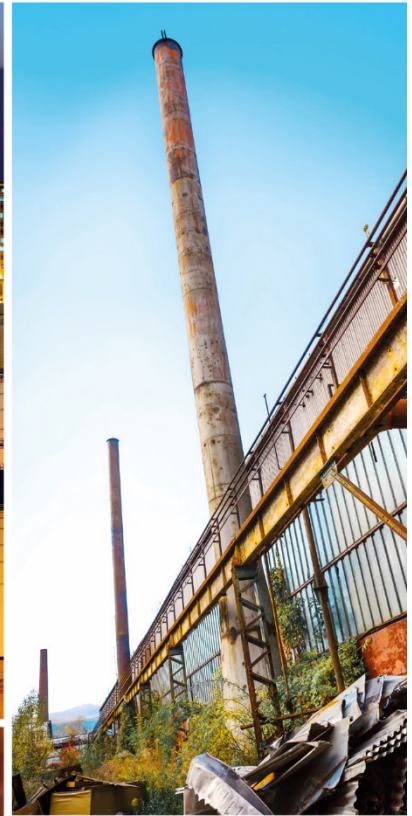




# **Addendum to Remedial Investigation Work Plan**

Former Tosco Bainbridge Bulk Plant 1784  
Weaver Avenue and  
Shepard Way Northwest  
Bainbridge Island, Washington  
Facility Site ID: 2659127

PNEC Corporation d.b.a. SC Fuels





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# 1. Introduction

GHD is submitting this *Addendum to Remedial Investigation Work Plan* on behalf of PNEC Corporation d.b.a. SC Fuels (PNEC) for the former Tosco Bainbridge Island Bulk Plant 1784 facility, located at Weaver Avenue and Shepard Way Northwest, Bainbridge Island, Kitsap County, Washington (Site; Figure 1). GHD submitted a *Remedial Investigation Work Plan* to the Washington State Department of Ecology (Ecology) on behalf of PNEC in May 2020, along with a Request for Opinion. Ecology issued an Opinion Letter, dated August 5, 2020, regarding the planned remedial investigation work. GHD discussed Ecology's August 2020 Opinion Letter comments in a telephone conversation with the Ecology Voluntary Cleanup Program (VCP) Site Manager, Mr. Mike Warfel, on August 13, 2020. This addendum was prepared to address Ecology's August 2020 Opinion Letter and telephone conversation comments to the May 2020 proposed work plan.

## 1.1 Response to Ecology August 2020 Opinion Letter

The following comments were included in Ecology's August 5, 2020, Opinion Letter:

- The spreadsheet with preliminary cleanup levels (PCULs) for soil, ground water, and surface water (developed by Ecology and sent to GHD) is mentioned, but not included, in the *Work Plan*. PCUL values in the spreadsheet will guide progress towards Site characterization and cleanup. Information in the spreadsheet should be incorporated in the *Work Plan*.

Response: The spreadsheet is included as Appendix A in this document.

- Ecology recommends moving the two proposed monitoring well locations ('A' on the City of Bainbridge Island park property and 'B' located on the Site) to positions directly downgradient (along flow lines) with respect to the MW-2A/GB-10 and MW-5/GB-14 locations. Please include one map showing the groundwater piezometric contours and the revised locations of the proposed wells as documentation.

Response: The revised location for proposed well A is shown on the attached Figure 3, which also includes groundwater piezometric contours from the most recent (December 14, 2018) groundwater sampling event. As discussed during our August 13, 2020 telephone call, well B is located downgradient of previous grab groundwater sample locations SB7 and GB-13 and will not be moved due to the location of the adjacent detention pond.

- Include surveying of new monitoring well elevations in the *Work Plan*, to facilitate incorporation of water level data into future groundwater piezometric maps. Wellhead elevations should be established by a Washington-licensed land surveyor.

Response: New and existing groundwater monitoring well locations and well casing elevations will be surveyed to established state plane and vertical data by a Washington-licensed land surveyor.

- As stated in the *Work Plan*, soil above PCULs remains at the Site after completion of the initial remedial excavations. The *Work Plan* addresses supplemental characterization of groundwater impacts only; additional soil confirmation sampling (using the soil PCULs) will be necessary to support a Feasibility Study of cleanup options. The lateral and vertical extent of contamination in soil above cleanup levels beyond the excavation boundaries needs to be delineated. Ecology



recommends preparation of a supplemental soil characterization work plan that identifies the additional confirmation sampling necessary to complete the Remedial Investigation.

Response: This addendum to the May 2020 work plan addresses the additional Site soil data requested by Ecology.

## 1.2 Background

The former Tosco Bainbridge Island Bulk Plant 1784 facility (Property) currently consists of vacant land and is comprised of a 0.9-acre parcel (Kitsap County Parcel No. 272502-4-005-2001) that measures approximately 60 feet wide (east to west) and 990 feet long. Weaver Creek is located along a portion of the west side of the Property, and Eagle Harbor is located at the south end of the Property. Historically, a heating oil bulk petroleum storage facility occupied the Property from about 1970 to 1997. Former facility features consisted of two 10,000-gallon and two 4,000-gallon horizontal above ground storage tanks (ASTs), a pumping station, an overhead loading rack, and a detention pond in the southern portion of the Property. A Site Plan and Detailed Site Plan showing the approximate locations of former Property features are included as Figures 2 and 3, respectively. The former facility ASTs, pumping station, and overhead loading rack structures were removed in September 1997. Petroleum impacted soil and groundwater have been identified at the Property during several investigations that have taken place since 1997, and several remedial treatment activities were completed at the Property from 1999 through 2015.

The Property is bounded to the north by Shepard Way Northwest, beyond which are residences; to the east by a City of Bainbridge Island walking path right-of-way (ROW), beyond which is Bromley Place Northwest and residences; to the south by Eagle Harbor; and to the west by the City of Bainbridge Island Strawberry Plant Park and Weaver Creek.

Based on the Property history, Ecology's risk assessment matrix, and discussions with Ecology, contaminants of concern (COCs) for the Property have been identified as total petroleum hydrocarbons (TPH) as gasoline range (TPHg), as diesel range (TPHd), and as oil range (TPHo); and naphthalenes. Ecology and GHD have jointly agreed that the use of the Model Toxics Control Act (MTCA) Method A cleanup levels is sufficient for the Site, with the exception of TPHd. Concentrations of TPHd will be compared to 460 milligrams per kilogram (mg/kg), the cleanup level for soil identified for unrestricted land use in Table 749-2 *Priority Contaminants of Ecological Concern for Sites that Qualify for the Simplified Terrestrial Ecological Evaluation Procedure*. Site soil must comply with the Simplified Terrestrial Ecological Evaluation (TEE) TPHd cleanup level to a depth of 6 feet below ground surface (bgs).

Based on the comparison of the 2018 Site investigation results and the above identified cleanup levels, impacted soil remains along the eastern sidewall of the main remedial excavation, near soil borings GB-2 through GB-4, from depths of approximately 8 to 14 feet bgs. Impacted groundwater remains in the vicinity of well MW-2A, located west of the main remedial excavation and along the western property boundary, and well MW-5, located along the western edge of the detention pond. Additionally, impacted groundwater was identified in grab samples collected from the 2018 temporary groundwater monitoring wells installed in direct-push soil borings GB-10, located in the vicinity of MW-2A; GB-13, located along the northern edge of the detention pond; and GB-14, located in the vicinity of MW-5.



## 2. Objectives and Scope

The objective and scope of this addendum to the Remedial Investigation are as follows:

- Evaluate shallow soil conditions in the vicinity of previous soil borings GB-2 through GB-4 to a depth of 6 feet bgs for completing a Simplified TEE.

Historical soil data are provided in Table 1, and historical groundwater data are provided in Table 2. A Site Plan and a Detailed Site Plan with the proposed soil boring and revised groundwater monitoring well locations are provided as Figures 2 and 3, respectively.

## 3. Pre-field Activities

GHD will complete the following pre-field activities:

### 3.1 Health and Safety Plan

GHD will prepare a Site-specific Health and Safety Plan (HASP) in accordance with federal regulations (Title 40, Code of Federal Regulations, Section 1910.120). The HASP will identify potential physical and chemical hazards associated with the proposed field activities and will outline safe work practices.

### 3.2 Underground Utility Clearance

Prior to any Site work involving soil disturbance, Washington State One Call Utility Notification Service will be called to alert the utility companies in the area of the scheduled work and to request identification of all underground utilities in the vicinity of the disturbance area. A private utility locating contractor will be retained to mark private utilities and to verify the absence of underground utilities near each of the proposed boring locations.

## 4. Investigation Activities

### 4.1 Soil Assessment

Six soil borings will be advanced to further characterize shallow soil at the Site. The borings will be advanced by a Washington State licensed driller using a direct-push drill rig. The locations of the proposed borings are presented on Figures 2 and 3. The table below outlines sample location, sample depth, proposed completion depths, purpose, and selected analysis per boring location.



**Table 4.1 Soil Boring Plan**

Proposed Boring	Anticipated Soil Samples Per Boring	Anticipated Total Depth	Purpose	Soil Analysis
1 through 6	2 samples per boring  1 sample at approximately 3 feet bgs, based on field screening  1 sample at the bottom of the boring, approximately 6 feet bgs	6 feet bgs, final depth based on field screening, observed water table, and TEE requirements  Borings will be backfilled with bentonite chips hydrated with potable water	Assess shallow soil conditions in the vicinity of previous soil borings GB-2 through GB-4.	TPHg, TPHd, TPHo, BTEX, naphthalenes

**Notes:**

bgs = below ground surface

TPHg = Gasoline range organics per Northwest Total Petroleum Hydrocarbon Method for Gasoline Range Organics (NWTPH-Gx)

TPHd = Diesel range organics per Northwest Total Petroleum Hydrocarbon for Diesel Range Organics and Heavy Oils (NWTPH-Dx)

TPHo = Oil range organics per NWTPH-Dx

BTEX = benzene, toluene, ethylbenzene and xylenes per EPA Method 8260B

Naphthalenes = 1-methyl-naphthalene, 2-methyl-naphthalene, and naphthalene per EPA Method 8270 with selected ion monitoring (SIM)

## 4.2 Soil Sampling and Logging

The borings will be advanced by dual tube direct push technology to the depths noted above. Soil samples will be collected using 2-inch diameter direct push rods with Macrocore® sampling liners. Soil will be continuously logged using the modified Unified Soil Classification System. Soil samples will be screened continuously using a photo ionization detector (PID) and visual inspection. Soil samples will be collected in accordance with Table 4.1 above. Soil samples submitted for chemical analyses will be labeled, entered onto a chain of custody form, packed on ice, and sent to ALS Laboratory (ALS) in Everett, Washington.

## 4.3 Investigation Derived Waste (IDW)

IDW will include decontamination fluids and soil from borings. All IDW will be placed in properly labeled 55-gallon drums and stored on Site pending analyses. All IDW will be disposed of according to applicable regulatory requirements.

# 5. Reporting and Scheduling

Following completion of the above activities and receipt of laboratory analytical data, GHD will prepare a remedial investigation report to summarize the completed Site investigation activities to date.

GHD will begin the proposed work upon receipt of Ecology’s approval of this work plan.



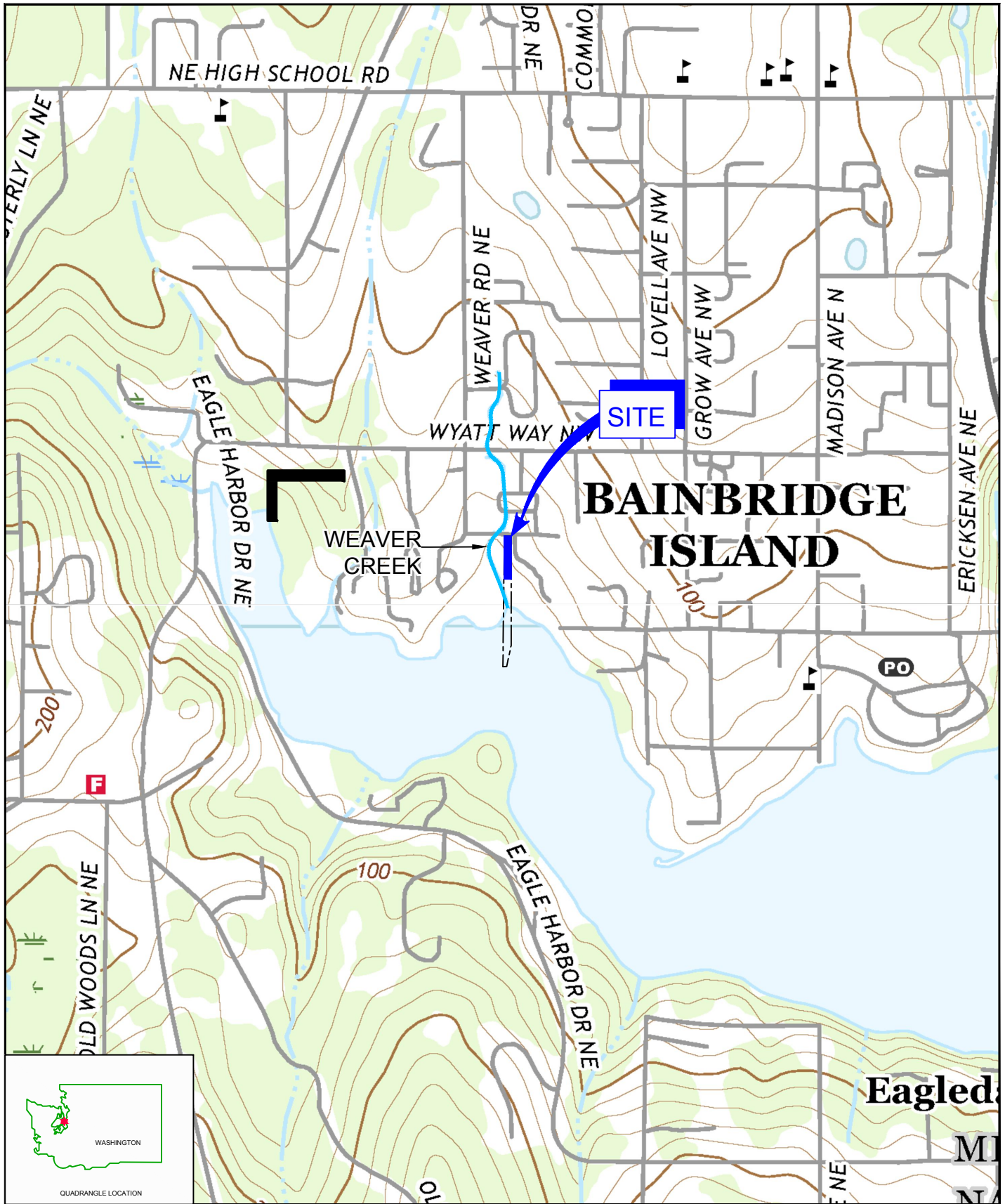
All of Which is Respectfully Submitted,  
GHD

*Emily Blakeway*  
Emily Blakeway



Michael D. Noll, L.G., L.Hg.

# Figures



Source: USGS Quadrangle Map, Suquamish and Bremerton East, WA 2017.

0 500 1000ft

Coordinate System:  
 Washington State  
 Plane North  
 WA83-NF



**LEGEND**



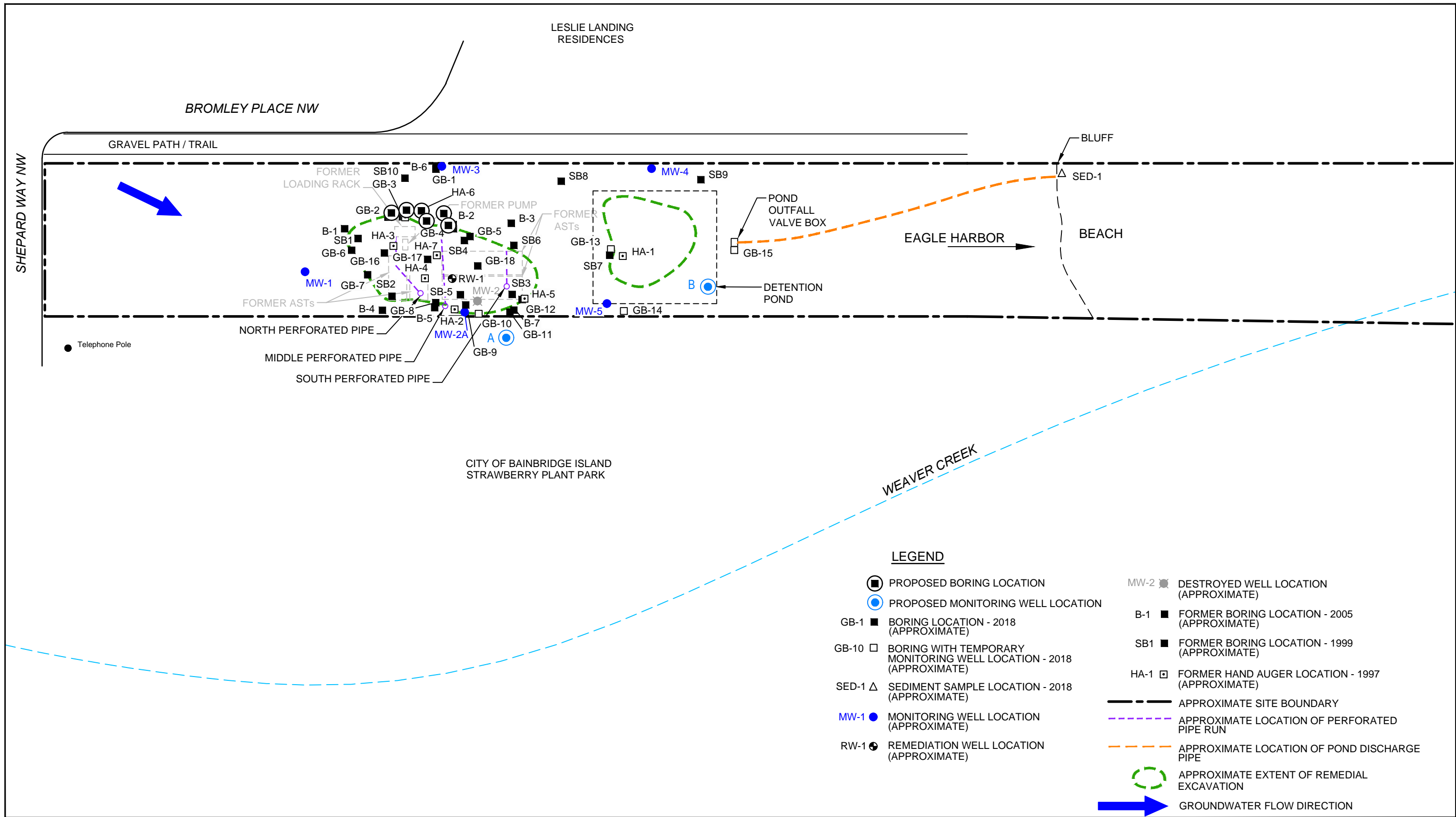
FORMER TOSCO BULK PLANT 1784  
 WEAVER AVENUE AND SHEPARD WAY NW  
 BAINBRIDGE ISLAND, WASHINGTON

11187604-18.01

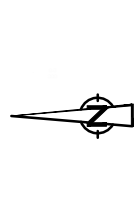
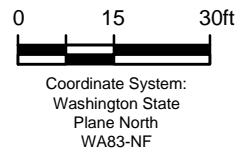
Jan 7, 2019

**VICINTIY MAP**

**FIGURE 1**



Source: Terracon Consulting Engineers and Scientists Site Diagram dated Sept 2017.



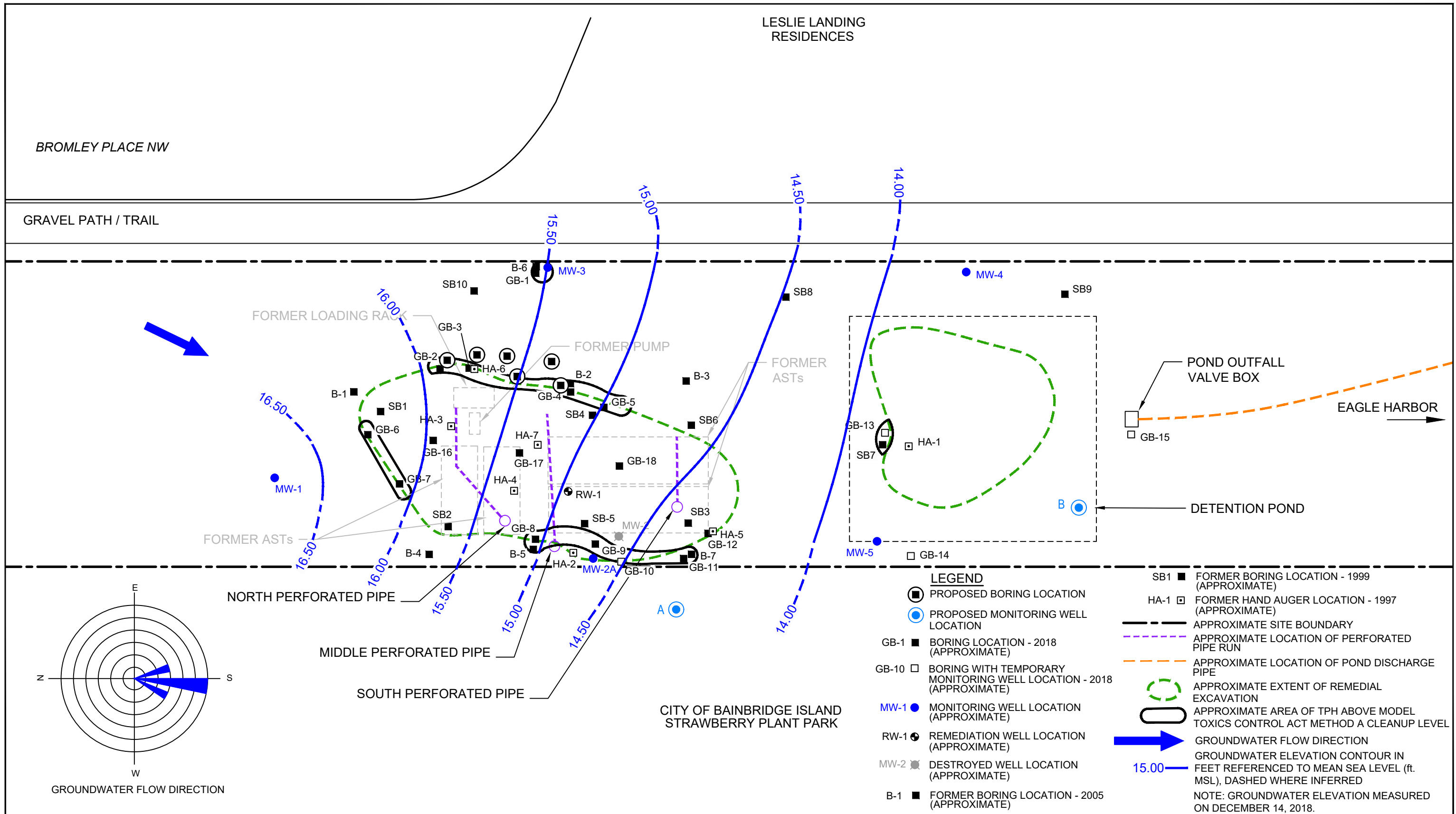
FORMER TOSCO BULK PLANT 1784  
WEAVER AVENUE AND SHEPARD WAY NW  
BAINBRIDGE ISLAND, KITSAP COUNTY, WASHINGTON

SITE PLAN

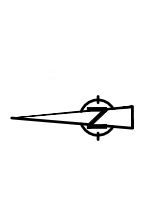
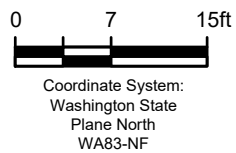
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Aug 27, 2020

FIGURE 2



Source: Terracon Consulting Engineers and Scientists Site Diagram dated Sept 2017 and Proposed Boring Location Map dated Jan 2018.



FORMER TOSCO BULK PLANT 1784  
 WEAVER AVENUE AND SHEPARD WAY NW  
 BAINBRIDGE ISLAND, KITSAP COUNTY, WASHINGTON

DETAILED SITE PLAN

11187604-18.01

Oct 27, 2020

FIGURE 3

# Tables

Table 1

**Summary of Soil Analytical Data  
Former Tosco Bainbridge Island Bulk Plant 1784  
Weaver Avenue and Shepard Way Northwest  
Bainbridge Island, Washington**

Boring ID/Monitoring Well ID/Sample Location	Sample ID	Sample Date	Sample Depth ft bgs	Soil Sample Removed/In- place (mg/kg)	Hydrocarbons			VOCs <sup>1</sup>				PAHs <sup>1</sup>
					TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalenes <sup>3</sup>
					100 (mg/kg)	460 <sup>4</sup> (mg/kg)	<50 (mg/kg)	0.03 (mg/kg)	7 (mg/kg)	6 (mg/kg)	9 (mg/kg)	5 (mg/kg)
<b>MTCA Method A Cleanup Level</b>												
<b>GHD Subsurface Investigation - December 2018</b>												
GB-1	S.11187604.121418.MN.GB.1.8'	12/14/18	8	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
	S.11187604.121418.MN.GB.1.14.5'	12/14/18	14.5	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
GB-2	S.11187604.121418.MN.GB.2.9'	12/14/18	9	In-Place	<60	1,400 <sup>2</sup>	<50	<0.005	<0.010	0.028	0.070	7.27
	S.11187604.121418.MN.GB.2.11'	12/14/18	11	In-Place	<3.0	860 <sup>2</sup>	<50	<0.005	<0.010	<0.010	<0.020	--
GB-3	S.11187604.121418.MN.GB.3.8'	12/14/18	8	In-Place	<30	2,300 <sup>2</sup>	<100	<0.005	<0.010	<0.010	<0.020	5.35
	S.11187604.121418.MN.GB.3.12'	12/14/18	12	In-Place	<30	2,000 <sup>2</sup>	<100	<0.005	<0.010	<0.010	0.021	--
GB-4	S.11187604.121418.MN.GB.4.9'	12/14/18	9	In-Place	<30	1,200 <sup>2</sup>	<100	<0.005	<0.010	<0.010	<0.020	--
	S.11187604.121418.MN.GB.4.14'	12/14/18	14	In-Place	<3.0	840 <sup>2</sup>	<100	<0.005	<0.010	<0.010	<0.020	--
GB-5	S.11187604.121418.MN.GB.5.8'	12/14/18	8	In-Place	<3.0	160 <sup>2</sup>	<50	<0.005	<0.010	<0.010	<0.020	--
	S.11187604.121418.MN.GB.5.14'	12/14/18	14	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
GB-6	S.11187604.122118.MN.GB.6.9'	12/21/18	9	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
	S.11187604.122118.MN.GB.6.13'	12/21/18	13	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
GB-7	S.11187604.122118.MN.GB.7.14'	12/21/18	14	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
GB-8	S.11187604.122118.MN.GB.8.13'	12/21/18	13	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
GB-9	S.11187604.122118.MN.GB.9.9'	12/21/18	9	In-Place	<3.0	73	<50	<0.005	<0.010	<0.010	<0.020	--
	S.11187604.122118.MN.GB.9.13'	12/21/18	13	In-Place	<3.0	41	<50	<0.005	<0.010	<0.010	<0.020	--
GB-10	S.11187604.121418.MN.GB.10.7'	12/14/18	7	In-Place	<3.0	220 <sup>2</sup>	<50	<0.005	<0.010	<0.010	<0.020	--
	S.11187604.121418.MN.GB.10.12'	12/14/18	12	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
GB-11	S.11187604.122118.MN.GB.11.9'	12/21/18	9	In-Place	<3.0	380	<50	<0.005	<0.010	<0.010	<0.020	--
	S.11187604.122118.MN.GB.11.14'	12/21/18	14	In-Place	<3.0	400	<50	<0.005	<0.010	<0.010	<0.020	--
GB-12	S.11187604.122118.MN.GB.12.8'	12/21/18	8	In-Place	<3.0	100	<50	<0.005	<0.010	<0.010	<0.020	--
	S.11187604.122118.MN.GB.12.12'	12/21/18	12	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
GB-13	S.11187604.121418.MN.GB.13.9'	12/14/18	9	In-Place	<3.0	190 <sup>2</sup>	<50	<0.005	<0.010	<0.010	<0.020	--
	S.11187604.121418.MN.GB.13.12'	12/14/18	12	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
GB-14	S.11187604.121418.MN.GB.14.7'	12/14/18	7	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
	S.11187604.121418.MN.GB.14.12'	12/14/18	12	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
GB-15	S.11187604.121418.MN.GB.15.7'	12/14/18	7	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
	S.11187604.121418.MN.GB.15.12'	12/14/18	12	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
GB-16	S.11187604.122118.MN.GB.16.4'	12/21/18	4	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
GB-17	S.11187604.122118.MN.GB.17.4'	12/21/18	4	In-Place	<3.0	71	<50	<0.005	<0.010	<0.010	<0.020	--
GB-18	S.11187604.122118.MN.GB.18.4'	12/21/18	4	In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	--
SED-1	S.11187604.121418.MN.SED-1	12/14/18		In-Place	<3.0	<25	<50	<0.005	<0.010	<0.010	<0.020	<0.020

Table 1

**Summary of Soil Analytical Data  
Former Tosco Bainbridge Island Bulk Plant 1784  
Weaver Avenue and Shepard Way Northwest  
Bainbridge Island, Washington**

Boring ID/Monitoring Well ID/Sample Location	Sample ID	Sample Date	Sample Depth	Soil Sample Removed/In-place	Hydrocarbons			VOCs <sup>1</sup>				PAHs <sup>1</sup>
					TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalenes <sup>3</sup>
	MTCA Method A Cleanup Level				100	460 <sup>4</sup>		0.03	7	6	9	5
			ft bgs	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
<b>SECOR Subsurface Investigation - May 2005</b>												
B-1	B1-8'	2/16/2005	8	In-Place	<4	<24.2	<48.3	<0.04	<0.04	<0.04	<0.04	--
B-2	B2-8'	2/16/2005	8	In-Place	<b>619</b>	<b>1,220</b> <sup>2</sup>	<52.6	<0.19	<0.19	<0.19	<0.19	<b>7.756</b>
B-3	B3-8'	2/16/2005	8	In-Place	11.9	<24.8	<49.5	<0.0364	<0.0364	<0.0364	<0.0364	--
<b>SECOR Subsurface Investigation - May 2005</b>												
B-4	B4-8'	2/16/2005	8	In-Place	5.27	<24.7	<49.3	<0.0363	<0.0363	<0.0363	<0.0363	--
B-5	B5-8'	2/16/2005	8	In-Place	<b>355</b>	<b>3,300</b> <sup>2</sup>	54.8	<0.204	<0.204	<0.204	<0.204	<b>24.450</b>
B-6	B6-8'	2/16/2005	8	In-Place	<b>121</b>	<22.6	<45.3	<0.179	<0.179	<0.179	<0.179	--
B-7	B7-8'	2/16/2005	7	In-Place	<b>291</b>	<b>1,830</b> <sup>2</sup>	<48.6	<0.167	<0.167	<0.167	<0.167	1.669
<b>Recovery Well and MW-2 replacement Well Installation - March 2003</b>												
	MW2A-10'	3/19/2003	10	In-Place	79.3	891	<25	<0.12	<0.2	<0.2	0.415	--
MW-2A	MW-2A-12.5'	3/19/2003	12.5	In-Place	<5	28.5	<25	<0.03	<0.05	<0.05	<0.1	--
	MW-2A-15'	3/19/2003	15	In-Place	<5	18.1	<25	<0.03	<0.05	<0.05	<0.1	--
	RW1-10'	3/19/2003	10	In-Place	53.0	<b>1,050</b>	<25	<0.06	<0.1	<0.1	0.270	--
RW-1	RW1-12.5'	3/19/2003	12.5	In-Place	<5	13.6	<25	<0.03	<0.05	<0.05	<0.1	--
	RW1-15'	3/19/2003	15	In-Place	<5	<10	<25	<0.03	<0.05	<0.05	<0.1	--
<b>Former Tank Excavation at MW-2 - March 2003</b>												
	WWALL-4	3/7/2003	4	In-Place	<20	567	<25	<0.03	<0.5	<0.5	<0.1	--
MW-2 Excavation/ Former Tank Excavation	WWALL-7	3/7/2003	7	In-Place	<b>367</b>	<b>6,550</b>	<250	<0.03	<0.5	<0.5	1.81	--
	WWALL-8	3/7/2003	8	In-Place	<b>107</b>	<b>1,240</b>	<25	<0.06	<0.1	0.145	0.411	--
<b>Monitoring Well Installation - June 2001</b>												
	MW1-5	6/27/2001	5	In-Place	<20	<50	<100	--	--	--	--	--
MW-1	MW1-10	6/27/2001	10	In-Place	<20	<50	<100	--	--	--	--	--
	MW2-5	6/27/2001	5	Removed	<5	24.4	<25	<0.05	<0.05	<0.05	<0.1	--
MW-2	MW2-10	6/27/2001	10	Removed	<b>186</b>	<b>900</b>	<25	<0.05	<0.05	0.179	0.461	--
	MW2-15	6/27/2001	15	In-Place	75.9	<b>477</b>	<25	<0.05	<0.05	0.0604	0.179	--
MW-3	MW3-5	6/27/2001	5	In-Place	<20	<50	<100	--	--	--	--	--
	MW3-10	6/27/2001	10	In-Place	<20	<50	<100	--	--	--	--	--
MW-4	MW4-5	6/27/2001	5	In-Place	<20	<50	<100	--	--	--	--	--
	MW4-10	6/27/2001	10	In-Place	<20	<50	<100	--	--	--	--	--
MW-5	MW5-5	6/27/2001	5	In-Place	<20	<50	<100	--	--	--	--	--
	MW5-10	6/27/2001	10	In-Place	<20	<50	<100	--	--	--	--	--

Table 1

**Summary of Soil Analytical Data  
Former Tosco Bainbridge Island Bulk Plant 1784  
Weaver Avenue and Shepard Way Northwest  
Bainbridge Island, Washington**

Boring ID/Monitoring Well ID/Sample Location	Sample ID	Sample Date	Sample Depth	Soil Sample Removed/In-place	Hydrocarbons			VOCs <sup>1</sup>				PAHs <sup>1</sup>
					TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalenes <sup>3</sup>
	<b>MTCA Method A Cleanup Level</b>				<b>100</b>	<b>460<sup>4</sup></b>		<b>0.03</b>	<b>7</b>	<b>6</b>	<b>9</b>	<b>5</b>
			<i>ft bgs</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>
<b>Retention Pond and Former AST Excavation Sampling - June 2001</b>												
North Trench	N-Trench-E-11'	6/13/2001	11	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	--
South Trench	S-Trench-E-10'	6/13/2001	10	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	--
	EWALL-N-5'	6/13/2001	5	In-Place	<b>715</b>	<b>2,530</b>	<275	<0.05	<0.05	<0.05	1.17	--
East Wall	EWALL-MID-10'	6/13/2001	10	In-Place	<b>183</b>	<b>804</b>	<75	<0.2	<0.2	<0.2	<0.4	--
	EWALL-S-8'	6/13/2001	8	In-Place	<b>122</b>	<b>586</b>	<25	<0.5	<0.5	<0.5	<1	--
North Wall	NWALL-E-6'	6/13/2001	6	In-Place	<b>183</b>	<b>655</b>	<75	<0.2	<0.2	<0.2	<0.4	--
	NWALL-W-7'	6/13/2001	7	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	--
<b>Retention Pond and Former AST Excavation Sampling - June 2001</b>												
	WWALL-N-7'	6/13/2001	7	In-Place	<b>295</b>	<b>984</b>	<275	ND	ND	ND	ND	--
West Wall	WWALL-MID-10'	6/13/2001	10	In-Place	<b>264</b>	<b>1,330</b>	<275	<0.05	<0.5	<0.5	<1	--
	WWALL-S-9'	6/13/2001	9	In-Place	<b>179</b>	<b>723</b>	<25	<0.05	<0.5	<0.5	<1	--
	WWALL-PIPES-8'	6/13/2001	8	In-Place	<b>302</b>	<b>1,660</b>	<275	<0.05	<0.5	<0.5	<1	--
South Wall	SWALL-8'	6/13/2001	8	In-Place	7.55	40.30	<25	<0.05	<0.05	<0.05	<0.1	--
Mid-Trench	Mid-Trench-E-12'	6/12/2001	12	In-Place	14.9	57.2	<25	<0.05	<0.05	<0.05	<0.1	--
	Mid-Trench-W-12'	6/12/2001	12	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	--
	Pondsed-1-6'	6/27/2000	6	In-Place	<5	353	<275	<0.05	<0.05	<0.05	<0.1	--
Pondsed	Pondsed-2-6'	6/27/2000	6	In-Place	<5	29.5	40.8	<0.05	<0.05	<0.05	<0.1	--
	Pondsed-3-6'	6/27/2000	6	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	--
	Pondsed-4-6'	6/27/2000	6	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	--
<b>Additional Site Assessment - December 1999</b>												
SB1	SB1-4	12/3/1999	4	Removed	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	--
	SB1-6	12/3/1999	6	Removed	--	--	--	--	--	--	--	--
SB2	SB2-4	12/3/1999	4	Removed	--	--	--	--	--	--	--	--
	SB2-7	12/3/1999	7	Removed	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	--
	SB3-3	12/3/1999	3	Removed	<b>681</b>	<b>4,410</b>	<50	<1	<1	<1	<44	--
SB3	SB3-6	12/3/1999	6	Removed	<b>779</b>	<b>2,790</b>	<30	<1	<1	<1	<2	--
SB4	SB4-7	12/3/1999	7	Removed	<b>777</b>	<b>1,410</b>	<25	<1	<1	<1	<2	--
SB5	SB5-4	12/3/1999	4	Removed	ND	ND	<25	<0.05	<0.05	<0.05	<0.1	--
	SB5-7	12/3/1999	7	Removed	<b>223</b>	<b>1,110</b>	<25	<0.5	<0.5	<0.5	<1	--
SB6	SB6-4	12/3/1999	4	In-Place	41.2	138	<25	<0.05	<0.05	<0.05	<0.1	--
	SB6-6	12/3/1999	6	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	--
SB7	SB7-3	12/3/1999	3	In-Place	<5	14.4	<25	<0.05	<0.05	<0.05	<0.1	--
	SB7-6	12/3/1999	6	In-Place	<b>189</b>	182	<25	<0.2	<0.2	<0.2	<0.4	--
SB8	SB8-7	12/3/1999	7	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	--
SB9	SB9-7	12/3/1999	7	In-Place	<5	<10	<25	<0.05	<0.05	<0.05	<0.1	--
SB10	SB10-7	12/3/1999	7	In-Place	50.7	360	<25	<0.05	<0.05	<0.05	<0.1	--
<b>Pacific Environmental Group, Inc. Soil Investigation - September 1997</b>												
HA-1	HA1-1	9/15/1997	1	Removed	--	12	<25	--	--	--	--	--

**Summary of Soil Analytical Data  
Former Tosco Bainbridge Island Bulk Plant 1784  
Weaver Avenue and Shepard Way Northwest  
Bainbridge Island, Washington**

Boring ID/Monitoring Well ID/Sample Location	Sample ID	Sample Date	Sample Depth	Soil Sample Removed/In-place	Hydrocarbons			VOCs <sup>1</sup>				PAHs <sup>1</sup>
					TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes	Naphthalenes <sup>3</sup>
	<b>MTCA Method A Cleanup Level</b>				<b>100</b>	<b>460<sup>4</sup></b>	<b>0.03</b>	<b>7</b>	<b>6</b>	<b>9</b>	<b>5</b>	
			<i>ft bgs</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	<i>(mg/kg)</i>	
HA-2	HA2-1	9/15/1997	1	Removed	--	293	59.8	--	--	--	--	--
	HA2-3	9/15/1997	3	Removed	--	232	27.7	--	--	--	--	--
	HA3-0.5	9/15/1997	0.5	Removed	--	<b>9,390</b>	<275	--	--	--	--	--
HA-3	HA3-3	9/15/1997	3	Removed	--	<b>9,110</b>	<525	--	--	--	--	--
	HA3-5	9/15/1997	5	Removed	--	<b>2,360</b>	<275	--	--	--	--	--
<b>Pacific Environmental Group, Inc. Soil Investigation - September 1997</b>												
HA-4	HA4-1	9/15/1997	1	Removed	--	<b>1,110</b>	31.3	--	--	--	--	--
	HA4-2.5	9/15/1997	2.5	Removed	--	29	<25	--	--	--	--	--
HA-5	HA5-1	9/15/1997	1	Removed	--	<b>21,200</b>	710	--	--	--	--	--
	HA5-4.5	9/15/1997	4.5	Removed	--	<b>8,240</b>	<275	--	--	--	--	--
HA-6	HA6-1	9/15/1997	1	Removed	--	<b>15,600</b>	<525	--	--	--	--	--
	HA6-3.5	9/15/1997	3.5	Removed	--	240	<25	--	--	--	--	--
HA-7	HA7-1	9/15/1997	1	Removed	--	<b>7,370</b>	<275	--	--	--	--	--

**Notes:**

**Bold** values equal or exceed MTCA Method A Cleanup Level.

cPAHs = Carcinogenic polycyclic aromatic hydrocarbons

EPH = Extractable petroleum hydrocarbons

ft bgs = feet below ground surface

mg/kg = Milligrams per kilogram

MTCA = Model Toxics Control Act (Chapter 173-340 WAC)

NA = Not applicable

ND = Less than the laboratory method reporting limit (MRL)

TPHd = Total petroleum hydrocarbons as diesel-range hydrocarbons

TPHg = TPH as gasoline-range hydrocarbons

TPHo = TPH as heavy oil-range hydrocarbons

VOCs = Volatile organic compounds

VPH = Volatile petroleum hydrocarbons

< = Not detected greater than laboratory MRL. Value listed is laboratory MRL.

-- = Not analyzed, not applicable, or not sampled.

1 Only select analytes are listed. See laboratory report for a full list of analytes.

2 Chromatogram indicates that it is likely that sample contains weathered to highly weathered diesel.

3 Reported naphthalenes concentration is the total value of naphthalene, 1-methyl naphthalene, and 2-methyl naphthalene.

4 This is the cleanup identified for unrestricted land use in Table 749-2 Priority Contaminants of Ecological concern for Sites that Qualify for the Simplified terrestrial Ecological Evaluation Procedure.

**ANALYTICAL METHOD:**

EPH by NWEPH

PAHs by USEPA Method 8270D Selected Ion Monitoring (SIM)

TPHg by Northwest TPH-Gx

TPHd and TPHo by Northwest TPH-Dx

VOCs by USEPA Method 8260

Table 2

**Summary of Groundwater Analytical Data  
Former Tosco Bainbridge Island Bulk Plant 1784  
Weaver Avenue and Shepard Way Northwest  
Bainbridge Island, Washington**

Well ID	Sample Date	TOC Elevation (ft)	Depth to Water (ft)	Groundwater Elevation (ft)	Hydrocarbons			VOCs <sup>1</sup>						Lead		PAHs
					TPHg (µg/L)	TPHd (µg/L)	TPHo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Other VOCs (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Naphthalenes <sup>7</sup> (µg/L)
<b>MTCA Method A Cleanup Level:</b>					<b>1,000</b>	<b>500</b>		<b>5</b>	<b>1,000</b>	<b>700</b>	<b>1,000</b>	<b>20</b>	<b>Varies</b>	<b>15</b>	<b>15</b>	<b>160</b>
W.11187604.121418.MN.GB-10	12/14/18	NA	NA	NA	<50	<b>9,400</b> <sup>2</sup>	<250	<2.0	<2.0	<2.0	<4.0	<2.0	1.6 <sup>6</sup>	--	--	0.025
W.11187604.121418.MN.GB-13 <sup>3</sup>	12/14/18	NA	NA	NA	550	<b>2,800</b> <sup>4</sup>	<250	<2.0	<2.0	<2.0	<4.0	<2.0	ND	--	--	30.3
W.11187604.122118.MN.GB-14	12/21/18	NA	NA	NA	<50	<b>770</b> <sup>2</sup>	<250	<2.0	2.2	<2.0	<4.0	<2.0	ND	--	--	<0.020
MW-1 (Ecology)	3/18/2019	19.51	--	--	--	340	<390	--	--	--	--	--	--	--	--	--
MW -1	12/14/2018	19.51	2.93	16.58						Gauged only, not sampled.						
MW -1	2/2/2017	19.51	4.05	15.46						Gauged only, not sampled.						
MW -1	11/30/2016	19.51	4.00	15.51	<50	<130	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW -1	7/7/2016	19.51	8.61	10.90	<130	<310	<310	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW -1	4/20/2016	19.51	5.32	14.19	<130	<310	<310	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW -1	2/11/2016	19.51	4.33	15.18						Gauged only, not sampled.						
MW -1	7/1/2015	19.51	8.53	10.98						Gauged only, not sampled.						
MW -1	4/9/2015	19.51	4.88	14.63						Gauged only, not sampled.						
MW -1	2/11/2015	19.51	--	--						Well not sampled or gauged.						
MW -1	8/21/2014	19.51	9.09	10.42	<100	<100	<250	<0.5	<5.0	<0.50	<1.5	--	--	--	--	--
MW -1	8/19/2014	19.51	9.00	10.51						Gauged only, not sampled.						
MW -1	6/18/2007	19.51	7.08	12.43	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
MW -1	3/26/2007	19.51	4.49	15.02	<240	<75	<94	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW -1	12/20/2006	19.51	3.85	15.66	<48	<76	<95	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
MW -1	9/13/2006	19.51	9.40	10.11	<48	160	150	<0.5	<0.7	<0.7	<0.8	<0.5	--	--	--	--
MW -1	6/26/2003	19.51	6.93	12.58	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW -1	3/30/2003	19.51	4.43	15.08	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW -1	12/21/2002	19.51	4.42	15.09	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	<0.01
MW -1	9/30/2002	19.51	8.83	10.68	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	<0.01
MW -1	5/23/2002	19.51	5.89	13.62	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	ND	<1	<1	<0.01
MW -1	3/26/2002	19.51	4.45	15.06	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW -1	12/11/2001	19.51	4.19	15.32	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW -1	9/13/2001	19.51	6.78	12.73	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW -1	6/28/2001	19.51	7.03	12.48	<50	<250	<500	<0.5	<0.5	<0.5	1.02	--	--	<1	<1	--
MW-2	3/4/2003	18.64								Monitoring Well Decommissioned 3/4/2003						
MW-2	12/21/2002	18.64	5.14	13.50	157	<b>3,810</b>	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	0.21
MW-2	9/30/2002	18.64	8.61	10.03	368	<b>5,020</b>	<500	<0.5	<0.5	1.46	2.14	--	--	--	--	8.0
MW-2	5/23/2002	18.64	5.91	12.73	327	<b>1,240</b>	<500	<0.5	<0.5	2.23	2.01	--	ND	<1	<1	18.2

Table 2

Summary of Groundwater Analytical Data  
 Former Tosco Bainbridge Island Bulk Plant 1784  
 Weaver Avenue and Shepard Way Northwest  
 Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	Hydrocarbons			VOCs <sup>1</sup>						Lead		PAHs
					TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Other VOCs	Total Lead	Dissolved Lead	Naphthalenes <sup>7</sup>
		MTCA Method A Cleanup Level: (ft)	(ft)	(ft)	1,000 (µg/L)	500 (µg/L)		5 (µg/L)	1,000 (µg/L)	700 (µg/L)	1,000 (µg/L)	20 (µg/L)	Varies (µg/L)	15 (µg/L)	15 (µg/L)	160 (µg/L)
MW-2	3/26/2002	18.64	4.86	13.78	134	512	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-2	12/11/2001	18.64	4.71	13.93	77.8	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-2	9/13/2001	18.64	6.71	11.93	697	649	<500	<0.5	0.762	5.93	5.61	--	--	--	--	--
MW-2	6/28/2001	18.64	7.17	11.47	1,370	1,780	<500	0.677	<0.5	11.0	18.6	--	--	--	--	5.41
MW-2A	12/14/18	18.28	3.74	14.54	<50	730 <sup>2</sup>	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW-2A	2/2/2017	18.28	4.07	14.21	<50	180	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW-2A	11/30/2016	18.28	4.02	14.26	<50	200	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW-2A	7/7/2016	18.28	7.80	10.48	<130	770	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	<0.022
MW-2A	4/20/2016	18.28	5.42	12.86	<130	<310	470	<2.0	<2.0	<2.0	<4.0	--	--	--	--	<0.020
MW-2A	2/11/2016	18.28	4.46	13.82	--	210	<250	--	--	--	--	--	--	--	--	<0.050
MW-2A	7/1/2015	18.28	7.61	10.67	--	510	<250	--	--	--	--	--	--	--	--	--
MW-2A	4/9/2015	18.28	4.97	13.31	--	<400	<400	--	--	--	--	--	--	--	--	--
MW-2A	2/11/2015	18.28	3.83	14.45	--	330	<250	--	--	--	--	--	--	--	--	--
MW-2A	8/21/2014	18.28	8.31	9.97	<100	920	360	<0.50	<5.0	<0.50	<1.5	--	--	--	--	--
MW-2A	8/19/2014	18.28	8.24	10.04						Gauged only, not sampled.						--
MW-2A	6/18/2007	18.28	6.78	11.50	<50	330	<95	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
MW-2A	3/26/2007	18.28	4.79	13.49	<48	300	120	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-2A	12/20/2006	18.28	4.46	13.82	<48	280	<95	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
MW-2A	9/13/2006	18.28	8.88	9.40	300	2,700	530	<0.5	<0.7	2	<0.8	<0.5	--	--	--	--
MW-2A	6/26/2003	18.28	6.49	11.79	728	8,180	533	<0.5	33.4	2.87	3.79	--	--	--	--	--
MW-2A	3/30/2003	18.28	4.43	13.85	567	4,370	<500	<0.5	<0.5	2.24	4.55	--	--	--	--	--
MW-3	12/14/2018	17.55	2.05	15.50						Gauged only, not sampled.						--
MW-3	2/2/2017	17.55	3.41	14.14						Gauged only, not sampled.						--
MW-3	11/30/2016	17.55	3.32	14.23	<50	<130	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW-3	7/7/2016	17.55	7.04	10.51	<130	<310	<310	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW-3	4/20/2016	17.55	4.32	13.23	<130	<310	<310	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW-3	2/11/2016	17.55	2.96	14.59						Gauged only, not sampled.						--
MW-3	7/1/2015	17.55	6.93	10.62						Gauged only, not sampled.						--
MW-3	4/9/2015	17.55	3.85	13.70						Gauged only, not sampled.						--
MW-3	2/11/2015	17.55	--	--						Well not sampled or gauged.						--
MW-3	8/21/2014	17.55	7.30	10.25	<100	<100	<250	<0.50	<5.0	<0.50	<1.5	--	--	--	--	--
MW-3	8/19/2014	17.55	7.19	10.36						Gauged only, not sampled.						--

Table 2

**Summary of Groundwater Analytical Data  
Former Tosco Bainbridge Island Bulk Plant 1784  
Weaver Avenue and Shepard Way Northwest  
Bainbridge Island, Washington**

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	Hydrocarbons			VOCs <sup>1</sup>						Lead		PAHs
					TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Other VOCs	Total Lead	Dissolved Lead	Naphthalenes <sup>7</sup>
		<b>MTCA Method A Cleanup Level:</b>			<b>1,000</b>	<b>500</b>		<b>5</b>	<b>1,000</b>	<b>700</b>	<b>1,000</b>	<b>20</b>	<b>Varies</b>	<b>15</b>	<b>15</b>	<b>160</b>
		<b>(ft)</b>	<b>(ft)</b>	<b>(ft)</b>	<b>(µg/L)</b>	<b>(µg/L)</b>	<b>(µg/L)</b>	<b>(µg/L)</b>	<b>(µg/L)</b>	<b>(µg/L)</b>	<b>(µg/L)</b>	<b>(µg/L)</b>	<b>(µg/L)</b>	<b>(µg/L)</b>	<b>(µg/L)</b>	<b>(µg/L)</b>
MW-3	6/18/2007	17.55	5.77	11.78	<50	<76	<95	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
MW-3	3/26/2007	17.55	3.41	14.14	<48	<76	<94	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-3	12/20/2006	17.55	3.95	13.60	<48	88	<95	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
MW-3	9/13/2006	17.55	7.40	10.15	<48	88	97	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
MW-3	6/26/2003	17.55	5.59	11.96	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-3	3/30/2003	17.55	3.16	14.39	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-3	12/21/2002	17.55	3.27	14.28	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	<0.01
MW-3	9/30/2002	17.55	7.11	10.44	<50	<250	<500	<0.5	0.513	<0.5	<1	--	--	--	--	<0.01
MW-3	5/23/2002	17.55	4.73	12.82	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	ND	<1	<1	<0.1
MW-3	3/26/2002	17.55	3.38	14.17	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-3	12/11/2001	17.55	2.83	14.72	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-3	9/13/2001	17.55	5.75	11.80	905	<250	<500	<0.5	0.738	5.92	5.68	--	--	--	--	--
MW-3	6/28/2001	17.55	5.30	12.25	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	<1	<1	--
MW-4	12/14/18	17.04	3.50	13.54	<50	<b>800</b> <sup>2</sup>	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW-4	2/2/2017	17.04	3.53	13.51	<50	<130	160	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW-4	11/30/2016	17.04	3.42	13.62	<50	<130	380	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW-4	7/7/2016	17.04	8.40	8.64	<130	240	<360	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW-4	4/20/2016	17.04	4.45	12.59	<130	<310	320	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
MW-4	2/11/2016	17.04	3.67	13.37												
MW-4	7/1/2015	17.04	8.33	8.71												
MW-4	4/9/2015	17.04	4.20	12.84												
MW-4	2/11/2015	17.04	--	--												
MW-4	8/21/2014	17.04	8.94	8.10	<100	<b>410</b>	<b>270</b>	<0.50	<5.0	<0.50	<1.5	--	--	--	--	--
MW-4	8/19/2014	17.04	8.76	8.28												
MW-4	6/18/2007	17.04	6.90	10.14	<50	430	<95	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
MW-4	3/26/2007	17.04	3.91	13.13	<48	150	<95	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--
MW-4	12/20/2006	17.04	3.34	13.70	<48	230	110	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
MW-4	9/13/2006	17.04	9.65	7.39	<48	<b>390</b>	<b>200</b>	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
MW-4	6/26/2003	17.04	6.57	10.47	<50	496	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-4	3/30/2003	17.04	3.62	13.42	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-4	12/21/2002	17.04	4.00	13.04	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	<0.01
MW-4	9/30/2002	17.04	9.32	7.72	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	<0.01
MW-4	5/23/2002	17.04	4.53	12.51	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	ND	<1	<1	<0.1

Table 2

Summary of Groundwater Analytical Data  
Former Tosco Bainbridge Island Bulk Plant 1784  
Weaver Avenue and Shepard Way Northwest  
Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	Hydrocarbons			VOCs <sup>1</sup>						Lead		PAHs
					TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Other VOCs	Total Lead	Dissolved Lead	Naphthalenes <sup>7</sup>
		MTCA Method A Cleanup Level:			1,000	500		5	1,000	700	1,000	20	Varies	15	15	160
		(ft)	(ft)	(ft)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-4	3/26/2002	17.04	3.63	13.41	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-4	12/11/2001	17.04	3.44	13.60	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-4	9/13/2001	17.04	7.05	9.99	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-4	6/28/2001	17.04	8.30	8.74	<50	<250	<500	<0.5	<0.5	<0.5	1.18	--	--	--	--	--
MW-5 (Ecology)	3/18/2019	17.53	--	--	--	<b>590</b>	<b>410</b>	--	--	--	--	--	--	--	--	--
MW-5	12/14/2018	17.53	3.75	13.78	<50	<b>4,400</b> <sup>2</sup>	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	0.51
MW-5	12/14/2018 <sup>5</sup>	17.53	3.75	13.78	<50	<b>4,300</b> <sup>2</sup>	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	1.31
MW-5	2/2/2017	17.53	3.85	13.68	<50	<b>720</b>	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	<0.020
MW-5	11/30/2016	17.53	3.76	13.77	<50	<b>960</b>	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	0.83
MW-5	7/7/2016	17.53	9.49	8.04	<130	<b>560</b>	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	<0.022
MW-5	4/20/2016	17.53	4.85	12.68	<130	<310	<b>1,300</b>	<2.0	<2.0	<2.0	<4.0	--	--	--	--	0.27
MW-5	2/11/2016	17.53	4.09	13.44	--	<b>810</b>	<250	--	--	--	--	--	--	--	--	<0.50
MW-5	7/1/2015	17.53	8.01	9.52	--	<b>620</b>	<250	--	--	--	--	--	--	--	--	--
MW-5	4/9/2015	17.53	4.61	12.92	--	<b>940</b>	<400	--	--	--	--	--	--	--	--	--
MW-5	2/11/2015	17.53	3.82	13.71	--	<b>1,200</b>	<b>560</b>	--	--	--	--	--	--	--	--	--
MW-5	8/21/2014	17.53	10.71	6.82	<100	<b>800</b>	<500	<0.5	<0.5	<0.5	<1.5	--	--	--	--	--
MW-5	8/19/2014	17.53	8.76	8.77												
MW-5	6/18/2007	17.53	6.10	11.43	130	<b>1,100</b>	<b>120</b>	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
MW-5	3/26/2007	17.53	4.28	13.25	250	<b>1,300</b>	<b>300</b>	<0.5	0.7	<0.5	<0.5	<0.5	--	--	--	--
MW-5	12/20/2006	17.53	3.97	13.56	200	<b>2,000</b>	<b>390</b>	<0.5	8	<0.8	<0.8	<0.5	--	--	--	--
MW-5	9/13/2006	17.53	11.60	5.93	61	<b>810</b>	<b>230</b>	<0.5	12	<0.8	<0.8	<0.5	--	--	--	--
MW-5	6/26/2003	17.53	5.81	11.72	111	<b>537</b>	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-5	3/30/2003	17.53	4.00	13.53	377	<b>1,410</b>	<500	<0.5	<0.5	0.52	<1	--	--	--	--	--
MW-5	12/21/2002	17.53	4.24	13.29	385	<b>734</b>	<500	<0.5	<0.5	5.38	3.77	--	--	--	--	12
MW-5	9/30/2002	17.53	11.12	6.41	95.2	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	<0.01
MW-5	5/23/2002	17.53	4.81	12.72	236	428	<500	<0.5	<0.5	<0.5	<1	--	ND	<1	<1	<0.1
MW-5	3/26/2002	17.53	4.00	13.53	469	454	<500	<0.5	<0.5	1.94	1.87	--	--	--	--	--
MW-5	12/11/2001	17.53	3.91	13.62	571	358	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-5	9/13/2001	17.53	5.61	11.92	77.8	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MW-5	6/28/2001	17.53	6.05	11.48	<50	290	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	<0.1
RW-1	2/2/2017	18.53	4.31	14.22	<50	130	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--

Table 2

Summary of Groundwater Analytical Data  
Former Tosco Bainbridge Island Bulk Plant 1784  
Weaver Avenue and Shepard Way Northwest  
Bainbridge Island, Washington

Well ID	Sample Date	TOC Elevation	Depth to Water	Groundwater Elevation	Hydrocarbons			VOCs <sup>1</sup>						Lead		PAHs
					TPHg	TPHd	TPHo	Benzene	Toluene	Ethylbenzene	Total Xylenes	MTBE	Other VOCs	Total Lead	Dissolved Lead	Naphthalenes <sup>7</sup>
		MTCA Method A Cleanup Level: (ft)	(ft)	(ft)	1,000 (µg/L)	500 (µg/L)		5 (µg/L)	1,000 (µg/L)	700 (µg/L)	1,000 (µg/L)	20 (µg/L)	Varies (µg/L)	15 (µg/L)	15 (µg/L)	160 (µg/L)
RW-1	11/30/2016	18.53	4.27	14.26	<50	160	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
RW-1	7/7/2016	18.53	7.98	10.55	<130	300	<250	<2.0	<2.0	<2.0	<4.0	--	--	--	--	2.71
RW-1	4/20/2016	18.53	5.65	12.88	<130	<310	<310	<2.0	<2.0	<2.0	<4.0	--	--	--	--	--
RW-1	2/11/2016	18.53	4.70	13.83	--	290	<250	--	--	--	--	--	--	--	--	<0.50
RW-1	7/1/2015	18.53	7.79	10.74	--	<b>870</b>	<250	--	--	--	--	--	--	--	--	--
RW-1	4/9/2015	18.53	5.21	13.32	--	<b>540</b>	<400	--	--	--	--	--	--	--	--	--
RW-1	2/11/2015	18.53	4.06	14.47	--	410	<250	--	--	--	--	--	--	--	--	--
RW-1	8/21/2014	18.53	8.45	10.08	<100	210	<250	<0.50	<5.0	<0.50	<1.5	--	--	--	--	--
RW-1	6/18/2007	18.53	7.02	11.51	<50	280	<96	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
RW-1	3/26/2007	18.53	5.03	13.50	<48	210	<95	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	--	--
RW-1	12/20/2006	18.53	4.70	13.83	<48	180	<96	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
RW-1	9/13/2006	18.53	8.80	9.73	<48	<77	<96	<0.5	<0.7	<0.8	<0.8	<0.5	--	--	--	--
RW-1	6/26/2003	18.53	6.73	11.80	<50	471	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
RW-1	3/30/2003	18.53	4.64	13.89	179	<b>1,600</b>	<500	<0.5	<0.5	0.52	<1	--	--	--	--	--
N-PERF PIPE	12/21/2002	NA	NA	NA	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	12
N-PERF PIPE	9/30/2002	NA	NA	NA	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
N-PERF PIPE	5/22/2002	NA	NA	NA	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	ND	<1	<1	<0.1
N-PERF PIPE	3/26/2002	NA	NA	NA	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
N-PERF PIPE	12/11/2001	NA	NA	NA	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
N-PERF PIPE	9/13/2001	NA	NA	NA	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
N-PERF PIPE	6/27/2001	NA	NA	NA	160	<b>663</b>	<500	<0.5	<0.5	<0.5	1.53	--	--	--	--	--
MID-PERF PIPE	12/21/2002	NA	NA	NA	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	0.11
MID-PERF PIPE	9/30/2002	NA	NA	NA	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MID-PERF PIPE	5/22/2002	NA	NA	NA	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	ND	<1	<1	<0.1
MID-PERF PIPE	3/26/2002	NA	NA	NA	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MID-PERF PIPE	12/11/2001	NA	NA	NA	57	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
MID-PERF PIPE	9/13/2001	NA	NA	NA	289	426	<500	<0.5	<0.5	0.766	2.12	--	--	--	--	--
MID-PERF PIPE	6/27/2001	NA	NA	NA	604	<b>1,110</b>	<500	0.796	<0.5	1.52	6.06	--	--	--	--	<0.2
S-PERF PIPE	12/21/2002	NA	NA	NA	<50	289	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	0.07
S-PERF PIPE	9/30/2002	NA	NA	NA	<50	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--

Table 2

**Summary of Groundwater Analytical Data  
Former Tosco Bainbridge Island Bulk Plant 1784  
Weaver Avenue and Shepard Way Northwest  
Bainbridge Island, Washington**

Well ID	Sample Date	TOC Elevation (ft)	Depth to Water (ft)	Groundwater Elevation (ft)	Hydrocarbons			VOCs <sup>1</sup>						Lead		PAHs
					TPHg (µg/L)	TPHd (µg/L)	TPHo (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	Other VOCs (µg/L)	Total Lead (µg/L)	Dissolved Lead (µg/L)	Naphthalenes <sup>7</sup> (µg/L)
<b>MTCA Method A Cleanup Level:</b>					<b>1,000</b>	<b>500</b>		<b>5</b>	<b>1,000</b>	<b>700</b>	<b>1,000</b>	<b>20</b>	<b>Varies</b>	<b>15</b>	<b>15</b>	<b>160</b>
S-PERF PIPE	5/22/2002	NA	NA	NA	154	<250	<500	<0.5	<0.5	<0.5	<1	--	ND	<1	<1	2.44
S-PERF PIPE	3/26/2002	NA	NA	NA	204	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
S-PERF PIPE	12/11/2001	NA	NA	NA	116	<250	<500	<0.5	<0.5	<0.5	<1	--	--	--	--	--
S-PERF PIPE	9/13/2001	NA	NA	NA	246	406	<500	<0.5	1.51	<0.5	<1	--	--	--	--	--
S-PERF PIPE	6/27/2001	NA	NA	NA	241	<b>842</b>	<500	<0.5	0.641	0.754	2.25	--	--	--	--	--
SB1	12/7/1999	NA	6	NA	<50	394	<1.37	<0.5	<0.5	<0.5	<1	--	--	--	--	--
SB2	12/7/1999	NA	6	NA	<50	470	<1.39	<0.5	0.611	<0.5	<1	--	--	6.28	<1	--
SB3	12/7/1999	NA	6	NA	<b>2,490</b>	<b>404,000</b>	<75.8	4.79	<2.5	51.1	82.5	--	--	2.89	<1	--
SB7	12/7/1999	NA	4	NA	<b>32,300</b>	<b>104,000</b>	<30.8	<100	<100	<100	<200	--	--	--	--	--
SB8	12/7/1999	NA	6	NA	<50	<b>1,370</b>	<0.75	<0.5	<0.5	<0.5	<1	--	--	--	--	--
SB9	12/7/1999	NA	6	NA	<50	<b>4,404</b>	<0.75	<0.5	<0.5	<0.5	<1	--	--	--	--	--
SB10	12/7/1999	NA	6	NA	363	<b>14,900</b>	<0.75	<0.5	<0.5	<0.5	1.03	--	--	--	--	--

**Notes:**

**Bold** values equal or exceed MTCA Method A cleanup level.

ft = feet

Lead = Total and dissolved lead by USEPA Method 6010D

MTBE = Methyl tert-butyl ether

MTCA = Model Toxics Control Act

ND = Less than laboratory method reporting limit (MRL)

PAHs = Polycyclic aromatic hydrocarbons by USEPA Method 8270D with Selected Ion Monitoring (SIM)

TOC = Top of casing

TPHd = Total petroleum hydrocarbons (TPH) as diesel-range hydrocarbons by Northwest TPH-Dx

TPHg = TPH as gasoline-range hydrocarbons by Northwest TPH-Gx

TPHo = TPH as heavy oil-range hydrocarbons by Northwest TPH-Dx

USEPA = United States Environmental Protection Agency

µg/L = Micrograms per liter

VOCs = volatile organic compounds by USEPA Method 8260

-- = Not Analyzed or Sampled

< = Less than the stated laboratory reporting limit

1 = Only analytes with concentrations above laboratory MRLs and established cleanup levels are listed. See laboratory report for full list of analytes.

2 = Chromatogram indicates that it is likely that sample contains highly weathered diesel.

3 = Chromatogram indicates that it is likely that sample contains an unidentified gasoline range product and highly weathered diesel.

4 = Diesel range product results biased high due to gasoline range product overlap.

5 = This sample was collected as a field duplicate.

6 = Sample contained n-hexane at a concentration of 1.6 µg/L; MTCA Method B cleanup level is 480 µg/L.

7 = Reported naphthalenes concentrations is the total value of naphthalene, 1-methyl naphthalene, and 2-methyl naphthalene.

# **Appendix A**

## **Preliminary Cleanup Levels and Chemicals of Potential Concern List**

Analyte	CAS	H.H. GW Method A (ug/L)	H.H. GW Method B (ug/L)	Final Protective Value (ug/L)	Consultant MRL (ug/L)	Ecology MRL (ug/L)	Final PQL (ug/L)	PCUL (ug/L)	Highest Recorded Value?	COPC?	Rationale?
Gasoline w/o Benzene	x	1.00E+03	x	1.00E+03	5.00E+01	2.50E+02	2.50E+02	1.00E+03	3.23E+04	y	
Diesel + HO	x	5.00E+02	x	5.00E+02	2.50E+02	2.50E+02	2.50E+02	5.00E+02	9.44E+03	y	
Benzene	71-43-2	5.00E+00	5.00E+00	5.00E+00	2.00E+00	1.00E+00	1.00E+00	5.00E+00	ND	n	
Toluene	108-88-3	1.00E+03	6.40E+02	1.00E+03	2.00E+00	1.00E+00	1.00E+00	1.00E+03	3.34E+01	n	
Ethylbenzene	100-41-4	7.00E+02	7.00E+02	7.00E+02	2.00E+00	1.00E+00	1.00E+00	7.00E+02	5.11E+01	n	
Xylenes	1330-20-7	1.00E+03	1.60E+03	1.00E+03	4.00E+00	1.00E+00	1.00E+00	1.00E+03	8.25E+01	n	
Dibromomethane-1,2 (EDB)	106-93-4	1.00E-02	5.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	1.00E-02	ND	n	
Dichloroethane-1,2 (EDC)	107-06-2	5.00E+00	4.81E+00	5.00E+00	2.00E+00	1.00E+00	1.00E+00	5.00E+00	ND	n	
Methyl tertiary butyl ether (MTBE)	1634-04-4	2.00E+01	2.43E+00	2.00E+01	2.00E+00	1.00E+00	1.00E+00	2.00E+01	ND	n	
Lead	7439-92-1	1.50E+01	1.50E+01	1.50E+01	1.00E+00	1.00E-01	1.00E-01	1.50E+01	6.28E+00	n	
Naphthalene	91-20-3	1.60E+02	1.60E+02	1.60E+02	2.00E-02	1.00E+00	1.00E+00	1.60E+02	2.30E+00	n	
n-Hexane	110-54-3	x	4.80E+02	4.80E+02	1.00E+00	1.00E+00	1.00E+00	4.80E+02	1.60E+00	n	
Benzo(a)anthracene	56-55-3	x	x	x	2.00E-02	2.00E-02	2.00E-02	x	4.70E-02	n	
Benzo(a)pyrene	50-32-8	1.00E-01	2.00E-01	1.00E-01	2.00E-02	2.00E-02	2.00E-02	1.00E-01	ND	n	
Benzo(b)fluoranthene	205-99-2	x	x	x	2.00E-02	2.00E-02	2.00E-02	x	ND	n	
Benzo(k)fluoranthene	207-08-9	x	x	x	2.00E-02	2.00E-02	2.00E-02	x	ND	n	
Chrysene	218-01-9	x	x	x	2.00E-02	2.00E-02	2.00E-02	x	ND	n	
Dibenz(a,h)anthracene	53-70-3	x	x	x	2.00E-02	2.00E-02	2.00E-02	x	ND	n	
Indeno(1,2,3-cd)pyrene	193-39-5	x	x	x	2.00E-02	2.00E-02	2.00E-02	x	ND	n	
cPAH	x	1.00E-01	2.00E-01	1.00E-01	2.00E-02	2.00E-02	2.00E-02	1.00E-01	1.27E-02	n	
Acenaphthene	83-32-9	x	9.60E+02	9.60E+02	2.00E-02	1.00E+00	1.00E+00	9.60E+02	2.04E+00	n	
Anthracene	120-12-7	x	4.80E+03	4.80E+03	2.00E-02	1.00E+00	1.00E+00	4.80E+03	1.60E-01	n	
Fluoranthene	206-44-0	x	6.40E+02	6.40E+02	2.00E-02	1.00E+00	1.00E+00	6.40E+02	ND	n	
Fluorene	86-73-7	x	6.40E+02	6.40E+02	2.00E-02	5.30E-01	5.30E-01	6.40E+02	5.83E+00	n	
1-Methylnaphthalene	90-12-0	x	x	x	2.00E-02	1.00E+00	1.00E+00	x	1.60E+01	n	
2-Methylnaphthalene	91-57-6	x	x	x	2.00E-02	1.00E+00	1.00E+00	x	1.20E+01	n	
Pyrene	129-00-0	x	4.80E+02	4.80E+02	2.00E-02	5.30E-01	5.30E-01	4.80E+02	2.10E-01	n	

Analyte	CAS	H.H. SW Method B (ug/L)	H.H. SW ARAR (ug/L)	Final H.H. Protection (ug/L)	Final Aquatic Protection (ug/L)	Final SW Protection (ug/L)	Consultant MRL (ug/L)	Ecology MRL (ug/L)	Final POL (ug/L)	PCUL (ug/L)	Highest Recorded Value?	COPC?	Rationale?
Gasoline w/o Benzene	x	1.00E+03	x	1.00E+03	1.00E+03	1.00E+03	5.00E+01	2.50E+02	2.50E+02	1.00E+03	3.23E+04	y	
Diesel + HO	x	5.00E+02	x	5.00E+02	3.00E+03	5.00E+02	2.50E+02	2.50E+02	2.50E+02	5.00E+02	9.44E+03	y	
Benzene	71-43-2	2.00E+01	4.40E-01	4.40E-01	1.00E+01	4.40E-01	2.00E+00	1.00E+00	1.00E+00	1.00E+00	ND	n	
Toluene	108-88-3	1.90E+04	5.70E+01	5.70E+01	5.30E+01	5.30E+01	2.00E+00	1.00E+00	1.00E+00	5.30E+01	3.34E+01	n	
Ethylbenzene	100-41-4	6.90E+03	2.90E+01	2.90E+01	1.20E+01	1.20E+01	2.00E+00	1.00E+00	1.00E+00	1.20E+01	5.11E+01	y	Check GW
Xylenes	1330-20-7	x	x	x	5.70E+01	5.70E+01	4.00E+00	1.00E+00	1.00E+00	5.70E+01	8.25E+01	y	Check GW
Dibromethane-1,2 (EDB)	106-93-4	x	x	x	x	x	1.00E-02	1.00E-02	1.00E-02	x	ND	n	
Dichloroethane-1,2 (EDC)	107-06-2	5.90E+01	8.90E+00	8.90E+00	x	8.90E+00	2.00E+00	1.00E+00	1.00E+00	8.90E+00	ND	n	
Methyl tertiary butyl ether (MTBE)	1634-04-4	x	x	x	x	x	2.00E+00	1.00E+00	1.00E+00	x	ND	n	
Lead	7439-92-1	x	x	x	2.50E+00	2.50E+00	1.00E+00	1.00E-01	1.00E-01	2.50E+00	6.28E+00	y	Check GW
Napthalenes	91-20-3	4.90E+03	x	4.90E+03	x	4.90E+03	2.00E-02	1.00E+00	1.00E+00	4.90E+03	2.30E+00	n	
n-Hexane	110-54-3	x	x	x	x	x	1.00E+00	1.00E+00	1.00E+00	x	1.60E+00	n	
Benzo(a)anthracene	56-55-3	x	1.60E-04	1.60E-04	x	1.60E-04	2.00E-02	2.00E-02	2.00E-02	2.00E-02	4.70E-02	n	See cPAH
Benzo(a)pyrene	50-32-8	3.50E-02	1.60E-05	1.60E-05	x	1.60E-05	2.00E-02	2.00E-02	2.00E-02	2.00E-02	ND	n	
Benzo(b)fluoranthene	205-99-2	x	1.60E-04	1.60E-04	x	1.60E-04	2.00E-02	2.00E-02	2.00E-02	2.00E-02	ND	n	
Benzo(k)fluoranthene	207-08-9	x	1.60E-03	1.60E-03	x	1.60E-03	2.00E-02	2.00E-02	2.00E-02	2.00E-02	ND	n	
Chrysene	218-01-9	x	1.60E-02	1.60E-02	x	1.60E-02	2.00E-02	2.00E-02	2.00E-02	2.00E-02	ND	n	
Dibenz(a,h)anthracene	53-70-3	x	1.60E-05	1.60E-05	x	1.60E-05	2.00E-02	2.00E-02	2.00E-02	2.00E-02	ND	n	
Indeno(1,2,3-cd)pyrene	193-39-5	x	1.60E-04	1.60E-04	x	1.60E-04	2.00E-02	2.00E-02	2.00E-02	2.00E-02	ND	n	
cPAH	x	3.50E-02	1.60E-05	1.60E-05	x	1.60E-05	2.00E-02	2.00E-02	2.00E-02	2.00E-02	1.27E-02	n	
Acenaphthene	83-32-9	6.40E+02	3.00E+01	3.00E+01	x	3.00E+01	2.00E-02	1.00E+00	1.00E+00	3.00E+01	2.04E+00	n	
Anthracene	120-12-7	2.60E+04	1.00E+02	1.00E+02	x	1.00E+02	2.00E-02	1.00E+00	1.00E+00	1.00E+02	1.60E-01	n	
Fluoranthene	206-44-0	9.00E+01	6.00E+00	6.00E+00	x	6.00E+00	2.00E-02	1.00E+00	1.00E+00	6.00E+00	ND	n	
Fluorene	86-73-7	3.50E+03	1.00E+01	1.00E+01	x	1.00E+01	2.00E-02	5.30E-01	5.30E-01	1.00E+01	5.83E+00	n	
1-Methylnapthalene	90-12-0	x	x	x	x	x	2.00E-02	1.00E+00	1.00E+00	x	1.60E+01	n	
2-Methylnapthalene	91-57-6	x	x	x	x	x	2.00E-02	1.00E+00	1.00E+00	x	1.20E+01	n	
Pyrene	129-00-0	2.60E+03	8.00E+00	8.00E+00	x	8.00E+00	2.00E-02	5.30E-01	5.30E-01	8.00E+00	2.10E-01	n	

3-Phase Model - Soil protective of groundwater/surface water	
Groundwater Cleanup Level (µg/Liter)	5.00E+00
Units Conversion (1 mg/1000 µg)	1.00E-03
Dilution Factor - Saturated Zone (1)	1.00E+00
Distribution Coefficient Kd (Liters/kg)	6.20E-02
Water-filled Soil Porosity - Saturated (ml water/ml soil)	4.30E-01
Air-filled Soil Porosity Saturated (ml air/ml soil)	0.00E+00
Henry's Law Constant - Hcc - dimensionless	1.33E-01
Dry Soil Bulk Density (kg/Liter)	1.50E+00
Soil Cleanup Level Protective of Groundwater - Saturated (mg/kg)	1.74E-03
<b>Saturated Conditions</b>	

Analyte	CAS	GW PCUL (ug/L)	SW PCUL (ug/L)	HCC @ 13° C (no unit)	Koc (L/Kg)	Kd (L/Kg)	Soil Protective of GW (mg/kg)	Soil protective of SW (mg/kg)
Gasoline w/o Benzene	x	1.00E+03	1.00E+03	x	x	x	x	x
Diesel + HO	x	5.00E+02	5.00E+02	x	x	x	x	x
Benzene	71-43-2	5.00E+00	1.00E+00	1.33E-01	6.20E+01	6.20E-02	1.74E-03	3.49E-04
Toluene	108-88-3	1.00E+03	5.30E+01	1.48E-01	1.40E+02	1.40E-01	4.27E-01	2.26E-02
Ethylbenzene	100-41-4	7.00E+02	1.20E+01	1.62E-01	2.04E+02	2.04E-01	3.43E-01	5.89E-03
Xylenes	1330-20-7	1.00E+03	5.70E+01	1.38E-01	2.33E+02	2.33E-01	5.20E-01	2.96E-02
Dibromomethane-1,2 (EDB)	106-93-4	1.00E-02	x	1.54E-02	6.60E+01	6.60E-02	3.53E-06	x
Dichloroethane-1,2 (EDC)	107-06-2	5.00E+00	8.90E+00	2.28E-02	3.80E+01	3.80E-02	1.62E-03	2.89E-03
Methyl tertiary butyl ether (MTBE)	1634-04-4	2.00E+01	x	1.59E-02	1.09E+01	1.09E-02	5.95E-03	x
Lead	7439-92-1	1.50E+01	2.50E+00	0.00E+00	x	1.00E+04	1.50E+02	2.50E+01
Naphthalenes	91-20-3	1.60E+02	4.90E+03	8.24E-03	1.19E+03	1.19E+00	2.36E-01	7.24E+00
Hexane	110-54-3	4.80E+02	x	4.11E+01	3.41E+03	3.41E+00	1.77E+00	x
Benzo(a)anthracene	56-55-3	x	2.00E-02	2.79E-05	3.58E+05	3.58E+02	x	7.17E-03
Benzo(a)pyrene	50-32-8	1.00E-01	2.00E-02	6.39E-06	9.69E+05	9.69E+02	9.69E-02	1.94E-02
Benzo(b)fluoranthene	205-99-2	x	2.00E-02	7.73E-04	1.23E+06	1.23E+03	x	2.46E-02
Benzo(k)fluoranthene	207-08-9	x	2.00E-02	5.13E-06	1.23E+06	1.23E+03	x	2.46E-02
Chrysene	218-01-9	x	2.00E-02	7.13E-04	3.98E+05	3.98E+02	x	7.97E-03
Dibenz(a,h)anthracene	53-70-3	x	2.00E-02	6.03E-07	1.79E+06	1.79E+03	x	3.58E-02
Indeno(1,2,3-cd)pyrene	193-39-5	x	2.00E-02	8.40E-06	3.47E+06	3.47E+03	x	6.94E-02
cPAH	x	1.00E-01	2.00E-02	6.39E-06	9.69E+05	9.69E+02	9.69E-02	1.94E-02
Acenaphthene	83-32-9	9.60E+02	3.00E+01	2.11E-03	4.90E+03	4.90E+00	4.98E+00	1.56E-01
Anthracene	120-12-7	4.80E+03	1.00E+02	7.56E-04	2.35E+04	2.35E+01	1.14E+02	2.38E+00
Fluoranthene	206-44-0	6.40E+02	6.00E+00	1.66E-04	4.91E+04	4.91E+01	3.16E+01	2.96E-01
Fluorene	86-73-7	6.40E+02	1.00E+01	8.58E-04	7.71E+03	7.71E+00	5.12E+00	8.00E-02
1-Methylnaphthalene	90-12-0	x	x	1.59E-02	x	x	x	x
2-Methylnaphthalene	91-57-6	x	x	6.99E-03	x	x	x	x
Pyrene	129-00-0	4.80E+02	8.00E+00	1.08E-04	6.80E+04	6.80E+01	3.28E+01	5.46E-01

Analyte	CAS	Final Protective Value (mg/kg)
Gasoline w/o Benzene	x	2.00E+03
Diesel + HO	x	4.60E+02
Benzene	71-43-2	x
Toluene	108-88-3	x
Ethylbenzene	100-41-4	x
Xylenes	1330-20-7	x
Dibromomethane-1,2 (EDB)	106-93-4	x
Dichloroethane-1,2 (EDC)	107-06-2	x
Methyl tertiary butyl ether (MTBE)	1634-04-4	x
Lead	7439-92-1	2.20E+02
Naphthalenes	91-20-3	x
Hexane	110-54-3	x
Benzo(a)anthracene	56-55-3	x
Benzo(a)pyrene	50-32-8	3.00E+01
Benzo(b)fluoranthene	205-99-2	x
Benzo(k)fluoranthene	207-08-9	x
Chrysene	218-01-9	x
Dibenz(a,h)anthracene	53-70-3	x
Indeno(1,2,3-cd)pyrene	193-39-5	x
cPAH	x	3.00E+01
Acenaphthene	83-32-9	x
Anthracene	120-12-7	x
Fluoranthene	206-44-0	x
Fluorene	86-73-7	x
1-Methylnaphthalene	90-12-0	x
2-Methylnaphthalene	91-57-6	x
Pyrene	129-00-0	x

Analyte	CAS	Soil Method A (mg/kg)	Soil Method B Direct Contact (mg/kg)	Soil Method B Protection of Groundwater (mg/kg) Saturated	Method B Protection of Surface Water (mg/kg) Saturated	Simplified TEE Value (mg/kg)	Soil Protective Value (mg/kg)	Consultant Reporting Limit (mg/kg)	Ecology Reporting Limit (mg/kg)	Agreed upon PQL (mg/kg)	Natural Background (mg/kg)	PCUL (mg/kg)	Highest Recorded Value (mg/kg)	COPC?	Rationale?
Gasoline w/o Benzene	x	1.00E+02	x	x	x	2.00E+03	1.00E+02	3.00E+00	5.00E+00	5.00E+00	x	1.00E+02	7.15E+02	y	
Diesel + HO	x	2.00E+03	x	x	x	4.60E+02	4.60E+02	5.00E+01	2.50E+01	2.50E+01	x	4.60E+02	6.55E+03	y	
Benzene	71-43-2	3.00E-02	1.80E+01	1.74E-03	3.49E-04	x	3.00E-02	5.00E-03	5.00E-03	5.00E-03	x	3.00E-02	ND	n	
Toluene	108-88-3	7.00E+00	6.40E+03	4.27E-01	2.26E-02	x	7.00E+00	1.00E-02	5.00E-03	5.00E-03	x	7.00E+00	ND	n	
Ethylbenzene	100-41-4	6.00E+00	8.00E+03	3.43E-01	5.89E-03	x	6.00E+00	1.00E-02	5.00E-03	5.00E-03	x	6.00E+00	1.45E-01	n	
Xylenes	1330-20-7	9.00E+00	1.60E+04	5.20E-01	2.96E-02	x	9.00E+00	2.00E-02	5.00E-03	5.00E-03	x	9.00E+00	1.81E+00	n	
Dibromethane-1,2 (EDB)	106-93-4	5.00E-03	5.00E-01	3.53E-06	x	x	5.00E-03	1.00E-02	1.00E-03	1.00E-03	x	5.00E-03	ND	n	
Dichloroethane-1,2 (EDC)	107-06-2	x	1.10E+01	1.62E-03	2.89E-03	x	x	1.00E-02	1.00E-03	1.00E-03	x	x	ND	n	
Methyl tertiary butyl ether (MTBE)	1634-04-4	1.00E-01	5.60E+02	5.95E-03	x	x	1.00E-01	1.00E-02	1.00E-03	1.00E-03	x	1.00E-01	ND	n	
Lead	7439-92-1	2.50E+02	x	1.50E+02	2.50E+01	2.20E+02	2.50E+02	1.02E+00	1.00E-01	1.00E-01	2.40E+01	2.50E+02	ND	n	
Naphthalene	91-20-3	5.00E+00	1.60E+03	2.36E-01	7.24E+00	x	5.00E+00	2.00E-02	1.00E-01	1.00E-01	x	5.00E+00	2.45E+01	y	
n-Hexane	110-54-3	x	4.80E+03	1.77E+00	x	x	1.33E-04	2.00E-01	5.00E-03	5.00E-03	x	5.00E-03	ND	n	
Benzo(a)anthracene	56-55-3	x	x	x	7.17E-03	x	x	2.00E-02	5.00E-02	5.00E-02	x	x	3.77E-02	n	
Benzo(a)pyrene	50-32-8	1.00E-01	1.90E-01	9.69E-02	1.94E-02	3.00E+01	1.00E-01	2.00E-02	5.00E-02	5.00E-02	x	1.00E-01	ND	n	
Benzo(b)fluoranthene	205-99-2	x	x	x	2.46E-02	x	x	2.00E-02	5.00E-02	5.00E-02	x	x	ND	n	
Benzo(k)fluoranthene	207-08-9	x	x	x	2.46E-02	x	x	2.00E-02	5.00E-02	5.00E-02	x	x	ND	n	
Chrysene	218-01-9	x	x	x	7.97E-03	x	x	2.00E-02	5.00E-02	5.00E-02	x	x	3.09E-02	n	
Dibenz(a,h)anthracene	53-70-3	x	x	x	3.58E-02	x	x	2.00E-02	5.00E-02	5.00E-02	x	x	ND	n	
Indeno(1,2,3-cd)pyrene	193-39-5	x	x	x	6.94E-02	x	x	2.00E-02	5.00E-02	5.00E-02	x	x	ND	n	
cPAH	x	1.00E-01	1.90E-01	9.69E-02	1.94E-02	3.00E+01	1.00E-01	2.00E-02	5.00E-02	5.00E-02	x	1.00E-01	4.08E-03	n	
Acenaphthene	83-32-9	x	4.80E+03	4.98E+00	1.56E-01	x	1.56E-01	2.00E-02	4.35E-02	2.00E-02	x	1.56E-01	3.55E-01	n	ND in GW and SW
Anthracene	120-12-7	x	2.40E+04	1.14E+02	2.38E+00	x	2.38E+00	2.00E-02	4.35E-02	2.00E-02	x	2.38E+00	1.57E-01	n	
Fluoranthene	206-44-0	x	3.20E+03	3.16E+01	2.96E-01	x	2.96E-01	2.00E-02	2.00E-02	2.00E-02	x	2.96E-01	3.31E-02	n	
Fluorene	86-73-7	x	3.20E+03	5.12E+00	8.00E-02	x	8.00E-02	2.00E-02	2.00E-02	2.00E-02	x	8.00E-02	1.00E+00	n	
1-Methylnaphthalene	90-12-0	x	3.40E+01	x	x	x	3.40E+01	2.00E-02	5.00E-01	2.00E-02	x	3.40E+01	9.93E+00	n	
2-Methylnaphthalene	91-57-6	x	3.20E+02	x	x	x	3.20E+02	2.00E-02	5.00E-01	2.00E-02	x	3.20E+02	1.16E+01	n	
Pyrene	129-00-0	x	2.40E+03	3.28E+01	5.46E-01	x	5.46E-01	2.00E-02	2.00E-02	2.00E-02	x	5.46E-01	1.64E-01	n	

Additional Contaminants not detected	CAS #
1,1,1,2-Tetrachloroethane	630-20-6
1,1,1-Trichloroethane	71-55-6
1,1,2,2-Tetrachloroethane	79-34-5
1,1,2-Trichloroethane	79-00-5
1,1-Dichloroethane	75-34-3
1,1-Dichloropropene	x
1,2,3-Trichlorobenzene	x
1,2,3-Trichloropropane	96-18-4
1,2,4-Trichlorobenzene	120-82-1
1,2,4-Trimethylbenzene	95-63-6
1,2-Dibromo-3-Chloropropane	96-12-8
1,2-Dichlorobenzene	95-50-1
1,2-Dichloropropane	78-87-5
1,3,5-Trimethylbenzene	108-67-8
1,3-Dichlorobenzene	541-73-1
1,3-Dichloropropane	542-75-6
1,4-Dichlorobenzene	106-46-7
2-Hexanone	591-78-6
4-Chlorotoluene	95-49-8
Acenaphthylene	208-96-8
Acetone	67-64-1
Acrylonitrile	107-13-1
Arsenic	7440-38-2
Barium	7440-39-3

Benzo(ghi)perylene	191-24-2
Bromobenzene	108-86-1
Bromochloromethane	x
Bromoform	75-25-2
Bromomethane	593-60-2
Cadmium	7440-43-9/7440-43-9a
Carbon Disulfide	75-15-0
Carbon Tetrachloride	56-25-3
CFC-11	x
CFC-12	x
Chlorobenzene	108-90-7
Chlorodibromomethane	x
Chloroethane	x
Chloroform	67-66-3
Chloromethane	74-87-3
Chromium	7440-47-3
Cis-1,2-Dichloroethene	107-06-2
Cis-1,3-Dichloropropene	542-75-6
Cumene	98-82-8
Dibromomethane	x
Dichlorobromomethane	x
Hexachlorobutadiene	87-68-3
Hexane	110-54-3
Mercury	7439-97-6
Methyl ethyl ketone	78-93-3
Methyl isobutyl ketone	108-10-1
Methylene Chloride	75-09-2
n-Butylbenzene	104-51-8
n-Propylbenzene	103-65-1
Phenanthrene	85-01-8
p-Isopropyltoluene	x
Sec-Butylbenzene	135-98-8
Selenium	7782-49-2
Silver	7440-22-4
Styrene	100-42-5
Tert-Butylbenzene	98-06-6
Tetrachloroethene	127-18-4
Trans-1,2-Dichloroethene	156-60-5
Trichloroethene	79-01-6
Vinyl Chloride	75-01-4



## about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

**Emily Blakeway**  
Emily.Blakeway@ghd.com  
425-563-6502

**Mike Noll**  
Michael.Noll@ghd.com  
425-563-6511

[www.ghd.com](http://www.ghd.com)