



STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

PO Box 47600 • Olympia, WA 98504-7600 • 360-407-6000

711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

October 8, 2018

Mr. Alan Blotch  
Aerotech Environmental Consulting, Inc.  
13925 Interurban Avenue South Suite 210  
Seattle, WA 98168

**Re: Opinion pursuant to WAC 173-340-515(5) on Remedial Investigation for the following Hazardous Waste Site:**

- **Name:** Unocal 5905
- **Address:** 18015 Bothell Way NE, Bothell, WA 98011
- **Facility/Site No.:** 35644949
- **VCP No.:** NW3177
- **Cleanup Site ID No.:** 8853

Dear Mr. Blotch:

Thank you for submitting documents regarding your proposed remedial action for the Unocal 5905 facility (Site) for review by the Washington State Department of Ecology (Ecology) under the Voluntary Cleanup Program (VCP). Ecology appreciates your initiative in pursuing this administrative option for cleaning up hazardous waste sites under the Model Toxics Control Act (MTCA), Chapter 70.105D RCW.

This letter constitutes an advisory opinion regarding a review of submitted documents/reports pursuant to requirements of MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the following release(s) at the Site:

- Petroleum hydrocarbons and related constituents into the Soil and Groundwater

Ecology is providing this advisory opinion under the specific authority of RCW 70.105D.030(1)(i) and WAC 173-340-515(5).

This opinion does not resolve liability to the state under MTCA or protect a person from contribution claims by third parties for matters addressed by the opinion. The state does not have the authority to settle with any person potentially liable under MTCA except in accordance with RCW 70.105D.040(4). The opinion is advisory only and not binding on Ecology.

Ecology's Toxics Cleanup Program has reviewed the following information regarding your proposed remedial action(s):

1. Aerotech Environmental Consulting, Inc. (Aerotech), *Remedial Investigation*. October 30, 2017.
2. Aerotech, *Phase I Environmental Site Assessment*. March 4, 2017.
3. Aerotech, *Phase II – Groundwater Sampling*. February 21, 2017.
4. GeoEngineers, *Results of Ground Water Sampling December 1994*. January 19, 1996.
5. GeoEngineers, *Results of Ground Water Sampling January and March 1994*. May 12, 1994.
6. GeoEngineers, *Results of Ground Water Sampling April 1994*. May 17, 1994.
7. GeoEngineers, *Results of Ground Water Sampling June and September 1994*. November 18, 1994.
8. GeoEngineers, *Progress Report No.2 Quarterly Ground Water Monitoring and Supplemental Subsurface Investigation Former Unocal Service Station 5905 Bothell, Washington*. January, 1993.
9. GeoEngineers, *Progress Report No.1 Quarterly Ground Water Monitoring and Supplemental Subsurface Investigation Former Unocal Service Station 5905 Bothell, Washington*. January, 1993.
10. GeoEngineers, *Report of Geoenvironmental Services Supplemental Subsurface Investigation and Remedial Excavation Monitoring Activities*. March 30, 1993.
11. GeoEngineers, *Results of Ground Water Sampling June and September 1993*. December 8, 1993.
12. GeoEngineers, *Report of Geoenvironmental Services Underground Storage Tank Removal and Remedial Excavation Activities*. May 15, 1992.
13. GeoEngineers, *Project Status: Underground Storage Tank Removal*. June 12, 1991.
14. GeoEngineers, *Report of Geotechnical Services Subsurface Contamination Study*. January 24, 1990.

These documents are kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. You can make an appointment by calling the NWRO resource contact at 425.649.7235 or sending an email to [nwro\\_public\\_request@ecy.wa.gov](mailto:nwro_public_request@ecy.wa.gov).

This opinion is void if any of the information contained in those documents is materially false or misleading.

The Site is located in Bothell, Washington (Figure 1), and is more particularly described in **Enclosure A** to this letter, which also includes detailed Site diagrams. The description of the Site is based solely on the information contained in the documents listed above.

## 1. Characterization of the Site

### Historical Cleanup Activities

- In 1989, four soil borings were advanced and developed to monitoring wells (MW-1 through MW4; Figure 2). A sample from each boring was analyzed for Total Petroleum Hydrocarbons (TPH) by EPA method 418.1 and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) by EPA method 8020. TPH was detected in a sample at a depth of 3 ft below ground surface (bgs) from MW-3, while TPH and BTEX were not detected in the remainder of the soil samples. Elevated levels of benzene were found in groundwater samples collected from MW1 and MW3 between 1989 and 1991.
- Three gasoline USTs, one heating oil UST, and a waste oil UST were removed from a single excavation between May 8 and May 10, 1991, which is referred to as the main excavation. Soil samples (G1 through G14, O1&O2, and HW1 through HW4) were collected from the limits of the excavation (Figure 3). Analytical results indicated a zone of petroleum-contaminated soil (PCS) was present in the east wall and the eastern portion at the north wall, extending underneath the former service building.
- Between September 1991 and October 1991, the service building was completely demolished to allow the main excavation extend eastward. Soil samples were obtained from the limits of the excavation and in the vicinity of former hydraulic hoists and sump and analyzed for contaminants of potential concern (COPCs). The PCS appeared to be sufficiently removed.
- An undocumented UST was uncovered in October 1991, as the main excavation extended to remove the remaining contamination along the north wall. The excavation for the undocumented UST extended downward and laterally until field screening results did not indicate the presence of PCS in the limits of the excavation. Soil samples collected from the final excavation limits indicated the removal of PCS is complete.
- In May 1991, during the product line removal, field screening and analytical results indicated PCS was not present around the product line except beneath product dispensers located within the former service island.
- The PCS near the former service island was excavated between September 1991 and February 1992. Soil samples were obtained from the limits and analyzed for gasoline range organics (GRO), diesel range organics (DRO), and BTEX. Excavations were extended laterally and vertically if field screening or analytical results showed exceedances. Concentrations of GRO and BTEX exceeding cleanup levels were left at FIE7, at the northeast corner, due to the close proximity to the sidewalk (Figure 3).
- An area with PCS was discovered in the northern portion of the Site, and confirmed by Test pit T1-92 (Figure 4). In December 1992, an excavation of PCS was conducted in the area, and completed at a depth of 9 ft bgs. Seven soil samples were collected from the final excavation limits and analyzed for DRO and heavy oils (HO). A sample was also analyzed for volatile organic compounds (VOCs). DRO and HO were both under their detection limits.

- In 1992 six monitoring wells (MW5 through MW11) were installed and sampled to evaluate the post-excavation site conditions (Figure 2). Groundwater samples collected from MW5, MW9, MW10, and MW11 contained TPHs, BTEX, and/or lead (unfiltered) above their MTCA Method A Groundwater Cleanup Levels (CULs). Monitoring wells MW6, MW7, and MW8 contained lead above the CUL only in April 1992.

### **Recent Remedial Investigation**

- Aerotech sampled the three remaining monitoring wells, including MW5, MW9, and MW10, for three quarters in 2017. The groundwater samples were analyzed for TPHs, BTEX, lead, etc., but none was determined above the CUL. MW10 is located to the east of FIE7, which is the currently determined as downgradient area.

Based on a review of supporting documentation, pursuant to requirements contained in MTCA and its implementing regulations, Chapter 70.105D RCW and Chapter 173-340 WAC, for characterizing and addressing the above release(s) at the Site, Ecology has determined:

**The characterization of the extent of the historical petroleum related releases is not sufficient.** During the historical excavation activities, a sufficient number of conformational soil samples were collected at the limits of excavations. At the locations where exceedances were present, excavations extended downward and laterally until clean boundaries were achieved, with only one exception due to its close proximity to the property boundary. For the purpose of establishing cleanup standards and selecting a cleanup action, further delineation is needed to understand the current conditions (i.e., extent and concentration) of the residual soil contamination and potential impacts to the downgradient.

Ecology also has the following comments:

1. Ecology concurs additional soil samples are needed in the area, represented by soil sample FIE7 (Figure 3), to assess the current conditions of the remaining PCS. Please refer to the sampling analysis protocol described in Tables 7.2 & 7.3, pages 104-106 of the *Guidance for Remediation of Petroleum Contaminated Sites*<sup>1</sup> and Table 830-1, pages 251-252 of the *Model Toxics Control Act Regulation and Statute*<sup>2</sup>.
2. If field screening indicates presence of PCS in a soil boring, also collect a groundwater sample from the same location and analyze for COPCs.
3. If additional data show that concentrations of COPCs exceeding their CULs are still present in the FIE7 area, delineate the lateral and vertical extent of PCS, and potentially groundwater. As such, subsequent submittal of the proposed investigation locations to Ecology is encouraged prior to commencing field activities.

---

<sup>1</sup> <https://fortress.wa.gov/ecy/publications/documents/1009057.pdf>

<sup>2</sup> <https://fortress.wa.gov/ecy/publications/documents/9406.pdf>

4. Ecology concurs it would be prudent to assess the soil-vapor pathway when the additional data are available. Please reference the current EPA and Ecology reference documentation pertaining to this pathway<sup>3</sup>.
5. As the current conditions of the remaining contamination is unknown, establishment of cleanup standards is premature at this time. Evaluate cleanup standards upon obtaining additional information.
6. Please also revise, as necessary, the terrestrial ecological evaluation form when additional data are available. The Site may meet criteria for determining that no further evaluation is required (WAC 173-340-7491).
7. Please consider MTCA model remedies<sup>4</sup> when the site characterization is completed, as appropriate.
8. In accordance with WAC 173-340-840(5) and Ecology Toxics Cleanup Program Policy 840 (Data Submittal Requirements), data generated for Independent Remedial Actions shall be submitted simultaneously in both a written and electronic format. For additional information regarding electronic format requirements, see the website <http://www.ecy.wa.gov/eim>. Be advised that according to the policy, any reports containing sampling data that are submitted for Ecology review are considered incomplete until the electronic data has been entered. Please ensure that data generated during on-site activities is submitted pursuant to this policy. Data must be submitted to Ecology in this format for Ecology to issue a No Further Action determination. Please be sure to submit all soil and groundwater data collected to date, as well as any future data, in this format. Data collected prior to August 2005 (effective date of this policy) is not required to be submitted; however, you are encouraged to do so if it is available. Be advised that Ecology requires up to two weeks to process the data once it is received.

**This opinion does not represent a determination by Ecology that a proposed remedial action will be sufficient to characterize and address the specified contamination at the Site or that no further remedial action will be required at the Site upon completion of the proposed remedial action.** To obtain either of these opinions, you must submit appropriate documentation to Ecology and request such an opinion under the VCP. **This letter also does not provide an opinion regarding the sufficiency of any other remedial action proposed for or conducted at the Site.**

Please note that this opinion is based solely on the information contained in the documents listed above. Therefore, if any of the information contained in those documents is materially false or misleading, then this opinion will automatically be rendered null and void.

---

<sup>3</sup> <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Vapor-intrusion-overview>

<sup>4</sup> <https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/MTCA-model-remedies>

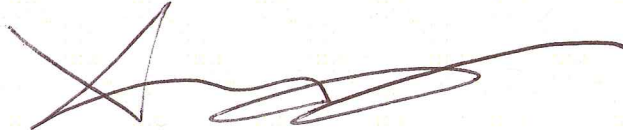
Alan Blotch  
October 8, 2018  
Page 6

The state, Ecology, and its officers and employees make no guarantees or assurances by providing this opinion, and no cause of action against the state, Ecology, its officers or employees may arise from any act or omission in providing this opinion.

Again, Ecology appreciates your initiative in conducting independent remedial action and requesting technical consultation under the VCP. As the cleanup of the Site progresses, you may request additional consultative services under the VCP, including assistance in identifying applicable regulatory requirements and opinions regarding whether remedial actions proposed for or conducted at the Site meet those requirements.

If you have any questions regarding this opinion, please contact me at (360) 407.7239 or [same461@ecy.wa.gov](mailto:same461@ecy.wa.gov).

Sincerely,

A handwritten signature in dark ink, appearing to read 'Sam Meng', with a long horizontal flourish extending to the right.

Sam Meng, PhD, EIT  
Site Manager  
Toxics Cleanup Program

SM:AF

Enclosures: (1) A – Description and Diagrams of the Site

cc: Sonia Fernandez, Ecology  
Sandra Caldwell, Ecology

# Site Description

## **Site Location:**

The Site is located at 18015 Bothell Way Northeast, Bothell, and is currently comprised of a single King County Parcel (no. 072605-9114), totaling 0.73-acre (Figure 1). The Site is within an area zoned as general commercial (GC) according to the City of Bothell Zoning Map (City of Bothell, January 2017). It is developed with a 2,488-square foot masonry building originally constructed in 1993.

## **Property Historical and Current Use:**

The Site was occupied by Unocal Service Station #5905 from 1967 to 1993. During 1991 and 1993, the Unocal facilities were demolished including: a service station with five service bays, three 10,000-gallon USTs, one 550-gallon underground heating oil tank, one underground waste oil tank and aboveground propane tank with two covered fuel dispenser islands with a kiosk. Petroleum-impacted soil and groundwater were discovered during the demolition. A series of excavation activities were conducted to remove the PCS.

From 1993 until 2013, the Site was operated as Chevron Extra Mile & Car Wash. The Site has operated as a 76-branded gas station and car wash since 2013. The current Site facilities include: a convenience store, a car wash, two fuel islands, a 12,000-gallon and two 8,000-gallon unleaded gasoline USTs, a 6,000-gallon diesel UST, and associated fuel conveyance system piping (Figure 2).

There is currently no planned redevelopment for the Site.

## **Surface/Storm Water System:**

No surface water features are located on the Site. The Sammamish River is located approximately 550-foot southeast of the Site.

The Site stormwater surface runoff is collected via a catch basin in front of the convenience store and catch basins along the southeast edge of the property. The catch basins collect and drain the stormwater in a 6-inch PVC pipe that flows to a 30-inch and then 70-inch corrugated metal pipe. The stormwater eventually discharges at an outfall in the Sammamish River.

## **Soils and Geology:**

The Site is located within the northern portion of the Puget Sound Lowland physiographic province. The Puget Sound Lowland is a north-south trending through between the Olympia Mountains to the west and the Cascade Mountains to the east. The primary geological units in the island are glacial sediments since the Puget Lowland was glaciated several times in the Pleistocene by ice originating in the mountains of British Columbia. The predominant sandy silty soils were encountered from the surface to approximately 19 feet below ground surface (bgs) in previous investigations by GeoEngineers, which is consistent with those commonly observed in Quaternary Vashon Glacial Till.

**Groundwater:**

The Site groundwater occurs in the shallow saturated zone comprised of silt, sandy silt, sand and gravel, and is present under unconfined conditions. The water table was encountered between approximately 7 to 10 feet bgs. The predominant groundwater flow direction is currently determined as southeast and toward the Sammamish River, which is consistently with the historical trend at the Site.



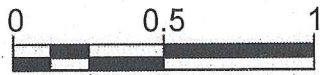
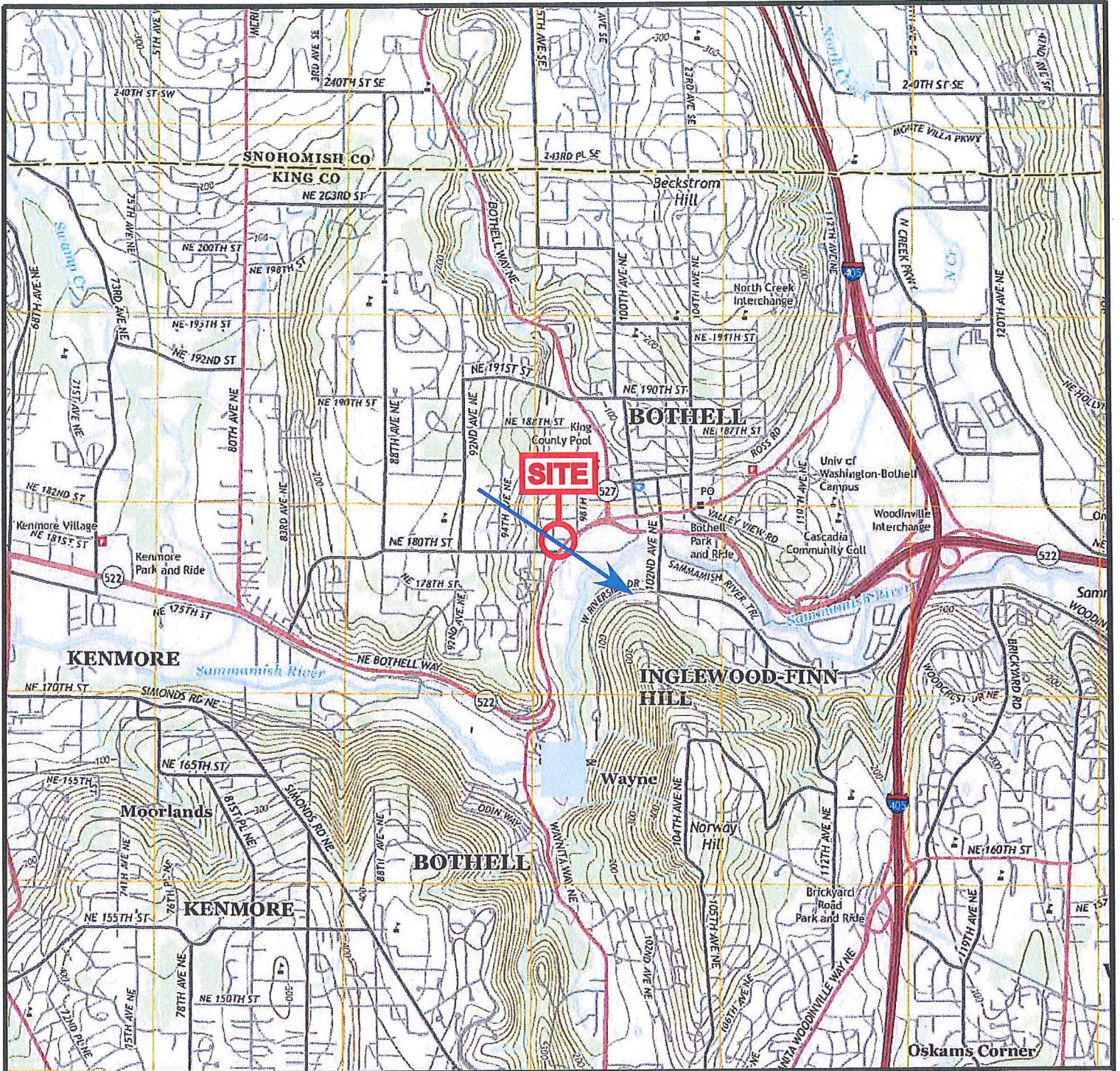
## **Site Diagrams**



## **Enclosure A**

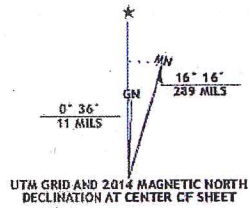
### **Description and Diagrams of Site**





SCALE (mile)

CONTOUR INTERVAL 20 FEET  
NORTH AMERICAN VERTICAL DATUM OF 1988



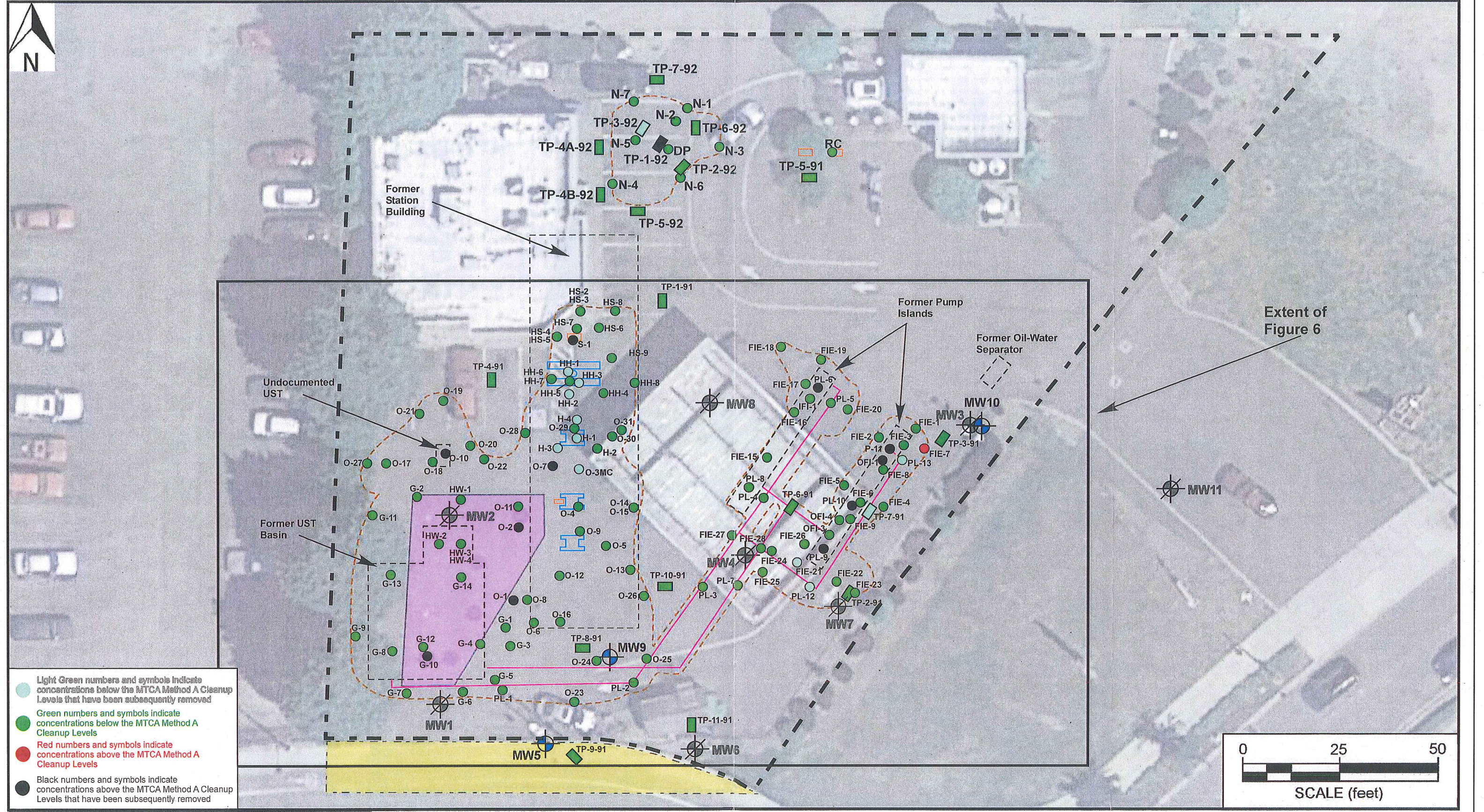
UTM GRID AND 2014 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET



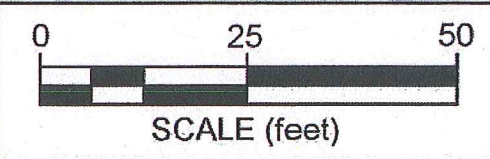
DIAGRAM'S LOCATION

Calculated Groundwater Flow Direction





Extent of Figure 6



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

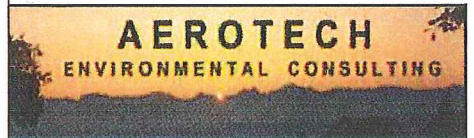
EXPLANATION	
	Groundwater Monitoring Well
	Destroyed Groundwater Monitoring Well
	Soil Sample Location
	Test Pit Location
	Former Hoist Location
	1st Generation Fuel Lines
	Sump
	Extent of Excavation
	1st Generation Service Station Features
	Property Boundary
	Parcel Purchased by City of Bothell in 2013

## SITE PLAN

### WITH CUMULATIVE SOIL DATA

Bothell 76  
18015 Bothell Way Northeast  
Bothell, Washington

Date: 10/19/17  
By: Nick Gerkin  
Figure: 4

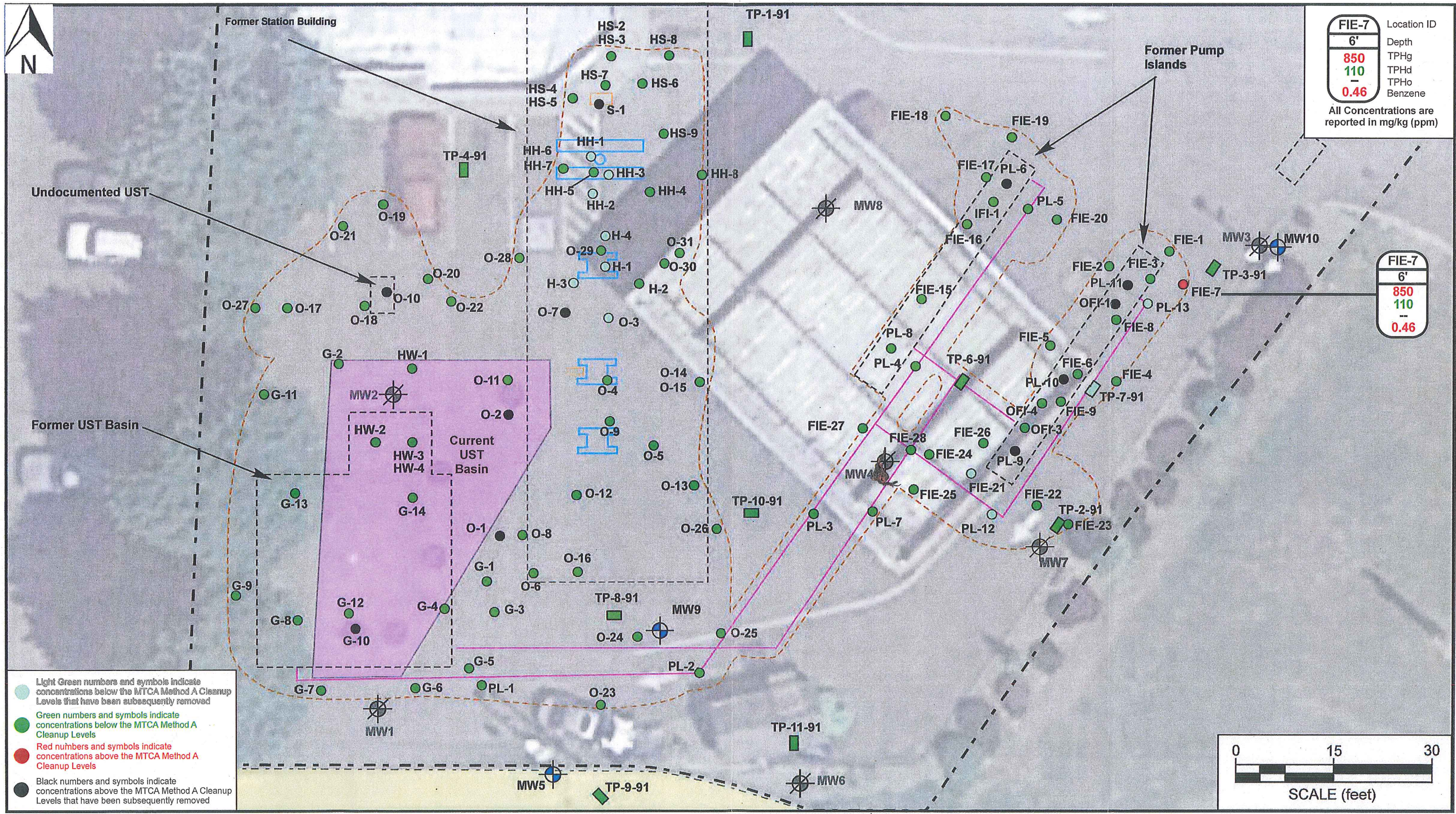




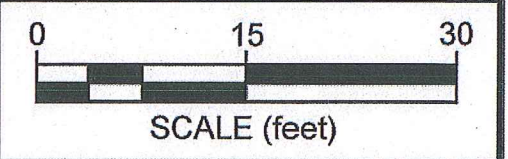
<b>FIE-7</b>	Location ID
6'	Depth
850	TPHg
110	TPHd
—	TPHo
0.46	Benzene

All Concentrations are reported in mg/kg (ppm)

<b>FIE-7</b>	Location ID
6'	Depth
850	TPHg
110	TPHd
—	TPHo
0.46	Benzene



- 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



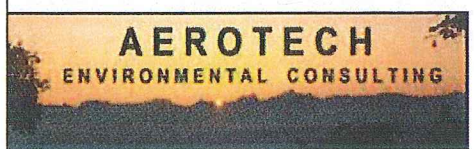
EXPLANATION	
	Groundwater Monitoring Well
	Destroyed Groundwater Monitoring Well
	Soil Sample Location
	Former Hoist Location
	1st Generation Fuel Lines
	Sump
	Test Pit Location
	Extent of Excavation
	1st Generation Service Station Features
	Property Boundary
	Parcel Purchased by City of Bothell in 2013

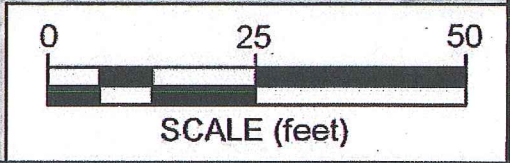
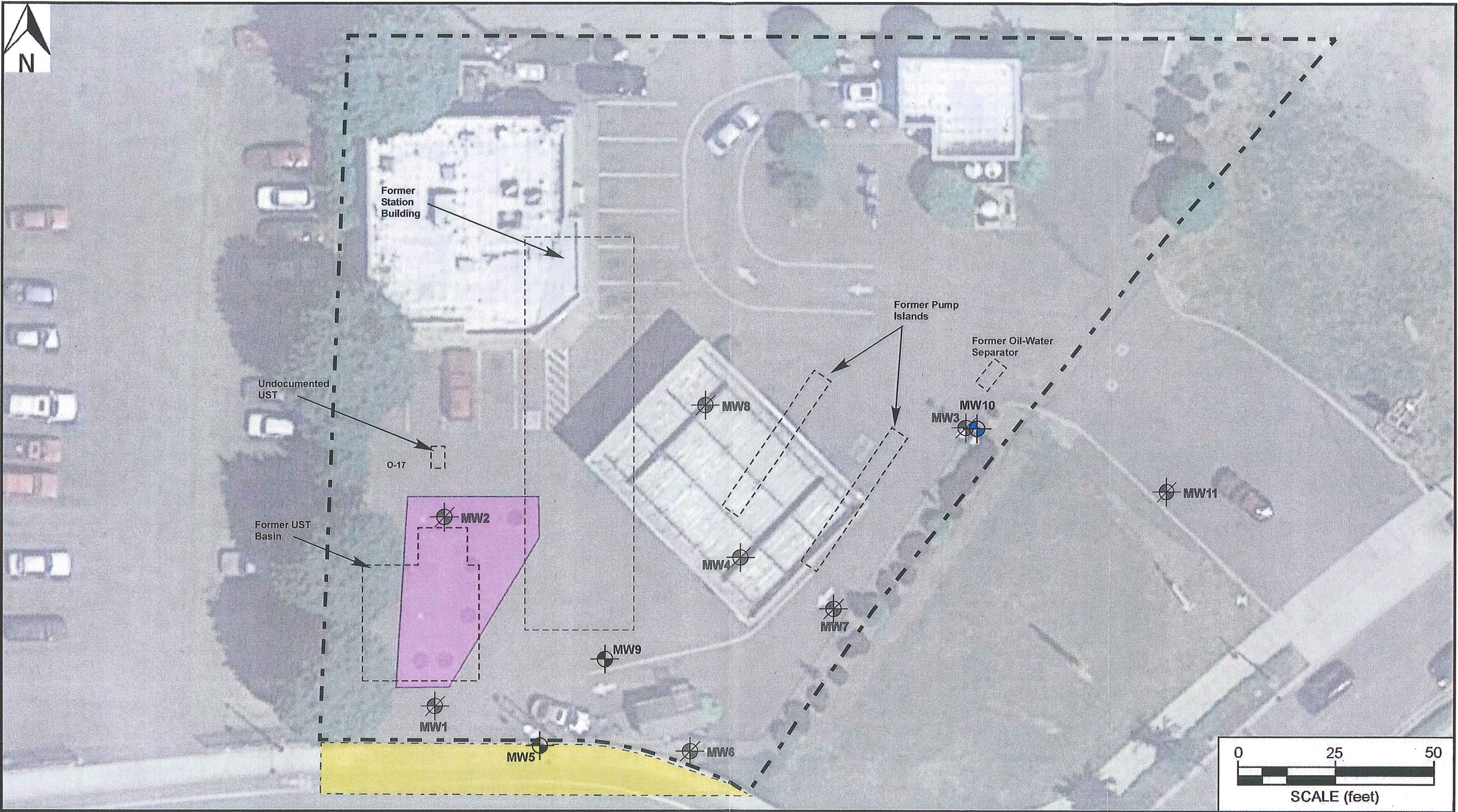
## CUMULATIVE SOIL ANALYTICAL RESULTS MAP - GAS AREA

Date: 10/19/17  
By: Nick Gerkin

Bothell 76  
18015 Bothell Way Northeast  
Bothell, Washington

Figure: 3





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

## GROUNDWATER MONITORING WELL LOCATIONS MAP

Bothell 76  
18015 Bothell Way Northeast  
Bothell, Washington

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

