AEROTECH
Environmental Consulting Inc.

13925 Interurban Avenue South, Suite No.210
Seattle, Washington 98168
(360)710-5899

2916 NW Bucklin Hill Road, Suite No.126
Silverdale, Washington 98383
(866) 800-4030

512 W. International Airport Road, Suite No.201Anchorage, Alaska 99518

5319 SW Westgate Dr., Suite No.24
Portland, Oregon 97221

October 30, 2017

VCP Coordinator
Washington State Department of Ecology
Northwest Regional Office
3190 - 160th Ave. SE
Bellevue, Washington 98008-5452

SUBJECT **Remedial Investigation Report**
Bothell 76 / Unocal 5905 / The Market at Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington 98003

VCP Coordinator,

At the request of Brent Johnson, Aerotech Environmental Consulting, Inc. ("Aerotech") has prepared the enclosed *Remedial Investigation* which summarizes environmental investigation activities to date. As described in the enclosed report, Aerotech requests an opinion from the Washington State Department of Ecology regarding the characterization of the historical release according to the substantive requirements of the MTCA.

Aerotech and Mr. Brent Johnson appreciate your assistance in the matter. Please do not hesitate to contact the President of Aerotech, Alan Blotch, at (360) 710-5899 with any questions.

Sincerely,

Justin Foslien
Licensed Geologist WA #2504
Email: justin@dirtydirt.us

ENCLOSURE
Aerotech 's *Remedial Investigation*, dated October 30, 2017

REMEDIAL INVESTIGATION

Performed at:
Bothell 76 / Unocal 5905
The Market at Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington 98011

AEROTECH
Environmental Consulting Inc.

Anchorage Seattle Portland

Performed by:

AEROTECH Environmental Consulting Inc.
13925 Interurban Avenue South, Suite No. 210
Seattle, Washington 98168
Fax (206) 402-3872
(866) 800-4030
www.AeroTechEnvironmental.com

Cost-effective environmental solutions
for the western United States and Alaska

www.AerotechEnvironmental.com

REMEDIAL INVESTIGATION

Performed at:
Bothell 76 / Unocal 5905
The Market at Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington 98011

October 30, 2017

Performed by:

AEROTECH Environmental Consulting Inc.
13925 Interurban Avenue South, Suite No. 210
Seattle, Washington 98168
Fax (206) 402-3872
(866) 800-4030
www.AeroTechEnvironmental.com

REMEDIAL INVESTIGATION

performed for:

BRENT JOHNSON
18015 Bothell Way Northeast
Bothell, Washington 98011

Clients:	**BRENT JOHNSON** FEDERAL WAY UNION INC. 2144 7TH Avenue West Seattle Washington 98119
Point of Contact:	**MR. BRENT JOHNSON** (206) 300-7829
Property:	**BOTHELL 76 / UNOCAL 5905 / THE MARKET AT BOTHELL LANDING** 18015 Bothell Way Northeast Bothell, Washington 98011
County:	King County, Washington Parcel Number: 0726059114
S.I.C. Code:	5541
Commercial Activity:	Convenience Store, Union 76 franchised Gasoline Station and Car Wash
Licensed Geologist	Justin Foslien (Washington State License No. 2540)
Report Date:	October 30, 2017

EXECUTIVE SUMMARY

Bothell 76 / Unocal 5905 / The Market at Bothell Landing, the subject Property (King County Tax Parcel No. 072605-9114), is a trapezoidal-shaped approximately 0.73-acre (31,841 square foot) Parcel located on the northwest corner of the intersection of Northeast 180th Street and Bothell Way Northeast (State Route 522) in Bothell, Washington (Figure 1). Located in a commercial area (GC), the Site is developed with a 2,488-square foot masonry building originally constructed in 1993. Prior to this development, the Site was Unocal Service Station #5905. From 1993 until 2013 the Site was operated as Chevron Extra Mile & Car Wash. The first generation service station facilities were constructed in 1967. In 1993 the former Unocal facilities were demolished including: a service station with five service bays, three 10,000-gallon underground storage tanks (USTs), one 550-gallon underground heating oil tank, one underground waste oil tank and an aboveground propane tank with two covered fuel dispenser islands with a kiosk. The current Site facilities include: a convenience store; a car wash; two fuel islands covered by a canopy; a 12,000-gallon and two 8000-gallon unleaded gasoline tanks; a 6000-gallon diesel tank and associated fuel conveyance system piping.

GeoEngineers oversaw the advancement of four soil borings completed as monitoring wells (MW-1 through MW-4) in November 1989. Gasoline related contamination was detected in the samples collected from downgradient monitoring well MW-1 and a release was reported to Ecology January 1990 associated with LUST ID number 455.

In May of 2017, a VCP application was submitted to Ecology on behalf of Mr. Brent Johnson, the current owner of the Site property. Ecology rejected the application and requested an additional report summarizing the work completed at the Site prior to acceptance in the program and the issuance of an opinion letter.

GeoEngineers observed the demolition of service station facilities at the Site and excavation of contaminated soil from February 1991 to February 1992. Widespread soil contamination was observed and removed from the areas of the former USTs, beneath the former station building and areas of the former dispenser islands. According to GeoEngineers, all contaminated soil encountered at the Site was excavated and removed with one exception. A small area of gasoline contaminated soil was not removed due to the close proximity of the eastern property boundary and Bothell Way Northeast.

Soil: Previous excavation activity completed at the Site has removed most of residual hydrocarbons in soil above the MTCA Method A Cleanup Level. Approximately 2150 yards of petroleum contaminated soil (PCS) were removed when the previous generation of USTs, dispenser islands and station building were demolished in several phases between 1991 and 1992. According to GeoEngineers, the edge of the public right of way on the southeast property boundary prevented the removal of additional petroleum contaminated soil. The limited extent of soil in the vicinity of FIE-7 represents the remaining gasoline left in place in the vicinity of FIE-7 above the MTCA Method A Cleanup Level.

Groundwater: Groundwater monitoring wells at the Site have previously verified the presence of petroleum related hydrocarbons leaching to groundwater. Samples collected from MW1, MW3, MW5 MW9 and MW10 contained concentrations of dissolved hydrocarbons between 1991 and 1994. The current monitoring wells present at the Site include MW5, MW9 and MW10. Samples collected in 2017 indicate dissolved hydrocarbons are no longer present beneath the Site. Monitoring well MW10 is in close proximity to the location of remaining soil sample FIE-7 above MTCA Method A Cleanup Levels.

Confirmation Borings and Groundwater Monitoring. According to the soil sample collected in October of 1991, soil remains at concentrations above MTCA Method A Cleanup Levels at FIE-7. Twenty-six years have elapsed since the collection of this sample allowing sufficient time for biological activity and attenuation of

elevated concentrations of TPHg and benzene to reduce below Method A Cleanup Levels. Samples of soil in this area are needed to confirm remaining concentrations are protective of human health and the environment. Additionally, groundwater monitoring events completed in 2017 from monitoring wells where previous concentrations of dissolved hydrocarbon occurred above MTCA Method A Cleanup Levels, contained no concentrations of dissolved hydrocarbons, indicating what soil is remaining in this area is protective of the groundwater pathway. Additional monitoring is necessary to meet the requirement of four consecutive quarters below MTCA Method A Cleanup Levels.

Aerotech requests an opinion from Ecology according to the substantive requirements of the MTCA, if the definition of the extent of the historical petroleum related release has been sufficiently characterized by TPH, TPHg, TPHd, TPHo, BTEX in soil and groundwater at the Site.

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

Appendix C Stockpile Sample Tables – GeoEngineers 1992

Appendix D Groundwater Potentiometric Surface Maps –GeoEngineers 1990, 1992, 1993

1 INTRODUCTION

1.1 Site Information

Property Name:	The Market Bothell Landing / Bothell 76 / Unocal 5905
Property Address:	18015 Bothell Way Northeast Bothell, Washington 98011
Facility Site Identification number (FSID):	35644949
Cleanup Site Identification number (CSID):	8853
Voluntary Cleanup Program (VCP):	TBD
Project Consultant:	Aerotech Environmental Consulting, Inc.
Project Consultant Contact Information:	Alan Blotch 13925 Interurban Avenue South, Suite No. 210 Seattle, Washington 98168 (360) 710-5899
Property Owner:	Brent Johnson Federal Way Union Inc. 18015 Bothell Way Northeast Bothell, Washington 98011 (206) 300-7829 brent04@comcast.net

1.2 Purpose

At the request of Brent Johnson, Aerotech Environmental Consulting, Inc. ("Aerotech") of Seattle, Washington has prepared this *Remedial Investigation* report to summarize environmental characterization activities at the subject property located at 18015 Bothell Way Northeast in Bothell, Washington and to request an opinion on the current definition of impacted media.

1.3 Site and Property Location/Definition

Bothell 76 / Unocal 5905, the subject Property (King County Tax Parcel No. 072605-9114), is a trapezoidal-shaped approximately 0.73-acre (31,841 square foot) Parcel located on the northwest corner of the intersection of Northeast 180th Street and Bothell Way Northeast (State Route 522) in Bothell, Washington (Figure 1). Located in a commercial area (GC), the Site is developed with a 2,488-square foot masonry building originally constructed in 1993. Prior to this development, the Site was Unocal Service Station #5905. From 1993 until 2013 the Site was operated as Chevron Extra Mile & Car Wash. The first generation service station facilities were constructed in 1967. In 1993 the former Unocal facilities were demolished including: a service station with five service bays, three 10,000-gallon underground storage tanks (USTs), one 550-gallon underground heating oil tank, one underground waste oil tank and an aboveground propane tank with two covered fuel dispenser islands with a kiosk. The

current Site facilities include: a convenience store; a car wash; two fuel islands covered by a canopy; a 12,000-gallon and two 8000-gallon unleaded gasoline tanks; a 6000-gallon diesel tank and associated fuel conveyance system piping.

The Property is located on the northwest corner of Bothell Way Northeast and 180th Street in Bothell, Washington. The Property located in a general commercial area. The King County Assessor tax parcel numbers for the Property is 072605-9114, with a description of the Northeast quarter of Section 7, Township 26N; Range 5E. The property coordinates are: Latitude 47 Degrees, 45 Minutes, 31.65 Seconds; Longitude 122 Degrees, 12 Minutes, 40.33 Seconds. The parcel is shown on Figure 2.

The MTCA site ("Site") is defined by the extent of release to soil and groundwater of gasoline, diesel and oil range petroleum hydrocarbons; benzene, toluene, ethylbenzene and xylenes (BTEX); and lead associated with 18015 Bothell Way Northeast in Bothell, Washington (the Property).

1.4 Site Discovery and Regulatory Status

GeoEngineers oversaw the advancement of four soil borings completed as monitoring wells (MW-1 through MW-4) in November 1989. Gasoline related contamination was detected in the samples collected from downgradient monitoring well MW-1 and a release was reported to Ecology January 1990 associated with LUST ID number 455.

In May of 2017, a VCP application was submitted to Ecology on behalf of Mr Brent Johnson, the current owner of the Site property. Ecology rejected the application and requested an additional report summarizing the work completed at the Site prior to acceptance in the program and the issuance of an opinion letter.

1.5 Neighborhood Setting

The Property is located near the north central portion of a commercial area which is situated along Bothell Way Northeast adjacent to the east and Northeast 180th Street adjacent to the south (Figure 3). Additional commercial properties as parts of the Bothell Landing redevelopment lie to the north. Bothell Landing Park and the Sammamish River are southeast across Bothell Way Northeast.

1.6 Physiographic Setting/Topography

The site is located within the northern portion of the Puget Sound Lowland physiographic province. The Puget Sound Lowland is a north-south trending trough between the Olympic Mountains to the west and the Cascade Mountains to the east. Elevation in the lowlands ranges from sea level up to several hundred feet above mean sea level. The topography is dominated by north-south trending valley and low nearly flat-topped highlands eroded by streams. The surface of the Property is generally flat with a slight downward slope toward the east and southeast and lies at an elevation of approximately 45 feet above mean sea level ("MSL"; Figure 4; Google Earth, 2017).

2 FIELD INVESTIGATIONS

2.1 Previous Site Assessment

GeoEngineers completed a subsurface investigation at the Site in November 1989 that consisted of four borings drilled via hollow stem auger and completed as 2-inch monitoring wells (MW-1 through MW-4). A sample from each soil boring was analysed for BTEX by EPA method 8020 and total petroleum hydrocarbons (TPH) by EPA method 418.1. BTEX constituents were not detected in any of the soil samples tested. TPH was not detected in any of the samples except one collected from MW-3 (in the vicinity of the USTs) at a depth of 3 feet below ground surface (bgs). All of the soil samples collected were either not detected or were detected below the concentrations of the MTCA Method A soil screening levels. Further information may be found in GeoEngineers' *Report of Geotechnical Services Former Unocal Service Station 5905* dated January 24, 1990.

Subsequent samples of the groundwater analysed for BTEX via 8020 and TPH via method 418.1 in water indicated concentrations of BTEX above groundwater screening levels in monitoring well MW-2. Specifically, samples collected from MW-1 contained concentrations of benzene at 120 micrograms per liter (µg/L), toluene at 47 µg/L, ethylbenzene at 110 µg/L, xylenes at 610 µg/L, and 1,000 µg/L of TPH.

GeoEngineers observed the demolition of service station facilities at the Site and excavation of contaminated soil from February 1991 to February 1992. Widespread soil contamination was observed and removed from the areas of the former USTs, beneath the former station building and areas of the former dispenser islands. All contaminated soil encountered at the Site was excavated and removed with one exception. According to GeoEngineers, a small area of gasoline contaminated soil was not removed due to the close proximity of the eastern property boundary and Bothell Way Northeast. Monitoring wells MW1, MW2, and MW4 were destroyed during the excavation activities.

To evaluate the potential presence and extent of groundwater impacted by petroleum compounds after excavation activities, six new monitoring wells were installed at the Site in March of 1992 (MW5 through MW10; Figure 5). Contamination related to gasoline was detected in the groundwater collected from MW-10, located in near the former eastern dispenser island. Evidence of heavier petroleum hydrocarbons diesel and oil range was detected in the groundwater sample collected from MW9, located in the backfill of the excavation near the former USTs. The concentrations detected were below the MTCA Method A groundwater screening levels. Further information may be found in GeoEngineers' *Report of GeoEnvironmental Services, Underground Storage Removal and Remedial Excavation Activities Former Unocal Service Station 5905* dated May 15, 1992.

Monitoring well MW11 was installed in September 1992 by GeoEngineers to evaluate groundwater conditions off-property. GeoEngineers placed the downgradient well southeast in the direction of groundwater flow. Further information may be found in GeoEngineers' *Progress Report No. 1 Quarterly Groundwater Monitoring and Supplemental Subsurface Investigation Former Unocal Service Station 5905* dated January 24, 1993.

3 ENVIRONMENTAL INVESTIGTION SUMMARY

A total of eleven soil borings have been advanced at the Site (MW-1 through MW11). The boring logs can be found in the Appendix A and cumulative soil analytical results can be found in Table 1 and Figures 2 and 6. Cumulative groundwater analytical results are summarized in Table 2.

3.1 Constituents of Potential Concern

Constituents of potential concern ("COPCs") based on current and past uses of the Property include the compounds listed in WAC Chapter 173-340-900 *Table 830-1 Required Testing for Petroleum Releases.* The following table lists COPCs for the Site:

Potential Source	COPCs
Former Gasoline Service Station Tanks and Fuel Conveyance System **Former Hydraulic Hoists** **Former Car Wash**	• Total Petroleum Hydrocarbons - Gasoline Range (TPHg) • Total Petroleum Hydrocarbons - Diesel Range (TPHd) • Total Petroleum Hydrocarbons - Oil Range (TPHo) • Benzene, Toluene, Ethylbenzene and total Xylenes (BTEX) • Halogenated Volatile Organic Compounds (HVOCs) • Poly-nuclear Aromatic Hydrocarbons (PAHs) • Total Lead

Based on the laboratory analytical results from environmental activities conducted at the Site, concentrations of TPHg, TPHd, TPHo and BTEX have been detected above MTCA Method A screening levels in groundwater and soil samples.

3.2 Soil

Locations of soil samples are depicted on Figure 6. Soil samples have been analysed for TPHg, TPHd, TPHo BTEX, HVOCs, Polychlorinated Biphenols (PCBs) and lead. Laboratory analytical results indicated TPHg, TPHd, TPHo and BTEX above the MTCA Method A screening levels. The depths of the soil samples range from 1.5 to 15 feet bgs. A summary of laboratory analytical results, sample depth, and sample date for each soil sample submitted for analysis is presented in Table 1.

3.3 Surface Water

Surface water has not been observed on the Property.

3.4 Groundwater

Four groundwater monitoring wells (MW-1 through MW-4; Figure 5) were installed at the Site in November 1989. Subsequent samples of the groundwater indicated concentrations of BTEX above

MTCA Method A screening levels in monitoring well MW-2. Monitoring wells MW1, MW2, and MW4 were destroyed during the excavation activities.

Six new monitoring wells were installed at the Site in March of 1992 (MW5 through MW10; Figure 5). Contamination related to gasoline was detected in the groundwater collected from MW-10, located in near the former eastern dispenser island. Evidence of heavier petroleum hydrocarbons diesel and oil range was also detected in the groundwater sample collected from MW9, located in the backfill of the excavation near the former USTs.

Monitoring well MW11 was installed in September 1992 to define extent of impacted groundwater in the southeast direction.

A summary of laboratory analytical results, and sample date for each groundwater sample submitted for analysis is presented in Table 2.

3.5 Sediment

Sediment has not been observed on the Property.

3.6 Air/Soil Vapor

Air/Soil vapor concentrations have not been evaluated on the Property.

3.7 Natural Resources/Wildlife

A Terrestrial Ecological Evaluation ("TEE") form has been completed as part of the previously submitted VCP Application and can be found in the Appendix B. Further details are discussed in Section 5.4.2.

3.8 Cultural History/Archeology

No information or reports of historical investigations have indicated a need for additional research of Property history or archaeology.

3.9 Interim Actions

B & C (B & C Equipment Company) excavated and removed six USTs, two sets of product lines, four hydraulic hoists and two sumps, and demolished and removed the station building and canopy from the site between February 26 and October 8, 1991. The approximate former locations of the USTs, product lines, hydraulic hoists, sumps, the limits of the excavations and the discrete soil sample locations are shown in Figure 5. B & C also was responsible for the excavation of petroleum contaminated soil encountered at the site. A representative of GeoEngineers was present to observe removal of the USTs, product line, hydraulic hoist, sump, and to obtain soil samples from the limits of the remedial excavations. Soil removed from the excavations was placed in temporary on-site stockpiles. The stockpiles were segregated according to the type and relative degree of contamination based on field screening. Soil samples were collected from the stockpiles. Stockpiled oil contaminated soil was subsequently transported to the Roosevelt Landfill in Klickitat County (operated by Rabanco, Inc.) for disposal. Stockpiled soil with contaminant concentrations less than cleanup levels was transported to Coal Creek Landfill in King County for disposal. All soil volumes presented in the remainder of this report are based on GeoEngineers review of landfill tickets from Coal Creek Landfill and Roosevelt Landfill. The tickets from Roosevelt Landfill are in units of tons. An assumed conversion factor of 1.5 tons per cubic yard was used to convert tons to cubic yards.

Groundwater was encountered at a depth of approximately 7 feet in the excavation completed for removal of the USTs. Groundwater was pumped from the excavation and discharged to the sanitary sewer To more effectively evaluate the degree of soil contamination at the base of the excavation, to facilitate excavation activities and to help remediate contaminated groundwater. GeoEngineers obtained permission from the METRO (Municipality of Metropolitan Seattle) Industrial Waste Section on May 9, 1991, and from the City of Bothell on May 16, 1991, to discharge a maximum of 25,000 gallons of groundwater a day from open excavations into the sanitary sewer. Observations made by GeoEngineers noted during removal of the service station facilities and remedial excavation activities are discussed in chronological order below. Samples collected during the excavation activity and the final limits of excavation are shown in Figures 2 and 6.

FEBRUARY 1991

Hydraulic Hoist Removal

One hydraulic hoist was removed from the center service bay of the service station building on February 26, 1991. Moderate soil contamination, based on field screening, was observed in the excavation completed for removal of the hoist. The excavation was extended laterally and downward to a depth of about 9 feet. Groundwater was encountered at a depth of about 8 feet. Four discrete soil samples (H-1 through H-4) obtained from the limits of the hydraulic hoist excavation were analyzed for gasoline-range, diesel-ranged and heavier hydrocarbons. Petroleum hydrocarbons either were not detected in the soil samples or were detected at concentrations less than the MTCA Method A soil screening levels. Soil chemical analytical results are summarized in Table 1. The approximate soil sample locations are shown in Figure 5.

Approximately 20 cubic yards of soil from the hydraulic hoist excavation was stockpiled on site. One composite sample (SP-l(A)) was obtained from the stockpiled soil and analyzed for gasoline-range, diesel-range and heavier hydrocarbons. Gasoline- and diesel-range hydrocarbons were not detected in sample SP-l(A). The concentration of heavier hydrocarbons (180 mg/kg) in sample SP-1A was less than the MTC Method A screening level. The stockpile remained on site until February 1992 when it was then transported to Roosevelt Landfill for disposal. Samples of contaminated stockpiles are presented in Table 3. Additional stockpile sample results have been also included in Appendix C.

MAY 1991

Main Excavation

The three gasoline USTs, one heating oil UST and one waste oil UST were removed from a single excavation between May 8 and May 10, 1991. The tanks were removed from the site on May 10, 1991. The gasoline USTs and waste oil UST appeared to be in good condition, with minor pitting and rust observed on the middle and western gasoline USTs and the waste oil UST.

Pitting was observed on the outside of the heating oil tank. Rust was observed on the outside of the tank. A film of product was observed adhering to the outside of the lower one third of the heating oil tank.

Backfill surrounding the tanks consisted of medium sand. Medium dense to dense native sand with gravel and silt lenses, overlying gravel with sand was observed in the walls of the excavation. Gravel with sand was observed in the base of the excavation. Groundwater was encountered at a depth of about 7 feet in the excavation. The approximate locations of the former tanks are shown in Figures 2 and 6.

Field screening indicated the presence of moderate gasoline-related soil contamination around the gasoline USTs and extensive oil-related soil contamination around the heating oil and waste oil USTs. Based on field screening results, the main excavation was extended eastward to within 2 feet of the service station building. Field screening indicated that a zone of oil-related soil contamination, extending from a depth of about 6 feet to 12 feet, was present in the east wall and the eastern portion at the north wall of the main excavation. This zone of contaminated soil appeared to extend beneath the service building.

Ten soil samples (G-1 through G-10) were obtained from the limits of the main excavation in the vicinity of the gasoline USTs and submitted for chemical analysis of BTEX, gasoline-range hydrocarbons and diesel-range hydrocarbons. BTEX, gasoline-range hydrocarbons and diesel-range hydrocarbons either were not detected or were detected at concentrations less than the MTCA Method A soil screening levels in samples G-1 through G-9. BTEX was detected at concentrations less than the screening levels in sample G-10. Gasoline-range hydrocarbons were detected in sample G-10 at a concentration of 170 mg/kg. Diesel-range hydrocarbons were not detected in sample G-10. Sample G-10 was obtained from beneath the south end of the center gasoline UST.

Two soil samples (O-1 and O-2) were obtained from the eastern wall of the main excavation to confirm field screening results indicating that oil-related contamination extended beneath the service station building. Samples O-1 and O-2 were submitted for chemical analyses of gasoline-range, diesel-range and heavier hydrocarbons. Diesel-range hydrocarbons were detected in samples O-1 and O-2 at concentrations of 1,500 mg/kg and 2,400 mg/kg, respectively. Heavier hydrocarbons were detected in samples O-1 and O-2 at concentrations of 2,600 mg/kg and 3,100 mg/kg, respectively.

Three soil samples (HW-1 through HW-3) were obtained from the main excavation in the vicinity of the heating oil and waste oil USTs. The samples were submitted for chemical analyses of gasoline-range, diesel-range and heavier hydrocarbons. Gasoline-range, diesel-range and heavier hydrocarbons were not detected in samples HW-1, HW-2 and HW-3. In addition, sample HW-3 was analyzed for HVOCs. HVOCs were not detected.

Soil chemical analytical results for samples G-1 through G-10, O-1 and O-3, and HW-1 through HW-3 are summarized in Table 1. Approximate soil sample locations are shown in Figures 2 and 6.

Approximately 80 cubic yards of gasoline-contaminated soil and 60 cubic yards of noncontaminated soil were excavated during removal of the USTs and stockpiled separately on site. Four composite soil samples (SP-l(B) and DSP-1 through DSP-3) were obtained from the gasoline-contaminated soil stockpile and were submitted for chemical analysis of BTEX, gasoline-range and diesel-range hydrocarbons, HVOCs, PCBs, and/or TCLP metals. Gasoline-range hydrocarbons were detected at a concentration exceeding the screening level in DSP-1. Other analytes either were not detected or were detected at concentrations less than applicable cleanup levels. Composite soil samples were obtained from the noncontaminated stockpile in September 1991.

Approximately 50 cubic yards of oil-contaminated soil was removed from the main excavation and stockpiled on site. One composite sample (WOSP-1) was obtained from the stockpile and submitted for chemical analysis of gasoline-range, diesel-range and heavier hydrocarbons. Diesel-range hydrocarbons were detected at a concentration of 12 mg/kg in sample WOSP-1. Heavier hydrocarbons were detected at a concentration of 130 mg/kg. Samples of contaminated stockpiles are presented in Table 3. Additional stockpile sample results have been also included in Appendix C.

Groundwater was encountered at a depth of about 7 feet in the excavation. In order to more effectively evaluate the degree of soil contamination at the base of the excavation, to facilitate excavation activities, and to help remediate contaminated groundwater, groundwater was pumped from the excavation and discharged to the sanitary sewer. A total of approximately 9,300 gallons of groundwater was discharged to the sanitary sewer on May 15 and May 16, 1991.

Product Line Removal

The steel and fiberglass product lines were excavated and removed between May 8 and May 13, 1991. The product lines appeared to be in good condition. Field screening did not indicate the presence of petroleum-related contamination around the product lines, but indicated the presence of extensive gasoline-related soil contamination beneath several of the product dispensers.

Eight discrete soil samples (PL-1 through PL-5, PL-7, PL-12 and PL-13) were obtained from the product line excavations between May 8 and May 16, 1991. In addition, five soil samples (PL-6 and PL-8 through PL-11) were obtained from beneath the product dispensers, and five soil samples (IFI-1 and OH-1 through OFI-4) were obtained from adjacent to the canopy footings. Approximate soil sample locations are shown in Figures 2 and 6.

The soil samples were analyzed for BTEX, gasoline-range and diesel-range hydrocarbons. BTEX, gasoline-range and/or diesel-range hydrocarbons were detected at concentrations exceeding the MTCA Method A screening levels in samples PL4 and PL-9 through PL-11, obtained from beneath the product dispensers, and in OFI-1, obtained from adjacent to the northeast canopy footing. BTEX, gasoline-range and diesel-range hydrocarbons either were not detected or were detected at concentrations less than the cleanup levels in samples PL-1 through PL-5, PL-7, PL-8, PL-12, IFI-1 and OFI-2 through OFI-4. Soil chemical analytical results are summarized in Table 1.

Test Pits

Eleven test pits (TP-1 through TP-11) were excavated between May 14 and May 21, 1991. Test pits TP-2, TP-3 and TP-6 through TP-11 were completed to evaluate the extent of contamination encountered at the site. Test pits TP-1 and TP-4 were excavated near catch basins outside the service station building and TP-5 was excavated at the proposed future location of new underground storage tanks. Test pits TP-2, TP-3, TP-6 and TP-7 were excavated to evaluate the extent of gasoline-related soil contamination in the vicinity of the service islands. Test pits TP-4 and TP-8 through TP-10 were excavated to evaluate the extent of oil- or diesel-related soil contamination detected in the east wall of the main excavation. Approximate test pit locations are shown in Figures 2 and 6.

Sixteen soil samples were obtained from the test pits and analyzed for BTEX, gasoline-range, diesel-range and heavier hydrocarbons. Petroleum-related soil contamination either was not detected or was detected at concentrations less than the MTC Method A screening levels in samples obtained from the test pits. Soil chemical analytical results are summarized in Table 1.

The soil excavated from the test pits was replaced in the test pits following sample collection activities.

SEPTEMBER AND OCTOBER 1991

Partial Building Demolition

A review of chemical analytical and field screening results from the main excavation indicated that petroleum-related soil contamination remained in the base, the eastern portion of the north wall, and

the east wall of the May 1991 tank excavation. The east wall of the tank excavation was within 2 feet of the service station building. The data and field observations indicated that the contamination observed in the east wall of the excavation extended beneath the service station building. B & C demolished and removed the two southern service bays of the building, including roof, walls, floor slab, two hydraulic hoists and a sump to enable the excavation of petroleum contaminated soil from under the building. The eastern service island was demolished and the northeast corner of the canopy was shored in preparation for excavation in the area of the eastern service island.

Main Excavation Remediation and Undocumented UST Removal

A small volume of gasoline-contaminated soil was excavated from the base of the main excavation in the area represented by sample G-10. The excavation extended to a final depth of 13 feet in this area. Field screening indicated that gasoline-related soil contamination was not present in the new base. A discrete sample (G-12) was obtained from the extended base and submitted for chemical analysis of BTEX, gasoline-range and diesel-range hydrocarbons. BTEX, gasoline-range and diesel-range hydrocarbons were not detected in sample G-12.

Sample HW-4 was obtained from the same location as sample HW-3 to clarify laboratory QA/QC (quality analysis/quality control) exceptions associated with sample HW-3. Methylene Chloride, a common laboratory contaminant, was detected in the method blank and the HW-3 sample.

Samples G-11, G-13 and G-14 were obtained from areas of the main excavation that were not sampled previously. Samples G-11, G-13 and G-14 were submitted for chemical analysis of BTEX, gasoline-range and diesel-range hydrocarbons. BTEX, gasoline-range and diesel-range hydrocarbons were not detected.

Noncontaminated overburden soil was excavated to a depth of about 6 feet in the area formerly occupied by the southern two service bays of the service station building. The noncontaminated soil was stockpiled on site. Beginning at a depth of about 6 to 7 feet, field screening indicated the presence of oil-related soil contamination extending to a depth of about 11 feet. The excavation was continued eastward, with the excavated noncontaminated soil being segregated from the excavated contaminated soil, until it became difficult to stockpile any more soil on site. Field screening indicated the presence of oil-related soil contamination extending from approximately 6 feet to 11 feet in the north, east and south walls of the new portion of the main excavation.

Thirteen soil samples (O-3 through O-9 and O-11 through O-16) were obtained from the limits of the excavation completed beneath the former south end of the service station building. The samples were submitted for chemical analysis of heavy hydrocarbons. In addition, soil samples O-3, O-7, O-9 and O-14 were analyzed for gasoline-range and diesel-range hydrocarbons and samples O-3 and O-7 were analyzed for HVOCs. Heavy hydrocarbons and gasoline-range hydrocarbons were detected at concentrations greater than applicable soil cleanup levels in sample O-7. An examination of the chromatogram from sample O-7 indicated that the product present was probably a combination of Stoddard solvent and hydraulic oil. Sample O-7 was obtained from a depth of 7.5 feet, from the portion of the excavation completed adjacent to the south wall of the undemolished portion of the service station building. Heavy hydrocarbons either were not detected or were detected at concentrations less than the soil cleanup level in the remainder of the samples submitted. Gasoline-range and diesel-range hydrocarbons were not detected in sample O-3. Methylene chloride was detected at a concentration less than the soil cleanup level in sample O-3. Methylene chloride also was detected at a similar concentration in the laboratory reagent blank, indicating laboratory cross-contamination. Ethylbenzene, methylene chloride and xylenes were detected in sample O-7 at concentrations less than the soil cleanup levels. Methylene chloride also

was detected in the laboratory reagent blank, but at a concentration much less than the reported concentration in sample O-7. Soil chemical analytical results are summarized in Table 1. Approximate soil sample locations are shown in Figures 2 and 6.

Oil-contaminated soil remaining in the north wall of the main excavation, in the vicinity of the former heating oil and waste oil USTs, was excavated in October 1991. During excavation activities in this area, an undocumented 550-gallon steel UST was partially uncovered on October 4, 1991. The approximate location of this undocumented tank is shown on Figure 6. The UST was buried about 1.5 feet beneath the surface. The tank was in poor condition; extensive rust and corrosion were observed on its exterior surface. The tank was approximately two-thirds full of pea gravel and a petroleum-like product. One sample (T-1) was obtained from the pea gravel and product mixture in the tank and analyzed for gasoline-range and diesel-range hydrocarbons. Diesel-range hydrocarbons were detected in sample T-1 at a concentration of 23,000 mg/kg.

The undocumented UST was excavated and removed on October 8, 1991. Based on a review of analytical data for sample T-1, Rabanco approved disposal of the pea gravel and product mixture at the Roosevelt Landfill. The mixture was removed from the tank and subsequently added to other contaminated soil that had been approved for disposal at the landfill. Field screening indicated that the soil immediately surrounding the undocumented tank was petroleum-contaminated. The UST was excavated and removed on October 8, 1991. Sample O-10 was obtained on October 4, 1991 from soil beneath the undocumented UST and submitted for chemical analysis of gasoline-range hydrocarbons, diesel-range hydrocarbons and heavier hydrocarbons. Diesel-range hydrocarbons and heavier hydrocarbons were detected at concentrations exceeding the MTCAMethod A soil screening levels in sample O-10.

The excavation for the undocumented UST was extended downward and laterally until field screening results did not indicate the presence of petroleum-related contamination in the limits of the excavation. Six soil samples (O-17 through O-22) were obtained from the limits of the main excavation in the vicinity of the undocumented UST.

Samples O-17 through O-22 were submitted for chemical analysis of heavier hydrocarbons.The concentration of heavier hydrocarbons in sample 0-17, obtained from west of the undocumented UST, exceeded the soil cleanup level. Heavier hydrocarbons either were not detected or were detected at concentrations less than the soil cleanup levels in the remainder of the soil samples obtained from the limits of the excavation in the vicinity of the undocumented UST. Soil chemical analytical results are summarized in Table 1. Approximate soil sample locations are shown in Figures 2 and 6.

Approximately 16,500 gallons of groundwater were pumped from the main excavation and discharged into the sanitary sewer from October 1 through October 10, 1991.

Approximately 850 cubic yards of oil-contaminated soil were removed from the main excavation in September and October 1991. Composite samples (OSPN-1 through OSPN-13) were obtained from the soil stockpile and submitted for chemical analysis of heavier hydrocarbons. Three samples (OSPN-3, OSPN-6 and OSPN-9) were also analyzed for HVOCs, semivolatile organics, PCBs and TCLP metals. Samples OSPN-1 through OSPN-7, OSPN-9, OSPN-10,OSPN-12 and OSPN-13 had concentrations of heavier hydrocarbons exceeding the soil screening level. Heavier hydrocarbons were detected at concentrations less than the soil cleanup level in samples OSPN-8 and OSPN-11. HVOCs, semivolatile organics, PCBs and TCLP metals either were not detected or were detected at concentrations less than the soil screeining levels in samples OSPN-3, OSPN-6 and OSPN-9. Soil chemical analytical results are summarized in Tables 3. Additional stockpile sample results have been also included in Appendix C.

Composite soil samples (OSPN-14 through OSPN-21) were obtained on December 2, 1991 to further characterize the oil-contaminated stockpile, Samples OSPN-14 through OSPN-20 were submitted for chemical analysis of diesel-range hydrocarbons. Samples OSPN-15 and OSPN-16 were also analyzed for HVOCs, BTEX, PCBs and TCLP metals. A TCLP extraction from sample OSPN-21 was analyzed for PCBs, volatile organics by EPA Method 8240, semivolatile organics and metals. A fish bioassay also was performed on sample OSPN-21. These analyses were performed at the request of several different landfills being evaluated as options for soil disposal. Diesel-range hydrocarbons were detected in samples OSPN-14 through OSPN-17, and OSPN-19 at concentrations exceeding the soil cleanup level. Diesel-range hydrocarbons were detected in samples OSPN-18 and OSPN-20 at concentrations less than the soil cleanup level. HVOCs, BTEX, PCBs and TCLP metals either were not detected or were detected at concentrations less than the soil cleanup levels in samples OSPN-15 and OSPN-16. Leachable barium was detected in sample OSPN-21 at a concentration of 0.54 mg/kg. The remainder of the compounds analyzed for in sample OSPN-21 were not detected. A zero percent mortality was observed during the fish bioassay performed on OSPN-21. Soil stockipile chemical analytical results are summarized in Table 3 and Appendix C.

Approximately 290 cubic yards of noncontaminated soil were removed from the main excavation in September and October 1991 and added to the stockpile of approximately 60 cubic yards of noncontaminated soil excavated in May 1991. Twelve discrete samples (CSP-A through CSP-L) were obtained from the noncontaminated stockpile on September 30 and October 1, 199 1 and were composited by the laboratory into six composite samples (CSP-A/B, CSP-C/D, CSP-E/F, CSP-G/H, CSP-I/J and CSP-K/L) for chemical analysis of heavier hydrocarbons. Three samples (CSP-C/D, CSP-G/H and CSP-K/L) were also analyzed for gasoline-range and diesel-range hydrocarbons. Heavier hydrocarbons were detected at concentrations less than soil screening levels. Gasoline-range and diesel-range hydrocarbons were not detected in the three samples tested. Soil chemical analytical results are summarized in Table 3 and Appendix C.

Hoist and Sump Removal

A dual post hydraulic hoist with a hydraulic fluid reservoir, and a sump were excavated and removed from the center two of the remaining four bays in the service station building on October 7, 1991. Field screening of the soil surrounding the hoist and sump indicated the presence of petroleum-related contamination. Pipes connected to the sump were observed to be corroded. Approximately 20 cubic yards of oil-contaminated soil were excavated to facilitate removal of the hoist and sump. The soil was stockpiled on site. Approximate locations of the hoist and sump are shown in Figures 2 and 6.

Soil samples HH-1 through HH-3 and S-1 were obtained from the hoist and sump excavations to confirm the presence of the petroleum-related contamination indicated by field screening results. Samples HH-1 through HH-3 and S-1 were submitted for chemical analysis of heavier hydrocarbons and/or gasoline-range and diesel-range hydrocarbons. The approximate sample locations are shown in Figure 4. Heavy hydrocarbons were detected at concentrations exceeding the Method A soil screening levels in HH-1, HH-3 and S-1. Heavier hydrocarbons were detected at a concentration less than the screening level in HH-2. Diesel-range hydrocarbons were detected at a concentration less than the soil screening level in sample HH-3. Diesel-range hydrocarbons were detected at a concentration exceeding the soil screening levels in sample S-1. GeoEngineers' inspection of the chromatogram indicated that the contaminant in sample S-1 was a combination of diesel and hydraulic fluid. S-1 also was tested for the presence of HVOCs. Methylene chloride was detected in S-1 at a concentration of 0.18 mg/kg. A similar

concentration of methylene chloride was detected in the laboratory blank, indicating laboratory cross contamination. Soil chemical analytical results are summarized in Table 1.

Central Service Island Excavation

Field screening and laboratory results from samples PL-9, PL-10, PL-11 and OFI-1 indicated that gasoline-related soil contamination remained under the eastern service island. Based on field screening, contaminated soil was excavated and removed from beneath the northern portion of the service island between September 30 and October 3, 1991. The excavation completed for the removal of contaminated soil beneath the northern portion of the eastern service island will be referred to as the central service island excavation.

Gasoline-contaminated soil was removed from the central service island excavation and stockpiled on site. The final excavation extended to approximate depths ranging between 10 feet and 15 feet. Field screening indicated that gasoline-related soil contamination was still present in the northern portion of the east wall of the final excavation limits. Gasoline-related soil contamination did not appear to remain at the limits of the remainder of the excavation, based on field screening. Nine soil samples (FIE-1 through FIE-9) were obtained from the final limits of the excavation and were analyzed for gasoline-range and diesel-range hydrocarbons and BTEX. Samples FIE-1, FIE-3, FIE4 and FIE-8 were also analyzed for total lead. Gasoline-range hydrocarbons and BTEX were detected at concentrations exceeding soil screening levels in sample FIE-7. This sample was obtained from the northeast corner of the central service island excavation (Figure 6). According to GeoEngineers, the northeast corner could not be excavated further because of the close proximity to the sidewalk at the property boundary. Gasoline-range and diesel-range hydrocarbons and BTEX were not detected in the remainder of the central service island excavation samples. Total lead was not detected in samples FIE-1, FIE-3, FIE4 or FIE-8. Soil chemical analytical results are summarized in Table 1. Approximate soil sample locations are shown in Figures 2 and 6.

Approximately 100 cubic yards of gasoline-contaminated soil were removed from the central service island excavation and stockpiled temporarily on site adjacent to the existing gasoline-contaminated soil stockpile. Five composite soil samples (GSPN-1 through GSPN-5) were obtained from the stockpiled soil from the central service island excavation. The soil samples were submitted for chemical analysis of gasoline-range and diesel-range hydrocarbons and BTEX. Gasoline-range hydrocarbons were detected at concentrations of 930 mg/kg in GSPN-1 and 180 mg/kg in GSPN-4. Xylenes were detected in sample GSPN-1 at a concentration exceeding the soil screening level for xylenes. Gasoline- and diesel-range hydrocarbons and BTEX either were not detected or were detected at concentrations less than the soil screening levels in the remaining stockpile samples.

The stockpile of gasoline-contaminated soil removed from the central service island excavation was spread and allowed to aerate for one week. At the end of this time, six composite samples (GSPN-6 through GSPN-11) were obtained and analyzed for gasoline- and diesel-range hydrocarbons and BTEX. Gasoline-range hydrocarbons were detected in sample GSPN-6 at a concentration of 100 mg/kg. Gasoline- and diesel-range hydrocarbons and BTEX either were not detected or were detected at concentrations less than the soil screening levels in the remaining samples. Soil chemical analytical results are summarized in Table 3 and Appendix C.

Six composite soil samples (GSPO-1 through GSPO-6) were obtained from the 150 cubic yards of soil in the existing gasoline-contaminated stockpile. The samples were submitted for laboratory analysis of gasoline- and diesel-range hydrocarbons and BTEX. Petroleum-related compounds either were

not detected or were detected at concentrations less than soil screening levels in samples GSPO-1 through GSPO-6.

FEBRUARY 1992

Complete Building and Canopy Demolition

A review of chemical analytical and field screening results indicated that petroleum-related soil contamination remained in the northeast and south walls of the main excavation, beneath the portion of the service station building demolished in September 1991. In addition, petroleum-related soil contamination remained in the west wall of the main excavation, west of the undocumented tank location; in the soil surrounding the sump and hydraulic hoist removed from the northern undemolished portion of the service station building; and beneath both service islands. Because of the presence of petroleum-related soil contamination immediately adjacent to and beneath the remaining portion of the service station building, Unocal made the decision to demolish the remainder of the service station building and the canopy. Demolition was completed by B & C before February 12, 1992.

Stockpile Disposal

Based on the laboratory results from composite soil samples GSPO-1 through GSPO-6 and GSPN-6 through GSPN-11, the King County Department of Public Health approved the two stockpiles of soil removed from gasoline-contaminated areas for disposal at the Coal Creek Landfill in King County, Washington. Based on laboratory results from composite soil samples WOSP-1, SP-l(A), SP-1(B)), OSPN-1 through OSPN-7, and OSPN-14 through OSPN-21, Rabanco Regional Landfill Company approved disposal of the stockpile of oil-contaminated soil at their Roosevelt Regional Landfill in Klickitat County, Washington. In addition, the approval from Rabanco allowed any further soil excavated at the site with similar contaminant types and concentrations to be disposed of at Roosevelt Landfill without further review by Rabanco. From February 10 to February 12, 1992, about 250 cubic yards of soil stockpiled on-site were transported to Coal Creek Landfill for disposal and about 900 cubic yards of soil stockpiled on-site were transported to Seattle, where it was then taken by rail to Roosevelt Landfill for disposal. These volumes are based on landfill ticket receipts. The tickets Coal Creek Landfill provided were in cubic yards. The tickets Roosevelt Landfill provided were in tons; we converted tons to cubic yards using an assumed conversion factor of 1.5 tons per cubic yard.

Main Excavation

Excavation of oil-contaminated soil began in February 1992 on the southern wall of the main excavation, beneath the southern end of the former service station building. Based on field screening, the upper 7 feet of soil was segregated as noncontaminated. Contaminated soil was excavated to a depth of about 12 feet, where the base of the contamination was encountered. This portion of the excavation was extended south and east until field screening indicated that contaminated soil was no longer present. Four soil samples (O-23 through O-26) were obtained from the limits of this portion of the excavation on February 11, 1991 and submitted for chemical analysis of gasoline-range, diesel-range and heavier hydrocarbons. Gasoline-range, diesel-range and heavier hydrocarbons were not detected in samples O-23 through O-26. Soil chemical analytical results are summarized in Table 1. Approximate soil sample locations are shown in Figures 2 and 6.

Approximately 200 cubic yards of oil-contaminated soil were removed from the southern portion of the excavation and was loaded directly into trucks for disposal at Roosevelt Landfill. Approximately 150 cubic yards of apparently noncontaminated soil was stockpiled on site. Three composite soil samples (CNSP-1 through CNSP-3) obtained from the noncontaminated stockpile were submitted for chemical

analysis of gasoline-range, diesel-range and heavier hydrocarbons. Heavier hydrocarbons were not detected in samples CNSP-1 through CNSP-3. Diesel-range hydrocarbons were detected in sample CNSP-3 at a concentration of 41 mg/kg. Gasoline- and diesel-range hydrocarbons were not detected in samples CNSP-1 and CNSP-2. Stockpile soil chemical analytical results are summarized in Table 3 and Appendix C.

Excavation of contaminated soil from the western wall of the main excavation, in the vicinity of the former undocumented UST, was completed on February 12, 1992. Approximately 15 cubic yards of soil were removed and placed in trucks for disposal at Roosevelt Landfill. One discrete soil sample (O-27) was obtained from the new western limit of the excavation and submitted for chemical analysis of gasoline-range and diesel-range and heavier hydrocarbons. Gasoline-range, diesel-range and heavier hydrocarbons were not detected in sample O-27. Soil chemical analytical results are summarized in Table 5. The approximate location of sample O-27 is shown in Figures 2 and 6.

Excavation of oil-contaminated soil was continued on the north wall of the main excavation, beneath the former service station building, beginning on February 12, 1991. Field screening indicated the presence of oil-related contamination extending from a depth of about 7 feet to 9 feet. Approximately 20 cubic yards of oil-contaminated soil was loaded directly onto trucks for disposal at Roosevelt Landfill. Two composite soil samples (RSP-1 and RSP-2) were obtained from the 35 cubic yards of soil that was excavated from the undocumented UST area and from the sump hoist area and loaded directly into trucks. These samples were submitted for chemical analysis of gasoline-range and diesel-range hydrocarbons and/or heavier hydrocarbons. Heavier hydrocarbons were detected at a concentration less than the soil cleanup level in RSP-1. Heavier hydrocarbons were detected at a concentration of 200 mg/kg in sample RSP-2, equal to the soil cleanup level. Gasoline- and diesel-range hydrocarbons were not detected in RSP-2. Stockpile soil chemical analytical results are summarized in Table 3 and Appendix C.

As the excavation continued north, toward the locations of the sump and hydraulic hoist removed in October 1991, field screening indicated that the contaminant type was changing to an apparently more volatile nature. Because of the change in the nature of the contaminant, the soil was no longer loaded directly into trucks for disposal at Roosevelt Landfill, but was stockpiled on site for further characterization. The soil removed from the main excavation in the vicinity of the northern hoist and sump on February 12 and February 13 was segregated into stockpiles according to field screening results.

In the immediate areas of the northern sump and hoist, field screening indicated the presence of contaminated soil extending from the surface to a depth of 11 feet. The excavation was extended east until field screening indicated that contaminated soil was no longer present. The final excavation in this northern extension of the main excavation ranged in depth from 4 feet to 11 feet below grade surface.

Seventeen discrete soil samples (HH-4 through HH-8, HS-2 through HS-9, and O-28 through O-31) were obtained from the limits of the excavation in the vicinity of the former hydraulic hoist and sump and analyzed for gasoline-range, diesel-range and heavier hydrocarbons. Samples HH-8, HS-2, HS-3, HS-5 and HS-9 were also analyzed for BTEX. Petroleum-related compounds either were not detected or were detected at concentrations less than the soil screening levels in samples HH-4 through HH-8, HS-2 through HS-9, and O-28 through O-31. Soil chemical analytical results are summarized in Table 1. Approximate soil sample locations are shown in Figures 2 and 6.

Two composite soil samples (OSPN-14 and OSPN-15) were obtained from the stockpile consisting of soil removed from the hoist and sump area that appeared contaminated by field screening. This stockpile consisted of approximately 175 cubic yards. The samples were submitted for chemical analysis of gasoline-range, diesel-range and heavier hydrocarbons and/or HVOCs. Gasoline-range

hydrocarbons were detected at a concentration of 115 mg/kg in OSPN-15, exceeding the soil screening level of 100 mg/kg for gasoline. Heavier hydrocarbons also were detected in OSPN-15, at a concentration of 270 mg/kg, exceeding the soil cleanup level of 200 mg/kg. Our inspection of the chromatogram indicated that the contaminant in OSPN-15 was probably Stoddard solvent. HVOCs and heavier hydrocarbons were detected at concentrations less than soil cleanup levels in sample OSPN-14. Soil chemical analytical results are summarized in Table 3A.

Two composite soil samples (CNSP-4 and CNSP-5) were obtained from the stockpile consisting of soil which appeared noncontaminated by field screening. This stockpile consisted of approximately 80 cubic yards. The samples were submitted for chemical analysis of gasoline-range, diesel-range and heavier hydrocarbons. Petroleum hydrocarbons were not detected in samples CNSP4 and CNSP-5. Stockpile soil chemical analytical results are summarized in Table 3 and Appendix C

Approximately 4,350 gallons of groundwater were pumped from the main excavation and disposed of in the sanitary sewer between February 14 and February 18, 1992.

NORTH AND SOUTH SERVICE ISLAND EXCAVATIONS

Field screening and laboratory results from samples PL-6 and PL-9 indicated that gasoline-related soil contamination remained under the north end of the western service island and the south end of the eastern service island. Excavation of gasoline-contaminated soil from beneath the western service island was completed on February 13 and February 14, 1992. The excavation completed for removal of contaminated soil beneath the northern portion of the western service island will be referred to as the north service island excavation.

Five discrete soil samples (FIE-16 through FIE-20) were obtained from the limits of the north service island excavation and submitted for chemical analysis of BTEX, gasoline-range and diesel-range hydrocarbons. BTEX and gasoline- and diesel-range hydrocarbons were not detected in samples FIE-16 through FIE-20. Soil chemical analytical results are summarized in Table 1. Approximate soil sample locations are shown in Figures 2 and 6.

Information provided by Unocal indicated that a gasoline dispenser was formerly located beneath the south end of the kiosk building on the western service island. To assess the potential presence of gasoline-related contamination originating from this former dispenser, the concrete slab of the fuel island was removed at the south end of the kiosk and the soil beneath was field screened. Field screening results did not indicate the presence of petroleum-related soil contamination. GeoEngineers obtained sample FIE-15 from a depth of about 3 feet at this location to confirm the absence of petroleum-related contamination. Sample FIE-15 was submitted for chemical analysis of BTEX, gasoline-range and diesel-range hydrocarbons. Petroleum-related compounds were not detected. Soil chemical analytical results are summarized in Table 1. The approximate soil sample location is shown in Figure 6.

Gasoline-contaminated soil was excavated from the beneath the southern end of the eastern service island between February 17 and February 20, 1992. This excavation is referred to as the south service island excavation. Field screening indicated that gasoline-related soil contamination was not present at the excavation limits.

Seven discrete soil samples (FIE-21 through FIE-27) were obtained from the limits of the south service island excavation on February 17 and February 18, 1992. These samples were submitted for chemical analysis of BTEX and gasoline- and diesel-range hydrocarbons. Diesel-range hydrocarbons were detected at a concentration exceeding the soil screening level in FIE-24, obtained from the base of the south service island excavation at a depth of 9 feet. Additional excavation of less than 10 cubic yards

of soil occurred on February 20, 1992 at the base of the south service island excavation, in the area represented by FIE-24. The excavation was extended to a final depth of 11 feet in this area. A discrete soil sample (FIE-28) was obtained and submitted for chemical analysis of BTEX and gasoline- and diesel-range hydrocarbons. Petroleum-related compounds were not detected in sample FIE-28. Soil chemical analytical results are summarized in Table 1.

Approximately 200 cubic yards of gasoline-contaminated soil were removed from the north and south service island excavations and stockpiled on-site. Four composite soil samples (PISP-1 through PISP-4) were obtained from the stockpile and submitted for chemical analysis of BTEX and gasoline- and diesel-ranged hydrocarbons. Gasoline- and diesel-range hydrocarbons were detected at concentrations exceeding the soil screening levels in PISP-3. BTEX was not detected in PISP-3. Petroleum-related hydrocarbons either were not detected or detected at concentrations less than cleanup levels in PISP-1, PISP-2 and PISP-4. Soil chemical analytical results are summarized in Table 3A. Approximately 20 cubic yards of noncontaminated overburden soil were removed from the north and south service island excavations and stockpiled on site. A composite soil sample (CNSP4) was obtained from the stockpile and submitted for chemical analysis of BTEX, gasoline-range, diesel-range and heavier hydrocarbons. Heavier hydrocarbons were detected at a concentration of 200 mg/kg. B & C placed this stockpile with the gasoline-contaminated stockpile for disposal purposes. Stockpile soil chemical analytical results are summarized in Table 3 and Appendix C.

SEPTEMBER 1992

Test Pit Explorations

Subsurface soil contamination in the northern portion of the site was encountered when excavating the trenched for VES piping.

The soil contamination encountered while excavating the VES trenching was evaluated by excavating 7 test pits (TP-1-92 through TP-7-92). The test pits were excavated on September 18, 23, and 24 1992 to a depth of approximately 8 feet each. Approximate test pit locations are shown in Figure 2.

Nine soil samples were obtained from the test pits for field screening and chemical analyses of petroleum compounds. In addition a soil sample (”Drain Pipe”) was collected from beneath a concrete drain pipe extending to a catch basin. The drain pipe was exposed during trenching for the VES piping. The sample names and location identification with chemical analyses are summarized in Table 1.

Sump Excavation

On a September 25, 1992 a concrete sump associated with the former car wash was exposed during on-site excavation activities. A second sump was encountered during the removal of the first. The sumps were used as separators of soap suds and particulates from soapy water, prior to recycling of the water for the car wash. GeoEngineers observed the soil conditions surrounding the sump removal activities on September 28 and 29, 1992.

The sumps appeared to be in generally good condition prior to removal. Each had a capacity of approximately 700-gallons. According to GeoEngineers, there was visible sheen on the sludge removed from the sumps. Glacier Environmental Services contained the sludge in drums and arranged for disposal. The excavation to remove the sumps extended to 7 feet below grade.

NORTH EXCAVATION

On December 2, 1992 GeoEngineers monitored the excavation of PCS in the vicinity of TP-1-92 and TP-3-92. The north excavation was completed to a depth of approximately 9 feet below grade.

Seven samples of soil were collected (N-1 through N-7) from the final limits of the excavation and submitted for chemical analyses of diesel- and oil-range hydrocarbons. Sample N-2 was also analyzed for volatile organic compounds. Soil chemical analyses are sumamrized in Table 1 and the approximate location of the samples with the limits of the excavation are presented in Figure 2. Approximately 225 cubic yards of petroleum contaminated soil was removed from the north Excavation.

Summary of Soil Disposal

In February 1992, approximately 250 cubic yards of successfully treated soil, formerly contaminated with gasoline, was transported to Coal Creek Landfill for disposal. Concurrently, approximately 900 cubic yards of oil-contaminated soil was transported to Roosevelt Landfill for disposal.

In March 1992, approximately 200 cubic yards of noncontaminated soil were transported to Coal Creek Landfill for disposal. Concurrently, approximately 550 cubic yards of oil-contaminated soil were transported to Roosevelt Landfill for disposal.

In December 1992, approximately 250 yards of petroleum coantiimnated soil was removed and transported to Roosevelt Landfill for disposal.

In total, approximately 2150 cubic yards of soil was transported offsite for disposal.

Approximately 100 cubic yards of noncontaminated soil were used to backfill a portion of the main excavation.

.

4 PROPERTY DEVELOPMENT AND HISTORY

4.1 Past Property Uses

The property has operated as a 76-branded gas station and carwash since 2013. From 1993 until 2013 the Site was operated as Chevron branded gas station, Extra Mile convenience store & Car Wash. Prior to this period, the property was Unocal Service Station #5905. The first generation service station facilities were constructed in 1967.

4.2 Current Property Uses and Facilities

The Property is currently occupied by a 76 branded gas station and carwash with convenience store.

4.3 Proposed or Potential Future Site Uses

There is currently no planned redevelopment for the property.

4.4 Zoning

The property is zoned general commercial (GC; King County Assessor, 2017).

4.5 Transportation/Roads

The Property is located on the northwest corner of the intersection of Northeast 180th Street and Bothell Way Northeast. Ormbreck Street runs east-west along the northern boundary of the property. The street ends currently at the northeast corner of the property. Bothell Way Northeast also known as State Route 522 along this segment runs immediately adjacent to the southeast of the property. Access to Interstate 5 is located about 1 ¼ miles east along State Route 522 at exit 23A and B (Google 2017).

4.6 Utilities and Water Supply

Utility corridors including sanitary sewer, storm sewer and water are located beneath Ormbrek Street along the northern property boundary, and beneath Northeast 180th Street along the southern property boundary (Figure 7)

Two oil-water separator collection drains separate drips of gas, diesel, oil and grease from water prior to flowing to treatment via the sanitary sewer. One is associated with the runoff collection in the vicinity of the dispenser canopy and the other is associated with runoff collected in the car wash. These flows intersect in a sewer line that flows southeast to the main interceptor beneath Bothell Way Northeast.

Stormwater surface runoff is collected via five catch basins along the southeast edge of the property. A sixth catch basin is located in front of the convenience store. They collect and drain the site in a 6-inch PVC that flows to 30-inch and then 70-inch corrugated metal pipe. This pipe flows across Bothell Way Northeast and then flows south to an outfall in the Sammamish River.

A fire hydrant exists in the northwest corner of the parcel and is sourced from Bothell Water district. Water is supplied by the City of Bothell by Seattle Public Utilities which is sourced primarily from the Tolt River and Cedar River watersheds (SPU, 2017). The nearest potable water well is located approximately 1 mile to the north of the Property (Health, 2017).

4.7 Potential Sources of Petroleum Hydrocarbons

The Site was originally developed prior to 1936 with a single-family residence on the west side of the parcel. In 1968, the original station building was constructed with two service bays by the Union Oil

Company. At that time, two 10,000-gallon gasoline tanks and one 280-gallon waste oil tank were installed. In 1991 the western half of the building was demolished to allow for the removal of underground tanks. The freestanding 1,800 square foot car wash was constructed in 1992. In 1993, a new building was constructed in the current configuration and the canopy was completed. At that time, four double-walled fiberglass underground tanks were installed: one 6,000-gallon diesel, two 8,000-gallon unleaded gasoline, and one 12,000-gallon unleaded gasoline all with interstitial monitoring. In 2002, the automatic car wash equipment was replaced. The former and current USTs and the fuel conveyance system including the fuel dispensers are considered a potential source of hydrocarbons.

5 NATURAL CONDITIONS

5.1 Geologic and Subsurface Conditions

The Puget Sound Region is a lowland basin created by tectonic wrenching between the Olympic Mountains to the west and the Cascade Mountains to the east. The principal aquifers in the Puget Lowlands commonly underlie the basin lowlands to depths of more than 1,000 feet. They occur within relatively permeable sand and gravel units within a series of several glacial drift deposits, separated by finer grained interglacial sediments. These aquifers receive ample recharge from the typically heavy precipitation characteristic of western Washington. The glacial drift in the Puget Sound region varies greatly in composition and water yielding capacity. Typically, wells in glacial drift that tap silt, clay, or till in the Region at approximately 75 to 100 feet below ground surface, may yield 100 gallons or more per minute. Deeper wells, tapping thick, saturated layers of highly permeable gravel and coarse sand, typically at depths greater than 250 feet below ground surface, can yield more than 1,000 gallons per minute.

The predominant sandy silty soils encountered in the investigation by GeoEngineers at the Property in, correlate with those commonly observed in Quaternary Vashon Glacial Till (Appendix A Boring Logs). This deposit consists of fine to coarse-grained silty sand with varying amounts of silt, clay and gravel. This unit is typically weathered at the surface, becoming more consolidated with increasing depth.

Soil assessments conducted by GeoEngineers indicate the Site is generally underlain by silt and sand deposits with variable moisture content from the surface to approximately 19 feet bgs, (GeoEngineers, 1990; 1992; 1993).

A Northwest-Southeast and Southwest-Northeast geologic cross section illustrating subsurface conditions observed at the Property can be found on Figure 8.

5.2 Surface Water

The Site is currently paved with concrete and asphalt. In the event of a storm water overflow at the Property, stormwater surface runoff is collected via five catch basins along the southeast edge of the property. A sixth catch basin is located in front of the convenience store. They collect and drain the site in a 6-inch PVC line that flows to a 30-inch and then to a 70-inch corrugated metal pipe. This pipe flows across Bothell Way Northeast and then flows south to an outfall in the Sammamish River.

The nearest surface water body is the Sammamish River located approximately 475 feet southeast of the Property. The Sammamish River flows west into Lake Washington approximately 2 miles west of the Site (Google Earth, 2017).

5.3 Groundwater Conditions

Groundwater occurs in the shallow saturated zone beneath the Site comprised of silt, sandy silt, sand and gravel (GeoEngineers, 1990). The water table depth ranges between 7 and 10 feet bgs (Table 2). Previous maps depict the local flow of groundwater is toward the southeast and the Sammamish River (Figure 9).

The nearest production well is a private connection utilized by Friends of Youth. The well extends 90 feet deep and is located approximately 1 mile north of the Site in an upgradient direction. The effective date of the well is July 3, 1991 (designated Well #1; Health 2017). No well log was available to review.

5.4 Ecological Receptors

5.4.1 Sensitive Receptor Survey Analysis

The nearest surface water body is the Sammamish River located approximately 475 feet southeast of the Property (Google Earth, 2017). Based on the previous removal of source areas of hydrocarbon concentrations above the MTCA Method A screening levels on the Property, it is unlikely that groundwater or soil beneath the subject property would pose a future risk to surface waters. Other potential receptors include the Park at Bothell Landing located approximately 200 feet southeast of the site across Bothell Way Northeast.

The nearest potable water well is located approximately 1 mile upgradient to the north of the Site (Health, 2017). The Property is not located within any groundwater well protection areas.

5.4.2 Terrestrial Ecological Evaluation

A Terrestrial Ecological Evaluation (TEE) Form was completed for the Property. A Simplified TEE was completed based on approximately 4.3 acres of contiguous undeveloped land on or within 500 feet of the subject site. An aerial map with a 500-foot radius encompassing the Property can be found in Appendix B along with a completed Simplified TEE exposure analyses procedure (Table 749-1). No further evaluation was necessary because: 1) according to WAC 173-340-7492(2)(a), the area of soil contamination is less than 350 square feet; and 2) according to WAC 173-340-7492(2)(c), not contaminant listed in Table 749-2 is, or will be present in the upper 15 feet at concentrations that exceed values in Table 749-2.

6 CONTAMINANTS OF CONCERN OCCURENCE

6.1 Soil

Cumulative soil analytical data can be found in Table 1. Gasoline-range hydrocarbons and BTEX were detected at concentrations exceeding soil Method A soil screening levels in sample FIE-7. This sample was obtained from the northeast corner of the central service island excavation (Figure 6). The northeast corner could not be excavated further because of the close proximity to the sidewalk at the property boundary. All other gasoline impacts were subsequently removed during the excavation activities overseen by GeoEngineers from February 1991 to February 1992.

6.2 Surface Water

Surface water has not been observed on the Property.

6.3 Groundwater

Cumulative groundwater analytical data can be found in Table 2. Groundwater samples collected after the installation of monitoring wells MW1 through MW4 indicated benzene above MTCA Method A screening levels in the vicinity of the first generation of USTs (MW1) and near the oil-water separator (MW3). These monitoring wells were destroyed a during the excavation activities of 1991 and 1992.

Subsequently installed post excavation monitoring wells include monitoring well MW5 through MW11 (Figure 5). Samples collected from MW5, MW9 and MW10 contained TPHg, TPHd, TPHo, BTEX and lead above MTCA Method A groundwater screening levels until December 1994. Monitoring wells MW6 and MW7 contained lead above screening levels in April 1992.

Currently there are three known monitoring wells at the Site. They include MW5, MW9 and MW10. No groundwater was sampled between December 1992 and February 2017. These wells have been sampled February 14, June 1 and September 6, 2017. Currently groundwater monitoring data indicates no residual petroleum hydrocarbons or associated COPCs present in the groundwater at the Site.

6.4 Sediment

Sediment has not been observed on the Property.

6.5 Air/Soil Vapor

There have been no air or soil vapor investigations on the Property.

7 CONCEPTUAL SITE MODEL

The conceptual site model is a "conceptual understanding of a site that identifies potential or suspected sources of hazardous substances, types and concentrations of hazardous substances, potentially contaminated media, and actual and potential exposure pathways and receptors." As defined by MTCA WAC 173-340-200 (WAC, 2017). This report has provided details regarding how COPCs were released, the types and extent of constituents detected at the Site, and actual and potential receptors. This section provides a conceptual summary of the detailed information described in the previous sections.

7.1 Sources of Constituents of Concern

The sources of hydrocarbons on the Site are the releases to soil of COPCs that were stored and distributed by the Former UNOCAL Station 5905. These COPCs occurred via releases from USTs, pipes, and dispensers. These releases were focused in the vicinity of the first generation of UST basin and the former pump islands.

The COPCs were released to soil; the hydrocarbons then spread by vapor transport into the vadose zone, by partitioning from soil vapor into groundwater, and by direct leaching to groundwater from saturated soils. The Property is currently paved with concrete and asphalt. Therefore, the potential of infiltration of rainwater that could leach COPCs from the soil or entrain soil vapors from chemicals and carry them downward to the water table is low.

7.2 Fate and Transport

The fate and transport of the COPCs are governed by the specific properties of the constituents and the surrounding environmental conditions at the Site. Hydrocarbons release at the Site biodegrade most rapidly under aerobic conditions. Under aerobic conditions, oxygen acts as an electron acceptor, but under anaerobic conditions naturally occurring organic matter or volatile hydrocarbons can act as the electron acceptor. The shallow water bearing zone is an oxidizing environment where naturally occurring microbes utilize hydrocarbons as a food source and proliferate until anaerobic conditions potentially occur. As a result, the transport of dissolved constituents is limited and concentrations decrease before they reach the property boundary.

Interim actions completed at the Site have removed most of residual contaminants based on confirmation samples collected and post excavation groundwater monitoring.

7.3 Exposure Pathways and Receptors

The Property is within a mixed residential and commercial use area that includes public streets, businesses, and other industrial activities. The streets and parking lots are covered with asphalt or concrete. There is some terrestrial habitat in the area, across Bothell Way Northeast at the Park at Bothell Landing which borders the Sammamish River. The closest private water well is located approximately 1 mile north of the site (Health, 2017). Current exposure pathways and receptors are limited to the following:

- Incidental ingestion of surface soils;
- Incidental ingestion of groundwater from leaching of soil:
- Inhalation of indoor air from volatilization of soil;
- Inhalation of outdoor air from volatilization of soil;

- Inhalation of indoor air from volatilization of groundwater; and
- Inhalation of outdoor air from volatilization of groundwater

The property is capped with asphalt and no redevelopment is planned. As such, the vapor intrusion pathway will be further evaluated based on recent guidance and planned confirmation sample data.

7.4 Potential Future Exposures Pathways and Receptors

Future land use in the area is expected to remain general commercial, therefore the MTCA Method A and B Cleanup Levels are applicable to this Site. No significant changes in zoning are expected in the foreseeable future.

7.5 Points of Compliance

Points of compliance ("POC"), locations where the cleanup levels shall be achieved, are established for each applicable media at the Site.

7.5.1 Soil Points of Compliance

The Points of Compliance for soil are based on two pathways of exposure:

- Soil direct contact – The MTCA standard POC for direct contact with soil is from the ground surface to a depth of 15 feet bgs. Compliance is determined by direct sampling of soil following the interim remediation by excavation and treatment.
- Soil leaching COPCs to groundwater – This is a cross-media pathway that concerns all Site soil that is a potential source of COPCs to groundwater. Compliance is demonstrated by delineating any COPCs vertically by obtaining soil samples containing COPC concentrations under the MTCA Method A Cleanup Level directly beneath samples above containing COPC concentrations above the MTCA Method A Cleanup Levels.
- Soil in the vadose zone causing vapor intrusion – For protection of this cross media pathway, the POC is from the surface to the uppermost groundwater observed at the Site (approximately 10 feet bgs). Compliance will be achieved by completion of Tier I/II vapor assessment outlined in Ecology's updated *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*.

7.5.2 Groundwater Conditional Points of Compliance

The standard POC for groundwater under MTCA is "throughout the site from the uppermost level of the saturated zone extending vertically to the lowest depth that could be potentially affected by the site" (WAC 173-340-720(8)(b)). The POC for groundwater, therefore, is the shallow saturated zone beneath the Site. Based on groundwater sample data collected at the Site in 2017, currently there are no remaining concentrations of COPCs above MTCA Method A groundwater screening levels.

7.5.3 Indoor Air Point of Compliance

The POC for ambient and indoor air is Site-wide; however, the previous excavation activity has removed most of the source of soil containing hydrocarbons. Confirmation sampling will confirm the presence or absence of a complete vapor intrusion pathway.

8 PROPOSED CLEANUP STANDARDS

8.1 Soil Cleanup Levels

The following pathways are considered for the establishment of soil cleanup levels at the Site:

- Protection of human health via direct exposure using the MTCA Method A Cleanup Levels;
- Protection of ecological receptors, an ecological evaluation is required under MTCA;
- Protection of groundwater resources from COCs leaching from soil; and
- Protection of indoor air from vapor intrusion from soil containing hydrocarbon concentrations exceeding the MTCA Method A Cleanup Levels.

In developing cleanup levels, the following Site-specific information is relevant:

- The Site and the adjacent properties are currently zoned for general commercial use (Figure 3);
- Soil containing residual COPCs is limited to a small area at the edge of the fuel island excavation (FIE-7) (Figure 6).

8.2 Groundwater Cleanup Levels

The following pathways are considered for the establishment of groundwater cleanup levels at the Site:

- Protection of human health via direct exposure using the MTCA Method A Cleanup Levels;
- Protection of ecological receptors, an ecological evaluation is required under MTCA;
- Protection of groundwater resources from COCs leaching from soil; and
- Protection of indoor air from vapor intrusion from soil containing hydrocarbon concentrations exceeding the MTCA Method A Cleanup Levels.

In developing cleanup levels, the following Site-specific information is relevant:

- The Site and the adjacent properties are currently zoned for general commercial use (Figure 3);
- Groundwater containing residual COPCs is not present at the Site (Table 2).

Final Cleanup Levels

	MTCA Cleanup Levels			
COPC	**Soil – Method A (mg/kg)**	**Soil – Method B Direct Contact (µg/kg)**	**Groundwater (µg/L)**	**Indoor Air (µg/m3)**
Benzene	0.030	N/A	5	N/A
Toluene	7	N/A	1,000	N/A
Ethylbenzene	6	N/A	700	N/A
Xylenes	9	N/A	1,000	N/A
TPHg	100a/30b	N/A	800a/1,000b	N/A
TPHd	2000	N/A	500	N/A

	MTCA Cleanup Levels			
TPHo	2000	N/A	500	N/A
Lead	250	N/A	15	N/A

N/A – Not applicable
a-Gasoline mixtures without benzene
b-All other gasoline mixtures
c-Based on benzo(a)pyrene

9 SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Soil: Previous excavation activity completed at the Site has removed most of residual hydrocarbons in soil above the MTCA Method A Cleanup Level. Approximately 2150 cubic yards of petroleum contaminated soil were removed when the previous generation of USTs, dispenser islands and station building were demolished in several phases between 1991 and 1992. According to GeoEngineers, the edge of the public right of way on the southeast property boundary prevented the removal of additional petroleum contaminated soil. The limited extent of soil in the vicinity of FIE-7 represents the remaining gasoline left in place in the vicinity of FIE7 above the MTCA Method A Cleanup Level.

Groundwater: Groundwater monitoring wells at the Site have previously verified the presence of petroleum related hydrocarbons leaching to groundwater. Samples collected from MW1, MW3, MW5 MW9 and MW10 contained concentrations of dissolved hydrocarbons between 1991 and 1994. The current monitoring wells present at the Site include MW5, MW9 and MW10. Samples collected in 2017 indicate dissolved hydrocarbons are no longer present beneath the Site. Monitoring well MW10 is in close proximity to the location of remaining soil sample FIE-7 above MTCA Method A Cleanup Levels.

Confirmation Borings and Groundwater Monitoring. According to the soil sample collected in October of 1991, soil remains at concentrations above MTCA Method A Cleanup Levels at FIE-7. Twenty-six years have elapsed since the collection of this sample allowing sufficient time for biological activity and attenuation of elevated concentrations of TPHg and benzene to reduce below Method A Cleanup Levels. Samples of soil in this area are needed to confirm remaining concentrations are protective of human health and the environment. Additionally, groundwater monitoring events completed in 2017 from monitoring wells where previous concentrations of dissolved hydrocarbon occurred above MTCA Method A Cleanup Levels, contained no concentrations of dissolved hydrocarbons, indicating what soil is remaining in this area is protective of the groundwater pathway. Additional monitoring is necessary to meet the requirement of four consecutive quarters below MTCA Method A Cleanup Levels.

Aerotech requests an opinion from Ecology according to the substantive requirements of the MTCA, if the current definition of the historical petroleum related release described in this report has been sufficiently characterized by TPH, TPHg, TPHd, TPHo, BTEX and lead and in soil and groundwater at the Site.

10 REFERENCES

Aerotech Environmental Consulting, Inc. March 4, 2017. *Phase I Environmental Site Assessment – Bothell 76 / UNOCAL 5905, The Market Bothell Landing*. 18015 Bothell Way Northeast, Bothell, Washington, 98011

Ecology, revised 2016. *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action*. Washington State Department of Ecology, Olympia, Washington. 108 pages. Publication no. 09-09-047. https://fortress.wa.gov/ecy/publications/documents/0909047.pdf

Ecology, revised 2013. *Model Toxics Control Act Regulation and Statute*. Washington State Department of Ecology, Olympia, Washington. 324 pages. Publication No. 94-06. http://www.ecy.wa.gov/biblio/9406.html

Ecology, revised 2011. *Guidance for Remediation of Petroleum Contaminated Sites.* Washington State Department of Ecology, Olympia, Washington. 197 pages. Publication No. 10-09-057. https://fortress.wa.gov/ecy/publications/SummaryPages/1009057.html

GeoEngineers. January 24, 1990. *Report of Geotechnical Services Subsurface Contamination Study Former Unocal Station #5905.* 18015 Bothell Way Northeast, Bothell, Washington 98011.

GeoEngineers. June 4, 1991. *Project Status Underground Storage Tank Removal Former Unocal Station #5905.* 18015 Bothell Way Northeast, Bothell, Washington 98011.

GeoEngineers. May 15, 1992. *Report of Geoenvironmental Services Underground Storage Tank Removal and Remedial Excavation Activities Former Unocal Station #5905.* 18015 Bothell Way Northeast, Bothell, Washington 98011.

GeoEngineers. January 24, 1993. *Progress Report No. 1 Quarterly Groundwater Monitoring and Supplemental Subsurface Investigation Former Unocal Service Station 5905.* 18015 Bothell Way Northeast, Bothell, Washington 98011.

GeoEngineers. March 30, 1993. *Report of Geoenvironmental Services Supplemental Subsurface Investigation and Remedial Excavation Activities Former Unocal Station #5905.* 18015 Bothell Way Northeast, Bothell, Washington 98011.

Google Earth Map. Accessed October 11, 2017.

King County Assessor. 2017.

Seattle Public Utilities (SPU). Accessed October 11, 2017 *Where does my water come from?* http://www.seattle.gov/util/MyServices/Water/index.htm

Washington Administrative Code (WAC). October 11, 2017 – http://apps.leg.wa.gov/WAC/

Washington Department of Health ("Health") 2017. Accessed Source Water Assessment Program (SWAP) Maps https://fortress.wa.gov/doh/eh/maps/SWAP/index.html

STATEMENT OF QUALITY ASSURANCE

I have performed this Remedial Investigation in accordance with generally accepted environmental practices, procedures, and regulatory requirements, as of the date of this Report. I have employed the degree of care and skill ordinarily exercised under similar circumstances by reputable environmental professionals practicing in this area.

I declare that, to the best of my professional knowledge and belief, I meet the definition of Environmental Professional as defined in § 312.10 of this part. I have the specific qualifications based upon education, training, and experience necessary to conduct Remedial Investigations.

Signature of Washington State Certified UST Site Assessor:

Signature – Nicholas Gerkin, (Certificate No. 8452487)

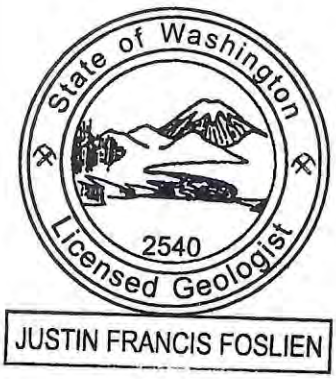
STATEMENT OF THE LICENSED GEOLOGIST

As stipulated in the Regulatory Code of the State of Washington Title 18, Chapter 18.220, the undersigned is a licensed Geologist in the State of Washington, and has met the statutory requirements of RCW § 18.220.060 for such licensing including, but not limited to, educational requirements, work and field experience, examination proficiency, and acceptance by the State Licensing Board.

The undersigned Licensed Geologist has supervised the geological work performed as described in attached Report – a majority of said work being performed by employees of the firm which employs undersigned Licensed Geologist – as delineated in RCW Title 18, Chapter 18.220, Paragraph 190.

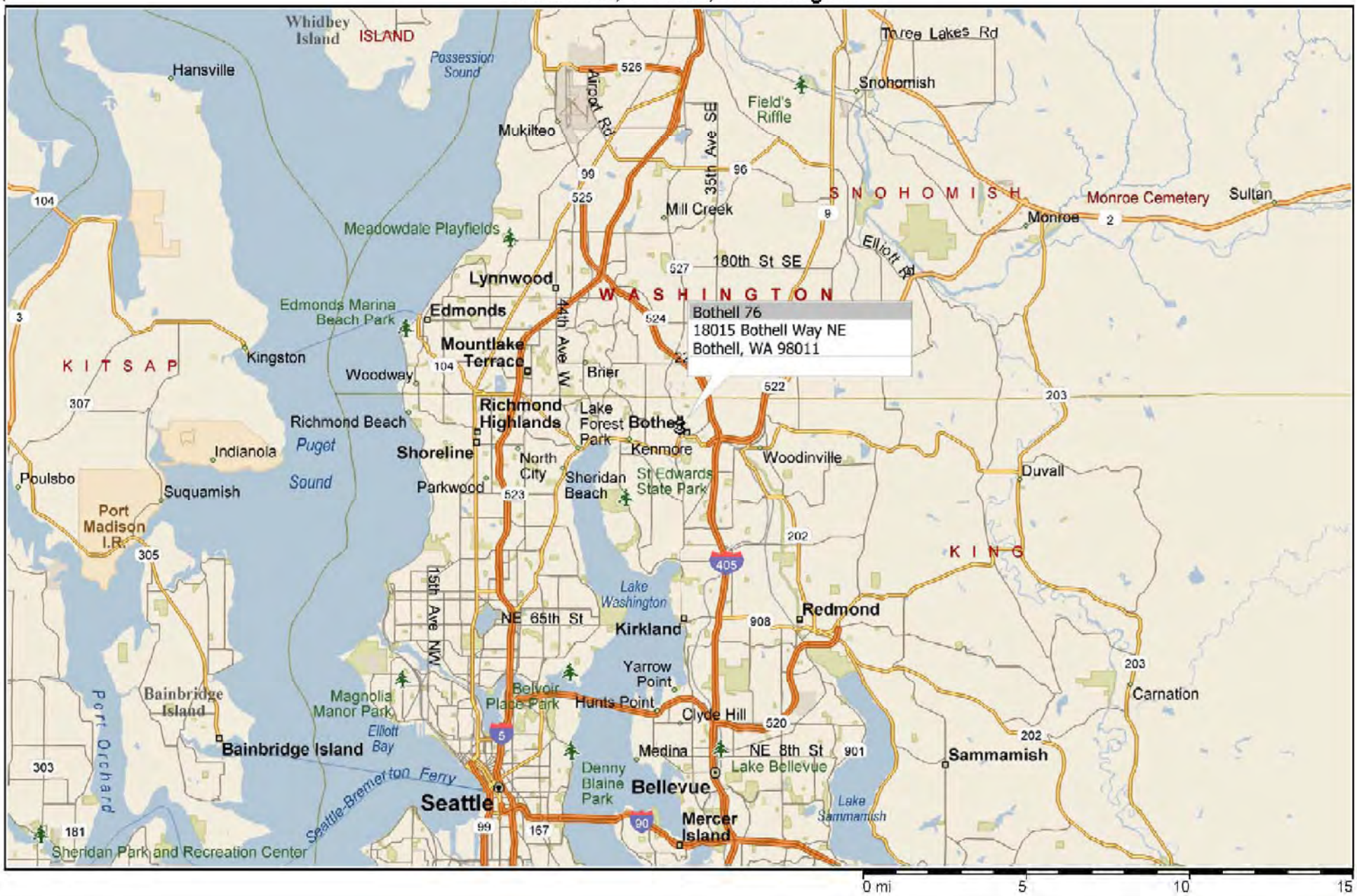
Signature of Licensed Washington Geologist:

Signature – Justin Foslien (License No. 2540)

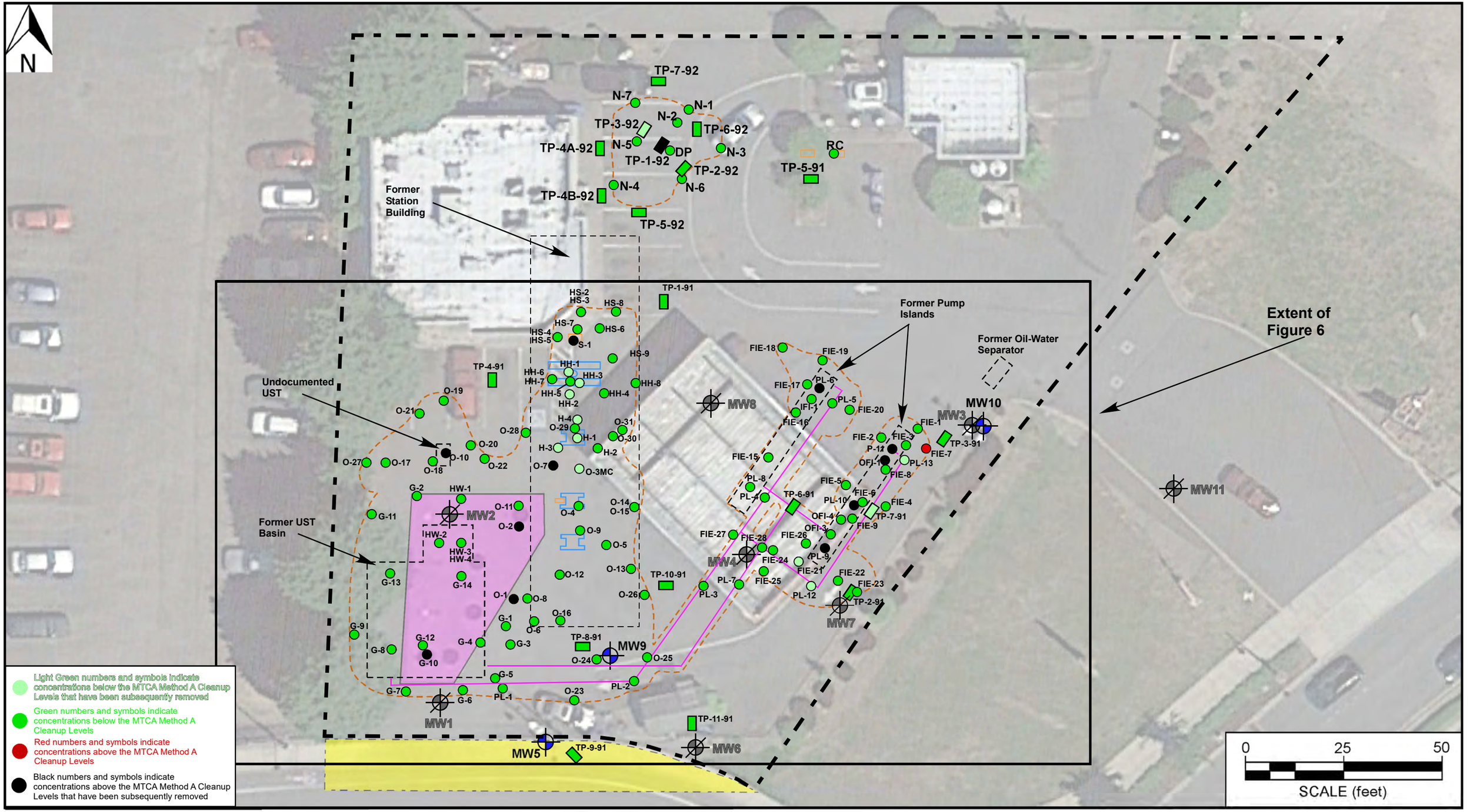


• Figures

Bothell 76, Bothell, Washington



AEROTECH ENVIRONMENTAL CONSULTING	**REGIONAL MAP**	**Bothell 76 (Unocal 5905)** **18015 Bothell Way Northeast** **Bothell, Washington**	**Date:** 02/27/17 **By:** Nick Gerkin **Figure:** 1



Light Green numbers and symbols indicate concentrations below the MTCA Method A Cleanup Levels that have been subsequently removed

Green numbers and symbols indicate concentrations below the MTCA Method A Cleanup Levels

Red numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels

Black numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels that have been subsequently removed

EXPLANATION

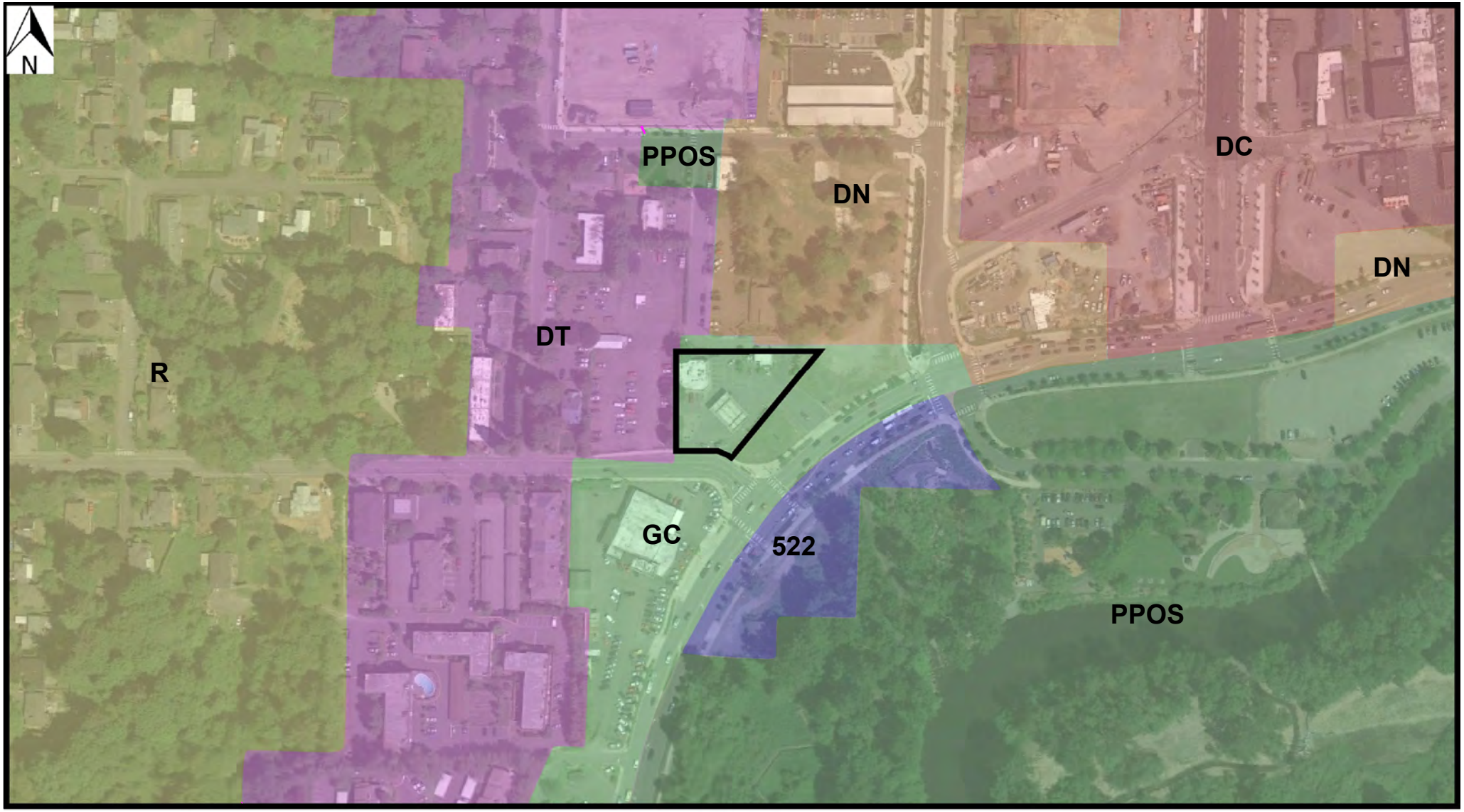
- MW10 — Groundwater Monitoring Well
- MW8 — Destroyed Groundwater Monitoring Well
- O-32 — Soil Sample Location
- Former Hoist Location
- 1st Generation Fuel Lines
- Sump
- TP8 — Test Pit Location
- Extent of Excavation
- 1st Generation Service Station Features
- Property Boundary
- Parcel Purchased by City of Bothell in 2013

AEROTECH ENVIRONMENTAL CONSULTING

SITE PLAN
WITH CUMULATIVE SOIL DATA

Bothell 76
18015 Bothell Way Northeast
Bothell, Washington

Date: 10/19/17
By: Nick Gerkin
Figure: 2



EXPLANATION

- Subject Property
- R - Residential
- 522 - SR 522 Corridor
- DC - Downtown Core
- DT - Downtown Transition
- DN - Downtown Neighborhood
- PPOS - Park & Public Open Space
- GC - General Commercial

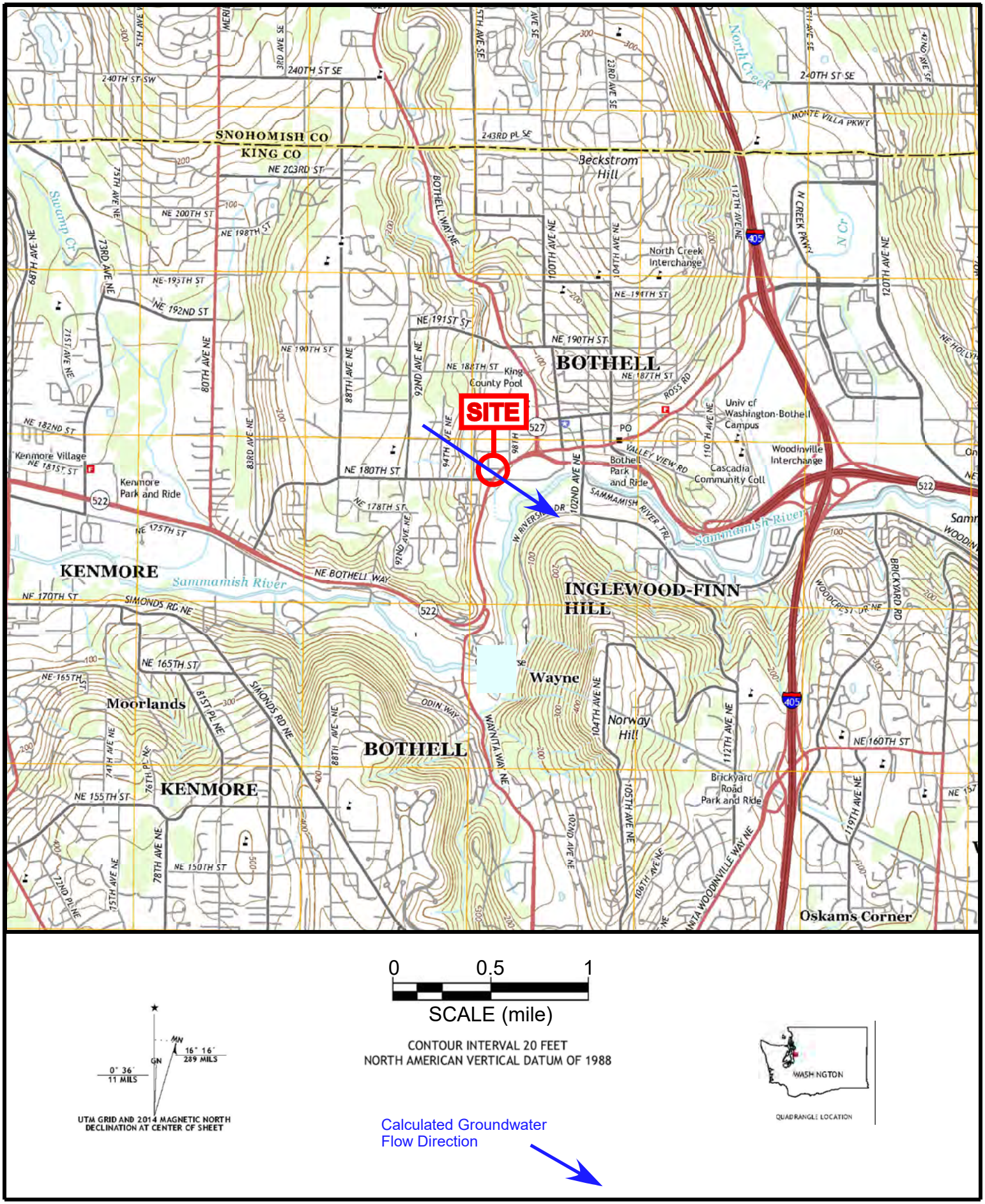
AEROTECH ENVIRONMENTAL CONSULTING

VICINITY ZONING MAP

Bothell 76
18015 Bothell Way Northeast
Bothell, Washington

0 250 500
SCALE (feet)

Date: 10/19/17
By: Nick Gerkin
Figure: 3

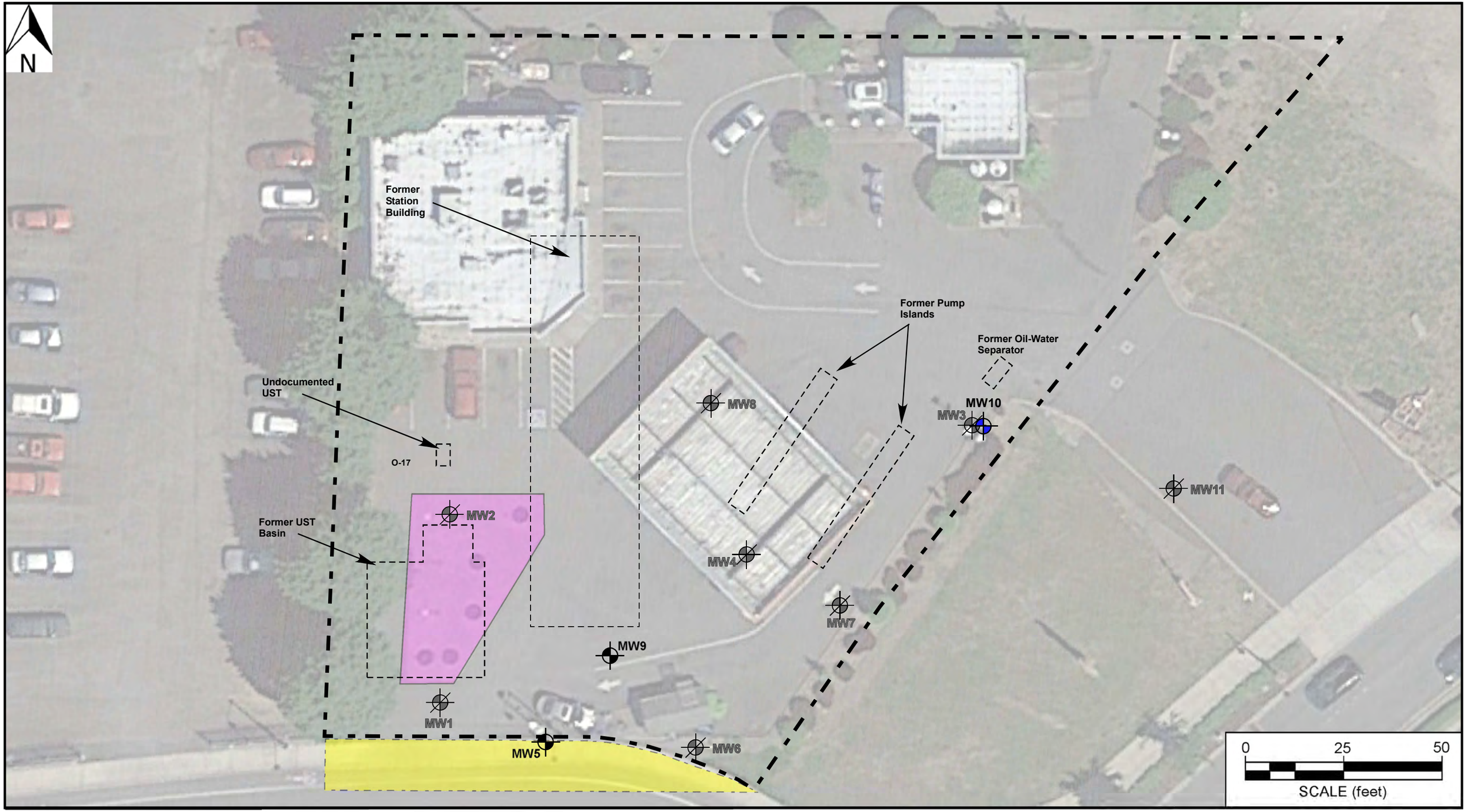


AEROTECH ENVIRONMENTAL CONSULTING

USGS TOPOGRAPHIC MAP

Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

Date: 10/23/17
By: Nick Gerkin
Figure: 4



EXPLANATION

- MW10 — Groundwater Monitoring Well
- MW8 — Destroyed Groundwater Monitoring Well
- Parcel Purchased by City of Bothell in 2013
- Extent of Excavation
- 1st Generation Service Station Features
- Property Boundary

AEROTECH ENVIRONMENTAL CONSULTING

GROUNDWATER MONITORING WELL LOCATIONS MAP

Bothell 76
18015 Bothell Way Northeast
Bothell, Washington

Date: 10/19/17
By: Nick Gerkin
Figure: 5

CUMULATIVE SOIL ANALYTICAL RESULTS MAP - GAS AREA

Bothell 76
18015 Bothell Way Northeast
Bothell, Washington

Date: 10/19/17
By: Nick Gerkin
Figure: 6

AEROTECH ENVIRONMENTAL CONSULTING

N

Former Station Building
Undocumented UST
Former UST Basin
Former Pump Islands
Current UST Basin

FIE-7 | Location ID
6' | Depth
850 | TPHg
110 | TPHd
-- | TPHo
0.46 | Benzene
All Concentrations are reported in mg/kg (ppm)

FIE-7
6'
850
110
--
0.46

HS-2 HS-3 HS-8 HS-7 HS-6 HS-4 HS-5 S-1 HS-9 HH-1 HH-6 HH-7 HH-3 HH-8 HH-5 HH-2 HH-4
TP-1-91 TP-4-91
O-19 O-21 O-28 O-20 O-10 O-27 O-17 O-18 O-22 O-31 O-29 H-4 H-1 O-30 H-3 H-2 O-7 O-3
G-2 HW-1 G-11 MW2 O-11 O-2 HW-2 HW-3 HW-4 G-13 G-14 O-14 O-15 O-4 O-9 O-5 O-12 O-13
O-1 O-8 O-16 G-1 O-6 G-9 G-12 G-4 G-8 G-10 G-3 TP-8-91 MW9 O-24 O-25 G-5 PL-2 G-7 G-6 PL-1 O-23 MW1
TP-10-91 PL-3 PL-7 PL-12 TP-11-91 MW5 TP-9-91 MW6
MW8 FIE-18 FIE-19 FIE-17 PL-6 PL-5 IFI-1 FIE-20 FIE-16 FIE-15 PL-8 PL-4 TP-6-91 FIE-5 FIE-6 PL-10 FIE-4 TP-7-91 OFI-4 FIE-9 FIE-27 FIE-28 FIE-26 OFI-3 FIE-24 PL-9 MW4 FIE-21 FIE-25 FIE-22 TP-2-91 FIE-23 MW7
FIE-1 MW3 MW10 FIE-2 FIE-3 TP-3-91 PL-11 FIE-7 OFI-1 PL-13 FIE-8

0 15 30
SCALE (feet)

Light Green numbers and symbols indicate concentrations below the MTCA Method A Cleanup Levels that have been subsequently removed

Green numbers and symbols indicate concentrations below the MTCA Method A Cleanup Levels

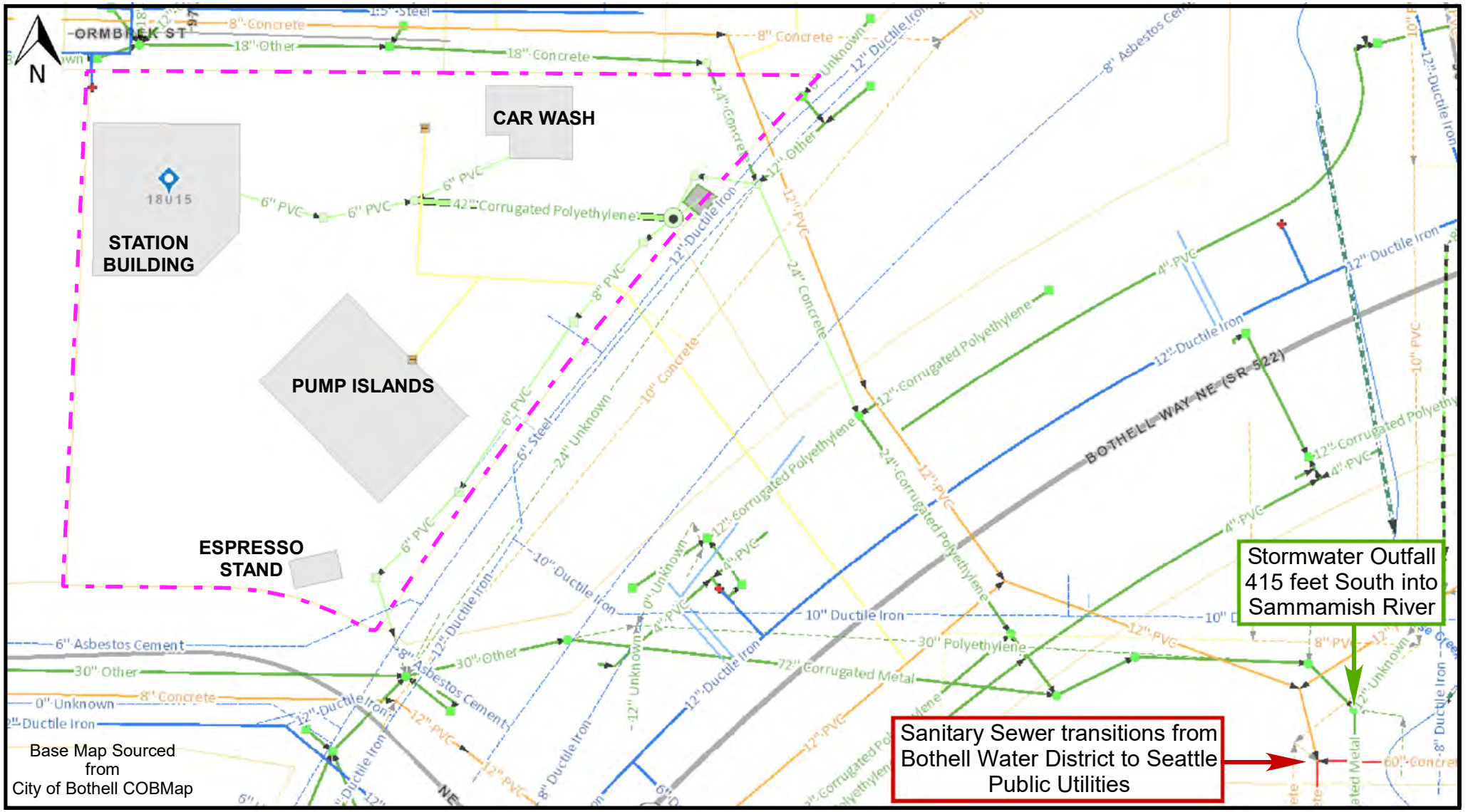
Red numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels

Black numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels that have been subsequently removed

MW10 Groundwater Monitoring Well
MW8 Destroyed Groundwater Monitoring Well
O-32 Soil Sample Location

EXPLANATION

Former Hoist Location
1st Generation Fuel Lines
Sump
TP8 Test Pit Location
Extent of Excavation
1st Generation Service Station Features
Property Boundary
Parcel Purchased by City of Bothell in 2013



EXPLANATION

Subject Site	Fire Hydrant	Property Boundary	Seattle Public Utilities Sewer
Oil Water Separator	Catch Basin	Alderwood Water & Wastewater District	City of Bothell Sewer
		Storm Pipe	Sewer Lateral

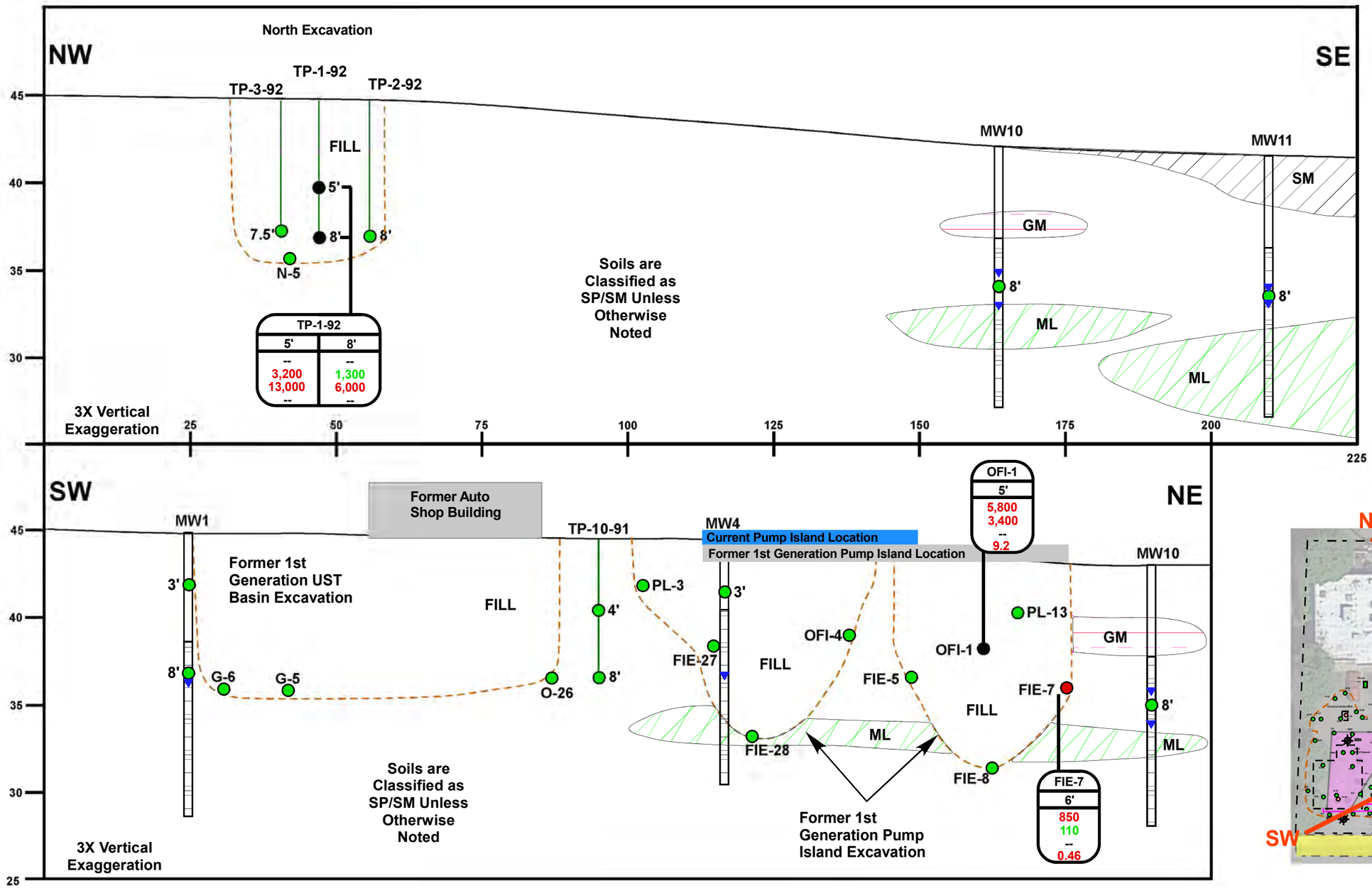
AEROTECH ENVIRONMENTAL CONSULTING

UTILITY LOCATIONS

Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

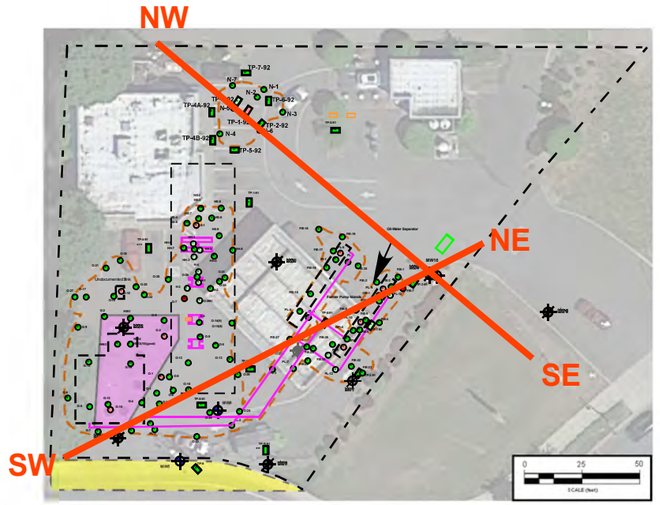
0 50 100
SCALE (feet)

Date: 10/18/17
By: Nick Gerkin
Drawing: 7



OFI-1	Location ID
5'	Depth
5,800	TPHg
3,400	TPHd
--	TPHo
9.2	Benzene

All Concentrations are reported in mg/kg (ppm)



AEROTECH ENVIRONMENTAL CONSULTING

EXPLANATION

- Green numbers and symbols indicate concentrations below the MTCA Method A Cleanup Levels
- Red numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels
- Black numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels that have been subsequently removed

O-32 — Soil Sample Location

Historical Water Level

Screened Interval

Extent of Excavation

Test Pit

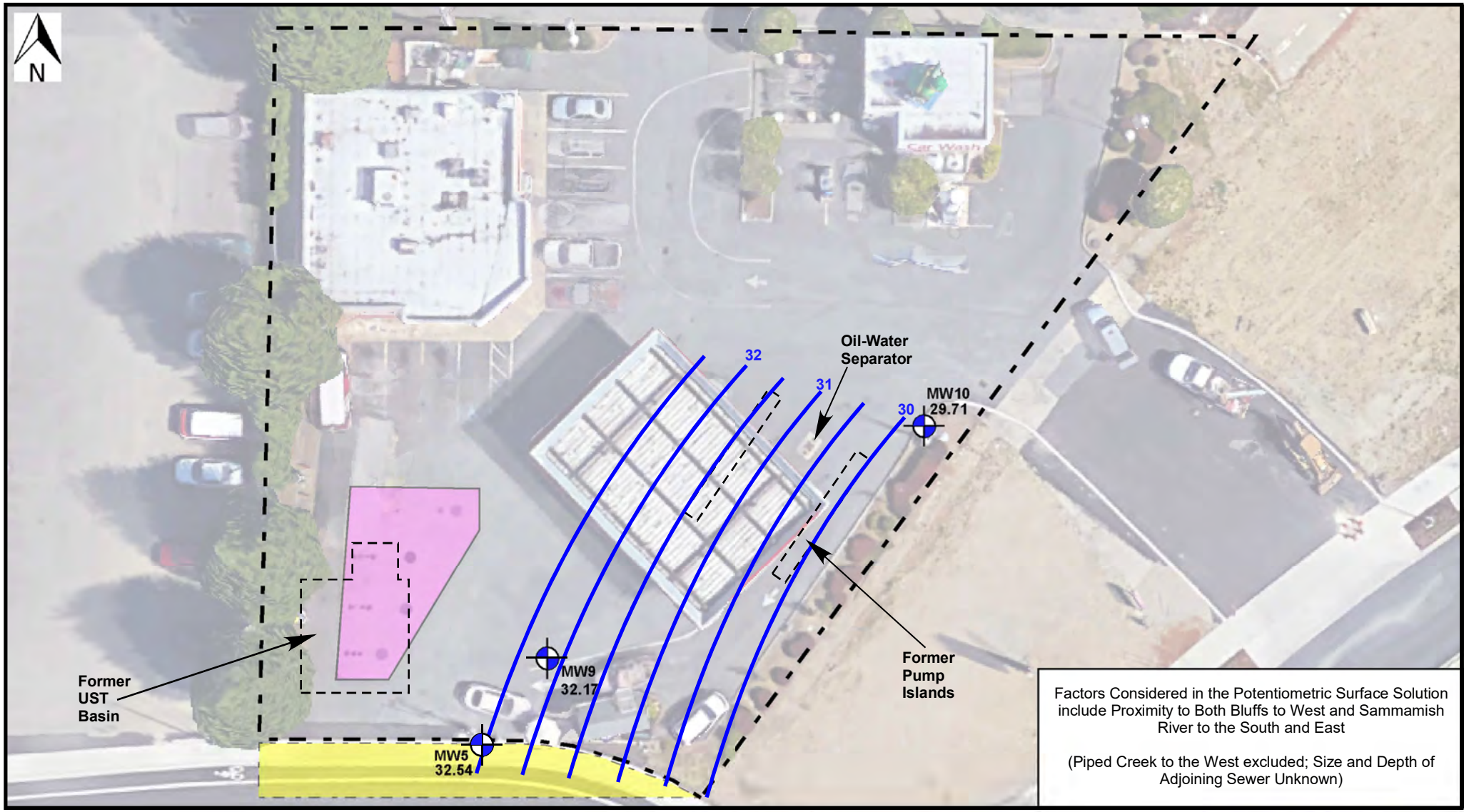
CROSS SECTIONS

Bothell 76
18015 Bothell Way Northeast
Bothell, Washington

Date: 10/18/17

By: Nick Gerkin

Figure: 8



EXPLANATION

- Blue numbers and symbols indicate concentrations below the MTCA Method A Cleanup Levels
- Red numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels

MW10
29.71

- Groundwater Monitoring Well
- Groundwater Elevation (Feet Above MSL)
- Groundwater Elevation Contour Line
- Parcel Purchased by City of Bothell in 2013
- Current UST Basin

Calculated Groundwater Flow Direction and Gradient:

Southeast 0.05 ft/ft

AEROTECH ENVIRONMENTAL CONSULTING

GROUNDWATER POTENTIOMETRIC SURFACE MAP - 09/06/17

Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

0 35 70
SCALE (feet)

Date: 10/23/17
By: Nick Gerkin
Drawing: 9

CUMULATIVE SOIL ANALYTICAL RESULTS MAP - GAS AREA

Bothell 76
18015 Bothell Way Northeast
Bothell, Washington

Date: 10/19/17
By: Nick Gerkin
Figure: 6

AEROTECH ENVIRONMENTAL CONSULTING

N

Former Station Building
Undocumented UST
Former UST Basin
Former Pump Islands
Current UST Basin

FIE-7 | Location ID
6' | Depth
850 | TPHg
110 | TPHd
-- | TPHo
0.46 | Benzene
All Concentrations are reported in mg/kg (ppm)

FIE-7
6'
850
110
--
0.46

HS-2 HS-3 HS-8 HS-7 HS-6 HS-4 HS-5 S-1 HS-9 HH-1 HH-6 HH-7 HH-3 HH-8 HH-5 HH-2 HH-4
TP-1-91 TP-4-91
O-19 O-21 O-28 O-20 O-10 O-27 O-17 O-18 O-22 O-31 O-29 H-4 H-1 O-30 H-3 H-2 O-7 O-3
G-2 HW-1 G-11 MW2 O-11 O-2 HW-2 HW-3 HW-4 G-13 G-14 O-14 O-15 O-4 O-9 O-5 O-12 O-13
O-1 O-8 O-16 G-1 O-6 G-9 G-12 G-4 G-8 G-10 G-3 TP-8-91 MW9 O-24 O-25 G-5 PL-2 G-7 G-6 PL-1 O-23 MW1
TP-10-91 PL-3 PL-7 PL-12 TP-11-91 MW5 TP-9-91 MW6
MW8 FIE-18 FIE-19 FIE-17 PL-6 PL-5 IFI-1 FIE-20 FIE-16 FIE-15 PL-8 PL-4 TP-6-91 FIE-5 FIE-6 PL-10 FIE-4 TP-7-91 OFI-4 FIE-9 FIE-27 FIE-28 FIE-26 OFI-3 FIE-24 PL-9 MW4 FIE-21 FIE-25 FIE-22 TP-2-91 FIE-23 MW7
FIE-1 MW3 MW10 FIE-2 FIE-3 TP-3-91 PL-11 FIE-7 OFI-1 PL-13 FIE-8

0 15 30
SCALE (feet)

Light Green numbers and symbols indicate concentrations below the MTCA Method A Cleanup Levels that have been subsequently removed

Green numbers and symbols indicate concentrations below the MTCA Method A Cleanup Levels

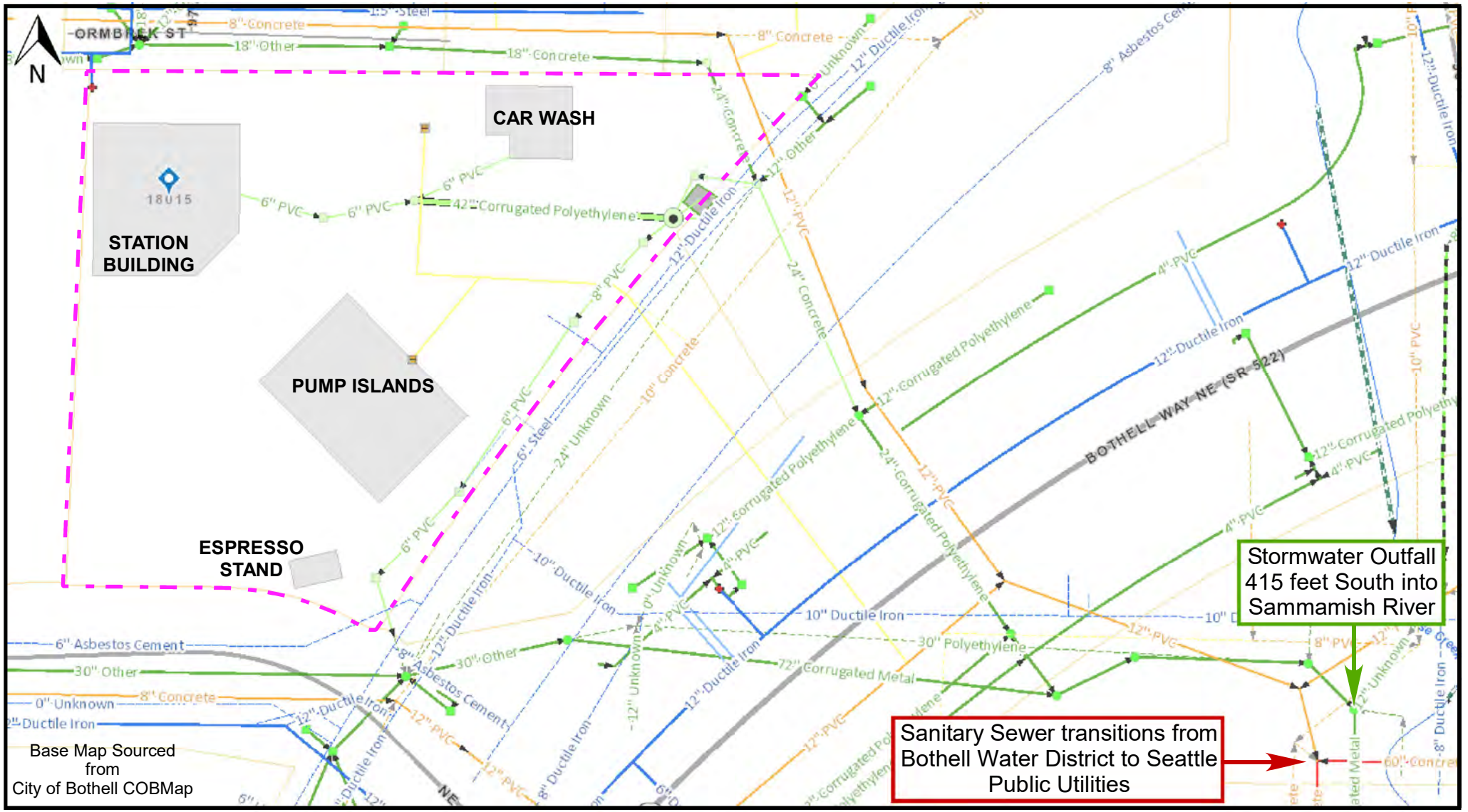
Red numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels

Black numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels that have been subsequently removed

MW10 Groundwater Monitoring Well
MW8 Destroyed Groundwater Monitoring Well
O-32 Soil Sample Location

EXPLANATION

Former Hoist Location
1st Generation Fuel Lines
Sump
TP8 Test Pit Location
Extent of Excavation
1st Generation Service Station Features
Property Boundary
Parcel Purchased by City of Bothell in 2013



EXPLANATION

Subject Site	Fire Hydrant	Property Boundary	Seattle Public Utilities Sewer
Oil Water Separator	Catch Basin	Alderwood Water & Wastewater District	City of Bothell Sewer
		Storm Pipe	Sewer Lateral

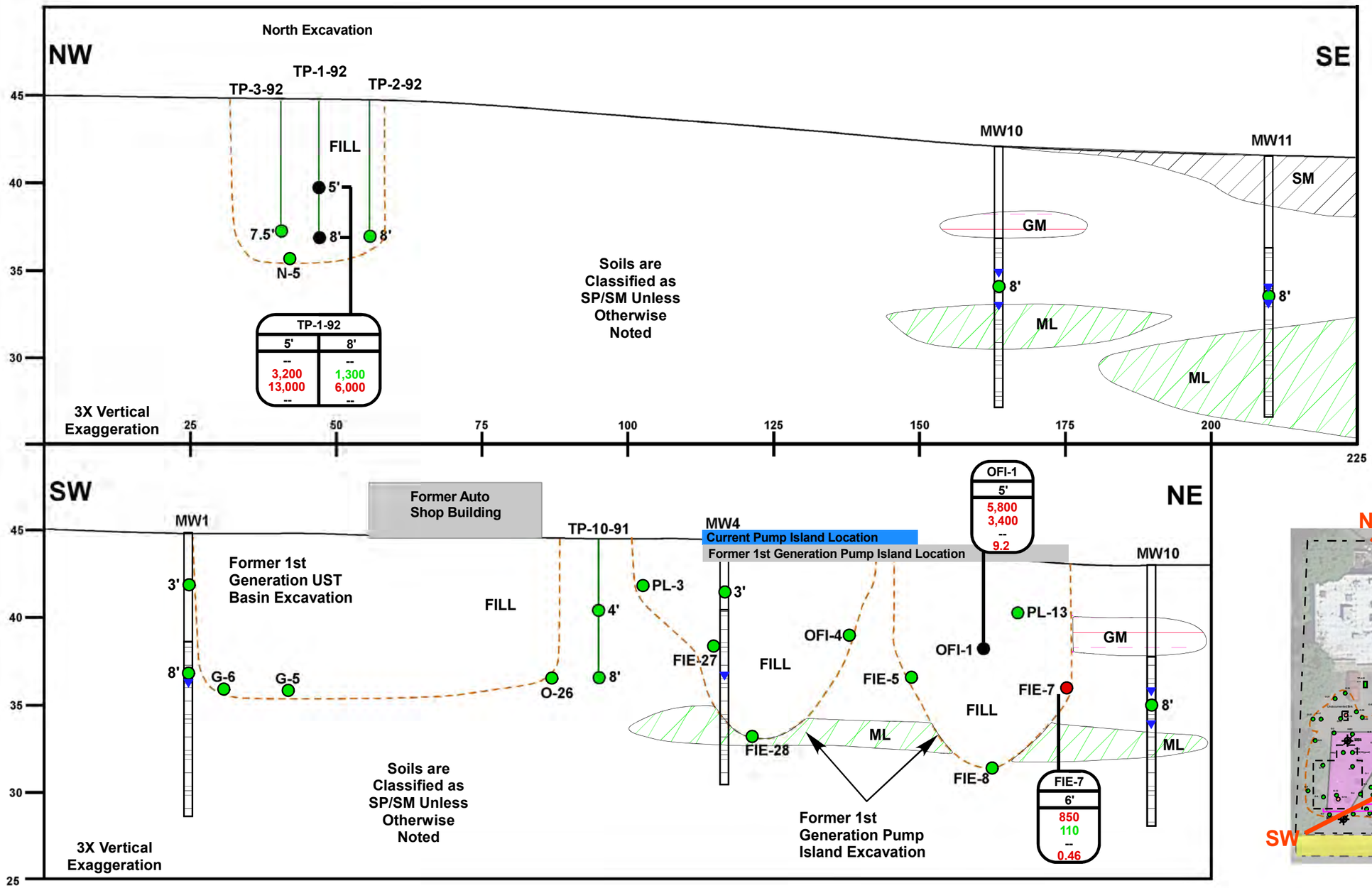
AEROTECH ENVIRONMENTAL CONSULTING

UTILITY LOCATIONS

Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

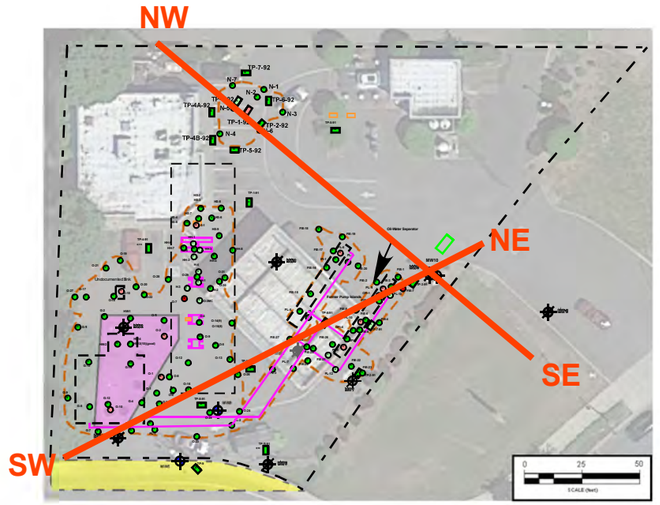
0 50 100
SCALE (feet)

Date: 10/18/17
By: Nick Gerkin
Drawing: 7



OFI-1	Location ID
5'	Depth
5,800	TPHg
3,400	TPHd
--	TPHo
9.2	Benzene

All Concentrations are reported in mg/kg (ppm)



AEROTECH ENVIRONMENTAL CONSULTING

EXPLANATION

- Green numbers and symbols indicate concentrations below the MTCA Method A Cleanup Levels
- Red numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels
- Black numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels that have been subsequently removed

O-32 — Soil Sample Location

Historical Water Level

Screened Interval

Extent of Excavation

Test Pit

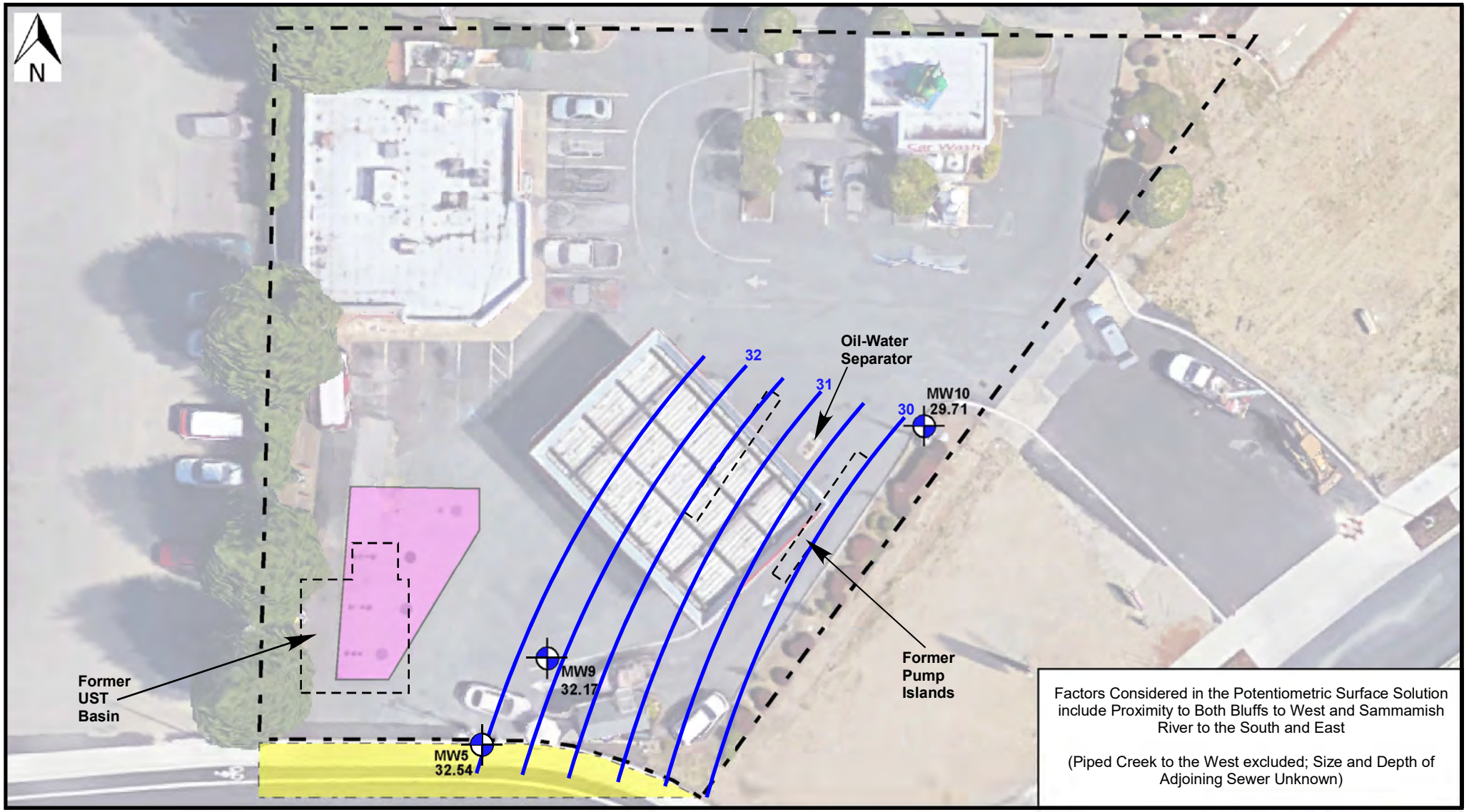
CROSS SECTIONS

Bothell 76
18015 Bothell Way Northeast
Bothell, Washington

Date: 10/18/17

By: Nick Gerkin

Figure: 8



EXPLANATION

- Blue numbers and symbols indicate concentrations below the MTCA Method A Cleanup Levels
- Red numbers and symbols indicate concentrations above the MTCA Method A Cleanup Levels

MW10
29.71

- Groundwater Monitoring Well
- Groundwater Elevation (Feet Above MSL)
- Groundwater Elevation Contour Line
- Parcel Purchased by City of Bothell in 2013
- Current UST Basin

Calculated Groundwater Flow Direction and Gradient:

Southeast 0.05 ft/ft

AEROTECH ENVIRONMENTAL CONSULTING

GROUNDWATER POTENTIOMETRIC SURFACE MAP - 09/06/17

Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

0 35 70
SCALE (feet)

Date: 10/23/17
By: Nick Gerkin
Drawing: 9

• Tables

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS

Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

GeoEngineers - Report of Geotechnical Services Subsurface Contamination Study - January 24, 1990

Sample ID	Soil Boring/Point Well ID	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MW-1	MW-1	MW-1	11/09/89	3	<1	--	--	--	<0.025	<0.025	<0.025	<0.025	--	--	--
MW-1	MW-1	MW-1	11/09/89	8	<1	--	--	--	<0.025	<0.025	<0.025	<0.025	--	--	--
MW-2	MW-2	MW-2	11/09/89	3	<1	--	--	--	<0.025	<0.025	<0.025	<0.025	--	--	--
MW-3	MW-3	MW-3	11/09/89	3	37	--	--	--	<0.025	<0.025	<0.025	<0.025	--	--	--
MW-4	MW-4	MW-4	11/09/89	3	<1	--	--	--	<0.025	<0.025	<0.025	<0.025	--	--	--

GeoEngineers - Report of Geoenvironmental Services Underground Storage Tank Removal and Remediation Excavation Activites - May 15, 1992

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Hydraulic Hoist Excacation															
H-1	Base	H-1	02/26/91	3	32	<5	<5	--	--	--	--	--			--
H-2	East wall	H-2	02/26/91	8	98	<5	<5	--	--	--	--	--			--
H-3	West wall	H-3	02/26/91	3	120	<5	<5	--	--	--	--	--			--
H-4	North wall	H-4	02/26/91	3	35	<5	<5		--	--	--	--			--
Main Excavation															
G-1	Tank Excavation east wall	G-1	05/14/91	7	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-2	Tank Excavation north wall	G-2	05/16/91	8	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-3	Tank Excavation east wall	G-3	05/17/91	8	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-4	Tank Excavation base	G-4	05/17/91	11	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-5	Tank Excavation east wall	G-5	05/17/91	9	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-6	Tank Excavation south wall	G-6	05/17/91	9	--	4.5	<20	--	<0.05	0.07	<0.05	0.10	--	--	--
G-7	Tank Excavation south wall	G-7	05/17/91	9	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-8	Tank Excavation base	G-8	05/17/91	11	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-9	Tank Excavation west wall	G-9	05/17/91	9	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-10*	Tank Excavation base	G-10	05/17/91	11	--	**170**	53	--	**0.14**	1.7	4.6	**12**	--	--	--
HW-1	Tank Excavation north wall	HW-1	05/16/91	7	<10.0	--	<10.0	--	--	--	--	--	--	--	--
HW-2	Tank Excavation base	HW-2	05/16/91	10	<10.0	--	<10.0	--	--	--	--	--	--	--	--
HW-3	Tank Excavation base	HW-3	05/16/91	10	<10.0	--	<10.0	--	--	--	--	--	ND	--	--
O-1*	Tank Excavation east wall	O-1	05/16/91	8	**2,600**	--	1,500	--	--	--	--	--	ND	--	--
O-2*	Tank Excavation east wall	O-2	05/16/91	8	**3,100**	--	**2,400**	--	--	--	--	--	ND	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS

Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

GeoEngineers - Report of Geoenvironmental Services Underground Storage Tank Removal and Remediation Excavation Activites - May 15, 1992 - Continued

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Product Line Excavation and Service Island Areas															
PL-1	Product Lines	PL-1	05/08/91	2	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-2	Product Lines	PL-2	05/08/91	2	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-3	Product Lines	PL-3	05/09/91	2.5	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-4	Product Lines	PL-4	05/09/91	2.5	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-5	Product Lines	PL-5	05/09/91	2.5	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-6*	Inboard Island	PL-6	05/14/91	4	--	15,000	14,000	--	0.54	180	440	1,900	--	--	<2.2
PL-7	Product Lines	PL-7	05/15/91	2	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-8	Inboard Island	PL-8	05/15/91	2.5	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-9*	Inboard Island	PL-9	05/15/91	3	--	2,200	2,200	--	<0.05	0.13	0.24	57	--	--	--
PL-10*	Inboard Island	PL-10	05/15/91	3	--	2,700	3,200	--	<0.05	3.0	4.9	60	--	--	--
PL-11*	Inboard Island	PL-11	05/15/91	3	--	20,000	9,600	--	17	140	370	840	--	--	--
PL-12	Product Lines	PL-12	05/16/91	2	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-13	Product Lines	PL-13	05/16/91	3	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
IFI-1	Northwest Canopy Footing	IFI-1	05/22/91	5	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
OFI-1*	Northeast Canopy Footing	OFI-1	05/22/91	5	--	5,800	3,400	--	9.2	180	260	550	--	--	--
OFI-2	Southeast Canopy Footing	OFI-2	05/22/91	5	--	<1.0	<10.0	--	<0.05	0.66	<0.05	0.73	--	--	--
OFI-3	Southeast Canopy Footing	OFI-3	05/22/91	5	--	<1.0	<10.0	--	<0.05	0.09	0.05	<0.05	--	--	--
Test Pit Explorations															
TP-1	Test Pit 1	TP-1-91	05/14/91	8	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-2	Test Pit 2	TP-2-91	05/14/91	8	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-3	Test Pit 3	TP-3-91	05/14/91	9	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-4A	Test Pit 4	TP-4A-91	05/15/91	7	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-4B	Test Pit 4	TP-4B-91	05/15/91	2.5	30	--	<10	--	--	--	--	--	--	--	--
TP-5	Test Pit 5	TP-5-91	05/15/91	7.5	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-6-1	Test Pit 6	TP-6-91	05/16/91	2	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-6-2	Test Pit 6	TP-6-91	05/16/91	7.5	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-7	Test Pit 7	TP-7-91	05/21/91	7.5	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-8-4.5	Test Pit 8	TP-8-91	05/21/91	4.5	21	--	<10	--	--	--	--	--	--	--	--
TP-8-9	Test Pit 8	TP-8-91	05/21/91	9	1,200	--	1,800	--	--	--	--	--	--	--	--
TP-9-8	Test Pit 9	TP-9-91	05/21/91	8	13	--	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-10-4	Test Pit 10	TP-10-91	05/21/91	4	28	--	<10	--	--	--	--	--	--	--	--
TP-10-8	Test Pit 10	TP-10-91	05/21/91	8	19	--	<10	--	--	--	--	--	--	--	--
TP-11-8	Test Pit 11	TP-11-91	05/21/91	8	18	--	<10	--	--	--	--	--	--	--	--
TP-11-10	Test Pit 11	TP-11-91	05/21/91	10	20	--	<10	--	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS

Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

GeoEngineers - Report of Geoenvironmental Services Underground Storage Tank Removal and Remediation Excavation Activites - May 15, 1992 - Continued

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Main Excavation															
G-11	West wall	G-11	09/30/91	7.5	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	<5.0
G-12	Base, beneath center gasoline UST	G-12	10/01/91	13	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
G-13	Base, beneath western gasoline UST	G-13	10/02/91	12	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
G-14	Base, beneath eastern gasoline UST	G-14	10/04/91	11.5	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
HW-4	Base, beneath waste oil UST	HW-4	10/02/91	11	--			--	--	--	--	--	0.13B - MC	--	--
O-3	North wall	O-3	10/02/91	4	--	<5	<5	13	<0.025	<0.025	<0.025	<0.025	0.26B - MC	--	--
O-4	Base, beneath building	O-4	10/02/91	10	--	--	--	5	--	--	--	--	--	--	--
O-5	Base, beneath buiding	O-5	10/02/91	10	--	--	--	5	--	--	--	--	--	--	--
O-6	Base, beneath buiding	O-6	10/02/91	11	--	--	--	5	--	--	--	--	--	--	--
O-7*	North wall	O-7	10/02/91	7.5	--	**2,400**	<50	**2,300**	<0.13	<0.13	1.1	5.0	--	--	--
O-8	Base, beneath building	O-8	10/02/91	11	--	--	--	5	--	--	--	--	--	--	--
O-9	Base, beneath building	O-9	10/03/91	10.5	--	--	--	34	--	--	--	--	--	--	--
O-10*	Beneath undocumented UST	O-10	10/04/91	6	--	**1,200**	**18,000**	**14,000**	--	--	--	--	--	--	--
O-11	Base, beneath building	O-11	10/04/91	11	--	--	--	44	--	--	--	--	--	--	--
O-12	Base, beneath building	O-12	10/08/91	11	--	--	--	<5	--	--	--	--	--	--	--
O-13	East wall	O-13	10/08/91	9	--	--	--	<5	--	--	--	--	--	--	--
O-14	East wall	O-14	10/08/91	9	--	<5	<5	<5	--	--	--	--	--	--	--
O-15	East wall	O-15	10/08/91	8	--	--	--	<5	--	--	--	--	--	--	--
O-16	South wall	O-16	10/08/91	9	--	--	--	59	--	--	--	--	--	--	--
O-17	West wall, undocumented UST area	O-17	10/09/91	7	--	--	--	260	--	--	--	--	--	--	--
O-18	Base, beneath undocumented UST	O-18	10/09/91	10	--	--	--	130	--	--	--	--	--	--	--
O-19	North wall, undocumented UST area	O-19	10/10/91	8	--	--	--	<5	--	--	--	--	--	--	--
O-20	North wall, undocumented UST area	O-20	10/10/91	8	--	--	--	<5	--	--	--	--	--	--	--
O-21	North wall, undocumented UST area	O-21	10/10/91	3	--	--	--	15	--	--	--	--	--	--	--
O-22	North wall, undocumented UST area	O-22	10/10/91	3	--	<5	<5	<5	--	--	--	--	--	--	--
Hoist Excavation and Sump Excavation															
S-1*B192	Base, sump excavation	S-1	10/07/91	5	--	**41**	310	570	--	--	--	--	--	ND	--
HH-1	Base, hoist excavation	HH-1	10/07/91	7	--	--	--	590	--	--	--	--	--	--	--
HH-2	Base, hoist excavation	HH-2	10/07/91	7	--	--	--	76	--	--	--	--	--	--	--
HH-3	Base, hoist excavation	HH-3	10/07/91	7	--	<5	57	250	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS
Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

GeoEngineers - Report of Geoenvironmental Services Underground Storage Tank Removal and Remediation Excavation Activites - May 15, 1992 - Continued

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Central Service Island Excavation															
FIE-1	North wall	FIE-1	09/30/91	12	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	<5.0
FIE-2	West wall	FIE-2	09/30/91	11	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
FIE-3	Base	FIE-3	09/30/91	15	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	<5.0
FIE-4	East wall	FIE-4	10/01/91	6	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
FIE-5	West wall	FIE-5	10/01/91	7	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
FIE-6	Base	FIE-6	10/01/91	10	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	<5.0
FIE-7	East wall	FIE-7	10/01/91	6	--	**850**	110	--	**0.46**	**22**	**29**	**160**	--	--	--
FIE-8	Base	FIE-8	10/03/91	12	--	<5	<28	--	<0.025	<0.025	<0.025	<0.025	--	--	<5.0
FIE-9	South wall	FIE-9	10/03/91	9	--	<5	<32	--	<0.025	<0.025	<0.025	<0.025	--	--	--
Main Excavation															
O-23	South wall	O-23	02/11/92	11	--	<5	<25	<20	--	--	--	--	--	--	--
O-24	Base	O-24	02/11/92	12	--	<5	<25	<20	--	--	--	--	--	--	--
O-25	East wall	O-25	02/11/92	10	--	<5	<25	<20	--	--	--	--	--	--	--
O-26	East wall	O-26	02/11/92	8	--	<5	<25	<20	--	--	--	--	--	--	--
O-27	West wall, undocumented UST area	O-27	02/12/92	7	--	<5	<25	<20	--	--	--	--	--	--	--
O-28	West wall, beneath building	O-28	02/12/92	7	--	<5	<25	<20	--	--	--	--	--	--	
O-29	Base, beneath building	O-29	02/12/92	11	--	<5	<25	<20	--	--	--	--	--	--	--
O-30	East wall, beneath building	O-30	02/12/92	9	--	<5	<25	<20	--	--	--	--	--	--	--
O-31	East wall, beneath building	O-31	02/13/92	4	--	<5	<25	<20	--	--	--	--	--	--	--
HH-4	East wall, hoist area	HH-4	02/12/92	8	--	<5	<25	<20	--	--	--	--	--	--	--
HH-5	Base, hoist area	HH-5	02/13/92	10	--	<5	<25	34	--	--	--	--	--	--	--
HH-6	West wall, hoist area	HH-6	02/13/92	9	--	<5	<25	<20	--	--	--	--	--	--	--
HH-7	West wall, hoist area	HH-7	02/13/92	4	--	<5	<25	<20	--	--	--	--	--	--	--
HH-8	East wall, hoist area	HH-8	02/17/92	1	--	<5	<25	22	<0.029	<0.029	<0.029	<0.029	--	--	--
HS-2	North wall, sump area	HS-2	02/13/92	10	--	<5	<25	<20	<0.033	<0.033	<0.033	<0.033	--	--	--
HS-3	North wall, sump area	HS-3	02/13/92	6	--	<5	<25	<20	<0.027	<0.027	<0.027	<0.027	--	--	--
HS-4	West wall, sump area	HS-4	02/13/92	10	--	<5	<25	<20	--	--	--	--	--	--	--
HS-5	West wall, sump area	HS-5	02/13/92	4.5	--	<5	<25	<20	<0.029	<0.029	<0.029	<0.029	--	--	--
HS-6	Base, sump area	HS-6	02/13/92	9	--	<5	<25	<20	--	--	--	--	--	--	--
HS-7	Base, sump area	HS-7	02/13/92	11	--	<5	<25	<20	<0.029	<0.029	<0.029	<0.029	--	ND	--
HS-8	East wall, sump area	HS-8	02/13/92	3	--	<5	<25	<23	<0.029	<0.029	<0.029	<0.029	--	--	--
HS-9	Base, sump area	HS-9	02/14/92	4	--	<5	<25	<20	<0.026	<0.026	<0.026	<0.026	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS

Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington
5 of 6

GeoEngineers - Report of Geoenvironmental Services Underground Storage Tank Removal and Remediation Excavation Activites - May 15, 1992 - Continued

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Northern Service Island Excavation															
FIE-15	Beneath former dispenser	FIE-15	02/12/92	3	--	<5	<25	--	<0.027	<0.027	<0.027	<0.027	--	--	--
FIE-16	South wall	FIE-16	02/13/92	8	--	<5	<25	--	<0.031	<0.031	<0.031	<0.031	--	--	--
FIE-17	Base	FIE-17	02/13/92	8	--	<5	<25	--	<0.032	<0.032	<0.032	<0.032	--	--	--
FIE-18	West wall	FIE-18	02/14/92	8	--	<5	<25	--	<0.027	<0.027	<0.027	<0.027	--	--	--
FIE-19	North wall	FIE-19	02/14/92	8	--	<5	<25	--	<0.031	<0.031	<0.031	<0.031	--	--	--
FIE-20	East well	FIE-20	02/14/92	8	--	<5	<25	--	<0.032	<0.032	<0.032	<0.032	--	--	--
Southern Service Island Excavation															
FIE-21	Base	FIE-21	02/14/92	3	--	<5	<25	--	<0.028	<0.028	<0.028	<0.028	--	--	--
FIE-22	Base	FIE-22	02/14/92	5	--	<5	<25	--	<0.026	<0.026	<0.026	<0.026	--	--	--
FIE-23	East wall	FIE-23	02/14/92	3	--	<5	<25	--	<0.027	<0.027	<0.027	<0.027	--	--	--
FIE-24	Base	FIE-24	02/17/92	9	--	67	460	--	<0.032	<0.032	<0.032	<0.032	--	--	--
FIE-25	South wall	FIE-25	02/17/92	6	--	<5	<25	--	<0.027	<0.027	<0.027	<0.027	--	--	--
FIE-26	North wall	FIE-26	02/17/92	7	--	<5	<25	--	<0.031	<0.031	<0.031	<0.031	--	--	--
FIE-27	West wall	FIE-27	02/17/92	6	--	<5	<25	--	<0.031	<0.031	<0.031	<0.031	--	--	--
FIE-28	Base	FIE-28	02/20/92	11	--	<5	<25	--	<0.028	<0.028	<0.028	<0.028	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

GeoEngineers - Report of Geoenvironmental Services Supplemental Subsurface Investigation and Remediation Monitoring Activities - March 1992

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MW-5	MW-5	MW-5	03/19/92	8	--	ND	ND	ND	ND	ND	ND	ND	--	--	--
MW-6	MW-6	MW-6	03/19/92	8	--	ND	ND	ND	ND	ND	ND	ND	--	--	--
MW-7	MW-7	MW-7	03/19/92	8	--	ND	ND	ND	ND	ND	ND	ND	--	--	--
MW-8	MW-8	MW-8	03/19/92	8	--	ND	ND	ND	ND	ND	ND	ND	--	--	--
MW-9	MW-9	MW-9	03/20/92	8	--	ND	ND	ND	--	--	--	--	--	--	--
MW-9			03/20/92	10.5	--	ND	ND	ND	ND	ND	ND	ND	--	--	
MW-10	MW-10	MW-10	03/20/92	8	--	ND	ND	ND	ND	ND	ND	ND	--	--	
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

GeoEngineers - Progress Report No.1 Quarterly Ground Water Monitoring and Supplemental Subsurface Investigation Reports - January 20, 1993

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MW11	MW11	MW11	09/28/92	7	--	--	--	100	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS

Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington
6 of 6

GeoEngineers - Report of Geoenvironmental Services Supplemental Subsurface Investigation and Remediation Monitoring Activities - March 30, 1993

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Drain Pipe	Beneath drain pipe	DP	09/18/92	1.5	--	--	21	110	--	--	--	--	--	--	--
TP-1-5*	Test pit TP-1	TP-1-92	09/18/92	5	--	--	**3,200**	**13,000**	--	--	--	--	--	--	--
TP-1-8*	Test pit TP-1	TP-1-92	09/18/92	8	--	--	1,300	**6,000**	--	--	--	--	--	--	--
TP-2-8	Test pit TP-2	TP-2-92	09/18/92	8	--	--	<14	<43	--	--	--	--	--	--	--
TP-3-7.5	Test pit TP-3	TP-3-92	09/18/92	7.5	--	--	<14	<42	--	--	--	--	--	--	--
TP-4-1	Test pit TP-4	TP-4A-92	09/23/92	8	--	--	<28	<23	--	--	--	--	--	--	--
TP-4-2	Test pit TP-4	TP-4B-92	09/23/92	8	--	--	<29	<23	--	--	--	--	--	--	--
TP-5-1	Test pit TP-5	TP-5-92	09/23/92	8	--	--	<27	39	--	--	--	--	--	--	--
TP-6-1	Test pit TP-6	TP-6-92	09/23/92	8	--	--	<28	<22	--	--	--	--	--	--	--
TP-7-1	Test pit TP-7	TP-7-92	09/23/92	8	--	--	<32	<25	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

GeoEngineers - Report of Geoenvironmental Services Supplemental Subsurface Investigation and Remediation Monitoring Activities - March 30, 1993 - Continued

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sump Excavation															
Reclamation Pit	Base	RC	09/28/92	7	--	--	--	100	--	--	--	--	--	--	--
North Excavation															
N-1	North wall	N-1	12/03/92	7.5	--	--	<29	<23	--	--	--	--	--	--	--
N-2	Base	N-2	12/03/92	9	--	--	<29	<24	--	--	--	--	--	--	--
N-3	East wall	N-3	12/03/92	8	--	--	<30	<24	--	--	--	--	--	--	--
N-4	West wall	N-4	12/04/92	8	--	--	<28	<22	--	--	--	--	--	--	--
N-5	Base	N-5	12/04/92	9	--	--	<29	<24	--	--	--	--	--	--	--
N-6	South wall	N-6	12/04/92	8	--	--	<30	<24	--	--	--	--	--	--	--
N-7	West wall	N-7	12/04/92	8	--	--	<28	<22	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

MTCA = Model Toxic Control Act Cleanup Level (WAC173-340-900)
BGS = Below Ground Surface mg/kg = milligram of analyte per kilogram of soil
< = not detected at indicated Laboratory Detection Limits -- = not analyzed
Benzene , Toluene, Ethylbenzene, Xylenes by EPA Method 8021B/8020
TPH - Total Petroleum Hydrocarbons - by EPA Method 418.1
TPHg - Total Petroleum Hydrocarbons - Gasoline by NWTPH-Gx/8020
TPHd - Total Petroleum Hydrocarbons - Diesel by NWTPH-Dx/8015 Modified
TPHo - Total Petroleum Hydrocarbons - Motor Oil by NWTPH-Dx extended/EPA Method 418.1 Modified

HVOCs - Halogenated Volatile Organic Compounds by EPA Method 8010
PCBs - Polychlorinated Biphenyls by EPA Method 8080
Lead by EPA Method 7010/7471
ND = Not Detected; mulitiple detection limits, see laboratory reports for specific detection limits
B = Also deteceted in method blank. MC = Methylene Chloride, is a comon laboratory contaminant.
Bolded numbers and red-shaded cells denote concentrations above the MTCA Method A Cleanup Levels for soil
* = Soil from which this sample originated was removed during the Remedial Excavation

TABLE 2
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

MW1

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
16.57	#########	--	102.49	--	1,000	--	--	--	120	47	110	610	--	--	--	--	--	--	--
	1/2/1990	8.87	102.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/23/1991	--	102.49	--	<1000	<1000	<1000	--	3.0	1.3	6.7	29	--	--	--	--	--	--	--
Well Destroyed During Excavation Activity																			
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW2

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
17.24	#########	NM	101.73	--	<50	--	--	--	<0.5	<0.5	<0.5	<0.5	--	--	--	ND	--	--	--
	1/2/1990	6.76	101.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/23/1991	NM	101.73	--	<1000	<1000	<1000	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
Well Destroyed During Excavation Activity																			
		MTCA Method A Cleanup Levels				800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW3

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
17.23	#########	--	99.22	--	<50	--	--	--	<0.5	<0.5	<0.5	1.0	--	--	--	--	--	--	--
	1/2/1989	--	99.22	--				--			--	--	--	--	--	--	--	--	--
	4/23/1991	--	99.22	--	<1000	<1000	<1000	--	17	21	2.4	29	--	--	--	--	--	--	--
	6/9/1992	--	99.22	--	--	<50	<500	--	3.2	0.66	<0.50	1.1	--	--	--	--	--	<1.0	--
	9/1/1992	--	99.22	--	--	<50	<500	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
Well abandoned 9/10/92																			
		MTCA Method A Cleanup Levels				800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW4

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
14.13	#########	--	100.74	--	<50	--	--	--	<0.5	1.2	<0.5	<0.5	--	--	--	--	--	--	--
	1/2/1990	7.99	100.74	--		--	--	--					--	--	--	--	--	--	--
	4/23/1991	--	100.74	--	<1000	<1000	<1000	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
Well Destroyed During Excavation Activity																			
		MTCA Method A Cleanup Levels				800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

TABLE 2
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

MW5

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	8.20	102.18	--	--	400	<500	--	<0.5	<0.5	<0.5	2.5	--	--	--	--	--	--	--
	4/20/1992	NM	102.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	76
	6/9/1992	7.85	102.18	--	--	240	<500	--	<0.50	1.0	<0.50	<0.5	--	--	--	--	--	<1.0	--
	9/1/1992	9.23	102.18	--	--	120	<250	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
	12/3/1992	8.82	102.18	--	--	<50	300	<380	<0.50	2.30	<0.50	3.50	--	--	--	--	--	--	--
	3/19/1993	9.57	102.18	--	--	<50	280	1,500	<0.50	<0.50	0.95	<0.50	--	--	--	--	--	--	--
	6/16/1993	8.42	102.18	--	--	<10	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	9/22/1993	9.02	102.18	--	--	--	<250	<750	--	--	--	--	--	--	--	--	--	--	--
	1/12/1994	8.77	102.18	--	--	--	<250	<750	--	--	--	--	--	--	--	--	--	--	--
	3/30/1994	8.43	102.18	--	--	140	<250	<750	23	6.6	<0.50	0.60	--	--	--	--	--	--	--
	4/13/1994	NM	102.18	--	--	290	<250	<750	220	60	<0.50	11.00	--	--	--	--	--	<3.0	4.9
	6/21/1994	8.75	102.18	--	--	<10	<250	<750	26	0.60	<0.50	<0.50	--	--	--	--	--	--	--
	9/30/1994	9.17	102.18	--	--	170	<250	<750	29	<0.50	<0.50	<1.0	--	--	--	--	--	--	--
	#########	8.55	102.18	--	--	100	<250	800	7	<0.50	<0.50	<1.0	--	--	--	--	--	--	--
12.4	2/14/2017	8.74	43.17	34.43	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	6/1/2017	8.67	43.17	34.50	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
	9/6/2017	10.63	43.17	32.54	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	--	<2.0
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW6

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	7.49	100.33	3.58	--	<100	<500	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	5.1
	4/20/1992	NM	100.33	NM	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	120
	6/9/1992	8.14	100.33	2.93	--	<50	<500	--	<0.50	<0.50	<0.50	<0.5	--	--	--	--	--	<1.0	--
	9/1/1992	8.64	100.33	2.43	--	<50	<250	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	2.2	--
DUP	9/1/1992	8.64	100.33	2.43	--	<50	--	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--
	12/3/1992	8.31	100.33	2.76	--	<50	120	<0.38	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	<2.0	--
DUP	12/3/1992	8.31	100.33		--	<50	--	--	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
		Well Destroyed																	
		MTCA Method A Cleanup Levels				800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW7

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	--	99.57	--	--	<100	<500	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
	4/20/1992	--	99.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	220
	6/9/1992	--	99.57	--	--	<50	<500	--	<0.50	<0.50	<0.50	<0.5	--	--	--	--	--	<1.0	--
	9/1/1992	--	99.57	--	--	<50	<310	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
		Well abandoned 9/10/92																	
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

TABLE 2
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

MW8

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	--	101.18	--	--	<100	<500	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
	4/20/1992	--	101.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	180
	6/9/1992	--	101.18	--	--	<50	<500	--	<0.50	<0.50	<0.50	<0.5	--	--	--	--	--	<1.0	--
	9/1/1992	--	101.18	--	--	<50	<250	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
Well abandoned 9/10/92																			
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW9

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	7.13	101.26	--	--	<100	880	<1000	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	96
	4/20/1992	NM	101.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	190
	6/9/1992	7.91	101.26	--	--	<50	<500	8,500	0.56	0.95	<0.50	1.20	--	--	--	--	--	<1.0	--
	7/15/1992	NM	101.26	--	--	--	<500	<500	--	--	--	--	--	--	--	--	--	--	--
	9/1/1992	8.65	101.26	--	--	<50	460	<500	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
	12/3/1992	NM	101.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
	3/9/1993	8.12	101.26	--	--	<50	390	1,700	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--		--
	6/16/1993	7.46	101.26	--	--	<100	310	1,100	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--		--
DUP	6/16/1993	7.46	101.26	--	--	<100	--	--	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--		--
	9/22/1993	8.35	101.26	--	--	--	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--		--
	1/12/1994	7.94	101.26	--	--	--	<250	<750	--	--	--	--	--	--	--	--	--		--
	3/30/1994	7.26	101.26	--	--	1,900	<250	<750	2,200	660	42	37	--	--	--	--	--		--
	4/13/1994	NM	101.26	--	--	1,600	<250	<750	1,700	610	0.90	40	--	--	--	--	--	<3.0	5.9
	6/21/1994	NM	101.26	--	--	<100	<250	<750	350	3.6	<0.50	7.2	--	--	--	--	--		--
	9/30/1994	8.47	101.26	--	--	<50	<250	<750	52	<0.50	<0.50	4.9	--	--	--	--	--		--
	#########	7.53	101.26	--	--	<50	<250	930	24	<0.50	<0.50	2.7	--	--	--	--	--		--
10.9	2/14/2017	8.76	42.74	33.98	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	6/1/2017	8.71	42.74	34.03	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
	9/6/2017	10.57	42.74	32.17	Insufficient Water Volume to Sample														
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

TABLE 2
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

MW10

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	7.56	99.35	2.38	--	<100	<500	--	55	<0.5	<0.5	10	--	--	--	--	--	--	12
	4/20/1992	NM	99.35	NM	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	3
	6/9/1992	8.12	99.35	2.06	--	73	<500	--	1.3	<0.50	<0.50	<0.5	--	--	--	--	--	--	--
DUP	6/9/1992	8.12	99.35	2.06	--	--	<500	--	--	--	--	--	--	--	--	--	--	--	--
	9/1/1992	8.46	99.35	1.72	--	<50	<250	--	4.9	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
	12/3/1992	9.11	99.35	0.83	--	<50	170	<380	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	10.5	
	3/19/1993	8.05	99.35	2.13	--	<50	130	<380	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	
	6/16/1993	7.83	99.35	2.18	--	<100	290	900	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	<3.0	
	9/22/1993	8.32	99.35	1.69	--	--	<250	<750	--	--	--	--	--	--	--	--	--	--	
	1/12/1994	8.06	99.35	1.95	--	--	<250	<750	--	--	--	--	--	--	--	--	--	<3.0	
	3/30/1994	7.94	99.35	2.07	--	<100	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	
	4/13/1994	NM	99.35	NM	--	<100	<250	<750	17	1.7	<0.50	<0.50	--	--	--	--	--	--	
	6/21/1994	8.17	99.35	1.84	--	<100	<250	<750	10	0.60	<0.50	<0.50	--	--	--	--	--	--	
	9/30/1994	8.26	99.35	1.75	--	<50	<250	<750	88	<0.50	<0.50	<1.0	--	--	--	--	--	--	
	#########	7.63	99.35	2.39	--	<50	<250	<750	43	<0.50	<0.50	<0.50	--	--	--	--	--	--	
15.0	2/14/2017	9.90	41.07	31.17	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	6/1/2017	10.23	41.07	30.84	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
	9/6/2017	11.36	41.07	29.71	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	--	<2.0
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW11

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
14.8	6/22/1992	8.71	9.15	0.74	--	<50	--	--	<0.50	<0.50	<0.50	<0.5	--	--	--	--	--	<1.0	--
	9/1/1992	8.77	9.15	0.68	--	<50	<250	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
	12/3/1992	8.35	9.15	1.10	--	<50	160	<380	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	3/19/1993	8.51	9.15	0.94	--	<50	170	<380	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	3/19/1993	NM	9.15	NM	--	<50	--	--	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	6/16/1993	8.27	9.15	1.00	--	<100	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	9/22/1993	8.59	9.15	0.68	--	--	<250	<750	--	--	--	--	--	--	--	--	--	--	--
	1/12/1994	8.45	9.15	0.82	--	--	<250	<750	--	--	--	--	--	--	--	--	--	--	--
	3/30/1994	8.37	9.15	0.90	--	<100	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	4/13/1994	NM	9.15	0.82	--	<100	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	<3.0	6.9
	6/21/1994	8.45	9.15	0.71	--	<100	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	9/30/1994	8.56	9.15	NM	--	<50	<250	<750	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--
	#########	7.82	9.15	1.45	--	<50	<250	<750	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--
Well Destroyed																			
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

TABLE 2

CUMULATIVE GROUNDWATER ANALYTICAL RESULTS

Bothell 76 (Unocal 5905)

18015 Bothell Way Northeast

Bothell, Washington

EXPLANATION

MTCA = Model Toxic Control Act Cleanup Level (WAC173-340-900)

TOC = Top of Casing MSL = Mean Sea Level

< = not detected at indicated Laboratory Detection Limits -- not analyzed /elevation not included due to uncertainty or missing measurement NM = Not Measured

* = TOC Elevations are relative to a bench mark prior to 2017, sourced from GeoEngineers' *Results of Ground Water Sampling - December 1994.* 2017 values measured by Aerotech field staff.

TPHg - Total Petroleum Hydrocarbons - Gasoline by Method NWTPH-Gx

TPHd - Total Petroleum Hydrocarbons - Diesel by Method NWTPH-Dx TPHo - Total Petroleum Hydrocarbons - Motor Oil by Method NWTPH-Dx extended

Benzene, Toluene, Ethylbenzene and Xylenes by EPA Methods 8021B and 8260B

MTBE = Methyl-tert-butyl-ether EDC = 1,2-Dichloroethane EDB = 1,2-Dibromoethane; and additional VOCs by EPA Method 8260B

HVOCs - Halogenated Volatile Organic Compounds by EPA Method 8010

Total and Dissolved Lead by EPA Method 7010 PAHs by EPA Method 8270 SIM

ND = Not Detected (multiple detection limits see laboratory report for further detail)

Bolded numbers and red-shaded cells denote concentrations above the MTCA Method A Cleanup Levels for groundwater

TABLE 3
CONTAMINATED STOCKPILE SAMPLE ANALYTICAL RESULTS
Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

Sample ID	Sampling Date	TPH	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Lead
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Samples obtained from soil stockpiles disposed of at Roosevelt Regional Landfill									
SP-1(A)	02/26/91	180	<5	<5	--	--	--	--	--
SP-1(B)	05/15/91	44	<10	<10	<0.05	<0.05	<0.05	<0.05	--
WOSP-1	05/17/91	130	<10	12	<0.05	<0.05	<0.05	<0.05	--
OSPN-1	10/02/91	400	--	--	--	--	--	--	--
OSPN-2	10/02/91	400	--	--	--	--	--	--	--
OSPN-3	10/03/91	500	--	--	--	--	--	--	--
OSPN-4	10/03/91	270	--	--	--	--	--	--	--
OSPN-5	10/09/91	530	--	--	--	--	--	--	--
OSPN-6	10/09/91	850	--	--	--	--	--	--	--
OSPN-7	10/09/91	750	--	--	--	--	--	--	--
OSPN-8	10/09/91	65	--	--	--	--	--	--	--
OSPN-9	10/09/91	880	--	--	--	--	--	--	--
OSPN-10	10/10/91	2,700	--	--	--	--	--	--	--
OSPN-11	10/10/91	190	--	--	--	--	--	--	--
OSPN-12	10/10/91	870	--	--	--	--	--	--	--
OSPN-13	10/10/91	1,600	--	--	--	--	--	--	--
OSPN-14(A)	12/02/91	--	--	280	--	--	--	--	--
OSPN-14(B)	02/12/92	130	ND	ND	<0.029	0.13	0.060	0.33	--
OSPN-15(A)	12/02/91	--	--	350	<0.025	<0.025	<0.025	<0.025	--
OSPN-15(B)	12/13/91	270	**130**	73	<0.025	<0.025	<0.025	0.071	--
OSPN-16	12/02/91	--	--	480	--	--	--	--	--
OSPN-17	12/02/91	--	--	1,600	--	--	--	--	--
OSPN-18	12/02/91	--	--	170	--	--	--	--	--
OSPN-19	12/02/91	--	--	400	--	--	--	--	--
OSPN-20	12/02/91	--	--	49	--	--	--	--	--
OSPN-21	12/02/91	--	--	--	--	--	--	--	--
T-1	10/08/91	--	**2,000**	**23,000**	--	--	--	--	--
RSP-1	02/12/92	54	--	--	--	--	--	--	--
RSP-2	02/12/92	200	<5	<25	ND	ND	ND	ND	--
CNSP-6	02/14/92	200	<5	<25	<0.027	<0.027	<0.027	<0.027	--
PISP-1	02/13/92	--	10	37	<0.028	<0.028	<0.028	<0.028	--
PISP-2	02/14/92	--	<5	<25	<0.027	<0.027	<0.027	<0.027	--
PISP-3	02/14/92	--	890	760	<0.030	<0.030	0.060	0.20	--
PISP-4	02/17/92	--	10	38	<0.028	<0.028	<0.028	<0.028	--
MTCA Method A Cleanup Levels		--	100	2000	0.03	7	6	6	250

TABLE 3
CONTAMINATED STOCKPILE SAMPLE ANALYTICAL RESULTS
Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington
2 of 2

Sample ID	Sampling Date	TPH	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Lead
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Samples obtained from gasoline-contaminated soil stockpiles prior to treatment									
DSP-1	05/17/91	--	**52**	ND	<0.05	0.61	1.3	9.9	--
DSP-2	05/17/91	--	**34**	ND	<0.05	0.36	0.33	1.1	--
DSP-3	05/17/91	--	**62**	ND	0.13	2.3	0.94	5.8	--
GSPN-1	09/30/91	--	**930**	ND	0.16	7.8	5.7	54	ND
GSPN-2	10/01/91	--	8	ND	<0.025	0.11	0.036	0.44	--
GSPN-3	10/01/91	--	24	7	<0.025	0.088	0.10	2.0	--
GSPN-4	10/01/91	--	**180**	22	0.13	3.1	1.8	14	--
GSPN-5	10/01/91	--	21	7	<0.025	0.057	0.052	0.63	--
Samples obtained from gasoline-contaminated soil stockpiles after treatment									
GSPN-6	01/07/91	--	74	31	<0.025	0.15	0.18	2.9	--
GSPN-7	01/07/91	--	<5	<5	<0.025	<0.025	<0.025	<0.025	--
GSPN-8	01/07/91	--	<5	8	<0.025	<0.025	<0.025	<0.025	--
GSPN-9	01/07/91	--	11	15	<0.025	<0.025	<0.025	<0.025	--
GSPN-10	10/07/91	--	10	7	<0.025	<0.025	<0.025	0.20	--
GSPN-11	10/07/91	--	14	13	<0.025	<0.025	<0.025	<0.025	<2.2
GSPO-1	10/03/91	--	9	<5	<0.025	<0.025	0.35	0.48	--
GSPO-2	10/03/91	--	<5	<5	<0.025	<0.025	<0.025	0.030	--
GSPO-3	10/03/91	--	33	79	<0.025	<0.025	<0.025	0.18	--
GSPO-4	10/03/91	--	10	<5	<0.025	<0.025	<0.025	<0.025	--
GSPO-5	10/03/91	--	20	<5	<0.025	<0.025	<0.025	<0.025	--
GSPO-6	10/03/91	--	<5	<5	<0.025	<0.025	<0.025	<0.025	--
MTCA Method A Cleanup Levels		--	100	2000	0.03	7	6	6	250

MTCA = Model Toxic Control Act Cleanup Level (WAC173-340-900)

BGS = Below Ground Surface mg/kg = milligram of analyte per kilogram of soil

< = not detected at indicated Laboratory Detection Limits -- = not analyzed

Benzene , Toluene, Ethylbenzene, Xylenes by EPA Method 8021B/8020

TPHg - Total Petroleum Hydrocarbons - Gasoline by NWTPH-Gx/8020

TPHd - Total Petroleum Hydrocarbons - Diesel by NWTPH-Dx/8015 Modified

TPHo - Total Petroleum Hydrocarbons - Motor Oil by NWTPH-Dx extended/EPA Method 418.1

HVOCs - Halogenated Volatile Organic Compounds by EPA Method 8010

PCBs - Polychlorinated Biphenyls by EPA Method 8080

Lead by EPA Method 7010/7471

ND = Not Detected; mulitiple detection limits, see laboratory reports for specific detection limits

B = Also deteceted in method blank. Methylene Chloride is a comon laboratory contaminant.

Bolded numbers and red-shaded cells denote concentrations above the MTCA Method A Cleanup Levels for soil

* = Soil from which this sample originated was removed during the Remedial Excavation

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS

Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

GeoEngineers - Report of Geotechnical Services Subsurface Contamination Study - January 24, 1990

Sample ID	Soil Boring/Point Well ID	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MW-1	MW-1	MW-1	11/09/89	3	<1	--	--	--	<0.025	<0.025	<0.025	<0.025	--	--	--
MW-1	MW-1	MW-1	11/09/89	8	<1	--	--	--	<0.025	<0.025	<0.025	<0.025	--	--	--
MW-2	MW-2	MW-2	11/09/89	3	<1	--	--	--	<0.025	<0.025	<0.025	<0.025	--	--	--
MW-3	MW-3	MW-3	11/09/89	3	37	--	--	--	<0.025	<0.025	<0.025	<0.025	--	--	--
MW-4	MW-4	MW-4	11/09/89	3	<1	--	--	--	<0.025	<0.025	<0.025	<0.025	--	--	--

GeoEngineers - Report of Geoenvironmental Services Underground Storage Tank Removal and Remediation Excavation Activites - May 15, 1992

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Hydraulic Hoist Excacation															
H-1	Base	H-1	02/26/91	3	32	<5	<5	--	--	--	--	--			--
H-2	East wall	H-2	02/26/91	8	98	<5	<5	--	--	--	--	--			--
H-3	West wall	H-3	02/26/91	3	120	<5	<5	--	--	--	--	--			--
H-4	North wall	H-4	02/26/91	3	35	<5	<5		--	--	--	--			--
Main Excavation															
G-1	Tank Excavation east wall	G-1	05/14/91	7	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-2	Tank Excavation north wall	G-2	05/16/91	8	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-3	Tank Excavation east wall	G-3	05/17/91	8	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-4	Tank Excavation base	G-4	05/17/91	11	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-5	Tank Excavation east wall	G-5	05/17/91	9	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-6	Tank Excavation south wall	G-6	05/17/91	9	--	4.5	<20	--	<0.05	0.07	<0.05	0.10	--	--	--
G-7	Tank Excavation south wall	G-7	05/17/91	9	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-8	Tank Excavation base	G-8	05/17/91	11	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-9	Tank Excavation west wall	G-9	05/17/91	9	--	<1.0	<20	--	<0.05	<0.05	<0.05	<0.05	--	--	--
G-10*	Tank Excavation base	G-10	05/17/91	11	--	**170**	53	--	**0.14**	1.7	4.6	**12**	--	--	--
HW-1	Tank Excavation north wall	HW-1	05/16/91	7	<10.0	--	<10.0	--	--	--	--	--	--	--	--
HW-2	Tank Excavation base	HW-2	05/16/91	10	<10.0	--	<10.0	--	--	--	--	--	--	--	--
HW-3	Tank Excavation base	HW-3	05/16/91	10	<10.0	--	<10.0	--	--	--	--	--	ND	--	--
O-1*	Tank Excavation east wall	O-1	05/16/91	8	**2,600**	--	1,500	--	--	--	--	--	ND	--	--
O-2*	Tank Excavation east wall	O-2	05/16/91	8	**3,100**	--	**2,400**	--	--	--	--	--	ND	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS

Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

GeoEngineers - Report of Geoenvironmental Services Underground Storage Tank Removal and Remediation Excavation Activites - May 15, 1992 - Continued

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Product Line Excavation and Service Island Areas															
PL-1	Product Lines	PL-1	05/08/91	2	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-2	Product Lines	PL-2	05/08/91	2	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-3	Product Lines	PL-3	05/09/91	2.5	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-4	Product Lines	PL-4	05/09/91	2.5	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-5	Product Lines	PL-5	05/09/91	2.5	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-6*	Inboard Island	PL-6	05/14/91	4	--	15,000	14,000	--	0.54	180	440	1,900	--	--	<2.2
PL-7	Product Lines	PL-7	05/15/91	2	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-8	Inboard Island	PL-8	05/15/91	2.5	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-9*	Inboard Island	PL-9	05/15/91	3	--	2,200	2,200	--	<0.05	0.13	0.24	57	--	--	--
PL-10*	Inboard Island	PL-10	05/15/91	3	--	2,700	3,200	--	<0.05	3.0	4.9	60	--	--	--
PL-11*	Inboard Island	PL-11	05/15/91	3	--	20,000	9,600	--	17	140	370	840	--	--	--
PL-12	Product Lines	PL-12	05/16/91	2	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
PL-13	Product Lines	PL-13	05/16/91	3	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
IFI-1	Northwest Canopy Footing	IFI-1	05/22/91	5	--	<1.0	<10.0	--	<0.05	<0.05	<0.05	<0.05	--	--	--
OFI-1*	Northeast Canopy Footing	OFI-1	05/22/91	5	--	5,800	3,400	--	9.2	180	260	550	--	--	--
OFI-2	Southeast Canopy Footing	OFI-2	05/22/91	5	--	<1.0	<10.0	--	<0.05	0.66	<0.05	0.73	--	--	--
OFI-3	Southeast Canopy Footing	OFI-3	05/22/91	5	--	<1.0	<10.0	--	<0.05	0.09	0.05	<0.05	--	--	--
Test Pit Explorations															
TP-1	Test Pit 1	TP-1-91	05/14/91	8	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-2	Test Pit 2	TP-2-91	05/14/91	8	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-3	Test Pit 3	TP-3-91	05/14/91	9	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-4A	Test Pit 4	TP-4A-91	05/15/91	7	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-4B	Test Pit 4	TP-4B-91	05/15/91	2.5	30	--	<10	--	--	--	--	--	--	--	--
TP-5	Test Pit 5	TP-5-91	05/15/91	7.5	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-6-1	Test Pit 6	TP-6-91	05/16/91	2	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-6-2	Test Pit 6	TP-6-91	05/16/91	7.5	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-7	Test Pit 7	TP-7-91	05/21/91	7.5	--	<1	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-8-4.5	Test Pit 8	TP-8-91	05/21/91	4.5	21	--	<10	--	--	--	--	--	--	--	--
TP-8-9	Test Pit 8	TP-8-91	05/21/91	9	1,200	--	1,800	--	--	--	--	--	--	--	--
TP-9-8	Test Pit 9	TP-9-91	05/21/91	8	13	--	<10	--	<0.05	<0.05	<0.05	<0.05	--	--	--
TP-10-4	Test Pit 10	TP-10-91	05/21/91	4	28	--	<10	--	--	--	--	--	--	--	--
TP-10-8	Test Pit 10	TP-10-91	05/21/91	8	19	--	<10	--	--	--	--	--	--	--	--
TP-11-8	Test Pit 11	TP-11-91	05/21/91	8	18	--	<10	--	--	--	--	--	--	--	--
TP-11-10	Test Pit 11	TP-11-91	05/21/91	10	20	--	<10	--	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

TABLE 1

CUMULATIVE SOIL ANALYTICAL RESULTS

Bothell 76 / UNOCAL # 5905

The Market Bothell Landing

18015 Bothell Way Northeast

Bothell, Washington

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS

Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

GeoEngineers - Report of Geoenvironmental Services Underground Storage Tank Removal and Remediation Excavation Activites - May 15, 1992 - Continued

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Main Excavation															
G-11	West wall	G-11	09/30/91	7.5	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	<5.0
G-12	Base, beneath center gasoline UST	G-12	10/01/91	13	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
G-13	Base, beneath western gasoline UST	G-13	10/02/91	12	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
G-14	Base, beneath eastern gasoline UST	G-14	10/04/91	11.5	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
HW-4	Base, beneath waste oil UST	HW-4	10/02/91	11	--			--	--	--	--	--	0.13B - MC	--	--
O-3	North wall	O-3	10/02/91	4	--	<5	<5	13	<0.025	<0.025	<0.025	<0.025	0.26B - MC	--	--
O-4	Base, beneath building	O-4	10/02/91	10	--	--	--	5	--	--	--	--	--	--	--
O-5	Base, beneath buiding	O-5	10/02/91	10	--	--	--	5	--	--	--	--	--	--	--
O-6	Base, beneath buiding	O-6	10/02/91	11	--	--	--	5	--	--	--	--	--	--	--
O-7*	North wall	O-7	10/02/91	7.5	--	**2,400**	<50	**2,300**	<0.13	<0.13	1.1	5.0	--	--	--
O-8	Base, beneath building	O-8	10/02/91	11	--	--	--	5	--	--	--	--	--	--	--
O-9	Base, beneath building	O-9	10/03/91	10.5	--	--	--	34	--	--	--	--	--	--	--
O-10*	Beneath undocumented UST	O-10	10/04/91	6	--	**1,200**	**18,000**	**14,000**	--	--	--	--	--	--	--
O-11	Base, beneath building	O-11	10/04/91	11	--	--	--	44	--	--	--	--	--	--	--
O-12	Base, beneath building	O-12	10/08/91	11	--	--	--	<5	--	--	--	--	--	--	--
O-13	East wall	O-13	10/08/91	9	--	--	--	<5	--	--	--	--	--	--	--
O-14	East wall	O-14	10/08/91	9	--	<5	<5	<5	--	--	--	--	--	--	--
O-15	East wall	O-15	10/08/91	8	--	--	--	<5	--	--	--	--	--	--	--
O-16	South wall	O-16	10/08/91	9	--	--	--	59	--	--	--	--	--	--	--
O-17	West wall, undocumented UST area	O-17	10/09/91	7	--	--	--	260	--	--	--	--	--	--	--
O-18	Base, beneath undocumented UST	O-18	10/09/91	10	--	--	--	130	--	--	--	--	--	--	--
O-19	North wall, undocumented UST area	O-19	10/10/91	8	--	--	--	<5	--	--	--	--	--	--	--
O-20	North wall, undocumented UST area	O-20	10/10/91	8	--	--	--	<5	--	--	--	--	--	--	--
O-21	North wall, undocumented UST area	O-21	10/10/91	3	--	--	--	15	--	--	--	--	--	--	--
O-22	North wall, undocumented UST area	O-22	10/10/91	3	--	<5	<5	<5	--	--	--	--	--	--	--
Hoist Excavation and Sump Excavation															
S-1*B192	Base, sump excavation	S-1	10/07/91	5	--	**41**	310	570	--	--	--	--	--	ND	--
HH-1	Base, hoist excavation	HH-1	10/07/91	7	--	--	--	590	--	--	--	--	--	--	--
HH-2	Base, hoist excavation	HH-2	10/07/91	7	--	--	--	76	--	--	--	--	--	--	--
HH-3	Base, hoist excavation	HH-3	10/07/91	7	--	<5	57	250	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS
Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

GeoEngineers - Report of Geoenvironmental Services Underground Storage Tank Removal and Remediation Excavation Activites - May 15, 1992 - Continued

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Central Service Island Excavation															
FIE-1	North wall	FIE-1	09/30/91	12	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	<5.0
FIE-2	West wall	FIE-2	09/30/91	11	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
FIE-3	Base	FIE-3	09/30/91	15	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	<5.0
FIE-4	East wall	FIE-4	10/01/91	6	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
FIE-5	West wall	FIE-5	10/01/91	7	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	--
FIE-6	Base	FIE-6	10/01/91	10	--	<5	<5	--	<0.025	<0.025	<0.025	<0.025	--	--	<5.0
FIE-7	East wall	FIE-7	10/01/91	6	--	**850**	110	--	**0.46**	**22**	**29**	**160**	--	--	--
FIE-8	Base	FIE-8	10/03/91	12	--	<5	<28	--	<0.025	<0.025	<0.025	<0.025	--	--	<5.0
FIE-9	South wall	FIE-9	10/03/91	9	--	<5	<32	--	<0.025	<0.025	<0.025	<0.025	--	--	--
Main Excavation															
O-23	South wall	O-23	02/11/92	11	--	<5	<25	<20	--	--	--	--	--	--	--
O-24	Base	O-24	02/11/92	12	--	<5	<25	<20	--	--	--	--	--	--	--
O-25	East wall	O-25	02/11/92	10	--	<5	<25	<20	--	--	--	--	--	--	--
O-26	East wall	O-26	02/11/92	8	--	<5	<25	<20	--	--	--	--	--	--	--
O-27	West wall, undocumented UST area	O-27	02/12/92	7	--	<5	<25	<20	--	--	--	--	--	--	--
O-28	West wall, beneath building	O-28	02/12/92	7	--	<5	<25	<20	--	--	--	--	--	--	
O-29	Base, beneath building	O-29	02/12/92	11	--	<5	<25	<20	--	--	--	--	--	--	--
O-30	East wall, beneath building	O-30	02/12/92	9	--	<5	<25	<20	--	--	--	--	--	--	--
O-31	East wall, beneath building	O-31	02/13/92	4	--	<5	<25	<20	--	--	--	--	--	--	--
HH-4	East wall, hoist area	HH-4	02/12/92	8	--	<5	<25	<20	--	--	--	--	--	--	--
HH-5	Base, hoist area	HH-5	02/13/92	10	--	<5	<25	34	--	--	--	--	--	--	--
HH-6	West wall, hoist area	HH-6	02/13/92	9	--	<5	<25	<20	--	--	--	--	--	--	--
HH-7	West wall, hoist area	HH-7	02/13/92	4	--	<5	<25	<20	--	--	--	--	--	--	--
HH-8	East wall, hoist area	HH-8	02/17/92	1	--	<5	<25	22	<0.029	<0.029	<0.029	<0.029	--	--	--
HS-2	North wall, sump area	HS-2	02/13/92	10	--	<5	<25	<20	<0.033	<0.033	<0.033	<0.033	--	--	--
HS-3	North wall, sump area	HS-3	02/13/92	6	--	<5	<25	<20	<0.027	<0.027	<0.027	<0.027	--	--	--
HS-4	West wall, sump area	HS-4	02/13/92	10	--	<5	<25	<20	--	--	--	--	--	--	--
HS-5	West wall, sump area	HS-5	02/13/92	4.5	--	<5	<25	<20	<0.029	<0.029	<0.029	<0.029	--	--	--
HS-6	Base, sump area	HS-6	02/13/92	9	--	<5	<25	<20	--	--	--	--	--	--	--
HS-7	Base, sump area	HS-7	02/13/92	11	--	<5	<25	<20	<0.029	<0.029	<0.029	<0.029	--	ND	--
HS-8	East wall, sump area	HS-8	02/13/92	3	--	<5	<25	<23	<0.029	<0.029	<0.029	<0.029	--	--	--
HS-9	Base, sump area	HS-9	02/14/92	4	--	<5	<25	<20	<0.026	<0.026	<0.026	<0.026	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS
Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

GeoEngineers - Report of Geoenvironmental Services Underground Storage Tank Removal and Remediation Excavation Activites - May 15, 1992 - Continued

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Northern Service Island Excavation															
FIE-15	Beneath former dispenser	FIE-15	02/12/92	3	--	<5	<25	--	<0.027	<0.027	<0.027	<0.027	--	--	--
FIE-16	South wall	FIE-16	02/13/92	8	--	<5	<25	--	<0.031	<0.031	<0.031	<0.031	--	--	--
FIE-17	Base	FIE-17	02/13/92	8	--	<5	<25	--	<0.032	<0.032	<0.032	<0.032	--	--	--
FIE-18	West wall	FIE-18	02/14/92	8	--	<5	<25	--	<0.027	<0.027	<0.027	<0.027	--	--	--
FIE-19	North wall	FIE-19	02/14/92	8	--	<5	<25	--	<0.031	<0.031	<0.031	<0.031	--	--	--
FIE-20	East well	FIE-20	02/14/92	8	--	<5	<25	--	<0.032	<0.032	<0.032	<0.032	--	--	--
Southern Service Island Excavation															
FIE-21	Base	FIE-21	02/14/92	3	--	<5	<25	--	<0.028	<0.028	<0.028	<0.028	--	--	--
FIE-22	Base	FIE-22	02/14/92	5	--	<5	<25	--	<0.026	<0.026	<0.026	<0.026	--	--	--
FIE-23	East wall	FIE-23	02/14/92	3	--	<5	<25	--	<0.027	<0.027	<0.027	<0.027	--	--	--
FIE-24	Base	FIE-24	02/17/92	9	--	67	460	--	<0.032	<0.032	<0.032	<0.032	--	--	--
FIE-25	South wall	FIE-25	02/17/92	6	--	<5	<25	--	<0.027	<0.027	<0.027	<0.027	--	--	--
FIE-26	North wall	FIE-26	02/17/92	7	--	<5	<25	--	<0.031	<0.031	<0.031	<0.031	--	--	--
FIE-27	West wall	FIE-27	02/17/92	6	--	<5	<25	--	<0.031	<0.031	<0.031	<0.031	--	--	--
FIE-28	Base	FIE-28	02/20/92	11	--	<5	<25	--	<0.028	<0.028	<0.028	<0.028	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

GeoEngineers - Report of Geoenvironmental Services Supplemental Subsurface Investigation and Remediation Monitoring Activities - March 1992

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MW-5	MW-5	MW-5	03/19/92	8	--	ND	ND	ND	ND	ND	ND	ND	--	--	--
MW-6	MW-6	MW-6	03/19/92	8	--	ND	ND	ND	ND	ND	ND	ND	--	--	--
MW-7	MW-7	MW-7	03/19/92	8	--	ND	ND	ND	ND	ND	ND	ND	--	--	--
MW-8	MW-8	MW-8	03/19/92	8	--	ND	ND	ND	ND	ND	ND	ND	--	--	--
MW-9	MW-9	MW-9	03/20/92	8	--	ND	ND	ND	--	--	--	--	--	--	--
MW-9			03/20/92	10.5	--	ND	ND	ND	ND	ND	ND	ND	--	--	
MW-10	MW-10	MW-10	03/20/92	8	--	ND	ND	ND	ND	ND	ND	ND	--	--	
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

GeoEngineers - Progress Report No.1 Quarterly Ground Water Monitoring and Supplemental Subsurface Investigation Reports - January 20, 1993

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MW11	MW11	MW11	09/28/92	7	--	--	--	100	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

TABLE 1
CUMULATIVE SOIL ANALYTICAL RESULTS

Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

GeoEngineers - Report of Geoenvironmental Services Supplemental Subsurface Investigation and Remediation Monitoring Activities - March 30, 1993

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Drain Pipe	Beneath drain pipe	DP	09/18/92	1.5	--	--	21	110	--	--	--	--	--	--	--
TP-1-5*	Test pit TP-1	TP-1-92	09/18/92	5	--	--	**3,200**	**13,000**	--	--	--	--	--	--	--
TP-1-8*	Test pit TP-1	TP-1-92	09/18/92	8	--	--	1,300	**6,000**	--	--	--	--	--	--	--
TP-2-8	Test pit TP-2	TP-2-92	09/18/92	8	--	--	<14	<43	--	--	--	--	--	--	--
TP-3-7.5	Test pit TP-3	TP-3-92	09/18/92	7.5	--	--	<14	<42	--	--	--	--	--	--	--
TP-4-1	Test pit TP-4	TP-4A-92	09/23/92	8	--	--	<28	<23	--	--	--	--	--	--	--
TP-4-2	Test pit TP-4	TP-4B-92	09/23/92	8	--	--	<29	<23	--	--	--	--	--	--	--
TP-5-1	Test pit TP-5	TP-5-92	09/23/92	8	--	--	<27	39	--	--	--	--	--	--	--
TP-6-1	Test pit TP-6	TP-6-92	09/23/92	8	--	--	<28	<22	--	--	--	--	--	--	--
TP-7-1	Test pit TP-7	TP-7-92	09/23/92	8	--	--	<32	<25	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

GeoEngineers - Report of Geoenvironmental Services Supplemental Subsurface Investigation and Remediation Monitoring Activities - March 30, 1993 - Continued

Sample ID	Soil Boring/Point Well ID/Location	Map Location ID	Sampling Date	Sample Depth	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Total Xylenes	HVOCs	PCBs	Lead
				Feet BGS		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Sump Excavation															
Reclamation Pit	Base	RC	09/28/92	7	--	--	--	100	--	--	--	--	--	--	--
North Excavation															
N-1	North wall	N-1	12/03/92	7.5	--	--	<29	<23	--	--	--	--	--	--	--
N-2	Base	N-2	12/03/92	9	--	--	<29	<24	--	--	--	--	--	--	--
N-3	East wall	N-3	12/03/92	8	--	--	<30	<24	--	--	--	--	--	--	--
N-4	West wall	N-4	12/04/92	8	--	--	<28	<22	--	--	--	--	--	--	--
N-5	Base	N-5	12/04/92	9	--	--	<29	<24	--	--	--	--	--	--	--
N-6	South wall	N-6	12/04/92	8	--	--	<30	<24	--	--	--	--	--	--	--
N-7	West wall	N-7	12/04/92	8	--	--	<28	<22	--	--	--	--	--	--	--
MTCA Method A Cleanup Levels					--	30	2,000	2,000	0.03	7	6	6			250

MTCA = Model Toxic Control Act Cleanup Level (WAC173-340-900)
BGS = Below Ground Surface mg/kg = milligram of analyte per kilogram of soil
< = not detected at indicated Laboratory Detection Limits -- = not analyzed
Benzene , Toluene, Ethylbenzene, Xylenes by EPA Method 8021B/8020
TPH - Total Petroleum Hydrocarbons - by EPA Method 418.1
TPHg - Total Petroleum Hydrocarbons - Gasoline by NWTPH-Gx/8020
TPHd - Total Petroleum Hydrocarbons - Diesel by NWTPH-Dx/8015 Modified
TPHo - Total Petroleum Hydrocarbons - Motor Oil by NWTPH-Dx extended/EPA Method 418.1 Modified

HVOCs - Halogenated Volatile Organic Compounds by EPA Method 8010
PCBs - Polychlorinated Biphenyls by EPA Method 8080
Lead by EPA Method 7010/7471
ND = Not Detected; mulitiple detection limits, see laboratory reports for specific detection limits
B = Also deteceted in method blank. MC = Methylene Chloride, is a comon laboratory contaminant.
Bolded numbers and red-shaded cells denote concentrations above the MTCA Method A Cleanup Levels for soil
* = Soil from which this sample originated was removed during the Remedial Excavation

TABLE 2
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

MW1

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
16.57	#########	--	102.49	--	1,000	--	--	--	120	47	110	610	--	--	--	--	--	--	--
	1/2/1990	8.87	102.49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/23/1991	--	102.49	--	<1000	<1000	<1000	--	3.0	1.3	6.7	29	--	--	--	--	--	--	--
Well Destroyed During Excavation Activity																			
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW2

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
17.24	#########	NM	101.73	--	<50	--	--	--	<0.5	<0.5	<0.5	<0.5	--	--	--	ND	--	--	--
	1/2/1990	6.76	101.73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4/23/1991	NM	101.73	--	<1000	<1000	<1000	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
Well Destroyed During Excavation Activity																			
		MTCA Method A Cleanup Levels				800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW3

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
17.23	#########	--	99.22	--	<50	--	--	--	<0.5	<0.5	<0.5	1.0	--	--	--	--	--	--	--
	1/2/1989	--	99.22	--				--			--	--	--	--	--	--	--	--	--
	4/23/1991	--	99.22	--	<1000	<1000	<1000	--	17	21	2.4	29	--	--	--	--	--	--	--
	6/9/1992	--	99.22	--	--	<50	<500	--	3.2	0.66	<0.50	1.1	--	--	--	--	--	<1.0	--
	9/1/1992	--	99.22	--	--	<50	<500	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
Well abandoned 9/10/92																			
		MTCA Method A Cleanup Levels				800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW4

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
14.13	#########	--	100.74	--	<50	--	--	--	<0.5	1.2	<0.5	<0.5	--	--	--	--	--	--	--
	1/2/1990	7.99	100.74	--		--	--	--					--	--	--	--	--	--	--
	4/23/1991	--	100.74	--	<1000	<1000	<1000	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
Well Destroyed During Excavation Activity																			
		MTCA Method A Cleanup Levels				800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

TABLE 2
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

MW5

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	8.20	102.18	--	--	400	<500	--	<0.5	<0.5	<0.5	2.5	--	--	--	--	--	--	--
	4/20/1992	NM	102.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	76
	6/9/1992	7.85	102.18	--	--	240	<500	--	<0.50	1.0	<0.50	<0.5	--	--	--	--	--	<1.0	--
	9/1/1992	9.23	102.18	--	--	120	<250	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
	12/3/1992	8.82	102.18	--	--	<50	300	<380	<0.50	2.30	<0.50	3.50	--	--	--	--	--	--	--
	3/19/1993	9.57	102.18	--	--	<50	280	1,500	<0.50	<0.50	0.95	<0.50	--	--	--	--	--	--	--
	6/16/1993	8.42	102.18	--	--	<10	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	9/22/1993	9.02	102.18	--	--	--	<250	<750	--	--	--	--	--	--	--	--	--	--	--
	1/12/1994	8.77	102.18	--	--	--	<250	<750	--	--	--	--	--	--	--	--	--	--	--
	3/30/1994	8.43	102.18	--	--	140	<250	<750	23	6.6	<0.50	0.60	--	--	--	--	--	--	--
	4/13/1994	NM	102.18	--	--	290	<250	<750	220	60	<0.50	11.00	--	--	--	--	--	<3.0	4.9
	6/21/1994	8.75	102.18	--	--	<10	<250	<750	26	0.60	<0.50	<0.50	--	--	--	--	--	--	--
	9/30/1994	9.17	102.18	--	--	170	<250	<750	29	<0.50	<0.50	<1.0	--	--	--	--	--	--	--
	#########	8.55	102.18	--	--	100	<250	800	7	<0.50	<0.50	<1.0	--	--	--	--	--	--	--
12.4	2/14/2017	8.74	43.17	34.43	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	6/1/2017	8.67	43.17	34.50	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
	9/6/2017	10.63	43.17	32.54	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	--	<2.0
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW6

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	7.49	100.33	3.58	--	<100	<500	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	5.1
	4/20/1992	NM	100.33	NM	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	120
	6/9/1992	8.14	100.33	2.93	--	<50	<500	--	<0.50	<0.50	<0.50	<0.5	--	--	--	--	--	<1.0	--
	9/1/1992	8.64	100.33	2.43	--	<50	<250	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	2.2	--
DUP	9/1/1992	8.64	100.33	2.43	--	<50	--	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--
	12/3/1992	8.31	100.33	2.76	--	<50	120	<0.38	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	<2.0	--
DUP	12/3/1992	8.31	100.33		--	<50	--	--	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
		Well Destroyed																	
		MTCA Method A Cleanup Levels				800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW7

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	--	99.57	--	--	<100	<500	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
	4/20/1992	--	99.57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	220
	6/9/1992	--	99.57	--	--	<50	<500	--	<0.50	<0.50	<0.50	<0.5	--	--	--	--	--	<1.0	--
	9/1/1992	--	99.57	--	--	<50	<310	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
		Well abandoned 9/10/92																	
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

TABLE 2
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

MW8

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	--	101.18	--	--	<100	<500	--	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	--
	4/20/1992	--	101.18	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	180
	6/9/1992	--	101.18	--	--	<50	<500	--	<0.50	<0.50	<0.50	<0.5	--	--	--	--	--	<1.0	--
	9/1/1992	--	101.18	--	--	<50	<250	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
Well abandoned 9/10/92																			
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW9

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	7.13	101.26	--	--	<100	880	<1000	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--	--	96
	4/20/1992	NM	101.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	190
	6/9/1992	7.91	101.26	--	--	<50	<500	8,500	0.56	0.95	<0.50	1.20	--	--	--	--	--	<1.0	--
	7/15/1992	NM	101.26	--	--	--	<500	<500	--	--	--	--	--	--	--	--	--	--	--
	9/1/1992	8.65	101.26	--	--	<50	460	<500	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
	12/3/1992	NM	101.26	--	--	--	--	--	--	--	--	--	--	--	--	--	--		--
	3/9/1993	8.12	101.26	--	--	<50	390	1,700	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--		--
	6/16/1993	7.46	101.26	--	--	<100	310	1,100	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--		--
DUP	6/16/1993	7.46	101.26	--	--	<100	--	--	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--		--
	9/22/1993	8.35	101.26	--	--	--	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--		--
	1/12/1994	7.94	101.26	--	--	--	<250	<750	--	--	--	--	--	--	--	--	--		--
	3/30/1994	7.26	101.26	--	--	1,900	<250	<750	2,200	660	42	37	--	--	--	--	--		--
	4/13/1994	NM	101.26	--	--	1,600	<250	<750	1,700	610	0.90	40	--	--	--	--	--	<3.0	5.9
	6/21/1994	NM	101.26	--	--	<100	<250	<750	350	3.6	<0.50	7.2	--	--	--	--	--		--
	9/30/1994	8.47	101.26	--	--	<50	<250	<750	52	<0.50	<0.50	4.9	--	--	--	--	--		--
	#########	7.53	101.26	--	--	<50	<250	930	24	<0.50	<0.50	2.7	--	--	--	--	--		--
10.9	2/14/2017	8.76	42.74	33.98	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	6/1/2017	8.71	42.74	34.03	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
	9/6/2017	10.57	42.74	32.17	Insufficient Water Volume to Sample														
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

TABLE 2
CUMULATIVE GROUNDWATER ANALYTICAL RESULTS
Bothell 76 (Unocal 5905)
18015 Bothell Way Northeast
Bothell, Washington

MW10

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
	3/23/1992	7.56	99.35	2.38	--	<100	<500	--	55	<0.5	<0.5	10	--	--	--	--	--	--	12
	4/20/1992	NM	99.35	NM	--	--	--	--	--	--	--	--	--	--	--	--	--	<2.0	3
	6/9/1992	8.12	99.35	2.06	--	73	<500	--	1.3	<0.50	<0.50	<0.5	--	--	--	--	--	--	--
DUP	6/9/1992	8.12	99.35	2.06	--	--	<500	--	--	--	--	--	--	--	--	--	--	--	--
	9/1/1992	8.46	99.35	1.72	--	<50	<250	--	4.9	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
	12/3/1992	9.11	99.35	0.83	--	<50	170	<380	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	10.5	
	3/19/1993	8.05	99.35	2.13	--	<50	130	<380	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	
	6/16/1993	7.83	99.35	2.18	--	<100	290	900	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	<3.0	
	9/22/1993	8.32	99.35	1.69	--	--	<250	<750	--	--	--	--	--	--	--	--	--	--	
	1/12/1994	8.06	99.35	1.95	--	--	<250	<750	--	--	--	--	--	--	--	--	--	<3.0	
	3/30/1994	7.94	99.35	2.07	--	<100	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	
	4/13/1994	NM	99.35	NM	--	<100	<250	<750	17	1.7	<0.50	<0.50	--	--	--	--	--	--	
	6/21/1994	8.17	99.35	1.84	--	<100	<250	<750	10	0.60	<0.50	<0.50	--	--	--	--	--	--	
	9/30/1994	8.26	99.35	1.75	--	<50	<250	<750	88	<0.50	<0.50	<1.0	--	--	--	--	--	--	
	#########	7.63	99.35	2.39	--	<50	<250	<750	43	<0.50	<0.50	<0.50	--	--	--	--	--	--	
15.0	2/14/2017	9.90	41.07	31.17	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	<2.0	<2.0
	6/1/2017	10.23	41.07	30.84	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	ND	<0.1	--	<2.0
	9/6/2017	11.36	41.07	29.71	--	<100	<200	<500	<1.0	<1.0	<1.0	<1.0	<0.01	<1.0	<5.0	--	--	--	<2.0
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

MW11

Well Depth	Sampling Date	Ground Water Level	Elevation (TOC north)*	Water Level Elevation(note)	TPH	TPHg	TPHd	TPHo	Benzene	Toluene	Ethyl-benzene	Xylenes	EDB	EDC	MTBE	Halogenated VOCs	PAHs	Dissolved Lead	Total Lead
Feet		Feet Below TOC	Feet Above MSL	Feet Above MSL	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	--	--	µg/L	µg/L
14.8	6/22/1992	8.71	9.15	0.74	--	<50	--	--	<0.50	<0.50	<0.50	<0.5	--	--	--	--	--	<1.0	--
	9/1/1992	8.77	9.15	0.68	--	<50	<250	--	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	<2.0	--
	12/3/1992	8.35	9.15	1.10	--	<50	160	<380	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	3/19/1993	8.51	9.15	0.94	--	<50	170	<380	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	3/19/1993	NM	9.15	NM	--	<50	--	--	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	6/16/1993	8.27	9.15	1.00	--	<100	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	9/22/1993	8.59	9.15	0.68	--	--	<250	<750	--	--	--	--	--	--	--	--	--	--	--
	1/12/1994	8.45	9.15	0.82	--	--	<250	<750	--	--	--	--	--	--	--	--	--	--	--
	3/30/1994	8.37	9.15	0.90	--	<100	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	4/13/1994	NM	9.15	0.82	--	<100	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	<3.0	6.9
	6/21/1994	8.45	9.15	0.71	--	<100	<250	<750	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--
	9/30/1994	8.56	9.15	NM	--	<50	<250	<750	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--
	#########	7.82	9.15	1.45	--	<50	<250	<750	<0.50	<0.50	<0.50	<1.0	--	--	--	--	--	--	--
Well Destroyed																			
		MTCA Method A Cleanup Levels			--	800	500	500	5	1,000	700	1,000	0.01	5	20	Variable	Variable	15	15

TABLE 2

CUMULATIVE GROUNDWATER ANALYTICAL RESULTS

Bothell 76 (Unocal 5905)

18015 Bothell Way Northeast

Bothell, Washington

EXPLANATION

MTCA = Model Toxic Control Act Cleanup Level (WAC173-340-900)

TOC = Top of Casing MSL = Mean Sea Level

< = not detected at indicated Laboratory Detection Limits -- not analyzed /elevation not included due to uncertainty or missing measurement NM = Not Measured

* = TOC Elevations are relative to a bench mark prior to 2017, sourced from GeoEngineers' *Results of Ground Water Sampling - December 1994.* 2017 values measured by Aerotech field staff.

TPHg - Total Petroleum Hydrocarbons - Gasoline by Method NWTPH-Gx

TPHd - Total Petroleum Hydrocarbons - Diesel by Method NWTPH-Dx TPHo - Total Petroleum Hydrocarbons - Motor Oil by Method NWTPH-Dx extended

Benzene, Toluene, Ethylbenzene and Xylenes by EPA Methods 8021B and 8260B

MTBE = Methyl-tert-butyl-ether EDC = 1,2-Dichloroethane EDB = 1,2-Dibromoethane; and additional VOCs by EPA Method 8260B

HVOCs - Halogenated Volatile Organic Compounds by EPA Method 8010

Total and Dissolved Lead by EPA Method 7010 PAHs by EPA Method 8270 SIM

ND = Not Detected (multiple detection limits see laboratory report for further detail)

Bolded numbers and red-shaded cells denote concentrations above the MTCA Method A Cleanup Levels for groundwater

TABLE 3
CONTAMINATED STOCKPILE SAMPLE ANALYTICAL RESULTS
Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington

Sample ID	Sampling Date	TPH	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Lead
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Samples obtained from soil stockpiles disposed of at Roosevelt Regional Landfill									
SP-1(A)	02/26/91	180	<5	<5	--	--	--	--	--
SP-1(B)	05/15/91	44	<10	<10	<0.05	<0.05	<0.05	<0.05	--
WOSP-1	05/17/91	130	<10	12	<0.05	<0.05	<0.05	<0.05	--
OSPN-1	10/02/91	400	--	--	--	--	--	--	--
OSPN-2	10/02/91	400	--	--	--	--	--	--	--
OSPN-3	10/03/91	500	--	--	--	--	--	--	--
OSPN-4	10/03/91	270	--	--	--	--	--	--	--
OSPN-5	10/09/91	530	--	--	--	--	--	--	--
OSPN-6	10/09/91	850	--	--	--	--	--	--	--
OSPN-7	10/09/91	750	--	--	--	--	--	--	--
OSPN-8	10/09/91	65	--	--	--	--	--	--	--
OSPN-9	10/09/91	880	--	--	--	--	--	--	--
OSPN-10	10/10/91	2,700	--	--	--	--	--	--	--
OSPN-11	10/10/91	190	--	--	--	--	--	--	--
OSPN-12	10/10/91	870	--	--	--	--	--	--	--
OSPN-13	10/10/91	1,600	--	--	--	--	--	--	--
OSPN-14(A)	12/02/91	--	--	280	--	--	--	--	--
OSPN-14(B)	02/12/92	130	ND	ND	<0.029	0.13	0.060	0.33	--
OSPN-15(A)	12/02/91	--	--	350	<0.025	<0.025	<0.025	<0.025	--
OSPN-15(B)	12/13/91	270	**130**	73	<0.025	<0.025	<0.025	0.071	--
OSPN-16	12/02/91	--	--	480	--	--	--	--	--
OSPN-17	12/02/91	--	--	1,600	--	--	--	--	--
OSPN-18	12/02/91	--	--	170	--	--	--	--	--
OSPN-19	12/02/91	--	--	400	--	--	--	--	--
OSPN-20	12/02/91	--	--	49	--	--	--	--	--
OSPN-21	12/02/91	--	--	--	--	--	--	--	--
T-1	10/08/91	--	**2,000**	**23,000**	--	--	--	--	--
RSP-1	02/12/92	54	--	--	--	--	--	--	--
RSP-2	02/12/92	200	<5	<25	ND	ND	ND	ND	--
CNSP-6	02/14/92	200	<5	<25	<0.027	<0.027	<0.027	<0.027	--
PISP-1	02/13/92	--	10	37	<0.028	<0.028	<0.028	<0.028	--
PISP-2	02/14/92	--	<5	<25	<0.027	<0.027	<0.027	<0.027	--
PISP-3	02/14/92	--	890	760	<0.030	<0.030	0.060	0.20	--
PISP-4	02/17/92	--	10	38	<0.028	<0.028	<0.028	<0.028	--
MTCA Method A Cleanup Levels		--	100	2000	0.03	7	6	6	250

TABLE 3
CONTAMINATED STOCKPILE SAMPLE ANALYTICAL RESULTS
Bothell 76 / UNOCAL # 5905
The Market Bothell Landing
18015 Bothell Way Northeast
Bothell, Washington
2 of 2

Sample ID	Sampling Date	TPH	TPHg	TPHd	Benzene	Toluene	Ethyl-benzene	Total Xylenes	Lead
		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Samples obtained from gasoline-contaminated soil stockpiles prior to treatment									
DSP-1	05/17/91	--	**52**	ND	<0.05	0.61	1.3	9.9	--
DSP-2	05/17/91	--	**34**	ND	<0.05	0.36	0.33	1.1	--
DSP-3	05/17/91	--	**62**	ND	0.13	2.3	0.94	5.8	--
GSPN-1	09/30/91	--	**930**	ND	0.16	7.8	5.7	54	ND
GSPN-2	10/01/91	--	8	ND	<0.025	0.11	0.036	0.44	--
GSPN-3	10/01/91	--	24	7	<0.025	0.088	0.10	2.0	--
GSPN-4	10/01/91	--	**180**	22	0.13	3.1	1.8	14	--
GSPN-5	10/01/91	--	21	7	<0.025	0.057	0.052	0.63	--
Samples obtained from gasoline-contaminated soil stockpiles after treatment									
GSPN-6	01/07/91	--	74	31	<0.025	0.15	0.18	2.9	--
GSPN-7	01/07/91	--	<5	<5	<0.025	<0.025	<0.025	<0.025	--
GSPN-8	01/07/91	--	<5	8	<0.025	<0.025	<0.025	<0.025	--
GSPN-9	01/07/91	--	11	15	<0.025	<0.025	<0.025	<0.025	--
GSPN-10	10/07/91	--	10	7	<0.025	<0.025	<0.025	0.20	--
GSPN-11	10/07/91	--	14	13	<0.025	<0.025	<0.025	<0.025	<2.2
GSPO-1	10/03/91	--	9	<5	<0.025	<0.025	0.35	0.48	--
GSPO-2	10/03/91	--	<5	<5	<0.025	<0.025	<0.025	0.030	--
GSPO-3	10/03/91	--	33	79	<0.025	<0.025	<0.025	0.18	--
GSPO-4	10/03/91	--	10	<5	<0.025	<0.025	<0.025	<0.025	--
GSPO-5	10/03/91	--	20	<5	<0.025	<0.025	<0.025	<0.025	--
GSPO-6	10/03/91	--	<5	<5	<0.025	<0.025	<0.025	<0.025	--
MTCA Method A Cleanup Levels		--	100	2000	0.03	7	6	6	250

MTCA = Model Toxic Control Act Cleanup Level (WAC173-340-900)

BGS = Below Ground Surface mg/kg = milligram of analyte per kilogram of soil

< = not detected at indicated Laboratory Detection Limits -- = not analyzed

Benzene , Toluene, Ethylbenzene, Xylenes by EPA Method 8021B/8020

TPHg - Total Petroleum Hydrocarbons - Gasoline by NWTPH-Gx/8020

TPHd - Total Petroleum Hydrocarbons - Diesel by NWTPH-Dx/8015 Modified

TPHo - Total Petroleum Hydrocarbons - Motor Oil by NWTPH-Dx extended/EPA Method 418.1

HVOCs - Halogenated Volatile Organic Compounds by EPA Method 8010

PCBs - Polychlorinated Biphenyls by EPA Method 8080

Lead by EPA Method 7010/7471

ND = Not Detected; mulitiple detection limits, see laboratory reports for specific detection limits

B = Also deteceted in method blank. Methylene Chloride is a comon laboratory contaminant.

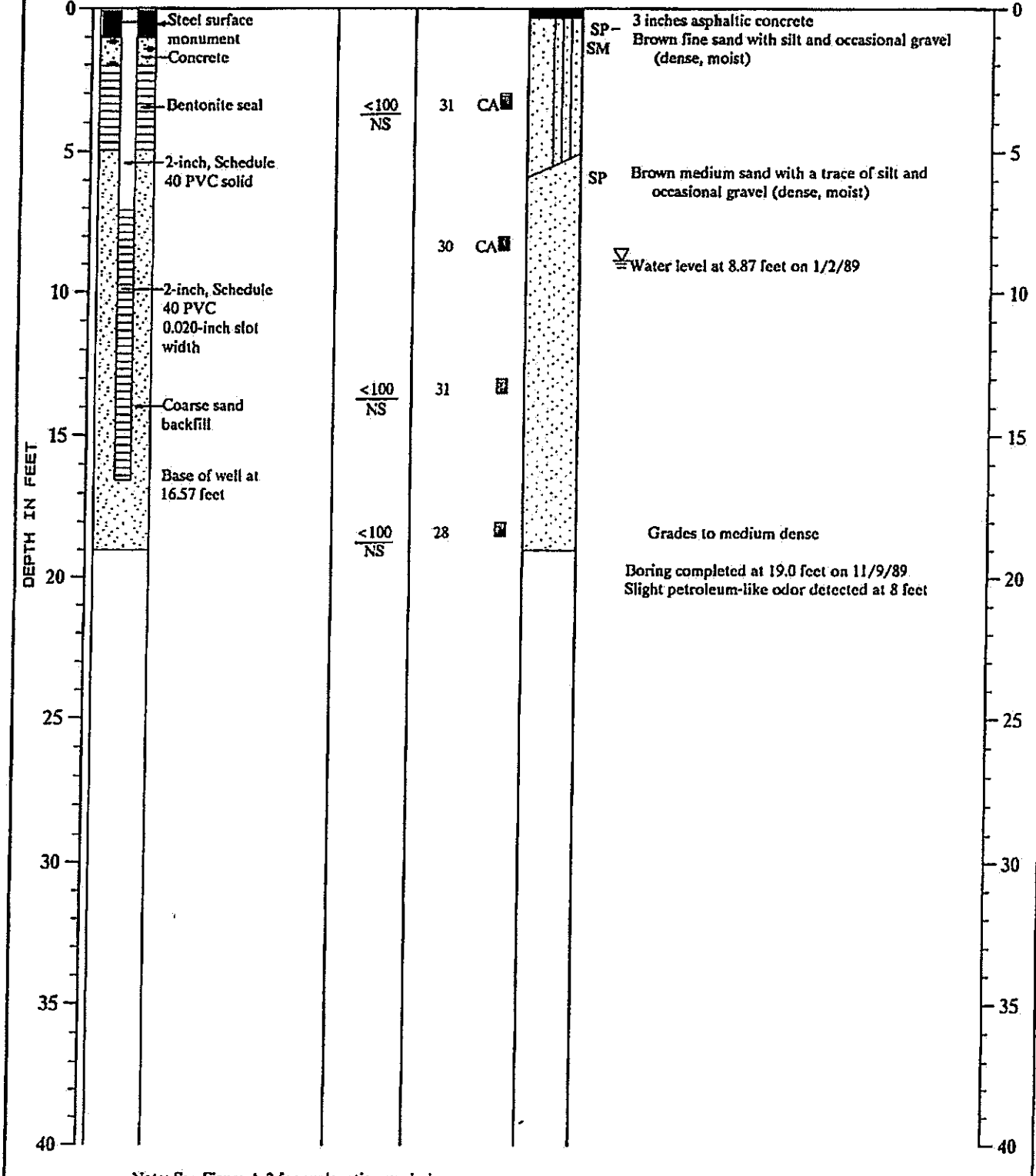
Bolded numbers and red-shaded cells denote concentrations above the MTCA Method A Cleanup Levels for soil

* = Soil from which this sample originated was removed during the Remedial Excavation

Appendix A

Boring Logs

MONITOR WELL NO. MW-1



Note: See Figure A-2 for explanation symbols

LRM: JAM: CDO 1/12/90

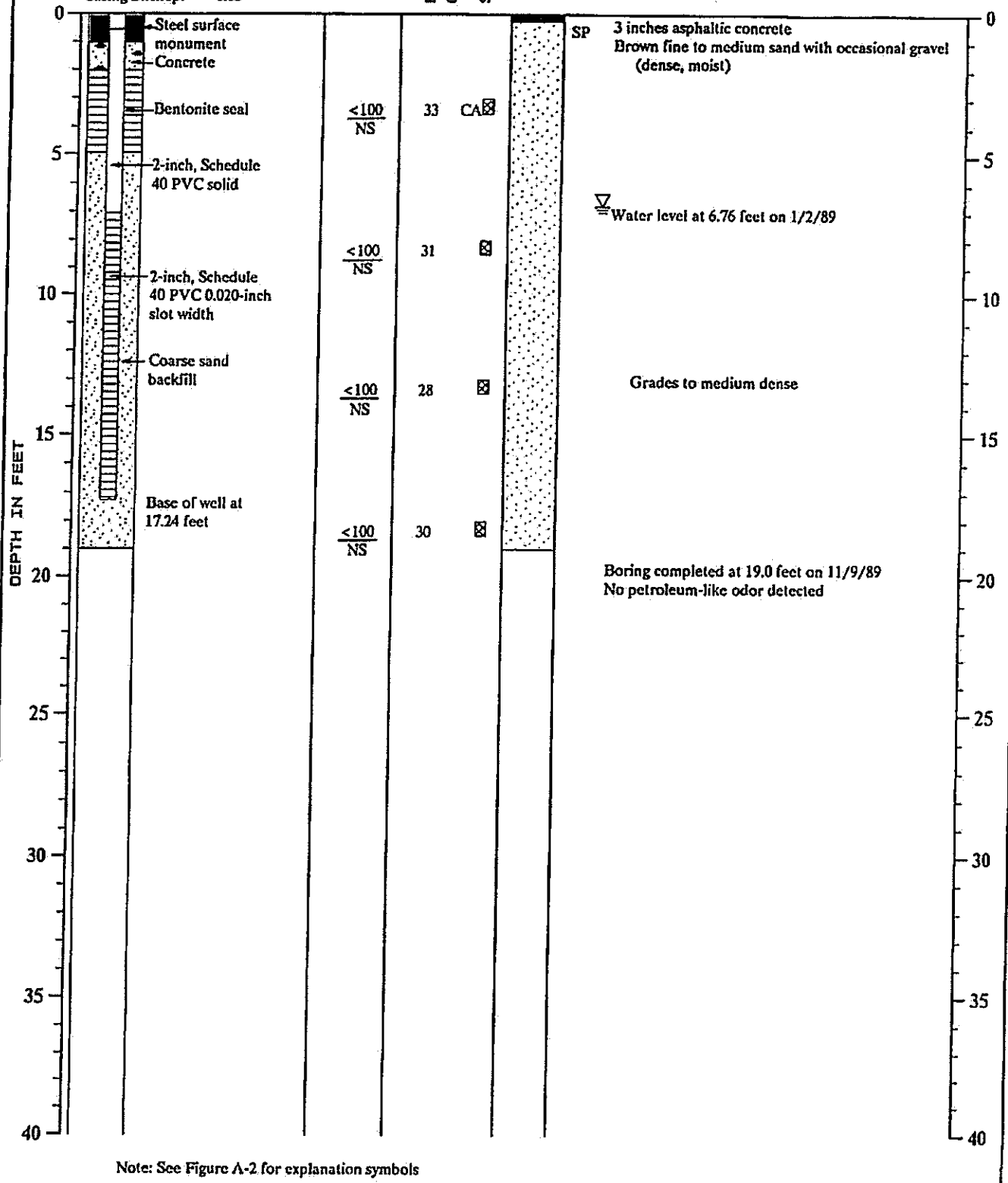
0161-183-B04

Geo Engineers

Log of Monitor Well

Figure A-3

MONITOR WELL NO. MW-2



Note: See Figure A-2 for explanation symbols

Geo Engineers

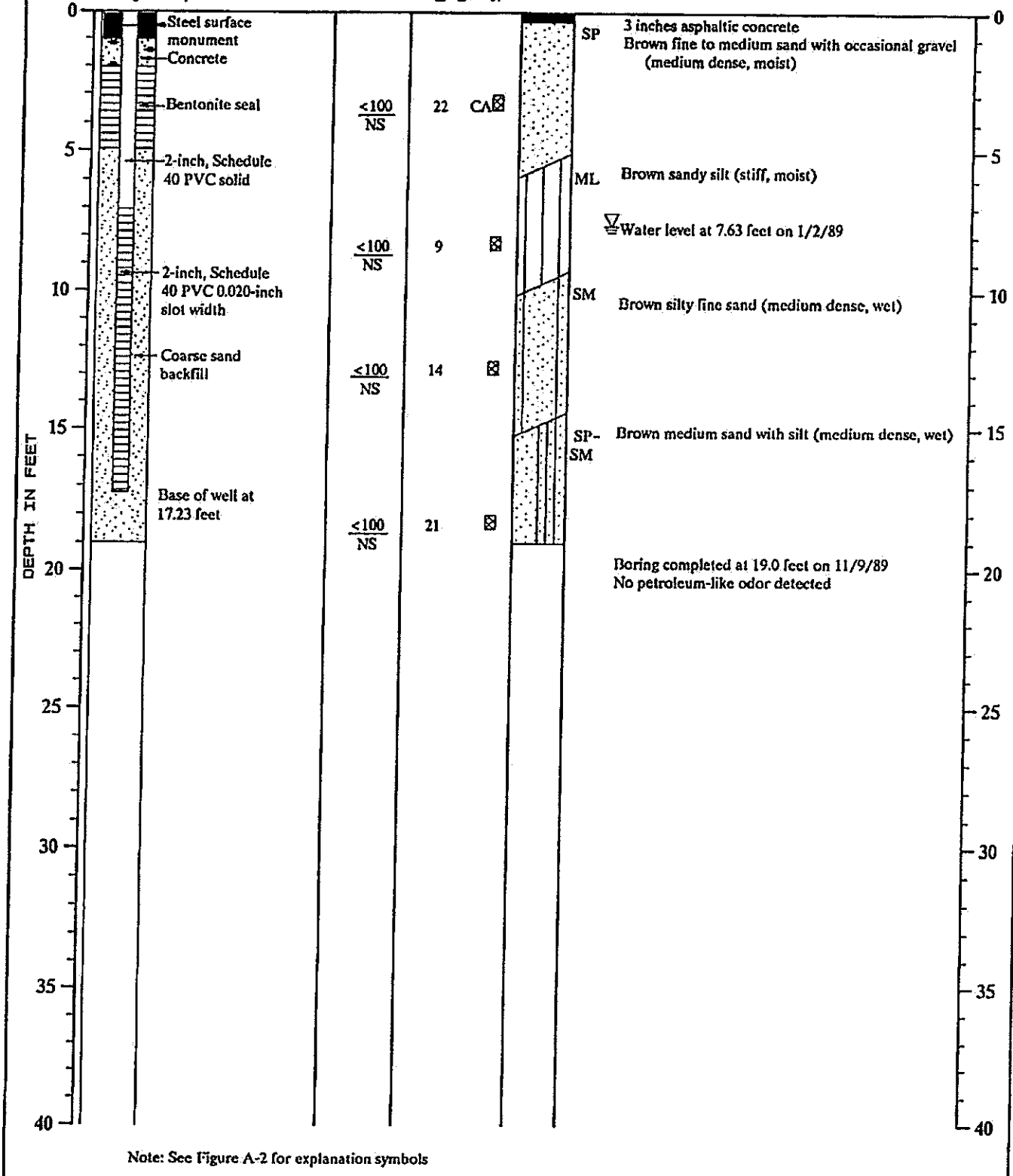
Log of Monitor Well

Figure A-4

LRM: JAM: CDO 1/12/90

0161-183-B04

MONITOR WELL NO. MW-3



Note: See Figure A-2 for explanation symbols

LRM:JAM:CDO 1/12/90

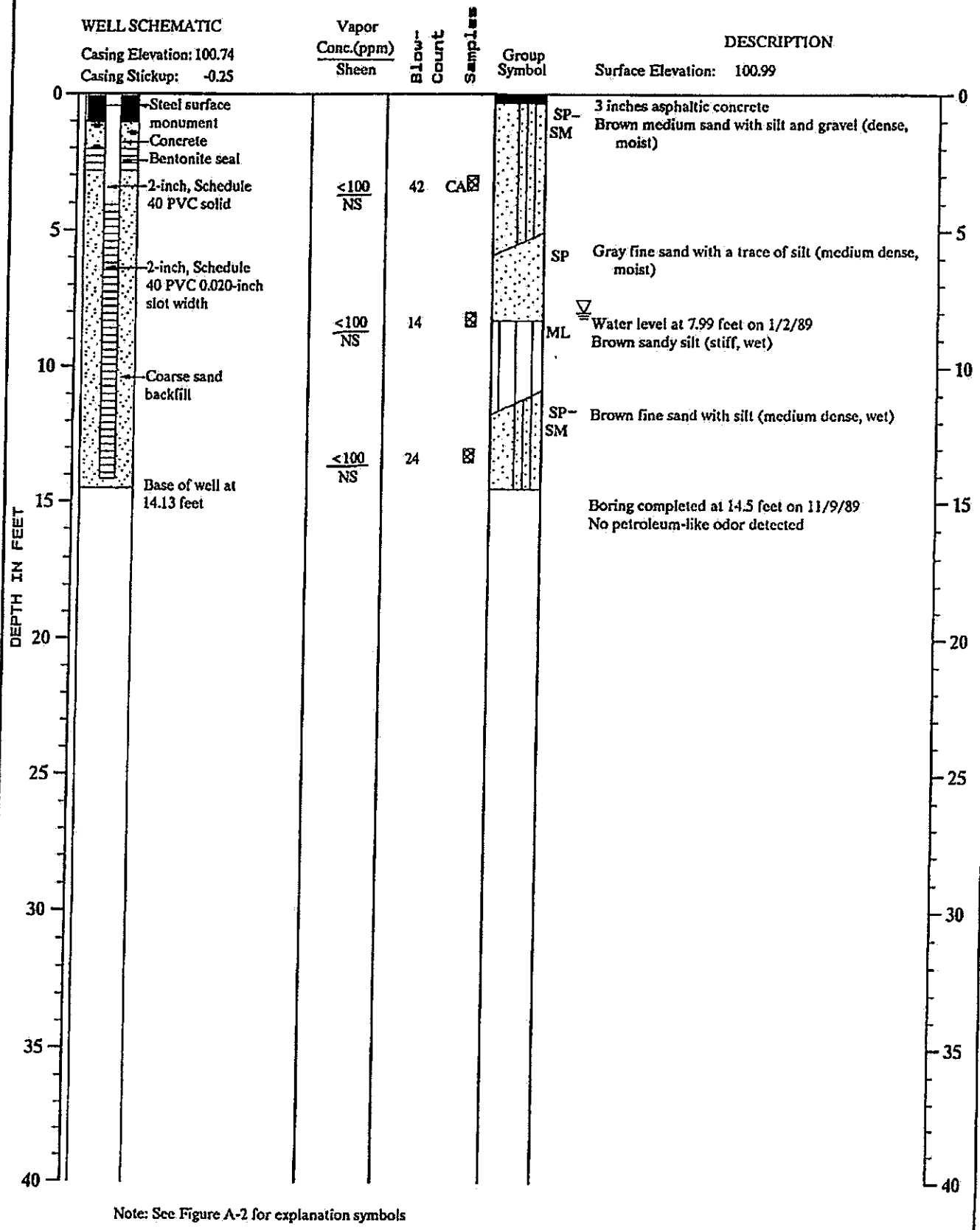
0161-183-B04

GeoEngineers

Log of Monitor Well

Figure A-5

MONITOR WELL NO. MW-4



Note: See Figure A-2 for explanation symbols

LRM:JAM:CDO 1/12/90

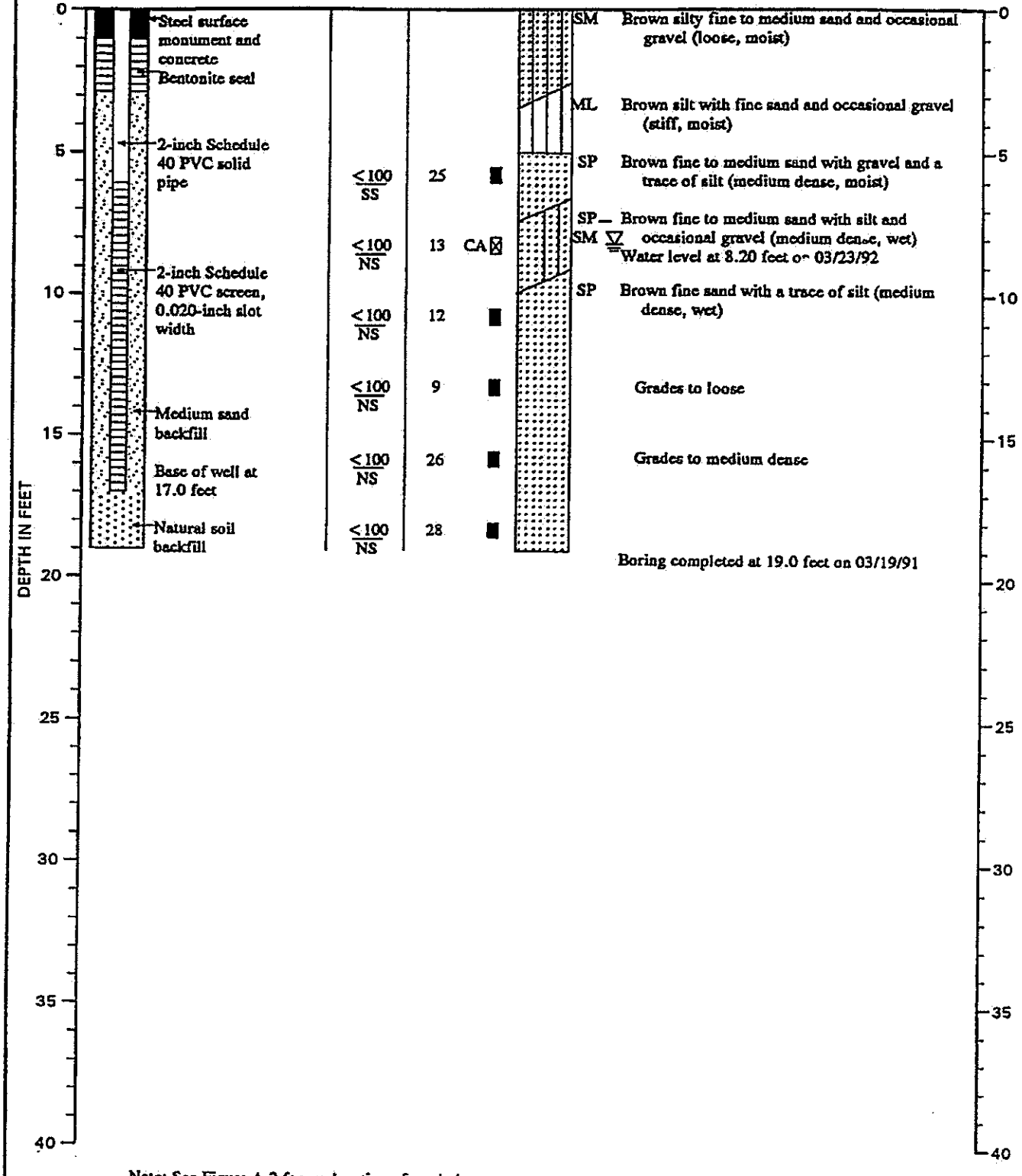
0161-183-804

Geo Engineers

Log of Monitor Well

Figure A-6

MONITORING WELL NO. MW-5



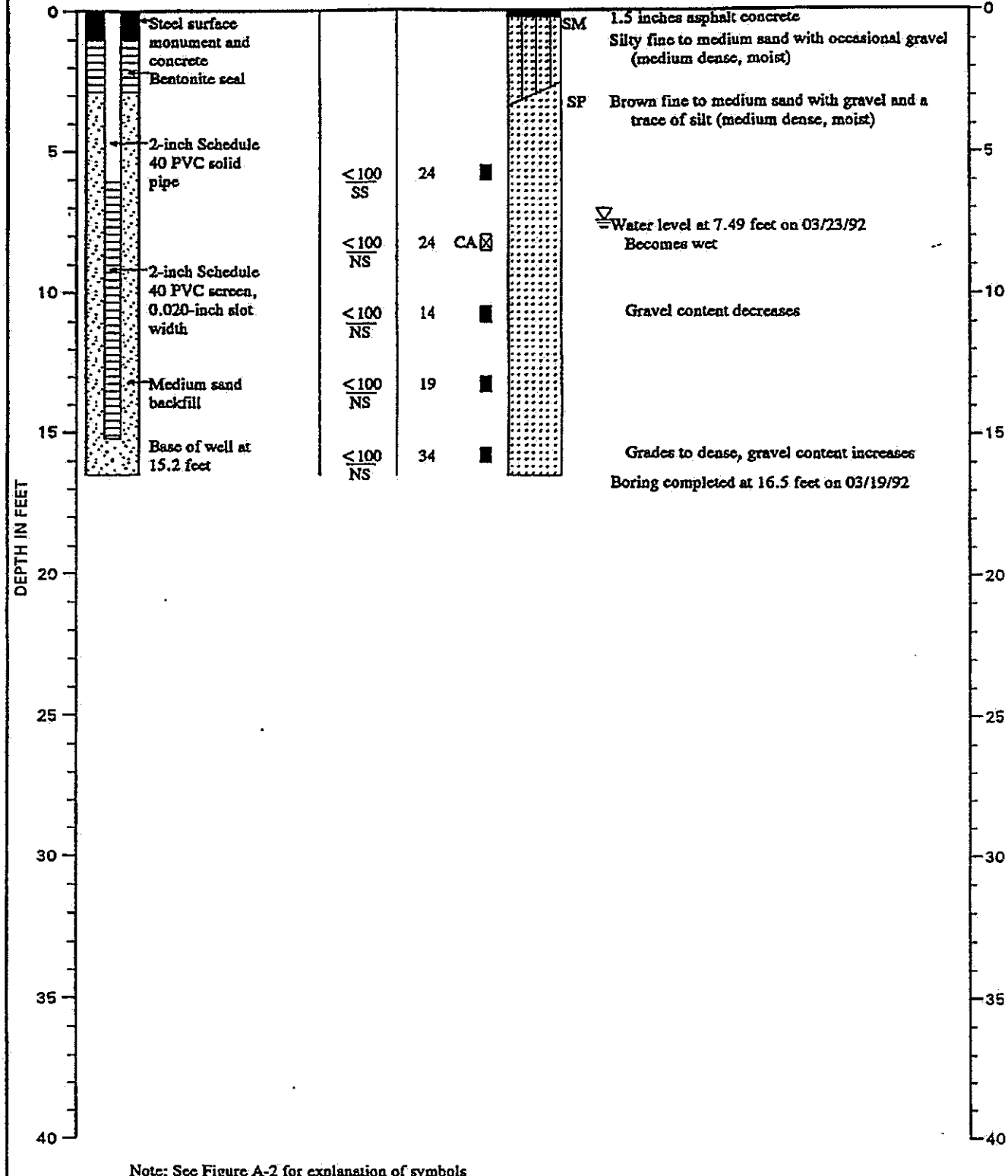
Note: See Figure A-2 for explanation of symbols

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-3

MONITORING WELL NO. MW-6



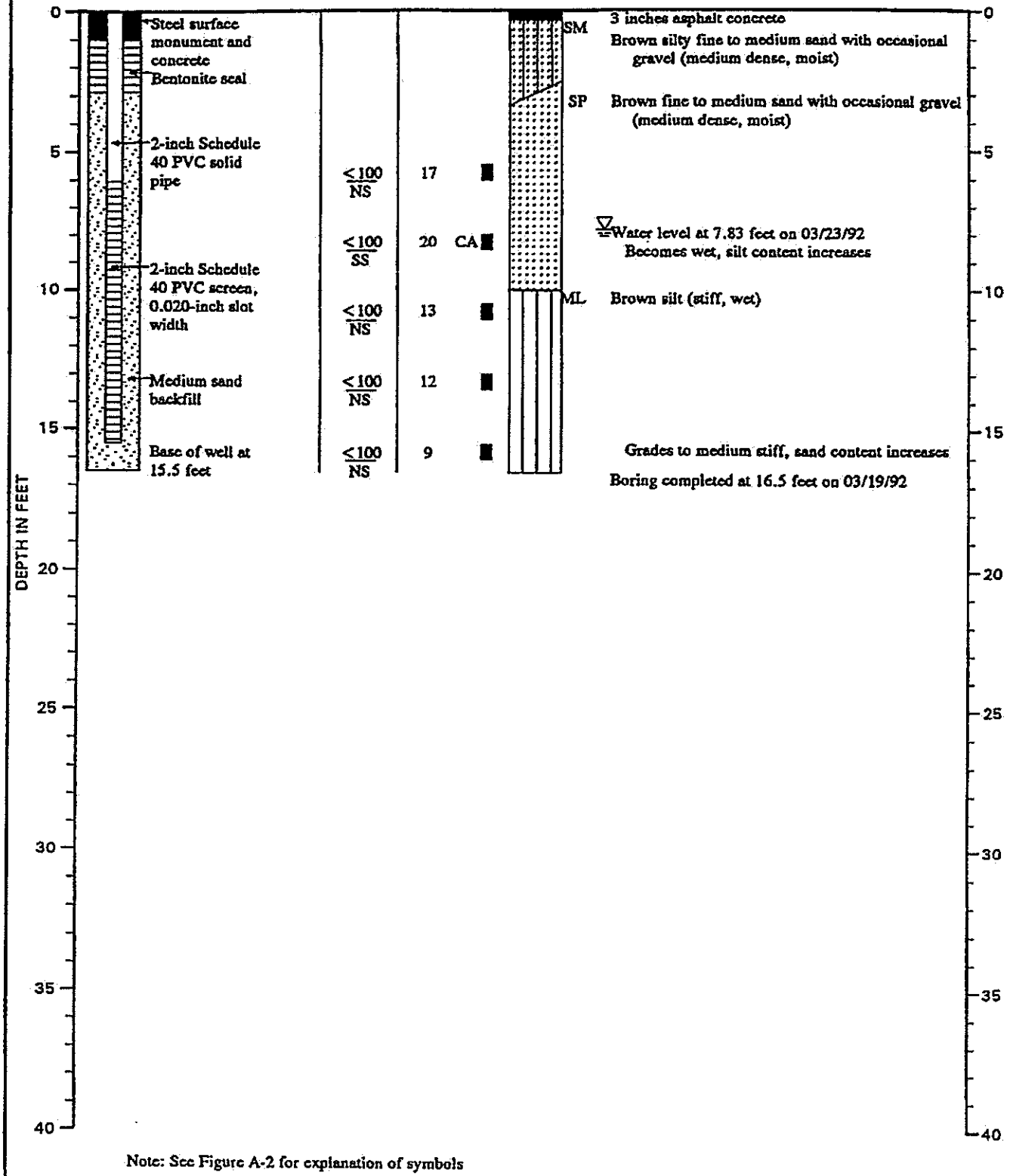
Note: See Figure A-2 for explanation of symbols

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-4

MONITORING WELL NO. MW-7



Note: See Figure A-2 for explanation of symbols

Geo Engineers

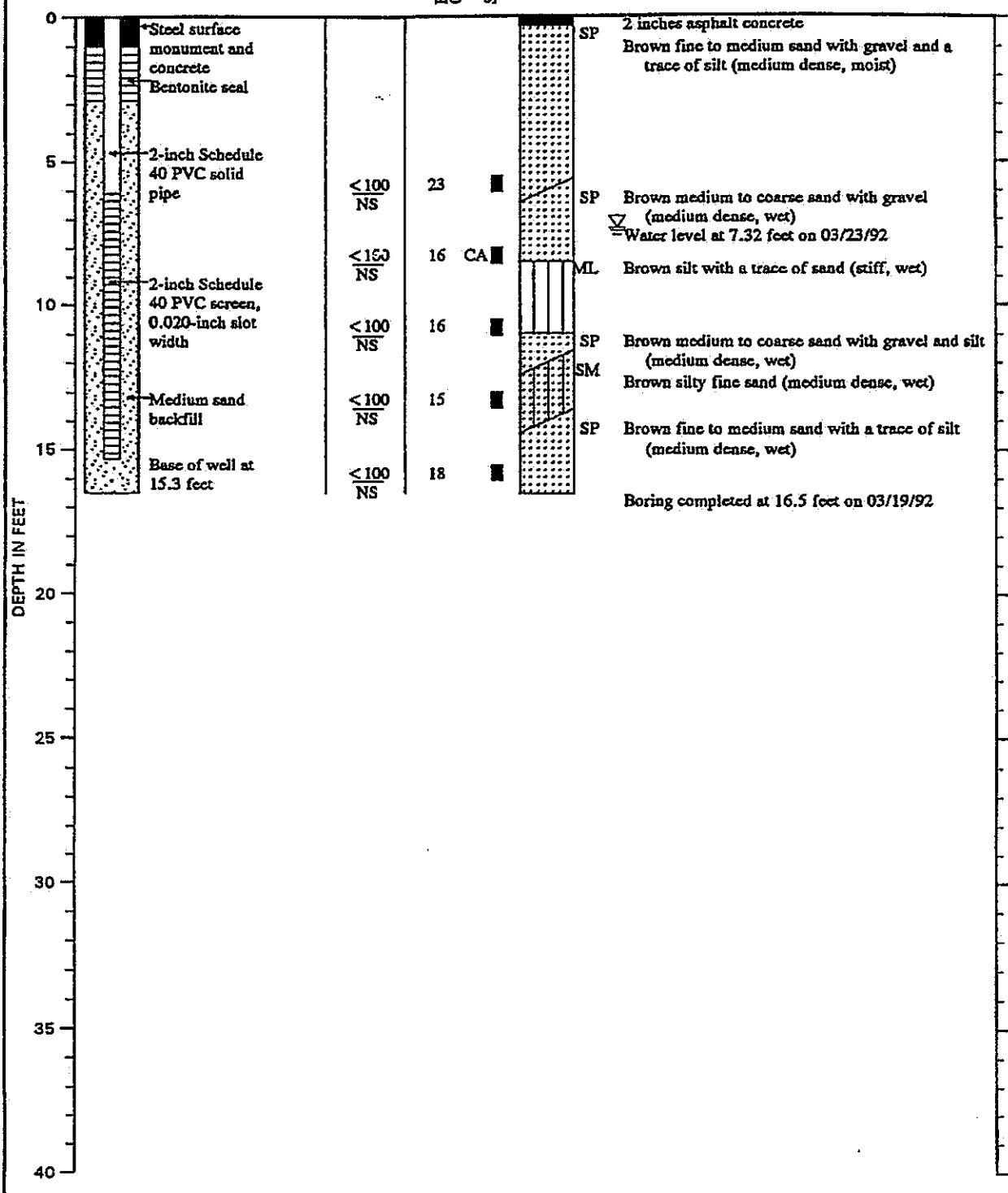
LOG OF MONITORING WELL

FIGURE A-5

MONITORING WELL NO. MW-8

WELL SCHEMATIC

Casing Elevation (ft.): 101.18
Casing Stickup (ft.): -0.34



Note: See Figure A-2 for explanation of symbols

Geo Engineers

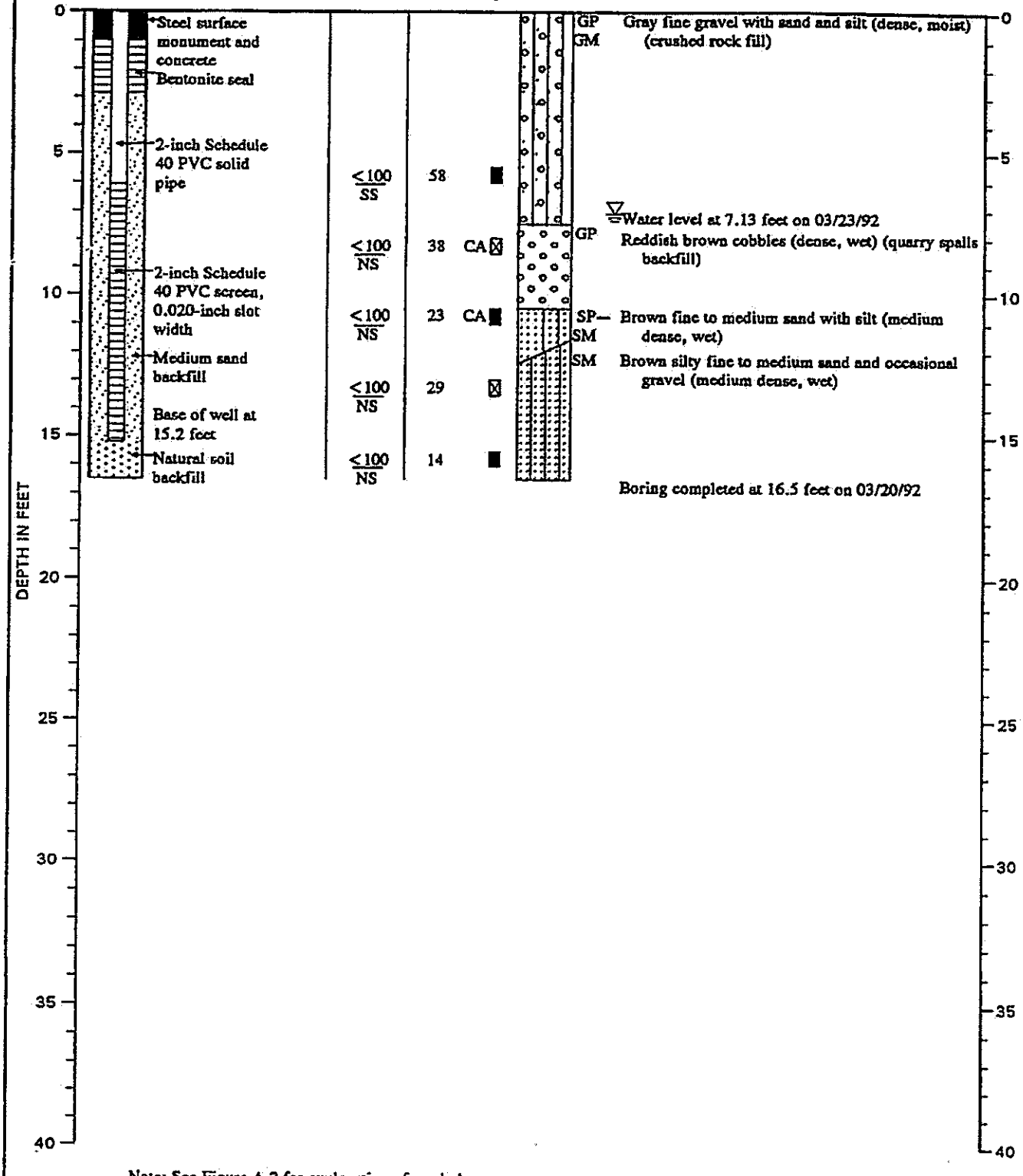
LOG OF MONITORING WELL

FIGURE A-6

MONITORING WELL NO. MW-9

WELL SCHEMATIC

Casing Elevation (ft.): 101.26
Casing Stickup (ft.): -0.30



Note: See Figure A-2 for explanation of symbols

Geo Engineers

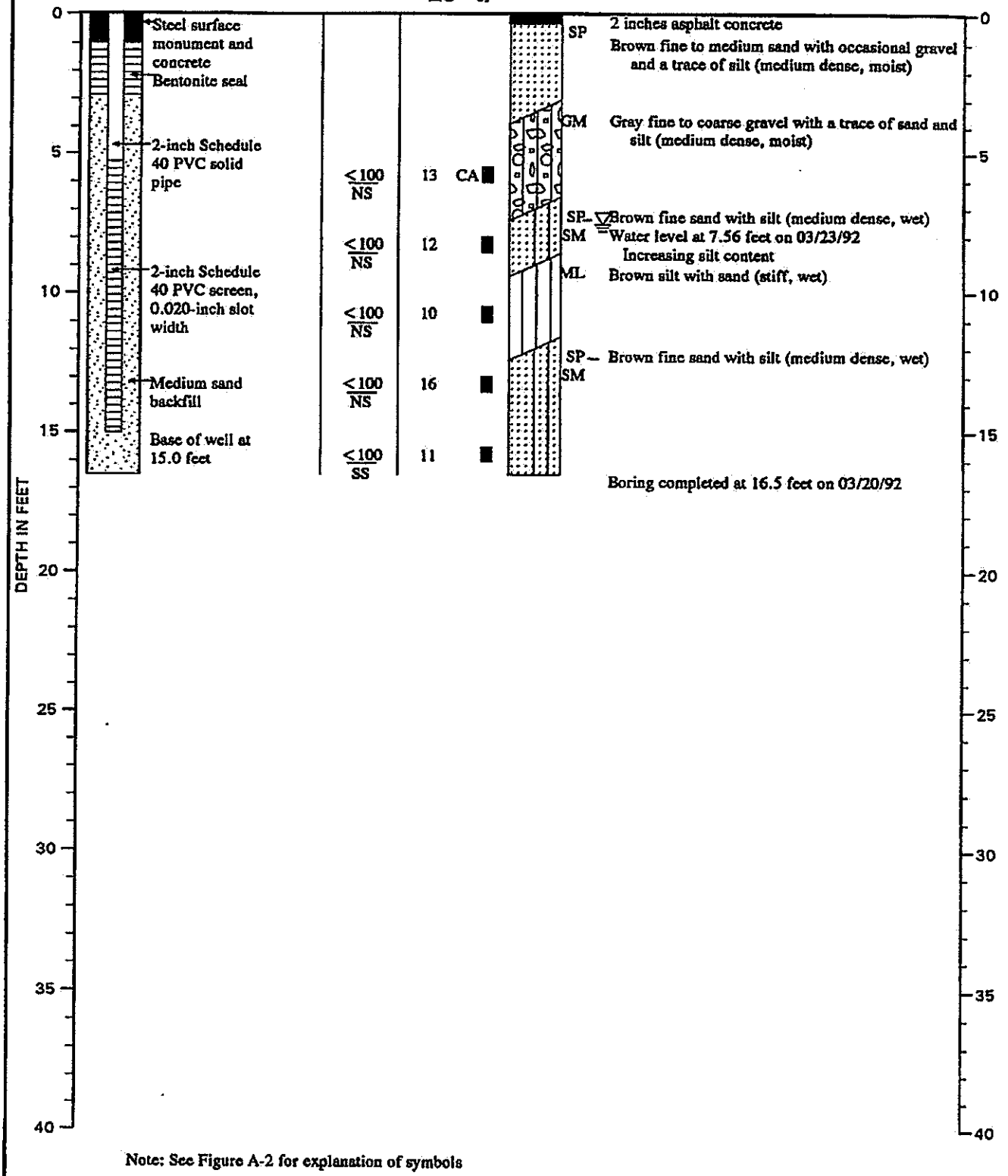
LOG OF MONITORING WELL

FIGURE A-7

MONITORING WELL NO. MW-10

WELL SCHEMATIC

Casing Elevation (ft.): 99.35
Casing Stickup (ft.): -0.31



Note: See Figure A-2 for explanation of symbols

Geo Engineers

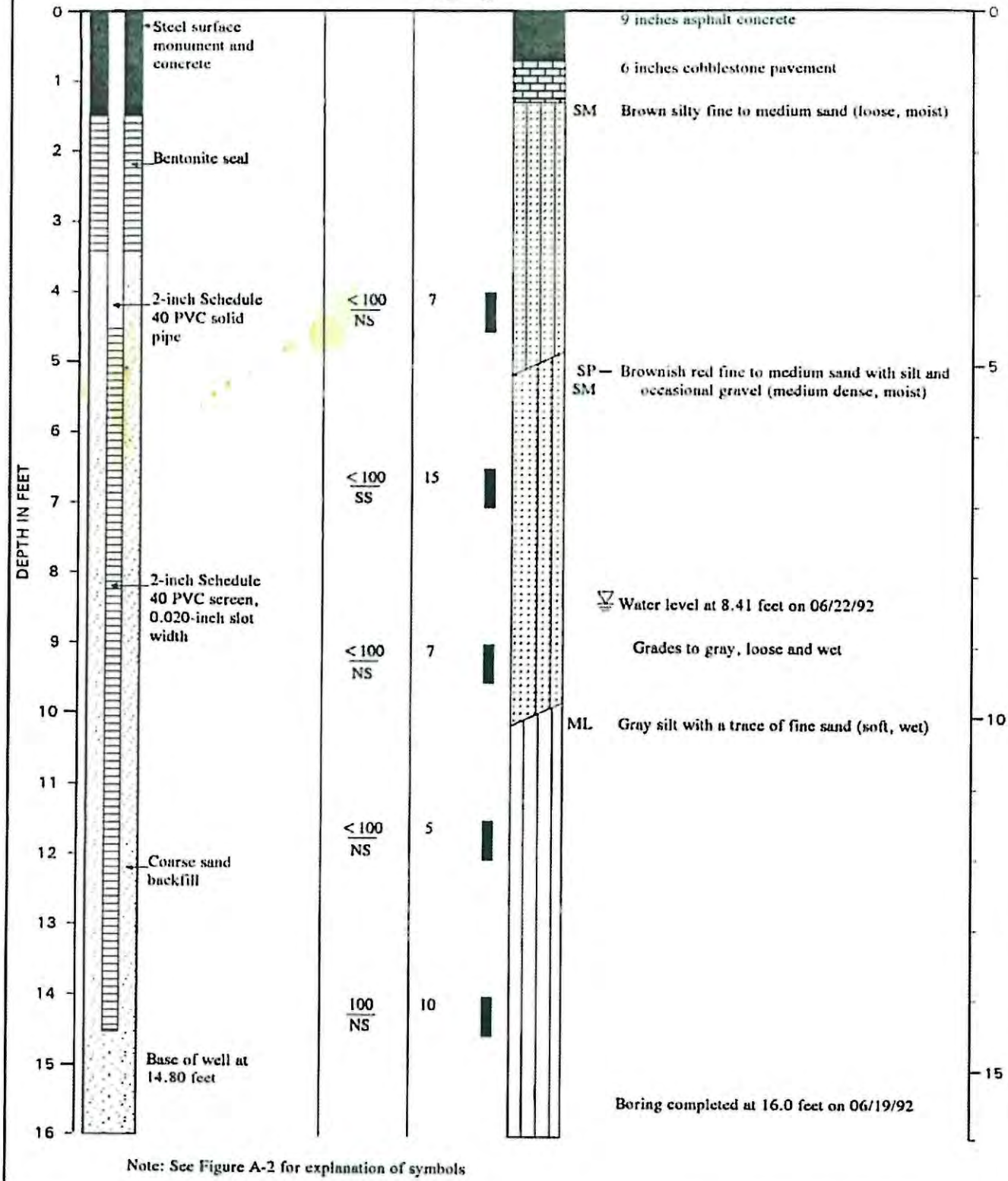
LOG OF MONITORING WELL

FIGURE A-8

:LJB:MET:CMS 6/15/92

0161-183-R04

MONITORING WELL NO. MW-11



Note: See Figure A-2 for explanation of symbols

NLP JKH CMS 11/23/92

0161-183-R04

Geo Engineers

LOG OF MONITORING WELL

FIGURE A-3

Appendix B

Terrestrial Ecological Evaluation

Voluntary Cleanup Program

Washington State Department of Ecology
Toxics Cleanup Program

TERRESTRIAL ECOLOGICAL EVALUATION FORM

Under the Model Toxics Control Act (MTCA), a terrestrial ecological evaluation is necessary if hazardous substances are released into the soils at a Site. In the event of such a release, you must take one of the following three actions as part of your investigation and cleanup of the Site:

1. Document an exclusion from further evaluation using the criteria in WAC 173-340-7491.
2. Conduct a simplified evaluation as set forth in WAC 173-340-7492.
3. Conduct a site-specific evaluation as set forth in WAC 173-340-7493.

When requesting a written opinion under the Voluntary Cleanup Program (VCP), you must complete this form and submit it to the Department of Ecology (Ecology). The form documents the type and results of your evaluation.

Completion of this form is not sufficient to document your evaluation. You still need to document your analysis and the basis for your conclusion in your cleanup plan or report.

If you have questions about how to conduct a terrestrial ecological evaluation, please contact the Ecology site manager assigned to your Site. For additional guidance, please refer to www.ecy.wa.gov/programs/tcp/policies/terrestrial/TEEHome.htm.

Step 1: IDENTIFY HAZARDOUS WASTE SITE	
Please identify below the hazardous waste site for which you are documenting an evaluation.	
Facility/Site Name: Federal Way Union, Inc.	
Facility/Site Address: 18015 Bothell Way North East, Bothell, Washington	
Facility/Site No: 35644949	VCP Project No.: TBD

Step 2: IDENTIFY EVALUATOR		
Please identify below the person who conducted the evaluation and their contact information.		
Name: Justin Foslien		Title: Licensed Geologist
Organization: Aerotech Environmental		
Mailing address: 13925 Interurban Avenue South #210		
City: Tukwila	State: WA	Zip code: 98168
Phone: 206 257 4211	Fax: 206 402 3872	E-mail: justin@dirtydirt.us

Step 3: DOCUMENT EVALUATION TYPE AND RESULTS

A. Exclusion from further evaluation.

1. Does the Site qualify for an exclusion from further evaluation?

☐ Yes *If you answered **"YES,"** then answer **Question 2**.*

☒ No or Unknown *If you answered **"NO" or "UKNOWN,"** then skip to **Step 3B** of this form.*

2. What is the basis for the exclusion? *Check all that apply. Then skip to **Step 4** of this form.*

Point of Compliance: WAC 173-340-7491(1)(a)

☐ All soil contamination is, or will be,* at least 15 feet below the surface.

☐ All soil contamination is, or will be,* at least 6 feet below the surface (or alternative depth if approved by Ecology), and institutional controls are used to manage remaining contamination.

Barriers to Exposure: WAC 173-340-7491(1)(b)

☐ All contaminated soil, is or will be,* covered by physical barriers (such as buildings or paved roads) that prevent exposure to plants and wildlife, and institutional controls are used to manage remaining contamination.

Undeveloped Land: WAC 173-340-7491(1)(c)

☐ There is less than 0.25 acres of contiguous[#] undeveloped[±] land on or within 500 feet of any area of the Site and any of the following chemicals is present: chlorinated dioxins or furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, heptachlor epoxide, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, or pentachlorobenzene.

☐ For sites not containing any of the chemicals mentioned above, there is less than 1.5 acres of contiguous[#] undeveloped[±] land on or within 500 feet of any area of the Site.

Background Concentrations: WAC 173-340-7491(1)(d)

☐ Concentrations of hazardous substances in soil do not exceed natural background levels as described in WAC 173-340-200 and 173-340-709.

* An exclusion based on future land use must have a completion date for future development that is acceptable to Ecology.

[±] "Undeveloped land" is land that is not covered by building, roads, paved areas, or other barriers that would prevent wildlife from feeding on plants, earthworms, insects, or other food in or on the soil.

[#] "Contiguous" undeveloped land is an area of undeveloped land that is not divided into smaller areas of highways, extensive paving, or similar structures that are likely to reduce the potential use of the overall area by wildlife.

B. Simplified evaluation.

1. Does the Site qualify for a simplified evaluation?

☒ Yes *If you answered **"YES,"** then answer **Question 2** below.*

☐ No or Unknown *If you answered **"NO"** or **"UNKNOWN,"** then skip to **Step 3C** of this form.*

2. Did you conduct a simplified evaluation?

☒ Yes *If you answered **"YES,"** then answer **Question 3** below.*

☐ No *If you answered **"NO,"** then skip to **Step 3C** of this form.*

3. Was further evaluation necessary?

☒ Yes *If you answered **"YES,"** then answer **Question 4** below.*

☐ No *If you answered **"NO,"** then answer **Question 5** below.*

4. If further evaluation was necessary, what did you do?

☒ Used the concentrations listed in Table 749-2 as cleanup levels. *If so, then skip to **Step 4** of this form.*

☐ Conducted a site-specific evaluation. *If so, then skip to **Step 3C** of this form.*

5. If no further evaluation was necessary, what was the reason? *Check all that apply. Then skip to **Step 4** of this form.*

Exposure Analysis: WAC 173-340-7492(2)(a)

☒ Area of soil contamination at the Site is not more than 350 square feet.

☐ Current or planned land use makes wildlife exposure unlikely. Used Table 749-1.

Pathway Analysis: WAC 173-340-7492(2)(b)

☐ No potential exposure pathways from soil contamination to ecological receptors.

Contaminant Analysis: WAC 173-340-7492(2)(c)

☒ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations that exceed the values listed in Table 749-2.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations that exceed the values listed in Table 749-2, and institutional controls are used to manage remaining contamination.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 15 feet at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays.

☐ No contaminant listed in Table 749-2 is, or will be, present in the upper 6 feet (or alternative depth if approved by Ecology) at concentrations likely to be toxic or have the potential to bioaccumulate as determined using Ecology-approved bioassays, and institutional controls are used to manage remaining contamination.

C. Site-specific evaluation. A site-specific evaluation process consists of two parts: (1) formulating the problem, and (2) selecting the methods for addressing the identified problem. Both steps require consultation with and approval by Ecology. *See* WAC 173-340-7493(1)(c).

1. Was there a problem? *See* WAC 173-340-7493(2).

☐ Yes *If you answered **"YES,"** then answer **Question 2** below.*

☐ No *If you answered **"NO,"** then identify the reason here and then skip to **Question 5** below:*

- ☐ No issues were identified during the problem formulation step.
- ☐ While issues were identified, those issues were addressed by the cleanup actions for protecting human health.

2. What did you do to resolve the problem? *See* WAC 173-340-7493(3).

☐ Used the concentrations listed in Table 749-3 as cleanup levels. *If so, then skip to **Question 5** below.*

☐ Used one or more of the methods listed in WAC 173-340-7493(3) to evaluate and address the identified problem. *If so, then answer **Questions 3 and 4** below.*

3. If you conducted further site-specific evaluations, what methods did you use?
Check all that apply. See WAC 173-340-7493(3).

- ☐ Literature surveys.
- ☐ Soil bioassays.
- ☐ Wildlife exposure model.
- ☐ Biomarkers.
- ☐ Site-specific field studies.
- ☐ Weight of evidence.
- ☐ Other methods approved by Ecology. If so, please specify:

4. What was the result of those evaluations?

- ☐ Confirmed there was no problem.
- ☐ Confirmed there was a problem and established site-specific cleanup levels.

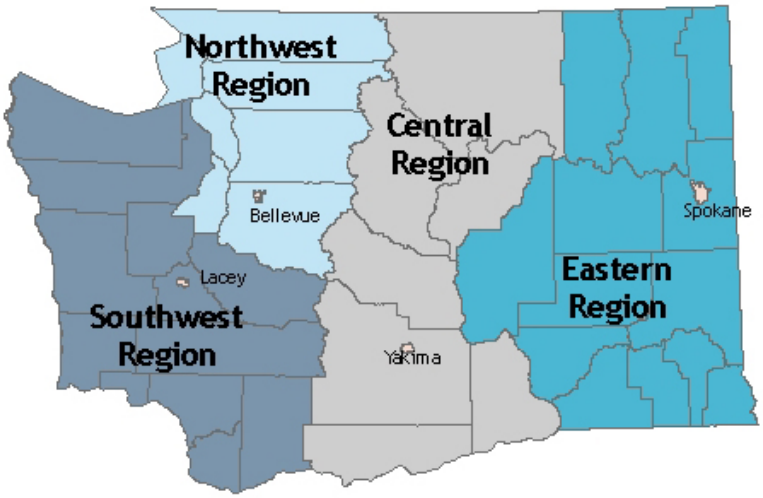
5. Have you already obtained Ecology's approval of both your problem formulation and problem resolution steps?

☐ Yes If so, please identify the Ecology staff who approved those steps:

☐ No

Step 4: SUBMITTAL

Please mail your completed form to the Ecology site manager assigned to your Site. If a site manager has not yet been assigned, please mail your completed form to the Ecology regional office for the County in which your Site is located.



Northwest Region: Attn: VCP Coordinator 3190 160th Ave. SE Bellevue, WA 98008-5452	**Central Region:** Attn: VCP Coordinator 15 W. Yakima Ave., Suite 200 Yakima, WA 98902
Southwest Region: Attn: VCP Coordinator P.O. Box 47775 Olympia, WA 98504-7775	**Eastern Region:** Attn: VCP Coordinator N. 4601 Monroe Spokane WA 99205-1295

Table 749-1

Simplified Terrestrial Ecological Evaluation-Exposure Analysis Procedure

Estimate the area of contiguous (connected) undeveloped land on the site or within 500 feet of any area of the site to the nearest 1/2 acre (1/4 acre if the area is less than 0.5 acre).	
1) From the table below, find the number of points corresponding to the area and enter this number in the field to the right.	
Area (acres) / Points 0.25 or less / 4 0.5 / 5 1.0 / 6 1.5 / 7 2.0 / 8 2.5 / 9 3.0 / 10 3.5 / 11 4.0 or more / 12	
2) Is this an industrial or commercial property? If yes, enter a score of 3. If no, enter a score of 1	
3)[a] Enter a score in the box to the right for the habitat quality of the site, using the following rating system[b]. High=1, Intermediate=2, Low=3	
4) Is the undeveloped land likely to attract wildlife? If yes, enter a score of 1 in the box to the right. If no, enter a score of 2.[c]	
5) Are there any of the following soil contaminants present: Chlorinated dioxins/furans, PCB mixtures, DDT, DDE, DDD, aldrin, chlordane, dieldrin, endosulfan, endrin, heptachlor, benzene hexachloride, toxaphene, hexachlorobenzene, pentachlorophenol, pentachlorobenzene? If yes, enter a score of 1 in the box to the right. If no, enter a score of 4.	
6) Add the numbers in the boxes on lines 2-5 and enter this number in the box to the right. If this number is larger than the number in the box on line 1, the simplified evaluation may be ended.	

Notes for Table 749-1

[a] It is expected that this habitat evaluation will be undertaken by an experienced field biologist. If this is not the case, enter a conservative score of (1) for questions 3 and 4.

[b] **Habitat rating system.** Rate the quality of the habitat as high, intermediate or low based on your professional judgment as a field biologist. The following are suggested factors to consider in making this evaluation:

> **Low:** Early successional vegetative stands; vegetation predominantly noxious, nonnative, exotic plant species or weeds. Areas severely disturbed by human activity, including intensively cultivated croplands. Areas isolated from other habitat used by wildlife.

High: Area is ecologically significant for one or more of the following reasons: Late-successional native plant communities present; relatively high species diversity; used by an uncommon or rare species; priority habitat (as defined by the Washington Department of fish and Wildlife); part of a larger area of habitat where size or fragmentation may be important for the retention of some species.

Intermediate: Area does not rate as either high or low.

[c] Indicate "yes" if the area attracts wildlife or is likely to do so. Examples: Birds frequently visit the area to feed; evidence of high use b mammals (tracks, scat, etc.); habitat "island" in an industrial area; unusual features of an area that make it important for feeding animals; heavy use during seasonal migrations.

[Area Calculation Aid] [Aerial Photo with Area Designations] [TEE Table 749-1] [Index of Tables]

[Exclusions Main] [TEE Definitions] [Simplified or Site-Specific?] [Simplified Ecological Evaluation] [Site-Specific Ecological Evaluation] [WAC 173-340-7493]

[TEE Home]

Table 749-2

Priority contaminants of ecological concern for sites that qualify for the simplified terrestrial ecological evaluation[a]

Soil Concentration (mg/kg)		
Priority Contaminant	Unrestricted Land Use[b]	Industrial or Commercial Site
METALS[c]		
Antimony	See Note [d]	See Note [d]
Arsenic III	20 mg/kg	20 mg/kg
Arsenic IV	95 mg/kg	260 mg/kg
Barium	1,250 mg/kg	1,320mg/kg
Beryllium	25 mg/kg	See Note [d]
Cadmium	25 mg/kg	36 mg/kg
Chromium (total)	42 mg/kg	135 mg/kg
Cobalt	See Note [d]	See Note [d]
Copper	100 mg/kg	550 mg/kg
Lead	220 mg/kg	220 mg/kg
Magnesium	See Note [d]	See Note [d]
Manganese	See Note [d]	23,500 mg/kg
Mercury, inorganic	9 mg/kg	9 mg/kg
Mercury, organic	0.7 mg/kg	0.7 mg/kg
Molybdenum	See Note [d]	71 mg/kg
Nickel	100 mg/kg	1,850 mg/kg
Selenium	0.8 mg/kg	0.8 mg/kg
Silver	See Note [d]	See Note [d]
Tin	275 mg/kg	See Note [d]
Vanadium	26 mg/kg	See Note [d]
Zinc	270 mg/kg	570 mg/kg
PESTICIDES		
Aldicarb/aldicarb sulfone (total)	See Note [d]	See Note [d]
Aldrin	0.17 mg/kg	0.17 mg/kg
Benzene hexachloride (including lindane)	10 mg/kg	10 mg/kg

Carbofuran	See Note [d]	See Note [d]
Chlordane	1 mg/kg	7 mg/kg
Chlorpyrifos/chlorpyrifos-methal (total)	See Note [d]	See Note [d]
DDT/DDD/DDE	1 mg/kg	1 mg/kg
Dieldrin	0.17 mg/kg	0.17 mg/kg
Endosulfan	See Note [d]	See Note [d]
Endrin	0.4 mg/kg	0.4 mg/kg
Heptachlor/heptachlor epoxide (total)	0.6 mg/kg	0.6 mg/kg
Hexachlorobenzene	31 mg/kg	31 mg/kg
Parathion/methyl parathion (total)	See Note [d]	See Note [d]
Pentachlorophenol	11 mg/kg	11 mg/kg
Toxaphene	See Note [d]	See Note [d]
OTHER CHLORINATED ORGANICS		
Chlorinated dibenzofurans (total)	3E-06 mg/kg	3E-06 mg/kg
Dioxins	5E-06 mg/kg	5E-06 mg/kg
Hexchlorophene	See Note [d]	See Note [d]
PCB mixtures (total)	2 mg/kg	2 mg/kg
Pentachlorobenzene	168 mg/kg	See Note [d]
OTHER NONCHLORINATED ORGANICS		
Acenaphthene	See Note [d]	See Note [d]
Benzo(a)pyrene	30 mg/kg	300 mg/kg
Bis (2-ethylhexyl) phthalate	See Note [d]	See Note [d]
Di-n-butyl phthalate	200 mg/kg	See Note [d]
PETROLEUM		
Gasoline Range Organics	200 mg/kg	12,000 mg/kg except that the concentration shall not exceed residual saturation at the soil surface.
Diesel Range Organics Common examples of diesel range organics include: Diesel #2, Fuel Oil #2, and light oil including some bunker oils. Refer to Table 830-1	460 mg/kg	15,000 mg/kg except that the concentration shall not exceed residual saturation at the soil surface.

Table 749-2 Notes

[a] Caution on misusing these chemical concentration numbers. These values have been developed for use at sites where a site-specific terrestrial ecological evaluation is not required. They are not intended to be protective of terrestrial ecological receptors at every site. Exceedances of the values in this table do not necessarily trigger requirements for cleanup action under this chapter. The table is not intended for purposes such as evaluating sludges or wastes.

This list does not imply that sampling must be conducted for each of these chemicals at every site. Sampling should be conducted for those chemicals that might be present based on available information, such as current and past uses of chemicals at the site.

[b] Applies to any site that does not meet the definition of industrial or commercial.

[c] For arsenic, use the valence state most likely to be appropriate for site conditions, unless laboratory information is available. Where soil conditions alternate between saturated, anaerobic and unsaturated, aerobic states, resulting in the alternating presence of arsenic III and arsenic V, the arsenic III concentrations shall apply.

[d] Safe concentration has not yet been established.

[Area Calculation Aid] [Aerial Photo with Area Designations] [TEE Table 749-1] [TEE Table 749-2] [TEE Table 749-3] [TEE Table 749-4] [TEE Table 749-5] [TEE Table 830-1]

[Exclusions Main] [TEE Definitions] [Simplified or Site-Specific?] [Simplified Ecological Evaluation] [Site-Specific Ecological Evaluation] [WAC 173-340-7493]

[TEE Home]

Table 749-3

Ecological Indicator Soil Concentrations (mg/kg) for Protection of Terrestrial Plants and Animals[a]. For chemicals where a value is not provided, see footnote [b].

Note: These values represent soil concentrations that are expected to be protective at any MTCA site and are provided for use in eliminating hazardous substances from further consideration under WAC 173-340-7493 (2)(a)(i). Where these values are exceeded, various options are provided for demonstrating that the hazardous substance does not pose a threat to ecological receptors at a site, or for developing site-specific remedial standards for eliminating threats to ecological receptors. See WAC 173-340-7493 (1)(b)(i), 173-340-7493 (2)(a)(ii) and 173-340-7493(3).

Hazardous Substance[b]	Plants[c]	Soil biota[d]	Wildlife[e]
METALS[f]			
Aluminum (soluble salts)	50		
Antimony	5		
Arsenic III			7
Arsenic V	10	60	132
Barium	500		102
Beryllium	10		
Boron	0.5		
Bromine	10		
Cadmium	4	20	14
Chromium (total)	42[g]	42[g]	67
Cobalt	20		
Copper	100	50	217
Fluorine	200		
Iodine	4		
Lead	50	500	118
Lithium	35[g]		
Manganese	1,100[g]		1,500
Mercury, Inorganic	0.3	0.1	5.5
Mercury, Organic			0.4
Molybdenum	2		7
Nickel	30	200	980
Selenium	1	70	0.3
Silver	2		

Technetium	0.2		
Thallium	1		
Tin	50		
Uranium	5		
Vanadium	2		
Zinc	86[g]	200	360
PESTICIDES			
Aldrin			0.1
Benzene hexachloride (including lindane)			6
Chlordane		1	2.7
DDT/DDD/DDE (total)			0.75
Dieldrin			0.07
Endrin			0.2
Hexachlorobenzene			17
Heptachlor/heptachlor epoxide (total)			0.4
Pentachlorophenol	3	6	4.5
OTHER CHLORINATED ORGANICS			
1,2,3,4-Tetrachlorobenzene		10	
1, 2,3-Trichlorobenzene		20	
1,2,4-Trichlorobenzene		20	
1,2-Dichloropropane		700	
1,4-Dichlorobenzene		20	
2,3,4,5-Tetrachlorophenol		20	
2,3,5,6-Tetrachloroaniline	20	20	
2,4,5-Trichloroaniline	20	20	
2,4,5-Trichlorophenol	4	9	
2,4,6-Trichlorophenol		10	
2,4-Dichloroaniline		100	
3,4-Dichloroaniline		20	
3,4-Dichlorophenol	20	20	
3-Chloroaniline	20	30	
3-Chlorophenol	7	10	
Chlorinated dibenzofurans (total)			2E-06
Chloroacetamide		2	
Chlorobenzene		40	
Dioxins			2E-06

Hexachlorocyclopentadiene	10		
PCB mixtures (total)	40		0.65
Pentachloroaniline		100	
Pentachlorobenzene		20	
OTHER NONCHLORINATED ORGANICS			
2,4-Dinitrophenol	20		
4-Nitrophenol		7	
Acenaphthene	20		
Benzo(a)pyrene			12
Biphenyl	60		
Diethylphthalate	100		
Dimethylphthalate		200	
Di-n-butyl phthalate	200		
Fluorene		30	
Furan	600		
Nitrobenzene		40	
N-nitrosodiphenylamine		20	
Phenol	70	30	
Styrene	300		
Toluene	200		
PETROLEUM			
Gasoline Range Organics		100	5,000 mg/kg except that the concentration shall not exceed residual saturation at the soil surface.
Diesel Range Organics		200	6,000 except that the concentration shall not exceed residual saturation at the soil surface.

Table 749-3 Notes

[a] Caution on misusing ecological indicator concentrations. Exceedances of the values in this table do not necessarily trigger requirements for cleanup action under this chapter. Natural

background concentrations may be substituted for ecological indicator concentrations provided in this table. The table is not intended for purposes such as evaluating sludges or wastes.

This list does not imply that sampling must be conducted for each of these chemicals at every site. Sampling should be conducted for those chemicals that might be present based on available information, such as current and past uses of chemicals at the site.

[b] For hazardous substances where a value is not provided, plant and soil biota indicator concentrations shall be based on a literature survey conducted in accordance with WAC 173-340-7493(4) and calculated using methods described in the publications listed below in footnotes c and d. Methods to be used for developing wildlife indicator concentrations are described in Tables 749-4 and 749-5.

[c] Based on benchmarks published in *Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Terrestrial Plants: 1997 revision*, Oak Ridge National Laboratory, 1997.

[d] Based on benchmarks published in *Toxicological Benchmarks for Potential Contaminants of Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process*, Oak Ridge National Laboratory, 1997.

[e] Calculated using the exposure model provided in Table 749-4 and chemical-specific values provided in Table 749-5. Where both avian and mammalian values are available, the wildlife value is the lower of the two.

[f] For arsenic, use the valence state most likely to be appropriate for site conditions, unless laboratory information is available. Where soil conditions alternate between saturated, anaerobic and unsaturated, aerobic states, resulting in the alternating presence of arsenic III and arsenic V, the arsenic III concentrations shall apply.

[g] Benchmark replaced by Washington state natural background concentration.

[Exclusions Main] [TEE Definitions] [Simplified or Site-Specific?] [Simplified Ecological Evaluation] [Site-Specific Ecological Evaluation] [WAC 173-340-7493] [Index of Tables]

[TEE Home]

EXPLANATION

Subject Property

500-foot Radius of Subject Site

Contiguous Undeveloped Land
4.3 Acres

AEROTECH
ENVIRONMENTAL CONSULTING

TERRESTRIAL ECOLOGICAL EVALUATION
500-FEET RADIUS MAP

Bothell 76
18015 Bothell Way Northeast
Bothell, Washington

0 250 500
SCALE (feet)

Date: 10/18/17
By: Nick Gerkin
Figure: Appendix B

Appendix C

Stockpile Sample Tables – GeoEngineers 1992

TABLE 3A (Page 1 of 3)
SUMMARY OF SOIL CHEMICAL ANALYTICAL DATA
CONTAMINATED SOIL STOCKPILES

Sample Number	Date Sampled	BETX[1] (mg/kg)				Gasoline-range Hydrocarbons[2] (mg/kg)	Diesel-range Hydrocarbons[3] (mg/kg)	Heavier Hydrocarbons[4] (mg/kg)
		B	E	T	X			
Samples obtained from soil stockpiles disposed of at Roosevelt Regional Landfill								
SP-1(A)	02/26/91	--	--	--	--	ND, --	ND, --	180
SP-1(B)	05/15/91	ND	ND	ND	ND	ND, --	ND, --	44
WOSP-1	05/17/91	ND	ND	ND	ND	ND, --	12, --	130
OSPN-1	10/02/91	--	--	--	--	--, --	--, --	400
OSPN-2	10/02/91	--	--	--	--	--, --	--, --	400
OSPN-3	10/03/91	--	--	--	--	--, --	--, --	500
OSPN-4	10/03/91	--	--	--	--	--, --	--, --	270
OSPN-5	10/09/91	--	--	--	--	--, --	--, --	530
OSPN-6	10/09/91	--	--	--	--	--, --	--, --	850
OSPN-7	10/09/91	--	--	--	--	--, --	--, --	750
OSPN-8	10/09/91	--	--	--	--	--, --	--, --	65
OSPN-9	10/09/91	--	--	--	--	--, --	--, --	880
OSPN-10	10/10/91	--	--	--	--	--, --	--, --	2,700
OSPN-11	10/10/91	--	--	--	--	--, --	--, --	190
OSPN-12	10/10/91	--	--	--	--	--, --	--, --	870
OSPN-13	10/10/91	--	--	--	--	--, --	--, --	1,600
OSPN-14(A)	12/02/91	--	--	--	--	--, --	--, 280	--
OSPN-14(B)	02/12/92	ND	0.060	0.13	0.33	ND, --	ND, --	130
OSPN-15(A)	12/02/91	ND	ND	ND	ND	--, --	--, 350	--
OSPN-15(B)	12/13/91	ND	ND	ND	0.071	130, --	73, --	270
OSPN-16	12/02/91	--	--	--	--	--, --	--, 480	--
OSPN-17	12/02/91	--	--	--	--	--, --	--, 1,600	--
MTCA Method A Soil Cleanup Level		0.5	20	40	20	100	200	200

Notes appear on page 3 of 3.

TABLE 3A (Page 2 of 3)

Sample Number	Date Sampled	BETX[1] (mg/kg)				Gasoline-range Hydrocarbons[2] (mg/kg)	Diesel-range Hydrocarbons[3] (mg/kg)	Heavier Hydrocarbons[4] (mg/kg)
		B	E	T	X			
OSPN-18	12/02/91	--	--	--	--	--, --	--, 170	--
OSPN-19	12/02/91	--	--	--	--	--, --	--, 400	--
OSPN-20	12/02/91	--	--	--	--	--, --	--, 49	--
OSPN-21	12/02/91	--	--	--	--	--, --	--, --	--
T-1	10/08/91	--	--	--	--	2,000, --	23,000, --	--
RSP-1	02/12/92	--	--	--	--	--, --	--, --	54
RSP-2	02/12/92	--	--	--	--	ND, --	ND, --	200
CNSP-6	02/14/92	ND	ND	ND	ND	ND, ND	ND, --	200
PISP-1	02/13/92	ND	ND	ND	ND	10, 12	37, --	--
PISP-2	02/14/92	ND	ND	ND	ND	ND, 13	ND, --	--
PISP-3	02/14/92	ND	0.060	ND	0.20	890, 1,800	760, --	--
PISP-4	02/17/92	ND	ND	ND	ND	10, 9	38, --	--
Samples obtained from gasoline-contaminated soil stockpiles prior to treatment								
DSP-1	05/17/91	ND	1.3	0.61	9.9	52, 230	ND, --	--
DSP-2	05/17/91	ND	0.33	0.36	1.1	34, 32	ND, --	--
DSP-3	05/17/91	0.13	0.94	2.3	5.8	62, 120	ND, --	--
GSPN-1	09/30/91	0.16	5.7	7.8	54	930, --	ND, --	--
GSPN-2	10/01/91	ND	0.036	0.11	0.44	8, --	ND, --	--
GSPN-3	10/01/91	ND	0.10	0.088	2.0	24, --	7, --	--
GSPN-4	10/01/91	0.13	1.8	3.1	14	180, --	22, --	--
GSPN-5	10/01/91	ND	0.052	0.057	0.63	21, --	7, --	--
Samples obtained from gasoline-contaminated soil stockpiles after treatment								
GSPN-6	01/07/91	ND	0.18	0.15	2.9	74, 100	31, --	--
GSPN-7	01/07/91	ND	ND	ND	ND	ND, ND	ND, --	--
GSPN-8	01/07/91	ND	ND	ND	ND	ND, ND	8, --	--
GSPN-9	01/07/91	ND	ND	ND	ND	11, ND	15, --	--
MTCA Method A Soil Cleanup Level		0.5	20	40	20	100	200	200

Notes appear on page 3 of 3.

TABLE 3A (Page 3 of 3)

Sample Number	Date Sampled	BETX[1] (mg/kg)				Gasoline-range Hydrocarbons[2] (mg/kg)	Diesel-range Hydrocarbons[3] (mg/kg)	Heavier Hydrocarbons[4] (mg/kg)
		B	E	T	X			
GSPN-10	10/07/91	ND	ND	ND	0.20	10, 7	7, –	–
GSPN-11	10/07/91	ND	ND	ND	ND	14, 16	13, –	–
GSPO-1	10/03/91	ND	0.35	ND	0.48	9, –	ND, –	–
GSPO-2	10/03/91	ND	ND	ND	0.030	ND, –	ND, –	–
GSPO-3	10/03/91	ND	ND	ND	0.18	33, –	79, –	–
GSPO-4	10/03/91	ND	ND	ND	ND	10, –	ND, –	–
GSPO-5	10/03/91	ND	ND	ND	ND	20, –	ND, –	–
GSPO-6	10/03/91	ND	ND	ND	ND	ND, –	ND, –	–
MTCA Method A Soil Cleanup Level		0.5	20	40	20	100	200	200

Notes:

[1]B = benzene, E = ethylbenzene, T = toluene, X = xylenes. BETX was analyzed by EPA Method 8020.

[2]Gasoline-range hydrocarbons were quantified using two different modifications of EPA Method 8015. The first value in each pair was obtained using sonication or vortex extraction techniques. The second value was obtained using Ecology-specified Method WTPH-G, except for samples DSP-1, DSP-2 and DSP-3 which were obtained using a purge-and-trap extraction technique.

[3]Diesel-range hydrocarbons were quantified using two different modifications of EPA Method 8015. The first value in each pair was obtained using sonication or vortex extraction techniques. The second value was obtained using Ecology-specified Method WTPH-D.

[4]Heavier hydrocarbons were quantified using EPA Method 418.1.

mg/kg = milligrams per kilogram; ND = not detected. See laboratory reports for specific detection limits; "–" = not tested

TABLE 3B
SUMMARY OF SOIL CHEMICAL ANALYTICAL DATA
CONTAMINATED SOIL STOCKPILES

Analysis	Units	Sample Number												
		SP-1(B)[1]	WOSP-1	GSPN-1	OSPN-1	OSPN-2	OSPN-3	OSPN-6	OSPN-9	OSPN-15(A)	OSPN-16	OSPN-21[2]	OSPN-14(B)	OSPN-15(B)
HVOCs[3] (by EPA Method 8010)	mg/kg	ND	ND	--	--	--								
Methylene chloride							0.15[4]	0.24[5]	0.28[5]	0.14[6]	0.18[6]	--	ND	0.78[7]
Tetrachloroethene							ND	ND	ND	ND	0.028			ND
PCBs[8] and Organochlorinated Pesticides	mg/kg		--	--	--				ND			ND	ND	
(by EPA Method 8080)														
PCB, 1254		ND				0.19	0.20	0.41		0.050	0.043			
4,4'-DDD		0.14				ND	ND	ND		ND	ND			
Dieldrin		0.03				ND	ND	ND		ND	ND			
Endrin		0.02				ND	ND	ND		ND	ND			
Semivolatile Organics	mg/kg	--	--	--				ND		--	--	--	--	--
(by EPA Method 8270)														
Bis(2-ethylhexyl)phthalate					0.18[10]	0.18[10]	0.12[10]		ND					
Phenanthrene					ND	ND	ND		0.13					
TCLP Extraction[9]	mg/l	--	--	--	--	--	--	--	--	ND	ND	ND	--	
Total Lead (by EPA Method 7420)	mg/kg	--	--	ND	--	--	--	--	--	--	--	--	--	--
TCLP Metals[3]	mg/kg		--	--	--								--	
(by EPA 7000 series methodology)														
Barium		0.6				0.56	0.54	0.48	0.47	0.53	0.53	0.54		
Mercury		0.011				ND	ND	ND	ND	ND	ND	ND		

Notes:

[1]Sample SP-1 was also analyzed for flash point by ASTM Method D-93. The sample had a flash point greater than 200 degrees Fahrenheit.

[2]A fish bioassay was also performed on sample OSPN-21 following Washington State Department of Ecology guidelines stated in 'Biological Testing Methods Static. Acute Fish Toxicity Test,' DOE 80-12. The result of the analysis was 0% fish mortality rate.

[3]HVOCs = halogenated volatile organic compounds

[4]A concentration of 0.072 mg/kg methylene chloride was detected in the reagent blank, indicating laboratory cross-contamination.

[5]A concentration of 0.18 mg/kg methylene chloride was detected in the reagent blank, indicating laboratory cross-contamination.

[6]A concentration of 0.05 mg/kg methylene chloride was detected in the reagent blank, indicating laboratory cross-contamination.

[7]A concentration of 0.22 mg/kg methylene chloride was detected in the reagent blank, indicating laboratory cross-contamination, significantly less than the analyte detected in sample OSPN-15.

[8]PCBs = polychlorinated biphenyls

[9]TCLP = toxic characteristics leaching procedure extraction techniques

[10]A concentration of 0.097 mg/kg bis (2-ethylhexyl) phthalate was detected on the reagent blank, indicating laboratory cross-contamination.

mg/kg = milligrams per kilogram; mg/l = milligrams per liter; '--' = not analyzed; ND = analyte not detected. See laboratory reports for specific detection limits.

TABLE 6
SUMMARY OF SOIL ANALYTICAL DATA
NONCONTAMINATED SOIL STOCKPILES

Sample Number	Date Sampled	BETX[1] (mg/kg)				Gasoline-range Hydrocarbons[2] (mg/kg)	Diesel-range Hydrocarbons[3] (mg/kg)	Heavier Hydrocarbons[5] (mg/kg)
		B	E	T	X			
CSP-1	05/16/91	ND	ND	ND	ND	ND, ND	ND	–
CSP-2	05/16/91	ND	ND	ND	ND	ND, ND	ND	–
CSP-A/B	09/30/91	–	–	–	–	–, –	–	46
CSP-C/D	09/30/91	–	–	–	–	ND, –	ND	35
CSP-E/F	09/30/91	–	–	–	–	–, –	–	18
CSP-G/H	09/30/91	–	–	–	–	ND, –	ND	60
CSP-I/J	09/30/91	–	–	–	–	–, –	–	32
CSP-K/L	09/30/91	–	–	–	–	ND, –	ND	35
CSP-7	10/01/91	–	–	–	–	–, –	–	27
CNSP-1	02/11/92	–	–	–	–	ND, –	ND	ND
CNSP-2	02/11/92	–	–	–	–	ND, –	ND	ND
CNSP-3	02/11/92	–	–	–	–	ND, –	41	ND
CNSP-4	02/12/92	–	–	–	–	ND, –	ND	ND
CNSP-5	02/12/92	–	–	–	–	ND, –	ND	ND

Notes:

[1]B = benzene, E = ethylbenzene, T - toluene, X = xylenes. Samples were analyzed for BETX by EPA Method 8020.

[2]Gasoline-range hydrocarbons were quantified using two different modifications of EPA Method 8015. The first value in each pair was obtained using a sonication or vortex extraction technique. The second value was obtained using a purge-and-trap extraction technique. The larger of the two values is reported in the text.

[3]Diesel-range hydrocarbons were quantified using modified EPA Method 8015.

[4]Heavier hydrocarbons were quantified using EPA Method 418.1.

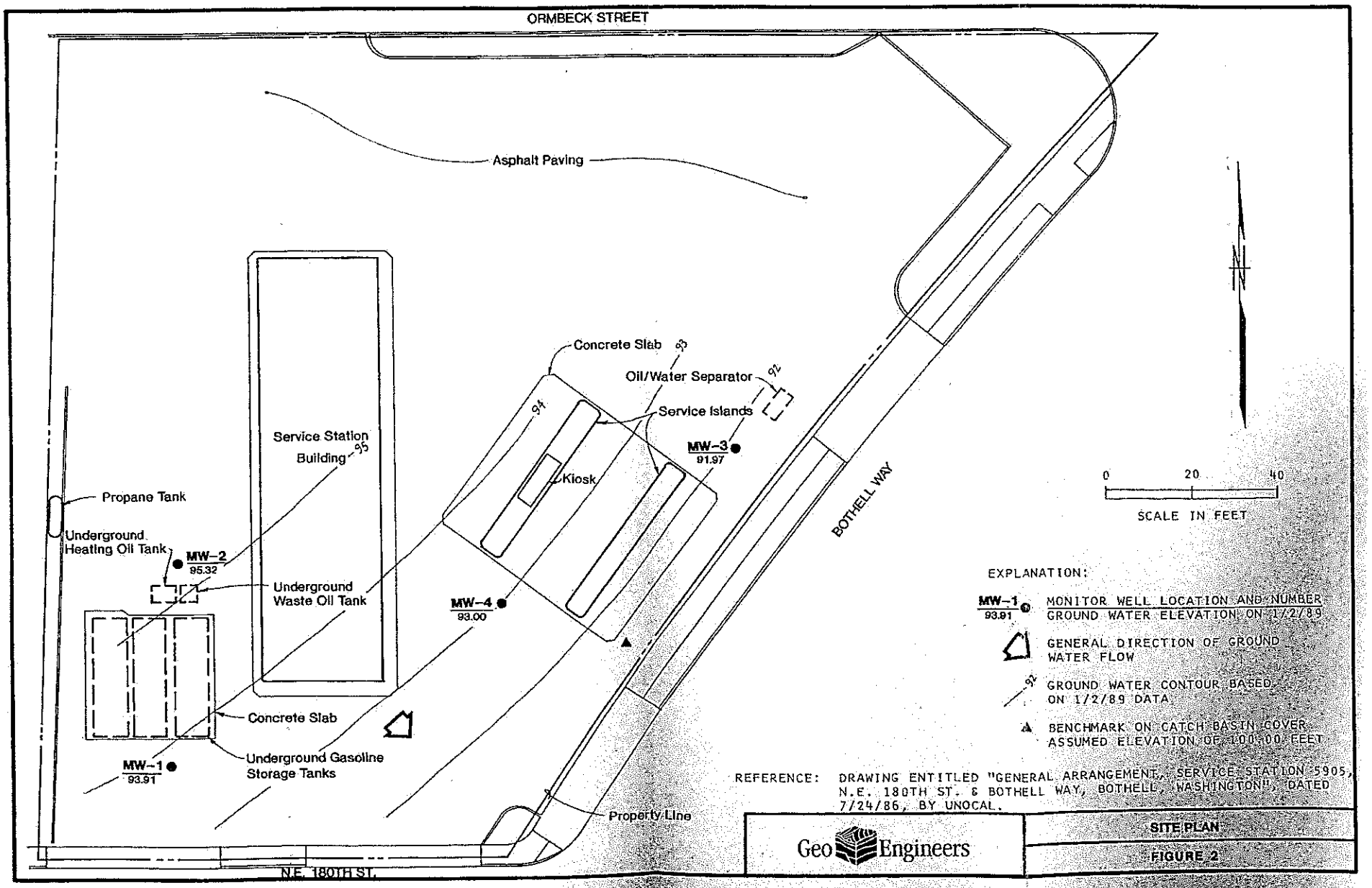
mg/kg = milligrams per kilogram

ND = not detected. See laboratory reports for specific detection limits.

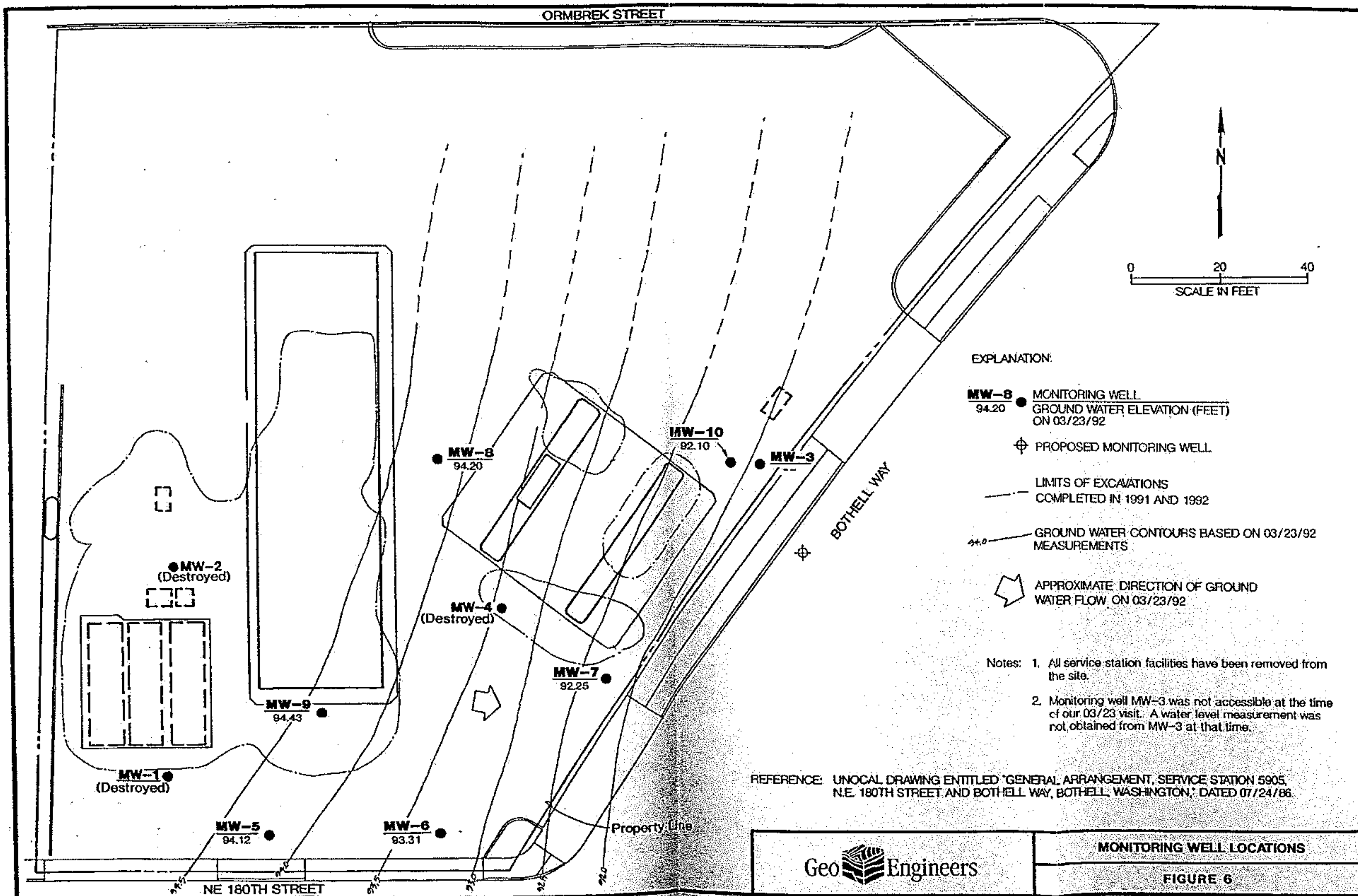
'–' = not tested

Appendix D

Groundwater Potentiometric Surface Maps – GeoEngineers 1990, 1992, 1993



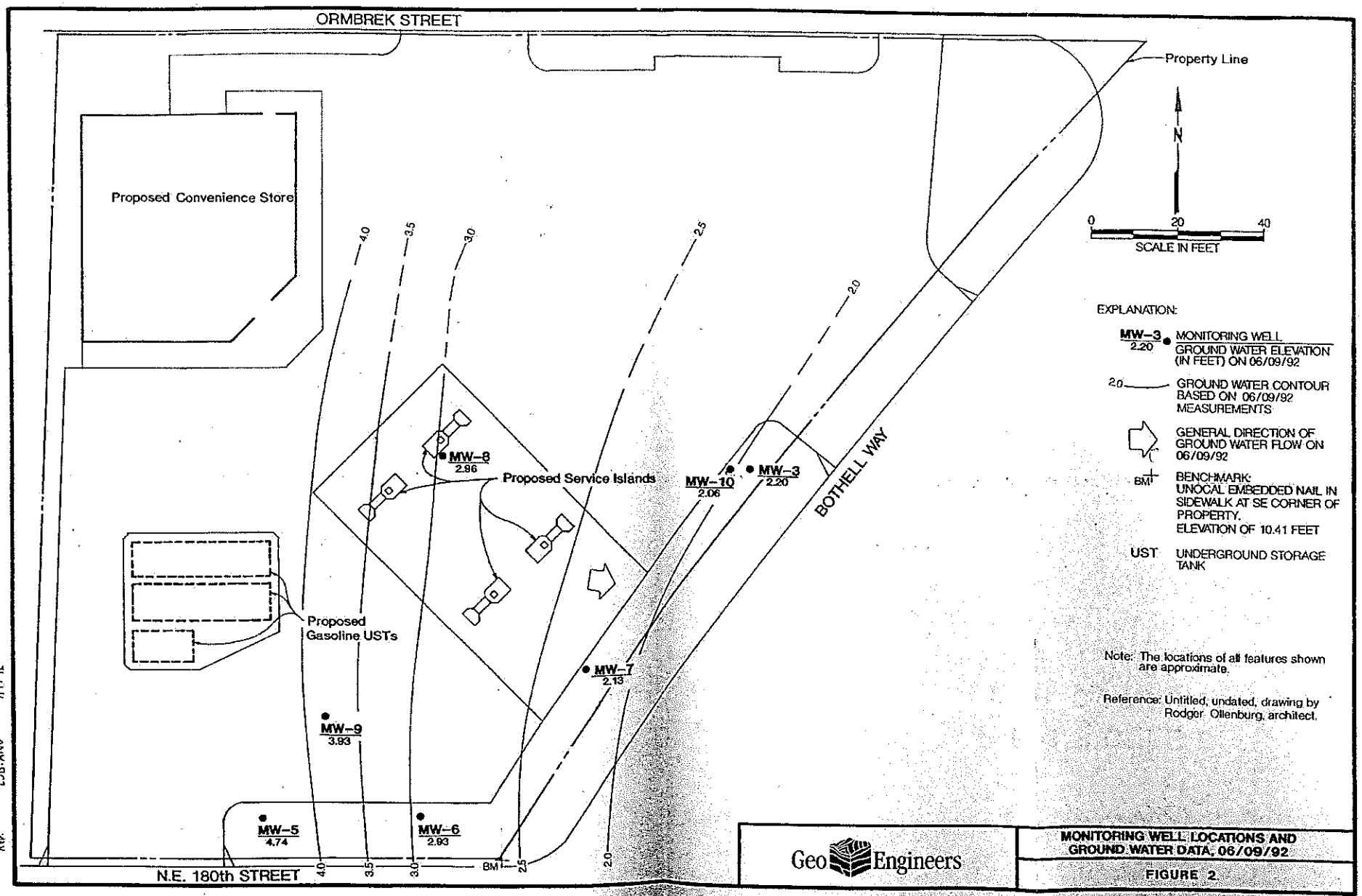
016-183-804 WSL:KKT 1-8-90



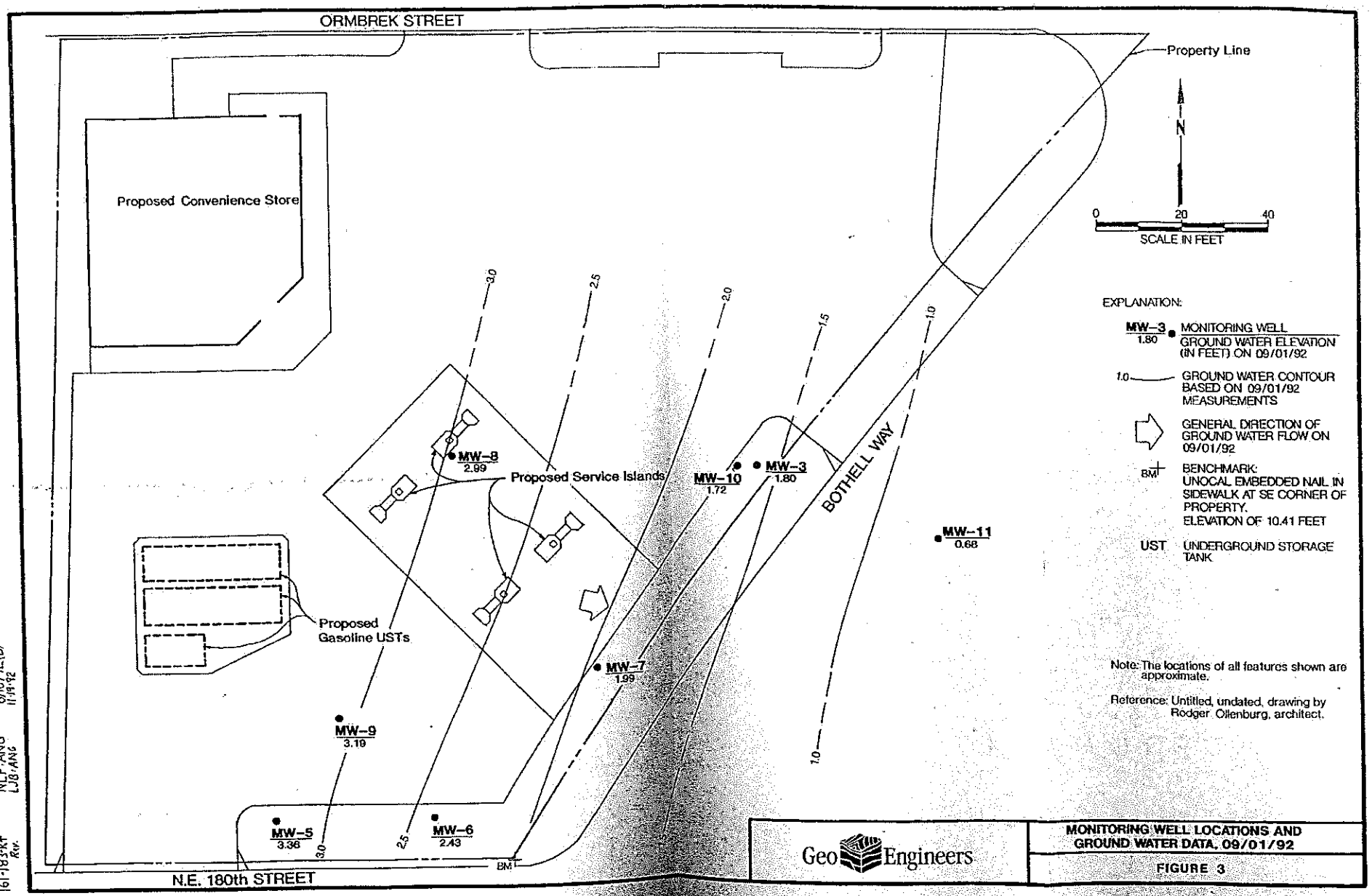
GeoEngineers

MONITORING WELL LOCATIONS

FIGURE 6



161-183-R1 Rev. NLP:ANG LJB:ANG 6/16/92 (5) 11-19-92



161-183-R4 Rev. NLP:ANG LJB:ANG 6/16/92 (B) 11/19/92