10.2
	10/6/2021	-	-	-	-	-	6.69

Please refer to notes at end of table.

Table 17

Groundwater Analytical Data – Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal (µg/L)		1.0	40	-	-	-	-
PHSS Cleanup Level (µg/L)		-	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV (µg/L)		-	1.2	9.8	7.3	200	-
MW48	1/29/2020	-	-	-	-	-	29.5
	1/29/2020 DUP	-	-	-	-	-	7.69
	9/29/2020	-	-	-	-	-	2.39
	9/29/2020 DUP	-	-	-	-	-	2.73
	3/24/2021	-	-	-	-	-	2.08
	10/5/2021	-	-	-	-	-	2.77
	10/5/2021 DUP	-	-	-	-	-	2.23
MW49	1/29/2020	1.23	-	-	-	-	7.62
	9/29/2020	-	-	-	-	-	2.27
	3/24/2021	1.39	-	-	-	-	8.08
	10/6/2021	-	-	-	-	-	3.61
Slurry Wall							
KMW36	1/30/2020	1.47	-	-	-	-	NA
	9/30/2020	1.03	-	-	-	-	NA
	3/24/2021	-	-	-	-	-	NA
	10/6/2021	1.30	-	-	-	-	NA
W-16	1/29/2020	2.48	2.2	-	-	-	NA
	10/1/2020	-	-	-	-	-	NA
	3/25/2021	1.15	-	-	-	-	NA
	10/6/2021	1.06	-	-	-	-	NA
W-19	2/8/2018	-	-	-	-	-	NA
	3/15/2019	-	-	-	-	-	NA
	1/30/2020	-	-	-	-	-	NA
	3/25/2021	-	-	-	-	-	NA

Please refer to notes at end of table.

Table 17

Groundwater Analytical Data – Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal (µg/L)		1.0	40	-	-	-	-
PHSS Cleanup Level (µg/L)		-	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV (µg/L)		-	1.2	9.8	7.3	200	-
W-20	2/8/2018	-	-	-	-	-	NA
	3/15/2019	-	-	-	-	-	NA
	1/30/2020	-	-	-	-	-	NA
	3/25/2021	-	-	-	-	-	NA
W-22	2/8/2018	-	-	-	-	-	NA
	3/15/2019	-	-	-	-	-	NA
	1/30/2020	-	-	-	-	-	NA
	3/23/2021	-	-	-	-	-	NA
Site-Wide							
KMW01	2/9/2018	-	-	-	-	-	NA
	3/15/2019	-	-	-	-	-	NA
	1/29/2020	-	-	-	-	-	NA
	3/23/2021	-	-	-	-	-	NA
KMW02	1/29/2020	-	-	-	-	-	NA
	10/1/2020	-	-	-	-	-	NA
	3/23/2021	-	-	-	-	-	NA
KMW05	2/8/2018	1.81	-	-	-	-	NA
	3/13/2019	1.52	-	-	-	-	NA
	1/28/2020	2.37	-	-	-	-	NA
	3/23/2021	1.00	-	-	-	-	NA

Please refer to notes at end of table.

Table 17

Groundwater Analytical Data – Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal (µg/L)		1.0	40	-	-	-	-
PHSS Cleanup Level (µg/L)		-	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV (µg/L)		-	1.2	9.8	7.3	200	-
KMW09	2/6/2018	-	-	-	-	-	NA
	3/13/2019	-	-	-	-	-	NA
	1/29/2020	-	-	-	-	-	NA
	3/23/2021	-	-	-	-	-	NA
KMW10	1/28/2020	-	-	-	-	-	NA
	9/29/2020	-	-	-	-	-	NA
	3/23/2021	-	-	-	-	-	NA
	10/7/2021	-	-	-	-	-	NA
KMW16*	2/9/2018	-	-	-	-	-	NA
	3/14/2019	-	-	-	-	-	NA
	1/30/2020	-	-	-	-	-	NA
	3/25/2021	-	-	-	-	-	NA
KMW20	2/9/2018	-	-	-	-	-	NA
	3/14/2019	-	-	-	-	-	NA
	1/30/2020	-	-	-	-	-	NA
	3/23/2021	-	-	-	-	-	NA
KMW21	2/9/2018	-	-	-	-	-	NA
	3/14/2019	-	-	-	-	-	NA
	1/30/2020	-	-	-	-	-	NA
	3/23/2021	-	-	-	-	-	NA

Please refer to notes at end of table.

Table 17

Groundwater Analytical Data – Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal (µg/L)		1.0	40	-	-	-	-
PHSS Cleanup Level (µg/L)		-	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV (µg/L)		-	1.2	9.8	7.3	200	-
MW42	2/8/2018	-	-	-	-	-	NA
	3/14/2019	-	-	-	-	-	NA
	1/30/2020	-	-	-	-	-	NA
	3/25/2021	-	-	-	-	-	NA
W-15	1/29/2020	2.59	1.2	-	-	-	7.7
	9/30/2020	2.48	1.1	-	-	-	4.7
	3/24/2021	2.15	-	-	-	-	6.3
	10/6/2021	2.62	-	-	-	-	6.3
	10/6/2021 DUP	2.52	-	-	-	-	5.5
Southern Facility Area							
MW-1	2/2/2012	-	-	-	-	-	NA
	12/29/2020	-	-	-	-	-	NA
	12/29/2020 DUP	-	-	-	-	-	NA
MW-2	2/2/2012	-	1.2	-	-	-	NA
	12/29/2020	-	-	-	-	-	15.6
	3/23/2021	-	-	-	-	-	-
	10/7/2021	-	-	-	-	-	-
MW-3	2/2/2012	-	-	-	-	-	NA
	12/29/2020	-	-	-	-	-	15.6
	3/23/2021	-	-	-	-	-	-
	10/7/2021	-	-	-	-	-	-
	10/7/2021 DUP	-	-	-	-	-	NM
MW-4	2/2/2012	-	-	-	-	-	NA
	12/29/2020	-	-	-	-	-	15.7
	3/23/2021	-	-	-	-	-	-
	10/7/2021	-	-	-	-	-	-
VRUMW-1	2/2/2012	-	-	-	-	-	NA
	12/28/2020	-	-	-	-	-	NA
VRUMW-2	2/2/2012	-	-	-	-	-	NA
	12/28/2020	-	-	-	-	-	NA

Table 17

Groundwater Analytical Data – Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)
Shore Terminals LLC - Portland Facility
Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal ($\mu\text{g/L}$)		1.0	40	--	--	--	--
PHSS Cleanup Level ($\mu\text{g/L}$)		--	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV ($\mu\text{g/L}$)		--	1.2	9.8	7.3	200	--

Please refer to notes at end of table.

Table 17

Groundwater Analytical Data – Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)
 Shore Terminals LLC - Portland Facility
 Portland, Oregon

Well ID	Sample Date	Exceedance Factors					
		Combined TPH	Benzene	Toluene	Ethyl-Benzene	Xylenes	Aliphatic Hydrocarbons C10 - C12
1997 Site ROD Cleanup Goal (µg/L)		1.0	40	--	--	--	--
PHSS Cleanup Level (µg/L)		--	0.44	9.8	7.3	13	2.6
Portland Harbor JSCS SLV (µg/L)		--	1.2	9.8	7.3	200	--
VO-1	2/1/2012	--	--	--	--	--	NA
	2/1/2012 DUP	--	--	--	--	--	NA
	12/28/2020	--	--	--	--	--	NA
VO-2	2/1/2012	--	--	--	--	--	NA
	12/28/2020	--	--	--	--	--	NA
VO-3	2/2/2012	--	--	--	--	--	NA
	12/29/2020	--	--	--	--	--	NA

Please refer to notes at end of table.

Table 17 Notes

Groundwater Analytical Data — Exceedance Factors (TPH, C10 - C12 Aliphatic-Range Hydrocarbons, and BTEX)

Shore Terminals LLC - Portland Facility

Portland, Oregon

Notes:

1. TPH = Total petroleum hydrocarbons by northwest methods, with samples for diesel- and motor-oil-range analyses prepared by silica gel cleanup.
2. TPHg = Total petroleum hydrocarbons measured in the gasoline range
3. TPHd = Total petroleum hydrocarbons measured in the diesel range
4. TPHo = Total petroleum hydrocarbons measured in the heavy oil range
5. TPHg by Method NWTPH-Gx; TPHd and TPHo by NWTPH-Dx; benzene, toluene, ethylbenzene, xylenes, MTBE analyzed by EPA Method 8260 B.
6. Combined TPH = The sum of TPHg, TPHd, and TPHo. If a constituent is non-detect, half of the non-detect concentration is used to calculate the combined TPH concentration.
If TPHg, TPHd, and TPHo are all non-detect, ND is reported for Combined TPH.
7. Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
8. PHSS Cleanup Levels = 2017 Portland Harbor Superfund Site Record of Decision Cleanup Levels.
9. Yellow highlighted cells indicate values that are equal to or exceeding 1997 Record of Decision (ROD) Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
- 10a. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
- 10b. Green highlight indicates the method reporting limit is greater than the PHSS ROD Cleanup Level or the JSCS SLV (if there is no ROD Cleanup Level)
11. < = less than the laboratory reporting limit.
12. µg/L = microgram(s) per liter.
13. mg/L = milligram(s) per liter.
14. EPA = United States Environmental Protection Agency.
16. NS = Not sampled
17. -- = Not applicable.
18. DUP = Field Duplicate.
19. * = Well is screened in Deep Sand unit.
20. ND = TPH not detected above method detection limits for TPHg, TPHd, or TPHo.
21. Well KMW14 was paved over prior to the October 2017 monitoring event. In an email dated February 21, 2018, DEQ agreed that well KMW14 was not critical to monitoring the Loading Rack Area and that replacement of KMW14 was not required. Well KMW14 has been removed from the monitoring program.
22. The exceedance factor is the ratio of the analyte concentration and either the 1997 ROD Cleanup Goal, PHSS Cleanup Level Level, or JSCS SLV, as appropriate.

Table 18

Groundwater Analytical Data – Exceedance Factors (PAHs)

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal (µg/L)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level (µg/L)		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-
Portland Harbor JSCS SLV (µg/L)		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
Tank Field 1																			
KMW07	2/8/2018	-	84	-	-	-	123	1,600	192	-	88	168	323	1.9	3.3	121	-	2.6	1.6
	2/08/2018 DUP	-	27	-	-	-	14	110	19	-	-	10	-	-	2.2	-	-	-	-
	3/13/2019	-	-	-	-	-	-	161	21	-	11	-	-	-	-	15	-	-	-
	3/13/2019 DUP	-	-	-	-	-	-	-	35	-	-	-	-	-	-	-	-	-	-
	1/28/2020	-	7.2	-	-	-	23	218	28	-	14	21	75	-	2.5	24	-	1.2	-
	1/28/2020 DUP	-	9.1	-	-	-	91	-	-	-	-	-	-	-	2.5	-	-	-	-
	3/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/25/2021 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KMW11	10/8/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/29/2020	-	-	-	-	-	14	153	18	-	9.2	11	-	-	-	-	-	-	-
	9/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	1.6	-	-	-	-
	10/6/2021	-	-	-	-	-	17	-	-	-	-	-	-	-	-	-	-	-	-
KMW18	1/28/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/28/2020 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/29/2020 DUP	-	-	-	-	-	-	-	-	-	-	6.7	-	-	-	-	-	-	-
	3/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/23/2021 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/7/2021	-	-	-	-	-	-	223	-	-	-	-	-	-	-	-	-	-	-
10/7/2021 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
KMW19	1/28/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/23/2021	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-	-	-	-
	10/6/2021	-	-	-	-	-	20	-	-	-	18	-	-	-	-	-	-	-	-

Please refer to notes at end of table.

Table 18

Groundwater Analytical Data – Exceedance Factors (PAHs)

Shore Terminals LLC - Portland Facility
Portland, Oregon

Well ID	Sample Date	Exceedance Factors																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal (µg/L)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level (µg/L)		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-
Portland Harbor JSCS SLV (µg/L)		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
KMW35	1/28/2020	-	193	-	-	-	-	-	-	-	-	-	-	-	45	-	-	31	-
	9/30/2020	-	64	-	-	-	-	-	-	-	-	-	-	-	44	-	-	27	-
	3/25/2021	-	4.0	-	-	-	11	84	-	-	-	-	-	-	21	-	-	8.5	-
	10/6/2021	-	-	-	-	-	19	-	21	-	-	-	-	-	31	-	-	19	-
MW41A	1/28/2020	-	-	-	-	-	48	-	96	-	42	46	-	-	3.0	-	-	-	-
	9/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	7.2	-	-	3.6	-
	3/25/2021	-	-	-	-	-	8	-	-	-	-	-	-	-	3.9	-	-	-	-
	10/6/2021	-	-	-	-	-	20	-	-	-	14	-	-	-	3.9	-	-	1.4	-
Loading Rack																			
KMW13*	1/30/2020	-	266	-	-	-	-	-	-	-	-	-	-	-	3.8	-	1.5	-	-
	10/1/2020	-	370	-	-	-	-	-	-	-	-	-	-	-	5.4	-	1.9	3.7	-
	10/1/2020 DUP	-	386	-	-	-	-	-	-	-	-	-	-	-	5.7	-	1.8	3.9	-
	3/25/2021	-	19	-	-	-	-	-	-	-	-	-	-	-	2.3	-	-	2.2	-
	10/7/2021	-	72	-	-	-	-	-	-	-	-	-	-	-	2.3	-	-	1.1	-
KMW14*	Well KMW14 has been removed from the groundwater monitoring program. ¹¹																		
MW38*	6/25/2020	-	129	-	-	-	-	-	-	-	-	-	-	-	13	-	-	16	-
	10/1/2020	-	1.3	-	-	-	-	-	-	-	-	-	-	-	2.0	-	-	3.2	-
	3/25/2021	-	1.0	-	-	-	-	-	-	-	-	-	-	0.2	8.0	-	-	7.9	-
	10/7/2021	-	6.7	-	-	-	-	251	16	-	-	22	-	0.2	2.9	-	-	4.0	-
MW39*	1/30/2020	-	1,250	-	-	-	-	-	-	-	-	-	-	-	15	-	1.4	-	-
	10/1/2020	-	820	-	-	-	-	-	-	-	-	-	-	-	11	-	27	-	-
	3/25/2021	-	630	-	-	-	-	-	-	-	-	-	-	-	10	-	23	9.3	-
	10/7/2021	-	915	-	-	-	-	-	-	-	-	-	-	-	9.9	-	19	-	-
MW40	2/8/2018	-	-	-	-	-	-	-	6.8	-	-	-	-	-	-	-	-	-	-
	3/13/2019	-	-	-	-	-	7.8	-	11	-	6.4	6.4	-	-	-	6.6	-	-	-
	1/28/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Please refer to notes at end of table.

Table 18

Groundwater Analytical Data – Exceedance Factors (PAHs)

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal (µg/L)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level (µg/L)		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-
Portland Harbor JSCS SLV (µg/L)		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
MW41B*	1/28/2020	-	-	-	-	-	70	1,317	218	-	76	96	304	-	-	141	-	-	-
	9/30/2020	-	-	-	-	-	21	349	49	-	16	24	67	-	-	31	-	-	-
	3/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/6/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW43	1/30/2020	-	1,405	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-
	9/30/2020	-	1,385	-	-	-	-	-	-	-	-	-	-	-	-	-	6.7	-	-
	3/25/2021	-	940	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1	-	-
	10/7/2021	-	850	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0	-	-
MW44*	1/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/6/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW45*	3/13/2019	-	-	-	-	-	-	-	8.8	-	-	-	-	-	-	-	-	-	-
	3/13/2019	-	-	-	-	-	-	-	8.8	-	-	-	-	-	-	-	-	-	-
	1/30/2020	-	-	-	-	-	9.8	203	27	-	11	13	-	-	-	14	-	-	-
	3/23/2021	-	-	-	-	-	14	373	56	-	21	19	7	-	-	38	-	-	-
MW46*	1/29/2020	-	-	-	-	-	27	297	38	-	18	31	-	-	-	22	-	-	-
	9/29/2020	-	-	-	-	-	7.5	113	12	-	-	-	-	-	-	-	-	-	-
	3/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-
	10/6/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
DPE Treatment Area																			
EX-07L	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/5/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Please refer to notes at end of table.

Table 18

Groundwater Analytical Data – Exceedance Factors (PAHs)

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal (µg/L)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-
2017 PHSS Cleanup Level (µg/L)		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-
Portland Harbor JSCS SLV (µg/L)		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
KMW29	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	13	-
	9/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	21	-	-	11	-
	3/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	14	-
	10/5/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	12	-
KMW30	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	9/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	4.1	-	-	3.4	-
	3/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/24/2021 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/5/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	-	-	4.5	-
KMW31	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0	-	-	4.6	-
	1/29/2020 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0	-	-	4.8	-
	9/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	7.5	-
	9/29/2020 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	6.5	-
	3/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	7.5	-	-	7.0	-
	10/5/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	-	-	1.0	-
KMW32	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	5.0	-	-	4.8	-
	9/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/24/2021 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/5/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KMW33	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	1.5	-
	9/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4.0
	3/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	2.3	-	-	-	-
	10/6/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	7.0	-	-	-	-
KMW37	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	2.9	-	-	1.8	-
	9/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	3.1	-	-	2.9	-
	3/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	9.0	-	-	3.4	-
	10/6/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	3.0	-	-	-	-

Please refer to notes at end of table.

Table 18

Groundwater Analytical Data – Exceedance Factors (PAHs)

Shore Terminals LLC - Portland Facility
Portland, Oregon

Well ID	Sample Date	Exceedance Factors																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal (µg/L)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level (µg/L)		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-
Portland Harbor JSCS SLV (µg/L)		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
MW47	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	11	-	-	-	-
	9/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-
	3/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-
	10/6/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	9.0	-	-	-	-
MW48	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	-	-	2.6	-
	1/29/2020 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	1.3	-	-	2.6	-
	9/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.0	-
	9/29/2020 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-	2.6	-
	3/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	1.1	-	-	1.4	-
	10/5/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW49	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	3.5	-
	9/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	2.2	-	-	-	-
	3/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	9.0	-	-	4.4	-
	10/6/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	3.5	-	-	-	-
Slurry Wall																			
KMW36	1/30/2020	-	-	-	-	-	34	268	-	-	-	32	-	1.4	9.7	-	-	-	1.6
	9/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	9.2	-	-	-	1.0
	3/24/2021	-	-	-	-	-	17	136	-	-	-	19	-	-	5.6	-	-	-	-
	10/6/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	9.3	-	-	-	-
W-16	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	10	-	-	-	-
	10/1/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	4.6	-	-	-	-
	3/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	8.1	-	-	-	-
	10/6/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	6.4	-	-	-	-
W-19	2/8/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1	-	-	4.8	1.0
	3/15/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	1.9	-	-	-	-
	1/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	4.8	-	-	6.3	1.2
	3/25/2021	-	-	-	-	-	11	-	-	-	-	9.5	-	-	-	-	-	-	-

Please refer to notes at end of table.

Table 18

Groundwater Analytical Data – Exceedance Factors (PAHs)

Shore Terminals LLC - Portland Facility
Portland, Oregon

Well ID	Sample Date	Exceedance Factors																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal (µg/L)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	
2017 PHSS Cleanup Level (µg/L)		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	
Portland Harbor JSCS SLV (µg/L)		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	
W-20	2/8/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	3/15/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	1/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	3/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
W-22	2/8/2018	-	-	-	-	-	-	-	5.5	-	-	-	-	-	-	-	-	-	
	3/15/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	1/30/2020	-	-	-	-	-	-	72	7.6	-	-	-	-	-	-	-	-	-	
	3/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Site-Wide																			
KMW01	2/9/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	3/15/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	3/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
KMW02	1/29/2020	-	-	-	-	-	-	248	-	-	-	-	-	-	-	-	-	-	
	10/1/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	3/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
KMW05	2/8/2018	-	-	-	-	-	65	404	47	-	-	138	85	-	13	24	-	3.7	
	3/13/2019	-	-	-	-	-	43	368	31	-	12	67	-	-	26	22	-	19	
	1/28/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	35	-	-	32	
	3/23/2021	-	-	-	-	-	12	97	-	-	-	9	-	-	42	-	-	25	
KMW09	2/6/2018	-	-	-	-	-	-	-	2.3	-	-	-	-	-	-	-	-	-	
	3/13/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	1/29/2020	-	-	-	-	-	15	150	18	-	7.2	13	-	-	-	14	-	-	
	3/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Please refer to notes at end of table.

Table 18

Groundwater Analytical Data – Exceedance Factors (PAHs)

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal (µg/L)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level (µg/L)		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-
Portland Harbor JSCS SLV (µg/L)		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
KMW10*	1/28/2020	-	-	-	-	-	-	88	7.7	-	-	-	-	-	-	-	-	-	-
	9/29/2020	-	-	-	-	-	-	-	14	-	-	-	-	-	-	-	-	-	-
	3/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/7/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KMW16*	2/9/2018	-	-	-	-	-	32	382	55	-	22	45	62	-	-	35	-	-	-
	3/14/2019	-	-	-	-	-	11	170	21	-	9.2	11	-	-	-	15	-	-	-
	1/30/2020	-	-	-	-	-	14	155	17	-	9.3	13	-	-	-	14	-	-	-
	3/25/2021	-	-	-	-	-	16	337	33	-	13.4	18	-	-	-	16	-	-	-
KMW20	2/9/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1.4
	3/14/2019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	1/30/2020	-	-	-	-	-	-	110	12	-	6.2	8.2	-	-	-	-	-	-	-
	3/23/2021	-	-	-	-	-	-	67	-	-	-	-	-	-	-	-	-	-	-
KMW21	2/9/2018	-	-	-	-	-	-	-	-	-	-	-	-	-	16	-	-	-	-
	3/14/2019	-	-	-	-	-	12	-	-	-	9.1	-	-	-	31	-	-	11	-
	1/30/2020	-	3.9	-	-	-	-	-	-	-	-	-	-	-	47	-	-	38	-
	3/23/2021	-	-	-	-	-	13	-	-	-	6.3	-	-	-	6.1	-	-	-	-
MW42	2/8/2018	-	-	-	-	-	-	-	10	-	-	38	-	-	-	-	-	-	-
	3/14/2019	-	-	-	-	-	9.2	122	13	-	7.1	-	-	-	-	9.0	-	-	-
	1/30/2020	-	-	-	-	-	9.6	169	21	-	10	10	-	-	-	12	-	-	-
	3/25/2021	-	-	-	-	-	62.6	1542	168	-	75	88	180	-	-	102	-	-	-
W-15	1/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	5.5	-	-	3.5	-
	9/30/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	8.0	-	-	5.5	-
	3/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	6.5	-	-	3.9	-
	10/6/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	3.05	-	-	2.1	-
	10/6/2021 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	6.0	-	-	4.7	-

Please refer to notes at end of table.

Table 18

Groundwater Analytical Data – Exceedance Factors (PAHs)

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal (µg/L)		-	-	-	-	-	-	-	-	-	-	-	-	-	-	347	-	-	-
2017 PHSS Cleanup Level (µg/L)		-	-	23	-	0.73	0.0012	0.00012	0.0012	-	0.0013	0.0013	0.00012	-	-	0.0012	12	-	-
Portland Harbor JSCS SLV (µg/L)		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
Southern Facility Area																			
MW-1	2/2/2012	-	-	-	-	-	24	318	32	-	15	22	79	-	-	16	-	-	-
	12/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	12/29/2020 DUP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-2	2/2/2012	-	-	-	-	-	5.9	-	-	-	-	2.3	-	-	-	-	-	-	-
	12/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/23/2021	-	-	-	-	-	13	189	15	-	-	8.8	-	-	-	8.4	-	-	-
	10/7/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-3	2/2/2012	-	-	-	-	-	23.8	158.3	15.8	-	14.6	14.6	158.3	-	-	15.8	-	-	-
	12/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/23/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/7/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	10/7/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MW-4	2/2/2012	-	-	-	-	-	16	79	7.9	-	7.3	7.3	40	-	-	2.5	-	-	-
	12/29/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	3/23/2021	-	-	-	-	-	12	151	12	-	-	7.3	-	-	-	-	-	-	-
	10/7/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VRUMW-1	2/2/2012	-	-	-	-	-	16	-	7.9	-	7.3	7.3	-	-	-	7.9	-	-	-
	12/28/2020	-	-	-	-	-	16	279	25	-	9.8	16	-	-	-	16	-	-	-
VRUMW-2	2/2/2012	-	-	-	-	-	-	158	-	-	-	-	-	-	-	-	-	-	-
	12/28/2020	-	-	-	-	-	-	80	-	-	-	-	-	-	-	-	-	-	-
VO-1	2/1/2012	-	-	-	-	-	7.9	-	-	-	-	2.3	-	-	-	-	-	-	-
	2/1/2012 DUP	-	-	-	-	-	7.9	-	-	-	-	2.3	-	-	-	-	-	-	-
	12/28/2020	-	9.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VO-2	2/1/2012	-	-	-	-	-	5.8	-	-	-	-	2.3	-	-	-	-	-	-	-
	12/28/2020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
VO-3	2/2/2012	-	-	-	-	-	16	-	7.9	-	7.3	7.3	-	-	-	7.9	-	-	-
	12/29/2020	-	-	-	-	-	-	91	7.4	-	-	-	-	-	-	-	-	-	-

Please refer to notes at end of table.

Table 18 Notes

Groundwater Analytical Data – Exceedance Factors (PAHs)

Shore Terminals LLC - Portland Facility

Portland, Oregon

Notes:

1. PAH = Polycyclic aromatic hydrocarbons.
2. < = Concentration as reported by the analytical laboratory is less than the laboratory reporting limit.
3. µg/L = Microgram(s) per liter.
4. NA = Not analyzed .
5. DUP = Field Duplicate.
6. Yellow highlighted cells indicate values that are equal to or exceeding 1997 Record of Decision (ROD) Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
7. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
8. Polycyclic aromatic hydrocarbons analyzed by EPA Method 8270C with selective ion monitoring.
9. * = Well is screened in Deep Sand unit.
10. Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
11. Well KMW14 was paved over prior to the October 2017 monitoring event. In an email dated February 21, 2018, DEQ agreed that well KMW14 was not critical to monitoring the Loading Rack Area and that replacement of KMW14 was not required. Well KMW14 has been removed from the monitoring program.
12. The exceedance factor is the ratio of the analyte concentration and either the 1997 ROD Cleanup Goal, PHSS Cleanup Level Level, or JSCS SLV, as appropriate.

Table 19**Groundwater Analytical Data – Exceedance Factors (Dissolved Metals)**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors			
		Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal (µg/L)		5.0	12	3.2	--
PHSS Cleanup Level (µg/L)		0.018	2.74	0.54	36
Portland Harbor JSCS SLV (µg/L)		0.045	2.7	0.54	36
Tank Field 1					
KMW07	2/8/2018	7.7	--	2.9	--
	2/08/2018 DUP	7.9	--	2.9	--
	3/13/2019	126	--	--	--
	3/13/2019 DUP	133	--	--	--
	1/28/2020	144	--	2.1	--
	1/28/2020 DUP	5.2	--	2.2	--
	3/25/2021	138	--	--	--
	3/25/2021 DUP	126	--	--	--
KMW11	1/29/2020	87	--	--	--
	9/30/2020	264	--	--	--
	3/25/2021	200	--	--	--
	10/6/2021	1.2	--	--	--
KMW18	1/28/2020	3.2	--	--	--
	1/28/2020 DUP	3.2	--	--	--
	9/29/2020	1.4	--	--	--
	9/29/2020 DUP	1.4	--	--	--
	3/23/2021	--	--	--	--
	3/23/2021 DUP	--	--	--	--
	10/7/2021	95	--	--	--
	10/7/2021 DUP	94	--	--	--

Please refer to notes at end of table.

Table 19**Groundwater Analytical Data – Exceedance Factors (Dissolved Metals)**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors			
		Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal (µg/L)		5.0	12	3.2	--
PHSS Cleanup Level (µg/L)		0.018	2.74	0.54	36
Portland Harbor JSCS SLV (µg/L)		0.045	2.7	0.54	36
KMW19	1/28/2020	241	--	--	--
	9/29/2020	257	--	--	--
	3/23/2021	226	--	--	--
	10/6/2021	234	--	--	--
KMW35	1/28/2020	2.0	--	4.3	--
	9/30/2020	1.8	--	5.0	--
	3/25/2021	1.8	--	3.5	--
	10/6/2021	2.3	--	1.1	--
MW41A	1/28/2020	3.33	--	--	--
	9/30/2020	1.1	--	--	--
	3/25/2021	2.37	--	--	--
	10/6/2021	1.6	--	--	--
Loading Rack					
KMW13*	1/30/2020	2.6	--	1.4	--
	10/1/2020	3.7	--	2.5	--
	3/25/2021	4.6	--	--	--
	3/25/2021 DUP	4.5	--	--	--
	10/7/2021	5.3	--	1.3	--
KMW14*	Well KMW14 has been removed from the groundwater monitoring program. ¹²				

Please refer to notes at end of table.

Table 19**Groundwater Analytical Data – Exceedance Factors (Dissolved Metals)**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors			
		Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal (µg/L)		5.0	12	3.2	--
PHSS Cleanup Level (µg/L)		0.018	2.74	0.54	36
Portland Harbor JSCS SLV (µg/L)		0.045	2.7	0.54	36
MW38*	6/25/2020	6.7	--	--	--
	10/1/2020	4.0	--	--	--
	3/25/2021	5.9	--	3.9	--
	10/7/2021	5.6	--	--	--
MW39*	1/30/2020	12.8	--	2.9	--
	10/1/2020	12.1	--	2.6	--
	3/25/2021	12.5	--	1.8	--
	10/7/2021	13.7	--	2.0	--
MW40	2/8/2018	74	--	1.6	--
	3/13/2019	--	--	--	--
	1/28/2020	--	--	--	--
	3/23/2021	--	--	--	--
MW41B*	1/28/2020	61	--	--	--
	9/30/2020	52	--	--	--
	3/25/2021	51	--	--	--
	10/6/2021	72	--	--	--
MW43	1/30/2020	7.3	--	1.9	--
	9/30/2020	6.7	--	--	--
	3/25/2021	7.0	--	1.3	--
	10/7/2021	7.0	--	1.0	--

Please refer to notes at end of table.

Table 19**Groundwater Analytical Data – Exceedance Factors (Dissolved Metals)**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors			
		Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal (µg/L)		5.0	12	3.2	--
PHSS Cleanup Level (µg/L)		0.018	2.74	0.54	36
Portland Harbor JSCS SLV (µg/L)		0.045	2.7	0.54	36
MW44*	1/30/2020	1.8	--	--	--
	9/30/2020	1.7	--	--	--
	3/25/2021	1.6	--	--	--
	10/6/2021	2.6	--	--	--
MW45*	2/8/2018	84	1.2	1.8	--
	3/13/2019	34	--	--	--
	1/30/2020	--	--	--	--
	3/23/2021	33	--	--	--
MW46*	1/29/2020	32	--	--	--
	9/29/2020	151	--	--	--
	3/25/2021	149	--	--	--
	10/6/2021	179	--	--	--
DPE Treatment Area					
EX-07L	1/29/2020	--	--	--	--
	9/29/2020	--	--	--	--
	3/24/2021	--	1.3	--	--
	10/5/2021	--	--	--	--
KMW29	1/29/2020	2.6	--	1.2	--
	9/29/2020	3.2	--	2.1	--
	3/24/2021	268	--	--	--
	10/5/2021	3.3	--	2.0	--

Please refer to notes at end of table.

Table 19**Groundwater Analytical Data – Exceedance Factors (Dissolved Metals)**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors			
		Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal (µg/L)		5.0	12	3.2	--
PHSS Cleanup Level (µg/L)		0.018	2.74	0.54	36
Portland Harbor JSCS SLV (µg/L)		0.045	2.7	0.54	36
KMW30	1/29/2020	--	--	--	--
	9/29/2020	106	--	--	--
	3/24/2021	68	--	--	--
	3/24/2021 DUP	67	--	--	--
	10/5/2021	248	--	--	--
KMW31	1/29/2020	128	1.3	1.2	--
	1/29/2020 DUP	132	--	1.2	--
	9/29/2020	90	--	1.6	--
	3/24/2021	110	--	--	--
	10/5/2021	95	--	1.2	--
KMW32	1/29/2020	34	1.2	0.116 J	--
	9/29/2020	--	--	--	--
	3/24/2021	80	--	1.8	--
	3/24/2021 DUP	83	--	1.8	--
	10/5/2021	--	1.1	--	--
KMW33	1/29/2020	134	--	--	--
	9/29/2020	79	--	--	--
	3/24/2021	81	--	--	--
	10/6/2021	88	--	--	--

Please refer to notes at end of table.

Table 19**Groundwater Analytical Data – Exceedance Factors (Dissolved Metals)**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors			
		Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal (µg/L)		5.0	12	3.2	--
PHSS Cleanup Level (µg/L)		0.018	2.74	0.54	36
Portland Harbor JSCS SLV (µg/L)		0.045	2.7	0.54	36
KMW37	1/29/2020	3.7	--	1.2	--
	9/30/2020	6.3	--	3.9	--
	3/24/2021	5.5	--	3.0	--
	10/6/2021	4.8	--	3.9	--
MW47	1/29/2020	207	--	--	--
	9/29/2020	90	--	--	--
	3/24/2021	273	--	--	--
	10/6/2021	128	--	--	--
MW48	1/29/2020	143	--	--	--
	1/29/2020 DUP	158	--	--	--
	9/29/2020	178	--	--	--
	9/29/2020 DUP	178	--	--	--
	3/24/2021	79	--	--	--
	10/5/2021	154	--	--	--
	10/5/2021 DUP	153	--	--	--
MW49	1/29/2020	1.8	--	--	--
	9/29/2020	1.7	--	--	--
	3/24/2021	1.5	--	1.04	--
	10/6/2021	2.0	--	--	--

Please refer to notes at end of table.

Table 19**Groundwater Analytical Data – Exceedance Factors (Dissolved Metals)**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors			
		Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal (µg/L)		5.0	12	3.2	--
PHSS Cleanup Level (µg/L)		0.018	2.74	0.54	36
Portland Harbor JSCS SLV (µg/L)		0.045	2.7	0.54	36
Slurry Wall					
KMW36	1/29/2020	53	--	--	--
	9/30/2020	--	--	--	--
	3/24/2021	67	--	--	--
	10/6/2021	--	--	--	--
W-16	1/29/2020	3.7	--	2.04	--
	10/1/2020	277	--	--	--
	3/25/2021	203	--	1.08	--
	10/6/2021	1.1	--	--	--
W-19	2/8/2018	2.4	--	--	--
	3/15/2019	213	--	--	--
	1/30/2020	2.5	--	--	--
	3/25/2021	152	--	--	--
W-20	2/8/2018	2.4	--	--	--
	3/15/2019	55	--	--	--
	1/30/2020	86	--	--	--
	3/25/2021	34	--	--	--
W-22	2/8/2018	66	--	1.27	--
	3/15/2019	--	--	--	--
	1/30/2020	--	--	--	--
	3/23/2021	--	--	--	--

Please refer to notes at end of table.

Table 19**Groundwater Analytical Data – Exceedance Factors (Dissolved Metals)**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors			
		Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal (µg/L)		5.0	12	3.2	--
PHSS Cleanup Level (µg/L)		0.018	2.74	0.54	36
Portland Harbor JSCS SLV (µg/L)		0.045	2.7	0.54	36
Site-Wide					
KMW01	02/09/2018	58	--	--	--
	3/15/2019	72	--	--	--
	1/29/2020	49	--	--	--
	3/23/2021	--	--	--	--
KMW02	1/29/2020	108	--	--	--
	10/1/2020	177	--	--	--
	3/23/2021	39	--	--	--
	10/7/2021	174	--	--	--
KMW05	2/8/2018	124	--	--	--
	3/13/2019	70	--	--	--
	1/28/2020	83	--	--	--
	3/23/2021	61	--	--	--
KMW09	2/6/2018	60	--	--	--
	3/13/2019	--	--	--	--
	1/29/2020	--	--	--	--
	3/23/2021	--	--	--	--

Please refer to notes at end of table.

Table 19**Groundwater Analytical Data – Exceedance Factors (Dissolved Metals)**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors			
		Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal (µg/L)		5.0	12	3.2	--
PHSS Cleanup Level (µg/L)		0.018	2.74	0.54	36
Portland Harbor JSCS SLV (µg/L)		0.045	2.7	0.54	36
KMW10*	1/29/2020	55	--	--	--
	9/29/2020	53	--	--	--
	3/23/2021	56	--	--	--
	10/7/2021	79	--	--	--
KMW16*	2/9/2018	97	--	--	--
	3/14/2019	51	--	--	--
	1/30/2020	48	--	--	--
	3/25/2021	46	--	--	--
KMW20	2/9/2018	94	--	--	--
	3/14/2019	42	--	--	--
	1/30/2020	57	--	--	--
	3/23/2021	93	--	--	--
KMW21	2/9/2018	149	--	--	--
	3/14/2019	119	--	--	--
	1/30/2020	110	--	--	--
	3/23/2021	40	--	--	--
KMW24*	2/9/2018	1.6	--	--	--
	3/13/2019	1.2	--	--	--
	1/30/2020	1.4	--	--	--
	3/25/2021	1.4	--	--	--

Please refer to notes at end of table.

Table 19**Groundwater Analytical Data – Exceedance Factors (Dissolved Metals)**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors			
		Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal (µg/L)		5.0	12	3.2	--
PHSS Cleanup Level (µg/L)		0.018	2.74	0.54	36
Portland Harbor JSCS SLV (µg/L)		0.045	2.7	0.54	36
KMW26*	2/9/2018	146	--	--	--
	3/13/2019	97	--	--	--
	1/30/2020	66	--	--	--
	3/25/2021	131	--	--	--
MW42	2/8/2018	62	--	--	--
	3/14/2019	--	--	--	--
	1/30/2020	--	1.1	--	--
	3/25/2021	--	--	--	--
W-15	1/29/2020	5.5	--	2.19	--
	9/30/2020	4.5	--	2.37	--
	3/24/2021	2.0	--	2.61	--
	10/6/2021	4.2	--	1.98	--
	10/6/2021 DUP	4.1	--	2.24	--
Southern Facility Area					
MW-1	2/2/2012	5.9	--	--	--
	12/29/2020	--	--	--	--
	12/29/2020 DUP	--	--	--	--
MW-2	2/2/2012	58	--	--	--
	12/29/2020	129	--	--	--
	3/23/2021	79	--	--	--
	10/7/2021	135	--	--	--
MW-3	2/2/2012	7.8	--	--	--
	12/29/2020	--	--	--	--
	3/23/2021	--	--	--	--
	10/7/2021	--	--	--	--
	10/7/2021 DUP	--	--	--	--

Please refer to notes at end of table.

Table 19**Groundwater Analytical Data – Exceedance Factors (Dissolved Metals)**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Exceedance Factors			
		Dissolved Arsenic	Dissolved Copper	Dissolved Lead	Dissolved Zinc
ROD Groundwater Cleanup Goal (µg/L)		5.0	12	3.2	--
PHSS Cleanup Level (µg/L)		0.018	2.74	0.54	36
Portland Harbor JSCS SLV (µg/L)		0.045	2.7	0.54	36
MW-4	2/2/2012	8.0	--	--	--
	12/29/2020	--	--	--	--
	3/23/2021	--	--	--	--
	10/7/2021	--	--	--	--
VRUMW-1	2/2/2012	42.4	--	--	--
	12/28/2020	49.2	--	--	--
VRUMW-2	2/2/2012	22.2	--	--	--
	12/28/2020	80.0	--	--	--
VO-1	2/1/2012	--	--	--	--
	2/1/2012 DUP	--	--	--	--
	12/28/2020	--	--	--	--
VO-2	2/2/2012	17.2	--	--	--
	12/28/2020	--	--	--	--
VO-3	2/2/2012	14.6	--	--	--
	12/29/2020	--	--	--	--

Notes:

- < = Concentration as reported by analytical laboratory is less than the laboratory reporting limit.
- µg/L = Microgram(s) per liter.
- EPA = United States Environmental Protection Agency.
- NS = Not sampled.
- NA = Not analyzed. Zinc is not a part of the approved monitoring program and is not typically included in the analysis suite; however, it was
- DUP = Field Duplicate.
- Yellow highlighted cells indicate values that are equal to or exceeding 1997 ROD Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
- Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
- * = Well is screened in Deep Sand unit.
- Data prior to December 22, 2011 were recorded and previously reported by ExxonMobil.
- Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
- Well KMW14 was paved over prior to the October 2017 monitoring event. In an email dated February 21, 2018, DEQ agreed that well KMW14 was not critical to monitoring the Loading Rack Area and that replacement of KMW14 was not required. Well KMW14 has been removed from the monitoring program.
- = Not applicable.
- The exceedance factor is the ratio of the analyte concentration and either the 1997 ROD Cleanup Goal, PHSS Cleanup Level Level, or JSCS

Table 20**Groundwater Elevation and SPH Thickness Measurements**Shore Terminals LLC - Portland Facility
Portland, Oregon

Well ID	Date	Reference Elevation (feet) ¹	Depth To SPH (feet)	Depth To Groundwater (feet)	SPH Thickness (feet)	Groundwater Elevation (feet)	Notes
Tank Field 1							
KMW07	1/27/2020	32.63	--	11.84	--	20.79	--
	9/28/2020	32.63	--	14.25	--	18.38	--
	3/22/2021	32.63	--	11.36	--	21.27	--
	10/4/2021	32.63	--	14.04	--	18.59	--
KMW11	1/27/2020	30.57	--	15.13	--	15.44	--
	9/28/2020	30.57	--	16.34	--	14.23	--
	3/22/2021	30.57	--	15.19	--	15.38	--
	10/4/2021	30.57	--	16.02	--	14.55	--
KMW18	1/27/2020	34.49	--	14.11	--	20.38	--
	9/28/2020	34.49	--	16.55	--	17.94	--
	3/22/2021	34.49	--	13.90	--	20.59	--
	10/4/2021	34.49	--	16.36	--	18.13	--
KMW19	1/27/2020	32.01	--	13.70	--	18.31	--
	9/28/2020	32.01	--	15.12	--	16.89	--
	3/22/2021	32.01	--	13.56	--	18.45	--
	10/4/2021	32.01	--	14.52	--	17.49	--
KMW35	1/27/2020	33.37	--	12.16	--	21.21	--
	9/28/2020	33.37	--	14.77	--	18.60	--
	3/22/2021	33.37	--	11.83	--	21.54	--
	10/4/2021	33.37	--	14.49	--	18.88	--
MW41A	1/27/2020	33.84	--	12.14	--	21.70	--
	9/28/2020	33.84	--	14.90	--	18.94	--
	3/22/2021	33.84	--	12.04	--	21.80	--
	10/4/2021	33.84	--	14.59	--	19.25	--
Tank 3510							
AC-2	1/27/2020	29.54	--	13.55	--	15.99	--
	9/28/2020	29.54	--	16.39	--	13.15	--
	3/22/2021	29.54	--	12.04	--	17.50	--
	10/4/2021	32.97	--	18.98	--	13.99	Well Resurveyed 12/2021
AC-7	1/27/2020	30.52	--	16.65	--	13.87	--
	9/28/2020	30.52	--	19.09	--	11.43	--
	3/22/2021	30.52	--	17.55	--	12.97	--
	10/4/2021	30.52	--	18.94	--	11.58	--
Loading Rack							
AC-8*	1/27/2020	42.90	--	14.41	--	28.49	--
	9/28/2020	42.90	--	15.38	--	27.52	--
	3/22/2021	42.90	--	13.30	--	29.60	--
	10/4/2021	42.90	--	15.40	--	27.50	--
AC-9*	1/27/2020	42.82	15.92	16.62	0.70	26.77	--
	9/28/2020	42.82	17.00	17.10	0.10	25.80	--
	3/22/2021	42.82	14.10	14.15	0.05	28.71	--
	10/4/2021	42.82	16.99	17.03	0.04	25.82	--

Please refer to notes at end of table.

Table 20**Groundwater Elevation and SPH Thickness Measurements**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Date	Reference Elevation (feet) ¹	Depth To SPH (feet)	Depth To Groundwater (feet)	SPH Thickness (feet)	Groundwater Elevation (feet)	Notes
AC-10*	1/27/2020	43.30	16.48	16.72	0.24	26.77	--
	9/28/2020	43.30	17.46	17.59	0.13	25.82	--
	3/22/2021	43.30	14.32	14.84	0.52	28.88	
	10/4/2021	43.05	17.32	17.44	0.12	25.71	Well Resurveyed 12/2021
KMW13*	1/27/2020	44.01	--	17.09	--	26.92	--
	9/28/2020	44.01	--	18.30	--	25.71	--
	3/22/2021	44.01	--	15.48	--	28.53	--
	10/4/2021	44.01	--	18.18	--	25.83	--
KMW14*	Well KMW14 has been removed from the groundwater monitoring program. ¹²						
MW38*	1/27/2020	41.85	--	NM	--	--	Inaccessible
	9/28/2020	41.85	--	16.37	--	25.48	--
	3/22/2021	41.85	--	13.89	--	27.96	--
	10/4/2021	41.85	--	16.30	--	25.55	--
MW39*	1/27/2020	42.21	--	15.60	--	26.61	--
	9/28/2020	42.21	--	16.84	--	25.37	--
	3/22/2021	42.21	--	14.40	--	27.81	--
	10/4/2021	42.07	--	NM	--	NM	Well Resurveyed 12/2021
MW40	1/27/2020	34.12	--	12.04	--	22.08	--
	9/28/2020	34.12	--	15.63	--	18.49	--
	3/22/2021	34.12	--	12.26	--	21.86	--
	10/4/2021	34.12	--	15.72	--	18.40	--
MW43*	1/27/2020	41.78	--	15.25	--	26.53	--
	9/28/2020	41.78	--	16.25	--	25.53	--
	3/22/2021	41.78	--	13.70	--	28.08	--
	10/4/2021	41.78	--	16.18	--	25.60	--
MW41B*	1/27/2020	34.00	--	8.20	--	25.80	--
	6/28/2020	34.00	--	9.28	--	24.72	--
	3/22/2021	34.00	--	8.79	--	25.21	--
	10/4/2021	34.00	--	9.25	--	24.75	--
MW44*	1/27/2020	32.65	--	6.18	--	26.47	--
	9/28/2020	32.65	--	7.51	--	25.14	--
	3/22/2021	32.65	--	5.36	--	27.29	--
	10/4/2021	32.65	--	7.40	--	25.25	--
MW45*	1/27/2020	32.97	--	7.02	--	25.95	--
	9/28/2020	32.97	--	8.24	--	24.73	--
	3/22/2021	32.97	--	6.72	--	26.25	--
	10/4/2021	32.97	--	--	--	NM	--
MW46*	1/27/2020	30.04	--	9.64	--	20.40	--
	9/28/2020	30.04	--	12.31	--	17.73	--
	3/22/2021	30.04	--	10.40	--	19.64	--
	10/4/2021	30.21	--	12.79	--	17.42	Well Resurveyed 12/2021

Please refer to notes at end of table.

Table 20**Groundwater Elevation and SPH Thickness Measurements**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Date	Reference Elevation (feet) ¹	Depth To SPH (feet)	Depth To Groundwater (feet)	SPH Thickness (feet)	Groundwater Elevation (feet)	Notes
DPE Treatment Area							
EX-07L	1/27/2020	29.70	--	18.07 ²	--	11.63	Angled Well (25°)
	9/28/2020	29.70	--	22.51 ²	--	7.19	Angled Well (25°)
	3/22/2021	29.70	--	20.71 ²	--	8.99	Angled Well (25°)
	10/4/2021	29.70	--	22.25 ²	--	7.45	Angled Well (25°)
KMW29	1/27/2020	30.74	--	19.27	--	11.47	--
	9/28/2020	30.74	--	22.13	--	8.61	--
	3/22/2021	30.74	--	20.97	--	9.77	--
	10/4/2021	30.74	--	22.28	--	8.46	--
KMW30	1/27/2020	30.13	--	18.95	--	11.18	--
	9/28/2020	30.13	--	22.51	--	7.62	--
	3/22/2021	30.13	--	21.13	--	9.00	--
	10/4/2021	30.13	--	22.75	--	7.38	--
KMW31	1/27/2020	30.55	--	19.35	--	11.20	--
	9/28/2020	30.55	--	23.38	--	7.17	--
	3/22/2021	30.55	--	21.79	--	8.76	--
	10/4/2021	30.55	--	23.43	--	7.12	--
KMW32	1/27/2020	30.27	--	18.59	--	11.68	--
	9/28/2020	30.27	--	22.57	--	7.70	--
	3/22/2021	30.27	--	20.51	--	9.76	--
	10/4/2021	30.11	--	22.23	--	7.88	Well Resurveyed 12/2021
KMW33	1/27/2020	30.83	--	18.51	--	12.32	--
	9/28/2020	30.83	--	23.21	--	7.62	--
	3/22/2021	30.83	--	20.63	--	10.20	--
	10/4/2021	30.83	--	22.92	--	7.91	--
KMW37	1/27/2020	30.54	--	18.48	--	12.06	--
	9/28/2020	30.54	--	20.82	--	9.72	--
	3/22/2021	30.54	--	19.51	--	11.03	--
	10/4/2021	30.54	--	21.01	--	9.53	--
MW47	1/27/2020	30.23	--	19.08	--	11.15	--
	9/28/2020	30.23	--	24.04	--	6.19	--
	3/22/2021	30.23	--	22.08	--	8.15	--
	10/4/2021	30.23	--	24.00	--	6.23	--
MW48	1/27/2020	30.36	--	19.22	--	11.14	--
	9/28/2020	30.36	--	22.67	--	7.69	--
	3/22/2021	30.36	--	21.38	--	8.98	--
	10/4/2021	30.36	--	22.98	--	7.38	--
MW49	1/27/2020	29.81	--	18.54	--	11.27	--
	9/28/2020	29.81	--	23.32	--	6.49	--
	3/22/2021	29.81	--	21.76	--	8.05	--
	10/4/2021	29.81	--	23.15	--	6.66	--

Please refer to notes at end of table.

Table 20

Groundwater Elevation and SPH Thickness Measurements

Shore Terminals LLC - Portland Facility
Portland, Oregon

Well ID	Date	Reference Elevation (feet) ¹	Depth To SPH (feet)	Depth To Groundwater (feet)	SPH Thickness (feet)	Groundwater Elevation (feet)	Notes
Slurry Wall							
KMW36	1/27/2020	31.00	--	14.23	--	16.77	--
	9/28/2020	31.00	--	16.47	--	14.53	--
	3/22/2021	31.00	--	14.08	--	16.92	--
	10/4/2021	31.00	--	17.33	--	13.67	--
W-16	1/27/2020	30.30	--	9.59	--	20.71	--
	9/28/2020	30.30	--	11.90	--	18.40	--
	3/22/2021	30.30	--	10.37	--	19.93	--
	10/4/2021	31.55	--	13.09	--	18.46	Well Resurveyed 12/2021
W-19	1/27/2020	29.70	--	11.22	--	18.48	--
	9/28/2020	29.70	--	13.77	--	15.93	--
	3/22/2021	29.70	--	10.42	--	19.28	--
	10/4/2021	29.70	--	13.76	--	15.94	--
W-20	1/27/2020	30.32	--	14.24	--	16.08	--
	9/28/2020	30.32	--	16.42	--	13.90	--
	3/22/2021	30.32	--	14.59	--	15.73	--
	10/4/2021	30.32	--	16.60	--	13.72	--
W-22	1/27/2020	31.40	--	16.28	--	15.12	--
	9/28/2020	31.40	--	19.71	--	11.69	--
	3/22/2021	31.40	--	16.75	--	14.65	--
	10/4/2021	31.40	--	19.47	--	11.93	--
Site-Wide							
KMW01	1/27/2020	35.48	--	17.87	--	17.61	--
	9/28/2020	35.48	--	22.29	--	13.19	--
	3/22/2021	35.48	--	18.65	--	16.83	--
	10/4/2021	35.48	--	21.50	--	13.98	--
KMW02	1/27/2020	34.64	--	12.69	--	21.95	--
	9/28/2020	34.64	--	14.93	--	19.71	--
	3/22/2021	34.64	--	13.99	--	20.65	--
	10/4/2021	34.64	--	14.28	--	20.36	--
KMW03*	1/27/2020	38.24	--	NM	--	NM	Inaccessible
	9/28/2020	38.24	--	6.50	--	31.74	--
	3/22/2021	38.24	--	4.69	--	33.55	--
	10/4/2021	38.24	--	6.51	--	31.73	--
KMW05	1/27/2020	33.68	--	12.49	--	21.19	--
	9/28/2020	33.68	--	15.62	--	18.06	--
	3/22/2021	33.68	--	12.18	--	21.50	--
	10/4/2021	33.68	--	15.58	--	18.10	--
KMW06	1/27/2020	32.80	--	NM	--	--	Inaccessible
	9/29/2020	32.80	--	14.83	--	17.97	--
	3/22/2021	32.80	--	11.48	--	21.32	--
	10/4/2021	32.80	--	14.81	--	17.99	--

Please refer to notes at end of table.

Table 20

Groundwater Elevation and SPH Thickness Measurements

Shore Terminals LLC - Portland Facility
Portland, Oregon

Well ID	Date	Reference Elevation (feet) ¹	Depth To SPH (feet)	Depth To Groundwater (feet)	SPH Thickness (feet)	Groundwater Elevation (feet)	Notes
KMW09	1/27/2020	31.39	--	16.48	--	14.91	--
	9/28/2020	31.39	--	17.99	--	13.40	--
	3/22/2021	31.39	--	17.32	--	14.07	--
	10/4/2021	31.39	--	17.65	--	13.74	--
KMW10*	1/27/2020	31.99	--	4.45	--	27.54	--
	9/28/2020	31.99	--	7.13	--	24.86	--
	3/22/2021	31.99	--	5.04	--	26.95	--
	10/4/2021	31.99	--	6.10	--	25.89	--
KMW15*	1/27/2020	40.98	--	5.65	--	35.33	--
	9/28/2020	40.98	--	7.97	--	33.01	--
	3/22/2021	40.98	--	6.44	--	34.54	--
	10/4/2021	40.98	--	7.39	--	33.59	--
KMW16*	1/27/2020	41.87	--	15.18	--	26.69	--
	9/28/2020	41.87	--	15.68	--	26.19	--
	3/22/2021	41.87	--	12.01	--	29.86	--
	10/4/2021	41.87	--	15.69	--	26.18	--
KMW17	1/27/2020	35.47	15.44	15.61	0.17	20.00	Corrected Using SPH density 0.81
	9/28/2020	35.47	21.95	22.30	0.35	13.45	Corrected Using SPH density 0.81
	3/22/2021	35.47	17.35	17.38	0.03	18.11	Corrected Using SPH density 0.81
	10/4/2021	35.47	20.80	20.81	0.01	14.67	Corrected Using SPH density 0.81
KMW20	1/27/2020	34.24	--	11.18	--	23.06	--
	9/28/2020	34.24	--	12.84	--	21.40	--
	3/22/2021	34.24	--	11.21	--	23.03	--
	10/4/2021	34.24	--	12.76	--	21.48	--
KMW21	1/27/2020	33.93	--	12.38	--	21.55	--
	9/28/2020	33.93	--	15.12	--	18.81	--
	3/22/2021	33.93	--	11.98	--	21.95	--
	10/4/2021	33.93	--	14.96	--	18.97	--
KMW23*	1/27/2020	42.57	--	9.91	--	32.66	--
	9/28/2020	42.57	--	10.56	--	32.01	--
	3/22/2021	42.57	--	8.69	--	33.88	--
	10/4/2021	42.57	--	10.59	--	31.98	--
KMW24*	1/27/2020	62.00	--	4.68	--	57.32	--
	9/28/2020	62.00	--	8.85	--	53.15	--
	3/22/2021	62.00	--	6.30	--	55.70	--
	10/4/2021	62.00	--	8.03	--	53.97	--
KMW25*	1/27/2020	61.36	--	14.79	--	46.57	--
	9/28/2020	61.36	--	18.64	--	42.72	--
	3/22/2021	61.36	--	14.68	--	46.68	--
	10/4/2021	61.36	--	17.50	--	43.86	--

Please refer to notes at end of table.

Table 20**Groundwater Elevation and SPH Thickness Measurements**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Date	Reference Elevation (feet) ¹	Depth To SPH (feet)	Depth To Groundwater (feet)	SPH Thickness (feet)	Groundwater Elevation (feet)	Notes
KMW26*	1/27/2020	74.48	--	2.83	--	71.65	--
	9/28/2020	74.48	--	9.24	--	65.24	--
	3/22/2021	74.48	--	3.26	--	71.22	--
	10/4/2021	74.48	--	6.31	--	68.17	--
KMW27*	1/27/2020	92.04	--	NM	--	--	Could Not Be Located
	9/29/2020	92.04	--	22.69	--	69.35	--
	3/22/2021	92.04	--	21.78	--	70.26	--
	10/4/2021	92.04	--	22.72	--	69.32	--
MW42*	1/27/2020	43.04	--	14.92	--	28.12	--
	9/28/2020	43.04	--	16.67	--	26.37	--
	3/22/2021	43.04	--	13.99	--	29.05	--
	10/4/2021	43.04	--	16.51	--	26.53	--
W-15	1/27/2020	29.26	--	10.94	--	18.32	--
	9/28/2020	29.26	--	12.37	--	16.89	--
	3/22/2021	29.26	--	11.81	--	17.45	--
	10/4/2021	30.49	13.66	13.66	Sheen	16.83	Well Resurveyed 12/2021
W-17	1/27/2020	31.15	--	9.72	--	21.43	--
	9/28/2020	31.15	--	13.77	--	17.38	--
	3/22/2021	31.15	--	9.54	--	21.61	--
	10/4/2021	31.15	--	12.65	--	18.50	--
W-18	1/27/2020	30.00	--	9.48	--	20.52	--
	9/28/2020	30.00	--	11.98	--	18.02	--
	3/22/2021	30.00	--	8.31	--	21.69	--
	10/4/2021	30.00	--	11.99	--	18.01	--
W-21	1/27/2020	29.79	--	11.91	--	17.88	--
	9/28/2020	29.79	--	17.82	--	11.97	--
	3/22/2021	29.79	--	13.60	--	16.19	--
	10/4/2021	29.79	--	16.83	--	12.96	--
Southern Facility Area							
MW-1	1/27/2020	33.58	--	13.47	--	20.11	--
	9/28/2020	33.58	--	DRY	--	--	--
	3/22/2021	33.58	--	14.29	--	19.29	--
	10/4/2021	33.58	--	17.53	--	16.05	--
MW-2	1/27/2020	32.90	--	18.99	--	13.91	--
	9/28/2020	32.90	--	22.31	--	10.59	--
	3/22/2021	32.90	--	19.42	--	13.48	--
	10/4/2021	32.90	--	21.76	--	11.14	--
MW-3	1/27/2020	33.67	--	19.52	--	14.15	--
	9/28/2020	33.67	--	22.40	--	11.27	--
	3/22/2021	33.67	--	20.04	--	13.63	--
	10/4/2021	33.67	--	22.17	--	11.50	--

Please refer to notes at end of table.

Table 20**Groundwater Elevation and SPH Thickness Measurements**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Date	Reference Elevation (feet) ¹	Depth To SPH (feet)	Depth To Groundwater (feet)	SPH Thickness (feet)	Groundwater Elevation (feet)	Notes
MW-4	1/27/2020	33.82	--	19.62	--	14.20	--
	9/28/2020	33.82	--	22.36	--	11.46	--
	3/22/2021	33.82	--	20.50	--	13.32	--
	10/4/2021	33.82	--	22.00	--	11.82	--
VRUMW-1	1/27/2020	32.51	--	13.86	--	18.65	--
	9/28/2020	32.51	--	14.79	--	17.72	--
	3/22/2021	32.51	--	14.40	--	18.11	--
	10/4/2021	32.51	--	14.81	--	17.70	--
VRUMW-2	1/27/2020	32.98	--	17.98	--	15.00	--
	9/28/2020	32.98	--	20.86	--	12.12	--
	3/22/2021	32.98	--	19.18	--	13.80	--
	10/4/2021	32.98	--	20.70	--	12.28	--
VO-1	1/27/2020	35.73	--	18.26	--	17.47	--
	9/28/2020	35.73	--	21.64	--	14.09	--
	3/22/2021	35.73	--	19.72	--	16.01	--
	10/4/2021	35.73	--	20.97	--	14.76	--
VO-2	1/27/2020	35.66	--	16.11	--	19.55	--
	9/28/2020	35.66	--	16.78	--	18.88	--
	3/22/2021	35.66	--	16.51	--	19.15	--
	10/4/2021	35.66	--	16.61	--	19.05	--
VO-3	1/27/2020	32.98	--	13.85	--	19.13	--
	9/28/2020	32.98	--	15.10	--	17.88	--
	3/22/2021	32.98	--	14.66	--	18.32	--
	10/4/2021	32.98	--	15.12	--	17.86	--

River Gauge	Date	Reference Elevation (feet) ⁴	Depth To SPH (feet)	River Stage (feet) ⁵	SPH Thickness (feet)	River Elevation (feet) ⁶	Notes
Willamette River	1/27/2020	2.92	--	7.79	--	10.71	--
	9/28/2020	2.92	--	2.26	--	5.18	--
	3/22/2021	2.92	--	2.92	--	5.84	--
	10/4/2021	2.92	--	2.44	--	5.36	--

Notes:

- Reference elevation (i.e., top of casing) relative to City of Portland Datum, survey conducted in July 2005. City of Portland Datum is 1.375 feet below NGVD 29 (sea level).
- Reported depth to groundwater is corrected from the field measurement for the 25° angle from vertical.
- Groundwater elevation is corrected where SPH is observed by using the SPH density stated in the "Notes" column.
- Reference elevation (i.e., top of casing) relative to City of Portland Datum. This is the gauge height at USGS Sta. 14211720 in feet.
- Mean daily river stage at USGS Sta. 14211720 in feet.
- Mean daily river elevation at USGS Sta. 14211720 relative to City of Portland Datum in feet.
- USGS = United States Geological Survey.
- SPH = Separate-phase hydrocarbons.
- NM = Not measured.
- NGVD 29 = National Geodetic Vertical Datum of 1929.
- * = Well is screened in Deep Sand unit.
- Well KMW14 was paved over prior to the October 2017 monitoring event. In an email dated February 21, 2018, DEQ agreed that well KMW14 was not critical to monitoring the Loading Rack Area and that replacement of KMW14 was not required. Well KMW14 has been removed from the monitoring program.

Table 21**SPH Monitoring and Removal**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Date	SPH Thickness (feet)										SPH/Water Mix Removed (gallons)
	KMW17	W-15	KMW32	AC-6	AC-8	AC-9	AC-10	KMW13 ^a	MW38 ^d	MW39 ^d	
1/5/2011	0.11 ^b	NP	NP	2.50	--	--	--	--	--	--	0.7
1/19/2011	0.04 ^b	--	--	3.19	NP	Sheen	NP	--	--	--	0.8
2/9/2011	--	--	--	4.09	--	--	--	--	--	--	0.8
2/21/2011	1.10 ^b	NP	NP	2.12	--	--	--	--	--	--	0.8
3/2/2011	--	--	--	1.96	--	--	--	--	--	--	0.4
3/8/2011	--	--	--	1.58	--	--	--	--	--	--	0.2
3/28/2011	0.30 ^b	NP	NP	3.55	--	--	--	--	--	--	1.1
4/13/2011	0.14 ^b	NP	NP	3.18	--	--	--	--	--	--	0.8
4/20/2011	--	--	--	1.87	--	--	--	--	--	--	0.3
4/26/2011	--	--	--	1.41	--	--	--	--	--	--	0.2
4/29/2011	--	--	--	0.88	--	--	--	--	--	--	0.1
5/4/2011	0.33 ^b	NP	NP	1.48	--	--	--	--	--	--	0.5
5/10/2011	--	--	--	1.35	--	--	--	--	--	--	0.2
5/17/2011	--	--	--	1.75	--	--	--	--	--	--	0.2
5/31/2011	--	--	--	3.48	--	--	--	--	--	--	0.6
6/8/2011	--	--	--	--	NP	NP	NP	--	--	--	--
6/9/2011	0.23 ^b	NP	NP	2.39	--	--	--	--	--	--	0.7
6/16/2011	--	--	--	1.85	--	--	--	--	--	--	0.3
6/29/2011	--	--	--	3.61	--	--	--	--	--	--	0.7
7/8/2011	0.01 ^b	NP	NP	2.46	--	--	--	--	--	--	0.7
7/21/2011	--	--	--	3.45	--	--	--	--	--	--	0.8
7/22/2011	--	--	--	0.08	--	--	--	--	--	--	<0.1
8/2/2011	--	--	--	2.53	--	--	--	--	--	--	0.5
8/9/2011	--	--	--	1.34	--	--	--	--	--	--	0.2
8/23/2011	0.18 ^b	NP	NP	--	--	--	--	--	--	--	0.3
8/26/2011	--	--	--	1.68	NP	NP	NP	--	--	--	0.2
8/30/2011	--	--	--	0.21	--	--	--	--	--	--	<0.1
9/7/2011	--	--	--	0.26	--	--	--	--	--	--	<0.1
9/14/2011	0.01 ^b	NP	NP	0.15	--	--	--	--	--	--	0.1
9/21/2011	--	--	--	0.17	--	--	--	--	--	--	<0.1
10/7/2011	--	--	--	0.21	--	--	--	--	--	--	<0.1
10/12/2011	SPH ^b	NP	NP	0.08	--	--	--	--	--	--	<0.1
10/19/2011	--	--	--	0.17	--	--	--	--	--	--	<0.1
11/4/2011	--	--	--	0.34	--	--	--	--	--	--	<0.1
11/7/2011	--	--	--	0.12	--	--	--	--	--	--	<0.1
11/29/2011	SPH ^b	NP	NP	5.72	--	--	--	--	--	--	1.1
11/30/2011	--	--	--	--	NP	NP	0.01	--	--	--	--
12/9/2011	--	--	--	4.19	--	--	--	--	--	--	0.7
12/21/2011	SPH ^b	NP	NP	3.04	--	--	--	--	--	--	0.5

Please refer to notes at end of table.

Table 21**SPH Monitoring and Removal**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Date	SPH Thickness (feet)										SPH/Water Mix Removed (gallons)
	KMW17	W-15	KMW32	AC-6	AC-8	AC-9	AC-10	KMW13 ^a	MW38 ^d	MW39 ^d	
1/25/2012	--	--	--	6.20	--	--	--	--	--	--	2.0
2/22/2012	Sheen	NP	NP	3.00	NP	NP	NP	--	--	--	--
3/14/2012	--	--	--	~4 ^c	--	--	--	--	--	--	2.3
3/20/2012	0.12 ^b	Sheen	NP	1.86	--	--	--	--	--	--	2.0
4/3/2012	--	--	--	4.12	--	--	--	--	--	--	1.5
4/17/2012	0.01 ^b	NP	NP	4.10	--	NP	NP	--	--	--	1.6
5/8/2012	--	--	--	3.99	NP	NP	NP	--	--	--	1.0
5/22/2012	0.15 ^b	NP	Sheen	3.76	--	--	--	--	--	--	1.8
7/3/2012	0.1b	NP	NP	3.98	--	--	--	--	--	--	2.8
6/5/2012	--	--	--	4.51	--	--	--	--	--	--	1.0
6/21/2012	0.03 ^b	NP	NP	3.78	--	NP	NP	--	--	--	1.2
7/3/2012	0.10	NP	NP	3.98	--	--	--	--	--	--	2.8
8/27/2012	0.13	NP	NP	--	--	--	--	--	--	--	0.25
9/12/2012	--	NP	NP	--	--	NP	NP	--	--	--	0.0
9/17/2012	Sheen	NP	NP	1.37	NP	NP	0.01	--	--	--	0.0
9/21/2012	--	--	--	--	--	NP	NP	--	--	--	--
9/27/2012	Sheen	--	--	0.69	NP	--	--	--	--	--	0.5
10/11/2012	--	--	--	0.10	--	--	--	--	--	--	0.0
10/24/2012	NP	NP	NP	2.30	--	0.01	0.01	--	--	--	0.6
11/19/2012	NP	NP	NP	0.88	--	--	--	--	--	--	0.3
12/4/2012	--	--	--	4.56	NP	NP	NP	--	--	--	1.5
12/6/2012	0.04	NP	NP	--	--	--	--	--	--	--	0.0
12/18/2012	Sheen	--	--	4.49	--	NP	Sheen	--	--	--	--
1/15/2013	Sheen	NP	--	3.35	NP	NP	NP	--	--	--	1.5
2/11/2013	0.02	NP	NP	1.55	NP	NP	NP	--	--	--	--
2/26/2013	--	--	--	1.25	--	--	--	--	--	--	1.0
3/13/2013	0.01	NP	NP	3.24	NP	NP	NP	--	--	--	1.0
3/28/2013	0.40	--	--	2.85	--	--	--	--	--	--	0.8
4/8/2013	Sheen	NP	NP	1.10	NP	NP	NP	--	--	--	2.0
4/22/2013	--	--	--	3.60	--	--	--	--	--	--	2.0
5/6/2013	--	NP	NP	1.00 ^c	--	--	--	--	--	--	1.0
5/20/2013	Sheen	NP	NP	1.01	NP	NP	Sheen	--	--	--	1.0
6/17/2013	0.40	NP	NP	0.70	NP	NP	NP	--	--	--	1.0
7/1/2013	0.01	NP	NP	0.34	NP	NP	NP	--	--	--	0.1
7/29/2013	--	--	--	2.17	--	--	--	--	--	--	0.4
8/12/2013	0.10	NP	NP	0.30	NP	NP	NP	--	--	--	0.1
9/16/2013	Sheen	NP	NP	1.27	NP	0.01	0.01	--	--	--	0.9
9/26/2013	0.10	NP	NP	0.15	NP	0.01	0.01	--	--	--	0.1
10/10/2013	0.20	NP	NM	0.50	NP	NP	NP	--	--	--	0.2
11/4/2013	0.05	Sheen	NP	2.19	NP	0.05	0.04	--	--	--	0.4
11/18/2013	0.05	NP	NP	0.35	NP	NP	NP	--	--	--	0.1
12/10/2013	0.05	NP	NP	0.24	NP	SHEEN	NP	--	--	--	0.1

Please refer to notes at end of table.

Table 21**SPH Monitoring and Removal**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Date	SPH Thickness (feet)										SPH/Water Mix Removed (gallons)
	KMW17	W-15	KMW32	AC-6	AC-8	AC-9	AC-10	KMW13 ^a	MW38 ^d	MW39 ^d	
1/27/2014	0.05	NP	NP	0.95	NP	NP	0.01	--	--	--	0.2
2/11/2014	0.13	NP	NP	1.99	NP	0.01	0.01	--	--	--	0.4
3/10/2014	0.02	NP	NP	0.03	NP	NP	NP	--	--	--	0.02
3/26/2014	0.05	NP	NP	0.60	NP	NP	NP	--	--	--	0.13
4/8/2014	0.07	NP	NP	4.55	NP	NP	NP	--	--	--	0.8
4/21/2014	0.05	NP	NP	5.95	NP	NP	NP	--	--	--	1.0
5/5/2014	0.03	NP	NP	0.90	NP	NP	NP	--	--	--	0.2
5/19/2014	0.08	NP	NP	3.81	NP	NP	NP	--	--	--	0.7
6/3/2014	0.01	NP	NP	0.82	NP	NP	NP	--	--	--	0.1
7/2/2014	0.02	NP	NP	2.01	NP	NP	NP	--	--	--	0.3
7/28/2014	0.05	NP	NP	2.70	NP	NP	NP	--	--	--	0.5
8/28/2014	NP	NP	NP	1.50	0.01	NP	NP	--	--	--	0.2
9/10/2014	0.25	NP	NP	--	--	--	0.01	0.1	--	--	0.01
9/12/2014	--	--	--	0.75	0.03	0.02	0.01	Sheen	--	--	0.1
9/22/2014	0.05	NP	NP	0.80	0.01	0.01	0.05	Sheen	--	--	0.2
10/6/2014	0.10	--	NP	0.70	0.01	NP	0.01	--	--	--	0.2
10/20/2014	0.30	NP	Sheen	0.45	0.01	0.01	0.02	Sheen	--	--	0.3
11/18/2014	0.05	NP	NP	2.0	NP	0.01	0.01	0.01	--	--	0.4
12/1/2014	1.40	NP	NP	2.0	0.01	0.01	0.01	0.01	--	--	1.2
12/29/2014	0.07	NP	NP	1.83	NP	0.02	0.01	0.01	--	--	0.3
1/27/2015	1.33	NP	NP	2.0	NP	NP	NP	NP	--	--	1.2
2/9/2015	0.05	NP	NP	1.3	NP	NP	NP	--	--	--	0.2
2/26/2015	0.50	--	--	1.5	--	--	--	--	--	--	1.3
3/12/2015	0.05	NP	NP	1.59	NP	NP	NP	NP	--	--	1.0
3/23/2015	0.01	NP	NP	4.15	NP	NP	NP	NP	--	--	--
4/2/2015	0.02	NP	NP	3.5	NP	NP	NP	NP	--	--	4.0
4/17/2015	0.11	NP	NP	1.00	NP	NP	NP	NP	--	--	2.0
4/28/2015	0.10	NP	NP	1.00	NP	NP	NP	NP	--	--	1.8
5/12/2015	Sheen	NP	NP	1.00	NP	NP	NP	NP	--	--	4.0
5/29/2015	0.04	NP	NP	1.52	NP	NP	NP	NP	--	--	0.5
6/12/2015	0.02	NP	NP	0.46	NP	NP	NP	NP	--	--	0.3
6/26/2015	Sheen	NP	NP	1.00	NP	NP	NP	NP	--	--	3.0
7/9/2015	1.70	NP	NP	0.70	NP	NP	NP	NP	--	--	1.5
7/21/2015	0.25	NP	NP	0.55	NP	NP	NP	NP	--	--	0.8
8/6/2015	0.01	NP	NP	0.20	NP	NP	NP	NP	--	--	0.3
8/20/2015	0.05	NP	NP	0.66	NP	NP	NP	NP	--	--	0.5
9/2/2015	0.35	NP	NP	1.65	NP	NP	NP	NP	--	--	1.3
9/16/2015	0.20	NP	NP	0.67	NP	NP	NP	NP	--	--	1.1
9/28/2015	0.10	NP	NP	0.41	NP	0.06	0.02	NP	--	--	--
10/16/2015	0.20	NP	NP	0.66	NP	NP	0.01	NP	--	--	3.5
10/29/2015	0.20	NP	SHEEN	0.60	NP	2.01	0.05	SHEEN	--	--	5.1

Please refer to notes at end of table.

Table 21**SPH Monitoring and Removal**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Date	SPH Thickness (feet)										SPH/Water Mix Removed (gallons)
	KMW17	W-15	KMW32	AC-6	AC-8	AC-9	AC-10	KMW13 ^a	MW38 ^d	MW39 ^d	
11/2/2015	NM	NM	NM	NM	NP	1.91	0.02	NM	--	--	1.5
11/10/2015	0.50	NP	SHEEN	0.40	NP	0.6	0.03	NP	--	--	4.9
11/18/2015	NM	NM	NM	NM	NM	1.40	NM	NM	--	--	0.8
11/24/2015	0.60	NP	SHEEN	0.25	NP	1.20	0.04	NP	--	--	2.4
12/4/2015	NM	NM	NM	NM	NM	1.15	NM	NM	--	--	0.5
12/10/2015	0.60	NP	SHEEN	0.41	NP	0.90	SHEEN	NM	--	--	3.8
12/16/2015	NM	NM	NM	NM	NM	1.30	NM	NM	--	--	0.8
12/21/2015	1.00	NP	NP	1.10	SHEEN	0.1	NP	NM	--	--	3.3
1/7/2016	0.40	NP	NP	4.30	NP	0.1	NP	NP	--	--	2.5
1/21/2016	1.10	NP	NP	3.75	NP	0.06	NP	NP	--	--	3.8
2/4/2016	1.08	NP	NP	3.84	NP	0.1	NP	NP	--	--	3.7
2/17/2016	3.00	NP	NP	2.90	SHEEN	SHEEN	SHEEN	SHEEN	--	--	3.8
3/4/2016	1.85	NP	NP	2.95	SHEEN	0.02	SHEEN	NP	--	--	1.5
3/14/2016	1.20	NP	NP	1.90	NP	0.03	SHEEN	NP	SHEEN	SHEEN	4.8
3/28/2016	0.51	NP	NP	2.42	NP	0.04	NP	NP	SHEEN	SHEEN	4.0
4/11/2016	0.50	NP	NP	1.80	NP	0.01	0.01	NP	SHEEN	SHEEN	3.5
5/2/2016	0.45	NP	NP	1.88	SHEEN	SHEEN	SHEEN	SHEEN	NM	NM	3.3
5/23/2016	0.23	NP	NP	4.03	NP	SHEEN	SHEEN	NP	NM	NM	3.0
6/6/2016	1.25	NP	NP	1.63	NP	SHEEN	SHEEN	NP	NP	NP	3.0
6/21/2016	3.50	NP	NP	3.50	NP	0.04	0.03	NP	SHEEN	NP	3.1
7/7/2016	0.45	NP	NP	3.14	NP	0.02	0.02	NP	NP	NP	3.0
7/20/2016	0.25	NP	NP	1.04	NP	NP	NP	NP	NP	NP	1.8
8/4/2016	0.31	NP	NP	0.46	NP	0.01	SHEEN	NP	NP	NP	2.0
8/18/2016	0.13	NP	NP	0.34	NP	0.02	NP	NP	NP	NP	0.8
8/31/2016	0.17	NP	NP	0.36	NP	0.03	0.01	NP	NP	NP	1.8
9/19/2016	0.02	NP	NP	0.50	NP	0.06	0.01	NP	SHEEN	NP	1.5
10/6/2016	0.02	NP	NP	0.44	NP	0.03	0.03	NM	NM	NM	0.5
10/20/2016	0.01	NP	NP	4.57	NP	NP	NP	NP	NP	NP	1.8
11/4/2016	0.01	NP	NP	3.87	SHEEN	SHEEN	SHEEN	NP	SHEEN	NP	1.0
12/1/2016	0.28	NP	NP	5.10	NP	NP	NP	NP	NP	NP	2.0
12/13/2016	0.95	NP	NP	4.50	NP	NP	NP	NP	NP	NP	2.5
1/5/2017	0.02	NP	NP	4.52	NP	NP	NP	NP	NP	NP	2.5
2/14/2017	0.15	NP	NP	5.51	NP	NP	NP	NP	NP	NP	2.5
3/20/2017	0.25	NP	NP	5.53	NP	NP	NP	NP	NP	NP	2.5
4/11/2017	0.34	NP	NP	3.61	NP	NP	NP	NP	NP	NP	2.5
5/11/2017	0.65	NP	NP	4.63	NP	NP	NP	NP	NP	NP	3.0
6/13/2017	0.99	NP	NP	5.18	NP	NP	NP	NP	NP	NP	2.5
7/13/2017	1.98	NP	NP	4.58	NP	NP	NP	NP	NP	NP	2.5
8/16/2017	0.30	NP	NP	2.39	NP	NP	NP	NP	NP	NP	1.0
9/8/2017	0.30	NP	NP	1.00	NP	NP	NP	NP	NP	NP	0.8

Please refer to notes at end of table.

Table 21**SPH Monitoring and Removal**

Shore Terminals LLC - Portland Facility

Portland, Oregon

Date	SPH Thickness (feet)										SPH/Water Mix Removed (gallons)
	KMW17	W-15	KMW32	AC-6	AC-8	AC-9	AC-10	KMW13 ^a	MW38 ^d	MW39 ^d	
10/16/2017	0.50	NP	NP	0.28	NP	0.01	SHEEN	NP	NP	NP	0.5
11/16/2017	1.00	NP	NP	2.00	SHEEN	SHEEN	SHEEN	NP	SHEEN	NP	2.5
12/8/2017	0.20	NP	NP	4.00	NP	NP	NP	NP	SHEEN	SHEEN	1.5
1/18/2018	1.00	NP	NP	2.13	NP	SHEEN	NP	NP	NP	NP	1.5
2/5/2018	0.38	NP	NP	4.85	NP	NP	NP	NP	NP	NP	1.0
3/28/2018	0.40	NP	NP	3.60	NP	NP	NP	NP	SHEEN	NP	2.3
4/26/2018	0.04	NP	NP	0.12	NP	SHEEN	NP	NP	SHEEN	NP	0.3
5/31/2018	0.20	NP	NP	0.40	NP	NP	NP	NP	NP	NP	0.3
6/21/2018	0.30	NP	NP	2.75	NP	NP	NP	NP	NP	NP	0.6
7/25/2018	0.32	NP	NP	2.00	NP	NP	NP	NP	NP	NP	0.4
8/23/2018	0.18	SHEEN	NP	0.34	NP	NP	NP	NP	NP	NP	0.7
9/21/2018	0.04	SHEEN	NP	0.59	NP	NP	NP	NP	NP	NP	0.4
10/15/2018	NM	NP	NP	NM	NP	NP	0.01	NP	NP	NP	NM
11/20/2018	0.18	NP	NP	2.83	NP	NP	SHEEN	NP	NP	NP	0.6
12/20/2018	0.02	NP	NP	5.04	NP	1.2	0.03	NP	NP	NP	1.7
1/24/2019	0.18	NP	NP	5.46	NP	0.60	SHEEN	NM	NP	NP	0.9
2/21/2019	0.63	NP	NP	5.69	NP	0.20	SHEEN	NP	NP	NP	1.3
3/15/2019	0.50	NP	NP	4.43	NP	0.15	SHEEN	NP	NP	NP	3.0
4/26/2019	0.20	NP	NP	4.00	NP	0.05	SHEEN	NP	SHEEN	NP	2.3
5/23/2019	0.07	NP	NP	3.62	NP	0.09	0.02	NP	NP	NP	2.1
6/27/2019	0.15	NP	NM	2.39	SHEEN	0.14	0.10	NP	NP	NP	2.2
7/17/2019	0.09	NP	NP	0.99	NP	0.11	0.04	NP	NP	NP	0.7
8/22/2019	0.47	NP	NP	1.35	NP	NP	NP	NP	NM	NP	0.8
9/25/2019	0.15	NP	NP	1.97	NP	NP	SHEEN	NP	NM	NP	0.5
10/7/2019	0.88	NP	NP	1.85	NP	0.07	0.1	NP	NM	NP	3.3
11/20/2019	0.33	NP	NP	2.05	NP	SHEEN	NP	NP	NM	NP	0.6
12/19/2019	0.28	NP	NP	1.69	NP	SHEEN	NP	NP	NM	NP	0.4
1/27/2020	0.17	NP	NP	6.36	SHEEN	0.90	0.24	NP	NM	NP	6.5
2/22/2020	0.96	NP	NP	1.88	NP	0.09	SHEEN	NP	NM	NP	1.75
Field work was not completed in March 2020 due to ongoing COVID-19 pandemic.											--
Field work was not completed in April 2020 due to ongoing COVID-19 pandemic.											--
5/14/2020	0.23	NP	NP	1.96	NP	0.16	0.04	NP	NM	NP	4.0
6/25/2020	0.93	NP	NP	2.05	NP	0.03	NP	NP	NP	NP	4.0
7/23/2020	0.92	NP	NP	2.06	NP	NP	NP	NP	NP	NP	3.0
8/27/2020	0.65	NP	NP	1.15	NP	0.02	0.03	NP	NP	NP	3.8
9/28/2020	0.35	NP	NP	0.89	NP	0.10	0.13	NP	NP	NP	3.2
10/30/2020	0.04	NP	NP	1.53	NP	0.06	0.04	NP	NP	NP	2.5
11/24/2020	0.01	NP	NP	4.65	NP	0.62	0.59	NP	NP	NP	2.9
12/28/2020	0.02	NP	NP	2.09	NP	0.14	NP	NP	NP	NP	3.5
1/27/2021	0.03	NP	NP	2.71	NP	0.56	0.24	NP	NP	NP	4.3
2/19/2021	0.01	NP	NP	5.32	NP	0.17	0.36	NP	NP	NP	2.5

Please refer to notes at end of table.

Table 21

SPH Monitoring and Removal

Shore Terminals LLC - Portland Facility

Portland, Oregon

Date	SPH Thickness (feet)										SPH/Water Mix Removed (gallons)
	KMW17	W-15	KMW32	AC-6	AC-8	AC-9	AC-10	KMW13 ^a	MW38 ^d	MW39 ^d	
3/22/2021	0.03	NP	NP	2.89	NP	0.15	0.52	NP	NP	NP	3.5
4/29/2021	0.11	NP	NP	3.97	NP	0.03	1.18	NP	NP	NP	3.5
5/24/2021	0.01	NP	NP	1.94	NP	0.05	0.78	NP	NP	NP	1.5
6/23/2021	0.02	NP	NP	3.11	NP	0.01	0.52	NP	NP	NP	2.0
7/26/2021	0.01	NP	NP	1.80	NP	0.02	0.20	NP	NP	NP	2.3
8/26/2021	0.02	NP	NP	1.50	NP	0.02	0.29	NP	NP	NP	2.5
9/28/2021	0.01	NP	NP	1.30	NP	0.02	0.27	NP	NP	NP	2.1
10/4/2021	0.01	NP	NP	0.99	NP	0.04	0.12	NP	NP	NP	2.6
11/23/2021	0.06	NP	NP	3.98	NP	0.97	0.14	NP	NP	NP	6.5
12/17/2021	0.03	NP	NP	6.67	NP	0.15	NP	NP	NP	NP	2.5

Notes:

1. SPH = separate phase hydrocarbons.
2. ^a Prior to September 2014, SPH was not measured in well KMW13 on a monthly basis.
3. ^b Oil sorbent socks maintained in well.
4. ^c Thickness estimated from column observed in disposable bailer.
5. ^d Wells MW38 and MW39 were not gauged on a monthly basis prior to SPH being measured in March 2016.
6. NM = Not measured.
7. NP = SPH not detected in well.
8. Sheen = sheen was detected in well; measurable SPH was not detected.
9. Data prior to December 22, 2011 were recorded and previously reported by ExxonMobil.

Table 24

Groundwater Analytical Data – Organochlorine Pesticides (Southern Facility Area)

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																					
		Aldrin	Alpha BHC	Beta BHC	Delta BHC	Gamma BHC (Lindane)	cis-Chlordane	trans-Chlordane	4,4'-DDD	4,4'-DDE	4,4'-DDT	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan Sulfate	Endrin	Endrin Aldehyde	Endrin Ketone	Heptachlor	Heptachlor Epoxide	Methoxychlor	Chlordane	Toxaphene
<i>1997 Site ROD Cleanup Goal</i>		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<i>2017 PHSS Cleanup Level</i>		--	--	--	--	--	--	--	0.000031	0.000018	0.000022	--	--	--	--	--	--	--	--	--	--	--	--
<i>Portland Harbor JSCS SLV</i>		0.00005	0.0049	0.017	0.037	0.052	--	--	0.00022	0.00031	0.00022	0.0042	0.051	0.051	89	0.036	--	--	0.000079	0.000039	0.03	0.0008	0.0002
MW-2	12/29/2020	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.0286	<0.357	<0.357
MW-3	12/29/2020	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.00952	<0.0286	<0.357	<0.357
MW-4	12/29/2020	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0190	<0.0571	<0.714	<0.714

Notes:

1. < = Concentration is less than the laboratory reporting limit.
2. µg/L = microgram(s) per liter.
3. Yellow highlighted cells indicate values that are equal to or exceeding 1997 Record of Decision (ROD) Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
4. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
5. Organochlorine Pesticides analyzed by EPA Method 8081B.
6. Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
7. PHSS Cleanup Levels = 2017 Portland Harbor Superfund Site Record of Decision (ROD) Cleanup Levels.

Table 25

Groundwater Analytical Data – Dioxins and Furans (Southern Facility Area)

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Concentrations are in pg/L				
		1,2,3,4,7,8-HxCDF	1,2,3,7,8-PeCDD	2,3,4,7,8-PeCDF	2,3,7,8-TCDD	2,3,7,8-TCDF
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	--	--
<i>PHSS Cleanup Level</i>		--	--	--	--	--
<i>Portland Harbor JSCS SLV</i>		--	--	--	0.0051	--
MW-2	12/29/2020	<2.71	<2.63	<1.16	<2.08	<1.53
MW-3	12/29/2020	<1.65	<2.31	<1.10	<2.11	<1.67
MW-4	12/29/2020	<1.50	<1.79	<0.976	<1.40	<1.00

Notes:

1. < = Concentration is less than the laboratory reporting limit.
2. pg/L = picograms per liter
3. Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
4. PHSS Cleanup Levels = 2017 Portland Harbor Superfund Site Record of Decision (ROD) Cleanup Levels.
5. Yellow highlighted cells indicate values that are equal to or exceeding 1997 ROD Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
6. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
7. Analysis for dioxins/furans by EPA Method 1613B.

Table 26

Groundwater Analytical Data – PCB Aroclors (Southern Facility Area)

Shore Terminals LLC - Portland Facility

Portland, Oregon

Well ID	Sample Date	Concentrations in micrograms per liter (µg/L)							
		PCB 1016	PCB 1221	PCB 1232	PCB 1242	PCB 1248	PCB 1254	PCB 1260	Total PCBs
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	--	--	--	--	--
<i>PHSS Cleanup Level</i>		--	--	--	--	--	--	--	0.014
<i>Portland Harbor JSCS SLV</i>		0.96	0.034	0.034	0.034	0.034	0.033	0.34	--
MW-2	12/29/2020	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935
MW-3	12/29/2020	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935
MW-4	12/29/2020	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935	<0.0935

Notes:

1. PCB = polychlorinated biphenyl
2. µg/L = micrograms per liter
3. Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
4. PHSS Cleanup Levels = 2017 Portland Harbor Superfund Site Record of Decision Cleanup Levels.
5. Yellow highlighted cells indicate values that are equal to or exceeding 1997 Record of Decision (ROD) Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
6. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
7. < = Concentration is less than the laboratory reporting limit.
8. Total PCBs calculated using 1/2 the detection limit for nondetects when at least one aroclor was above the detection limit. Total PCBs were reported as the highest detection limit when no aroclors were detected in a sample.
9. Analysis for PCBs by EPA Method 8082A.

Attachment 5

Groundwater Monitoring Sampling Results: 2023-2024

Table 5

Groundwater Analytical Data—TPH, BTEX, MTBE, and Aliphatic Hydrocarbons

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	--	--	--	40	--	--	--	--	--
PHSS Cleanup Level		--	--	--	--	0.44	9.8	7.3	13	--	2.6
Portland Harbor JSCS SLV		--	--	--	--	1.2	9.8	7.3	200	37	--
Tank Field 1											
KMW07	3/25/2021	0.24	<0.10	0.112 F-11	<0.157	<0.20	<1.00	<0.50	<1.50	<1.00	--
	3/25/2021 DUP	0.22	<0.10	0.0953 F-11	<0.155	<0.20	<1.00	<0.50	<1.50	<1.00	--
	3/23/2022	0.23	<0.100	0.109 F-11	<0.150	<0.20	<1.00	<0.50	<1.50	--	--
	3/23/2022 DUP	0.24	<0.100	0.111 F-11	<0.150	<0.20	<1.00	<0.50	<1.50	--	--
	3/1/2023	ND	<0.100	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	--	--
	2/27/2024	ND	<0.100	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
KMW11	3/1/2023	0.42	0.300	<0.0769	<0.154	0.21	<1.00	<0.50	<1.50	--	--
	10/10/2023	ND	<0.100	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	--	--
	2/28/2024	0.79	0.553	0.159 F-13	<0.155	0.33	<1.00	<0.50	<1.50	--	--
	10/1/2024	0.22	0.104	<0.0784	<0.157	<0.200	<1.00	<0.50	<1.50	--	--
KMW18	3/2/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	3/2/2023 DUP	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	10/12/2023	ND	<0.100	<0.0769	<0.154	0.21	<1.00	<0.50	<1.50	--	--
	10/12/2023 DUP	ND	<0.100	<0.0762	<0.152	0.27	<1.00	<0.50	<1.50	--	--
	2/28/2024	ND	<0.100	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	--	--
	2/28/2024 DUP	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	10/2/2024	0.56	0.447	<0.0762	<0.152	0.61	<1.00	<0.50	<1.50	--	--
	10/2/2024 DUP	0.57	0.446	<0.0808	<0.162	0.63	<1.00	<0.50	<1.50	--	--

Please refer to notes at end of table.

Table 5

Groundwater Analytical Data—TPH, BTEX, MTBE, and Aliphatic Hydrocarbons

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Aliphatic Hydrocarbons C10 - C12 (µg/L)
<i>1997 Site ROD Cleanup Goal</i>		1.0	--	--	--	40	--	--	--	--	--
<i>PHSS Cleanup Level</i>		--	--	--	--	0.44	9.8	7.3	13	--	2.6
<i>Portland Harbor JSCS SLV</i>		--	--	--	--	1.2	9.8	7.3	200	37	--
KMW19	3/2/2023	0.43	0.314	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	--	--
	10/12/2023	0.71	0.591	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/28/2024	0.59	0.476	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
	10/2/2024	0.56	0.437	<0.0825	<0.165	<0.200	<1.00	<0.50	<1.50	--	--
KMW35	3/1/2023	0.65	0.484	0.0921 F-13, F-20	<0.151	<0.20	<1.00	<0.50	<1.50	--	--
	10/10/2023	3.66	3.13	0.452 F-13	<0.152	<0.20	1.46	<0.50	<1.50	--	--
	2/27/2024	0.25	<0.100	0.120 F-11	<0.158	<0.20	<1.00	<0.50	<1.50	--	--
	10/2/2024	3.66	3.02	0.554 F-13	<0.165	<0.200	<1.00	<0.50	<1.50	--	--
MW41A	3/1/2023	ND	<0.100	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
	10/12/2023	0.40	0.171	0.149	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/27/2024	ND	<0.100	<0.0833	<0.167	<0.20	<1.00	<0.50	<1.50	--	--
	10/1/2024	0.33	0.148	0.105 F-13	<0.163	<0.200	<1.00	<0.50	<1.50	--	--
Tank 3510											
AC-2	3/2/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	10/12/2023	Well dewatered before sampling could occur									
	2/28/2024	ND	<0.100	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
	10/1/2024	Well dewatered before sampling could occur									
AC-7	3/7/2023	1.90	1.65	0.174	<0.154	0.21	3.00	<0.50	2.05	--	--
	10/10/2023	Well dewatered before sampling could occur									
	2/28/2024	1.16	0.860	0.221	<0.154	<0.20	1.55	<0.50	<1.50	--	--
	10/1/2024	Well dewatered before sampling could occur									

Please refer to notes at end of table.

Table 5

Groundwater Analytical Data—TPH, BTEX, MTBE, and Aliphatic Hydrocarbons

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	--	--	--	40	--	--	--	--	--
PHSS Cleanup Level		--	--	--	--	0.44	9.8	7.3	13	--	2.6
Portland Harbor JSCS SLV		--	--	--	--	1.2	9.8	7.3	200	37	--
Loading Rack											
AC-8	3/3/2023	1.43	1.32	<0.0762 F-01	<0.152	331	2.66	17.9	5.8	--	--
	10/13/2023	3.45	3.33	<0.0769	<0.154	604	7.07	66.0	33.1	--	--
	2/29/2024	Well was not sampled due to the presence of SPH or SPH sheen.									
	10/2/2024	4.53	4.39	<0.0964	<0.193	1,290	12.0	73.2	22.2	<5.00	--
AC-9	3/3/2023	Well was not sampled due to the presence of SPH or SPH sheen.									
	10/11/2023	33.0	32.6	0.316 F-18	<0.154	2,580	131	1,480	1,680	--	--
	2/29/2024	Well was not sampled due to the presence of SPH or SPH sheen.									
	10/1/2024	Well was not sampled due to the presence of SPH or SPH sheen.									
AC-10*	3/3/2023	16.5	16.3	0.127 F-18	<0.152	523	40.5	333	1,110	--	--
	10/11/2023	8.98	8.8	0.137 F-18	<0.154	354	18.7	181	397	--	--
	3/1/2024	20.5	20.1	0.345 F-18	<0.154	738	57.3	484	1,520	<10.0	--
	10/1/2024	Well was not sampled due to the presence of SPH or SPH sheen.									
KMW13*	3/3/2023	2.28	2.17	<0.0755	<0.151	134	6.56	4.13	32.8	--	--
	3/3/2023 DUP	2.49	2.37	<0.0769	<0.154	134	6.75	4.35	34.2	--	--
	10/13/2023	7.37	7.19	0.102 F-11, F-20	<0.154	116	18.3	262	596	--	--
	10/13/2023 DUP	4.83	4.66	0.0908 F-11, F-20	<0.154	83	14.7	218	403	--	--
	3/8/2024	3.51	3.17	0.267 F-20	<0.152	114	4.16	2.38	25.8	<1.00	--
	3/8/2024 DUP	3.42	3.07	0.268 F-20	<0.155	106	4.08	2.39	26.2	<1.00	--
	10/2/2024	3.89	3.60	0.216 F-13	<0.152	68.8	12.8	36.8	147	<1.00	--
	10/2/2024 DUP	3.53	3.18	0.268 F-13	<0.154	64.9	12.0	29.3	132	<1.00	--
KMW14*	Well KMW14 has been removed from the groundwater monitoring program. ²¹										

Please refer to notes at end of table.

Table 5**Groundwater Analytical Data—TPH, BTEX, MTBE, and Aliphatic Hydrocarbons**

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	--	--	--	40	--	--	--	--	--
PHSS Cleanup Level		--	--	--	--	0.44	9.8	7.3	13	--	2.6
Portland Harbor JSCS SLV		--	--	--	--	1.2	9.8	7.3	200	37	--
MW38*	3/3/2023	3.50	3.3	0.118 F-13	<0.155	321	3.51	3.03	15.3	--	--
	10/11/2023	0.94	0.82	<0.0784	<0.157	32.7	<1.00	0.65	3.02	--	--
	3/1/2024	1.21	0.99	0.139 F-18	<0.154	10.8	<1.00	<0.50	2.92	<1.00	--
	10/2/2024	2.17	1.85 B-02	0.239 F-13	<0.152	145	2.08	1.75	6.77	<1.00	--
MW39*	3/3/2023	75.1	74.8	0.196 F-18	<0.154	19,000	<250	168	<375	--	--
	10/11/2023	106	106.0	0.109 F-18	<0.151	32,900	402	165	<375	--	--
	2/27/2024	37.7	37.3	0.302 F-18	<0.154	26,300	96.1	200	180	92.1	--
	10/2/2024	65.7	65.0	0.659 F-13	<0.152	23,900	120	140	102	85.0	--
MW42*	3/25/2021	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	--
	3/24/2022	ND	<0.100	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
	3/7/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	3/8/2024	ND	<0.100	<0.0784 H-02	<0.157 H-02	<0.20	<1.00	<0.50	<1.50	--	--
MW41B*	3/1/2023	ND	<0.100	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	<1.00	--
	10/10/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/27/2024	ND	<0.100	<0.0825	<0.165	<0.20	<1.00	<0.50	<1.50	--	--
	10/1/2024	ND	<0.100	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
MW43	3/2/2023	12.9	12.6	0.184 F-18	<0.154	1,060	100	538	439	--	--
	10/10/2023	15.8	15.5	0.202 F-18	<0.152	1,670	137	938	492	--	--
	2/27/2024	10.6	10.3	0.196 F-18	<0.155	720	72.6	532	321	<10.0	--
	10/2/2024	10.9	10.3	0.522 F-13	<0.154	935	76.3	558	310	--	--

Please refer to notes at end of table.

Table 5

Groundwater Analytical Data—TPH, BTEX, MTBE, and Aliphatic Hydrocarbons

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	--	--	--	40	--	--	--	--	--
PHSS Cleanup Level		--	--	--	--	0.44	9.8	7.3	13	--	2.6
Portland Harbor JSCS SLV		--	--	--	--	1.2	9.8	7.3	200	37	--
MW44	3/1/2023	0.24	0.127	<0.0755	<0.151	18.3	<1.00	<0.50	<1.50	--	--
	3/1/23 DUP	ND	<0.100	<0.0769	<0.154	8.66	<1.00	<0.50	<1.50	--	--
	10/11/2023	17.4	17.3	<0.0784	<0.157	4,510	22.1	71.9	18.0	--	--
	2/27/2024	1.13	1.01	<0.0808	<0.162	286	<2.00	<1.00	<3.00	<2.00	--
	2/27/2024 DUP	1.14	1.02	<0.0816	<0.163	284	<2.00	<1.00	<3.00	--	--
	10/3/2024	11.1	10.8	0.221 F-13	<0.162	3,780	15.8	36.6	15.8	<5.00	--
MW45*	3/23/2021	ND	<0.10	<0.08	<0.16	<0.20	<1.00	<0.50	<1.50	0.68 J	--
	3/25/2022	ND	<0.100	<0.0748	<0.150	<0.20	<1.00	<0.50	<1.50	--	--
	3/2/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	1.11	--
	2/28/2024	ND	<0.100	<0.0808	<0.162	<0.20	<1.00	<0.50	<1.50	<1.00	--
MW46	3/1/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	10/10/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/28/2024	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	<1.00	--
	10/1/2024	ND	<0.100	<0.0808	<0.162	<0.20	<1.00	<0.50	<1.50	--	--
DPE Treatment Area											
EX-07L	3/1/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	1.01 J*
	10/10/2023	ND	<0.100	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	--	3.98 J**
	2/27/2024	ND	<0.100	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	--	#
	9/30/2024	0.23	<0.100	0.0982 F-11, CONT	<0.154	<0.20	<1.00	<0.50	<1.50	--	<39.9
KMW29	2/28/2023	3.07	2.82	0.170 F-13, F-20	<0.154	0.35	<1.00	<0.50	<1.50	--	32.0 J
	10/9/2023	3.20	2.81	0.313 F-13	<0.152	0.44	<1.00	<0.50	1.57	--	25.6 J**
	2/27/2024	3.57	3.32	0.172 F-18	<0.163	<0.20	<1.00	<0.50	<1.50	--	#
	10/1/2024	3.74	3.19	0.468 F-13, CONT	<0.154	0.65	<1.00	<0.50	1.53	--	27.9
KMW30	2/28/2023	0.38	0.264	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	6.2 J
	10/9/2023	0.34	0.229	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	--	12.2 J**
	2/26/2024	ND	<0.100	<0.0808	<0.162	<0.20	<1.00	<0.50	<1.50	--	#
	10/1/2024	0.91	0.651	0.182 F-13, CONT	<0.154	<0.20	<1.00	<0.50	<1.50	--	<39.9
	10/1/2024 DUP	0.90	0.657	0.165 F-13, CONT	<0.151	<0.20	<1.00	<0.50	<1.50	--	<40.0

Please refer to notes at end of table.

Table 5

Groundwater Analytical Data—TPH, BTEX, MTBE, and Aliphatic Hydrocarbons

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Aliphatic Hydrocarbons C10 - C12 (µg/L)
1997 Site ROD Cleanup Goal		1.0	--	--	--	40	--	--	--	--	--
PHSS Cleanup Level		--	--	--	--	0.44	9.8	7.3	13	--	2.6
Portland Harbor JSCS SLV		--	--	--	--	1.2	9.8	7.3	200	37	--
KMW31	2/28/2023	1.30	1.11	0.118 F-13, F-20	<0.151	<0.20	<1.00	<0.50	<1.50	--	19.2 J
	2/28/2023 DUP	1.45	1.25	0.120 F-13, F-20	<0.154	<0.20	<1.00	<0.50	<1.50	--	21.5 J
	10/10/2023	1.47	1.23	0.163 F-13	<0.152	<0.20	<1.00	<0.50	<1.50	--	18.1 J**
	10/10/2023 DUP	1.65	1.42	0.158 F-13	<0.152	<0.20	<1.00	<0.50	<1.50	--	19.4 J**
	2/27/2024	1.20	0.952	0.168 F-18	<0.160	<0.20	<1.00	<0.50	<1.50	--	#
	2/27/2024 DUP	0.97	0.771	0.116 F-18	<0.168	<0.20	<1.00	<0.50	<1.50	--	#
	10/1/2024	1.93	1.61	0.245 F-13, CONT	<0.154	<0.20	<1.00	<0.50	<1.50	--	<40.0
KMW32	10/1/2024 DUP	1.63	1.18	0.374 F-13, CONT	<0.154	<0.20	<1.00	<0.50	<1.50	--	<39.9
	3/1/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	2.69 J*
	10/10/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	1.19 J**
	2/26/2024	ND	<0.100	<0.0769	<0.154	1.48	<1.00	<0.50	<1.50	--	#
KMW33	10/1/2024	0.42	0.18	0.161 F-11, CONT	<0.154	<0.20	<1.00	<0.50	<1.50	--	<39.9
	2/28/2023	ND	<0.100	<0.0816	<0.163	<0.20	<1.00	<0.50	<1.50	--	1.51 J
	10/10/2023	0.30	<0.100	0.174 F-13	<0.154	<0.20	<1.00	<0.50	<1.50	--	1.93 J**
	2/26/2024	0.22	<0.100	0.0941	<0.154	<0.20	<1.00	<0.50	<1.50	--	#
KMW37	10/1/2024	0.44	0.115	0.246 F-13, CONT	<0.155	<0.20	<1.00	<0.50	<1.50	--	<39.9
	10/11/2022	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/28/2023	3.12	2.88	0.146 F-13, F-20	<0.186	0.52	<1.00	<0.50	<1.50	--	26.4 J
MW47	10/10/2023	5.50	5.38	<0.0769	<0.154	0.95	1.39	0.58	1.92	--	33.8**
	Well KMW37 was decommissioned prior to the February 2024 monitoring event										
	2/28/2023	0.59	0.38	0.133 F-13, F-20	<0.154	<0.20	<1.00	<0.50	<1.50	--	27.5 J
	10/1/2024	1.08	0.651	0.354 F-13, CONT	<0.157	<0.20	<1.00	<0.50	<1.50	--	<40.0

Please refer to notes at end of table.

Table 5

Groundwater Analytical Data—TPH, BTEX, MTBE, and Aliphatic Hydrocarbons

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Aliphatic Hydrocarbons C10 - C12 (µg/L)
<i>1997 Site ROD Cleanup Goal</i>		1.0	--	--	--	40	--	--	--	--	--
<i>PHSS Cleanup Level</i>		--	--	--	--	0.44	9.8	7.3	13	--	2.6
<i>Portland Harbor JSCS SLV</i>		--	--	--	--	1.2	9.8	7.3	200	37	--
MW48	2/28/2023	0.30	0.185	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	--	10.1 J
	2/28/2023 DUP	0.30	0.186	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	--	8.8 J
	10/9/2023	0.32	0.202	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	7.60 J**
	10/9/2023 DUP	0.30	0.187	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	8.06 J**
	2/26/2024	ND	<0.100	<0.0808	<0.162	1.00	<1.00	<0.50	<1.50	--	#
	2/26/2024 DUP	ND	<0.100	<0.0777	<0.155	0.94	<1.00	<0.50	<1.50	--	#
	10/1/2024	0.38	0.211	0.0909 F-11, CONT	<0.152	<0.20	<1.00	<0.5	<1.50	--	<40.0
MW49	2/28/2023	1.04	0.835	0.132 F-13, F-20	<0.154	<0.20	<1.00	<0.50	<1.50	--	18.6 J
	10/10/2023	1.26	0.945	0.235 F-13	<0.151	0.27	<1.00	<0.50	<1.50	--	15.7 J**
	2/27/2024	1.08	0.697	0.307 F-11	<0.154	<0.20	<1.00	<0.50	<1.50	--	#
	10/1/2024	1.66	1.15	0.425 F-13, CONT, PRES	<0.160	<0.20	<1.00	<0.50	<1.50	--	<40.0
Slurry Wall											
KMW36	3/7/2023	0.27	<0.100	0.132 F-13	<0.170	<0.20	<1.00	<0.50	<1.50	--	--
	10/10/2023	0.87	0.483	0.306	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/29/2024	0.23	<0.100	0.100 F-13	<0.162	<0.20	<1.00	<0.50	<1.50	--	--
	10/1/2024	0.89	0.512	0.301 F-13	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
W-16	3/1/2023	0.81	0.656	0.0780 F-13, F-20	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	10/11/2023	1.35	1.04	0.233 F-20	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/29/2024	1.19	0.823	0.288 F-13	<0.158	<0.20	<1.00	<0.50	<1.50	--	--
	10/2/2024	1.35	1.01 B-02	0.260 F-13	<0.162	0.20	<1.00	<0.50	<1.50	--	--
W-19	3/25/2021	0.51	0.153	0.278 F-13,F-20	<0.15	<0.20	<1.00	<0.50	<1.50	0.721 J	--
	3/25/2022	0.65	0.229	0.348 F-13	<0.151	<0.20	<1.00	<0.50	<1.50	--	--
	3/2/2023	0.23	<0.100	0.101 F-13	<0.157	<0.20	<1.00	<0.50	<1.50	--	--
	2/29/2024	0.37	0.147	0.141 F-13	<0.168	<0.20	<1.00	<0.50	<1.50	--	--

Please refer to notes at end of table.

Table 5**Groundwater Analytical Data—TPH, BTEX, MTBE, and Aliphatic Hydrocarbons**

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Aliphatic Hydrocarbons C10 - C12 (µg/L)
<i>1997 Site ROD Cleanup Goal</i>		1.0	--	--	--	40	--	--	--	--	--
<i>PHSS Cleanup Level</i>		--	--	--	--	0.44	9.8	7.3	13	--	2.6
<i>Portland Harbor JSCS SLV</i>		--	--	--	--	1.2	9.8	7.3	200	37	--
W-20	3/25/2021	ND	<0.10	<0.0755	<0.151	<0.20	<1.00	<0.50	<1.50	<1.00	--
	3/25/2022	ND	<0.100	<0.0748	<0.150	<0.20	<1.00	<0.50	<1.50	--	--
	3/2/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/29/2024	ND	<0.100	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
W-22	3/23/2021	ND	<0.10	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	<1.00	--
	3/25/2022	ND	<0.100	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	--	--
	3/2/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/29/2024	ND	<0.100	<0.0784	<0.157	<0.20	<1.00	<0.50	<1.50	--	--
Site-Wide											
KMW01	3/23/2021	ND	<0.10	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	0.56 J	--
	3/25/2022	ND	<0.100	<0.0792	<0.158	<0.20	<1.00	<0.50	<1.50	--	--
	3/3/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/28/2024	ND	<0.100	<0.0825	<0.165	<0.20	<1.00	<0.50	<1.50	--	--
KMW02	3/7/2023	ND	<0.100	<0.0833	<0.167	<0.20	<1.00	<0.50	<1.50	--	--
	10/11/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/28/2024	ND	<0.100	<0.0825	<0.165	<0.20	<1.00	<0.50	<1.50	--	--
	10/3/2024	ND	<0.100	<0.0792	<0.158	<0.20	<1.00	<0.50	<1.50	--	--
KMW05	3/23/2021	1.00	0.5	0.42 F-13	<0.152	<0.20	<1.00	<0.50	<1.50	<1.00	--
	3/24/2022	1.23	0.406	0.746 F-13	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
	3/1/2023	1.01	0.602	0.328 F-13, F-20	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/28/2024	0.97	0.413	0.472 F-13	<0.162	<0.20	<1.00	<0.50	<1.50	--	--

Please refer to notes at end of table.

Table 5**Groundwater Analytical Data—TPH, BTEX, MTBE, and Aliphatic Hydrocarbons**

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Aliphatic Hydrocarbons C10 - C12 (µg/L)
<i>1997 Site ROD Cleanup Goal</i>		1.0	--	--	--	40	--	--	--	--	--
<i>PHSS Cleanup Level</i>		--	--	--	--	0.44	9.8	7.3	13	--	2.6
<i>Portland Harbor JSCS SLV</i>		--	--	--	--	1.2	9.8	7.3	200	37	--
KMW09	3/23/2021	ND	<0.10	<0.0748	<0.15	<0.20	<1.00	<0.50	<1.50	<1.00	--
	3/22/2022	ND	<0.100	<0.0784	<0.157	<0.20	<1.00	<0.50	<1.50	--	--
	3/7/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/28/2024	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
KMW10	6/29/2023	ND	<0.100	<0.0748	<0.150	0.42	<1.00	<0.50	<1.50	--	--
	10/12/2023	ND	<0.100	<0.0769	<0.154	1.10	<1.00	<0.50	<1.50	--	--
	2/28/2024	ND	<0.100	<0.0784	<0.157	<0.20	<1.00	<0.50	<1.50	--	--
	10/1/2024	ND	<0.100	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
KMW16*	3/25/2021	0.22	0.106	<0.0748	<0.15	<0.20	<1.00	<0.50	<1.50	<1.00	--
	3/24/2022	0.27	0.152 F-12	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	3/2/2023	0.28	0.164 F-12	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	--	--
	2/27/2024	0.26	0.139 F-12	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
KMW20	3/23/2021	ND	<0.10	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	<1.00	--
	3/24/2022	ND	<0.100	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	--	--
	3/3/2023	ND	<0.100	<0.0762	<0.152	<0.20	<1.00	<0.50	<1.50	--	--
	2/29/2024	ND	<0.100	<0.0777	<0.155	<0.20	<1.00	<0.50	<1.50	--	--
KMW21	3/23/2021	0.43	0.0975 J	0.261 F-13	<0.15	<0.20	<1.00	<0.50	<1.50	1.07	--
	3/24/2022	0.43	<0.100	0.308 F-13	<0.150	<0.20	<1.00	<0.50	<1.50	--	--
	3/3/2023	0.36	0.111	0.175 F-13	<0.151	<0.20	<1.00	<0.50	<1.50	--	--
	2/29/2024	0.40	0.109	0.210 F-13	<0.157	<0.20	<1.00	<0.50	<1.50	--	--

Please refer to notes at end of table.

Table 5

Groundwater Analytical Data—TPH, BTEX, MTBE, and Aliphatic Hydrocarbons

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Combined TPH (mg/L)	TPHg Gasoline (mg/L)	TPHd Diesel (mg/L)	TPHo Motor Oil (mg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-Benzene (µg/L)	Xylenes (µg/L)	MTBE (µg/L)	Aliphatic Hydrocarbons C10 - C12 (µg/L)
<i>1997 Site ROD Cleanup Goal</i>		1.0	--	--	--	40	--	--	--	--	--
<i>PHSS Cleanup Level</i>		--	--	--	--	0.44	9.8	7.3	13	--	2.6
<i>Portland Harbor JSCS SLV</i>		--	--	--	--	1.2	9.8	7.3	200	37	--
MW40	3/23/2021	ND	<0.10	<0.0762	<0.152	2.32	<1.00	<0.50	<1.50	0.59 J	--
	3/24/2022	0.59	0.476 F-03	<0.0762	<0.152	148	<1.00	<0.50	<1.50	<1.00	--
	3/2/2023	ND	<0.100	<0.0769	<0.154	<0.20	<1.00	<0.50	<1.50	<1.00	--
	2/28/2024	ND	<0.100	<0.0842	<0.168	<0.20	<1.00	<0.50	<1.50	--	--
W-15	10/13/2022	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/2/2023	1.36	1.16	0.12	<0.154	<0.20	<1.00	<0.50	<1.50	--	8.81 J*
	10/10/2023	3.06	2.7	0.285 F-13	<0.152	0.30	<1.00	<0.50	1.63	--	32.2 J**
Well W-15 was decommissioned prior to the February 2024 monitoring event											

Please refer to notes at end of table.

Table 5

Groundwater Analytical Data—TPH, BTEX, MTBE, and Aliphatic Hydrocarbons

Shore Terminals—Portland

Portland, Oregon

Notes:

1. TPH = Total petroleum hydrocarbons by northwest methods, with samples for diesel- and motor-oil-range analyses prepared by silica gel cleanup.
2. TPHg = Total petroleum hydrocarbons measured in the gasoline range
3. TPHd = Total petroleum hydrocarbons measured in the diesel range
4. TPHo = Total petroleum hydrocarbons measured in the heavy oil range
5. TPHg by Method NWTPH-Gx; TPHd and TPHo by NWTPH-Dx; benzene, toluene, ethylbenzene, xylenes, MTBE analyzed by EPA Method 8260 B.
6. Combined TPH = The sum of TPHg, TPHd, and TPHo. If a constituent is non-detect, half of the non-detect concentration is used to calculate the combined TPH concentration.
If TPHg, TPHd, and TPHo are all non-detect, ND is reported for Combined TPH.
7. Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
8. PHSS Cleanup Levels = 2017 Portland Harbor Superfund Site Record of Decision Cleanup Levels.
9. Yellow highlighted cells indicate values that are equal to or exceeding 1997 Record of Decision (ROD) Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
10. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
11. < = less than the laboratory reporting limit.
12. µg/L = microgram(s) per liter.
13. mg/L = milligram(s) per liter.
14. EPA = United States Environmental Protection Agency.
15. MTBE = Methyl tertiary butyl ether.
16. NS = Not sampled
17. -- = Not applicable.
18. DUP = Field Duplicate.
19. * = Well is screened in Deep Sand unit.
20. ND = TPH not detected above method detection limits for TPHg, TPHd, or TPHo.
21. Well KMW14 was paved over prior to the October 2017 monitoring event. In an email dated February 21, 2018, DEQ agreed that well KMW14 was not critical to monitoring the Loading Rack Area and that replacement of KMW14 was not required. Well KMW14 has been removed from the monitoring program.

Quality Assurance/Quality Control Data Qualifiers

CONT = The sample container was not provided by Apex Laboratories, and has not been verified as part of the Apex Quality System

J = Reported result is an estimated value.

F-03 = The result for this hydrocarbon range is elevated due to the presence of individual analyte peaks in the quantitation range that are not representative of the fuel pattern reported.

F-11 = The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component.

F-12 = The result for this hydrocarbon range is primarily due to the presence of individual analyte peaks in the quantitation range. No fuel pattern detected.

F-13 = The chromatographic pattern does not resemble the fuel standard used for quantitation.

F-18 = Result for Diesel (Diesel Range Organics, C12–C24) is due to overlap from Gasoline or a Gasoline Range product.

F-19 = Results are Estimated due to the presence of multiple fuel products.

F-20 = Result for Diesel is Estimated due to overlap from Gasoline Range Organics or other VOCs.

PRES = Incomplete field preservation. Additional preservative was added to adjust the pH within the appropriate range for this analysis.

* = A lower control criterion was exceeded for Dodecane-d26 and spike recovery of some or all analytes.

** = The spike recovery of n-Decane for Laboratory Control Sample (LCS) KQ2318656-02 was outside the lower control criterion. The error associated with reduced recovery indicated a potential low bias.

= C10–C12 data is not being reported for the February 2024 monitoring event due to data quality concerns which are described in the Data Quality Review, provided as Appendix C.

Table 6

Groundwater Analytical Data—PAHs

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo(a,h)anthracene	Fluoranthene	Fluorene	Benzo(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	347	--	--
2017 PHSS Cleanup Level		--	--	23	--	0.73	0.0012	0.00012	0.0012	--	0.0013	0.0013	0.00012	--	--	0.0012	12	--	--
Portland Harbor JSCS SLV		--	0.2	0.2	0.2	--	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
Tank Field 1																			
KMW07	3/25/2021	0.132	<0.074	<0.0578 R-02	<0.037	<0.037	<0.0231 R-02	<0.0185	<0.0185	<0.037	<0.0185	<0.0185	<0.0185	<0.037	0.0569	<0.0185	<0.074	<0.074	<0.037
	3/25/2021 DUP	0.109	<0.0707	<0.0353	<0.0353	<0.0353	<0.0177	<0.0177	<0.0177	<0.0353	<0.0177	<0.0177	<0.0177	<0.0353	0.0543	<0.0177	<0.0707	<0.0707	<0.0353
	3/23/2022	<0.0833	<0.0833	<0.0417	<0.0417	<0.0417	<0.0208	<0.0208	<0.0208	<0.0417	<0.0208	<0.0208	<0.0208	<0.0417	<0.0417	<0.0208	<0.0833	<0.0833	<0.0417
	3/23/2022 DUP	<0.0762	<0.0762	<0.0381	<0.0381	<0.0381	<0.0191	<0.0191	<0.0191	<0.0381	<0.0191	<0.0191	<0.0191	<0.0381	<0.0381	<0.0191	<0.0762	<0.0762	<0.0381
	3/2/2023	<0.0664	<0.0664	<0.0332 R-02	<0.0332	<0.0332	<0.0166	<0.0166	<0.0166	<0.0332	<0.0166	<0.0166	<0.0166	<0.0332	0.0411	<0.0166	<0.0664 R-02	<0.0664	<0.0332
	2/27/2024	0.18	<0.0845	<0.0793 R-02	<0.0423	<0.0423	<0.0211	<0.0211	<0.0211	<0.0423	<0.0211	<0.0211	<0.0211	<0.0423	0.0867	<0.0211	<0.172 R-02	<0.0845	<0.0423
KMW11	3/2/2023	0.978	<0.0754	<0.530 R-02	<0.177 R-02	<0.177 R-02	<0.0188	<0.0188	<0.0188	<0.0377	<0.0188	<0.0188	<0.0188	<0.0377	0.532	<0.0188	<0.825 R-02	0.225	<0.0377
	10/10/2023	<0.0830	<0.0830	<0.0415	<0.0415	<0.0415	<0.0207	<0.0207	<0.0207	<0.0415	<0.0207	<0.0207	<0.0207	<0.0415	<0.0415	<0.0207	<0.130 R-02	<0.0830	<0.0415
	2/28/2024	1.49	<0.0794	<0.583 R-02	<0.124 R-02	<0.0993 R-02	0.18	<0.0845	<0.0793 R-02	<0.0423	<0.0423	<0.0211	<0.0211	<0.0211	<0.0423	<0.0211	<0.0211	<0.0211	<0.0423
	10/1/2024	<0.0662	<0.0662	<0.0331	<0.0331	<0.0331	<0.0166	<0.0166	<0.0166	<0.0331	<0.0166	<0.0166	<0.0166	<0.0331	<0.0331	<0.0166	<0.124 R-02	<0.0662	<0.0331
KMW18	3/2/2023	<0.0653	<0.0653	<0.0326	<0.0326	<0.0326	<0.0163	<0.0163	<0.0163	<0.0326	<0.0163	<0.0163	<0.0163	<0.0326	<0.0326	<0.0163	<0.0653	<0.0653	<0.0326
	3/2/2023 DUP	<0.0742	<0.0742	<0.0371	<0.0371	<0.0371	<0.0186	<0.0186	<0.0186	<0.0371	<0.0186	<0.0186	<0.0186	<0.0371	<0.0371	<0.0186	<0.0742	<0.0742	<0.0371
	10/12/2023	0.105	<0.0646	<0.0323	<0.0323	<0.0606 R-02	<0.0162	<0.0162	<0.0162	<0.0323	<0.0162	<0.0162	<0.0162	<0.0323	<0.0323	<0.0162	<0.0646	<0.0646	0.0428
	10/12/2023 DUP	0.409	<0.0652	<0.0326	<0.0326	<0.0713 R-02	<0.0163	<0.0163	<0.0163	<0.0326	<0.0163	<0.0163	<0.0163	<0.0326	<0.0326	<0.0163	<0.173 R-02	<0.0652	0.0574
	2/28/2024	<0.0646	<0.0646	<0.0323	<0.0323	<0.0323	<0.0161	<0.0161	<0.0161	<0.0323	<0.0161	<0.0161	<0.0161	<0.0323	<0.0323	<0.0161	<0.0646	<0.0646	<0.0323
	2/28/2024 DUP	<0.0642	<0.0642	<0.0321	<0.0321	<0.0321	<0.0160	<0.0160	<0.0160	<0.0321	<0.0160	<0.0160	<0.0160	<0.0321	<0.0321	<0.0160	<0.0642	<0.0642	<0.0321
	10/2/2024	1.95	<0.0713	<0.0357	<0.0357	<0.0490 R-02	<0.0178	<0.0178	<0.0178	<0.0357	<0.0178	<0.0178	<0.0178	<0.0357	0.0441	<0.0178	<0.579 R-02	<0.0713	0.049 Q-29
10/2/2024 DUP	2.24	<0.0699	<0.0525 R-02	<0.0350	<0.0557 R-02	<0.0175	<0.0175	<0.0175	<0.0350	<0.0175	<0.0175	<0.0175	<0.0350	0.0437	<0.0175	<0.688 R-02	<0.0699	0.0542 Q-29	
KMW19	3/2/2023	0.142	<0.0828	0.0471	<0.0414	0.044	<0.0207	<0.0207	<0.0207	<0.0414	<0.0207	<0.0207	<0.0207	0.0523	<0.0414	<0.0207	<0.517 R-02	<0.0828	0.0631
	10/12/2023	0.127	<0.0760	<0.0831 R-02	<0.0380	0.0385	<0.0190	<0.0190	<0.0190	<0.0380	<0.0190	<0.0190	<0.0190	0.0631	<0.0380	<0.0190	<0.475 R-02	<0.0760	0.0698
	2/28/2024	0.126	<0.0897	<0.0701 R-02	<0.0449	<0.0449	<0.0224	<0.0224	<0.0224	<0.0449	<0.0224	<0.0224	<0.0224	<0.0449	<0.0449	<0.0224	<0.435 R-02	<0.0897	<0.0449
	10/2/2024	0.126	<0.0764	<0.0716 R-02	<0.0382	0.0439	<0.0191	<0.0191	<0.0191	<0.0382	<0.0191	<0.0191	<0.0191	0.0506	0.0568 Q-29	<0.0191	<0.465 R-02	<0.0764	0.0582

Please refer to notes at end of table.

Table 6

Groundwater Analytical Data—PAHs
 Shore Terminals—Portland
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo(a,h)anthracene	Fluoranthene	Fluorene	Benzo(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	347	--	--
2017 PHSS Cleanup Level		--	--	23	--	0.73	0.0012	0.00012	0.0012	--	0.0013	0.0013	0.00012	--	--	0.0012	12	--	--
Portland Harbor JSCS SLV		--	0.2	0.2	0.2	--	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
KMW35	3/2/2023	<0.0651	<0.0651	<0.0325	0.0488	0.12	0.0167 M-05	<0.0163	0.0273	<0.0325	<0.0163	0.0203 M-05	<0.0163	<0.0325	<0.0325	0.0187	<0.0651	<0.0651	<0.0325
	10/10/2023	57.9	<0.153 R-02	< 1.88 R-02	<0.647 R-02	0.238	<0.0188	<0.0188	<0.0188	<0.0376	<0.0188	<0.0188	<0.0188	<0.0376	5.5	<0.0188	<1.08 R-02	2.11	<0.0376
	2/27/2024	1.49	<0.0822	<0.0770 R-02	<0.0411	0.0493	<0.0205	<0.0205	<0.0205	<0.0411	<0.0205	<0.0205	<0.0205	<0.0411	0.166	<0.0205	<0.0822	<0.0822	<0.0411
	10/2/2024	41.0	<0.719	<1.82 R-02	<0.562 R-02	<0.360	<0.180	<0.180	<0.180	<0.360	<0.180	<0.180	<0.180	<0.360	5.24	<0.180	<1.18 R-02	1.35	<0.360
MW41A	3/2/2023	0.332	<0.0714	<0.335 R-02	<0.112 R-02	<0.134 R-02	<0.0178	<0.0178	<0.0178	<0.0357	<0.0178	<0.0178	<0.0178	<0.0357	0.438	<0.0178	<0.279 R-02	0.0839	<0.0357
	10/12/2023	1.66	<0.0703	<0.429 R-02	<0.165 R-02	<0.0989 R-02	<0.0176	<0.0176	<0.0176	<0.0352	<0.0176	<0.0176	<0.0176	0.044	0.755	<0.0176	<0.385 R-02	0.515	0.0484
	2/27/2024	0.276	<0.0738	<0.0807 R-02	<0.0369	<0.0369	<0.0184	<0.0184	<0.0184	<0.0369	<0.0184	<0.0184	<0.0184	<0.0369	0.0945	<0.0184	<0.0738	<0.0738	<0.0369
	10/1/2024	0.745	<0.0711	<0.333 R-02	<0.0733 R-02	<0.111 R-02	<0.0178	<0.0178	<0.0178	<0.0356	<0.0178	<0.0178	<0.0178	<0.0356	0.460	<0.0178	<0.278 R-02	0.158	0.04
Loading Rack																			
KMW13*	3/3/2023	18.4	7.87	<0.390	<0.390	<0.390	<0.195	<0.195	<0.195	<0.390	<0.195	<0.195	<0.195	<0.390	<0.390	<0.195	1.61	<0.781	<0.390
	3/3/23 DUP	18	7.87	<0.450	<0.450	<0.450	<0.225	<0.225	<0.225	<0.450	<0.225	<0.225	<0.225	<0.450	<0.450	<0.225	1.51	<0.900	<0.450
	10/13/2023	32.7	19.2	<0.376	<0.376	<0.376	<0.188	<0.188	<0.188	<0.376	<0.188	<0.188	<0.188	<0.376	0.409	<0.188	24.3	<0.752	<0.376
	10/13/2023 DUP	36.5	19.5	<0.368	<0.368	<0.368	<0.184	<0.184	<0.184	<0.368	<0.184	<0.184	<0.184	<0.368	0.488	<0.184	21.7	<0.736	<0.368
	3/8/2024	20.4	0.628	<0.381 R-02	<0.0861 R-02	<0.0394	<0.0197	<0.0197	<0.0197	<0.0394	<0.0197	<0.0197	<0.0197	<0.0394	0.493	<0.0197	<0.898 R-02	0.373	<0.0394
	3/8/2024 DUP	21.3	0.634	<0.385 R-02	<0.0963 R-02	<0.0385	<0.0193	<0.0193	<0.0193	<0.0385	<0.0193	<0.0193	<0.0193	<0.0385	0.502	<0.0193	<0.867 R-02	0.362	<0.0385
	10/2/2024	33	7.49	<0.367	<0.367	<0.367	<0.183	<0.183	<0.183	<0.367	<0.183	<0.183	<0.183	<0.367	0.518	<0.183	6.27	<0.734	<0.367
	10/2/2024 DUP	28.8	6.98	<0.364	<0.364	<0.364	<0.182	<0.182	<0.182	<0.364	<0.182	<0.182	<0.182	<0.364	0.487	<0.182	6.55	<0.729	<0.364
KMW14*	Well KMW14 has been removed from the groundwater monitoring program. ¹¹																		
MW38*	3/3/2023	9.06	0.766	<0.760 R-02	<0.128	<0.280 R-02	<0.0640	<0.0640	<0.0640	<0.128	<0.0640	<0.0640	<0.0640	<0.128	0.768	<0.0640	<0.520	1.04	<0.128
	10/11/2023	6.57	<0.307	<0.528 R-02	<0.154	<0.154	<0.0768	<0.0768	<0.0768	<0.154	<0.0768	<0.0768	<0.0768	<0.154	0.515	<0.0768	<0.480 R-02	0.726	<0.154
	3/1/2024	7.14	0.322	<0.773 R-02	<0.145	<0.145	<0.0727	<0.0727	<0.0727	<0.145	<0.0727	<0.0727	<0.0727	<0.145	0.785	<0.0727	<0.545 R-02	1.14	<0.145
	10/2/2024	25.0	3.21	<1.37 R-02	<0.351	<0.351	<0.176	<0.176	<0.176	<0.351	<0.176	<0.176	<0.176	<0.351	1.75	<0.176	<0.922 R-02	1.95	<0.351
MW39*	3/3/2023	56.1	72.5	<0.990 R-02	<0.792	<0.792	<0.396	<0.396	<0.396	<0.792	<0.396	<0.396	<0.396	<0.792	1.14	<0.396	47.6	<1.58	<0.792
	10/11/2023	61.5	46.5	<0.976 R-02	<0.781	<0.781	<0.391	<0.391	<0.391	<0.781	<0.391	<0.391	<0.391	<0.781	1.17	<0.391	6.95	< 1.56	<0.781
	2/27/2024	97.3	147	<1.21 R-02	<0.773	<0.773	<0.387	<0.387	<0.387	<0.773	<0.387	<0.387	<0.387	<0.773	1.78	<0.387	19.6	1.64	<0.773
	10/2/2024	60.6	24.9	<0.965 R-02	<0.753	<0.753	<0.377	<0.377	<0.377	<0.753	<0.377	<0.377	<0.377	<0.753	1.43	<0.377	5.03	<1.51	<0.753
MW42*	3/25/2021	<0.0653	<0.0653	<0.0327	0.0176 J	<0.383	0.0751	0.185	0.202	0.144	0.0972 M-05	0.115	0.0216	0.174	<0.0327	0.122	<0.0653	0.0625 J	0.165
	3/24/2022	<0.0641	<0.0641	<0.0321	<0.0321	<0.0321	<0.0160	<0.0160	<0.0160	<0.0321	<0.0160	<0.0160	<0.0160	<0.0321	<0.0321	<0.0160	<0.0641	<0.0641	<0.0321
	3/7/2023	<0.0648	<0.0648	<0.0324	<0.0324	<0.0324	<0.0162	<0.0162	<0.0162	<0.0324	<0.0162	<0.0162	<0.0162	<0.0324	<0.0324	<0.0162	<0.0648	<0.0648	<0.0324
	3/8/2024	<0.0642	<0.0642	<0.0321	<0.0321	<0.0321	<0.0161	<0.0161	<0.0161	<0.0321	<0.0161	<0.0161	<0.0161	<0.0321	<0.0321	<0.0161	<0.0642	<0.0642	<0.0321

Please refer to notes at end of table.

Table 6

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 Shore Terminals—Portland
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo(a,h)anthracene	Fluoranthene	Fluorene	Benzo(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	347	--	--
2017 PHSS Cleanup Level		--	--	23	--	0.73	0.0012	0.00012	0.0012	--	0.0013	0.0013	0.00012	--	--	0.0012	12	--	--
Portland Harbor JSCS SLV		--	0.2	0.2	0.2	--	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
MW41B*	3/2/2023	<0.0682	<0.0682	<0.0341	<0.0341	<0.0341	0.0256	0.0379	0.0665	0.0452	0.0264 M-05	0.0337	<0.0170	0.0366	<0.0341	0.0528	<0.0682	<0.0682	0.0392
	10/10/2023	<0.0649	<0.0649	<0.0324	<0.0324	<0.0324	<0.0162	<0.0162	<0.0162	<0.0324	<0.0162	<0.0162	<0.0162	<0.0324	<0.0324	<0.0162	<0.0649	<0.0649	<0.0324
	2/27/2024	<0.0654	<0.0654	<0.0327	<0.0327	<0.0327	0.0163	0.0323	0.0527	0.0376	0.0172 M-05	0.0249	<0.0163	<0.0327	<0.0327	0.0364	<0.0654	<0.0654	<0.0327
	10/1/2024	<0.0669	<0.0669	<0.0335	<0.0335	<0.0335	<0.0167	<0.0167	<0.0167	<0.0335	<0.0167	<0.0167	<0.0167	<0.0335	<0.0335	<0.0167	<0.0669	<0.0669	<0.0335
MW43	3/2/2023	87.8	204	<0.414	<0.414	<0.414	<0.207	<0.207	<0.207	<0.414	<0.207	<0.207	<0.207	<0.414	<0.414	<0.207	22.6	<0.828	<0.414
	10/10/2023	76.5	165	<0.120 R-02	<0.0426	<0.0426	<0.0213	<0.0213	<0.0213	<0.0426	<0.0213	<0.0213	<0.0213	<0.0426	0.098	<0.0213	17.2	<0.0852	<0.0426
	2/27/2024	98.8	172	<0.743	<0.743	<0.743	<0.372	<0.372	<0.372	<0.743	<0.372	<0.372	<0.372	<0.743	<0.743	<0.372	17.9	<1.49	<0.743
	10/2/2024	67.5	167	<0.707	<0.707	<0.707	<0.354	<0.354	<0.354	<0.707	<0.354	<0.354	<0.354	<0.707	<0.707	<0.354	14.0	<1.41	<0.707
MW44*	3/2/2023	0.147	<0.0650	<0.0325	<0.0325	<0.0325	<0.0163	<0.0163	<0.0163	<0.0325	<0.0163	<0.0163	<0.0163	<0.0325	<0.0325	<0.0163	<0.0650	<0.0650	<0.0325
	3/2/23 DUP	0.173	<0.0654	<0.0327	<0.0327	<0.0327	<0.0164	<0.0164	<0.0164	<0.0327	<0.0164	<0.0164	<0.0164	<0.0327	<0.0327	<0.0164	<0.0654	<0.0654	<0.0327
	10/11/2023	< 18.4 R-02	<0.0736	<0.184 R-02	<0.0690 R-02	0.0791	<0.0184	<0.0184	<0.0184	<0.0368	<0.0184	<0.0184	<0.0184	<0.0368	<0.0920 R-02	<0.0184	<4.21 R-02	<0.0736	0.0515
	2/27/2024	1.09	<0.0778	<0.0389	<0.0389	<0.0389	<0.0195	<0.0195	<0.0195	<0.0389	<0.0195	<0.0195	<0.0195	<0.0389	<0.0389	<0.0195	0.168	<0.0778	<0.0389
	2/27/2024 DUP	0.897	<0.0804	<0.0402	<0.0402	<0.0402	<0.0201	<0.0201	<0.0201	<0.0402	<0.0201	<0.0201	<0.0201	<0.0402	<0.0402	<0.0201	<0.226 R-02	<0.0804	<0.0402
10/3/2024	18.5	<0.279	<0.174 R-02	<0.139	<0.139	<0.0697	<0.0697	<0.0697	<0.139	<0.0697	<0.0697	<0.0697	<0.139	<0.139	<0.0697	2.1	<0.279	<0.139	
MW45*	3/23/2021	<0.0652	<0.0652	<0.0326	<0.0326	<0.034	0.0171 M-05	0.0448	0.0672	0.0558	0.0277 M-05	0.0253 M-05	0.00856 J	0.0261 J	<0.0326	0.0452	0.0338 J	<0.0652	0.0289 J
	3/25/2022	<0.0648	<0.0648	<0.0324	<0.0324	<0.0324	<0.0162	<0.0162	<0.0162	<0.0324	<0.0162	<0.0162	<0.0162	<0.0324	<0.0324	<0.0162	<0.0648	<0.0648	<0.0324
	3/2/2023	<0.0666	<0.0666	<0.0333	<0.0333	<0.0333	<0.0166	<0.0166	<0.0166	<0.0333	<0.0166	<0.0166	<0.0166	<0.0333	<0.0333	<0.0166	<0.0666	<0.0666	<0.0333
	2/28/2024	<0.0686	<0.0686	<0.0343	<0.0343	<0.0343	<0.0171	<0.0171	<0.0171	<0.0343	<0.0171	<0.0171	<0.0171	<0.0343	<0.0343	<0.0171	<0.0686	<0.0686	<0.0343
MW46*	3/2/2023	<0.639	<0.639	<0.0319	<0.0319	<0.0319	<0.0160	<0.0160	<0.0160	<0.0319	<0.0160	<0.0160	<0.0160	<0.0319	<0.0319	<0.0160	<0.639	<0.639	<0.0319
	10/10/2023	<0.0665	<0.0665	<0.0333	<0.0333	<0.0333	<0.0166	<0.0166	<0.0166	<0.0333	<0.0166	<0.0166	<0.0166	<0.0333	<0.0333	<0.0166	<0.0665	<0.0665	<0.0333
	2/28/2024	<0.0669	<0.0669	<0.0335	<0.0335	<0.0335	<0.0167	<0.0167	<0.0167	<0.0335	<0.0167	<0.0167	<0.0167	<0.0335	<0.0335	<0.0167	<0.0669	<0.0669	<0.0335
	10/1/2024	<0.0697	<0.0697	<0.0348	<0.0348	<0.0348	<0.0174	<0.0174	<0.0174	<0.0348	<0.0174	<0.0174	<0.0174	<0.0348	<0.0348	<0.0174	<0.0697	<0.0697	<0.0348
DPE Treatment Area																			
EX-07L	3/2/2023	<0.0668	<0.0668	<0.0334	<0.0334	<0.0626 R-02	<0.0167	<0.0167	<0.0167	<0.0334	<0.0167	<0.0167	<0.0167	<0.0334	0.0705	<0.0167	<0.0668	<0.0668	<0.0334
	10/10/2023	<0.0818	<0.0818	<0.0895 R-02	<0.0409	<0.166 R-02	<0.0205	<0.0205	<0.0205	<0.0409	<0.0205	<0.0205	<0.0205	<0.0409	<0.0895 R-02	<0.0205	<0.217 R-02	<0.0818	<0.0409
	2/27/2024	<0.0646	<0.0646	<0.0323	<0.0323	<0.0606 R-02	<0.0162	<0.0162	<0.0162	<0.0323	<0.0162	<0.0162	<0.0162	<0.0323	<0.0323	<0.0162	<0.0646	<0.0646	<0.0323
	9/30/2024	<0.0643	<0.0643	<0.0573 R-02	<0.0322	<0.121 R-02	<0.0161	<0.0161	<0.0161	<0.0322	<0.0161	<0.0161	<0.0161	<0.0322	<0.0322	<0.0161	<0.181 R-02	<0.0643	<0.0322

Please refer to notes at end of table.

Table 6

Groundwater Analytical Data—PAHs
 Shore Terminals—Portland
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo(a,h)anthracene	Fluoranthene	Fluorene	Benzo(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	347	--	--
2017 PHSS Cleanup Level		--	--	23	--	0.73	0.0012	0.00012	0.0012	--	0.0013	0.0013	0.0012	--	--	0.0012	12	--	--
Portland Harbor JSCS SLV		--	0.2	0.2	0.2	--	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
KMW29	2/28/2023	25.1	<0.907	<2.83 R-02	<0.709 R-02	<0.454	<0.227	<0.227	<0.227	<0.454	<0.227	<0.227	<0.227	<0.454	2.95	<0.227	<2.13 R-02	2.80	<0.454
	10/9/2023	19.6	<0.787	< 2.21 R-02	<0.492 R-02	<0.393	<0.197	<0.197	<0.197	<0.393	<0.197	<0.197	<0.197	<0.393	2.77	<0.197	<1.48 R-02	0.94	<0.393
	2/27/2024	49.6	<0.779	<2.80 R-02	<0.730 R-02	<0.389	<0.195	<0.195	<0.195	<0.389	<0.195	<0.195	<0.195	<0.389	3.94	<0.195	<2.07 R-02	3.48	<0.389
	10/1/2024	22.9	<0.698	<2.51 R-02	<0.545 R-02	<0.349	<0.174	<0.174	<0.174	<0.349	<0.174	<0.174	<0.174	<0.349	4.07	<0.174	<1.42 R-02	2.26	<0.349
KMW30	2/28/2023	8.82 R-02	<0.0853	<0.467 R-02	<0.120 R-02	<0.107 R-02	<0.0213	<0.0213	<0.0213	<0.0427	<0.0213	<0.0213	<0.0213	<0.0427	0.460	<0.0213	<0.507 R-02	0.145	<0.0427
	10/9/2023	3.46	<0.0649	<0.112 R-02	<0.0325	0.067	<0.0162	<0.0162	<0.0162	<0.0325	<0.0162	<0.0162	<0.0162	<0.0325	0.150	<0.0162	<0.690 R-02	0.0759	<0.0325
	2/26/2024	2.08	<0.0760	<0.119 R-02	<0.0380	<0.0380	<0.0190	<0.0190	<0.0190	<0.0380	<0.0190	<0.0190	<0.0190	<0.0380	0.113	<0.0190	<0.297 R-02	<0.0760	<0.0380
	10/1/2024	13.8	<0.0647	<0.364 R-02	<0.0738 R-02	0.112	<0.0162	<0.0162	<0.0162	<0.0323	<0.0162	<0.0162	<0.0162	<0.0323	0.584	<0.0162	<0.910 R-02	0.331	<0.0323
	10/1/2024 DUP	10.2	<0.0652	<0.306 R-02	<0.0611 R-02	0.0986	<0.0163	<0.0163	<0.0163	<0.0326	<0.0163	<0.0163	<0.0163	<0.0326	0.426	<0.0163	<0.805 R-02	0.242	<0.0326
KMW31	2/28/2023	15.8	<0.643	<1.21 R-02	<0.322	<0.322	<0.161	<0.161	<0.161	<0.322	<0.161	<0.161	<0.161	<0.322	1.11	<0.161	<0.905 R-02	1.41	<0.322
	2/28/2023 DUP	14.3	<0.647	<1.31 R-02	<0.324	<0.324	<0.162	<0.162	<0.162	<0.324	<0.162	<0.162	<0.162	<0.324	1.16	<0.162	<0.910 R-02	1.58	<0.324
	10/10/2023	12.6	<0.756	< 1.06 R-02	<0.378	<0.378	<0.189	<0.189	<0.189	<0.378	<0.189	<0.189	<0.189	<0.378	1.14	<0.189	<0.756	1.44	<0.378
	10/10/2023 DUP	12	<0.865	< 1.22 R-02	<0.433	<0.433	<0.216	<0.216	<0.216	<0.433	<0.216	<0.216	<0.216	<0.433	1.12	<0.216	<0.865	1.57	<0.433
	2/27/2024	14.3	<0.851	<1.20 R-02	<0.426	<0.426	<0.213	<0.213	<0.213	<0.426	<0.213	<0.213	<0.213	<0.426	1.07	<0.213	<0.851	1.00	<0.426
	2/27/2024 DUP	9.3	<0.862	<1.08 R-02	<0.431	<0.431	<0.215	<0.215	<0.215	<0.431	<0.215	<0.215	<0.215	<0.431	0.905	<0.215	<0.862	0.921	<0.431
	10/1/2024	13.8	<0.646	<1.31 R-02	<0.323	<0.323	<0.162	<0.162	<0.162	<0.323	<0.162	<0.162	<0.162	<0.323	1.32	<0.162	<0.818 R-02	1.53	<0.323
	10/1/2024 DUP	13.9	<0.698	<1.20 R-02	<0.349	<0.349	<0.175	<0.175	<0.175	<0.349	<0.175	<0.175	<0.175	<0.349	1.24	<0.175	<0.786 R-02	1.39	<0.349
KMW32	3/1/2023	<0.0671	<0.0671	<0.0336	<0.0336	<0.0734 R-02	<0.0168	<0.0168	<0.0168	<0.0336	<0.0168	<0.0168	<0.0168	<0.0336	<0.0336	<0.0168	<0.136 R-02	<0.0671	<0.0336
	10/10/2023	<0.0640	<0.0640	<0.0320	<0.0320	<0.0500 R-02	<0.0160	<0.0160	<0.0160	<0.0320	<0.0160	<0.0160	<0.0160	<0.0320	<0.0320	<0.0160	<0.0900 R-02	<0.0640	0.0616
	2/26/2024	<0.0659	<0.0659	<0.0329	<0.0329	<0.0823 R-02	<0.0165	<0.0165	<0.0165	<0.0329	<0.0165	<0.0165	<0.0165	<0.0329	<0.0329	<0.0165	<0.0659	<0.0659	<0.0329
	10/1/2024	0.262 R-02	<0.0655	<0.0471 R-02	<0.0328	<0.0430	<0.0164	<0.0164	<0.0164	<0.0328	<0.0164	<0.0266 R-02	<0.0164	<0.0328	0.0614	<0.0164	<0.307 R-02	<0.0655	0.075
KMW33	2/28/2023	<0.0655	<0.0655	<0.520 R-02	<0.312 R-02	<0.312 R-02	<0.0166	<0.0166	<0.0166	<0.0333	<0.0166	<0.0166	<0.0166	<0.0333	0.688	<0.0166	<0.125 R-02	<0.0655	<0.0831
	10/10/2023	0.504	<0.137 R-02	0.731	<0.123 R-02	<0.0960 R-02	<0.0220	<0.0220	<0.0220	<0.0439	<0.0220	<0.0220	<0.0220	<0.110 R-02	<0.0439	<0.0220	3.39	<0.165 R-02	0.111
	2/26/2024	<0.0802	<0.0802	<0.438 R-02	<0.113 R-02	<0.225 R-02	<0.0200	<0.0200	<0.0200	<0.0401	<0.0200	<0.0376 R-02	<0.0200	<0.0401	0.761	<0.0200	<0.113 R-02	<0.0802	0.0571
	10/1/2024	<0.0923 R-02	<0.0738	<1.30 R-02	<0.404 R-02	<0.358 R-02	<0.0185	<0.0185	<0.0185	<0.0369	<0.0185	<0.0185	<0.0185	<0.0369	3.21	<0.0185	0.351	<0.0738	0.0443
KMW37	10/11/2022	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	2/28/2023	0.728	<0.189 R-02	<1.89 R-02	<0.503 R-02	<0.189 R-02	<0.0201	<0.0201	<0.0201	<0.0402	<0.0201	<0.0201	<0.0201	<0.0402	3.17	<0.0201	<2.26 R-02	0.801	0.0463
	10/10/2023	0.668	0.169	<0.628 R-02	<0.279 R-02	<0.126 R-02	<0.0223	<0.0223	<0.0223	<0.0446	<0.0223	<0.0223	<0.0223	0.0686	0.918	<0.0223	< 1.95 R-02	0.345	0.0842

KMW37 was decommissioned prior to the February 2024 monitoring event

Please refer to notes at end of table.

Table 6

Groundwater Analytical Data—PAHs
Shore Terminals—Portland
Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo(a,h)anthracene	Fluoranthene	Fluorene	Benzo(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	347	--	--
2017 PHSS Cleanup Level		--	--	23	--	0.73	0.0012	0.00012	0.0012	--	0.0013	0.0013	0.00012	--	--	0.0012	12	--	--
Portland Harbor JSCS SLV		--	0.2	0.2	0.2	--	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
MW47	2/28/2023	<0.386 R-02	<0.0823	<2.70 R-02	<0.643 R-02	0.141 R-02	<0.0206	<0.0206	<0.0206	<0.0411	<0.0206	<0.0206	<0.0206	0.0823	3.46	<0.0206	<1.67 R-02	<0.103 R-02	0.0957
	10/10/2023	<0.115 R-02	<0.0670	1.28	<0.136 R-02	<0.0629 R-02	<0.0168	<0.0168	<0.0168	<0.0335	<0.0168	<0.0168	<0.0168	0.0612	1.46	<0.0168	< 1.15 R-02	<0.0670	0.0763
	2/26/2024	<0.655	<0.655	1.35	<0.511 R-02	<0.327	<0.164	<0.164	<0.164	<0.327	<0.164	<0.164	<0.164	<0.327	2.48	<0.164	<1.12 R-02	<0.655	<0.327
	10/1/2024	<0.687	<0.687	<2.15 R-02	<0.451 R-02	<0.343	<0.172	<0.172	<0.172	<0.343	<0.172	<0.172	<0.172	<0.343	3.57	<0.172	<1.29 R-02	<0.687	<0.343
MW48	2/28/2023	5.96	<0.0643	<0.251 R-02	<0.101 R-02	<0.101 R-02	<0.0161	<0.0161	<0.0161	<0.322	<0.0161	<0.0161	<0.0161	<0.0322	0.302	<0.0161	<0.553 R-02	0.317	0.0346
	2/28/23 DUP	5.99	<0.0649	<0.254 R-02	<0.0913 R-02	<0.101 R-02	<0.0162	<0.0162	<0.0162	<0.0325	<0.0162	<0.0162	<0.0162	<0.0325	0.294	<0.0162	<0.558 R-02	0.303	0.0373
	10/9/2023	3.37	<0.0648	<0.152 R-02	<0.0608 R-02	0.0915	<0.0162	<0.0162	<0.0162	<0.0324	<0.0162	<0.0162	<0.0162	0.0332	0.194	<0.0162	<0.456 R-02	0.111	0.0446
	10/9/2023 DUP	3.85	<0.0651	<0.163 R-02	<0.0610 R-02	0.0947	<0.0163	<0.0163	<0.0163	<0.0325	<0.0163	<0.0163	<0.0163	0.0337	0.215	<0.0163	<47.8 R-02	0.127	0.0463
	2/26/2024	0.416	<0.0817	<0.0409	<0.0409	<0.0409	<0.0204	<0.0204	<0.0204	<0.0409	<0.0204	<0.0204	<0.0204	<0.0409	0.0659	<0.0204	0.205	<0.0817	<0.0409
	2/26/2024 DUP	0.715	<0.0663	<0.0829 R-02	<0.0331	0.0439	<0.0166	<0.0166	<0.0166	<0.0331	<0.0166	<0.0166	<0.0166	<0.0331	0.065	<0.0166	0.259	<0.0663	<0.0331
10/1/2024	0.842	<0.0644	<0.0704 R-02	<0.0322	0.093	<0.0161	<0.0161	<0.0161	<0.0322	<0.0161	<0.0161	<0.0161	<0.0322	0.0914	<0.0161	<0.443 R-02	<0.0644	<0.0322	
MW49	2/28/2023	0.221	<0.0760 R-02	<2.02 R-02	<0.475 R-02	<0.475 R-02	<0.0190	<0.0190	<0.0190	<0.380	<0.0190	<0.0190	<0.0190	0.109	2.47	<0.0190	<1.19 R-02	1.54	0.138
	10/10/2023	0.262	<0.106 R-02	< 1.64 R-02	<0.469 R-02	0.297	<0.0352 R-02	<0.0188	<0.0188	<0.0376	<0.0188	<0.0188	<0.0188	0.100	1.78	<0.0188	< 1.23 R-02	0.89	0.14
	2/27/2024	<1.57	<1.57	<1.97	<0.787	<0.787	<0.394	<0.394	<0.394	<0.787	<0.394	<0.394	<0.394	<0.787	2.29	<0.394	<1.57	<1.57	<0.787
	10/1/2024	<0.699	<0.699	<1.75 R-02	<0.350	<0.350	<0.175	<0.175	<0.175	<0.350	<0.175	<0.175	<0.175	<0.350	2.62	<0.175	<1.05 R-02	1.29	<0.350
Slurry Wall																			
KMW36	3/7/2023	<0.154 R-02	<0.0676	<0.211 R-02	<0.0951 R-02	<0.137 R-02	<0.0201 R-02	<0.0169	<0.0169	<0.0338	<0.0169	<0.0222 R-02	<0.0169	0.0701	0.206	<0.0169	<0.316 R-02	<0.0782 R-02	0.134
	10/10/2023	<0.369 R-02	<0.215 R-02	< 1.23 R-02	<0.451 R-02	0.314	<0.0164	<0.0164	<0.0164	<0.0328	<0.0164	<0.0164	<0.0164	0.105	1.41	<0.0164	<1.23 R-02	<0.0820 R-02	0.13
	2/29/2024	<0.195 R-02	<0.0833	<0.352 R-02	<0.0911 R-02	<0.234 R-02	<0.0208	<0.0208	<0.0208	<0.0417	<0.0208	<0.0208	<0.0208	<0.0417	0.574	<0.0208	<0.378 R-02	<0.0833	0.0922
	10/1/2024	<0.162 R-02	<0.101 R-02	<1.21 R-02	<0.333 R-02	0.414	<0.0162	<0.0162	<0.0162	<0.0323	<0.0162	<0.0162	<0.0162	0.126	1.52	<0.0162	<1.11 R-02	<0.0728R-02	0.157
W-16	3/2/2023	0.657	<0.0650	<0.864 R-02	<0.203 R-02	<0.112 R-02	<0.0508 R-02	<0.0163	<0.0163	<0.0325	<0.0163	<0.0508 R-02	<0.0163	0.0411	1.41	<0.0163	<0.813 R-02	0.196	0.0768
	10/11/2023	0.119	<0.0652	<0.774 R-02	<0.183 R-02	<0.255 R-02	<0.0163	<0.0163	<0.0163	<0.0326	<0.0163	<0.0163	<0.0163	0.0644	1.44	<0.0163	<0.631 R-02	<0.214 R-02	0.099
	2/29/2024	0.172	<0.0993	<0.730 R-02	<0.0931 R-02	<0.0621 R-02	<0.0248	<0.0248	<0.0248	<0.0497	<0.0248	<0.0248	<0.0248	<0.0497	1.35	<0.0248	<0.559	<0.124	0.0695
	10/2/2024	0.331	<0.0686	<1.18 R-02	<0.225 R-02	<0.0643 R-02	<0.0171	<0.0171	<0.0171	<0.0343	<0.0171	<0.0171	<0.0171	0.072 Q-29	2.52	<0.0171	<1.06 R-02	<0.246 R-02	0.114 Q-29
W-19	3/25/2021	0.144	<0.0728	1.89	<0.193 R-02	0.02 J	0.0132 J	<0.0182	<0.0182	<0.0364	<0.0182	0.0123 J	<0.0182	0.117	0.158	<0.0182	<0.341 R-02	0.141	0.173
	3/25/2022	0.431	0.079	<2.42 R-02	<0.364 R-02	<0.303 R-02	<0.0194	<0.0194	<0.0194	<0.0388	<0.0194	<0.0194	<0.0194	0.0766	1.28	<0.0194	<0.909 R-02	<0.424 R-02	0.137
	3/2/2023	<0.0748	<0.0748	<0.117 R-02	0.203	<0.117 R-02	<0.0187	<0.0187	<0.0187	<0.0374	<0.0187	<0.0187	<0.0187	<0.0374	<0.0374	<0.0187	<0.140 R-02	<0.0748	0.101
	2/29/2024	<0.151 R-02	<0.0808	<1.20 R-02	<0.151 R-02	<0.252 R-02	<0.0202	<0.0202	<0.0202	<0.0404	<0.0202	<0.0202	<0.0202	0.0621	0.235	<0.0202	<0.808	<0.0808	0.134

Please refer to notes at end of table.

Table 6

Groundwater Analytical Data—PAHs
 Shore Terminals—Portland
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo(a,h)anthracene	Fluoranthene	Fluorene	Benzo(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	347	--	--
2017 PHSS Cleanup Level		--	--	23	--	0.73	0.0012	0.00012	0.0012	--	0.0013	0.0013	0.00012	--	--	0.0012	12	--	--
Portland Harbor JSCS SLV		--	0.2	0.2	0.2	--	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
W-20	3/25/2021	<0.071	<0.071	<0.0355	<0.0355	<0.032	<0.0178	<0.0178	<0.0178	<0.0355	<0.0178	<0.0178	<0.0178	<0.0355	<0.0355	<0.0178	<0.071	<0.071	<0.0355
	3/25/2022	<0.0732	<0.0732	<0.0366	<0.0366	<0.0366	<0.0183	<0.0183	<0.0183	<0.0366	<0.0183	<0.0183	<0.0183	<0.0366	<0.0366	<0.0183	<0.0732	<0.0732	<0.0366
	3/2/2023	<0.0777	<0.0777	<0.0388	<0.0388	<0.0388	0.0257	<0.0194	0.0199	<0.0388	0.0218	<0.0194	<0.0194	<0.0388	<0.0388	<0.0194	<0.0777	<0.0777	<0.0388
	2/29/2024	<0.0776	<0.0776	<0.0388	<0.0388	<0.0388	<0.0194	<0.0194	<0.0194	<0.0388	<0.0194	<0.0194	<0.0194	<0.0388	<0.0388	<0.0194	<0.0776	<0.0776	<0.0388
W-22	3/23/2021	<0.0639	<0.0639	<0.032	<0.032	<0.032	<0.016	<0.016	<0.016	<0.032	<0.016	<0.016	<0.016	<0.032	<0.032	<0.016	<0.0639	<0.0639	<0.032
	3/25/2022	<0.0678	<0.0678	<0.0339	<0.0339	<0.0339	<0.0169	<0.0169	<0.0169	<0.0339	<0.0169	<0.0169	<0.0169	<0.0339	<0.0339	<0.0169	<0.0678	<0.0678	<0.0339
	3/2/2023	<0.0668	<0.0668	<0.0334	<0.0334	<0.0334	<0.0167	<0.0167	<0.0167	<0.0334	<0.0167	<0.0167	<0.0167	<0.0334	<0.0334	<0.0167	<0.0668	<0.0668	<0.0334
	2/29/2024	<0.0731	<0.0731	<0.0365	<0.0365	<0.0365	<0.0183	<0.0183	<0.0183	<0.0365	<0.0183	<0.0183	<0.0183	<0.0365	<0.0365	<0.0183	<0.0731	<0.0731	<0.0365
Site-Wide																			
KMW01	3/23/2021	<0.0643	<0.0643	<0.0321	<0.0321	<0.0321	<0.0161	<0.0161	<0.0161	<0.0321	<0.0161	<0.0161	<0.0161	<0.0321	<0.0321	<0.0161	<0.0643	<0.0643	<0.0321
	3/25/2022	<0.0648	<0.0648	<0.0324	<0.0324	<0.0324	<0.0162	<0.0162	<0.0162	<0.0324	<0.0162	<0.0162	<0.0162	<0.0324	<0.0324	<0.0162	<0.0648	<0.0648	<0.0324
	3/3/2023	<0.0662	<0.0662	<0.0331	<0.0331	<0.0331	<0.0165	<0.0165	<0.0165	<0.0331	<0.0165	<0.0165	<0.0165	<0.0331	<0.0331	<0.0165	<0.0662	<0.0662	<0.0331
	2/28/2024	<0.0678	<0.0678	<0.0339	<0.0339	<0.0339	<0.0170	<0.0170	<0.0170	<0.0339	<0.0170	<0.0170	<0.0170	<0.0339	<0.0339	<0.0170	<0.0678	<0.0678	<0.0339
KMW02	3/7/2023	<0.0742	<0.0742	<0.0371	<0.0371	<0.0371	<0.0186	<0.0186	<0.0186	<0.0371	<0.0186	<0.0186	<0.0186	<0.0371	<0.0371	<0.0186	<0.0742	<0.0742	<0.0371
	10/11/2023	<0.0772	<0.0772	<0.0386	<0.0386	<0.0386	<0.0193	<0.0193	<0.0193	<0.0386	<0.0193	<0.0193	<0.0193	<0.0386	<0.0386	<0.0193	<0.0772	<0.0772	<0.0386
	2/28/2024	<0.0885	<0.0885	<0.0442	<0.0442	<0.0442	<0.0221	<0.0221	<0.0221	<0.0442	<0.0221	<0.0221	<0.0221	<0.0442	<0.0442	<0.0221	<0.0885	<0.0885	<0.0442
10/3/2024	<0.0706	<0.0706	<0.0353	<0.0353	<0.0353	<0.0177	<0.0177	<0.0177	<0.0353	<0.0177	<0.0177	<0.0177	<0.0353	<0.0353	<0.0177	<0.0706	<0.0706	<0.0353	
KMW05	3/23/2021	3.16	<0.145 R-02	<6.77 R-02	<1.21 R-02	<0.967 R-02	0.014 J	0.0116 J	<0.0193	<0.0387	<0.0193	0.0111 J	<0.0193	0.0551	8.40	<0.0193	<0.484 R-02	5.06	0.181
	3/24/2022	2.54	0.123	<5.52 R-02	<0.799 R-02	<0.799 R-02	<0.0232	<0.0232	<0.0232	<0.0465	<0.0232	<0.0232	<0.0232	<0.0465	8.39	<0.0232	<0.653 R-02	3.59	0.152
	3/2/2023	3.62	0.149	<6.10 R-02	<1.52 R-02	<1.02 R-02	0.0354	0.0402	0.0569	<0.0325	<0.0163	0.0496	<0.0163	0.128	8.40	0.0297	<1.02 R-02	6.01	0.272
	2/28/2024	1.32	0.118	<5.37 R-02	<0.725 R-02	<0.580 R-02	<0.0232	<0.0232	<0.0232	<0.0464	<0.0232	<0.0232	<0.0232	<0.0464	6.57	<0.0232	<1.02 R-02	4.28	0.129
KMW09	3/23/2021	<0.0639	<0.0639	<0.0319	<0.0319	<0.0319	<0.016	<0.016	<0.016	<0.0319	<0.016	<0.016	<0.016	<0.0319	<0.0319	<0.016	<0.0639	<0.0639	<0.0319
	3/22/2022	<0.0713	<0.0713	<0.0357	<0.0357	<0.0357	<0.0178	<0.0178	<0.0178	<0.0357	<0.0178	<0.0178	<0.0178	<0.0357	<0.0357	<0.0178	<0.0713	<0.0713	<0.0357
	3/7/2023	<0.0654	<0.0654	<0.0327	<0.0327	<0.0327	<0.0163	<0.0163	<0.0163	<0.0327	<0.0163	<0.0163	<0.0163	<0.0327	<0.0327	<0.0163	<0.0654	<0.0654	<0.0327
	2/28/2024	<0.0646	<0.0646	<0.0323	<0.0323	<0.0323	<0.0161	<0.0161	<0.0161	<0.0323	<0.0161	<0.0161	<0.0161	<0.0323	<0.0323	<0.0161	<0.0646	<0.0646	<0.0323

Please refer to notes at end of table.

Table 6

Groundwater Analytical Data—PAHs
 Shore Terminals—Portland
 Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)																	
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo(a,h)anthracene	Fluoranthene	Fluorene	Benzo(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
1997 Site ROD Cleanup Goal		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	347	--	--
2017 PHSS Cleanup Level		--	--	23	--	0.73	0.0012	0.00012	0.0012	--	0.0013	0.0013	0.00012	--	--	0.0012	12	--	--
Portland Harbor JSCS SLV		--	0.2	0.2	0.2	--	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2
KMW10*	6/29/2023	<0.0687	<0.0687	<0.0343	<0.0343	<0.0343	<0.0172	<0.0172	<0.0172	<0.0343	<0.0172	<0.0172	<0.0172	<0.0343	<0.0343	<0.0172	<0.0687	<0.0687	<0.0343
	10/12/2023	<0.0697	<0.0697	<0.0349	<0.0349	<0.0349	<0.0174	<0.0174	<0.0174	<0.0349	<0.0174	<0.0174	<0.0174	<0.0349	<0.0349	<0.0174	<0.0697	<0.0697	<0.0349
	2/28/2024	<0.0788	<0.0788	<0.0394	<0.0394	<0.0394	<0.0197	<0.0197	<0.0197	<0.0394	<0.0197	<0.0197	<0.0197	<0.0394	<0.0394	<0.0197	<0.0788	<0.0788	<0.0394
	10/1/2024	<0.0684	<0.0684	<0.0342	<0.0342	<0.0342	<0.0171	<0.0171	<0.0171	<0.0342	<0.0171	<0.0171	<0.0171	<0.0342	<0.0342	<0.0171	<0.0684	<0.0684	<0.0342
KMW16*	3/25/2021	<0.068	<0.068	<0.034	<0.034	<0.034	0.0191	0.0404	0.0391	0.0298 J	0.0174 M-05	0.023	<0.017	0.0463	<0.034	0.0196	<0.068	<0.068	0.0455
	3/24/2022	<0.0647	<0.0647	<0.0323	<0.0323	<0.0323	<0.0162	<0.0162	0.0222	<0.0323	<0.0162	<0.0162	<0.0162	<0.0323	<0.0323	0.0166	<0.0647	<0.0647	<0.0323
	3/2/2023	<0.0650	<0.0650	<0.0325	<0.0325	<0.0162	<0.0162	<0.0162	<0.0162	<0.0325	<0.0162	<0.0162	<0.0162	<0.0325	<0.0325	<0.0162	<0.0650	<0.0650	<0.0325
	2/27/2024	<0.0661	<0.0661	<0.0331	<0.0331	<0.0331	<0.0165	<0.0165	<0.0165	<0.0331	<0.0165	<0.0165	<0.0165	<0.0331	<0.0331	<0.0165	0.174	<0.0661	<0.0331
KMW20	3/23/2021	0.0328 J	<0.0639	<0.032	<0.032	<0.032	<0.016	0.00799 J	<0.016	<0.032	<0.016	<0.016	<0.016	<0.032	<0.032	<0.016	0.139	<0.0639	0.0212 J
	3/24/2022	<0.0748	<0.0748	<0.0374	<0.0374	<0.0374	<0.0187	<0.0187	<0.0187	<0.0374	<0.0187	<0.0187	<0.0187	<0.0374	<0.0374	<0.0187	<0.0748	<0.0748	<0.0374
	3/3/2023	<0.0661	<0.0661	<0.0330	<0.0330	<0.0330	<0.0165	<0.0165	<0.0165	<0.0330	<0.0165	<0.0165	<0.0165	<0.0330	<0.0330	<0.0165	<0.0661	<0.0661	0.0508
	2/29/2024	<0.0802	<0.0802	<0.0401	<0.0401	<0.0401	<0.0200	<0.0200	<0.0200	<0.0401	<0.0200	<0.0200	<0.0200	<0.0401	<0.0401	<0.0200	<0.0802	<0.0802	<0.0401
KMW21	3/23/2021	<0.123 R-02	<0.0655	0.545	<0.0717 R-02	<0.154 R-02	0.0152 J	<0.0164	<0.0164	<0.0328	<0.0164	0.00819 J	<0.0164	0.0393	1.22	<0.0164	<0.184 R-02	<0.102 R-02	0.0684
	3/24/2022	<0.0821	<0.0821	<0.0411	0.0616	<0.0898 R-02	<0.0205	<0.0205	<0.0205	<0.0411	<0.0205	<0.0205	<0.0205	<0.0411	<0.128 R-02	<0.0205	<0.0821	<0.0821	<0.0411
	3/3/2023	<0.0881	<0.0881	<0.0440	<0.0440	<0.0440	<0.0220	<0.0220	<0.0220	<0.0440	<0.0220	<0.0220	<0.0220	<0.0440	<0.0440	<0.0220	<0.124 R-02	<0.0881	<0.0440
	2/29/2024	<0.120 R-02	<0.0852	<1.20 R-02	<0.133 R-02	<0.133 R-02	<0.0213	<0.0213	<0.0213	<0.0426	<0.0213	<0.0213	<0.0213	<0.0426	2.67	<0.0213	<0.532 R-02	<0.0852	0.0559
MW40	3/23/2021	<0.0636	<0.0636	<0.0318	<0.0318	<0.0988 R-02	<0.0159	<0.0159	<0.0159	<0.0318	<0.0159	<0.0159	<0.0159	<0.0318	<0.0318	<0.0159	<0.0636	<0.0636	<0.0318
	3/24/2022	1/0/1900	<0.0735	<0.0367	<0.0367	0.0478	<0.0184	<0.0184	<0.0184	<0.0367	<0.0184	<0.0184	<0.0184	<0.0367	<0.0367	<0.0184	0.464	<0.0735	<0.0367
	3/2/2023	<0.0664	<0.0664	<0.0332	<0.0332	0.0469	<0.0166	<0.0166	<0.0166	<0.0332	<0.0166	<0.0166	<0.0166	<0.0332	<0.0332	<0.0166	<0.0664	<0.0664	<0.0332
	2/28/2024	<0.0785	<0.0785	<0.0392	<0.0392	0.0461	<0.0196	<0.0196	<0.0196	<0.0392	<0.0196	<0.0196	<0.0196	<0.0392	<0.0392	<0.0196	<0.0785	<0.0785	<0.0392
W-15	10/13/2022	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
	3/2/2023	0.26	<0.0748	<0.818 R-02	<0.234 R-02	<0.234 R-02	<0.0187	<0.0187	<0.0187	<0.0374	<0.0187	<0.0187	<0.0187	0.0388	1.12	<0.0187	<1.05 R-02	0.394	0.105
	10/10/2023	0.389	<0.158 R-02	< 1.21 R-02	<0.231 R-02	<0.146 R-02	<0.0195	<0.0195	<0.0195	<0.0390	<0.0195	<0.0195	<0.0195	0.0458	1.63	<0.0195	< 1.17 R-02	0.528	0.125
Well W-15 was decommissioned prior to the February 2024 monitoring event																			

Please refer to notes at end of table.

Table 6

Groundwater Analytical Data—PAHs

Shore Terminals—Portland

Portland, Oregon

Notes:

1. PAH = Polycyclic aromatic hydrocarbons.
2. < = Concentration as reported by the analytical laboratory is less than the laboratory reporting limit.
3. µg/L = Microgram(s) per liter.
4. NA = Not analyzed .
5. DUP = Field Duplicate.
6. Yellow highlighted cells indicate values that are equal to or exceeding 1997 Record of Decision (ROD) Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
7. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
8. Polycyclic aromatic hydrocarbons analyzed by EPA Method 8270C with selective ion monitoring.
9. * = Well is screened in Deep Sand unit.
10. Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
11. Well KMW14 was paved over prior to the October 2017 monitoring event. In an email dated February 21, 2018, DEQ agreed that well KMW14 was not critical to monitoring the Loading Rack Area and that replacement of KMW14 was not required. Well KMW14 has been removed from the monitoring program.

Quality Assurance/Quality Control Data Qualifiers

J = Reported result is an estimated value.

M-05 = Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.

Q-29 = Recovery for Lab Control Spike (LCS) is above the upper control limit. Data may be biased high.

R-02 = The reporting limit for the analyte has been raised to account for interference from coeluting organic compounds present in the sample.

Table 7**Groundwater Analytical Data—Total and Dissolved Metals**

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)					
		Total Arsenic	Total Copper	Total Lead	Dissolved Arsenic	Dissolved Copper	Dissolved Lead
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	5.0	12	3.2
<i>PHSS Cleanup Level</i>		--	--	--	0.018	2.74	0.54
<i>Portland Harbor JSCS SLV</i>		--	--	--	0.045	2.7	0.54
Tank Field 1							
KMW07	3/25/2021	5.22	1.49 J	0.315	2.49	<2.00	<0.20
	3/25/2021 DUP	4.89	1.43 J	0.293	2.26	<2.00	<0.20
	3/23/2022	2.67	<2.00	0.213	<1.00	<2.00	<0.20
	3/23/2022 DUP	2.75	<2.00	<0.20	<1.00	<2.00	<0.20
	3/2/2023	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	2/27/2024	1.69	<2.00	<0.200	<1.00	<2.00	<0.200
KMW11	3/2/2023	3.23	<2.00	0.363	3.20	<2.00	<0.20
	10/10/2023	4.34	<2.00	0.296	4.27	<2.00	<0.20
	2/28/2024	3.89	<2.00	0.231	3.87	<2.00	<0.200
	10/1/2024	4.58	<2.00	0.41	4.45	<2.00	<0.200
KMW18	3/2/2023	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	3/2/2023 DUP	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	10/12/2023	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	10/12/2023 DUP	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	2/28/2024	<1.00	<2.00	<0.200	<1.00	<2.00	<0.200
	2/28/2024 DUP	<1.00	<2.00	<0.200	<1.00	<2.00	<0.200
	10/2/2024	<1.00	<2.00	0.234	<1.00	<2.00	<0.200
	10/2/2024 DUP	<1.00	<2.00	0.243	<1.00	<2.00	<0.200

Please refer to notes at end of table.

Table 7**Groundwater Analytical Data—Total and Dissolved Metals**

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)					
		Total Arsenic	Total Copper	Total Lead	Dissolved Arsenic	Dissolved Copper	Dissolved Lead
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	5.0	12	3.2
<i>PHSS Cleanup Level</i>		--	--	--	0.018	2.74	0.54
<i>Portland Harbor JSCS SLV</i>		--	--	--	0.045	2.7	0.54
KMW19	3/2/2023	4.38	<2.00	0.407	4.51	<2.00	<0.20
	10/12/2023	4.33	< 2.00	<0.20	4.21	< 2.00	<0.20
	2/28/2024	4.32	<2.00	0.492	4.29	<2.00	0.25
	10/2/2024	4.22	<2.00	0.26	4.01	<2.00	<0.200
KMW35	3/2/2023	3.78	<2.00	0.562	4.50	<2.00	0.536
	10/10/2023	11	<2.00	1.23	11.5	<2.00	1.06
	2/27/2024	1.56	<2.00	0.713	1.21	<2.00	0.208
	10/2/2024	11.9	<2.00	1.36	11.7	<2.00	1.04
MW41A	3/2/2023	6.01	<2.00	<0.20	7.43	<2.00	0.263
	10/12/2023	10.9	<2.00	0.389	9.37	<2.00	<0.20
	2/27/2024	2.02	<2.00	<0.200	1.45	<2.00	<0.200
	10/1/2024	9.28	<2.00	0.405	8.99	<2.00	<0.200
Loading Rack							
KMW13*	3/3/2023	18.2	<2.00	0.488	19.3	<2.00	0.306
	3/3/2023 DUP	17.6	<2.00	0.358	20.0	<2.00	<0.308
	10/13/2023	21.3	<2.00	1.67	20.6	<2.00	0.745
	10/13/2023 DUP	21.7	<2.00	1.20	20.7	<2.00	0.734
	3/8/2024	15.7	<2.00	0.249	16.5	<2.00	0.200
	3/8/2024 DUP	15.8	<2.00	0.221	16.6	<2.00	<0.200
	10/2/2024	19.8	<2.00	0.69	22.5	<2.00	0.595
	10/2/2024 DUP	21.8	<2.00	0.868	22.6	<2.00	0.627
KMW14*	Well KMW14 has been removed from the groundwater monitoring program. ¹²						

Please refer to notes at end of table.

Table 7**Groundwater Analytical Data—Total and Dissolved Metals**

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)					
		Total Arsenic	Total Copper	Total Lead	Dissolved Arsenic	Dissolved Copper	Dissolved Lead
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	5.0	12	3.2
<i>PHSS Cleanup Level</i>		--	--	--	0.018	2.74	0.54
<i>Portland Harbor JSCS SLV</i>		--	--	--	0.045	2.7	0.54
MW38*	3/3/2023	28.1	<2.00	0.251	30.5	<2.00	0.299
	10/11/2023	31.6	<2.00	0.49	31.3	<2.00	0.408
	3/1/2024	26.3	<2.00	0.272	29.6	<2.00	0.248
	10/2/2024	41.9	<2.00	1.22	42.2	<2.00	0.974
MW39*	3/3/2023	64.7	<2.00	1.09	67.4	<2.00	1.02
	10/11/2023	67.2	<2.00	1.54	66.8	<2.00	1.31
	2/27/2024	69.6	<2.00	1.76	66.6	<2.00	1.73
	10/2/2024	67.7	<2.00	2.06	69.2	<2.00	1.77
MW42*	3/25/2021	<1.00	1.65 J,Q-42	0.679	<1.00	<2.00	<0.20
	3/24/2022	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	3/7/2023	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	3/8/2024	<1.00	<2.00	7.52	<1.00	<2.00	<0.200
MW41B*	3/2/2023	<1.00	2.5	0.254	<1.00	<2.00	<0.20
	10/10/2023	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	2/27/2024	1.03	<2.00	<0.200	<1.00	<2.00	<0.200
	10/1/2024	1.07	<2.00	<0.200	1.04	<2.00	<0.200
MW43	3/2/2023	36	<2.00	0.772	36.6	<2.00	0.544
	10/10/2023	40.6	<2.00	1.25	37.3	<2.00	0.427
	2/27/2024	39.8	<2.00	39.5	38.6	<2.00	0.410
	10/2/2024	43.2	<2.00	0.831	41.3	<2.00	0.613

Please refer to notes at end of table.

Table 7**Groundwater Analytical Data—Total and Dissolved Metals**

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)					
		Total Arsenic	Total Copper	Total Lead	Dissolved Arsenic	Dissolved Copper	Dissolved Lead
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	5.0	12	3.2
<i>PHSS Cleanup Level</i>		--	--	--	0.018	2.74	0.54
<i>Portland Harbor JSCS SLV</i>		--	--	--	0.045	2.7	0.54
MW44*	3/2/2023	6.99	<2.00	<0.20	7.82	<2.00	<0.20
	3/2/23 DUP	6.44	<2.00	<0.20	7.81	<2.00	<0.20
	10/11/2023	13.9	<2.00	<0.20	13.7	<2.00	<0.20
	2/27/2024	13	<2.00	<0.200	9.83	<2.00	<0.200
	10/3/2024	14.2	<2.00	<0.200	13.9	<2.00	<0.200
MW45*	3/23/2021	0.64 J	2.21	0.261	0.597 J	1.09 J	<0.20
	3/25/2022	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	3/2/2023	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	2/28/2024	<1.00	<2.00	<0.200	<1.00	<2.00	<0.200
MW46*	3/2/2023	2.3	<2.00	<0.20	2.83	<2.00	<0.20
	10/10/2023	2.25	<2.00	<0.20	2.29	<2.00	<0.20
	2/28/2024	2.84	<2.00	14.0	2.90	<2.00	<0.200
	10/1/2024	2.61	<2.00	<0.200	2.62	<2.00	<0.200
DPE Treatment Area							
EX-07L	3/2/2023	<1.00	2.57	<0.20	<1.00	2.82	<0.20
	10/10/2023	2.85	<2.00	<0.20	2.98	<2.00	<0.20
	2/27/2024	<1.00	3.32	<0.200	<1.00	3.27	<0.200
	9/30/2024	2.15	<2.00	<0.200	2.42	<2.00	<0.200
KMW29	2/28/2023	11.2	<2.00	0.482	11.5	<2.00	0.420
	10/9/2023	13.3	<2.00	0.638	13.5	<2.00	0.674
	2/29/2024	10.3	<2.00	0.226	9.86	<2.00	<0.200
	10/1/2024	12.8	<2.00	0.564	14.0	<2.00	0.553

Please refer to notes at end of table.

Table 7**Groundwater Analytical Data—Total and Dissolved Metals**

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)					
		Total Arsenic	Total Copper	Total Lead	Dissolved Arsenic	Dissolved Copper	Dissolved Lead
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	5.0	12	3.2
<i>PHSS Cleanup Level</i>		--	--	--	0.018	2.74	0.54
<i>Portland Harbor JSCS SLV</i>		--	--	--	0.045	2.7	0.54
KMW30	2/28/2023	1.84	<2.00	<0.20	2.29	<2.00	<0.20
	10/9/2023	1.23	2.11	<0.20	1.30	<2.00	<0.20
	2/26/2024	1.23	<2.00	<0.200	<1.00	<2.00	<0.200
	10/1/2024	2.95	<2.00	<0.200	3.29	<2.00	<0.200
	10/1/2024 DUP	2.99	<2.00	<0.200	3.21	<2.00	<0.200
KMW31	2/28/2023	1.59	<2.00	0.502	1.67	<2.00	0.470
	2/28/2023 DUP	1.61	<2.00	0.52	1.80	<2.00	0.475
	10/10/2023	1.59	<2.00	0.658	1.73	<2.00	0.650
	10/10/2023 DUP	1.68	<2.00	0.863	1.83	<2.00	0.743
	2/27/2024	1.45	<2.00	0.705	1.25	<2.00	0.487
	2/27/2024 DUP	1.21	<2.00	31.8	1.41	<2.00	0.339
	10/1/2024	2.62	<2.00	0.539	2.81	<2.00	0.546
10/1/2024 DUP	2.60	<2.00	0.543	2.83	<2.00	0.591	
KMW32	3/2/2023	<1.00	2.33	1.03	<1.00	<2.00	0.789
	10/10/2023	<1.00	<2.00	0.375	<1.00	<2.00	0.338
	2/26/2024	1.04	3.24	0.466	1.21	3.01	0.432
	10/1/2024	2.43	<2.00	0.421	2.65	<2.00	0.300
KMW33	2/28/2023	1.62	<2.00	<0.20	1.46	<2.00	<0.20
	10/10/2023	1.93	<2.00	<0.20	2.61	<2.00	<0.20
	2/26/2024	2.32	<2.00	<0.200	1.92	<2.00	<0.200
	10/1/2024	8.93	<2.00	<0.200	8.12	<2.00	<0.200

Please refer to notes at end of table.

Table 7

Groundwater Analytical Data—Total and Dissolved Metals

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)					
		Total Arsenic	Total Copper	Total Lead	Dissolved Arsenic	Dissolved Copper	Dissolved Lead
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	5.0	12	3.2
<i>PHSS Cleanup Level</i>		--	--	--	0.018	2.74	0.54
<i>Portland Harbor JSCS SLV</i>		--	--	--	0.045	2.7	0.54
KMW37	10/11/2022	NS	NS	NS	NS	NS	NS
	2/28/2023	20.8	<2.00	1.63	21.4	<2.00	1.55
	10/10/2023	20.7	<2.00	2.37	22.0	<2.00	2.21
	KMW37 was decommissioned prior to the February 2024 monitoring event						
MW47	2/28/2023	3.69	<2.00	<0.20	3.83	<2.00	<0.20
	10/10/2023	1.81	<2.00	<0.20	1.86	<2.00	<0.20
	2/26/2024	2.33	2.34	<0.200	2.42	<2.00	<0.200
	10/1/2024	1.66	<2.00	<0.200	1.75	<2.00	<0.200
MW48	2/28/2023	2.08	<2.00	<0.20	2.25	<2.00	<0.20
	2/28/2023 DUP	2.31	<2.00	<0.20	2.28	<2.00	<0.20
	10/9/2023	1.63	<2.00	<0.20	1.68	<2.00	<0.20
	10/9/2023 DUP	1.52	<2.00	<0.20	1.78	<2.00	<0.20
	2/26/2024	1.24	3.45	<0.200	1.05	<2.00	<0.200
	2/26/2024 DUP	1.14	<2.00	<0.200	1.00	<2.00	<0.200
	10/1/2024	1.74	<2.00	<0.200	1.83	<2.00	<0.200
MW49	2/28/2023	8.54	<2.00	0.504	8.40	<2.00	0.405
	10/10/2023	8.41	<2.00	0.279	11.5	<2.00	0.206
	2/27/2024	9.03	<2.00	0.425	8.48	<2.00	0.396
	10/1/2024	8.91	<2.00	0.319	8.21	<2.00	0.388

Please refer to notes at end of table.

Table 7**Groundwater Analytical Data—Total and Dissolved Metals**

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)					
		Total Arsenic	Total Copper	Total Lead	Dissolved Arsenic	Dissolved Copper	Dissolved Lead
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	5.0	12	3.2
<i>PHSS Cleanup Level</i>		--	--	--	0.018	2.74	0.54
<i>Portland Harbor JSCS SLV</i>		--	--	--	0.045	2.7	0.54
Slurry Wall							
KMW36	3/7/2023	3.14	<2.00	0.288	2.96	<2.00	0.215
	10/10/2023	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	2/29/2024	1.74	<2.00	0.513	1.31	<2.00	<0.200
	10/1/2024	<1.00	<2.00	<0.200	<1.00	<2.00	<0.200
W-16	3/2/2023	2.26	<2.00	<0.440	1.98	<2.00	0.372
	10/11/2023	3.06	<2.00	0.8	1.51	<2.00	<0.20
	2/29/2024	2.27	<2.00	0.676	1.40	<2.00	0.399
	10/2/2024	1.90	<2.00	0.468	1.76	<2.00	0.284
W-19	3/25/2021	6.07	<2.00	<0.20	2.74	<2.00	<0.20
	3/25/2022	3.96	<2.00	<0.20	2.86	<2.00	<0.20
	3/2/2023	3.8	<2.00	<0.20	1.87	<2.00	<0.20
	2/29/2024	5.7	<2.00	<0.200	2.49	<2.00	<0.200
W-20	3/25/2021	5.32	<2.00	0.147 J	0.617 J	<2.00	<0.20
	3/25/2022	1.96	<2.00	<0.20	<1.00	<2.00	<0.20
	3/2/2023	1.75	<2.00	<0.20	<1.00	2.28	<0.20
	2/29/2024	2.12	<2.00	<0.200	<1.00	<2.00	<0.200
W-22	3/23/2021	<1.00	1.2 J	0.263	<1.00	<2.00	<0.20
	3/25/2022	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	3/2/2023	<1.00	<2.00	0.289	<1.00	<2.00	<0.20
	2/29/2024	<1.00	<2.00	0.201	<1.00	<2.00	<0.200

Please refer to notes at end of table.

Table 7

Groundwater Analytical Data—Total and Dissolved Metals

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)					
		Total Arsenic	Total Copper	Total Lead	Dissolved Arsenic	Dissolved Copper	Dissolved Lead
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	5.0	12	3.2
<i>PHSS Cleanup Level</i>		--	--	--	0.018	2.74	0.54
<i>Portland Harbor JSCS SLV</i>		--	--	--	0.045	2.7	0.54
Site-Wide							
KMW01	3/23/2021	<1.00	<2.00	0.14 J	<1.00	<2.00	<0.20
	3/25/2022	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	3/3/2023	1.18	<2.00	<0.20	1.69	<2.00	<0.20
	2/28/2024	<1.00	<2.00	<0.200	<1.00	<2.00	<0.200
KMW02	3/7/2023	2.9	<2.00	<0.20	<1.00	<2.00	<0.20
	10/11/2023	4.82	<2.00	<0.20	2.85	<2.00	<0.20
	2/28/2024	3.75	<2.00	<0.200	2.09	<2.00	<0.200
	10/3/2024	3.45	<2.00	<0.200	2.85	<2.00	<0.200
KMW05	3/23/2021	1.16	1.61 J	0.234	1.10	<2.00	<0.20
	3/24/2022	1.15	<2.00	<0.20	1.06	<2.00	<0.20
	3/2/2023	1.02	<2.00	<0.20	1.21	<2.00	<0.20
	2/28/2024	1.23	<2.00	<0.200	1.06	<2.00	<0.200
KMW09	3/23/2021	<1.00	1.92 J	<0.20	<1.00	1.06 J,Q-42	<0.20
	3/22/2022	<1.00	<2.00	0.371	<1.00	<2.00	<0.20
	3/7/2023	<1.00	<2.00	0.334	<1.00	<2.00	<0.20
	2/28/2024	<1.00	<2.00	<0.200	<1.00	<2.00	<0.200

Please refer to notes at end of table.

Table 7**Groundwater Analytical Data—Total and Dissolved Metals**

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)					
		Total Arsenic	Total Copper	Total Lead	Dissolved Arsenic	Dissolved Copper	Dissolved Lead
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	5.0	12	3.2
<i>PHSS Cleanup Level</i>		--	--	--	0.018	2.74	0.54
<i>Portland Harbor JSCS SLV</i>		--	--	--	0.045	2.7	0.54
KMW10*	6/29/2023	3.21	<2.00	<0.780	1.53	<2.00	<0.20
	10/12/2023	6.85	<2.00	1.5	6.68	<2.00	<0.20
	2/28/2024	2.81	<2.00	0.311	<1.00	<2.00	<0.200
	10/1/2024	1.08	<2.00	<0.200	<1.00	<2.00	<0.200
KMW16*	3/25/2021	0.789 J	<2.00	0.127 J	0.829 J	<2.00	<0.20
	3/24/2022	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	3/2/2023	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	2/27/2024	<1.00	<2.00	<0.20	<1.00	<2.00	<0.200
KMW20	3/23/2021	5.08	2	0.172 J	1.67	<2.00	<0.20
	3/24/2022	3.03	<2.00	<0.20	<1.00	<2.00	<0.20
	3/3/2023	1.91	<2.00	<0.20	<1.00	<2.00	<0.20
	2/29/2024	2.13	<2.00	<0.200	1.52	<2.00	<0.200
KMW21	3/23/2021	1.35	<2.00	<0.20	0.727J	1.74 J	<0.20
	3/24/2022	1.31	<2.00	<0.20	<1.00	<2.00	<0.20
	3/3/2023	1.18	<2.00	<0.20	<1.00	<2.00	<0.20
	2/29/2024	1.04	<2.00	<0.200	<1.00	<2.00	<0.200
KMW24*	3/25/2021	7.13	<2.00	1.31	6.90	<2.00	<0.20
	3/25/2022	8.19	2.06	7.16	6.61	<2.00	<0.20
	3/23/2023	7.2	<2.00	0.584	7.88	<2.00	<0.20
	2/29/2024	8.77	<2.00	<0.200	8.34	<2.00	<0.200

Please refer to notes at end of table.

Table 7

Groundwater Analytical Data—Total and Dissolved Metals

Shore Terminals—Portland

Portland, Oregon

Well ID	Sample Date	Analytical Results (µg/L)					
		Total Arsenic	Total Copper	Total Lead	Dissolved Arsenic	Dissolved Copper	Dissolved Lead
<i>ROD Groundwater Cleanup Goal</i>		--	--	--	5.0	12	3.2
<i>PHSS Cleanup Level</i>		--	--	--	0.018	2.74	0.54
<i>Portland Harbor JSCS SLV</i>		--	--	--	0.045	2.7	0.54
KMW26*	3/25/2021	2.3	1.03 J	0.193 J	2.36	1.32 J	<0.20
	3/25/2022	2.94	<2.00	<0.20	2.49	<2.00	<0.20
	3/3/2023	7.02	2.75	1.3	5.92	2.65	0.897
	2/27/2024	3.94	<2.00	0.28	3.44	<2.00	<0.200
MW40	3/23/2021	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	3/24/2022	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	3/2/2023	<1.00	<2.00	<0.20	<1.00	<2.00	<0.20
	2/28/2024	<1.00	<2.00	<0.200	<1.00	<2.00	<0.200
W-15	10/13/2022	NS	NS	NS	NS	NS	NS
	3/2/2023	2.59	<2.00	1.21	2.45	<2.00	1.17
	10/10/2023	8.7	<2.00	1.27	8.62	<2.00	1.01
W-15 was decommissioned prior to the February 2024 monitoring event							

Please refer to notes at end of table.

Table 7

Groundwater Analytical Data—Total and Dissolved Metals

Shore Terminals—Portland

Portland, Oregon

Notes:

1. < = Concentration as reported by analytical laboratory is less than the laboratory reporting limit.
2. µg/L = Microgram(s) per liter.
3. EPA = United States Environmental Protection Agency.
4. NS = Not sampled.
5. NA = Not analyzed. Zinc is not a part of the approved monitoring program and is not typically included in the analysis suite; however, it was identified as a potential constituent of concern in the 1997 Record of Decision (ROD) and was included in this monitoring event to assist in completing the groundwater pathway source control evaluation currently being conducted.
6. DUP = Field Duplicate.
7. Yellow highlighted cells indicate values that are equal to or exceeding 1997 ROD Groundwater Cleanup Goals for the ExxonMobil/Shore Terminals Site.
8. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, The JSCS SLV is used for comparison.
9. * = Well is screened in Deep Sand unit.
10. Data prior to December 22, 2011 were recorded and previously reported by ExxonMobil.
11. Portland Harbor JSCS SLVs = 2007 Portland Harbor Joint Source Control Strategy Screening Level Values.
12. Well KMW14 was paved over prior to the October 2017 monitoring event. In an email dated February 21, 2018, DEQ agreed that well KMW14 was not critical to monitoring the Loading Rack Area and that replacement of KMW14 was not required. Well KMW14 has been removed from the monitoring program.
13. -- = Not applicable.

Quality Assurance/Quality Control Data Qualifiers:

J = Reported result is an estimated value.

Attachment 6

Stormwater Solids Data and Rank Order Curves

Table 7

Stormwater Solids Data
 Shore Terminals, LLC–Portland Facility
 Portland, Oregon

	Units	JSCS SLV ⁴		ROD Cleanup Level for PHSS	TEF ⁹	OWS-WP-78 (Catch Basins PS01A and PS12) 11/8/2012	
		MacDonald PECs and other SQVs	DEQ 2007 Bioaccumulative Sediment SLVs			Concentration	Qualifier
		Toxicity	Bioaccumulation				
Metals by EPA Method 200/7470							
Aluminum	mg/kg	--	--	--	--	4,800	--
Antimony	mg/kg	64	--	--	--	5.75	--
Arsenic	mg/kg	33	7	3	--	2.31	--
Barium	mg/kg	--	--	--	--	--	--
Cadmium	mg/kg	5	1	0.51	--	1.87	--
Chromium	mg/kg	111	--	--	--	26.9	--
Copper	mg/kg	149	--	359	--	99.8	--
Lead	mg/kg	128	17	196	--	86.8	--
Manganese	mg/kg	1,100	--	--	--	223	--
Mercury	mg/kg	1.1	0.07	0.085	--	0.0199	--
Nickel	mg/kg	48.6	--	--	--	18	--
Selenium	mg/kg	5	2	--	--	--	--
Silver	mg/kg	5	--	--	--	0.207	--
Zinc	mg/kg	459	--	459	--	632	--
Polycyclic Aromatic Hydrocarbons (PCBs) as Aroclors by EPA Method 8082							
Aroclor 1016	µg/kg	0.53	--	--	--	<0.102	U
Aroclor 1221	µg/kg	--	--	--	--	<0.102	U
Aroclor 1232	µg/kg	--	--	--	--	<0.102	U
Aroclor 1242	µg/kg	--	--	--	--	<0.102	U
Aroclor 1248	µg/kg	1.5	--	--	--	<0.102	U
Aroclor 1254	µg/kg	0.3	--	--	--	<0.102	U
Aroclor 1260	µg/kg	0.2	--	--	--	<0.102	U
Aroclor 1262	µg/kg	--	--	--	--	<0.102	U
Aroclor 1268	µg/kg	--	--	--	--	<0.102	U
Total PCBs	µg/kg	0.676	0.00039	9	--	<0.102	U
Polycyclic Aromatic Hydrocarbons by EPA Method 8270SIM							
1-Methylnaphthalene	mg/kg	--	--	--	--	--	--
2-Methylnaphthalene ¹	mg/kg	200	--	--	--	--	--
Acenaphthene ¹	mg/kg	300	--	--	--	167	--
Acenaphthylene ¹	mg/kg	200	--	--	--	93.3	--
Anthracene ¹	mg/kg	845	--	--	--	300	--
Benzo(a)anthracene ^{2,3}	mg/kg	1,050	--	--	0.1	1,430	J3
Benzo(a)pyrene ³	mg/kg	1,450	--	--	1	1,950	--
Benzo(b)fluoranthene ^{2,3}	mg/kg	--	--	--	0.1	2,840	--
Benzo(g,h,i)perylene ²	mg/kg	300	--	--	0.01	1,940	--
Benzo(k)fluoranthene ^{2,3}	mg/kg	13,000	--	--	0.01	677	--
Carbazole	mg/kg	1,600	--	--	--	--	--
Chrysene ^{2,3}	mg/kg	1,290	--	--	0.001	2,000	J3
Dibenz(a,h)anthracene ³	mg/kg	1,300	--	--	1	693	--
Fluoranthene ²	mg/kg	2,230	37,000	--	--	4,130	J3
Fluorene ¹	mg/kg	536	--	--	--	163	--
Indeno(1,2,3-cd)pyrene ³	mg/kg	100	--	--	0.1	1,730	J3
Naphthalene ¹	mg/kg	561	--	--	--	70	J3
Phenanthrene ¹	mg/kg	1,170	--	--	--	2,200	J3
Pyrene ²	mg/kg	1,520	1,900	--	--	3,490	J3
Total LPAH	mg/kg	--	--	--	--	4,423	T
Total HPAH	mg/kg	--	--	--	--	16,507	T
Total cPAH (BaP eq)	mg/kg	--	--	12	--	3,271	T
Total PAHs	mg/kg	--	--	23,000	--	23,873	T

Please refer to notes at end of table.

Table 7

Stormwater Solids Data

Shore Terminals, LLC–Portland Facility

Portland, Oregon

	Units	JSCS SLV ⁴		ROD Cleanup Level for PHSS	TEF ⁹	OWS-WP-78 (Catch Basins PS01A and PS12) 11/8/2012	
		MacDonald PECs and other SQVs	DEQ 2007 Bioaccumulative Sediment SLVs			Concentration	Qualifier
		Toxicity	Bioaccumulation				
Phthalate Esters by EPA Method 8270B							
Bis(2-ethylhexyl)phthalate	mg/kg	800	330	135	--	3,940	--
Butyl benzyl phthalate	mg/kg	--	--	--	--	907	--
Diethyl phthalate	mg/kg	600	--	--	--	33.3	--
Dimethyl phthalate	mg/kg	--	--	--	--	19.3	J
Di-n-butyl phthalate	mg/kg	100	60	--	--	95	--
Di-n-octyl phthalate	mg/kg	--	--	--	--	70	--
Organochlorine Pesticides by EPA Method 8081B w/low MDLs							
4,4'-DDD	mg/kg	28	0.33	--	--	0.693	J
4,4'-DDE	mg/kg	31.3	0.33	--	--	<0.0695	U
4,4'-DDT	mg/kg	62.9	0.33	--	--	2.99	--
Total DDx	mg/kg	--	--	6.1	--	3.68	T
Aldrin	mg/kg	40	--	2	--	<0.176	U
alpha-BHC	mg/kg	--	--	--	--	<0.291	U
alpha-Chlordane	mg/kg	--	--	--	--	<0.073	U
beta-BHC	mg/kg	--	--	--	--	<0.165	U
Chlordane	mg/kg	17.6	0.37	--	--	<6.67	U
delta-BHC	mg/kg	--	--	--	--	<0.102	U
Dieldrin	mg/kg	61.8	0.0081	0.07	--	<0.0545	U
Endosulfan I	mg/kg	--	--	--	--	1.13	--
Endosulfan II	mg/kg	--	--	--	--	<.0535	J
Endosulfan sulfate	mg/kg	--	--	--	--	<0.0655	U
Endrin	mg/kg	207	--	--	--	<0.263	U
Endrin aldehyde	mg/kg	--	--	--	--	86.7	--
Endrin ketone	mg/kg	--	--	--	--	<0.184	U
gamma-BHC (Lindane)	mg/kg	4.99	--	5	--	<0.198	U
gamma-Chlordane	mg/kg	--	--	--	--	<0.0685	U
Total Chlordanes	mg/kg	17.6	0.37	1.4	--	--	--
Heptachlor	mg/kg	10	--	--	--	<0.161	U
Heptachlor epoxide	mg/kg	16	--	--	--	<0.128	U
Methoxychlor	mg/kg	--	--	--	--	<0.128	U
Toxaphene	mg/kg	--	--	--	--	<6.67	U
Organochlorine Pesticides by EPA Method 8081A							
4,4'-DDD	mg/kg	28	0.33	--	--	0.752	J
4,4'-DDE	mg/kg	31.3	0.33	--	--	<0.0695	U
4,4'-DDT	mg/kg	62.9	0.33	--	--	3.27	--
Total DDx	mg/kg	--	--	6.1	--	4.02	T
Aldrin	mg/kg	40	--	2	--	<0.176	U
alpha-BHC	mg/kg	--	--	--	--	<0.291	U
alpha-Chlordane	mg/kg	--	--	--	--	<0.073	U
beta-BHC	mg/kg	--	--	--	--	<0.165	U
Chlordane	mg/kg	17.6	0.37	--	--	<6.67	U
delta-BHC	mg/kg	--	--	--	--	<0.102	U
Dieldrin	mg/kg	61.8	0.0081	0.07	--	<0.0545	U

Please refer to notes at end of table.

Table 7

Stormwater Solids Data

Shore Terminals, LLC–Portland Facility

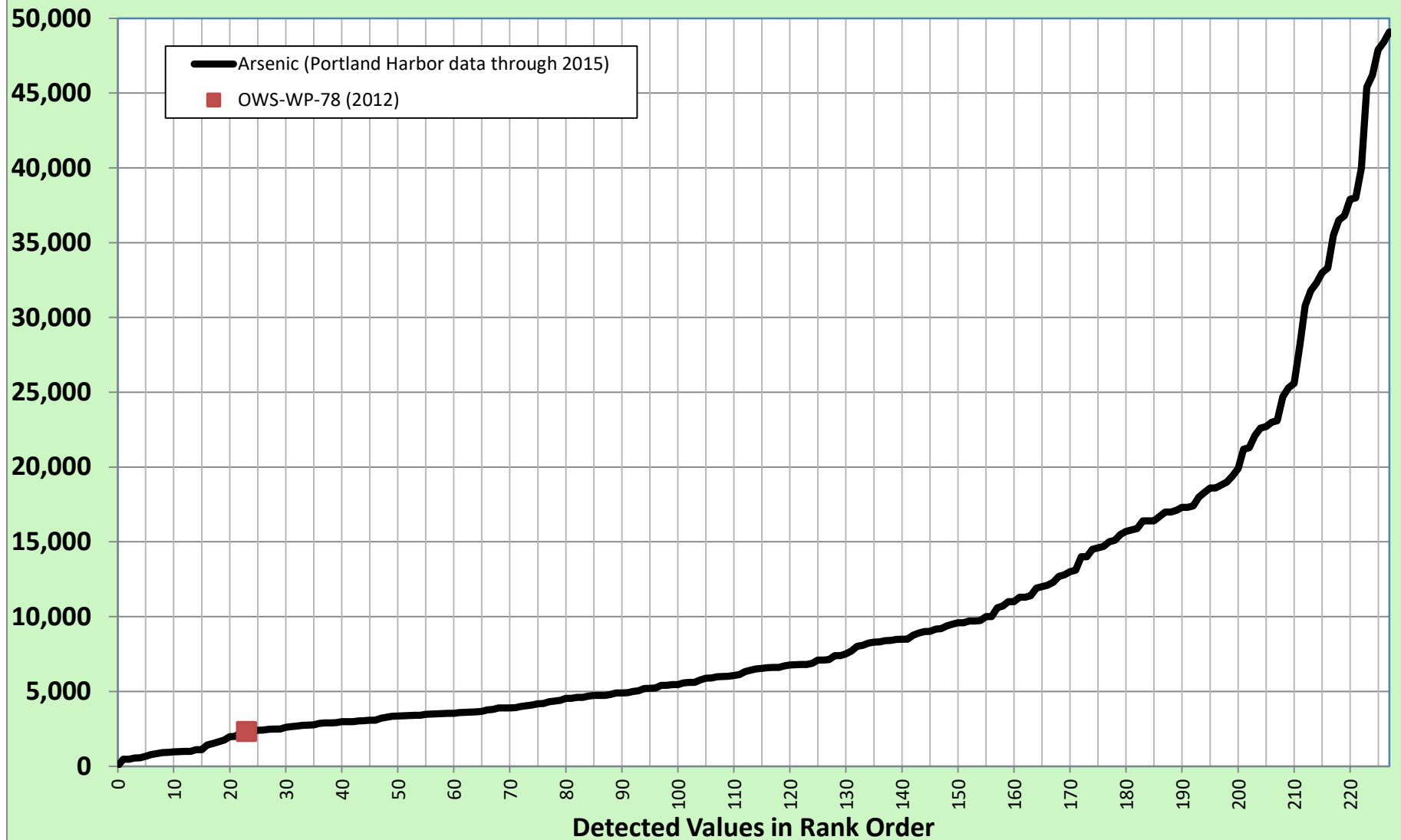
Portland, Oregon

	Units	JSCS SLV ⁴		ROD Cleanup Level for PHSS	TEF ⁹	OWS-WP-78 (Catch Basins PS01A and PS12) 11/8/2012	
		MacDonald PECs and other SQVs	DEQ 2007 Bioaccumulative Sediment SLVs			Concentration	Qualifier
		Toxicity	Bioaccumulation				
Organochlorine Pesticides by EPA Method 8081A (continued)							
Endosulfan I	mg/kg	--	--	--	--	<0.0855	U
Endosulfan II	mg/kg	--	--	--	--	1.04	J
Endosulfan sulfate	mg/kg	--	--	--	--	<0.0655	U
Endrin	mg/kg	207	--	--	--	<0.263	U
Endrin aldehyde	mg/kg	--	--	--	--	84.5	--
Endrin ketone	mg/kg	--	--	--	--	<0.184	U
gamma-BHC (Lindane)	mg/kg	4.99	--	5	--	<0.198	U
gamma-Chlordane	mg/kg	--	--	--	--	<0.0685	U
Total Chlordanes	mg/kg	--	--	1.4	--	--	--
Heptachlor	mg/kg	10	--	--	--	<0.161	U
Heptachlor epoxide	mg/kg	16	--	--	--	<0.128	U
Methoxychlor	mg/kg	--	--	--	--	<0.128	U
Toxaphene	mg/kg	--	--	--	--	<6.67	U
BTEX by EPA Method 8260B							
Benzene	mg/kg	--	--	--	--	<1.10	U
Ethylbenzene	mg/kg	--	--	--	--	<1.03	U
Toluene	mg/kg	--	--	--	--	4.3	J
m,p-Xylene	mg/kg	--	--	--	--	<1.84	U
o-Xylene	mg/kg	--	--	--	--	1.02	J,J3
Total Petroleum Hydrocarbons (TPH) by NWTPH-Dx and NWTPH-Gx							
Gasoline	mg/kg	--	--	--	--	72.9	A
Diesel	mg/kg	--	--	91	--	1,260	J3
Heavy Oil	mg/kg	--	--	--	--	2,230	A2
Total Organic Carbon by Method Plumb, et al. 1981							
Total Organic Carbon	mg/kg	--	--	--	--	32,000	--

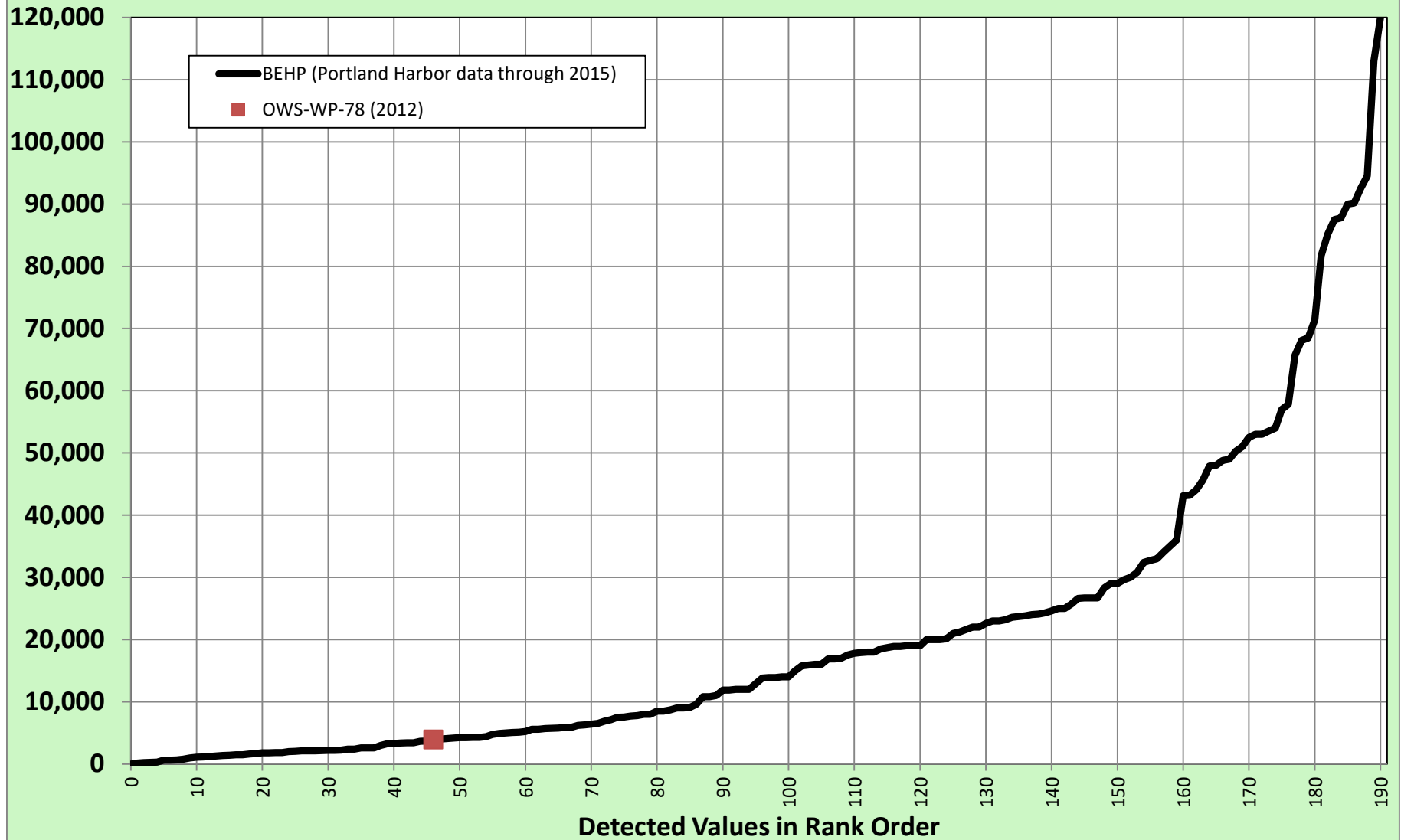
Notes:

1. Light Polycyclic Aromatic Hydrocarbon (LPAH).
2. Heavy Polycyclic Aromatic Hydrocarbon (HPAH).
3. Carcinogenic Polycyclic Aromatic Hydrocarbon (cPAH).
4. The source of each SLV is documented in Table 3.1 of the Portland Harbor Joint Source Control Strategy, which can be viewed at http://www.deq.state.or.us/lq/cu/nwr/PortlandHarbor/docs/JSCSFinalTable03_1.pdf.
5. At Portland Harbor sites, drinking water MCLs and PRGs are also used as screening levels, per the JSCS. These values are applied when they are lower than all other screening values.
6. National Pollutant Discharge Elimination System (NPDES) permit issued July 19, 2013 for discharge of treated groundwater from the Northwest Natural/Gasco remediation site.
7. SLV = Screening Level Value.
8. Cleanup Level = Cleanup level documented in the Portland Harbor Superfund Site (PHSS) ROD, which can be viewed at <https://semsub.epa.gov/work/10/100036257.pdf>.
9. TEF = Toxicity Equivalency Factor.
10. TEF is used to evaluate the toxic effects of PAHs relative to benzo(a)pyrene as discussed in Oregon DEQ Human Health Risk Assessment Guidance, which can be viewed at <http://www.oregon.gov/deq/FilterDocs/HumanHealthRiskAssessmentGuidance.pdf>.
11. **Bold** = Detected above the method reporting limit (MRL).
12. < = Not detected at or above the method detection limit (MDL) shown.
13. U = Not detected at or above the MDL shown.
14. -- = Not analyzed, not available, or not applicable.
15. Yellow shading indicates an MDL exceeding the PHSS ROD Cleanup Level; gray shading indicates a detection exceeding the PHSS ROD Cleanup Level.
16. µg/L = Micrograms per liter.
17. mg/L = Milligrams per liter.
18. J = Analyte detected below quantitation limits.
19. J3 = Analyte detected in method blank, detection in sample was less than or equal to five times the detected concentration from the method blank.
20. A2 = Sample contains a lube oil range organic not identified as a specific hydrocarbon product. The result was quantified against the lube oil calibration standard.
21. EQ = Exceedance Quotient (calculated as concentration/screening level).
22. A = Sample contains a gasoline range organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards.
23. T = Value is the sum of 6+ detected concentrations.
24. Elevated = concentration is in the "elevated range" of stormwater discharges from industrial sites as defined by JSCS guidance Appendix E.
25. Typical = concentration is in the "typical range" of stormwater discharges from industrial sites as defined by JSCS guidance Appendix E.
26. *= Dissolved analyte concentration.
27. DDD = Dichlorodiphenyldichloroethane.
28. DDE = Dichlorodiphenyldichloroethylene.
29. DDT = Dichlorodiphenyltrichloroethane.
30. Total DDD = Sum of the concentrations of DDD isomers.
31. Total DDE = Sum of the concentrations of DDE isomers.
32. Total DDT = sum of the concentrations of DDT isomers.
33. Total DDx = sum of the concentrations of 2,4 and 4,4 isomers of DDD, DDE, and DDT.

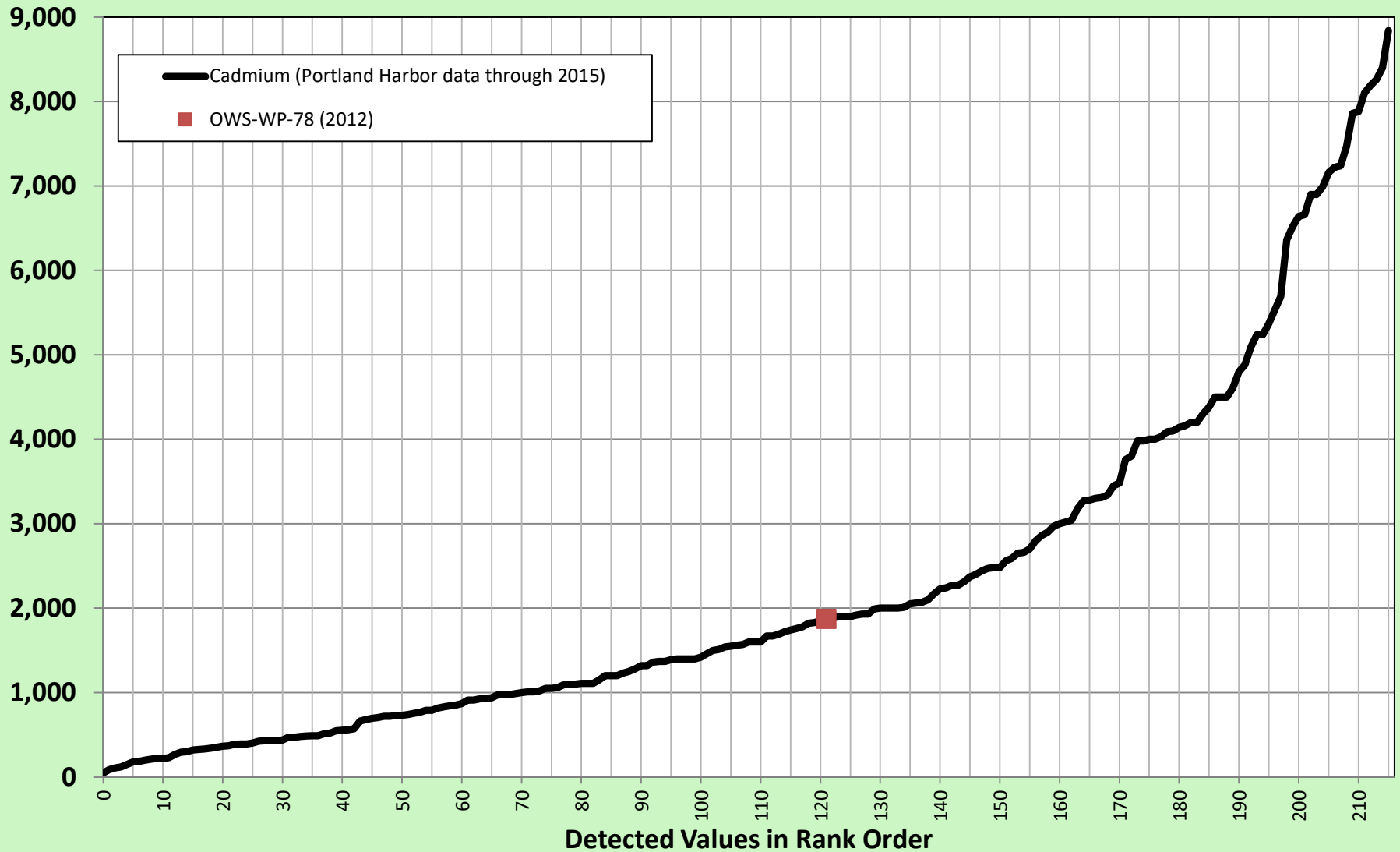
Arsenic (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



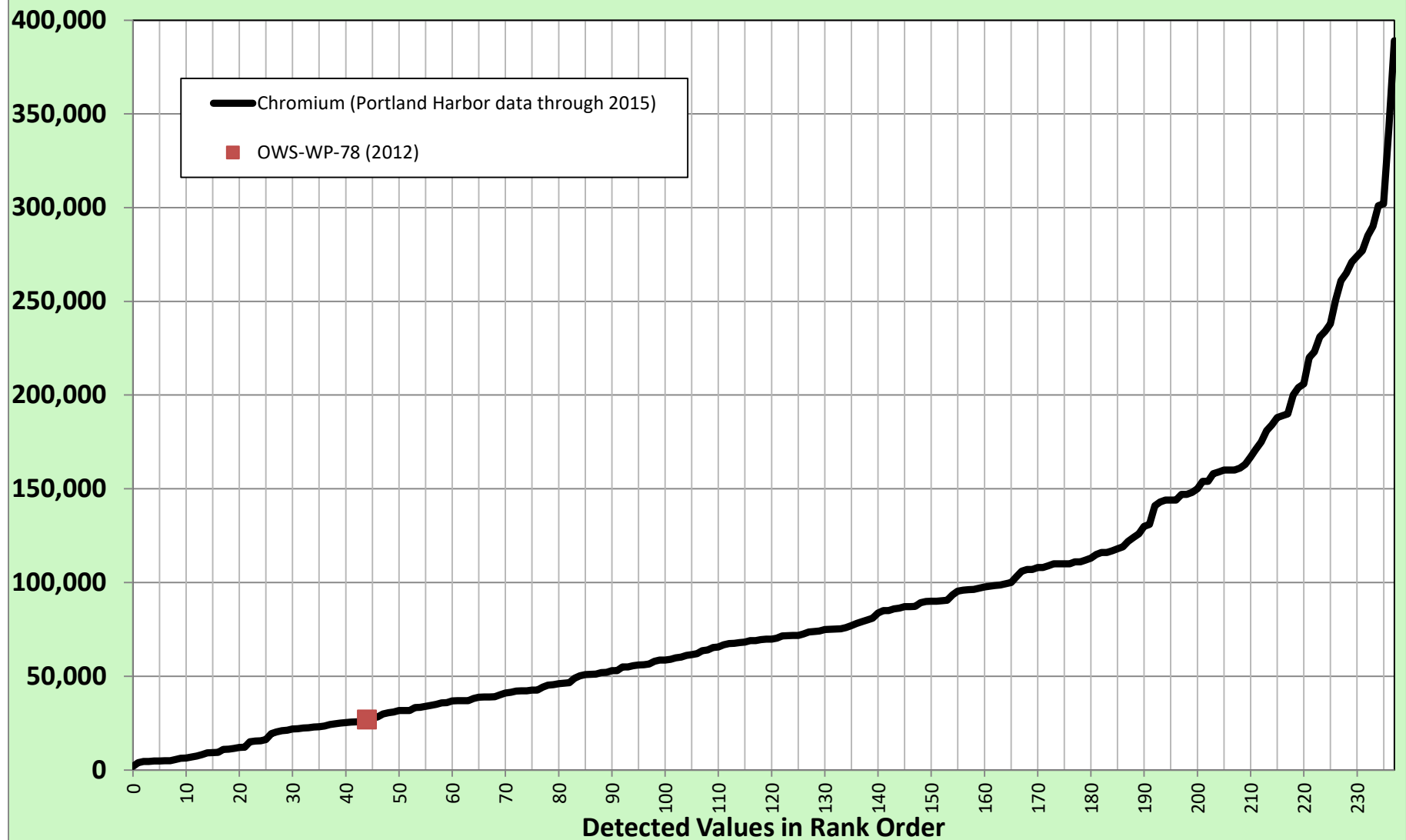
Bis(2-Ethylhexyl)phthalate (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



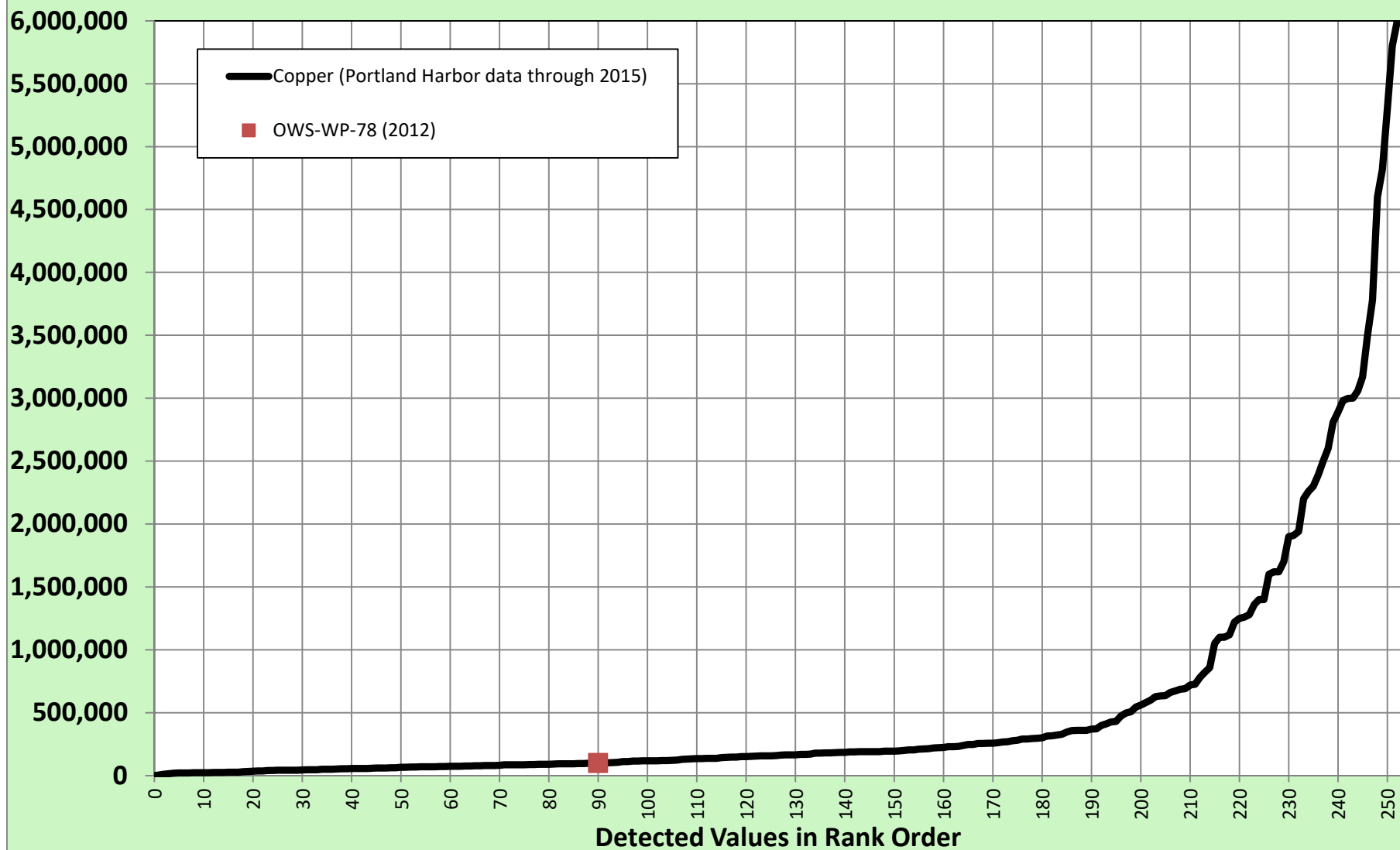
Cadmium (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



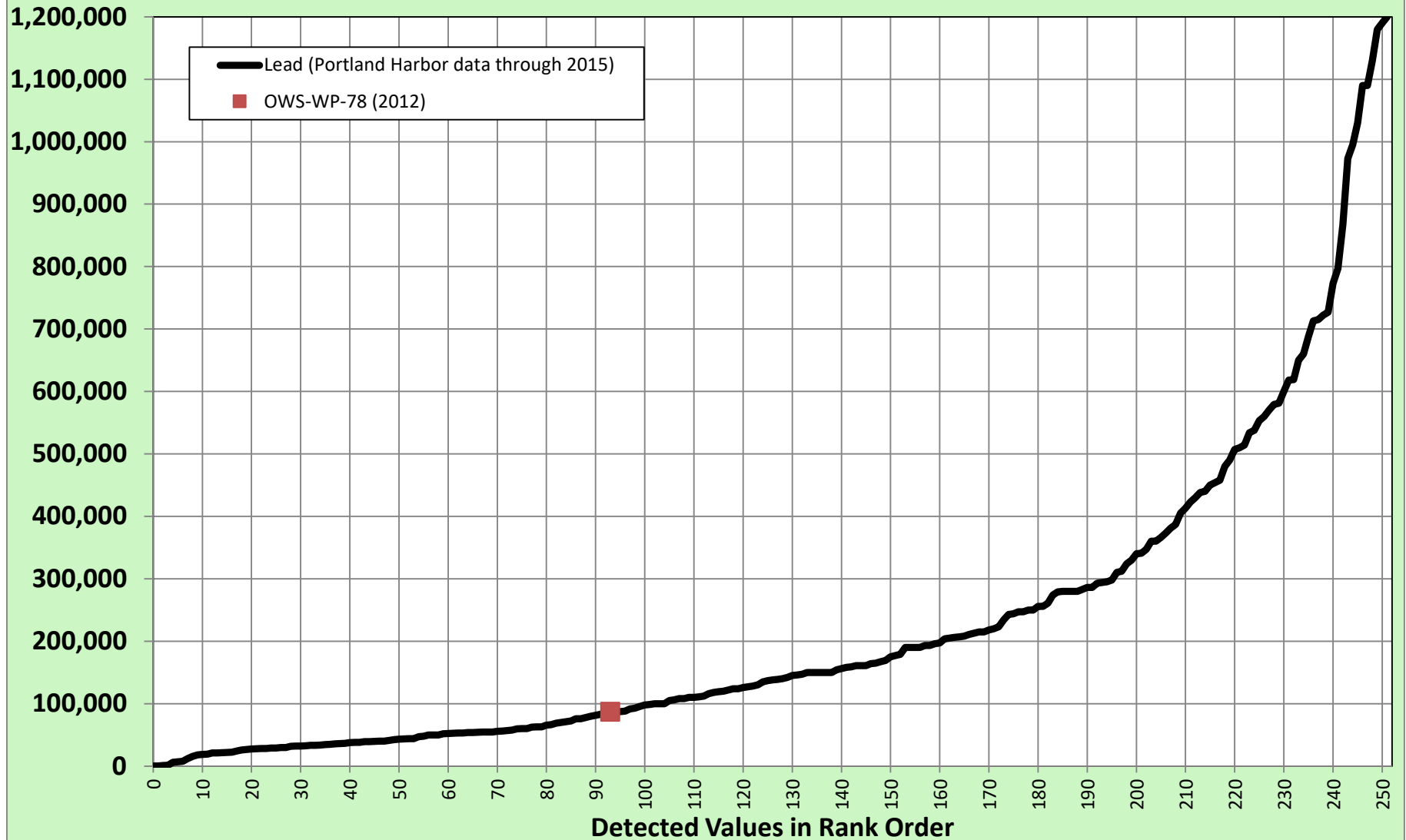
Chromium (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



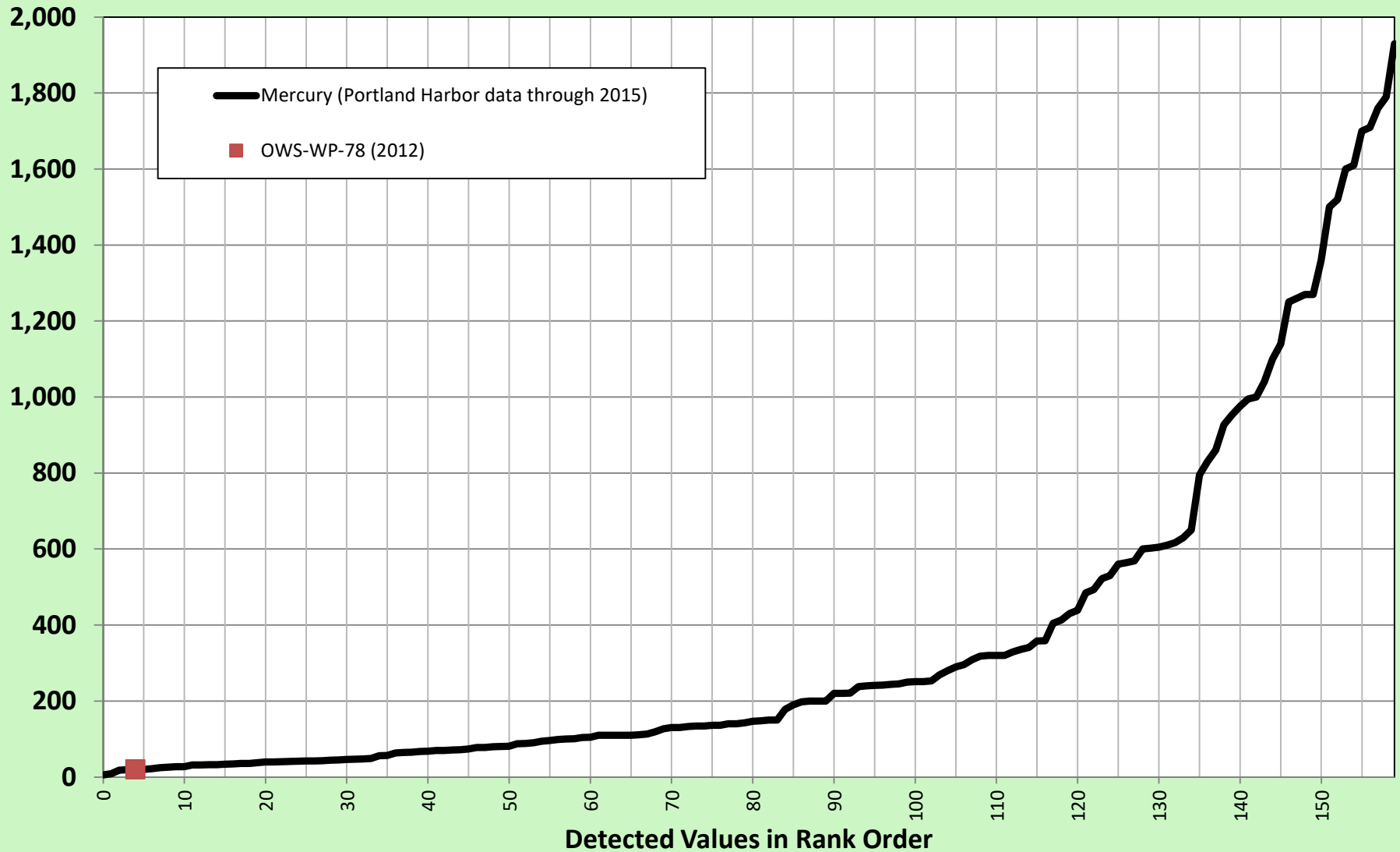
Copper (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



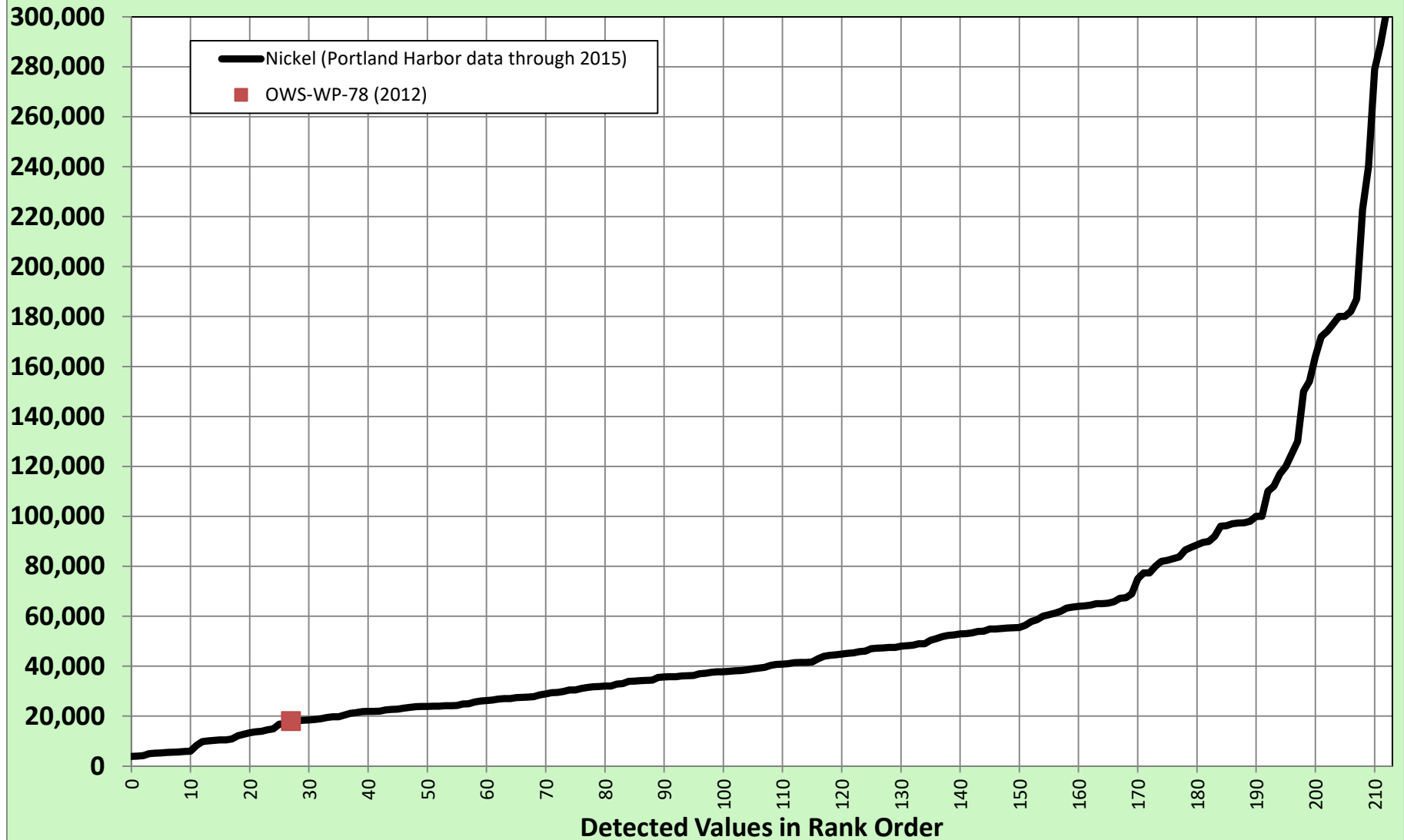
Lead (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



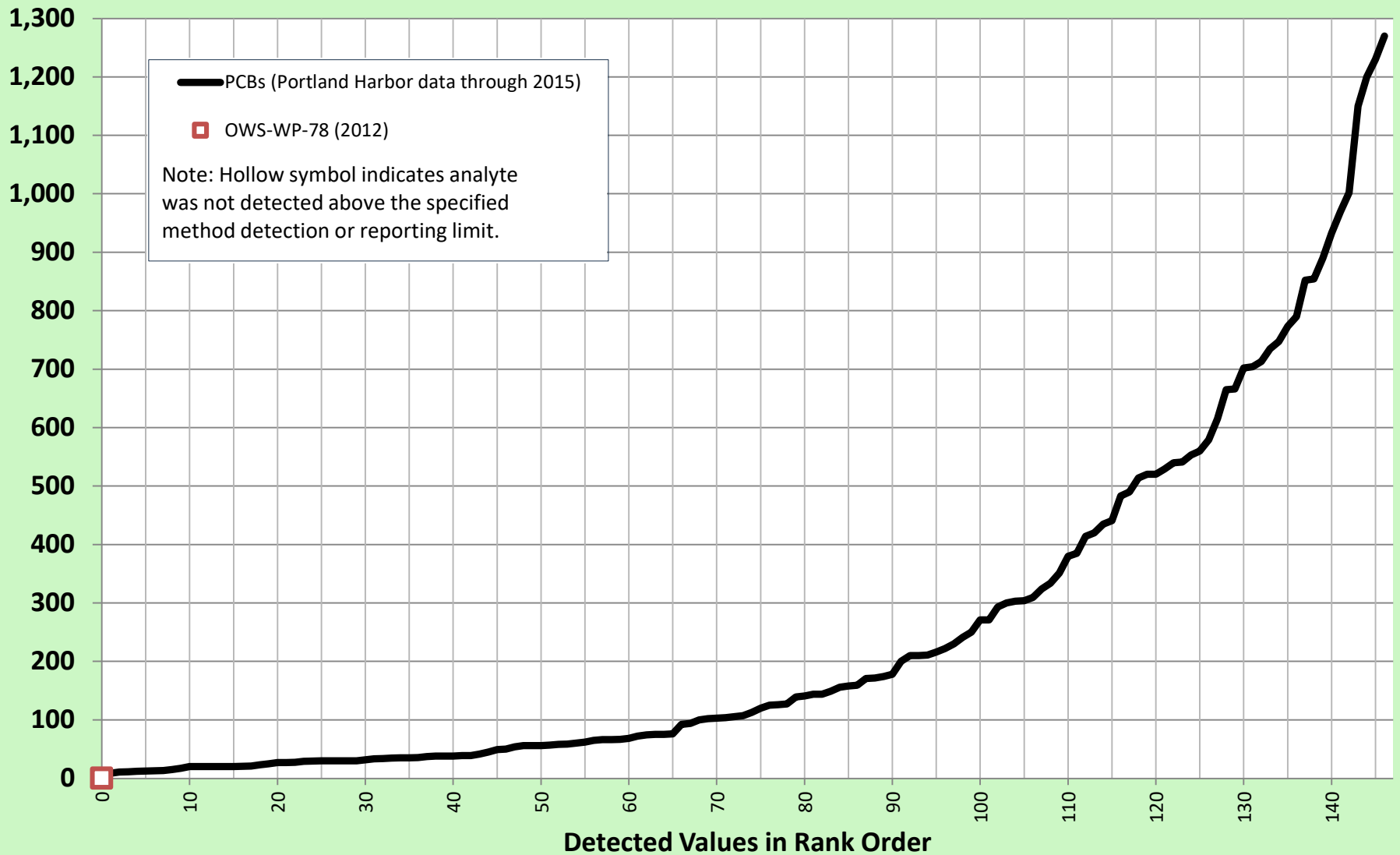
Mercury (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



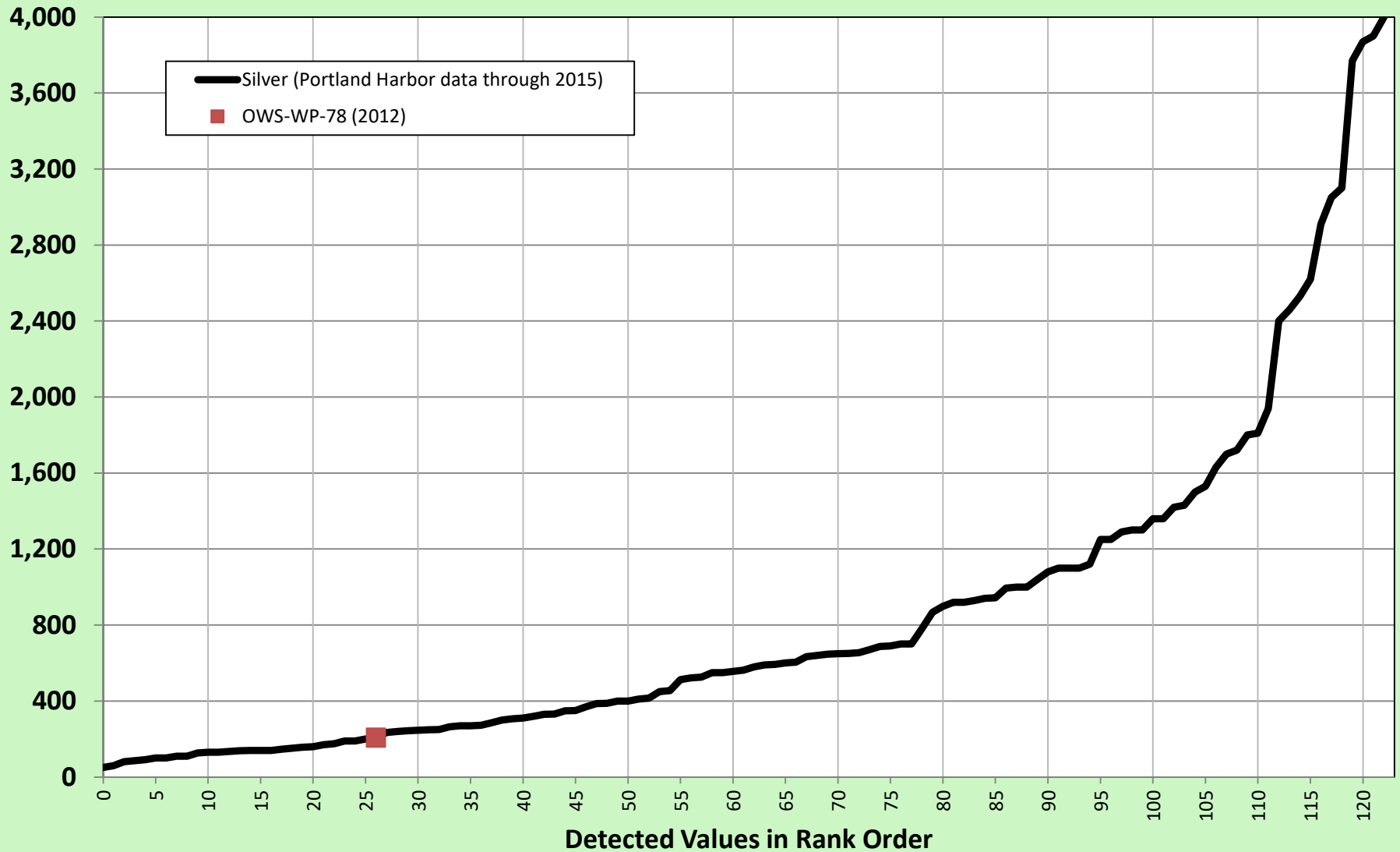
Nickel (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



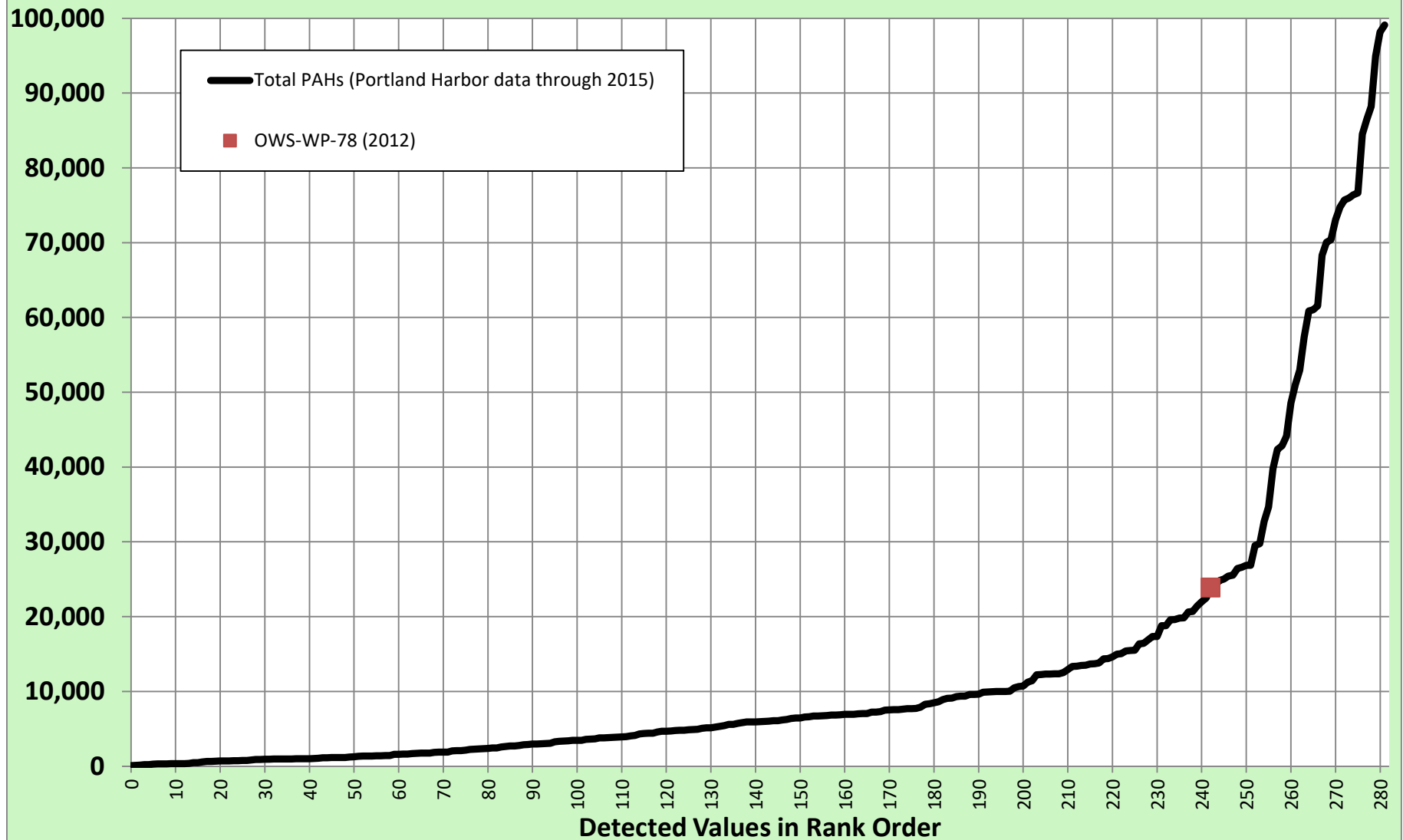
Total PCBs (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



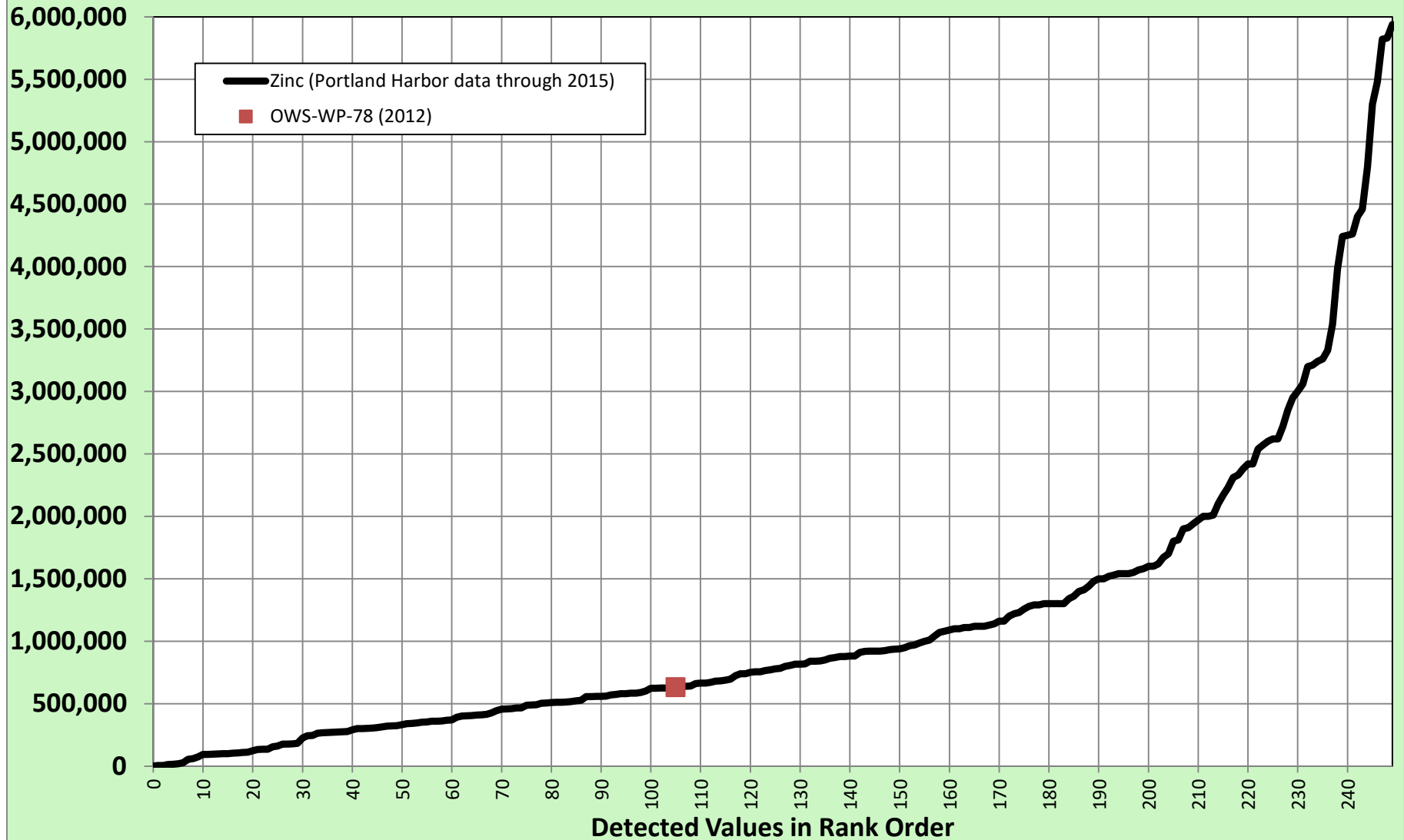
Silver (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



Total PAHs (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



Zinc (ug/kg) in Stormwater Solids at Portland Harbor Heavy Industrial Sites



Attachment 7

Stormwater Data

Table 2

Stormwater Analytical Results—Total Suspended Solids

Shore Terminals—Portland

Portland, Oregon

Location ID	Sample Date	Analytical Results (mg/L)
		TSS Concentration
Outfall WR-78	11/16/2011	11
	1/24/2012	7
	4/3/2012	5
	11/29/2012	<1.1
	4/17/2023	<5.00
Outfall WR-152	11/16/2011	5
	1/24/2012	<1.1
	4/3/2012	<1.1
	11/29/2012	<1.1
	4/17/2023	<5.00

Notes:

1. mg/L = Milligram(s) per liter.
2. Total Suspended Solids by EPA Method 160.2
3. PHSS Cleanup Levels for surface water from U.S. EPA Record of Decision Portland Harbor Superfund Site, Portland, Oregon, January 2017 are not available for TPH.
4. JSCS SLV = Screening Level Values from Portland Harbor Joint Source Control Strategy (JSCS), December 2005; not available for TPH.
5. **Bold** cells indicates that the compound was detected above the laboratory method detection limit.
6. < = Concentration as reported by analytical laboratory is less than the method detection limit.

Table 3

WR-78 and WR-152 Analytical Results—TPH

Shore Terminals–Portland

Portland, Oregon

Location ID	Sample Date	Analytical Results		
		TPHg (mg/L)	TPHd (mg/L)	TPHo (mg/L)
1997 Site ROD Cleanup Goal		--	--	--
2017 PHSS Cleanup Level		--	--	--
Portland Harbor JSCS SLV		--	--	--
		Conc.	Conc.	Conc.
Outfall WR-78	11/16/2011	0.080 J, J3	0.19	0.22 J3
	1/24/2012	0.460 J3	0.128 A1	0.160 J, J3
	4/3/2012	0.00309 A	0.355 A1, L, J3	0.29 A2, J3
	11/29/2012	<0.0108	0.0877 J3	0.119 J, J3
Outfall WR-152	11/16/2011	0.074 J, J3	<0.0788	0.197 J, J3
	1/24/2012	0.021 J, J3	0.63 J	0.90 J, J3
	4/3/2012	<0.0108	<0.76	0.141 J, J3
	11/29/2012	<0.0108	0.0714 J, J3	0.0792 J, J3

Notes:

1. mg/L = Milligram(s) per liter.
2. Total Petroleum Hydrocarbons as gasoline (TPHg) analyzed by NWTPH-Gx; TPH as diesel (TPHd) and TPH as oil (TPHo) analyzed by NWTPH-Dx.
3. PHSS Cleanup Levels for surface water from U.S. EPA Record of Decision Portland Harbor Superfund Site, Portland, Oregon, January 2017 are not available for TPH.
4. JSCS SLV = Screening Level Values from Portland Harbor Joint Source Control Strategy (JSCS), December 2005; not available for TPH.

Qualifiers:

J = Analyte detected below quantitation limits

J3 = Analyte detected in method blank, detection in sample was less than or equal to five times the detected concentration from the method blank.

A = Sample contains a gasoline range organic not identified as a specific hydrocarbon product. The result was quantified against gasoline calibration standards.

A1 = Sample contains a diesel range organic not identified as a specific hydrocarbon product. The result was quantified against the diesel calibration standards.

A2 = Sample contains a lube oil range organic not identified as a specific hydrocarbon product. The result was quantified against the lube oil calibration standard.

L = Diesel result is biased high due to amount of Diesel contained in the sample.

Table 4
WR-78 and WR-152 Analytical Results—VOCs
 Shore Terminals—Portland
 Portland, Oregon

Location ID	Sample Date	Analytical Results (µg/L)																			
		Benzene	Toluene	Ethylbenzene	m,p-Xylene	o-Xylene	Xylenes (total)	1,1,1,2- Tetrachloroethane	1,1,1,1- Trichloroethane (TCA)	1,1,1,2- Tetrachloroethane	1,1,2- Trichloroethane	1,1- Dichloroethane	1,2,3- Trichlorobenzene	1,2,3- Trichloropropane	1,2- Dichloroethane (EDC)	cis-1,2-Dichloroethylene	1,2- Dichloropropane	1,2- Dibromoethane (EDB)	1,3,5- Trimethylbenzene	2,2- Dichloropropane	2- Butanone (MEK)
2017 PHSS Cleanup Level		--	--	7.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Portland Harbor JSCS SLV		1.2	9.8	7.3	1.8	13	200	2.5	11	0.33	1.2	47	--	0.0095	0.73	61	0.97	0.033	--	--	7,100
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
WR-78	11/16/2011	<0.0135	<0.0343	<0.0648	<0.0238	0.11 J	0.11 J	<0.0495	<0.0559	<0.0759	<0.0793	<0.0223	--	<0.0679	<0.0551	0.12 J, J3	<0.0165	<0.0755	--	--	<1.48
	1/24/2012	2.99	37	4.72	30.6	15.8	46.4	<0.0495	<0.0559	0.14 J, J3	<0.0793	<0.0223	--	0.28	<0.0551	<0.035	<0.0165	<0.00755	--	--	<1.48
	4/3/2012	2.66	6.27	0.0648	2.28	12.7	14.98	<0.0495	<0.0559	<0.0759	<0.0793	<0.0223	--	<0.00068	--	<0.035	--	<0.0755	--	--	<1.48
	11/29/2012	<0.031	<0.0572	0.09	<0.186	<0.0312	--	<0.057	<0.0528	<0.148	<0.204	<0.0851	0.32	<0.167	0.09	--	<0.0964	<0.108	<0.031	<0.088	<0.333
WR-152	11/16/2011	<0.0135	<0.0343	0.12 J	<0.0238	<0.0286	<0.0286	<0.0495	<0.0559	<0.0759	<0.0793	<0.0223	--	<0.0679	<0.0551	0.035 J3	<0.0165	<0.0755	--	--	<1.48
	1/24/2012	<0.0135	0.2 J	<0.0648	0.12 J	<0.0286	0.12 J	<0.0495	<0.0559	0.18 J, J3	<0.0759	<0.0223	--	<0.0679	<0.0551	<0.035	<0.0165	<0.0755	--	--	<1.48
	4/3/2012	<0.0135	<0.0343	<0.08	<0.0238	<0.0286	<0.0286	<0.0495	<0.0559	<0.0759	<0.0793	<0.0223	--	<0.00068	--	<0.035	--	<0.0755	--	--	<1.48
	11/29/2012	<0.031	<0.0572	0.09 J, J3	<0.186	<0.0312	--	<0.057	<0.0528	<0.148	<0.204	<0.0851	0.18 J, J3	<0.167	0.1 J, J3	--	<0.0964	<0.108	<0.031	<0.088	<0.333

Notes:

- < = Concentration as reported by analytical laboratory is less than the method detection limit.
- µg/L = Microgram(s) per liter.
- Volatile Organic Compounds (VOCs) analyzed by EPA Method 8260B.
- PHSS Cleanup Levels for surface water from U.S. EPA Record of Decision Portland Harbor Superfund Site, Portland, Oregon, January 2017.
- JSCS SLV = Screening Level Values from Portland Harbor Joint Source Control Strategy (JSCS), December 2005.
- Bold** cells indicates that the compound was detected above the laboratory method detection limit.
- Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
- Light green highlighted cells indicate method detection limits (MDLs) that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.

Quality Assurance/Quality Control Data Qualifiers.

- J = Reported result is an estimated value.
 J3 = The associated batch QC was outside the established quality control range for precision.

Table 4
WR-78 and WR-152 Analytical Results—VOCs
 Shore Terminals—Portland
 Portland, Oregon

Location ID	Sample Date	Analytical Results (µg/L)																			
		2-Chlorotoluene	2-Hexanone	4-Methyl-2-Pentanone (MIBK)	Acetone	Acrylonitrile	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	sec-Butylbenzene	Carbon Disulfide	Carbon Tetrachloride	Chlorobenzene	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	cis-1,3-Dichloropropene	Dibromomethane
2017 PHSS Cleanup Level		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Portland Harbor JSCS SLV		-	99	170	1,500	0.12	-	-	1.1	8.5	8.7	-	0.92	0.51	50	0.79	23	0.17	2.1	0.055	61
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
WR-78	11/16/2011	-	<0.236	<1.1	<1.1	<0.0529	-	<0.0683	<0.0467	<0.067	<0.0672 J3	-	<0.0619	<0.059	<0.0521	-	<0.0717	0.33	0.1 J	<0.0479	<0.0781
	1/24/2012	-	<0.236	<1.1	4.3 J, J3	<0.0529	-	<0.0683	<0.0467	<0.067	<0.0672	-	<0.0619	<0.059	<0.0521	-	<0.0717	<0.0384	<0.0178	<0.0479	<0.0781
	4/3/2012	-	<0.236	<1.1	<1.1	<0.0529	-	<0.0683	<0.0467	<0.067	<0.0672	-	<0.0619	<0.059	<0.0521	-	<0.0717	<0.0384	<0.0178	<0.00479	<0.0781
	11/29/2012	<0.0247	<0.214	<0.435	1.99	<0.059	-	<0.13	<0.055	0.39	0.67	<0.0295	<0.0584	<0.0727	<0.07	-	<0.203	<0.0659	0.34	<0.077	<0.0595
WR-152	11/16/2011	-	<0.236	<1.1	<1.1	<0.0529	-	<0.0683	<0.0467	<0.067	<0.0672	-	<0.0619	<0.059	<0.0521	-	<0.0717	<0.0384	<0.0178	<0.0479	<0.0781
	1/24/2012	-	<1.1	<1.1	4.0 J, J3	<0.0529	-	<0.0683	<0.0467	<0.067	<0.0672	-	<0.0619	<0.059	<0.0521	-	<0.0717	<0.0384	<0.0178	<0.00479	<0.0781
	4/3/2012	-	<0.236	<1.1	<1.1	<0.0529	-	<0.0683	<0.0467	<0.067	<0.0672	-	<0.0619	<0.059	<0.0521	-	<0.0717	<0.0384	<0.0178	<0.00479	<0.0781
	11/29/2012	<0.0247	<0.214	<0.435	7.82 J, J3	<0.059	-	<0.13	<0.055	0.44 J, J3	0.78 J	<0.0295	<0.0584	<0.0727	<0.07	-	<0.203	0.41 J	0.38 J, J3	<0.077	<0.0595

Table 4

WR-78 and WR-152 Analytical Results—VOCs

Shore Terminals—Portland

Portland, Oregon

Location ID	Sample Date	Analytical Results (µg/L)																	
		Dichlorodifluoromethane	Isopropylbenzene	Methylene chloride	Styrene	Trichlorofluoromethane	Methyl tert-butyl ether	Tetrachloroethene (PCE)	trans-1,2-Dichloroethene	trans-1,3-Dichloropropene	Trichloroethene (TCE)	Vinyl Chloride	n-Butylbenzene	n-Propylbenzene	1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2,4-Trichlorobenzene	Hexachlorobutadiene
2017 PHSS Cleanup Level		--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Portland Harbor JSCS SLV		390	660	8.9	100	1,300	37	0.12	110	0.055	0.17	0.015	--	--	49	14	2.8	8.2	0.86
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
WR-78	11/16/2011	<0.0333	<0.0299	<3.58	<0.0261	<0.0727	<0.0862	<0.103	<0.0366	<0.0575	<0.0273	<0.0171	--	--	--	--	--	--	<0.142
	1/24/2012	<0.0333	0.65	<3.58	<0.0261	<0.0727	<0.0862	<0.0103	<0.0366	<0.00575	<0.00273	<0.00171	--	--	--	--	--	--	<0.142
	4/3/2012	<0.0333	<0.0299	<3.58	--	<0.0273	<0.0862	<0.00103	<0.0366	<0.00575	<0.0273	<0.00171	--	--	--	--	--	--	<0.142
	11/29/2012	<0.0818	<0.0361	<0.681	<0.0281	<0.0848	<0.0626	<0.0672	<0.083	<0.0393	0.1	<0.155	<0.0607	<0.0324	<0.054	<0.0655	<0.038	0.1	0.22 J, J3
WR-152	11/16/2011	<0.0333	<0.0299	<3.58	<0.0261	<0.0727	<0.0862	<0.103	<0.0366	<0.0575	<0.0273	<0.0171	--	--	--	--	--	--	<0.142
	1/24/2012	<0.0333	<0.0648	<3.58	<0.0261	<0.0727	<0.0862	<0.0103	0.0366 J	<0.00575	<0.0273	<0.00171	--	--	--	--	--	--	<0.142
	4/3/2012	<0.0333	<0.0299	<3.58	--	<0.0273	<0.0862	<0.00103	<0.0366	<0.00575	<0.0273	<0.00171	--	--	--	--	--	--	<0.142
	11/29/2012	<0.0818	<0.0361	<0.681	<0.0281	<0.0848	<0.0626	<0.0672	<0.083	<0.0393	<0.087	<0.155	<0.0607	<0.0324	<0.054	<0.0655	0.05 J, J3	<0.0872	0.16 J, J3

Table 5

WR-78 and WR-152 Analytical Results—PAHs

Shore Terminals—Portland

Portland, Oregon

Location ID	Sample Date	Analytical Results (µg/L)																			
		1-Methylnaphthalene	2-Methylnaphthalene	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(e)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	Carcinogenic PAHs	Total PAHs
2017 PHSS Cleanup Level		-	2.1	23	-	0.73	0.0012	0.00012	0.0012	0.4	0.0013	0.0013	0.00012	6.2	3.9	0.0012	12	6.3	10	0.00012	-
Portland Harbor JSCS SLV		-	0.2	0.2	0.2	-	0.018	0.018	0.018	0.2	0.018	0.018	0.018	0.2	0.2	0.018	0.2	0.2	0.2	0.00012	-
TEF							0.1	1	0.1	0.01	0.001	1			0.1						
WR-78	11/16/2011	-	0.001 J	0.003 J	0.001 J	0.001 J	0.008	0.009	0.02	0.013	0.004 J	0.01	0.003 J	0.02	0.003 J	0.009	0.007	0.009	0.019	0.016	0.140
	1/24/2012	-	0.815	0.0807 J3	<0.00671	0.0215	0.0441	0.054	0.0886	0.0678	0.012 J	0.06	0.0084 J	0.105 J3	0.0353	0.0568	0.762 J3	0.0536 J3	0.0988 J3	0.083	2.367
	4/3/2012	-	11.4	0.0546	0.0122	0.0103	0.0295	0.00176 J	0.064	0.015	0.0106	0.0415	0.00127	0.113	0.0124	0.204 J	6.44	0.0722 J3	0.0832	0.034	18.566
	11/29/2012	-	-	0.0189 J	0.00943 J	<0.008	0.0189 J, J3	0.00943 J	0.00943 J	0.00943 J, J3	<0.0073	0.00943 J	<0.00558	0.00943 J	0.00943 J	0.00943 J, J3	<0.0133	0.00943 J, J3	0.00943 J	0.013	0.149
	4/18/2022	<0.0381	<0.0381	<0.0190	<0.0190	<0.0190	<0.0190	<0.0286	<0.0286	<0.0190	<0.0286	<0.0190	<0.0190	0.0225	<0.0190	<0.0190	<0.0381	0.0196	0.0205	0.029	0.229
	11/4/2022	<0.0408	<0.0408	<0.0204	<0.0204	<0.0204	<0.0204	<0.0306	<0.0306	<0.0204	<0.0306	<0.0204	<0.0204	0.0288	<0.0204	<0.0204	<0.0408	<0.0204	0.0278	0.031	0.245
	4/17/2023	<0.0639	<0.0639	<0.0319	<0.0319	<0.0319	<0.0319	<0.0160	<0.0160	<0.0160	<0.0319	<0.0160	<0.0160	<0.0319	<0.0319	<0.160	<0.0639	<0.0639	<0.0319	0.027	0.0639
WR-152	11/16/2011	-	<0.000743	0.001 J	<0.000671	<0.00037	0.003 J	<0.000451	0.001 J	<0.000402	0.001 J	0.001 J	<0.000497	0.001 J	<0.000617	<0.000318	0.001 J	0.001 J	0.002 J	0.0004	0.014
	1/24/2012	-	0.0074 J	0.014 J, J3	<0.00670	0.0069 J	<0.00738	0.0051 J	<0.00374	<0.00402	<0.000731	0.0075 J	<0.00497	0.015 J, J3	0.0071 J	0.0053 J	0.013 J, J3	0.0017 J, J3	0.014 J, J3	0.0060	0.110
	4/3/2012	-	0.00273 J	0.00444 J	0.0117	0.00973	0.0156	0.00187 J	0.00449 J	0.0048 J	0.00822	0.00547	0.00289 J	0.0137 J	0.00236 J	0.00384 J	0.00136	0.00758 J3	0.0045	0.0070	0.105
	11/29/2012	-	-	0.00951 J	<0.00945	0.00951 J	0.00951 J, J3	0.00951 J	0.00951 J	0.00951 J, J3	<0.00736	0.00951 J	<0.00563	0.00951 J	0.00951 J	0.00951 J, J3	0.0495 J3	0.00951 J, J3	0.00951 J	0.0120	0.171
	4/18/2022	<0.0388	<0.0388	<0.0194	<0.0194	<0.0194	<0.0194	<0.0291	<0.0291	<0.0194	<0.0291	<0.0194	<0.0194	<0.0194	<0.0194	<0.0194	<0.0388	<0.0194	<0.0194	<0.0291	0.0388
	11/4/2022	<0.0377	<0.0377	<0.0189	<0.0189	<0.0189	<0.0189	<0.0283	<0.0283	<0.0189	<0.0283	<0.0189	<0.0189	<0.0189	<0.0189	<0.0189	<0.0377	<0.0189	<0.0189	<0.0283	0.0377
	4/17/2023	<0.0639	<0.0639	<0.0319	<0.0319	<0.0319	<0.0319	<0.0160	<0.0160	<0.0160	<0.0319	<0.0160	<0.0160	<0.0319	<0.0319	<0.160	<0.0639	<0.0639	<0.0319	<0.0319	0.0639

Notes:

1. PAH = Polycyclic aromatic hydrocarbons.
2. < = Concentration as reported by analytical laboratory is less than the method detection limit.
3. -- = not analyzed or concentration does not exceed the PHSS Cleanup Level or JSCS SLV.
4. µg/L = Micrograms per liter.
5. PHSS Cleanup Levels for surface water from U.S. EPA Record of Decision Portland Harbor Superfund Site, Portland, Oregon, January 2017.
6. JSCS SLV = Screening Level Values from Portland Harbor Joint Source Control Strategy (JSCS), December 2005.
7. **Bold** cells indicates that the compound was detected above the laboratory method detection limit.
8. Gray highlighted cells indicate the screening value used to screen and the results that are equal to or exceeding the screening level. PHSS Cleanup Levels are used; if a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
9. Light green highlighted cells indicate method detection limits (MDLs) that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
10. Polycyclic aromatic hydrocarbons analyzed by EPA Method 8270 with selective ion monitoring.
11. TEF = Toxic equivalency factor.
12. TEF is used to evaluate the toxic effects of PAHs relative to benzo(a)pyrene as discussed in Oregon DEQ Human Health Risk Assessment Guidance, which can be viewed at <http://www.oregon.gov/deq/FilterDocs/HumanHealthRiskAssessmentGuidance.pdf>

Quality Assurance/Quality Control Data Qualifiers:

- J = Reported result is an estimated value.
- J3 = The associated batch QC was outside the established quality control range for precision.

Table 6

NuStar-owned Outfalls WR-78 and WR-152 Analytical Results—Dissolved Metals

Shore Terminals—Portland

Portland, Oregon

Location ID	Sample Date	Analytical Results (µg/L)												
		Aluminum	Antimony	Arsenic	Cadmium	Total Chromium	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Zinc
1997 Site ROD Cleanup Goal		--	--	5.0	--	--	12	3.2	--	--	--	--	--	--
2017 PHSS Cleanup Level		--	--	0.018	--	100	2.74	--	--	--	--	--	36.5	
Portland Harbor JCS SLV		50	6	0.045	0.094	100	2.7	0.54	50	0.77	16	5	0.12	36
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
WR-78	11/16/2011	5.9 J	0.38 J	0.281	0.258	0.228	2.54	0.137	7.43	<0.01	1.18	--	<0.005	112
	1/24/2012	172	0.27 J	0.485	0.147	0.317	2.55	1.87	16.8	<0.01	0.655	--	0.0062	74.6
	4/3/2012	214	0.211 J	0.866	0.212	0.414	3.38	2.12	31.8	<0.1	0.813	--	0.02 J	91.1
	11/29/2012	144	0.26 J	0.53	0.139	2.01	2.63	7.62	22.9	<0.0114	0.97	--	<0.005	55
	4/18/2022	151	--	<1.00	--	--	--	--	--	--	--	--	--	52.1
	11/4/2022	1,500	--	1.34	--	--	--	--	--	--	--	--	--	64.1
	4/17/2023	214	--	<1.00	--	--	--	--	--	--	--	--	--	47.4
WR-152	11/16/2011	6.2 J	0.09 J	0.533	<0.0209	0.658	1.61	1.14	6.85	<0.01	0.38 J	--	<0.006	84.3
	1/24/2012	160	0.075 J	0.161	0.031 J	0.335	1.34	0.34	6.61	<0.01	0.33 J, J3	--	0.085	76.6
	4/3/2012	42.7	<0.5	0.179	0.036 J	0.207	0.856	0.115	5.69	<0.1	0.768 J	--	0.025	58
	11/29/2012	66.2	0.14 J	0.343	0.0149	0.32	1.38	0.246	3.2	<0.0114	0.331 J	--	<0.005	57.5
	4/18/2022	--	--	<1.00	--	--	--	--	--	--	--	--	--	46.7
	11/4/2022	56.6	--	<1.00	--	--	--	--	--	--	--	--	--	71.3
	4/17/2023	--	--	<1.00	--	--	--	--	--	--	--	--	--	17.8

Notes:

- < = Concentration as reported by analytical laboratory is less than the method detection limit.
- µg/L = Microgram(s) per liter.
- Total Metals analyzed by EPA Method 6020.
- PHSS Cleanup Levels for surface water from U.S. EPA Record of Decision Portland Harbor Superfund Site, Portland, Oregon, January 2017.
- JCS SLV = Screening Level Values from Portland Harbor Joint Source Control Strategy (JCS), December 2005.
- Bold** cells indicates that the compound was detected above the laboratory method detection limit.
- Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level; light green highlighting indicates the MDL exceeds the PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JCS SLV is used for comparison.
- = not analyzed or concentration does not exceed the PHSS Cleanup Level or JCS SLV.

Quality Assurance/Quality Control Data Qualifiers

J = Reported result is an estimated value.

Table 7

NuStar-owned Outfalls WR-78 and WR-152 Analytical Results—Organochlorine P
 Shore Terminals—Portland
 Portland, Oregon

Location ID	Sample Date	Analytical Results (µg/L)														
		α - BHC	β - BHC	γ - BHC (Lindane)	δ - BHC	Heptachlor	Heptachlor epoxide	Aldrin	Chlordane	Endosulfan alpha	Endosulfan beta	Endosulfan sulfate	Dieldrin	Endrin	Endrin aldehyde	Endrin ketone
2017 PHSS Cleanup Level		-	-	-	-	-	-	0.0000077	-	-	-	-	-	-	-	-
Portland Harbor JSCS SLV		0.0049	0.017	0.052	0.037	0.000079	0.000039	0.00005	0.00081	0.051	0.051	89	0.0042	0.036	-	-
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
WR-78	11/16/2011	<0.000025	<0.000037	<0.000036	<0.000034	<0.000053	<0.000042	<0.000006	<0.000019	<0.000036	<0.000045	<0.000051	<0.000004	<0.000052	<0.000039	<0.000045
	1/24/2012	<0.000025	<0.000037	<0.000036	<0.000034	<0.000053	<0.000042	<0.000006	<0.000019	<0.000036	<0.000045	<0.000051	<0.000004	<0.000052	<0.000039	<0.000045
	4/3/2012	<0.000025	<0.000037	<0.000036	<0.000034	<0.000053	<0.000042	<0.000006	<0.000019	<0.000036	<0.000045	<0.000051	<0.000004	<0.000052	<0.000039	<0.000045
	11/29/2012	<0.000025	<0.000037	<0.0000371	<0.000034	<0.0000198	<0.000042	<0.0000180	<0.0000189	<0.000036	<0.000045	<0.0000104	<0.00004	<0.000052	<0.00000971	<0.000011
	4/18/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/4/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/17/2023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
WR-152	11/16/2011	<0.000025	<0.000037	<0.000036	<0.000034	<0.000053	<0.000042	<0.000006	<0.000019	<0.000036	<0.000045	<0.000051	<0.000004	<0.000052	<0.000039	<0.000045
	1/24/2012	<0.000025	<0.000037	<0.000036	<0.000034	<0.000053	<0.000042	<0.000006	<0.000019	<0.000036	<0.000045	<0.000051	<0.000004	<0.000052	<0.000039	<0.000045
	4/3/2012	<0.000025	<0.000037	<0.000036	<0.000034	<0.000053	<0.000042	<0.000006	<0.000019	<0.000036	<0.000045	<0.000051	<0.000004	<0.000052	<0.000039	<0.000045
	11/29/2012	<0.000025	<0.000037	<0.000036	<0.000034	<0.000053	<0.0000129	<0.000006	<0.000019	<0.000036	<0.000045	<0.000051	<0.000004	<0.00000905	<0.000039	<0.000045
	4/18/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	11/4/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4/17/2023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- < = Concentration as reported by analytical laboratory is less than the method detection limit.
- µg/L = Microgram(s) per liter.
- Organochlorine pesticides analyzed by EPA Method 8081B.
- PHSS Cleanup Levels for surface water from U.S. EPA Record of Decision Portland Harbor Superfund Site, Portland, Oregon, January 2017.
- JSCS SLV = Screening Level Values from Portland Harbor Joint Source Control Strategy (JSCS), December 2005
- Bold** cells indicates that the compound was detected above the laboratory method detection limit.
- Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level; light green highlighting indicates the MDL exceeds the PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.

Quality Assurance/Quality Control Data Qualifiers.

- H = Sample was analyzed outside of method holding time
- T = Value is the sum of detected concentrations
- J = Analyte detected below quantitation limits

Table 7

NuStar-owned Outfalls WR-78 and WR-152 Analytical Results—Organochlorine Pest

Shore Terminals—Portland

Portland, Oregon

Location ID	Sample Date	Analytical Results (µg/L)																	
		Methoxychlor	Toxaphene	Oxy chlordane	cis - nonachlor	trans - nonachlor	2,4'-DDD	2,4'-DDE	2,4'-DDT	4,4'-DDD	4,4'-DDE	4,4'-DDT	Total DDD	Total DDE	Total DDT	Total DDx	alpha-Chlordane	gamma-Chlordane	Total Chlordanes
2017 PHSS Cleanup Level		-	-	-	-	-	0.000031	0.000018	0.000022	0.000031	0.000018	0.000022	0.000031	0.000018	0.000022	0.01	-	-	0.000081
Portland Harbor JSCS SLV		0.03	0.0002	-	-	7,100	0.00022	0.00031	0.00022	0.00022	0.00031	0.00022	0.00022	0.00031	0.00022	-	-	-	
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	
WR-78	11/16/2011	<0.000028	<0.000042	<0.000019	<0.000033	<0.000056	-	-	-	<0.000061	<0.000051	<0.000043	-	-	-	-	<0.000041	<0.00005	-
	1/24/2012	<0.000028	<0.000042	<0.000019	<0.000033	<0.000056	-	-	-	<0.000042	<0.000036	<0.000058	-	-	-	-	<0.000041	<0.00005	-
	4/3/2012	<0.000028	<0.000042	-	-	<0.000056	-	-	-	<0.000042	<0.000036	<0.000058	-	-	-	-	<0.000041	<0.00005	-
	11/29/2012	<0.000028	<0.0000189	-	-	-	-	-	-	0.0064H	<0.0000121	0.0083H	-	-	0.0083 T	0.0147 T	<0.000041	0.0056 H	0.0056 T
	4/18/2022	-	-	-	-	-	0.000030 J (1)	0.000025 J	<0.000040	0.000036 J	0.000044 J	0.000081 J	0.000066	0.000069	0.000101	0.000236	-	-	-
	11/4/2022	-	-	-	-	-	0.000223	0.000023 J	0.000151 J	0.000362	0.00022	0.00106	0.000585	0.000243	0.001211	0.002039	-	-	-
	4/17/2023	-	-	-	-	-	0.000046 J	0.000021 J	0.000073 J	0.000052 J	0.000074 J	0.000488	0.000098	0.000095	0.000561	0.000754	-	-	-
WR-152	11/16/2011	<0.000028	<0.000042	<0.000019	<0.000033	<0.000056	-	-	-	<0.000061	<0.000051	<0.000043	-	-	-	-	<0.000041	<0.00005	-
	1/24/2012	<0.000028	<0.000042	<0.000019	<0.000033	<0.000056	-	-	-	<0.000042	<0.000036	<0.000058	-	-	-	-	<0.000041	<0.00005	-
	4/3/2012	<0.000028	<0.000042	-	-	<0.000056	-	-	-	<0.000042	<0.000036	<0.000058	-	-	-	-	<0.000041	<0.00005	-
	11/29/2012	<0.0000355	<0.000042	-	-	-	-	-	-	0.0049	<0.000036	0.0092	-	-	0.0092 T	0.0141 T	<0.000041	0.0052	0.0052 T
	4/18/2022	-	-	-	-	-	<0.000020	<0.000016	<0.000040	<0.000014	<0.000012	<0.000050	<0.000020	<0.000016	<0.000050	<0.000050	-	-	-
	11/4/2022	-	-	-	-	-	<0.000020	<0.000016	<0.000040	<0.000014	0.000014 J	<0.000050	<0.000020	0.000022 J	<0.000050	0.000057	-	-	-
	4/17/2023	-	-	-	-	-	<0.000020	0.000016 J	<0.000040	<0.000014	<0.000012	0.000062 J	<0.000020	0.000022 J	0.000082	0.000114	-	-	-

Table 8**NuStar-owned Outfalls WR-78 and WR-152 Analytical Results—PCBs**

Shore Terminals—Portland

Portland, Oregon

Location ID	Sample Date	Analytical Results (µg/L)									Total PCBs
		Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	
2017 PHSS Cleanup Level		--	--	--	--	--	--	--	--	--	0.000064
Portland Harbor JSCS SLV		0.96	0.034	0.034	0.034	0.034	0.033	0.034	--	--	0.000064
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
WR-78	11/16/2011	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039
	1/24/2012	<0.00444	<0.00444	<0.00444	<0.00444	<0.00444	<0.00444	<0.00444	<0.00444	<0.00444	<0.00444
	4/3/2012	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
	11/29/2012	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037	<0.0037
WR-152	11/16/2011	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039	<0.0039
	1/24/2012	<0.00421	<0.00421	<0.00421	<0.00421	<0.00421	<0.00421	<0.00421	<0.00421	<0.00421	<0.00421
	4/3/2012	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
	11/29/2012	<0.00368	<0.00368	<0.00368	<0.00368	<0.00368	<0.00368	<0.00368	<0.00368	<0.00368	<0.00368

Notes:

- < = Concentration as reported by analytical laboratory is less than the method detection limit.
- µg/L = Microgram(s) per liter.
- PCB Aroclors by EPA Method 8082
- PHSS Cleanup Levels for surface water from U.S. EPA Record of Decision Portland Harbor Superfund Site, Portland, Oregon, January 2017.
- JSCS SLV = Screening Level Values from Portland Harbor Joint Source Control Strategy (JSCS), December 2005.
- Bold** cells indicates that the compound was detected above the laboratory method detection limit.
- Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level; light green highlighting indicates the MDL exceeds the PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
- = not analyzed or concentration does not exceed the PHSS Cleanup Level or JSCS SLV.

Table 9

NuStar-owned Outfalls WR-78 and WR-152 Analytical Results—Phthalates

Shore Terminals—Portland

Portland, Oregon

Location ID	Sample Date	Analytical Results (µg/L)					bis(2-Ethylhexyl)phthalate
		Dimethylphthalate	Diethylphthalate	Di-n-butylphthalate	Butylbenzylphthalate	Di-n-octylphthalate	
2017 PHSS Cleanup Level		--	--	--	--	--	0.2
Portland Harbor JSCS SLV		3	3	3	3	3	2.2
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
WR-78	11/16/2011	<0.277	<0.309	<0.379	<0.168	<0.150	<0.291
	1/24/2012	<0.277	<0.309	<0.379	<0.168	0.17	0.3 J
	4/3/2012	<0.277	<0.309	<0.379	<0.168	<0.379	<0.291
	11/29/2012	<0.265	<0.295	<0.362	<0.16	<0.143	0.382 J
	10/21/2021	--	--	--	--	--	<0.374
	4/18/2022	--	--	--	--	--	<0.381
	11/4/2022	--	--	--	--	--	<0.612 A-01
	4/17/2023	--	--	--	--	--	<0.399
WR-152	11/16/2011	<0.277	<0.309	<0.379	<0.168	<0.15	<0.291
	1/24/2012	<0.277	<0.309	<0.379	0.26	0.3	<0.291
	4/3/2012	<0.277	<0.309	<0.379	<0.168	<0.379	<0.291
	11/29/2012	<0.261	<0.292	<0.142	<0.158	<0.142	<0.275
	10/21/2021	--	--	--	--	--	<0.381
	4/18/2022	--	--	--	--	--	<0.388
	11/4/2022	--	--	--	--	--	<0.377
	4/17/2023	--	--	--	--	--	<0.399

Notes:

- < = Concentration as reported by analytical laboratory is less than the method detection limit.
- µg/L = Microgram(s) per liter.
- Phthalate Esters by EPA Method 8270B
- PHSS Cleanup Levels for surface water from U.S. EPA Record of Decision Portland Harbor Superfund Site, Portland, Oregon, January 2017.
- JSCS SLV = Screening Level Values from Portland Harbor Joint Source Control Strategy (JSCS), December 2005.
- Bold** cells indicates that the compound was detected above the laboratory method detection limit.
- Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
- = not analyzed or concentration does not exceed the PHSS Cleanup Level or JSCS SLV.
- A-01 = The Reporting Limit for this analyte has been raised due to the analyte being detected in the method blank.

Table 10

NuStar-owned Outfalls WR-78 and WR-152 Analytical Results—SVOCs

Shore Terminals—Portland

Portland, Oregon

Location ID	Sample Date	Analytical Results (µg/L)							
		1,2-Dichlorobenzene	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2,4-Trichlorobenzene	Hexachlorobenzene	2-Chloronaphthalene	Hexachloroethane	Hexachlorobutadiene
2017 PHSS Cleanup Level		-	-	-	-	0.000029	-	-	-
Portland Harbor JSCS SLV		49	14	2.8	8.2	0.00029	490	3.3	0.86
		Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.	Conc.
WR-78	11/16/2011	--	--	--	--	<0.18	--	<0.114	<0.142
	1/24/2012	--	--	--	--	<0.18	--	<0.114	<0.142
	4/3/2012	--	--	--	--	<0.18	--	<0.114	<0.142
	11/29/2012	<0.054	<0.0655	<0.038	0.1	-	--	--	0.22
WR-152	11/16/2011	--	--	--	--	<0.18	--	<0.114	<0.142
	1/24/2012	--	--	--	--	<0.18	--	<0.114	<0.142
	4/3/2012	--	--	--	--	<0.18	--	<0.114	<0.142
	11/29/2012	<0.054	<0.0655	0.05	<0.0872	--	--	--	0.16

Notes:

1. PAH = Polycyclic aromatic hydrocarbons.
2. < = Concentration as reported by analytical laboratory is less than the method detection limit.
3. -- = not analyzed or concentration does not exceed the PHSS Cleanup Level or JSCS SLV.
4. µg/L = Micrograms per liter.
5. PHSS Cleanup Levels for surface water from U.S. EPA Record of Decision Portland Harbor Superfund Site, Portland, Oregon, January 2017.
6. JSCS SLV = Screening Level Values from Portland Harbor Joint Source Control Strategy (JSCS), December 2005.
7. **Bold** cells indicates that the compound was detected above the laboratory method detection limit.
8. Gray highlighted cells indicate values that are equal to or exceeding PHSS Cleanup Level. If a PHSS Cleanup Level was not developed for an analyte, the JSCS SLV is used for comparison.
9. Polycyclic aromatic hydrocarbons analyzed by EPA Method 8270 with selective ion monitoring.
10. Semivolatile Organic Compounds by EPA Method 8270B

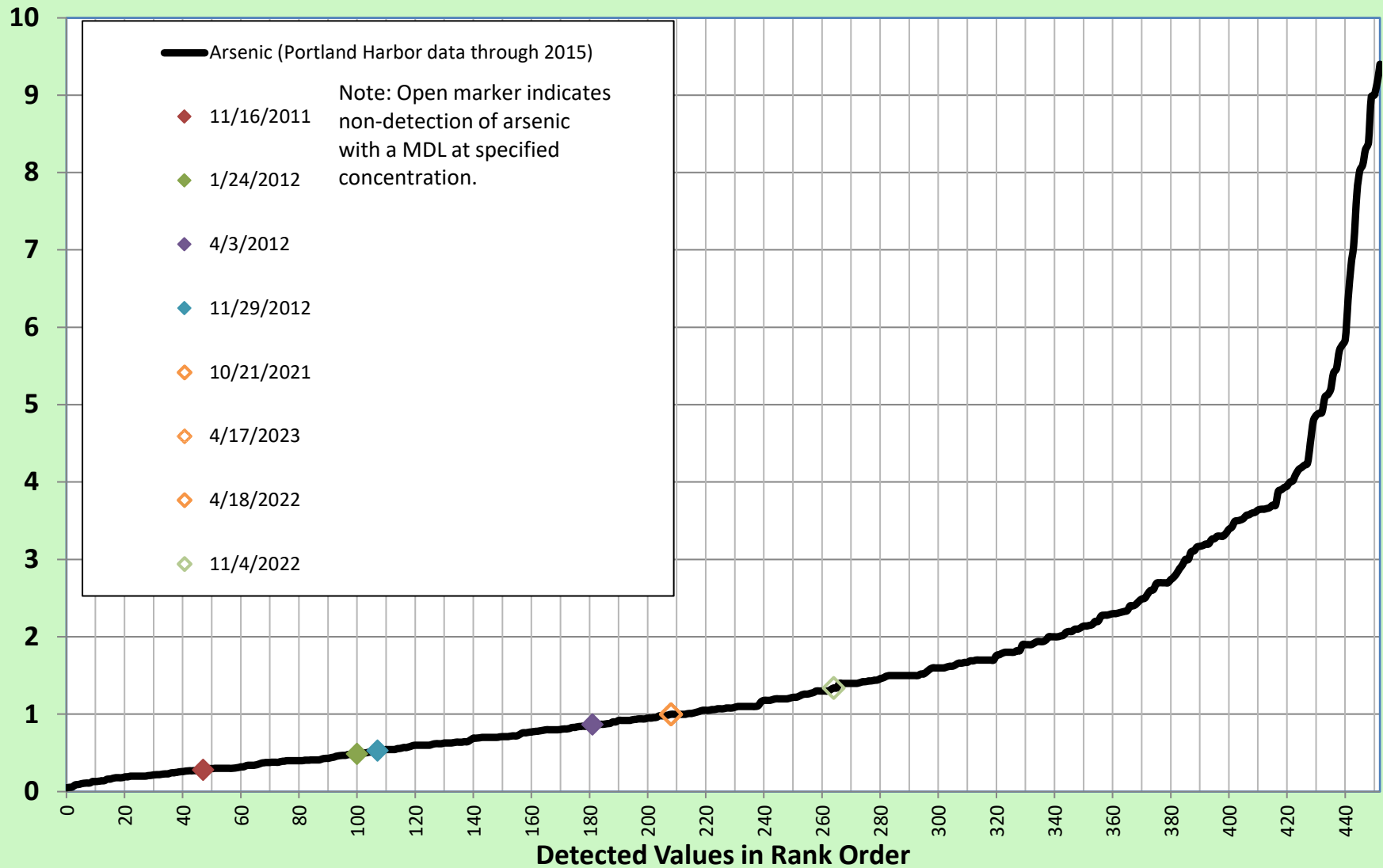
Quality Assurance/Quality Control Data Qualifiers:

- J = Reported result is an estimated value.
- J3 = The associated batch QC was outside the established quality control range for precision.

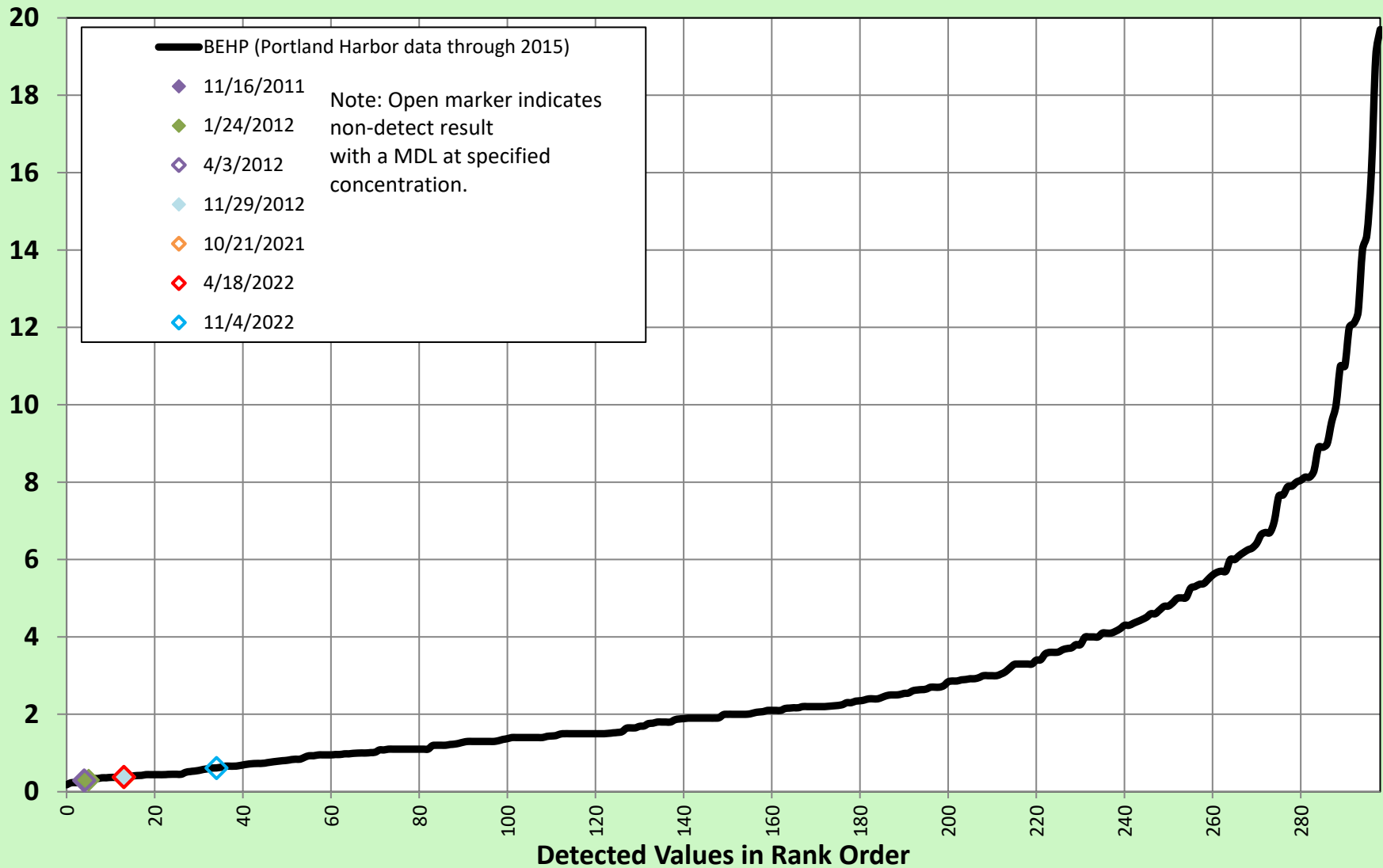
Attachment 8

Stormwater Rank Order Curves – WR-78

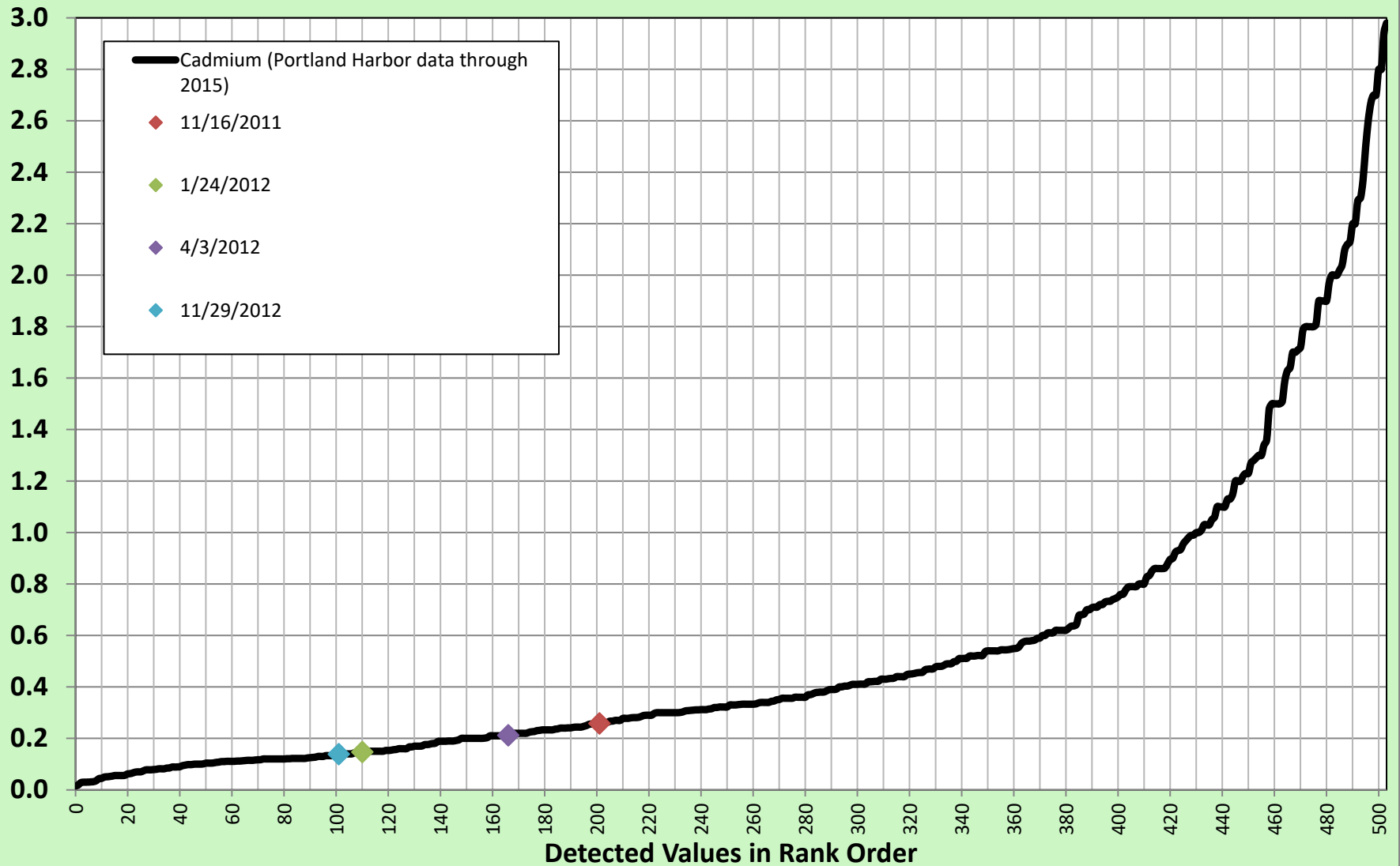
WR-78: Arsenic (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



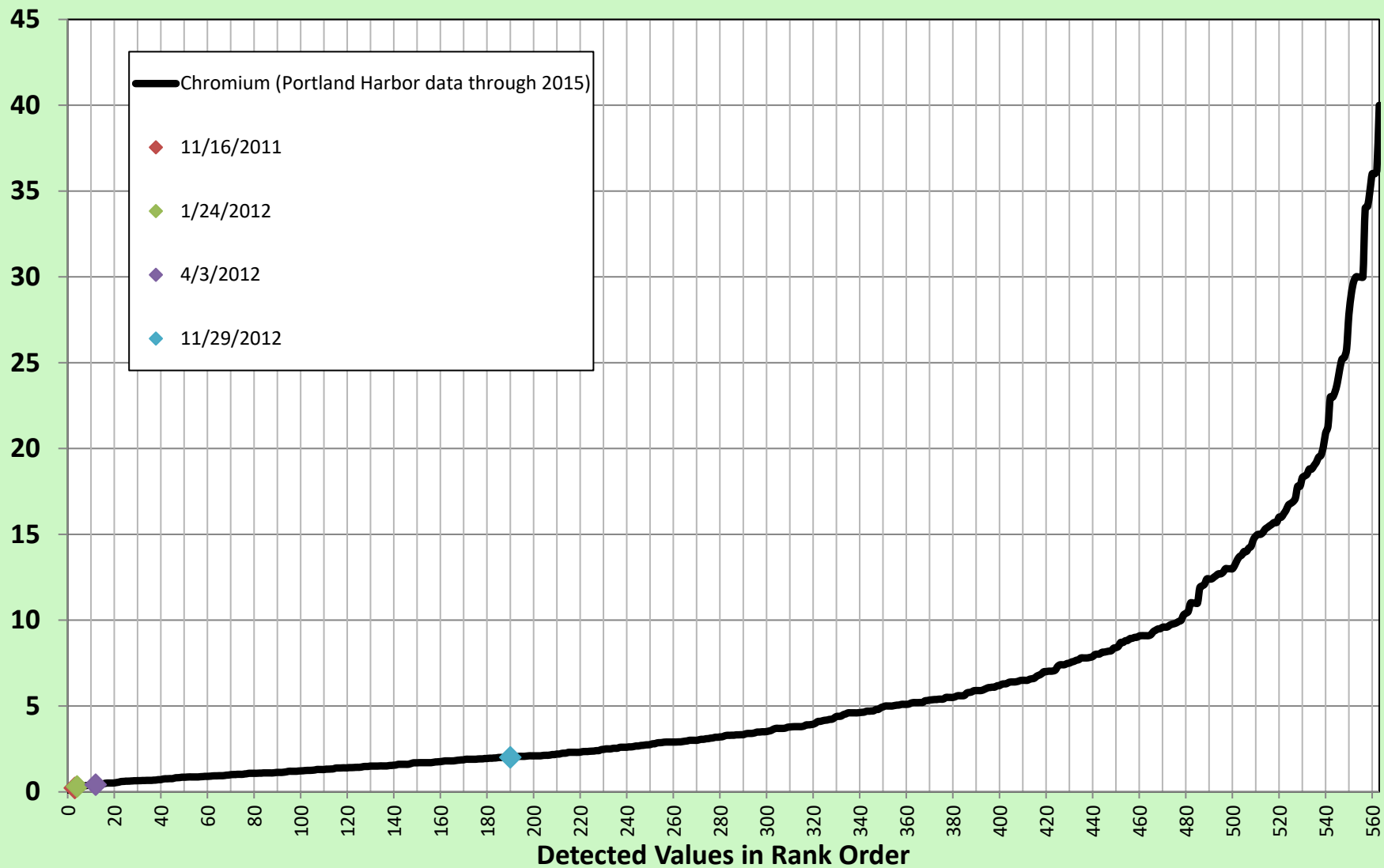
WR-78 Bis(2-Ethylhexyl)phthalate in Stormwater at Portland Harbor Heavy Industrial Sites (ug/L)



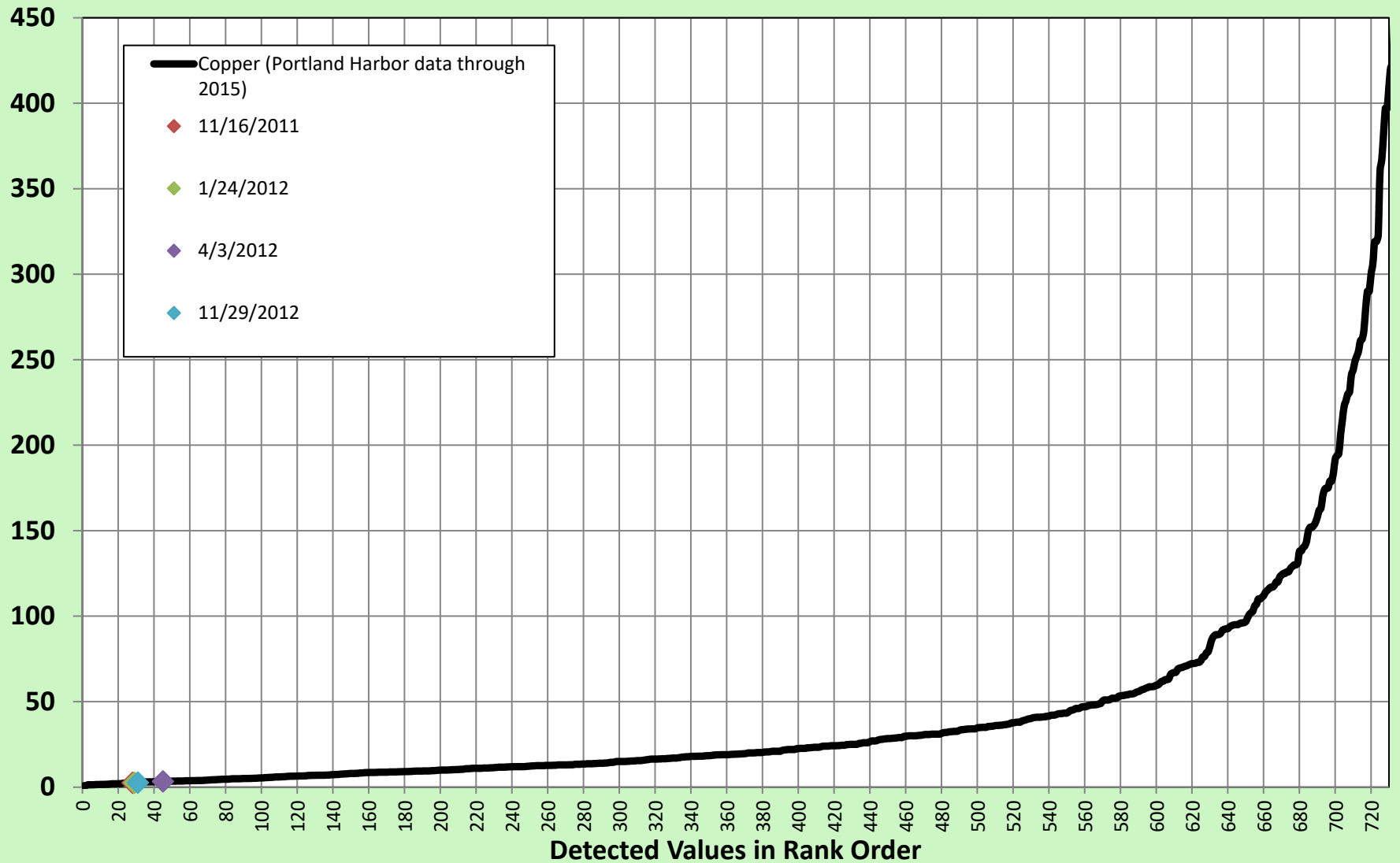
WR-78 Cadmium (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



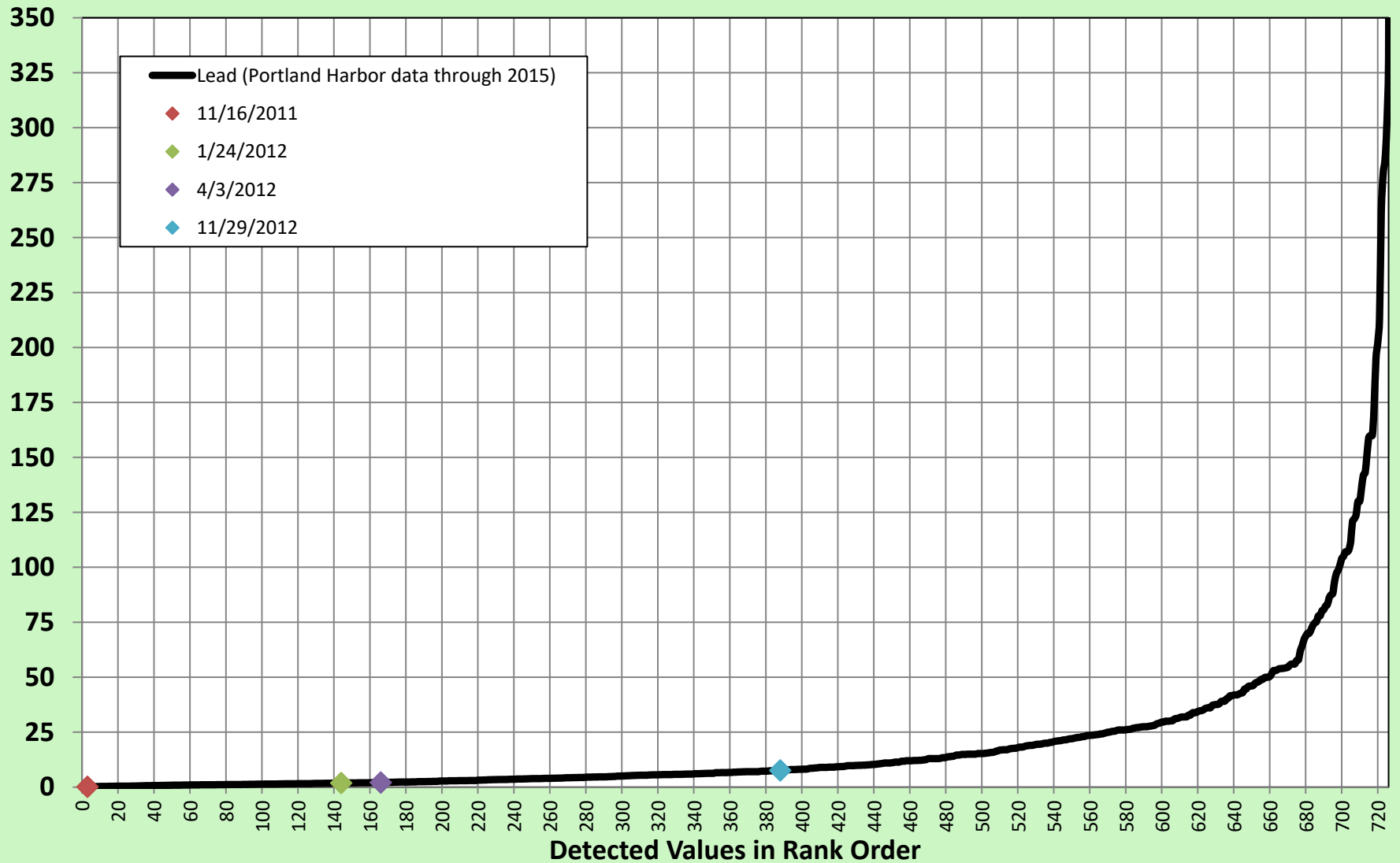
WR-78 Chromium (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



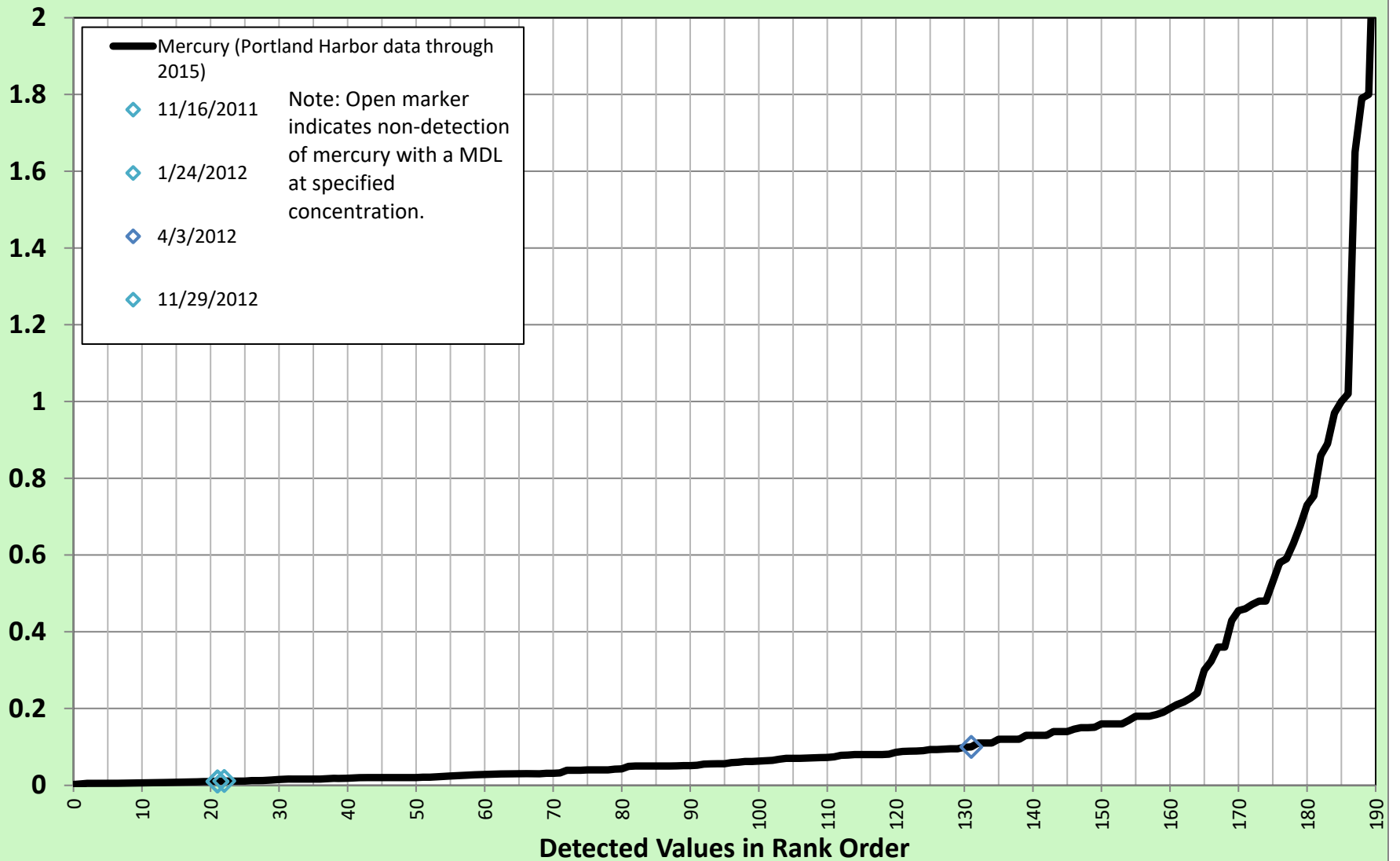
WR-78 Copper (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



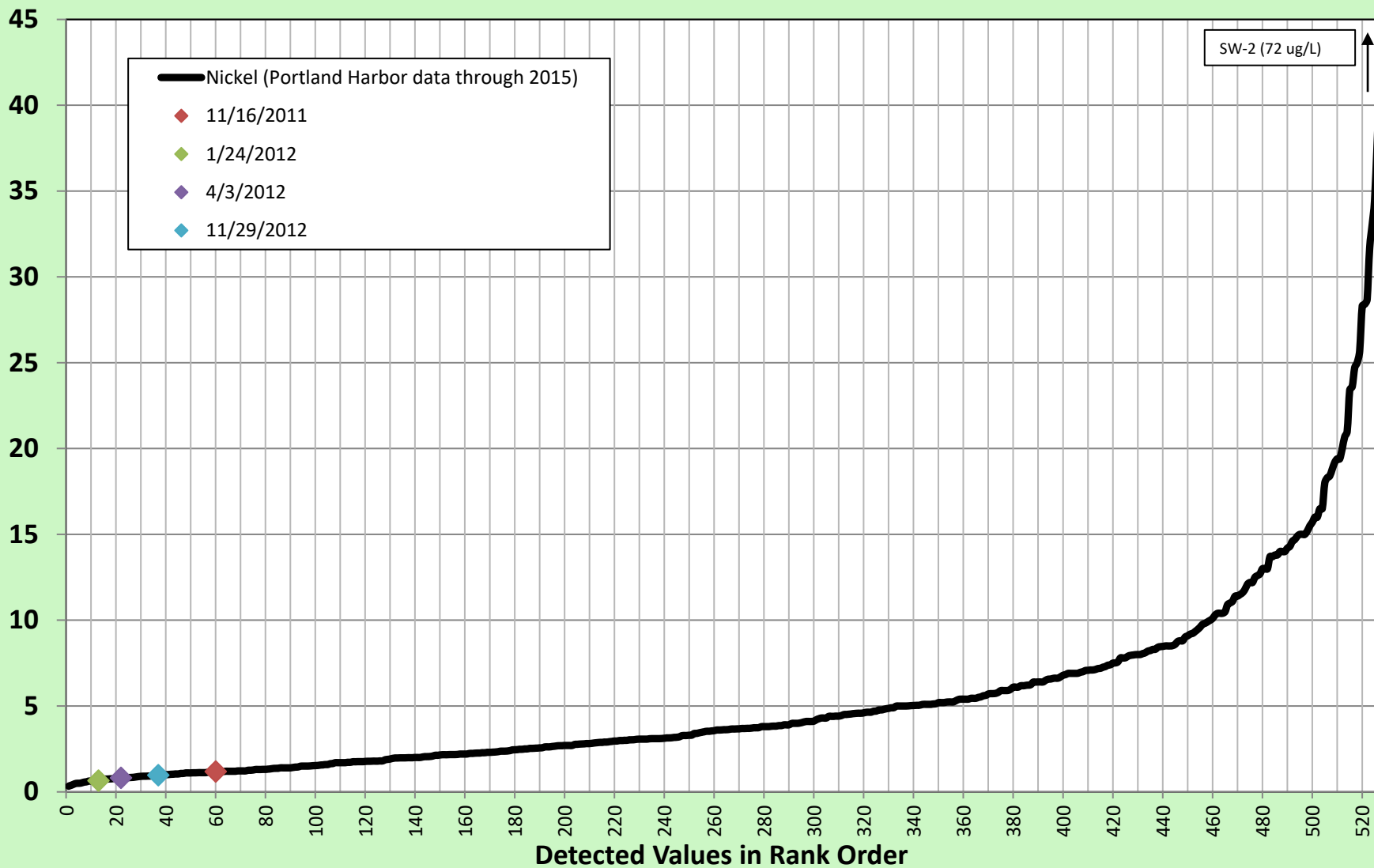
WR-78 Lead (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



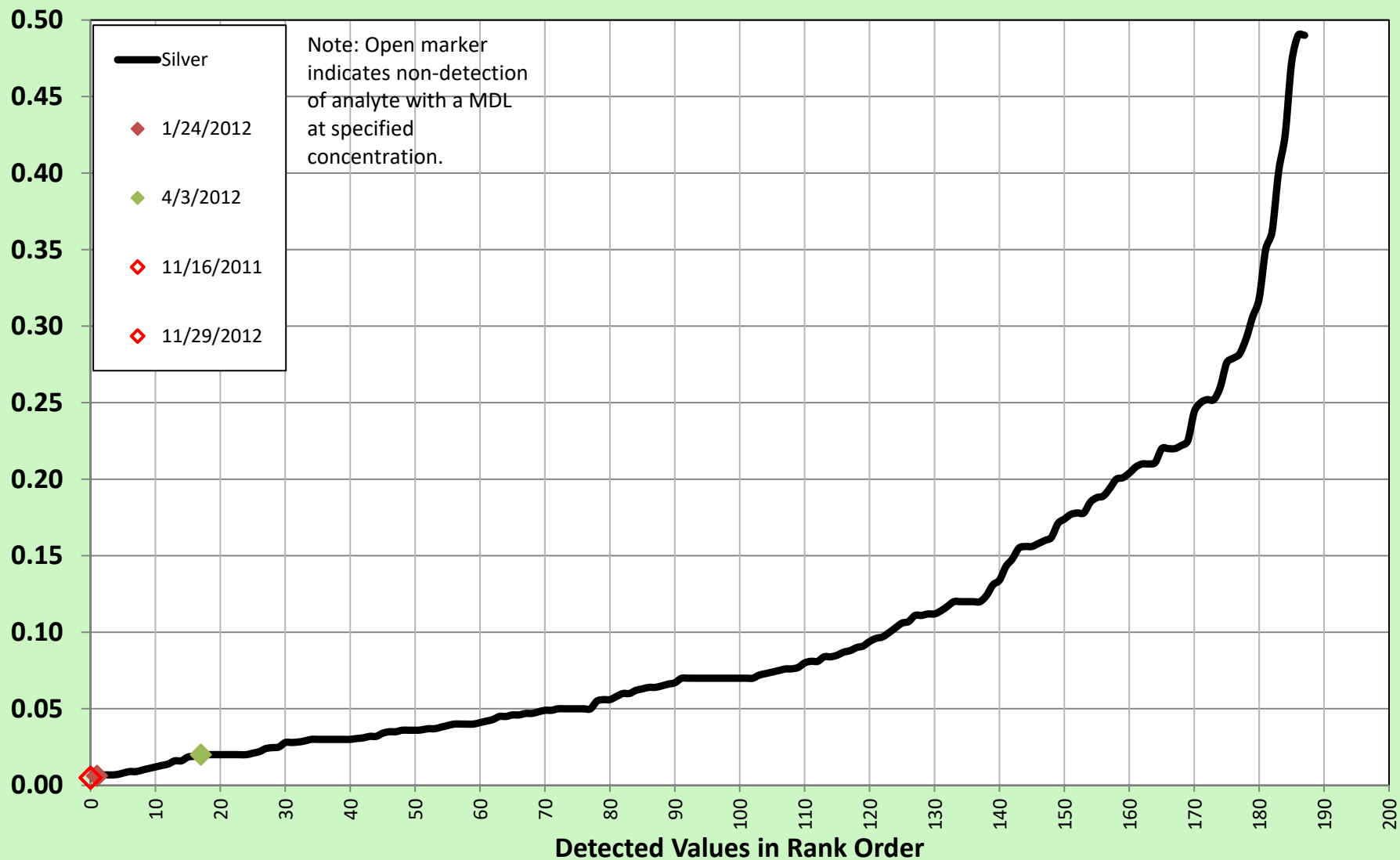
WR-78 Mercury (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



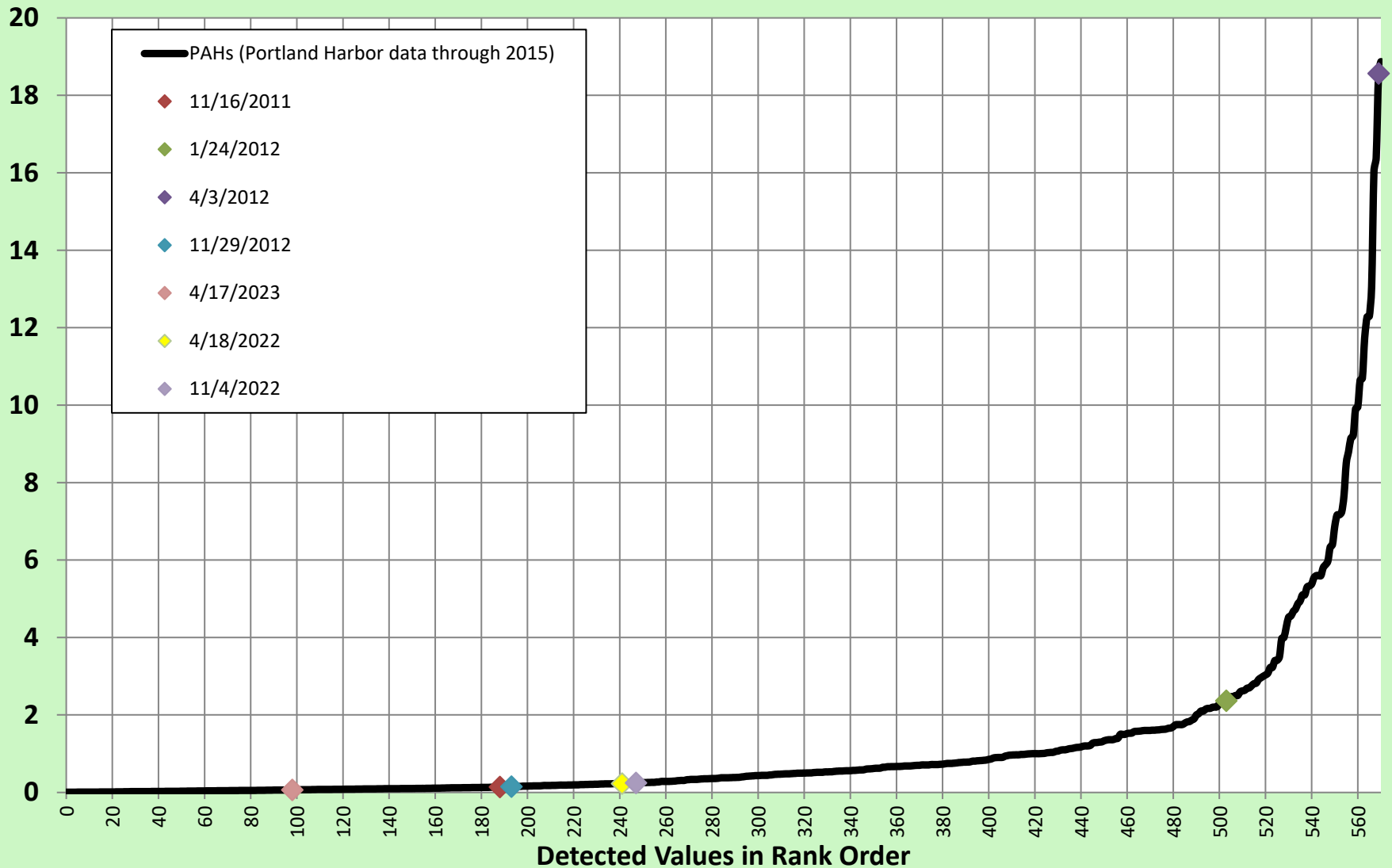
WR-78 Nickel (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



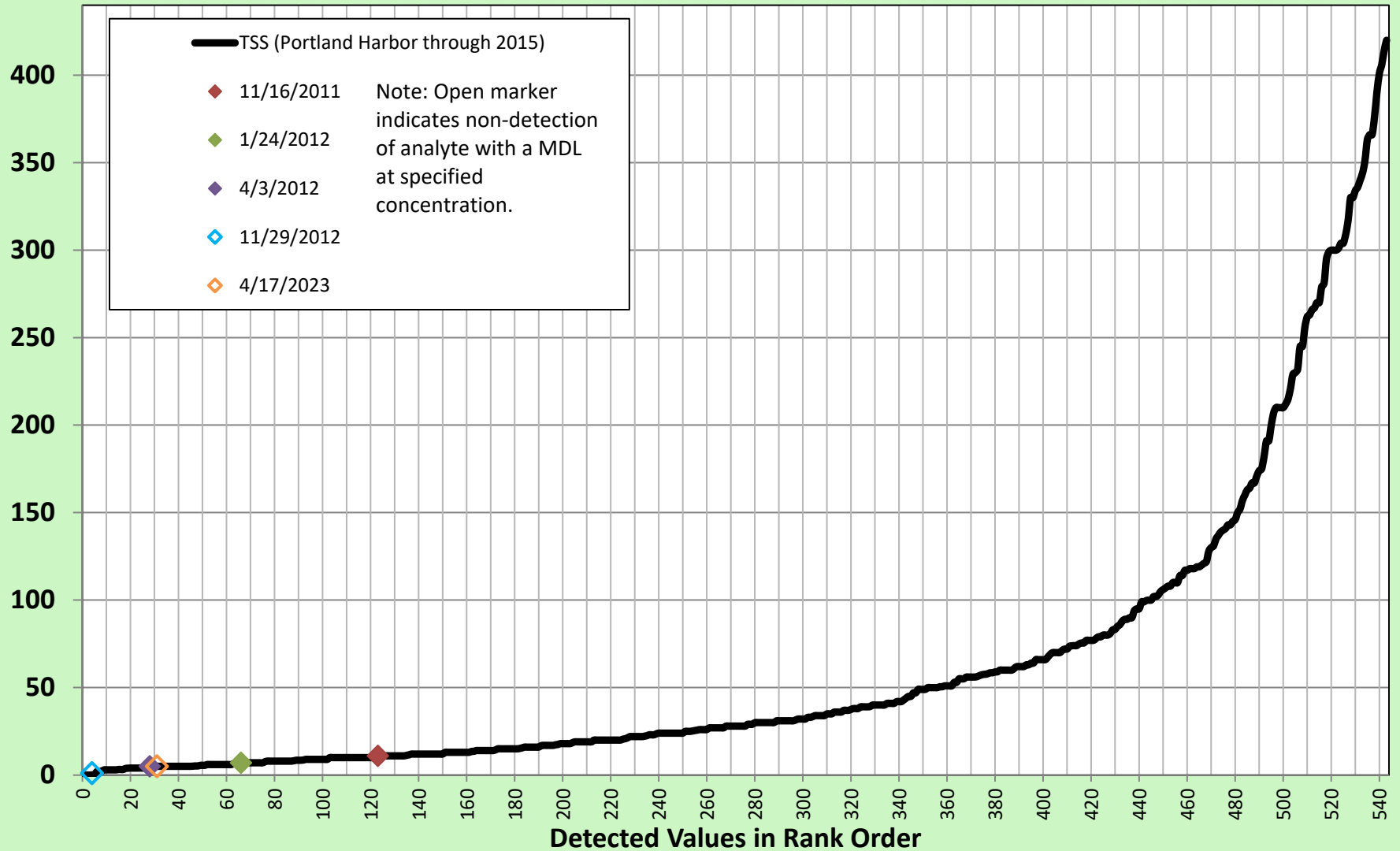
WR-78 Silver (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



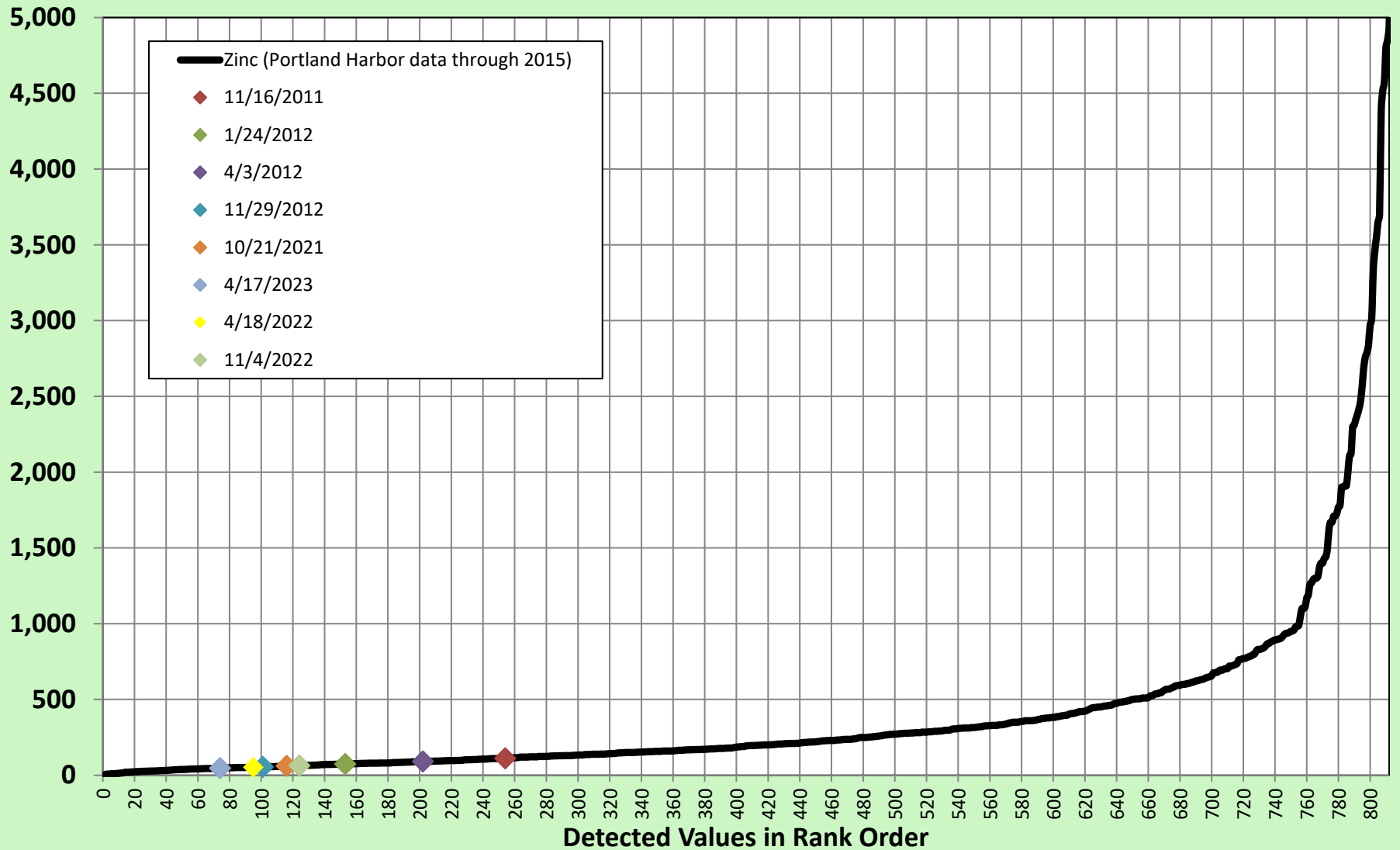
WR-78 Total PAHs (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



WR-78 TSS (mg/L) in Stormwater at Portland Harbor Heavy Industrial Sites



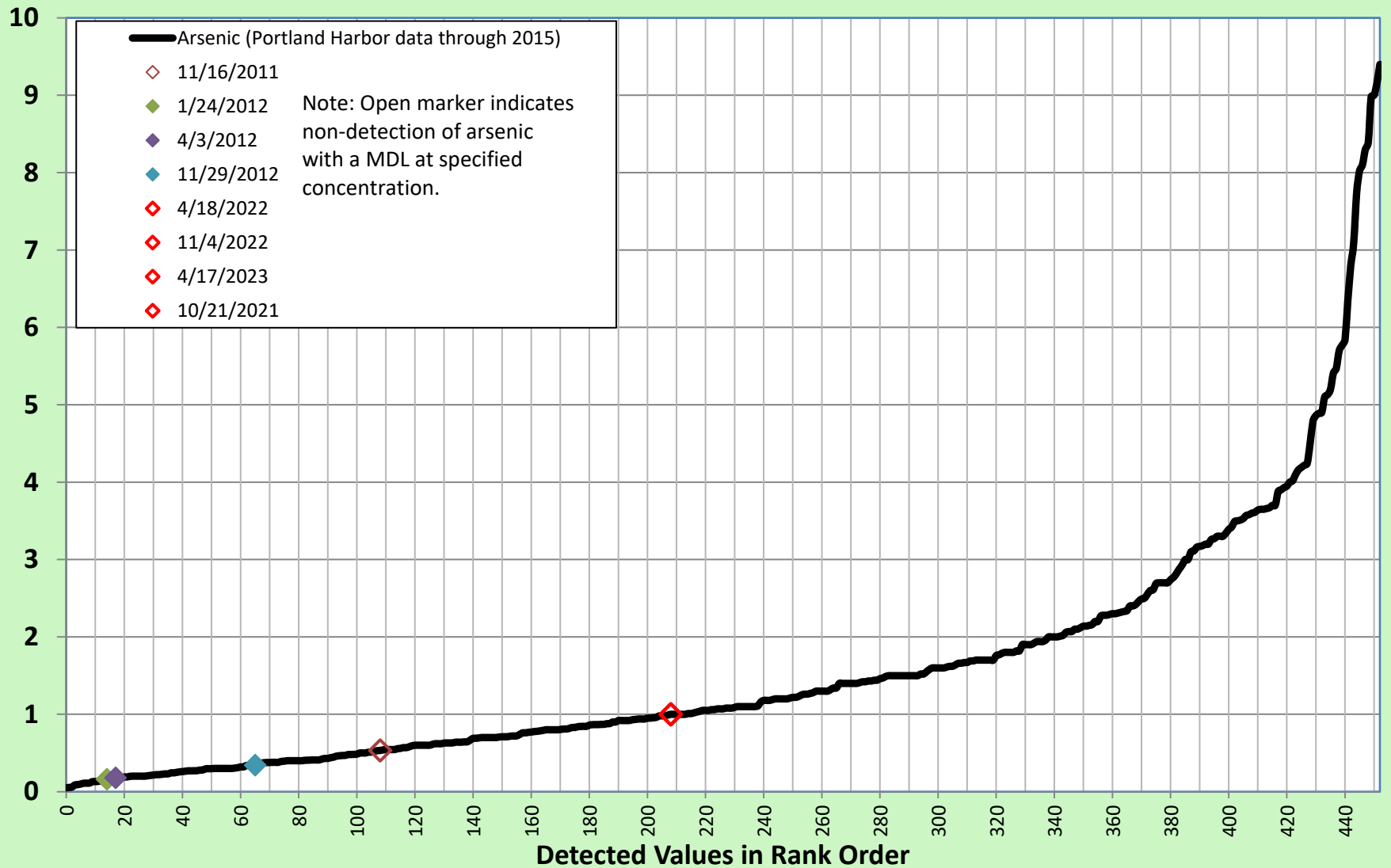
WR-78 Zinc (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



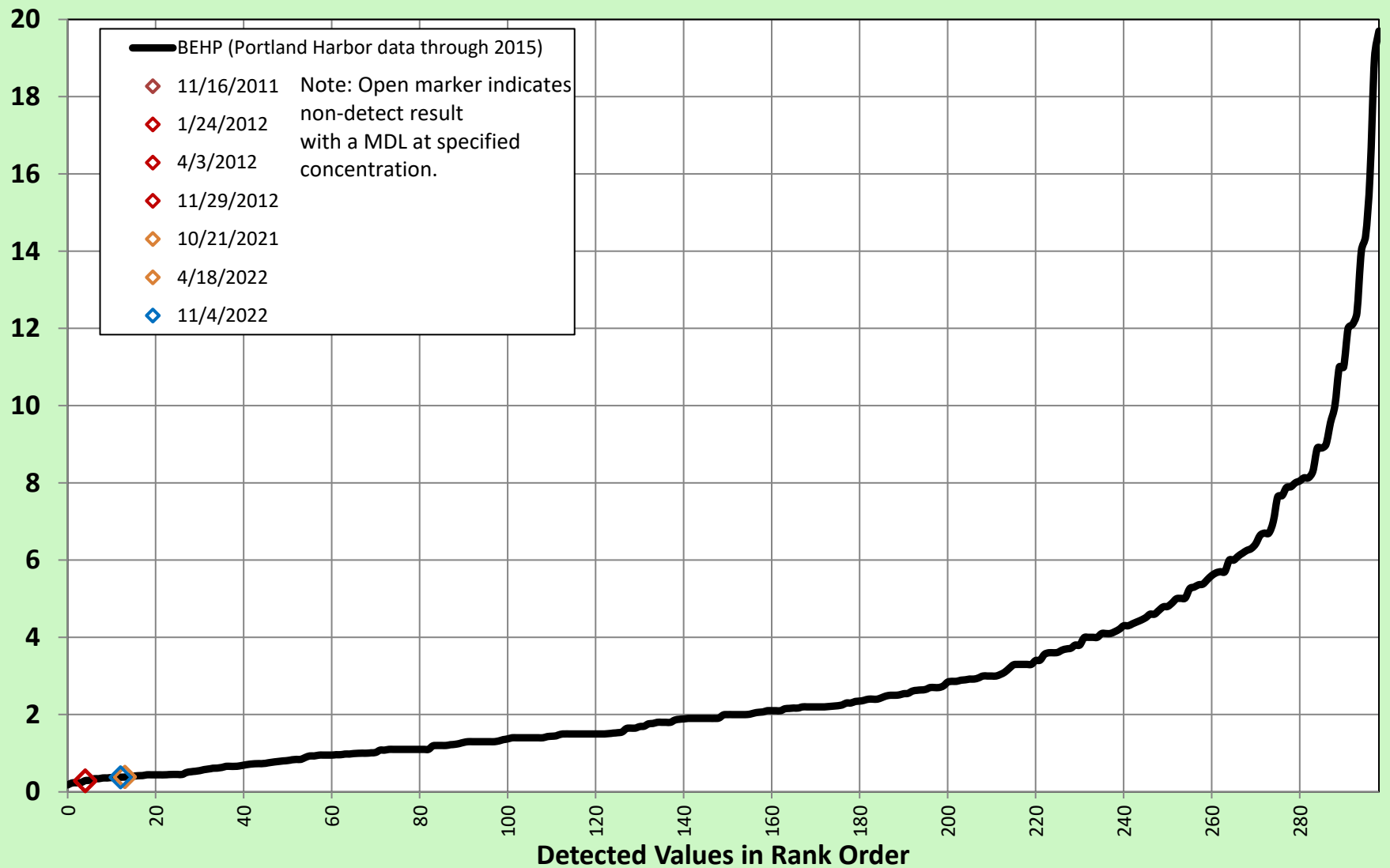
Attachment 9

Stormwater Rank Order Curves – WR-152

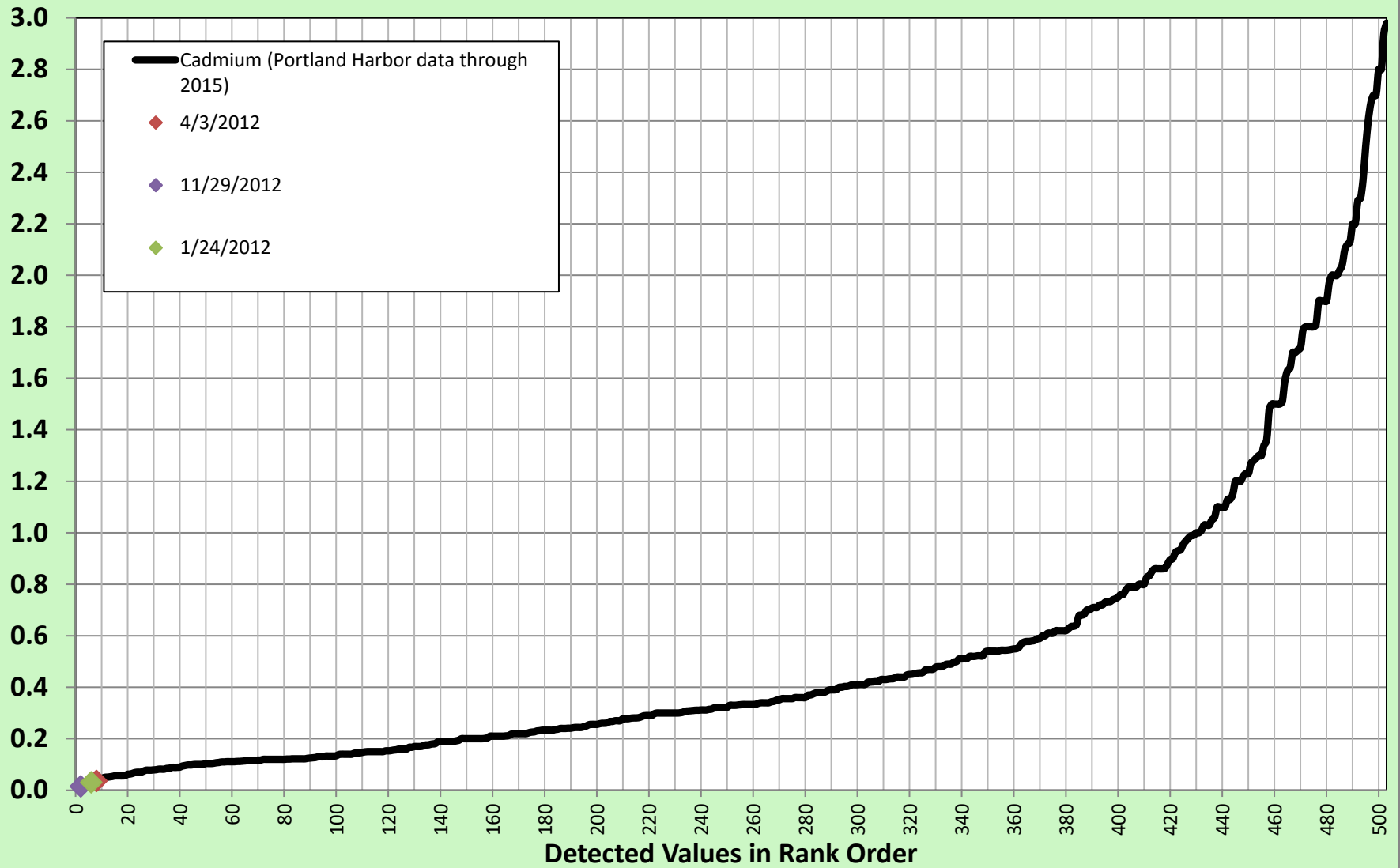
WR-152 Arsenic (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



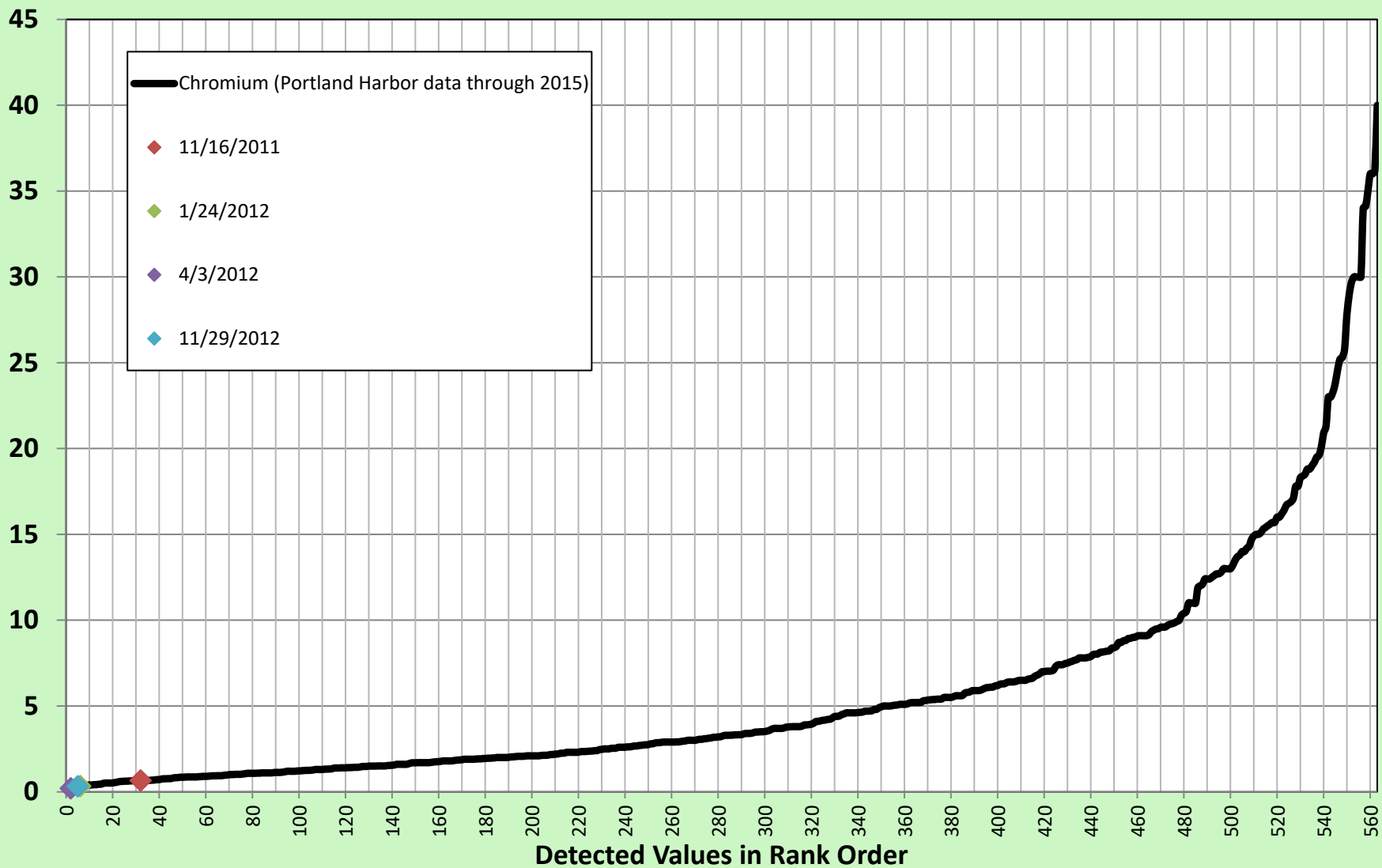
WR-152 Bis(2-Ethylhexyl)phthalate in Stormwater at Portland Harbor Heavy Industrial Sites (ug/L)



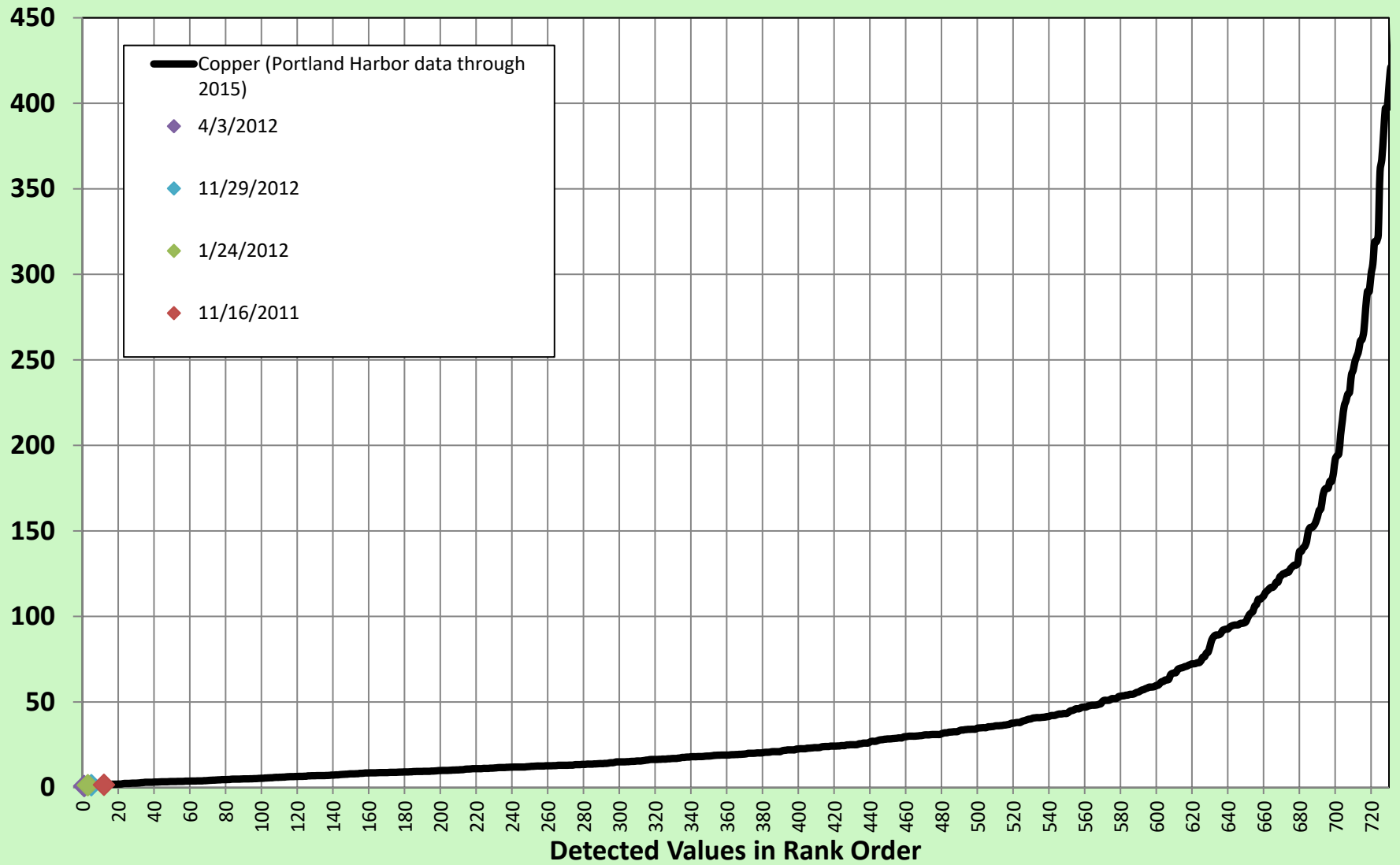
WR-152 Cadmium (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



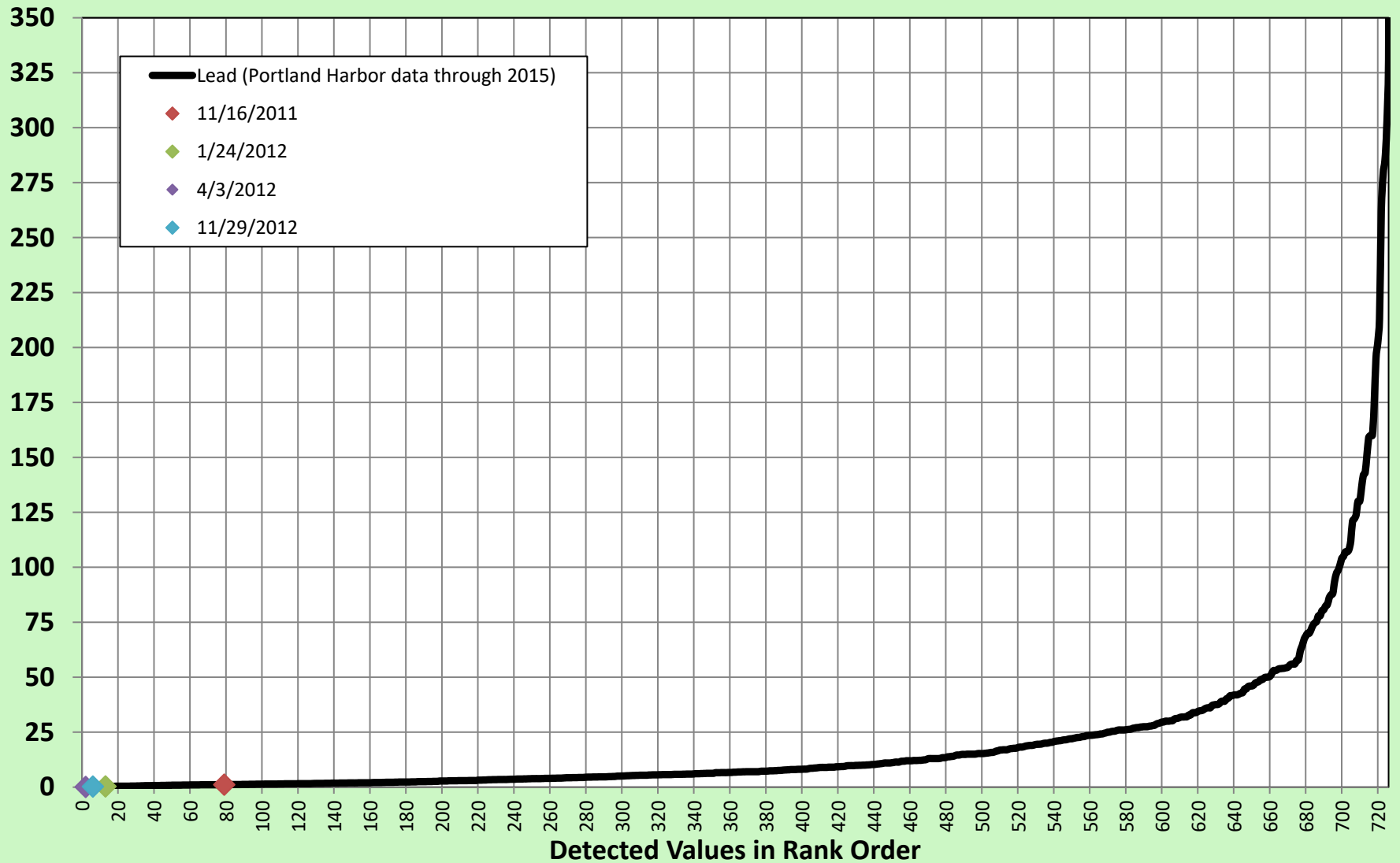
WR-152 Chromium (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



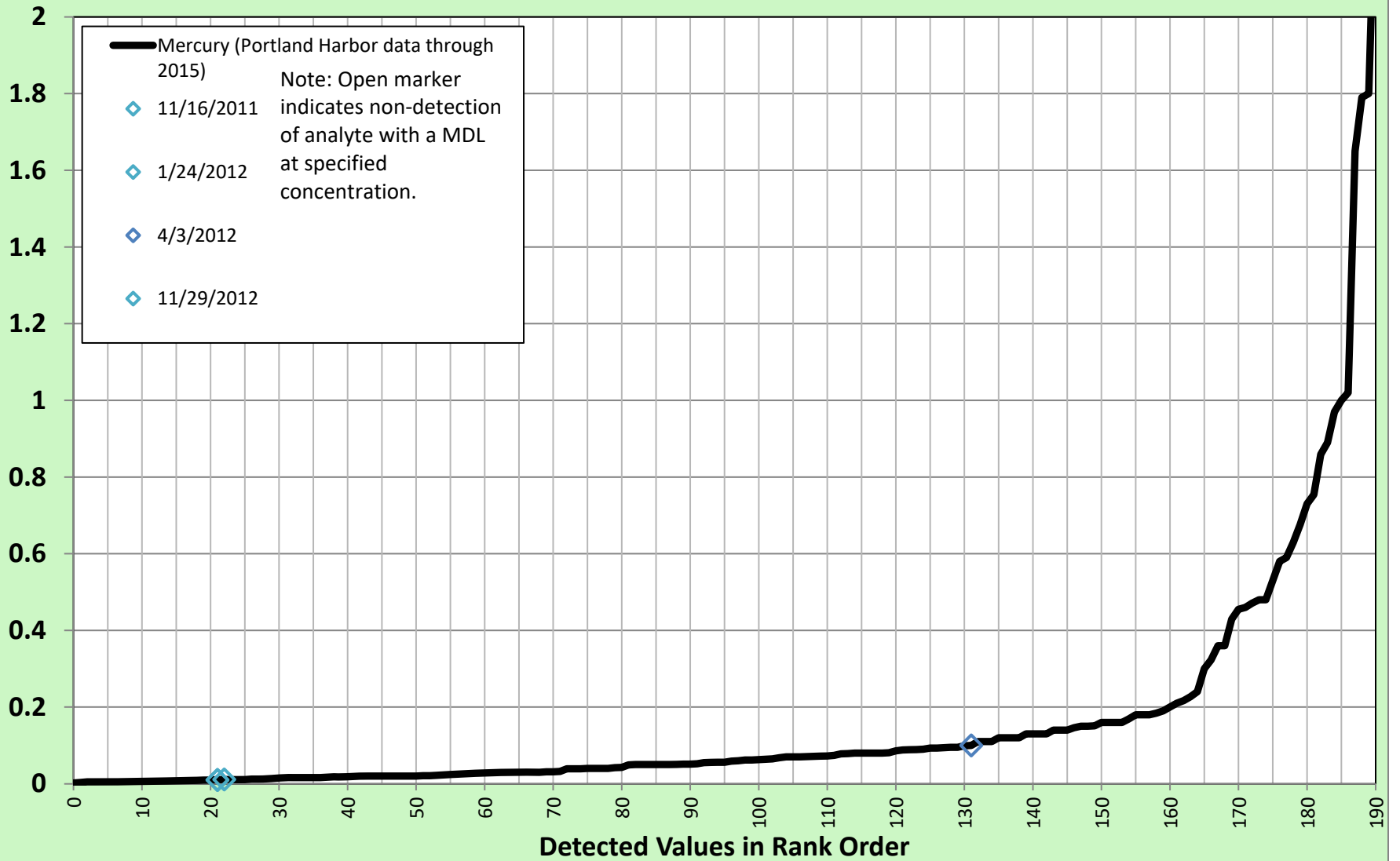
WR-152 Copper (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



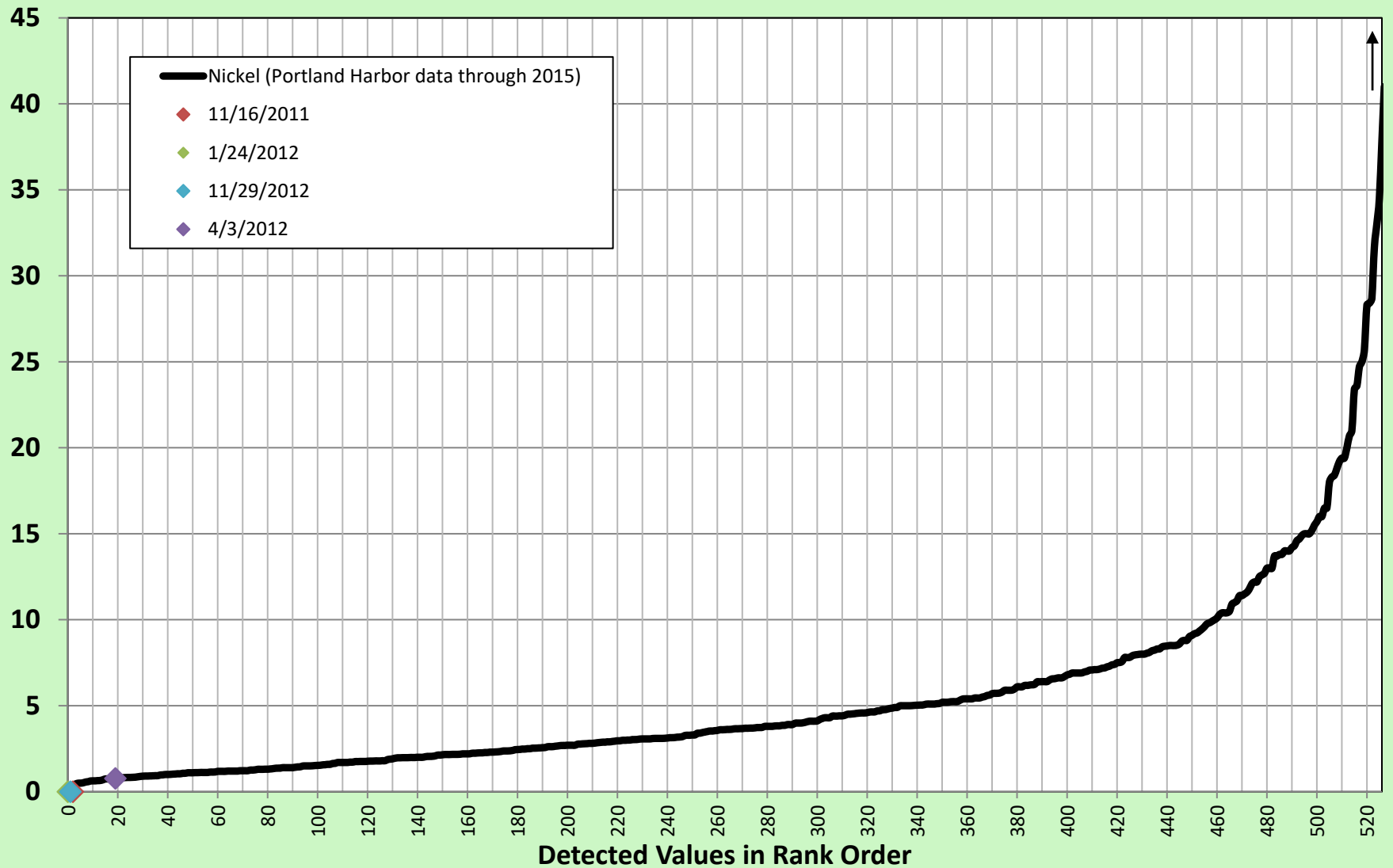
WR-152 Lead (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



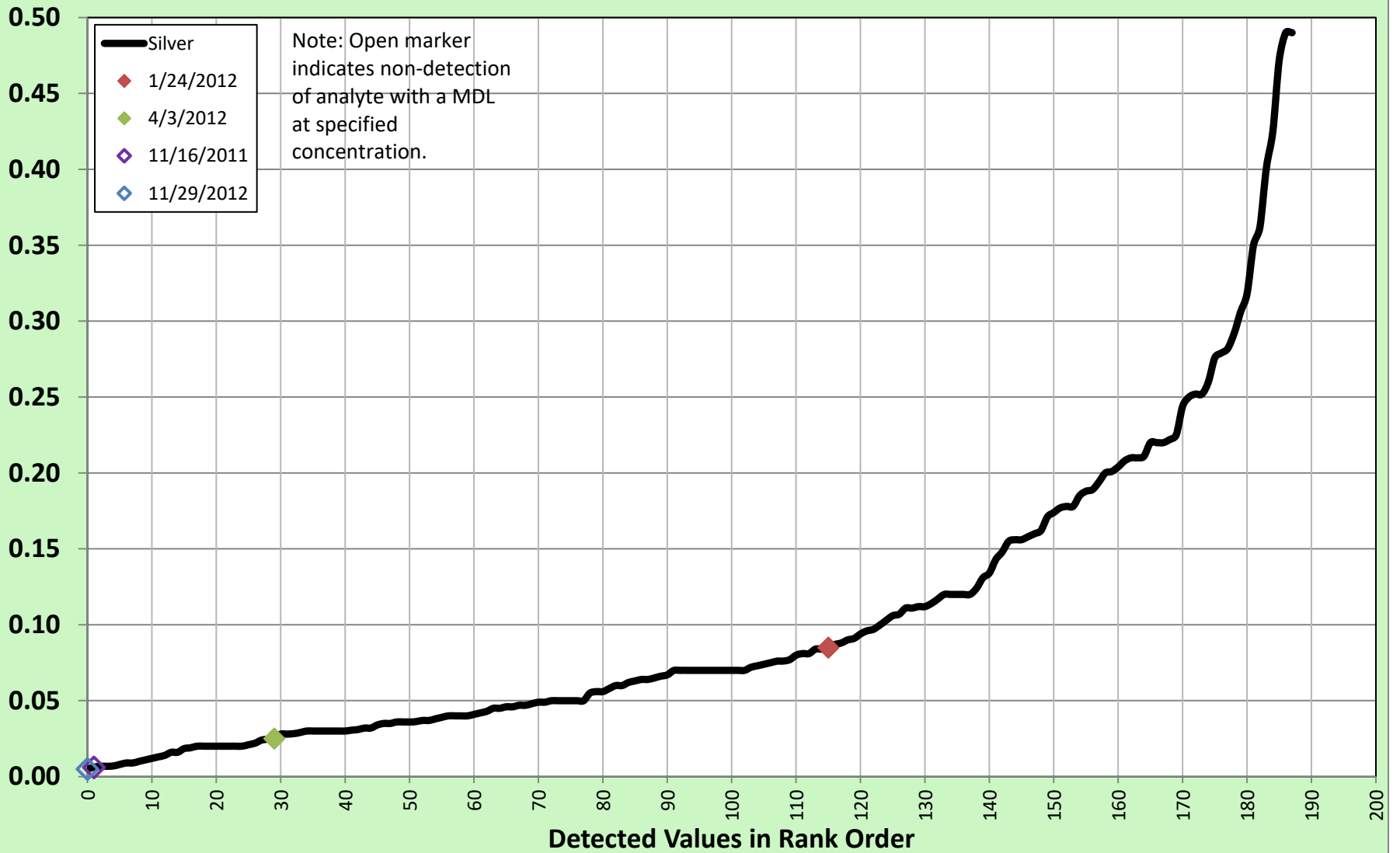
WR-152 Mercury (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



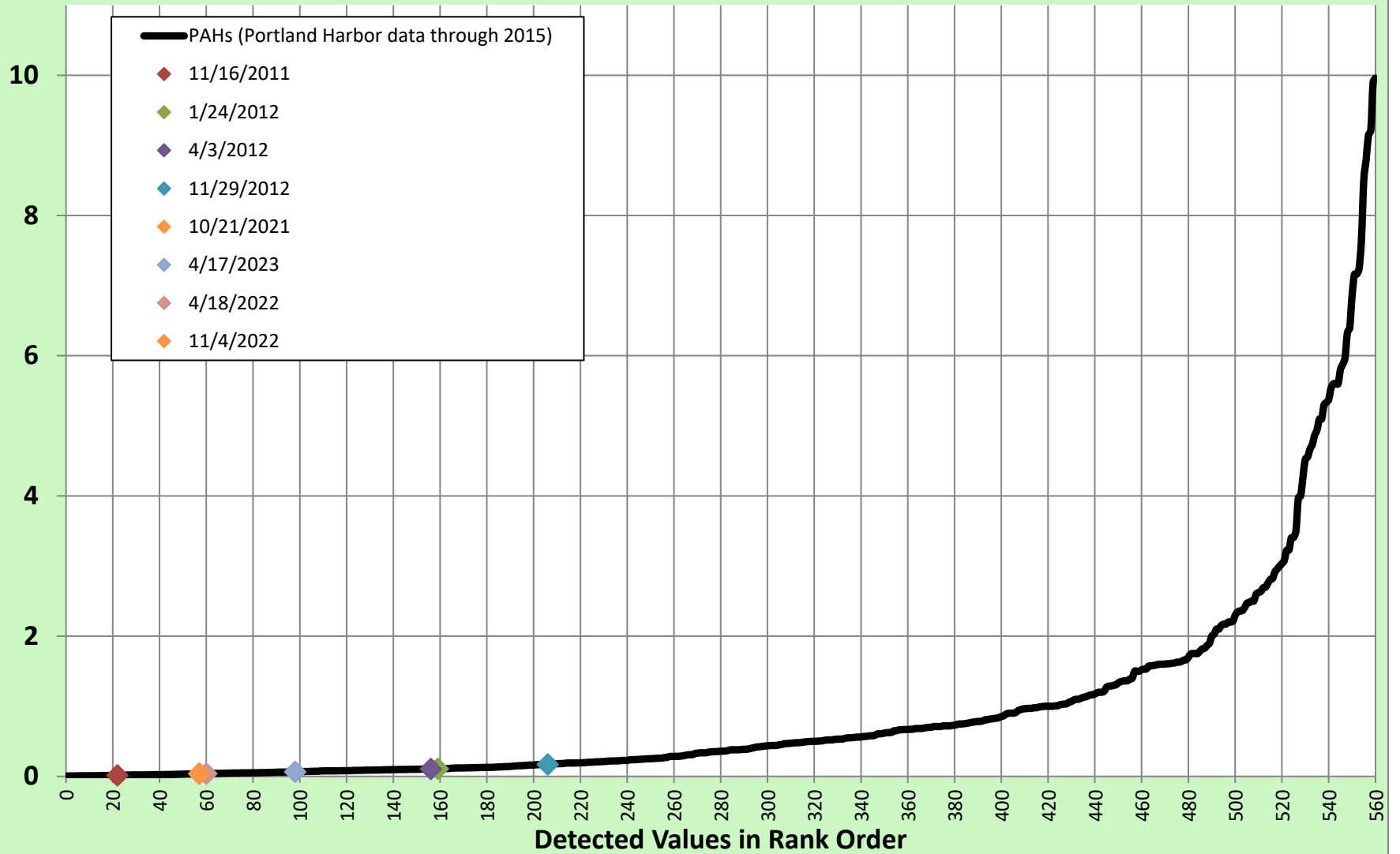
WR-152 Nickel (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



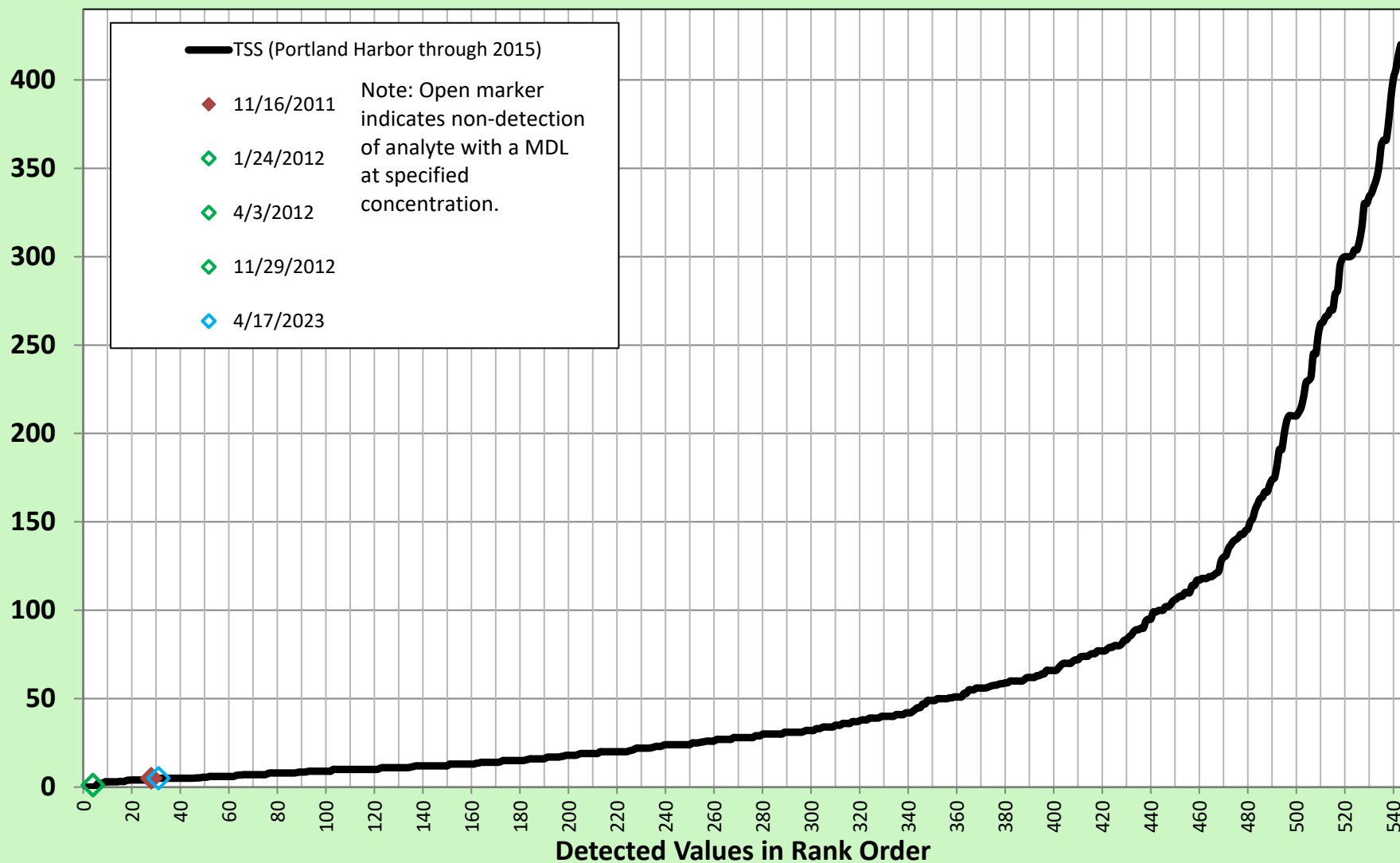
WR-152 Silver (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



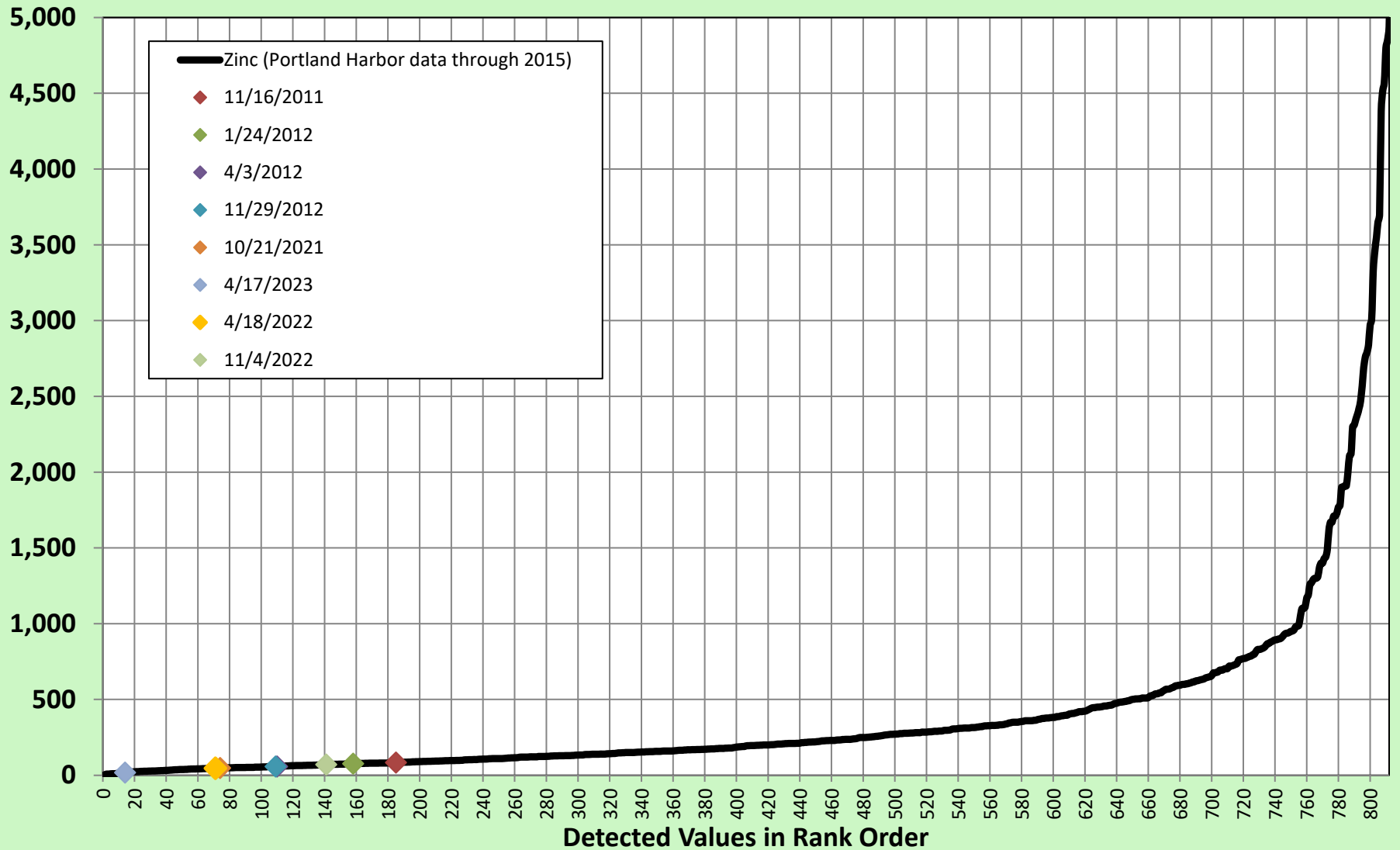
WR-152 Total PAHs (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



WR-152 TSS (mg/L) in Stormwater at Portland Harbor Heavy Industrial Sites



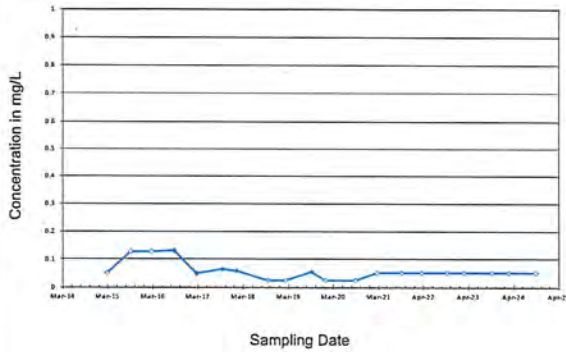
WR-152 Zinc (ug/L) in Stormwater at Portland Harbor Heavy Industrial Sites



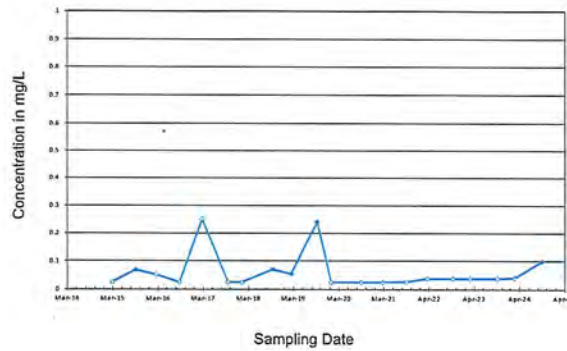
Attachment 10

Groundwater Contaminant Trend Plots
Former Dual Phase Extraction Treatment Area Wells 2015-2024

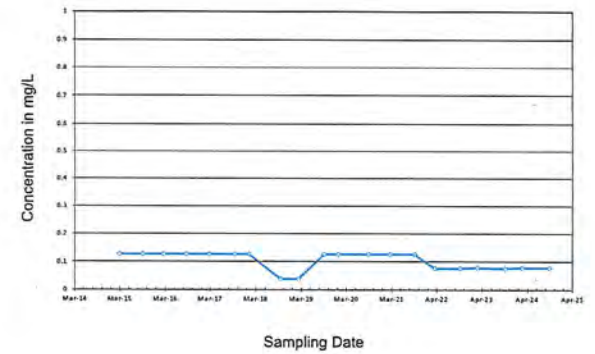
Total Petroleum Hydrocarbons - Gasoline



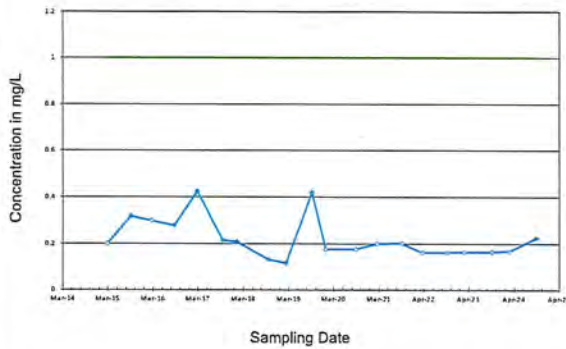
Total Petroleum Hydrocarbons - Diesel



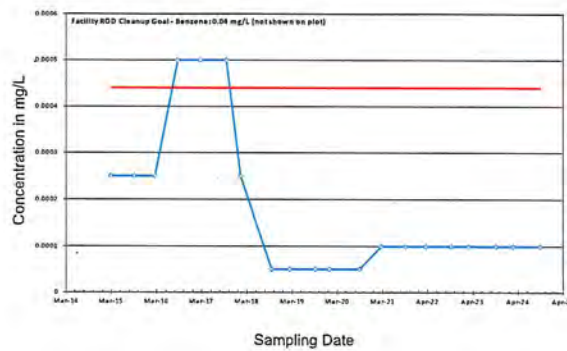
Total Petroleum Hydrocarbons - Oil



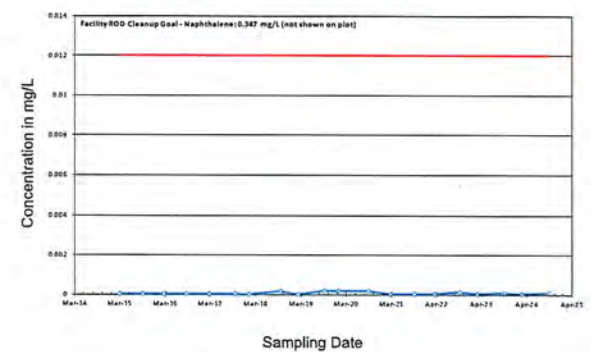
Total Petroleum Hydrocarbons - Combined



Benzene




Naphthalene

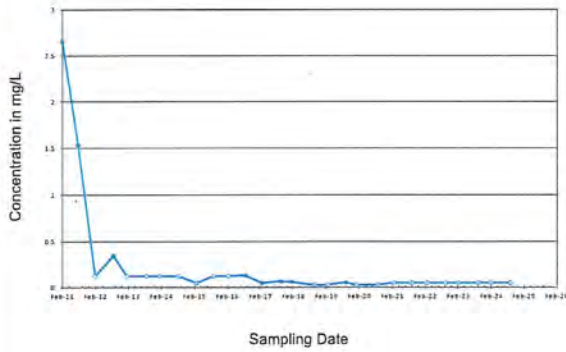


Legend:

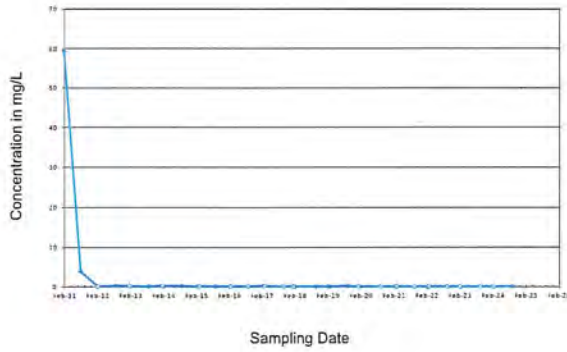
- Detected Concentration of Analyte
- ◇ Detection Limit of Analyte Not Detected
- Estimated Concentration Trend Between Detections
- ROD Groundwater Cleanup Goal
- Portland Harbor Superfund Site Cleanup Level

Concentration Trends in Monitoring Well EX07L Second Semi-Annual 2024 Groundwater Monitoring Report Shore Terminals LLC Portland Facility Portland, Oregon		
	Project Number 019001-010-16	Figure H-1a
February 2025		

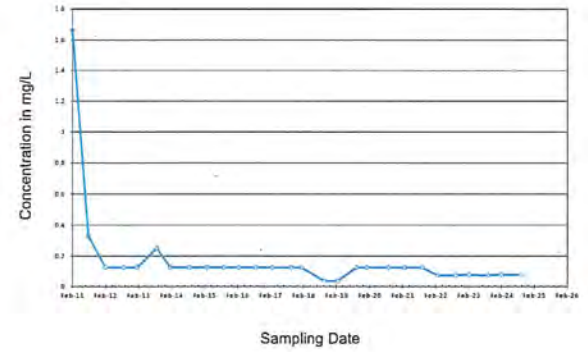
Total Petroleum Hydrocarbons - Gasoline



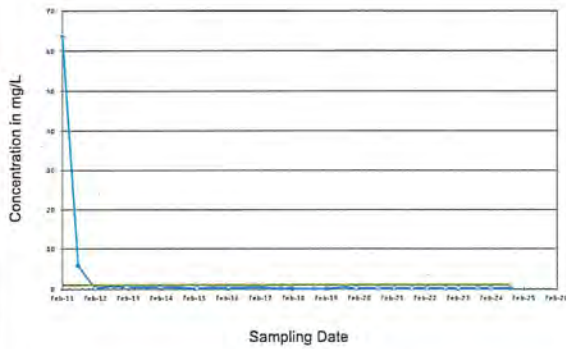
Total Petroleum Hydrocarbons - Diesel



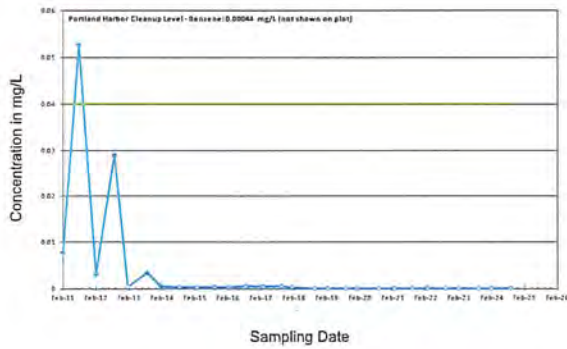
Total Petroleum Hydrocarbons - Oil



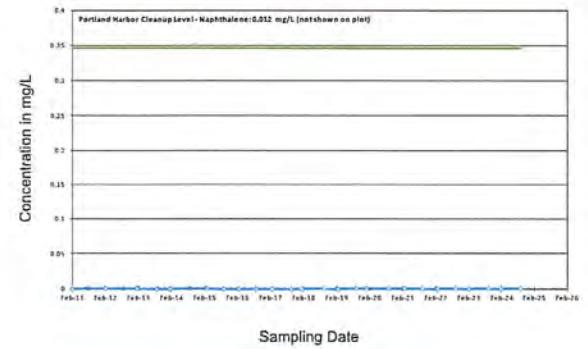
Total Petroleum Hydrocarbons - Combined



Benzene



Naphthalene

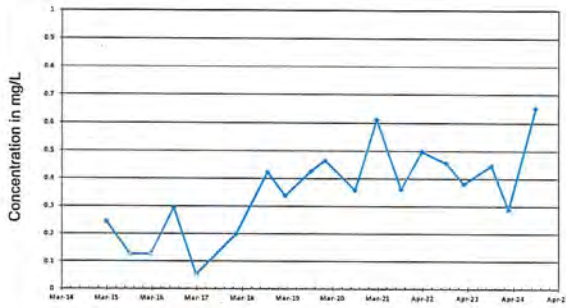


Legend:

- Detected Concentration of Analyte
- Detection Limit of Analyte Not Detected
- Estimated Concentration Trend Between Detections
- ROD Groundwater Cleanup Goal

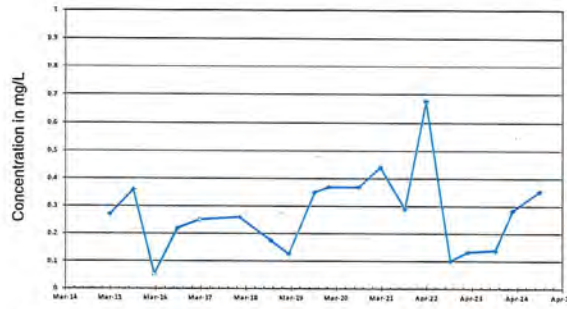
Concentration Trends in Monitoring Well EX07L
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

Total Petroleum Hydrocarbons - Gasoline



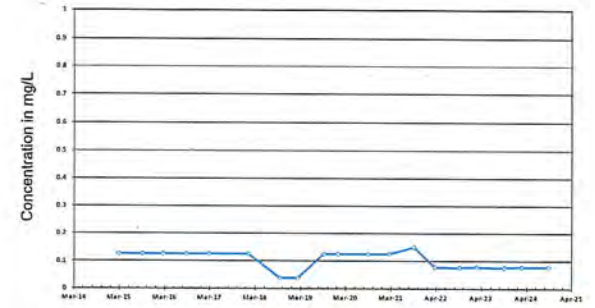
Sampling Date

Total Petroleum Hydrocarbons - Diesel



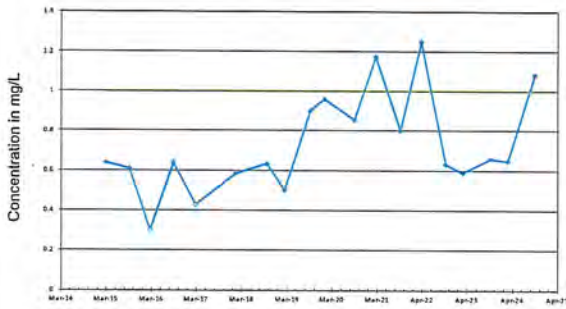
Sampling Date

Total Petroleum Hydrocarbons - Oil



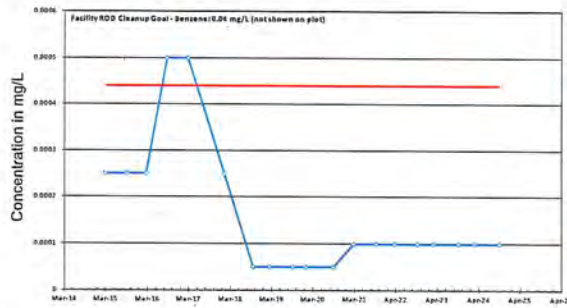
Sampling Date

Total Petroleum Hydrocarbons - Combined



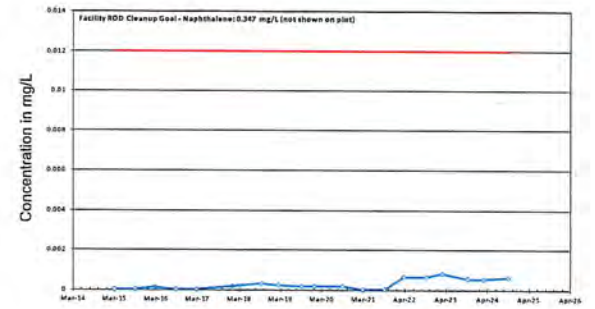
Sampling Date

Benzene



Sampling Date

Naphthalene



Sampling Date

Legend:

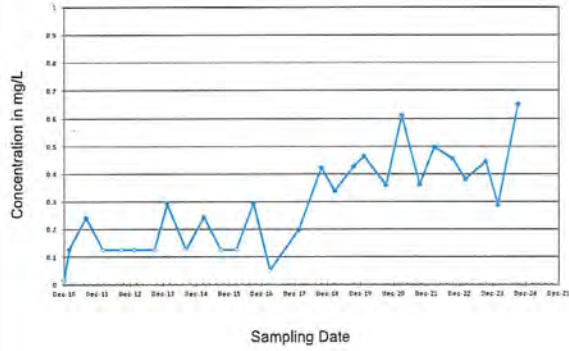
- Detected Concentration of Analyte
- Detection Limit of Analyte Not Detected
- Estimated Concentration Trend Between Detections
- ROD Groundwater Cleanup Goal
- Portland Harbor Superfund Site Cleanup Level

Concentration Trends in Monitoring Well MW47
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

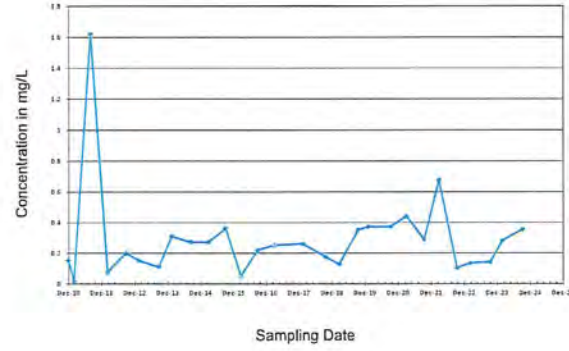


Project Number	019001-010-16	Figure
February 2025		H-2a

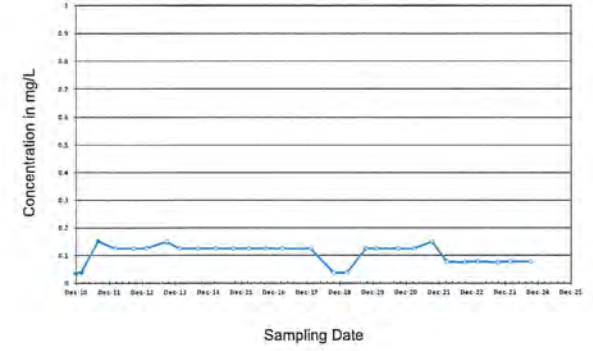
Total Petroleum Hydrocarbons - Gasoline



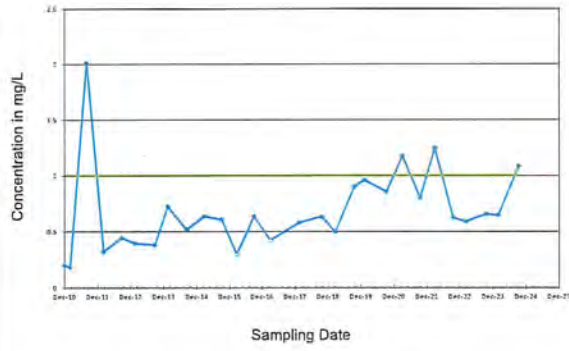
Total Petroleum Hydrocarbons - Diesel



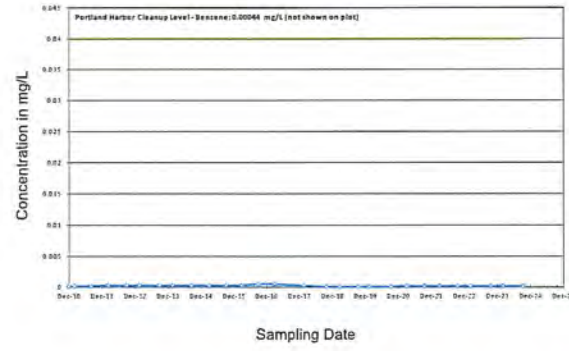
Total Petroleum Hydrocarbons - Oil



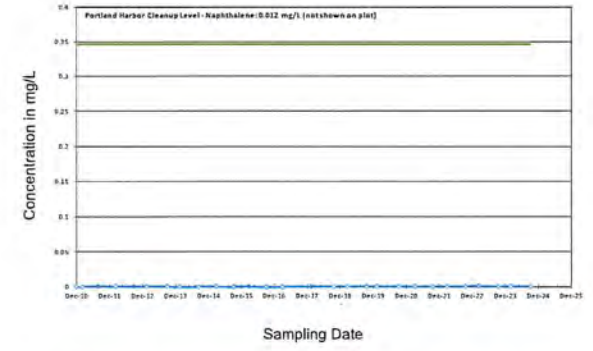
Total Petroleum Hydrocarbons - Combined



Benzene



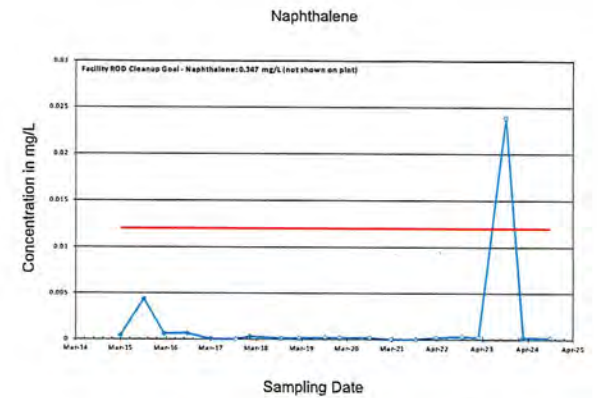
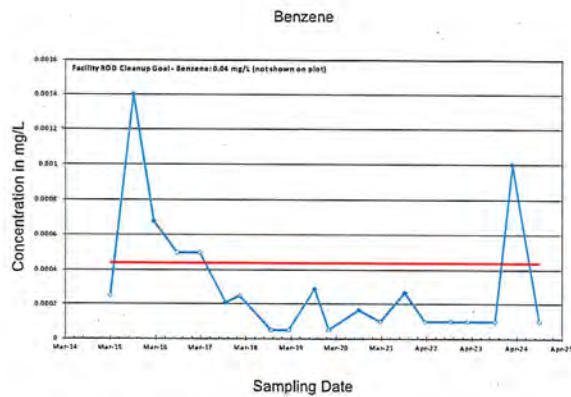
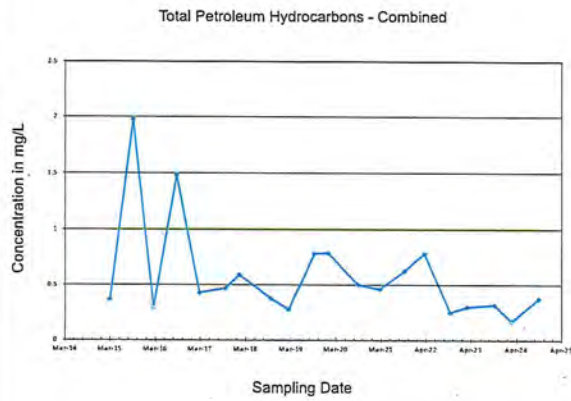
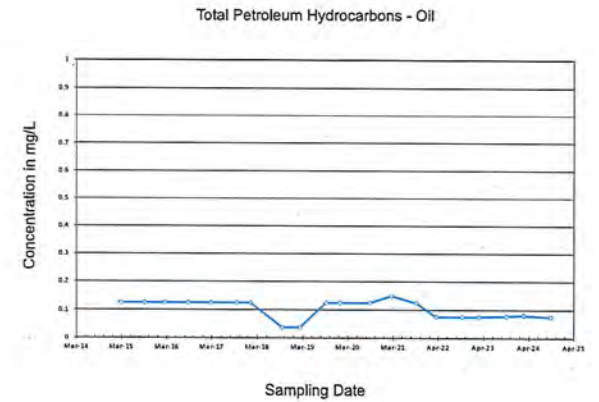
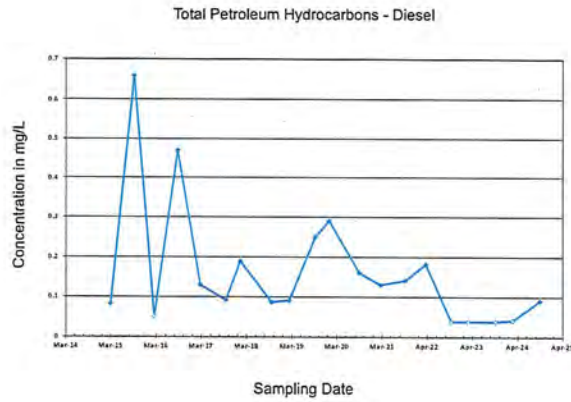
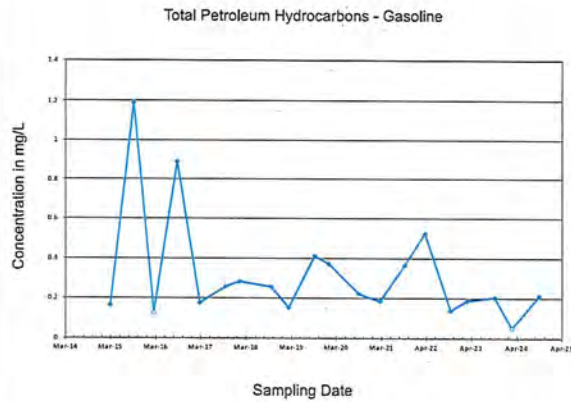
Naphthalene



- Legend:**
- Detected Concentration of Analyte
 - ◊ Detection Limit of Analyte Not Detected
 - Estimated Concentration Trend Between Detections
 - ROD Groundwater Cleanup Goal

Concentration Trends in Monitoring Well MW47
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

	Project Number	019001-010-16	Figure
	February 2025		H-2b

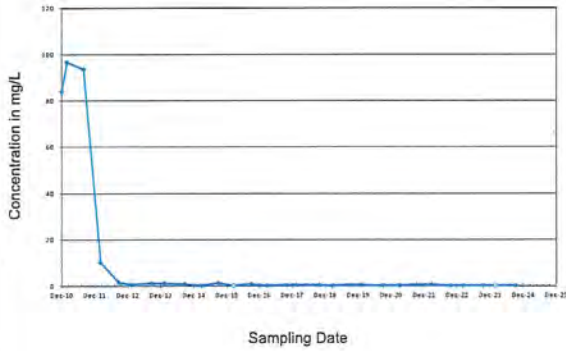


- Legend:**
- Detected Concentration of Analyte
 - Detection Limit of Analyte Not Detected
 - Estimated Concentration Trend Between Detections
 - ROD Groundwater Cleanup Goal
 - Portland Harbor Superfund Site Cleanup Level

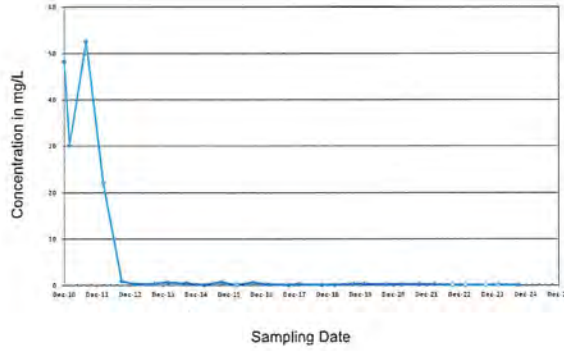
Concentration Trends in Monitoring Well MW48
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

	Project Number	019001-010-16	Figure
	February 2025		H-3a

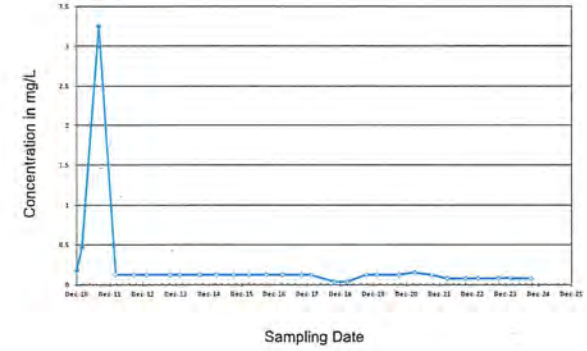
Total Petroleum Hydrocarbons - Gasoline



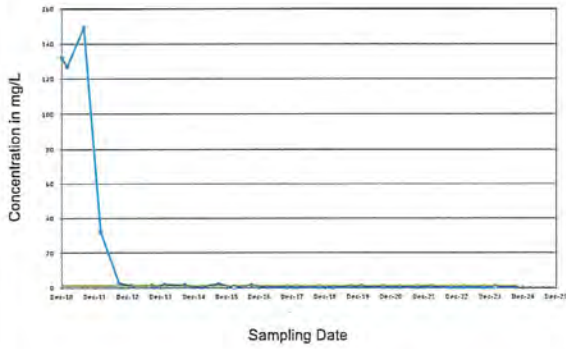
Total Petroleum Hydrocarbons - Diesel



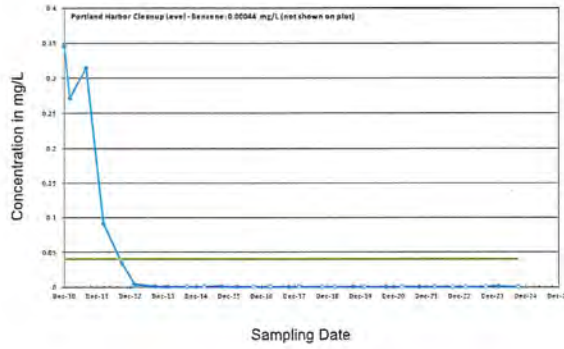
Total Petroleum Hydrocarbons - Oil



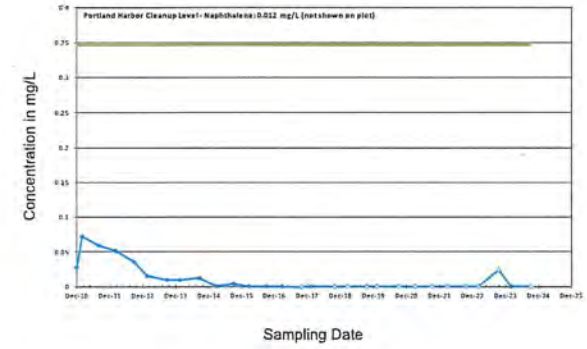
Total Petroleum Hydrocarbons - Combined



Benzene



Naphthalene

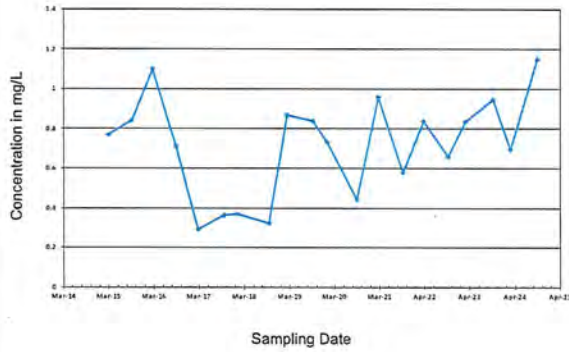


- Legend:**
- Detected Concentration of Analyte
 - Detection Limit of Analyte Not Detected
 - Estimated Concentration Trend Between Detections
 - ROD Groundwater Cleanup Goal

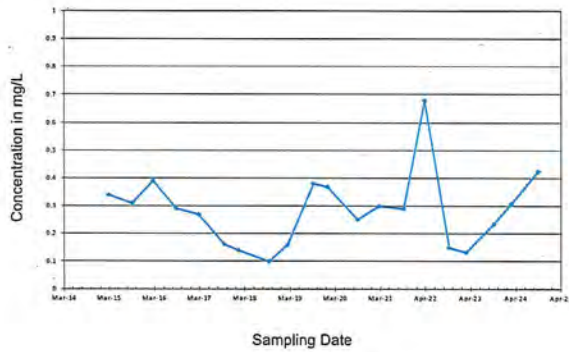
Concentration Trends in Monitoring Well MW48
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

	Project Number	019001-010-16	Figure
	February 2025		H-3b

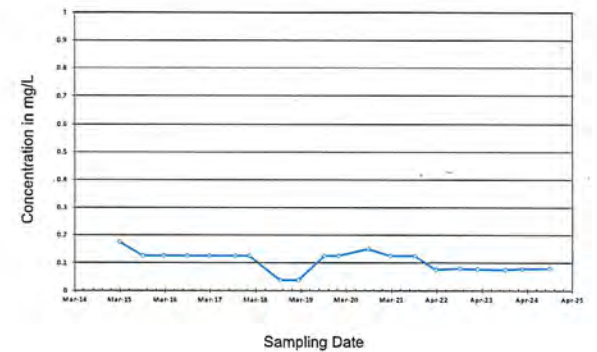
Total Petroleum Hydrocarbons - Gasoline



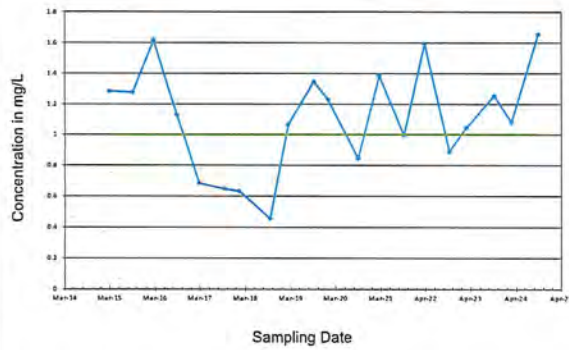
Total Petroleum Hydrocarbons - Diesel



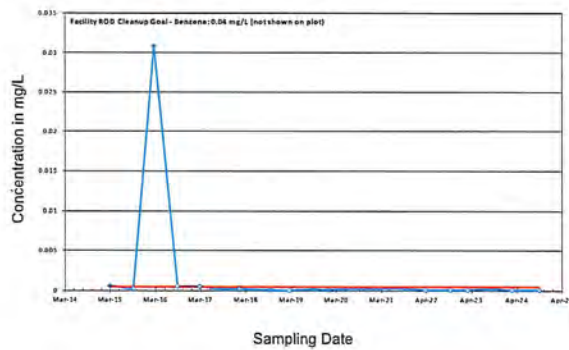
Total Petroleum Hydrocarbons - Oil



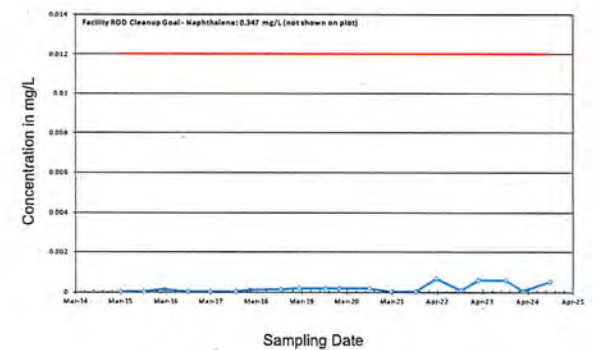
Total Petroleum Hydrocarbons - Combined



Benzene



Naphthalene

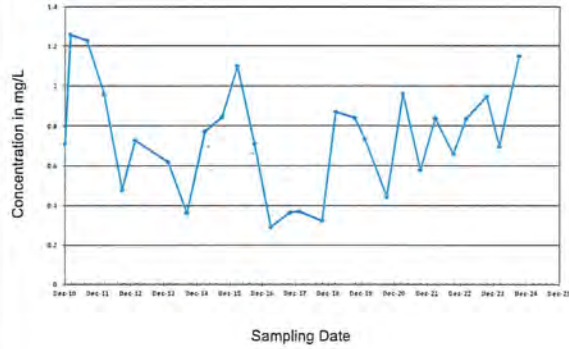


Legend:

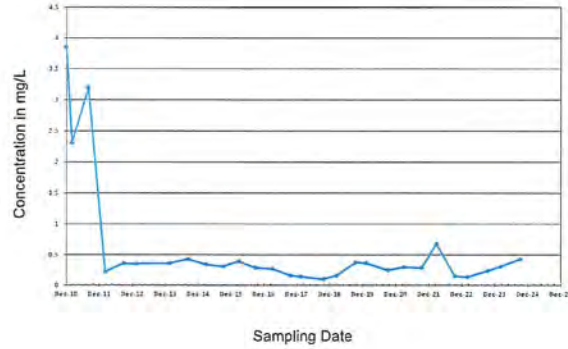
- Detected Concentration of Analyte
- Detection Limit of Analyte Not Detected
- Estimated Concentration Trend Between Detections
- ROD Groundwater Cleanup Goal
- Portland Harbor Superfund Site Cleanup Level

Concentration Trends in Monitoring Well MW49 Second Semi-Annual 2024 Groundwater Monitoring Report Shore Terminals LLC Portland Facility Portland, Oregon		
	Project Number 019001-010-16	Figure H-4a
February 2025		

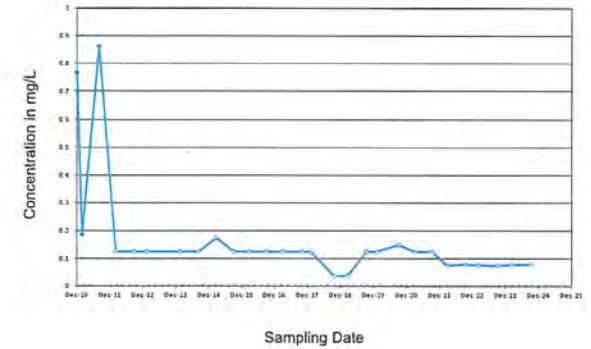
Total Petroleum Hydrocarbons - Gasoline



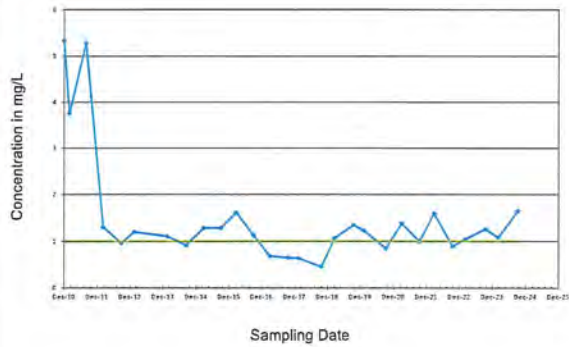
Total Petroleum Hydrocarbons - Diesel



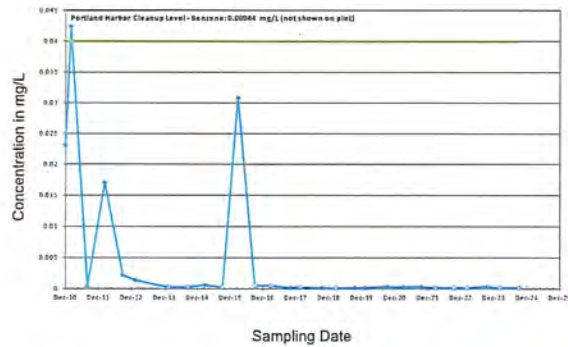
Total Petroleum Hydrocarbons - Oil



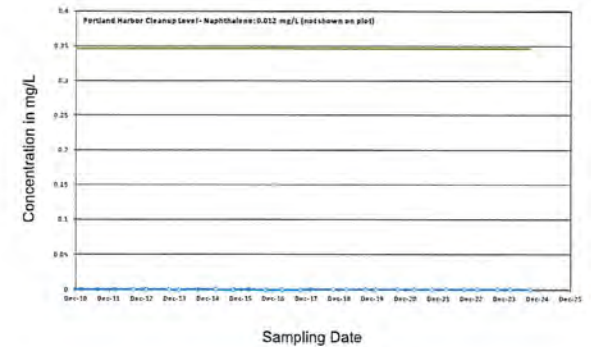
Total Petroleum Hydrocarbons - Combined



Benzene



Naphthalene



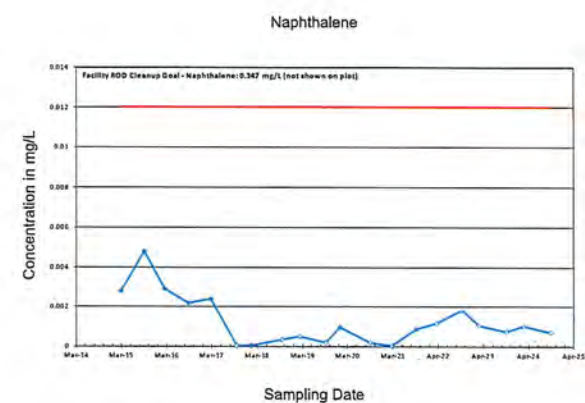
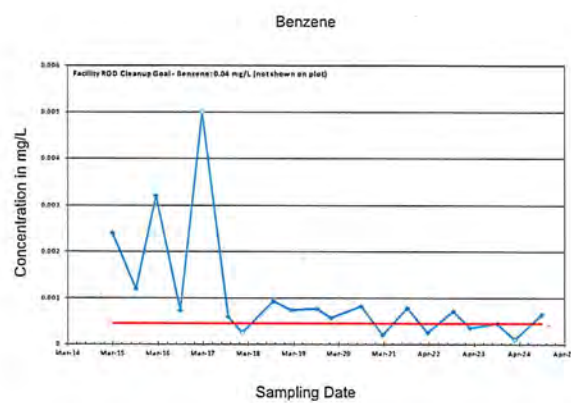
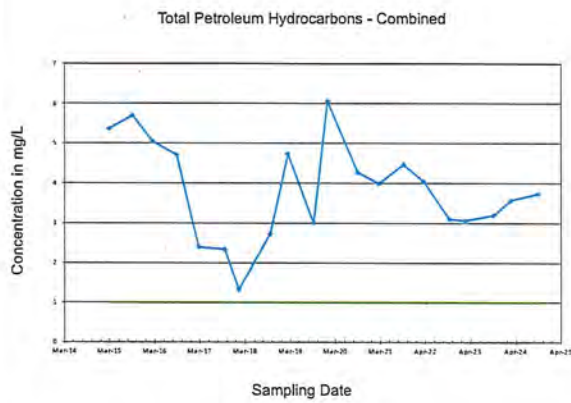
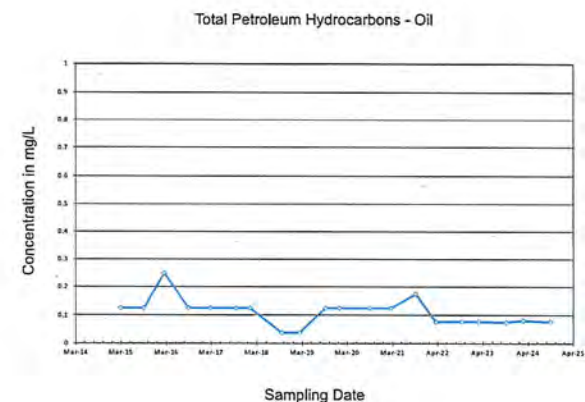
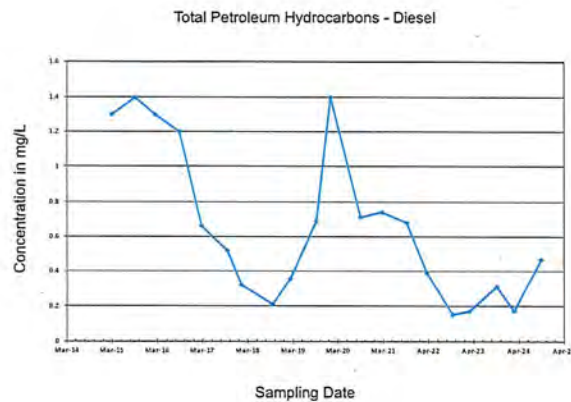
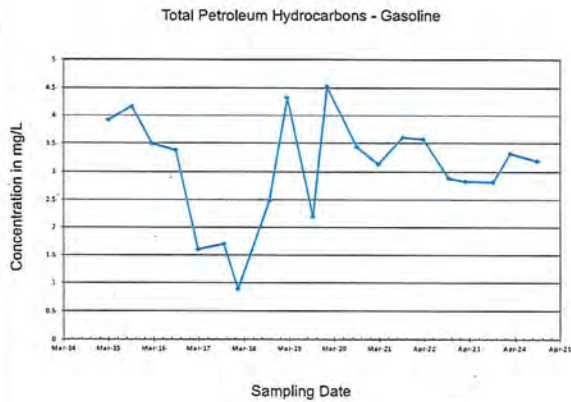
Legend:

- Detected Concentration of Analyte
- Detection Limit of Analyte Not Detected
- Estimated Concentration Trend Between Detections
- ROD Groundwater Cleanup Goal

Concentration Trends in Monitoring Well MW49
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon



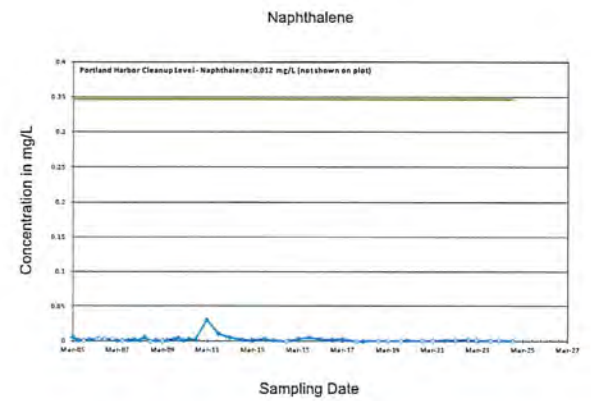
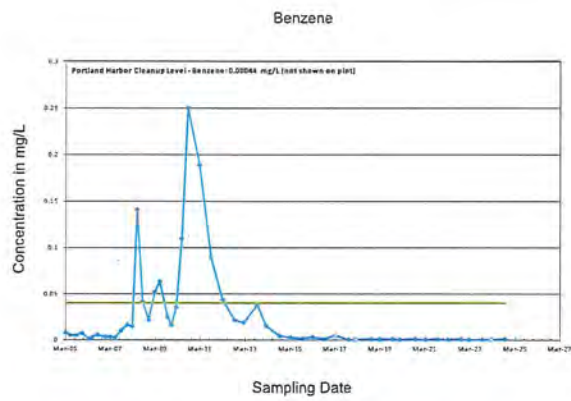
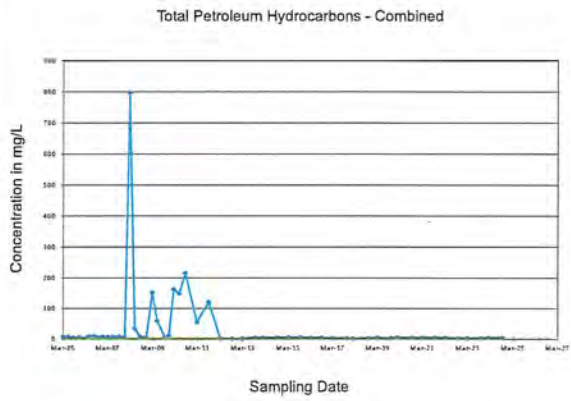
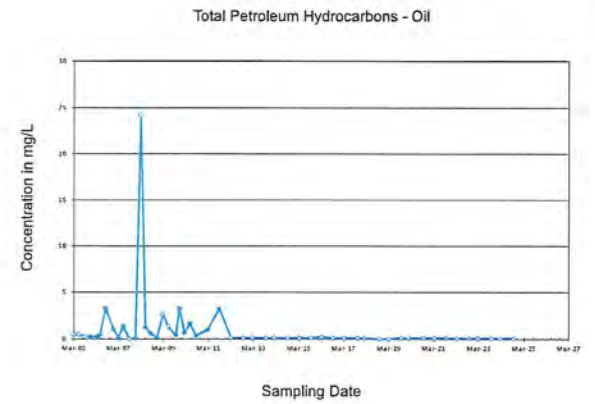
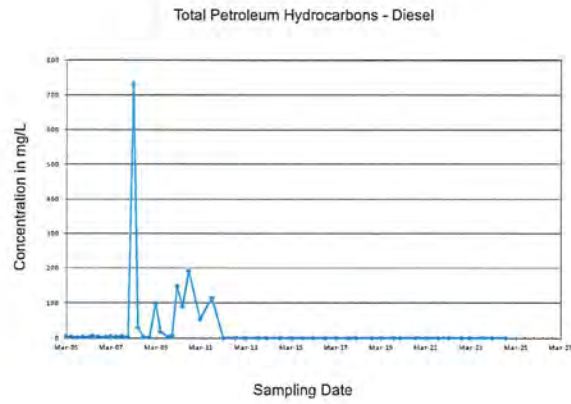
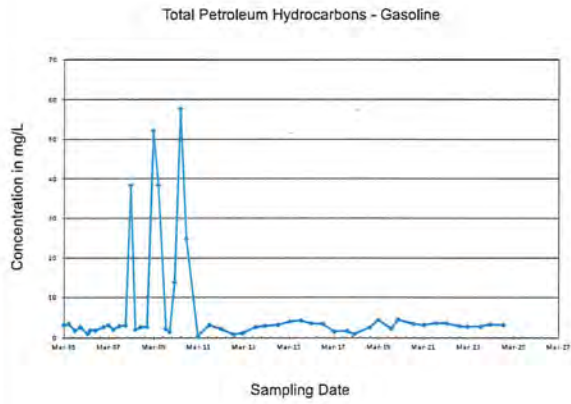
Project Number	019001-010-16	Figure
February 2025		H-4b



- Legend:**
- Detected Concentration of Analyte
 - ◊ Detection Limit of Analyte Not Detected
 - Estimated Concentration Trend Between Detections
 - ROD Groundwater Cleanup Goal
 - Portland Harbor Superfund Site Cleanup Level

Concentration Trends in Monitoring Well KMW29
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

	Project Number	019001-010-16	Figure
	February 2025		H-5a

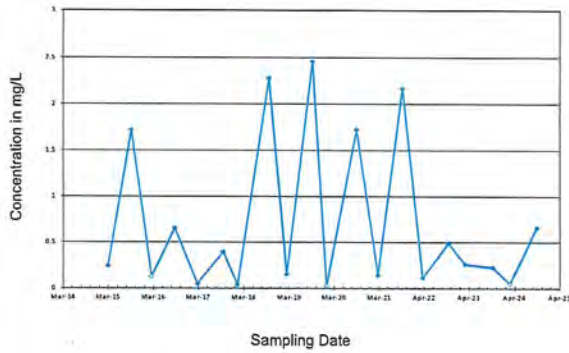


- Legend:**
- Detected Concentration of Analyte
 - Detection Limit of Analyte Not Detected
 - Estimated Concentration Trend Between Detections
 - ROD Groundwater Cleanup Goal

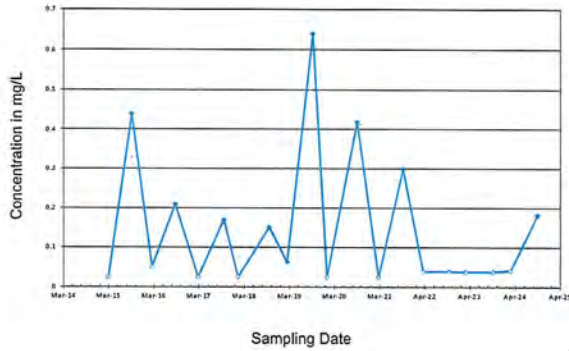
Concentration Trends in Monitoring Well KMW29
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

	Project Number	019001-010-16	Figure
	February 2025		H-5b

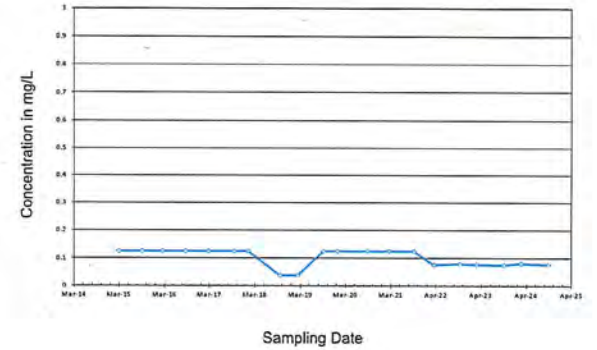
Total Petroleum Hydrocarbons - Gasoline



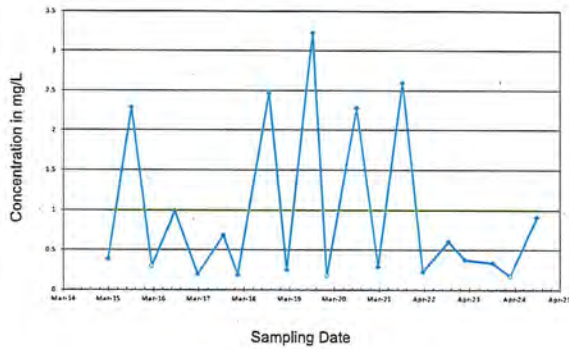
Total Petroleum Hydrocarbons - Diesel



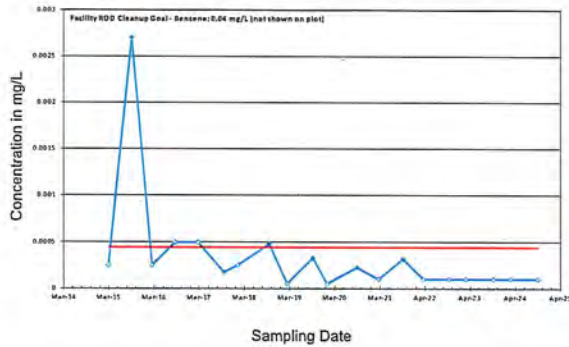
Total Petroleum Hydrocarbons - Oil



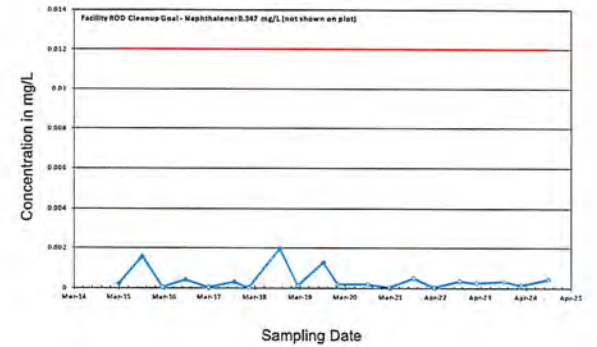
Total Petroleum Hydrocarbons - Combined



Benzene



Naphthalene



Legend:

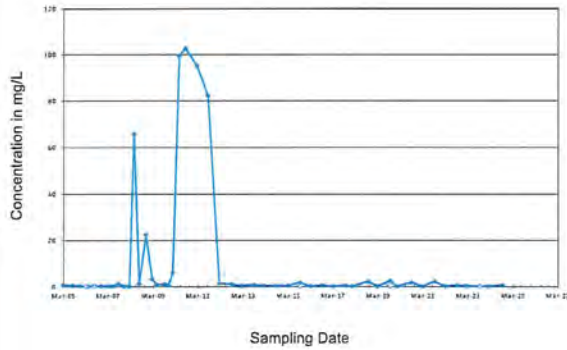
- Detected Concentration of Analyte
- ◊ Detection Limit of Analyte Not Detected
- Estimated Concentration Trend Between Detections
- ROD Groundwater Cleanup Goal
- Portland Harbor Superfund Site Cleanup Level

Concentration Trends in Monitoring Well KMW30
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

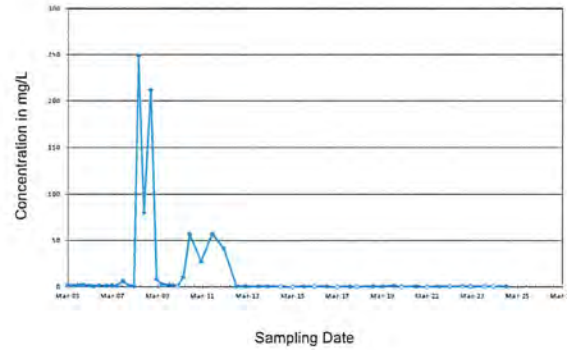


Project Number	019001-010-16	Figure
February 2025		H-6a

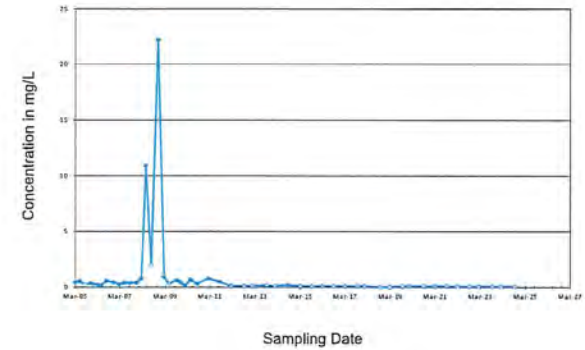
Total Petroleum Hydrocarbons - Gasoline



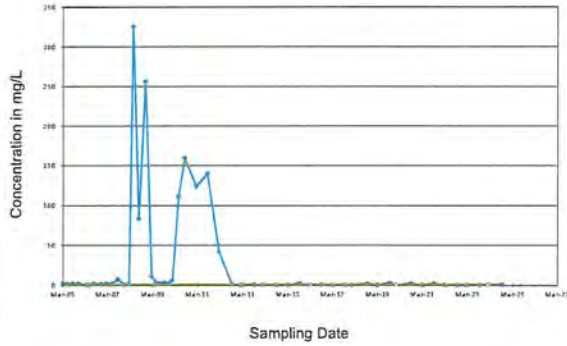
Total Petroleum Hydrocarbons - Diesel



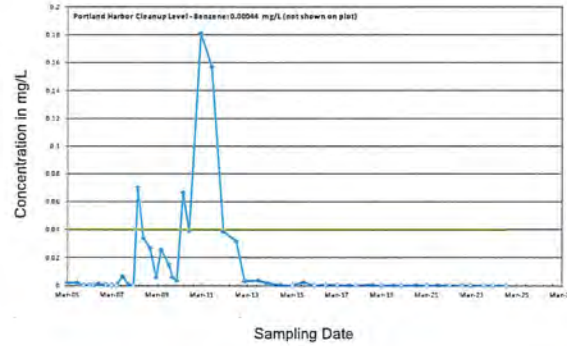
Total Petroleum Hydrocarbons - Oil



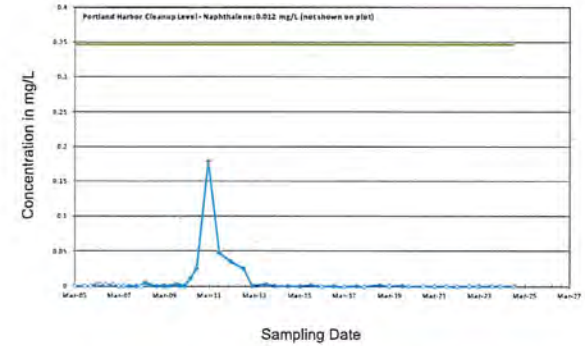
Total Petroleum Hydrocarbons - Combined



Benzene



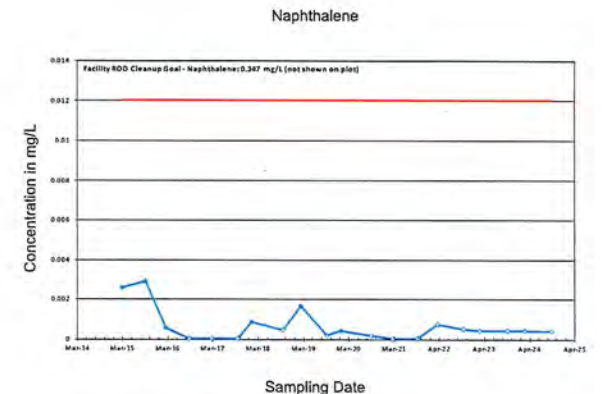
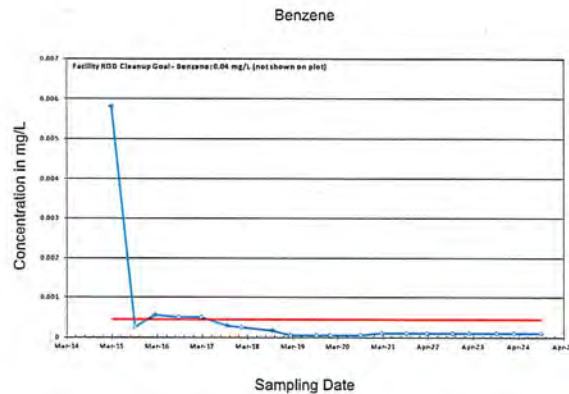
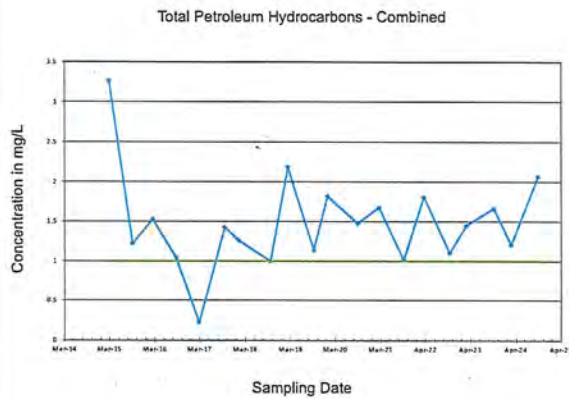
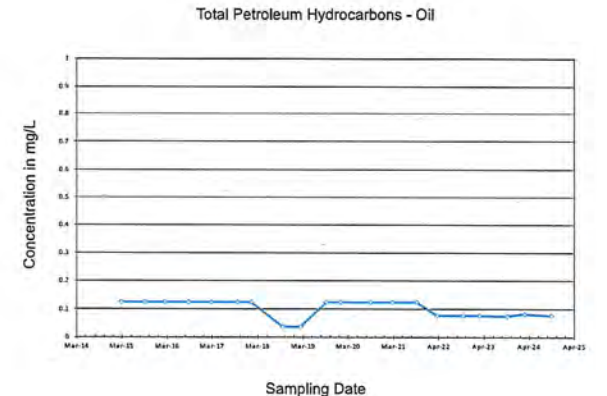
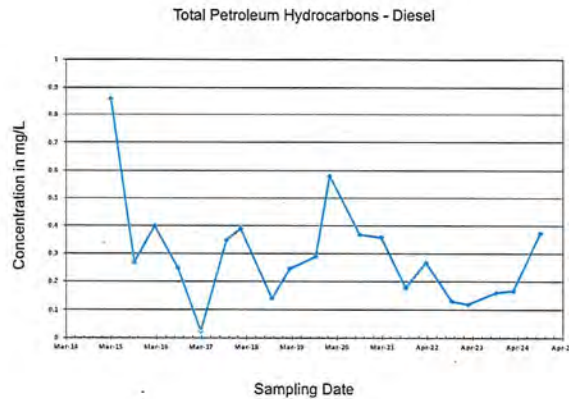
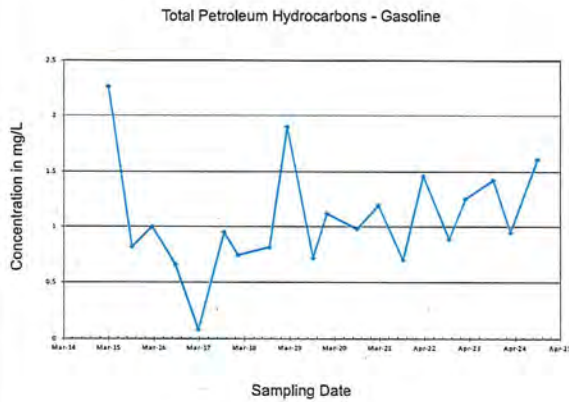
Naphthalene



Legend:

- Detected Concentration of Analyte
- ◇ Detection Limit of Analyte Not Detected
- Estimated Concentration Trend Between Detections
- ROD Groundwater Cleanup Goal

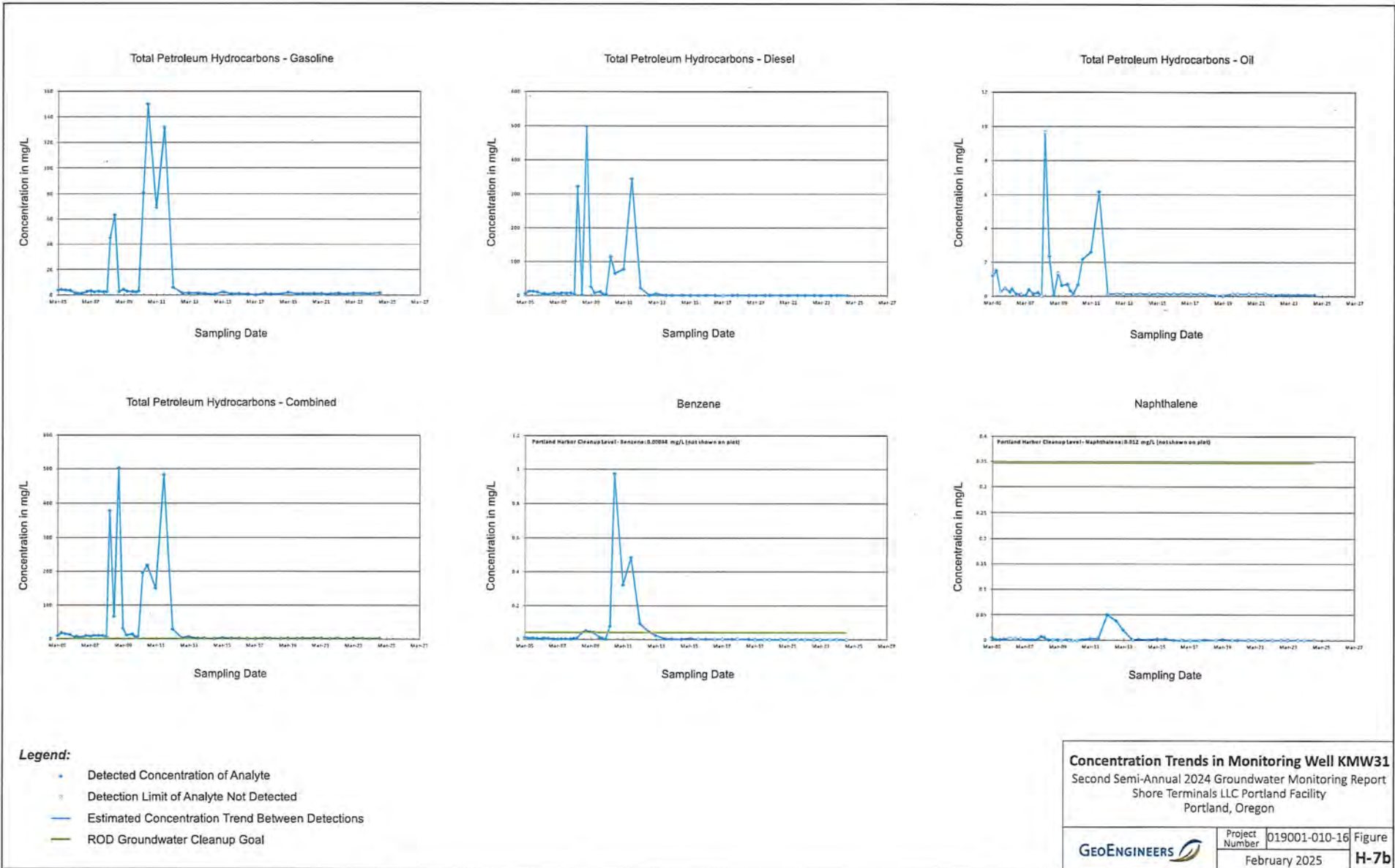
Concentration Trends in Monitoring Well KMW30
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

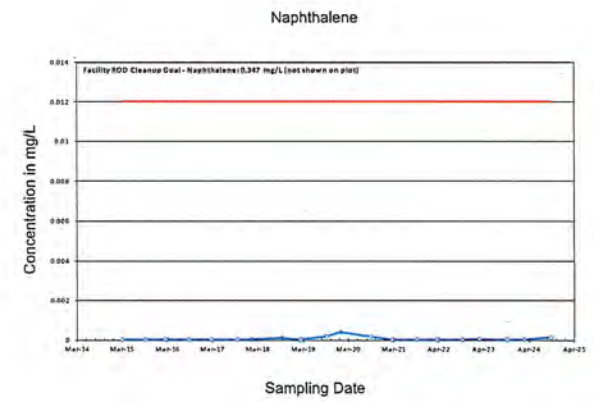
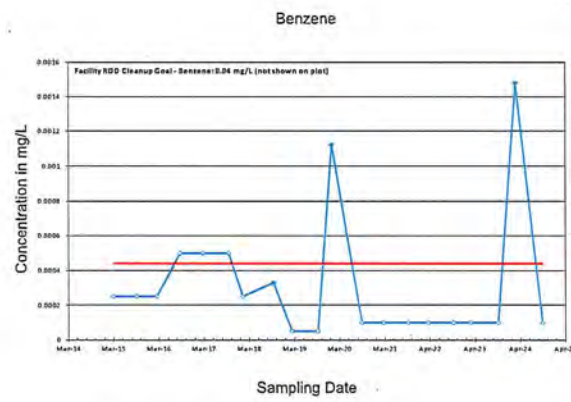
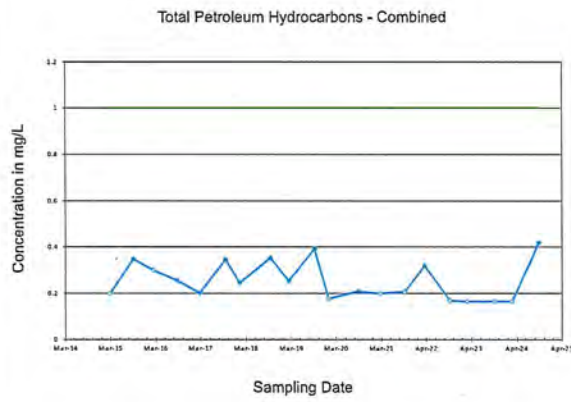
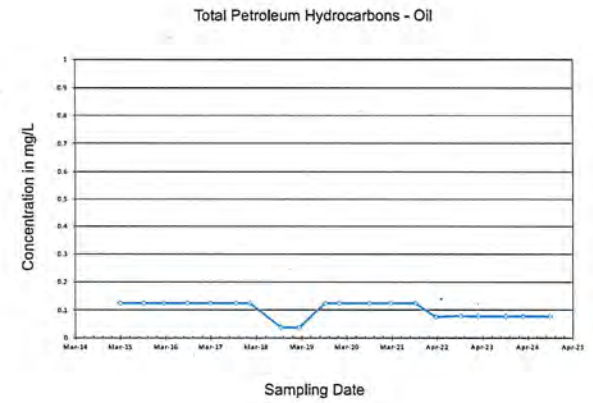
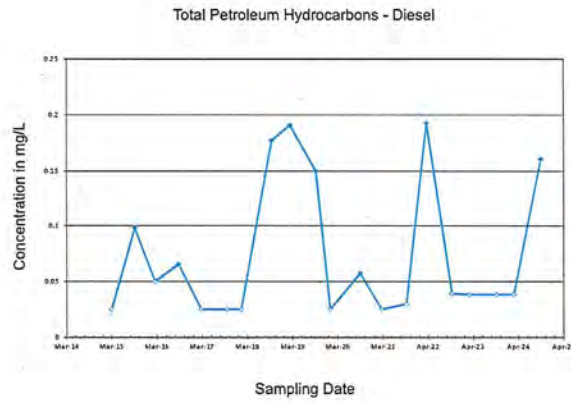
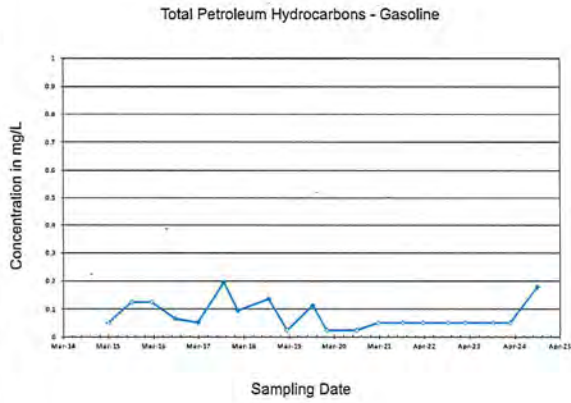


- Legend:**
- Detected Concentration of Analyte
 - ◊ Detection Limit of Analyte Not Detected
 - Estimated Concentration Trend Between Detections
 - ROD Groundwater Cleanup Goal
 - Portland Harbor Superfund Site Cleanup Level

Concentration Trends in Monitoring Well KMW31
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

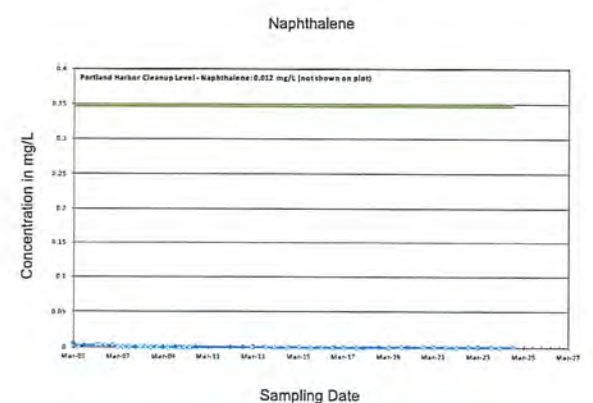
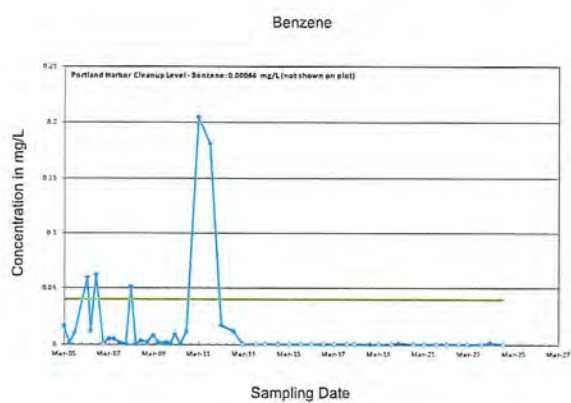
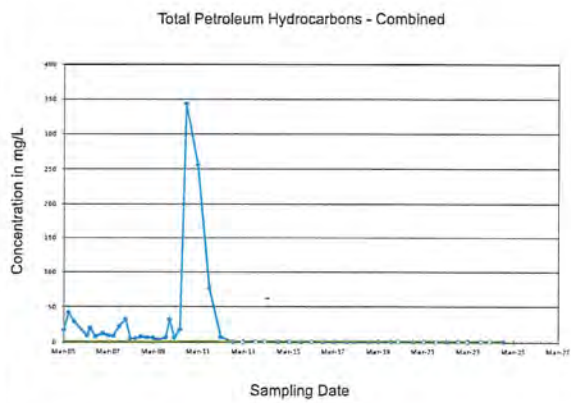
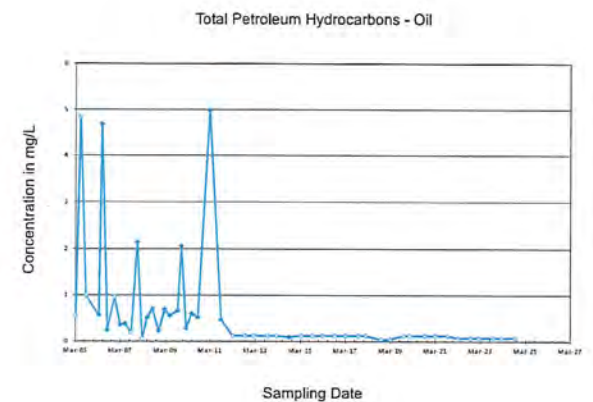
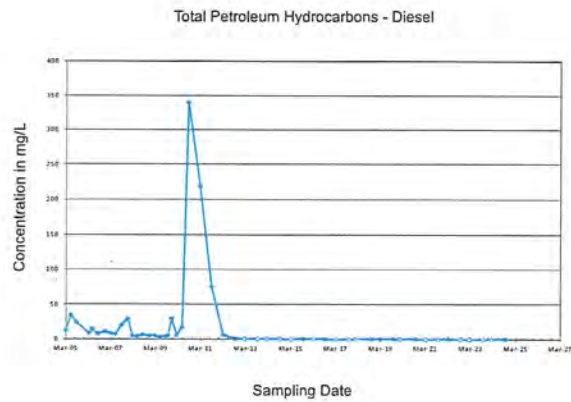
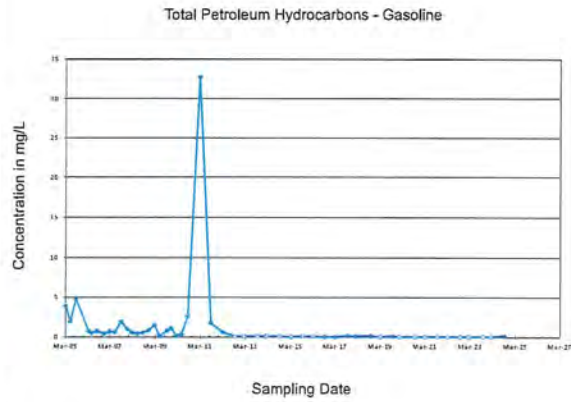
	Project Number	019001-010-16	Figure
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- Legend:**
- Detected Concentration of Analyte
 - Detection Limit of Analyte Not Detected
 - Estimated Concentration Trend Between Detections
 - ROD Groundwater Cleanup Goal
 - Portland Harbor Superfund Site Cleanup Level

Concentration Trends in Monitoring Well KMW32 Second Semi-Annual 2024 Groundwater Monitoring Report Shore Terminals LLC Portland Facility Portland, Oregon		
	Project Number	019001-010-16
	February 2025	Figure H-8a

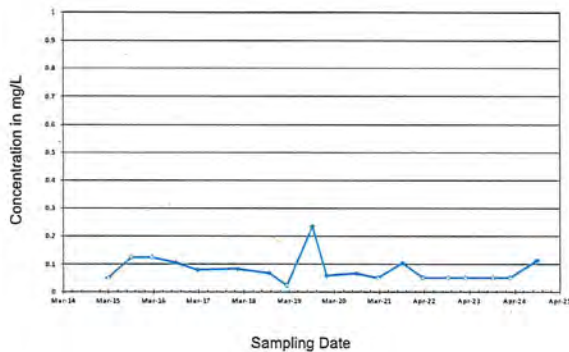


- Legend:**
- Detected Concentration of Analyte
 - Detection Limit of Analyte Not Detected
 - Estimated Concentration Trend Between Detections
 - ROD Groundwater Cleanup Goal

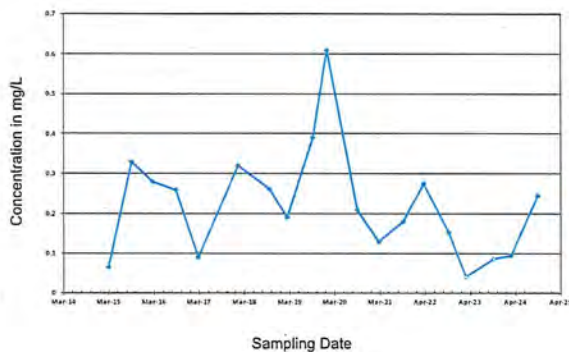
Concentration Trends in Monitoring Well KMW32
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

GEOENGINEERS	Project Number	019001-010-16	Figure
	February 2025		H-8b

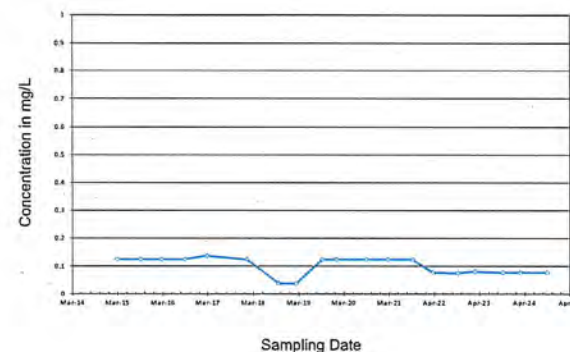
Total Petroleum Hydrocarbons - Gasoline



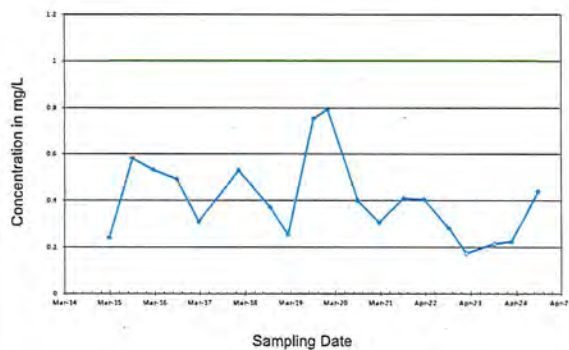
Total Petroleum Hydrocarbons - Diesel



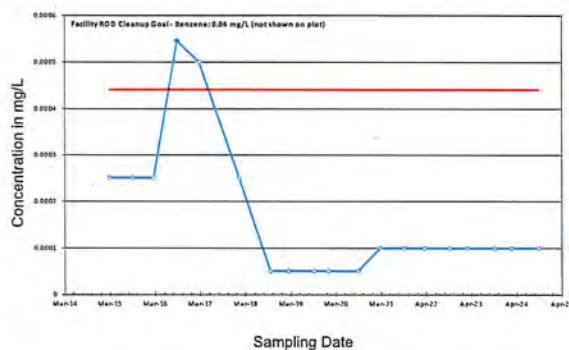
Total Petroleum Hydrocarbons - Oil



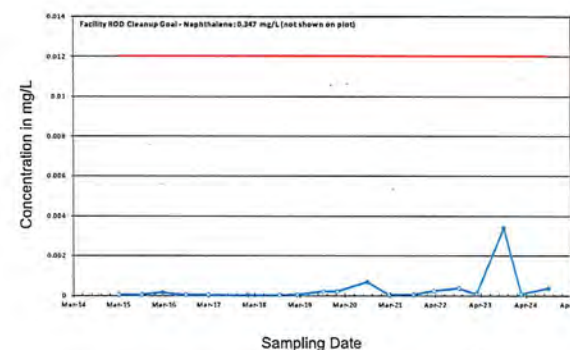
Total Petroleum Hydrocarbons - Combined



Benzene



Naphthalene

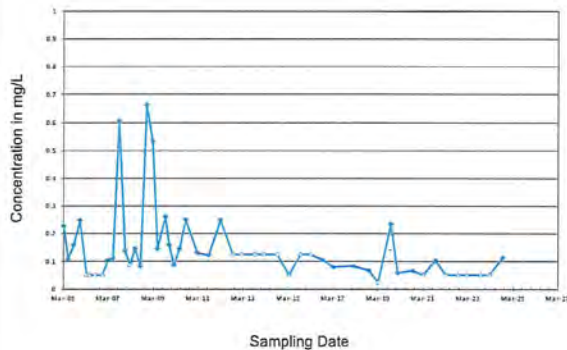


Legend:

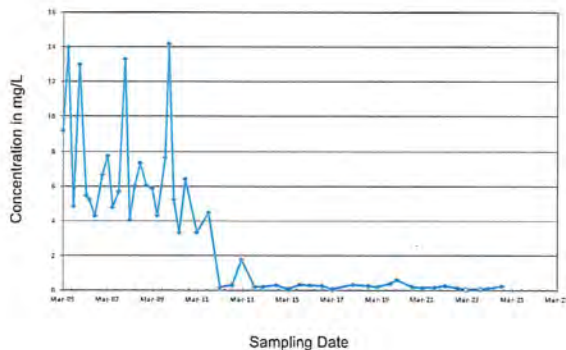
- Detected Concentration of Analyte
- Detection Limit of Analyte Not Detected
- Estimated Concentration Trend Between Detections
- ROD Groundwater Cleanup Goal
- Portland Harbor Superfund Site Cleanup Level

Concentration Trends in Monitoring Well KMW33
 Second Semi-Annual 2024 Groundwater Monitoring Report
 Shore Terminals LLC Portland Facility
 Portland, Oregon

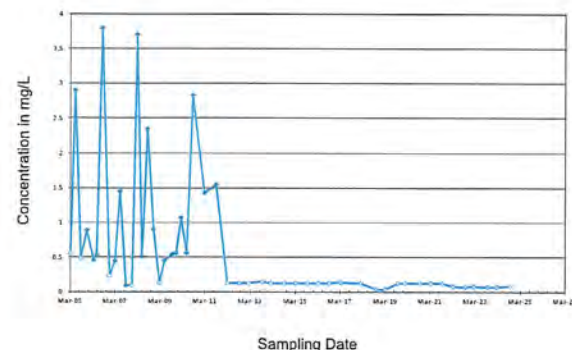
Total Petroleum Hydrocarbons - Gasoline



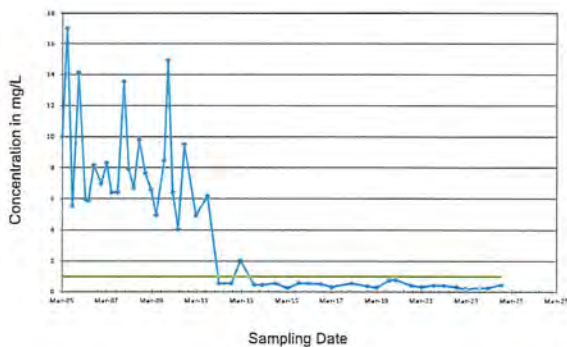
Total Petroleum Hydrocarbons - Diesel



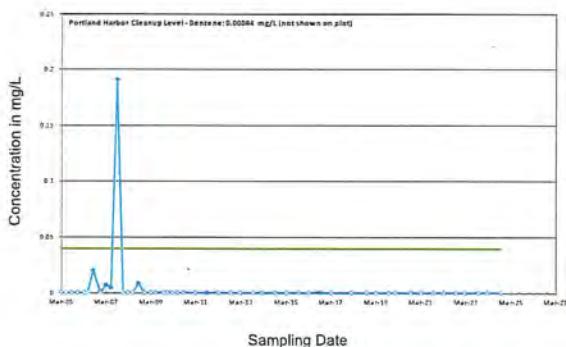
Total Petroleum Hydrocarbons - Oil



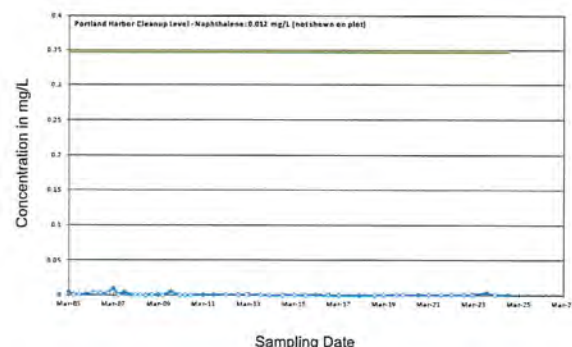
Total Petroleum Hydrocarbons - Combined



Benzene



Naphthalene

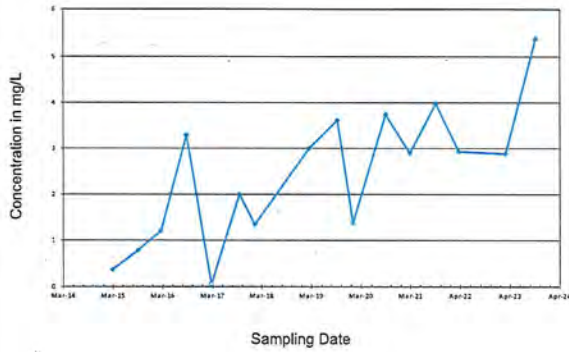


Legend:

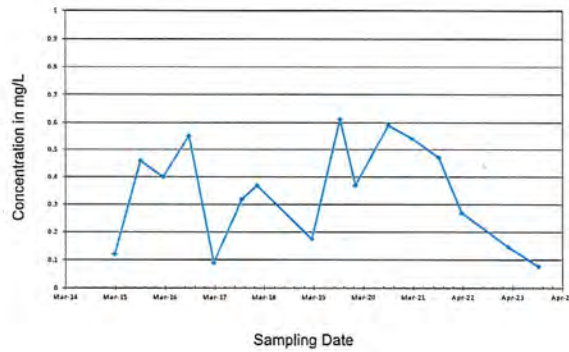
- Detected Concentration of Analyte
- ◇ Detection Limit of Analyte Not Detected
- Estimated Concentration Trend Between Detections
- ROD Groundwater Cleanup Goal

Concentration Trends in Monitoring Well KMW33		
Second Semi-Annual 2024 Groundwater Monitoring Report Shore Terminals LLC Portland Facility Portland, Oregon		
GEOENGINEERS 	Project Number	019001-010-16
	February 2025	Figure H-9b

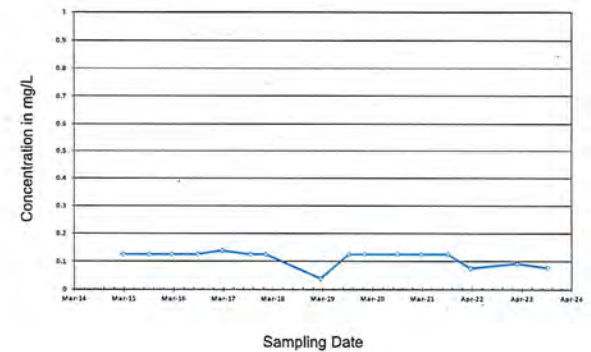
Total Petroleum Hydrocarbons - Gasoline



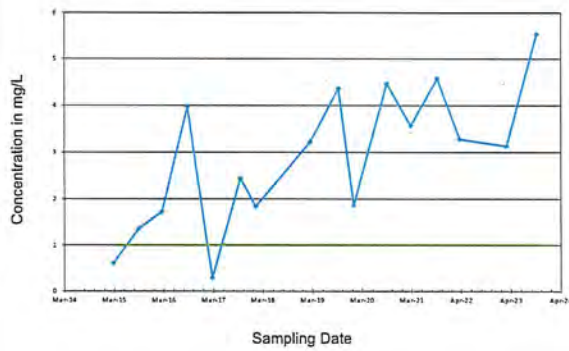
Total Petroleum Hydrocarbons - Diesel



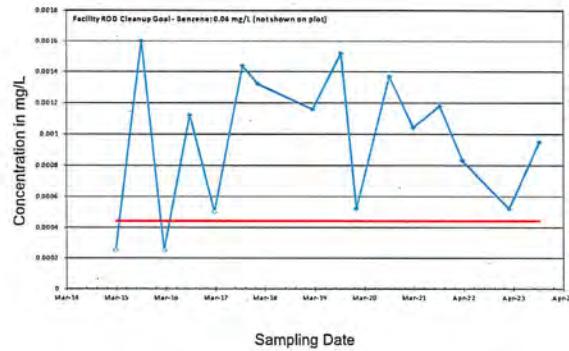
Total Petroleum Hydrocarbons - Oil



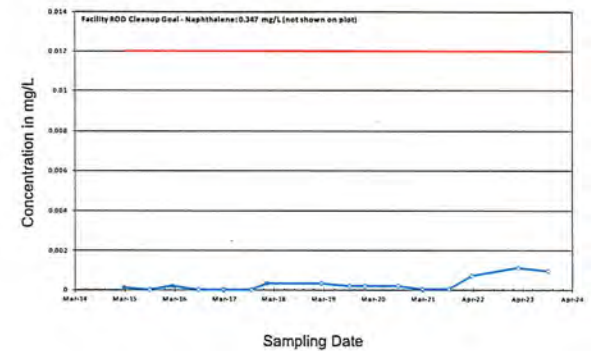
Total Petroleum Hydrocarbons - Combined



Benzene



Naphthalene



Legend:

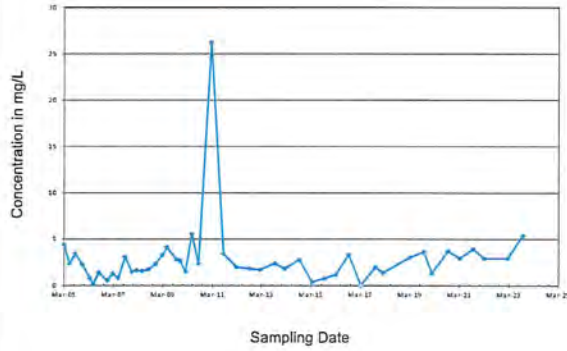
- Detected Concentration of Analyte
- ◊ Detection Limit of Analyte Not Detected
- Estimated Concentration Trend Between Detections
- ROD Groundwater Cleanup Goal
- Portland Harbor Superfund Site Cleanup Level

Concentration Trends in Monitoring Well KMW37
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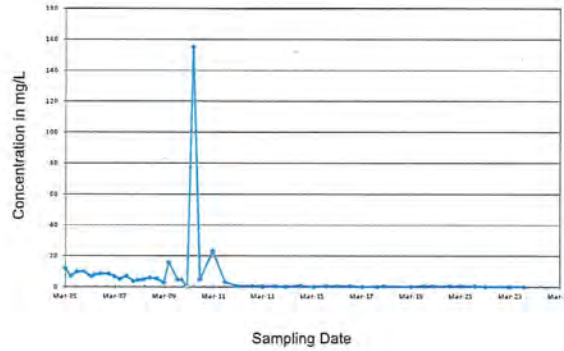


Project Number	019001-010-16	Figure
February 2025		H-10a

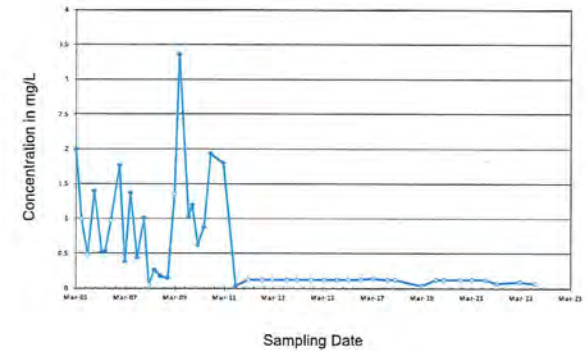
Total Petroleum Hydrocarbons - Gasoline



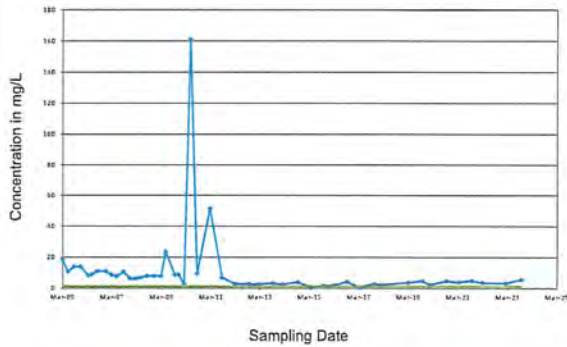
Total Petroleum Hydrocarbons - Diesel



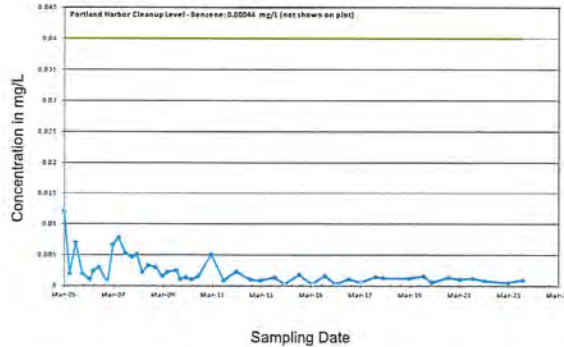
Total Petroleum Hydrocarbons - Oil



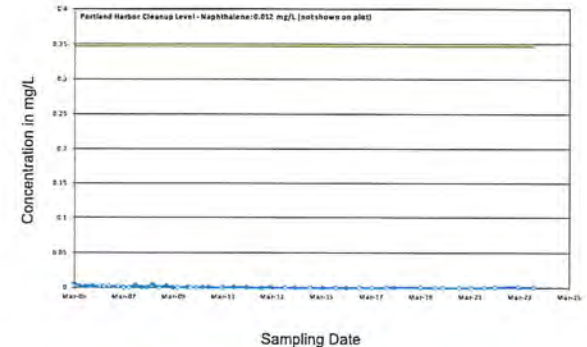
Total Petroleum Hydrocarbons - Combined



Benzene



Naphthalene



Legend:

- Detected Concentration of Analyte
- Detection Limit of Analyte Not Detected
- Estimated Concentration Trend Between Detections
- ROD Groundwater Cleanup Goal

Concentration Trends in Monitoring Well KMW37
 Second Semi-Annual 2024 Groundwater Monitoring Report
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Project Number	019001-010-16	Figure
February 2025		H-10b