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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Region Office
PO Box 330316, Shoreline, WA 98133-9716 • 206-594-0000

March 31, 2023

Audrey Bonafede
Phillips 66
3900 Kilroy Airport Way
Long Beach, CA 90806-1535
(Audrey.A.Bonafede@p66.com)

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

- **Site Name:** Circle K 1476
- **Site Address:** 12660 1st Avenue S, Burien WA 98168
- **Facility/Site No.:** 35395376
- **Cleanup Site ID No.:** 8839
- **VCP Project No.:** NW2718

Dear Audrey Bonafede:

The Washington State Department of Ecology (Ecology) received your request for an opinion on *Additional Site Characterization Report* dated December 19, 2022, at the Circle K 1476 facility (Site). This letter provides our opinion. We are providing this opinion under the authority of the Model Toxics Control Act (MTCA), Chapter 70A.305 RCW.

Issue Presented and Opinion

Does the *Additional Site Characterization Report* meet the stated objectives with respect to Site data gaps?

YES. Ecology has determined that the additional Site characterization work has resolved remedial investigation (RI) data gaps discussed in the previous VCP opinion letter dated November 17, 2020.

Description of the Site

This opinion applies only to the Site described below. The Site is defined by the nature and extent of contamination associated with the following releases:

- Gasoline-range petroleum hydrocarbons (TPH-G), benzene, toluene, ethylbenzene, and xylenes (BTEX) into the Soil and Groundwater.

Enclosure A includes a detailed description and diagrams of the Site, as currently known to Ecology.

Please note the parcel of real property associated with this Site is also located within the projected boundaries of the Tacoma Smelter Plume King County facility (Cleanup Site ID 2123). At this time, we have no information that this parcel is actually affected. This opinion does not apply to any contamination associated with the Tacoma Smelter Plume King County facility.

Please note contaminant impacts from this Site are possibly located within the projected boundaries of the UNOCAL 6382 facility (Cleanup Site ID [CSID] 8250) and the Burien City Right of Way facility (CSID 9475). At this time, we have no information that the contaminant plumes are actually commingled. This opinion does not apply to any contamination associated with the CSID 8250 or CSID 9475 facilities.

Basis for the Opinion

This opinion is based on the information contained in the documents listed in **Enclosure B**. A number of these documents are accessible in electronic form from the Site web page[1]. The complete records are kept in the Central Files of the Northwest Regional Office of Ecology (NWRO) for review by appointment only. Visit our Public Records Request page[2] to submit a public records request or get more information about the process. If you require assistance with this process, you may contact the Public Records Officer at publicrecordsofficer@ecy.wa.gov or 360-407-6040.

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

Analysis and Opinion

Based on a review of the *Additional Site Characterization Report*, Ecology has determined:

[1] https://apps.ecology.wa.gov/cleanupsearch/site/8839
[2] https://ecology.wa.gov/publicrecords

- The Additional Site Characterization Report provided the following important information to resolve data gaps identified in the prior VCP opinion letter (dated November 17, 2020):

    - Comparison of soil sample results from adjacent locations, for samples collected between 1992 and 2012, to identify concentrations that decreased below applicable cleanup levels due to prior interim actions (air sparge / soil vapor extraction system) and natural attenuation.

    - Borings SB-6 and SB-7 (drilled at the locations of former waste oil and heating oil USTs, respectively) yielded soil sample results below Method A cleanup levels for parameters required by MTCA Table 830-1).

    - Monitoring well MW-14V provides data to confirm the vertical extent of groundwater impacts at the Site.

- Ecology concurs that the horizontal and vertical extents of Site soil and groundwater above Method A cleanup levels have been sufficiently delineated, such that the Site RI completed to date is sufficient to support an updated assessment of cleanup action alternatives for the Site.

Limitations of the Opinion

1. Opinion does not settle liability with the state.

Liable persons are strictly liable, jointly and severally, for all remedial action costs and for all natural resource damages resulting from the release or releases of hazardous substances at the Site. This opinion **does not**:

- Resolve or alter a person's liability to the state.
- Protect liable persons from contribution claims by third parties.

To settle liability with the state and obtain protection from contribution claims, a person must enter into a consent decree with Ecology under RCW 70A.305.040(4).

2. Opinion does not constitute a determination of substantial equivalence.

To recover remedial action costs from other liable persons under MTCA, one must demonstrate that the action is the substantial equivalent of an Ecology-conducted or Ecology-supervised action. This opinion does not determine whether the action you performed is substantially equivalent. Courts make that determination. *See* RCW 70A.305.080 and WAC 173-340-545.

3. State is immune from liability.

The state, Ecology, and its officers and employees are immune from all liability, and no cause of action of any nature may arise from any act or omission in providing this opinion. *See* RCW 70A.305.170(6).

Contact Information

Thank you for choosing to clean up the Site under the Voluntary Cleanup Program (VCP). After you have addressed our concerns, you may request another review of your cleanup. Please do not hesitate to request additional services as your cleanup progresses. We look forward to working with you.

For more information about the VCP and the cleanup process, please visit our web site: www.ecy.wa.gov/vcp. If you have any questions about this opinion, please contact me by phone at 425-324-1892 or e-mail at michael.warfel@ecy.wa.gov.

Sincerely,

Michael R. Warfel
VCP Site Manager
Toxics Cleanup Program, NWRO

Enclosures (2): A – Description and Diagrams of the Site
B – Basis for the Opinion: List of Documents

cc: Juns Investment, Inc., Property Owner (gamga25@hotmail.com)
Elisabeth Silver, ATC (Elisabeth.Silver@oneatlas.com)
Sonia Fernandez, VCP Coordinator, Ecology (sonia.fernandez@ecy.wa.gov)

Enclosure A

Description and Diagrams of the Site

Site Description

This section provides Ecology's understanding and interpretation of Site conditions, and is the basis for the opinions expressed in the body of the letter.

Site: The Site is defined by the release of total petroleum hydrocarbons in the gasoline range (TPH-G), and benzene, toluene, ethylbenzene, and xylenes (BTEX) to soil and groundwater, associated with the operation of a gasoline service station. The Site is located at 12660 First Avenue South in Burien, Washington (Property.

Area and Property Description: The Property corresponds to King County parcel number 144680-0380 which is 0.47 acres in size. The Property is occupied by a one-story building built in 1965. The Property is located in the northeast corner of the intersection of 1st Avenue S and S 128th St, (**Figure 1**). Adjacent properties include a Mobile-branded gasoline station to the west (Underground Storage Tank [UST] ID 604839), residences to the east, and commercial businesses to the north, west, and south (**Figure 2**).

Property History and Current Use: The Property is currently occupied by an active service station with a convenience store (Burien 76, UST ID 5748). Service station operations have been active on the property since 1965. The present service station includes three USTs containing unleaded gasoline (one 12,000-gallon and two 10,000-gallon), and two fuel dispenser islands, each covered by a canopy (**Figure 3**). The remainder of the Property is covered by asphalt or concrete, with small landscaped areas on the northern and eastern boundaries.

Contaminant Source and History: Three first-generation USTs were reportedly installed on the Property in December 1964 and January 1965 (500-gallon waste oil, 6,000-gallon leaded gasoline, and 8,000-gallon unleaded gasoline USTs); see **Figure 3**. Another 6,000-gallon unleaded UST was installed in January 1976. These gasoline USTs were removed in 1992 during fueling facility upgrades, when the existing gasoline USTs were installed. The waste-oil UST was removed in 1995, along with a 500-gallon heating oil UST that was discovered during the removal work.

A leaking UST (LUST) release was discovered at the Site during UST removal work in 1992 and reported to Ecology on January 29, 1992.

Physiographic Setting: The Site is situated at an elevation of approximately 415 feet above mean sea level (amsl). Land surface slopes to the southeast from the Site. The Site is located in the Puget Sound Lowland Physiographic Province, a north-south trending structural and topographic depression bordered to the west by the Olympic Mountains and to the east by the Cascade Mountains. The Des Moines Upland upon which the Site is located is elevated above Puget Sound to the west and the Duwamish/Green River Valley to the east.

Surface/Storm Water System: The closest surface water bodies to the Site are tributaries of Miller Creek, which are located 1,300 feet south and 1,400 feet northeast of the Site. Runoff from the paved areas of the Site is collected in storm drains located at the intersection of 1st Avenue S and SW 128th Street. An unpaved grassed area is located in the northeast corner of the Property, behind the convenience store building.

Ecological Setting: The Property is located in an urban area primarily covered with asphalt, concrete, and buildings with minor grassy areas. The southeast corner of Puget Sound Park, located approximately 350 feet northwest of the Site, is the closest undeveloped land. Less than 1.5 acres of the Park are located within 500 feet of the Site. The *Remedial Investigation Report* dated 8/19/2020 included a Terrestrial Ecological Evaluation (TEE) that documented an exclusion from further evaluation.

Geology: Completion of deep monitoring well MW-14V in May 2022 indicates that the Site is underlain by approximately 120 feet of dense fine- to medium-grained silty sand with varying amounts of gravel (Vashon till), overlying less-dense coarse-grained sand and gravel (Vashon advance outwash), as illustrated on **Figure 4**). This data is consistent with regional stratigraphy described by the USGS (1995).

Groundwater: The uppermost zone of saturation beneath the Site occurs in the till at depths ranging from 20 to 50 feet bgs. Groundwater levels measured in monitoring wells screened at successively increasing depths in the till confirm a strong downward vertical groundwater flow gradient, which is common in glacial plains like the Des Moines Upland. The flow direction in this shallow zone from recent data is generally to the northwest (**Figure 5**); however, historical monitoring data have shown flow to the west and southwest. Vertical gradients can affect apparent flow directions when monitoring wells screened at different vertical intervals are used to construct groundwater elevation contour maps.

Groundwater levels observed in monitoring wells completed in deeper permeable zones of the glacial till (at depths of 60 to 80 feet bgs) show a flow direction to the east (**Figure 6**). This lower zone flow direction is consistent with regional hydrogeologic studies that show the Site area is situated on a groundwater divide, with flow to the east towards the Duwamish Valley or to the west towards Puget Sound (USGS 1995).

Water Supply: The Property is served by King County Water District 20 which obtains water from the Seattle Public Utilities Cedar River Pipeline. Water well records indicate that the closest water supply well to the Site is the Boulevard Park wellfield operated by the City of Seattle, located 1.2 miles east of the Site. These water supply wells are screened in pre-Vashon deposits consisting of sand, gravel, and cobbles, shown as the "Intermediate Aquifer" in **Figure 7** (NTIS, 1996).

Release and Extent of Soil and Groundwater Contamination: Characterization of soil and groundwater contamination at the Site began with the release discovery in 1992 and has continued through the present, as described by more than 90 documents (see **Enclosure B**). The following chronology summarizes the progress of the release investigations and interim actions completed at the Site:

- 1992: Petroleum hydrocarbons results showed concentrations above Method A cleanup levels in soil samples from borings B-1, B-3, and B-4, and in groundwater samples from monitoring wells GW1 and GW2 (see **Figure 3**). A free product sheen was observed in well GW2.

- 1994-1995: Additional borings and monitoring wells supported further delineation of soil and groundwater contamination. Measurements in monitoring wells GW2 and GW6 showed the presence of light non-aqueous phase liquid (LNAPL). LNAPL recovery began in GW2 and GW6.

- 1998: Operation of an air sparge/soil vapor extraction (AS/SVE) began, consisting of seven AS wells and nine combination monitoring/SVE wells. A catalytic oxidizer treated the SVE discharge. Operation of three combination monitoring/groundwater extraction wells also began, with the extracted groundwater treated by air stripping and carbon absorption, prior to discharge to an on-site infiltration trench (see **Figure 3**).

- The remediation systems operated until October 2006, when they were shut down after asymptotic performance was verified. Estimated removals were 1,550 pounds of hydrocarbons by the AS/SVE system and greater than 1 million gallons of groundwater treated by the extraction well system. LNAPL observations ceased in GW6 and GW2 after November 1995 and August 2001, respectively.

- 2012: Additional Site characterization work confirmed locations with the continued presence of soil and groundwater contaminants above Method A cleanup levels.

- 2016: Decommissioning of the AS/SVE and groundwater extraction systems was completed.

- 2018: Monitoring wells GW1 through GW6 were decommissioned, an activity that resolved the issues of long well screens extending across shallow and deep groundwater zones in GW3 through GW6. Thirteen additional monitoring wells were installed at the Site, screened in both the shallow and deep aquifers.

- 2020: Off-Property deep-aquifer monitoring well MW-9D was decommissioned. The RI Report was prepared by ATC and submitted to Ecology.

- 2022: Additional Site characterization was completed to resolve RI data gaps. The work included:
    - Borings near the former waste oil UST and heating oil UST (SB-6 and SB-7, respectively), to facilitate analysis of parameters specified in MTCA Table 830-1.
    - Installation of replacement shallow and deep monitoring wells GWR-18S and GWR-18D.
    - Installation of monitoring well GW-14V, to determine the vertical extent of groundwater contamination at the Site.
    - Collection and analysis of soil and groundwater samples.
- 2018-2022: Continued quarterly groundwater monitoring at the Site.

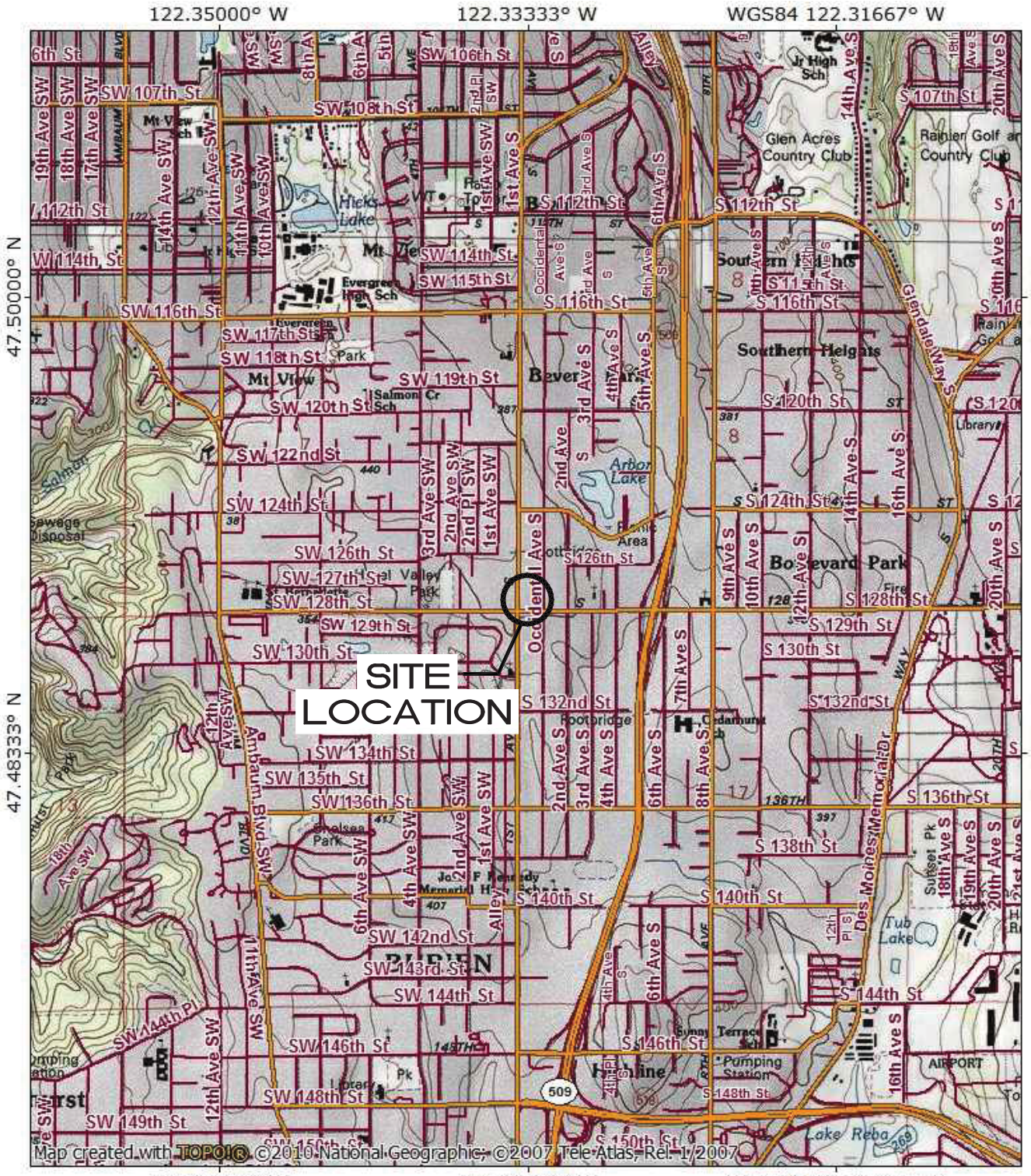
Soil and groundwater concentrations at the Site are shown on **Figures 8 and 9**, respectively.

References

U.S. Geological Survey (USGS). Occurrence and Quality of Ground Water in Southwestern King County, Washington. Water-Resources Investigations Report 92-4098. 1995.

National Technical Information Service (NTIS), U.S. Department of Commerce. Highline Well Field Artificial Groundwater Recharge Demonstration Project Summary. Document PB2005-106501. June 1996.

Site Diagrams



SOURCE: USGS TOPO MAP, DES MOINES, WA QUAD, 1995

SITE VICINITY MAP

PHILLIPS 66 FACILITY NO. 2701476 (AOC #2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WA

PROJECT NUMBER: Z076000048		DATE: 4/26/16	FIGURE 1
APPROVED BY: KS		DRAWN BY: BK	

ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

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Enclosure A, Figure 1

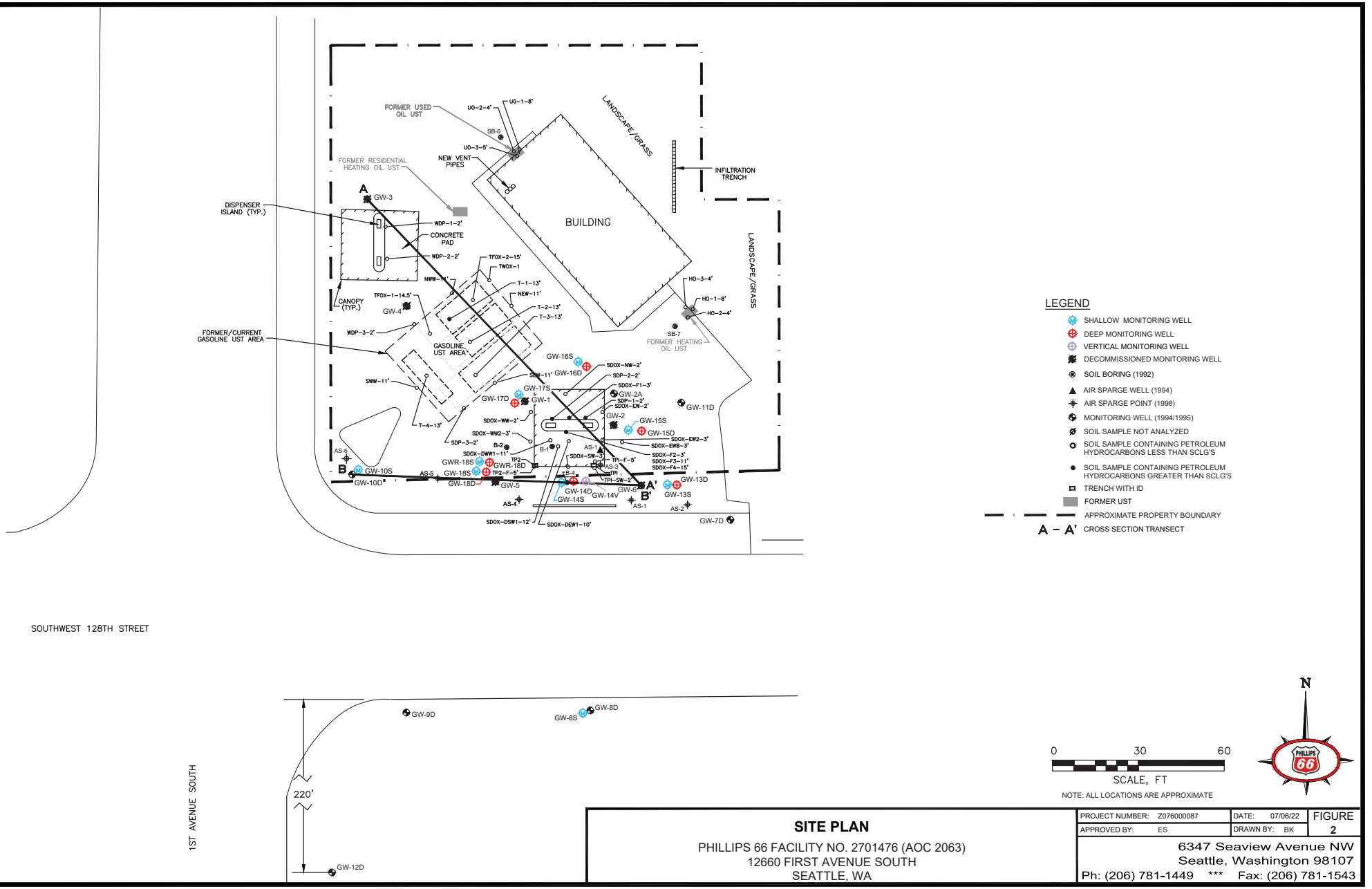
King County iMap

Enclosure A, Figure 2

N

King County

Date: 10/27/2020 Notes:



SITE PLAN

PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WA

PROJECT NUMBER: Z076000087		DATE: 07/06/22	FIGURE 2
APPROVED BY: ES		DRAWN BY: BK	

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Seattle, Washington 98107
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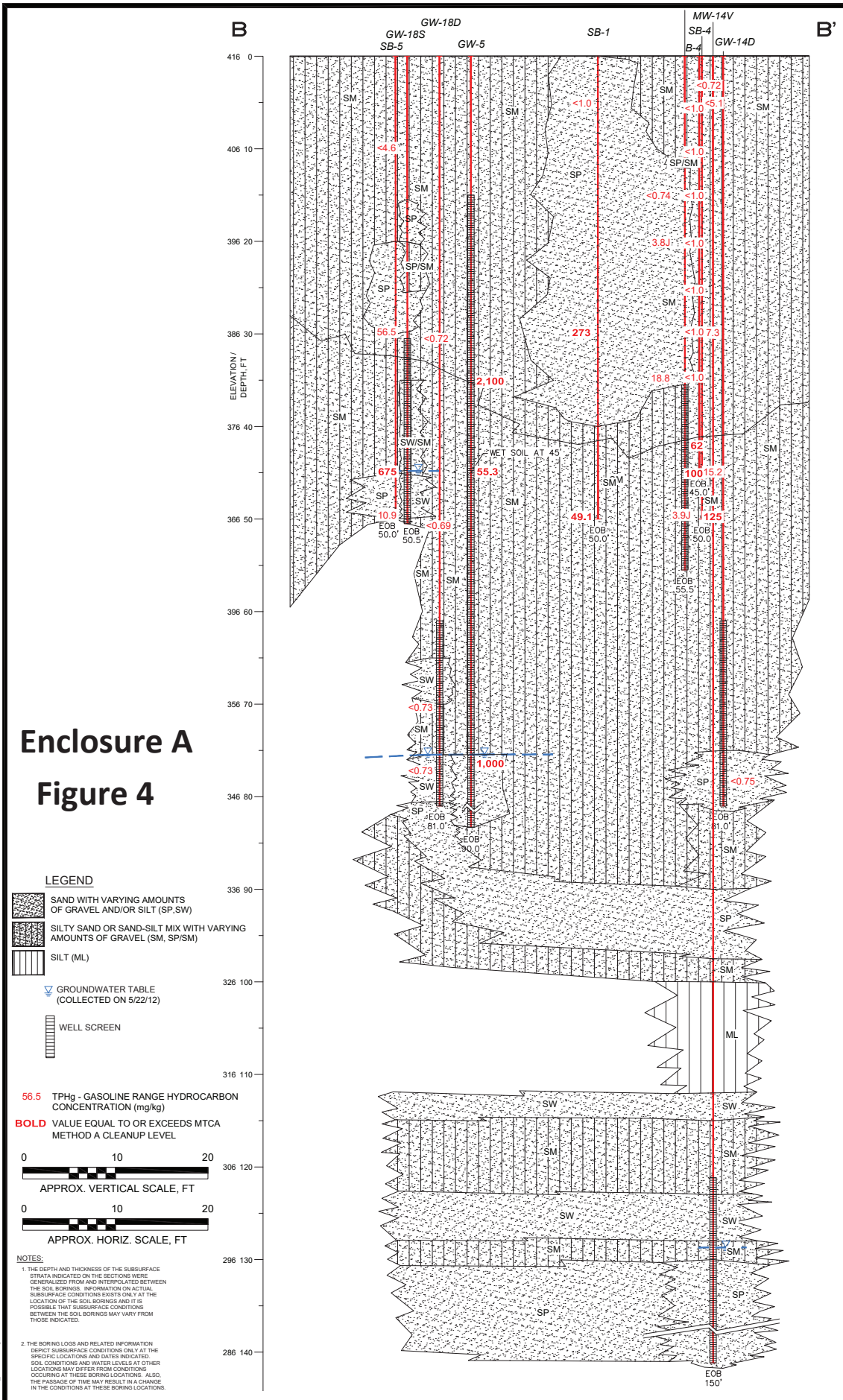
Enclosure A, Figure 3

Enclosure A

Figure 4



NOTES:

1. THE DEPTH AND THICKNESS OF THE SUBSURFACE STRATA INDICATED ON THE SECTIONS WERE GENERALIZED FROM AND INTERPOLATED BETWEEN THE SOIL BORINGS. INFORMATION ON ACTUAL SUBSURFACE CONDITIONS EXISTS ONLY AT THE LOCATION OF THE SOIL BORINGS AND IT IS POSSIBLE THAT SUBSURFACE CONDITIONS BETWEEN THE SOIL BORINGS MAY VARY FROM THOSE INDICATED.

2. THE BORING LOGS AND RELATED INFORMATION DEPICT SUBSURFACE CONDITIONS ONLY AT THE SPECIFIC LOCATIONS AND DATES INDICATED. SOIL CONDITIONS AND WATER LEVELS AT OTHER LOCATIONS MAY DIFFER FROM CONDITIONS OCCURING AT THESE BORING LOCATIONS. ALSO, THE PASSAGE OF TIME MAY RESULT IN A CHANGE IN THE CONDITIONS AT THESE BORING LOCATIONS.

CROSS SECTION B - B'

PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WA

PROJECT NUMBER: Z076000070		DATE: 10/11/22	FIGURE 7
APPROVED BY: ES		DRAWN BY: BK	

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6347 Seaview Avenue NW
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Ph: (206) 781-1449 *** Fax: (206) 781-1543

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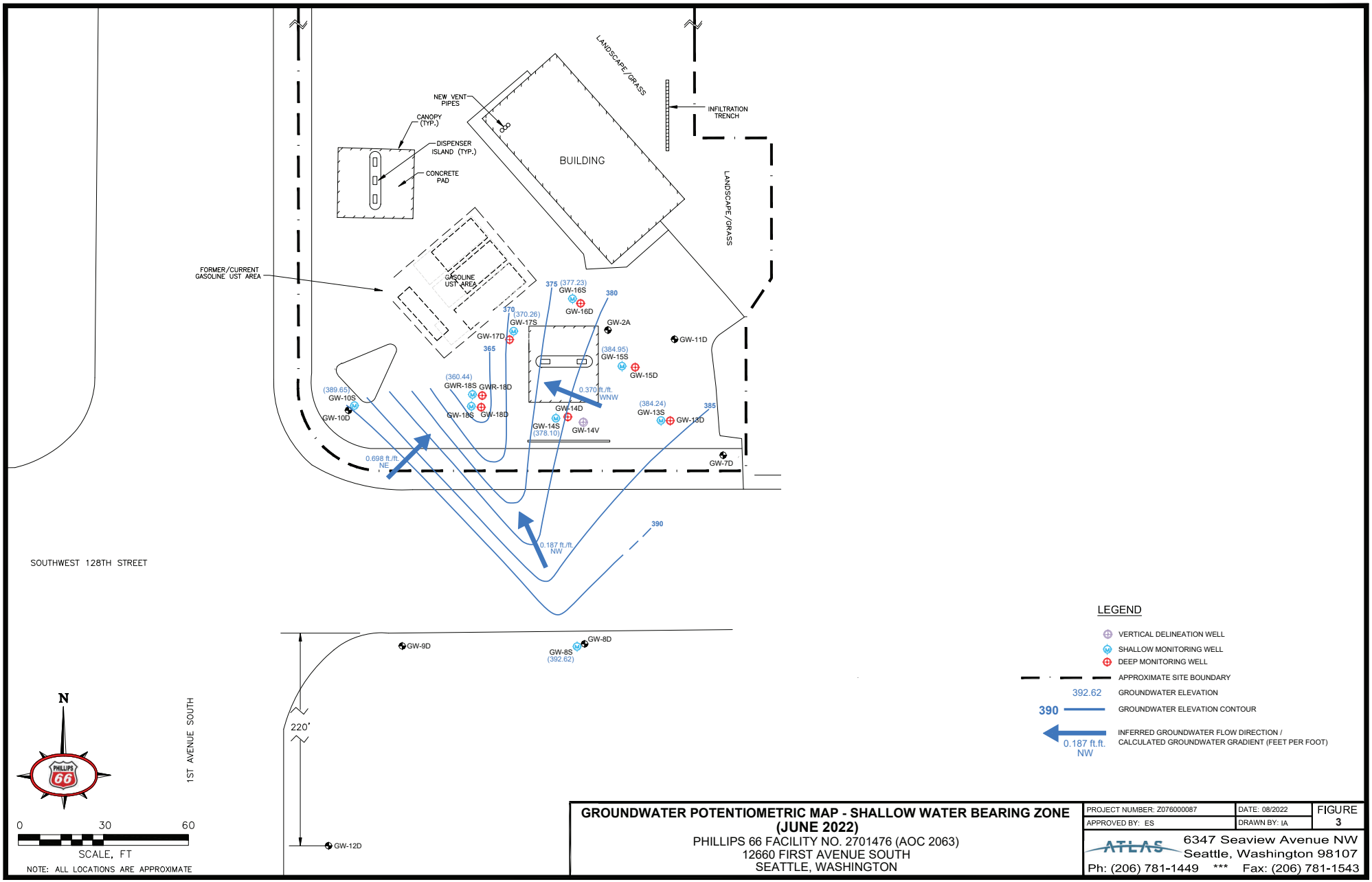
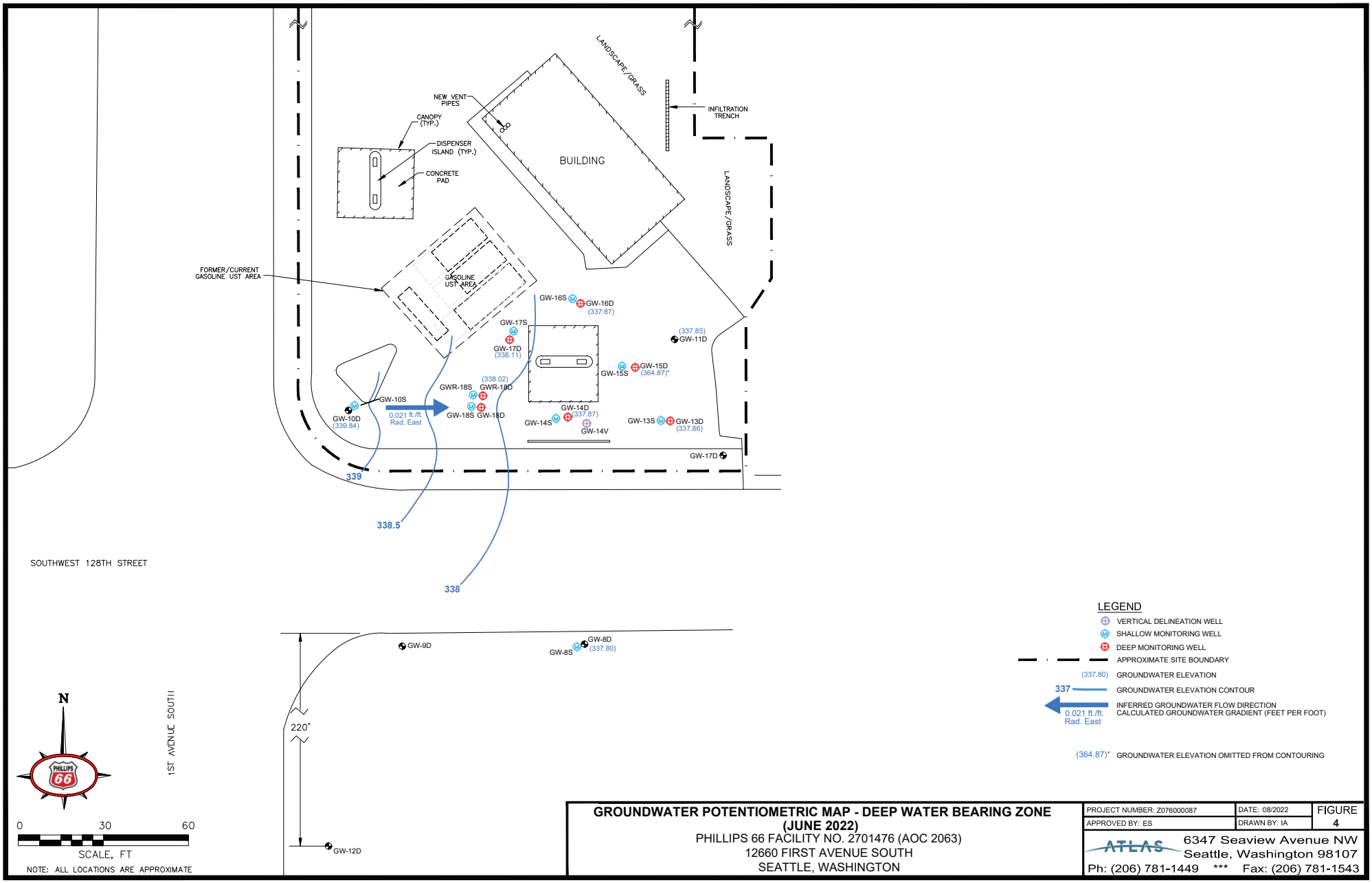


GROUNDWATER POTENTIOMETRIC MAP - SHALLOW WATER BEARING ZONE (JUNE 2022)
PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WASHINGTON

PROJECT NUMBER: Z076000087	DATE: 08/2022	FIGURE
APPROVED BY: ES	DRAWN BY: IA	3

ATLAS
6347 Seaview Avenue NW
Seattle, Washington 98107
Ph: (206) 781-1449 *** Fax: (206) 781-1543

Enclosure A, Figure 5



GROUNDWATER POTENTIOMETRIC MAP - DEEP WATER BEARING ZONE (JUNE 2022)
PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WASHINGTON

PROJECT NUMBER: Z076000087	DATE: 08/2022	FIGURE 4
APPROVED BY: ES	DRAWN BY: IA	

ATLAS
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Seattle, Washington 98107
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Enclosure A, Figure 6

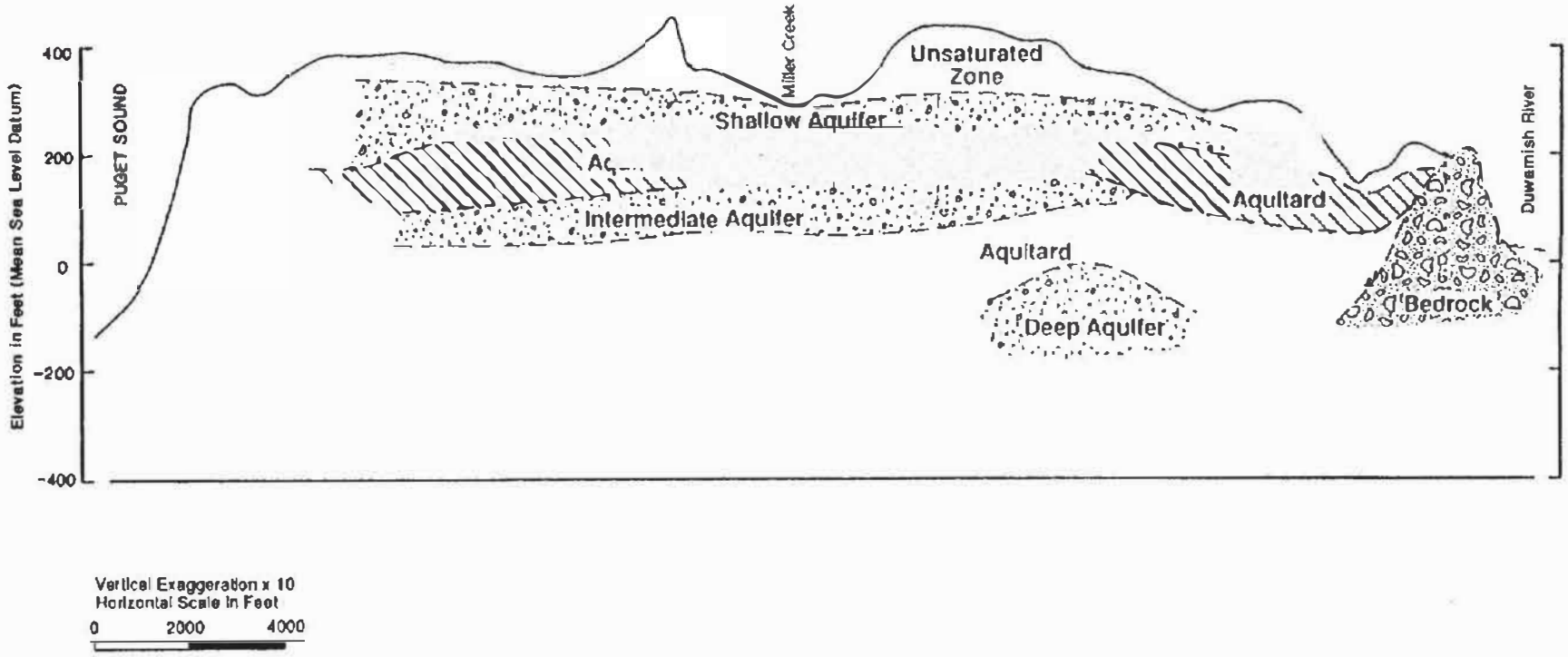
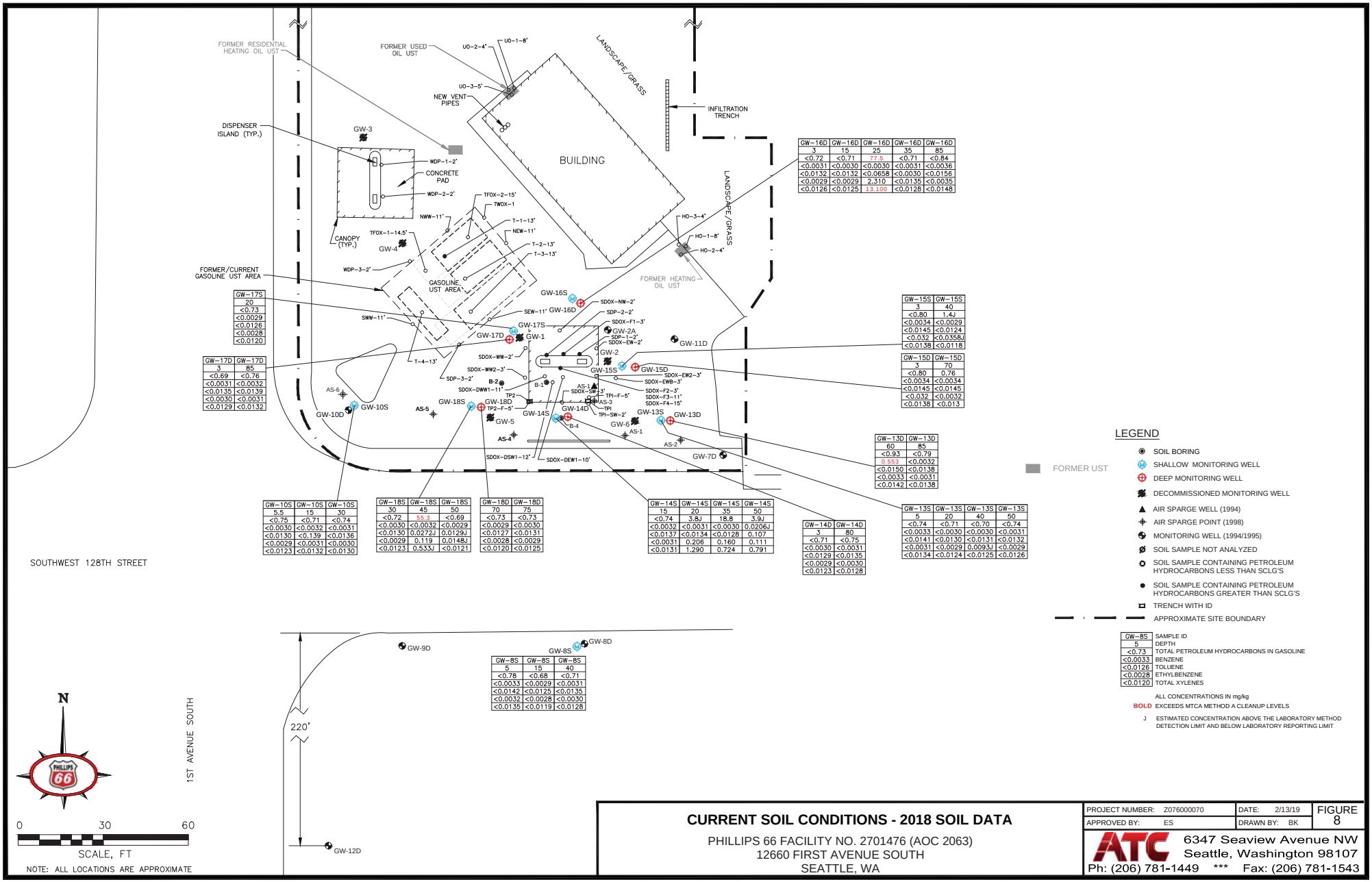


FIGURE 2

GENERALIZED HYDROSTRATIGRAPHIC CROSS-SECTION

Enclosure A, Figure 7



GW–17S	
20	
<0.73	
<0.0029	
<0.0126	
<0.0028	
<0.0120	

GW–17D	GW–17D
3	85
<0.69	<0.76
<0.0031	<0.0032
<0.0135	<0.0139
<0.0030	<0.0031
<0.0129	<0.0132

GW–16D	GW–16D	GW–16D	GW–16D	GW–16D
3	15	25	35	85
<0.72	<0.71	77.5	<0.71	<0.84
<0.0031	<0.0030	<0.0030	<0.0031	<0.0036
<0.0132	<0.0132	<0.0658	<0.0030	<0.0156
<0.0029	<0.0029	2.310	<0.0135	<0.0035
<0.0126	<0.0125	13.100	<0.0128	<0.0148

GW–15S	GW–15S
3	40
<0.80	1.4J
<0.0034	<0.0029
<0.0145	<0.0124
<0.032	<0.0358J
<0.0138	<0.0118

GW–15D	GW–15D
3	70
<0.80	0.76
<0.0034	<0.0034
<0.0145	<0.0145
<0.032	<0.0032
<0.0138	<0.013

GW–13D	GW–13D
60	85
<0.93	<0.79
0.553	<0.0032
<0.0150	<0.0138
<0.0033	<0.0031
<0.0142	<0.0138

GW–13S	GW–13S	GW–13S	GW–13S
5	20	40	50
<0.74	<0.71	<0.70	<0.74
<0.0033	<0.0030	<0.0030	<0.0031
<0.0141	<0.0130	<0.0131	<0.0132
<0.0031	<0.0029	0.0093J	<0.0029
<0.0134	<0.0124	<0.0125	<0.0126

GW–14D	GW–14D
3	80
<0.71	<0.75
<0.0030	<0.0031
<0.0129	<0.0135
<0.0029	<0.0030
<0.0123	<0.0128

GW–14S	GW–14S	GW–14S	GW–14S
15	20	35	50
<0.74	3.8J	18.8	3.9J
<0.0032	<0.0031	<0.0030	0.0206J
<0.0137	<0.0134	<0.0128	0.107
<0.0031	0.206	0.160	0.111
<0.0131	1.290	0.724	0.791

GW–18S	GW–18S	GW–18S
30	45	50
<0.72	55.3	<0.69
<0.0030	<0.0032	<0.0029
<0.0130	0.0272J	0.0129J
<0.0029	0.119	0.0148J
<0.0123	0.533J	<0.0121

GW–18D	GW–18D
70	75
<0.73	<0.73
<0.0029	<0.0030
<0.0127	<0.0131
<0.0028	<0.0029
<0.0120	<0.0125

GW–10S	GW–10S	GW–10S
5.5	15	30
<0.75	<0.71	<0.74
<0.0030	<0.0032	<0.0031
<0.0130	<0.139	<0.0136
<0.0029	<0.0031	<0.0030
<0.0123	<0.0132	<0.0130

GW–8S	GW–8S	GW–8S
5	15	40
<0.78	<0.68	<0.71
<0.0033	<0.0029	<0.0031
<0.0142	<0.0125	<0.0135
<0.0032	<0.0028	<0.0030
<0.0135	<0.0119	<0.0128

CURRENT SOIL CONDITIONS - 2018 SOIL DATA

PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WA

PROJECT NUMBER: Z076000070	DATE: 2/13/19	FIGURE 8
APPROVED BY: ES	DRAWN BY: BK	

ATC
6347 Seaview Avenue NW
Seattle, Washington 98107
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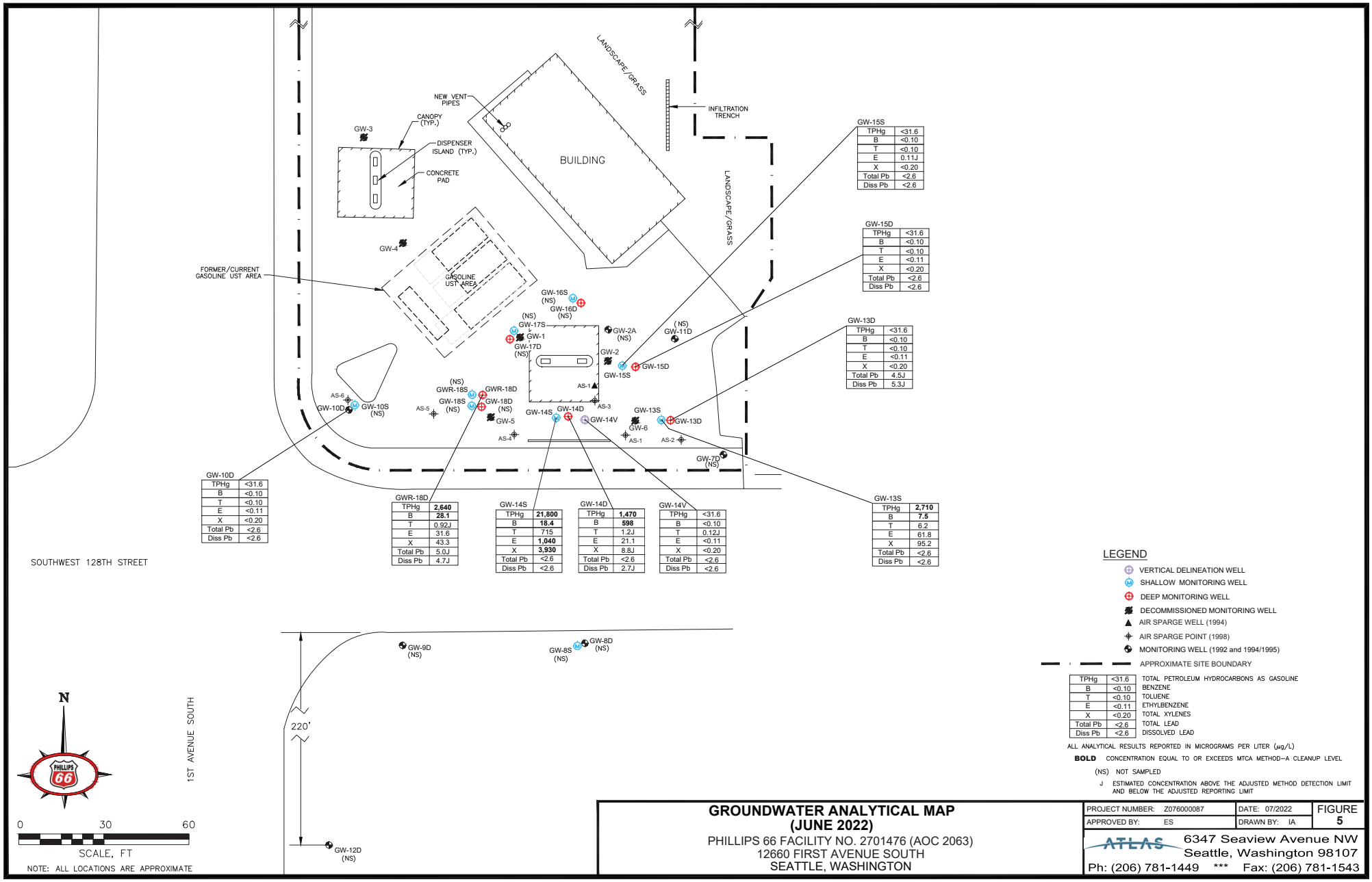
Enclosure A, Figure 8



GW-15S	
TPHg	<31.6
B	<0.10
T	<0.10
E	0.11J
X	<0.20
Total Pb	<2.6
Diss Pb	<2.6

GW-15D	
TPHg	<31.6
B	<0.10
T	<0.10
E	<0.11
X	<0.20
Total Pb	<2.6
Diss Pb	<2.6

GW-13D	
TPHg	<31.6
B	<0.10
T	<0.10
E	<0.11
X	<0.20
Total Pb	4.5J
Diss Pb	5.3J

GW-10D	
TPHg	<31.6
B	<0.10
T	<0.10
E	<0.11
X	<0.20
Total Pb	<2.6
Diss Pb	<2.6

GWR-18D	
TPHg	**2,640**
B	**28.1**
T	0.92J
E	31.6
X	43.3
Total Pb	5.0J
Diss Pb	4.7J

GW-14S	
TPHg	**21,800**
B	**18.4**
T	715
E	**1,040**
X	**3,930**
Total Pb	<2.6
Diss Pb	<2.6

GW-14D	
TPHg	**1,470**
B	**598**
T	1.2J
E	21.1
X	8.8J
Total Pb	<2.6
Diss Pb	2.7J

GW-14V	
TPHg	<31.6
B	<0.10
T	0.12J
E	<0.11
X	<0.20
Total Pb	<2.6
Diss Pb	<2.6

GW-13S	
TPHg	**2,710**
B	**7.5**
T	6.2
E	61.8
X	95.2
Total Pb	<2.6
Diss Pb	<2.6

LEGEND

- VERTICAL DELINEATION WELL
- SHALLOW MONITORING WELL
- DEEP MONITORING WELL
- DECOMMISSIONED MONITORING WELL
- AIR SPARGE WELL (1994)
- AIR SPARGE POINT (1998)
- MONITORING WELL (1992 and 1994/1995)
- APPROXIMATE SITE BOUNDARY

TPHg	<31.6	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE
B	<0.10	BENZENE
T	<0.10	TOLUENE
E	<0.11	ETHYLBENZENE
X	<0.20	TOTAL XYLENES
Total Pb	<2.6	TOTAL LEAD
Diss Pb	<2.6	DISSOLVED LEAD

ALL ANALYTICAL RESULTS REPORTED IN MICROGRAMS PER LITER (µg/L)

BOLD CONCENTRATION EQUAL TO OR EXCEEDS MTCA METHOD–A CLEANUP LEVEL

(NS) NOT SAMPLED

J ESTIMATED CONCENTRATION ABOVE THE ADJUSTED METHOD DETECTION LIMIT AND BELOW THE ADJUSTED REPORTING LIMIT

GROUNDWATER ANALYTICAL MAP
(JUNE 2022)
PHILLIPS 66 FACILITY NO. 2701476 (AOC 2063)
12660 FIRST AVENUE SOUTH
SEATTLE, WASHINGTON

PROJECT NUMBER: Z076000087		DATE: 07/2022	FIGURE 5
APPROVED BY: ES		DRAWN BY: IA	

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Enclosure A, Figure 9

Enclosure B

Basis for the Opinion:
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