Groundwater Investigation Report
Kitsap County North Road Shop Site
301 Bernt Road
Poulsbo, Washington

May 18, 2022

Prepared for

Kitsap County Department of Public Works
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Port Orchard, Washington

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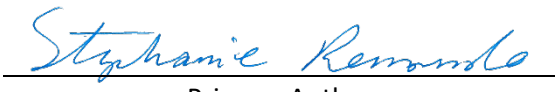
Document prepared by:  Stephanie Renando

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Project Coordinator:	Christopher C. Young

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LIST OF ABBREVIATIONS AND ACRONYMS

ALS	Analytical Laboratory Services
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and xylenes
City	City of Poulsbo, Washington
CUL	cleanup level
County	Kitsap County
Ecology	Washington State Department of Ecology
ft	feet
IDW	investigation-derived waste
Landau	Landau Associates, Inc.
µg/L	micrograms per liter
MTCA	Model Toxics Control Act
MW	monitoring well
RL	laboratory reporting limit
Site	Kitsap County North Road Shop Site
TOC	top of casing
TPH	total petroleum hydrocarbons
TPH-D	diesel-range total petroleum hydrocarbons
TPH-G	gasoline-range total petroleum hydrocarbons
TPH-O	oil-range total petroleum hydrocarbons
WSDOT	Washington State Department of Transportation

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1.0 INTRODUCTION

At the request of Kitsap County (County), Landau Associates, Inc. (Landau) prepared this report documenting the results of groundwater characterization activities at the Kitsap County North Road Shop site (Site; Facility Site ID #65471731) located at 301 Bernt Road in Poulsbo, Washington (Figure 1). Per recommendations made by the Washington State Department of Ecology (Ecology) during the most recent Site Periodic Review for 2017 (Ecology 2018b), and additional Ecology recommendations described in an email from Ecology to the County on July 30, 2020 (Welty 2020), the groundwater characterization activities included evaluation of groundwater flow direction and determining if petroleum hydrocarbon contamination has migrated off Site since completion of remedial activities in 1997 by Golder Associates, Inc. (Golder 1998).

The 2017 Site Periodic Review (Ecology 2018b) included an additional recommendation to install a pavement cap on top of the dirt and/or gravel floors present in two of the buildings at the Site. The County has installed pavement in the two buildings and photographs showing the paved floors in the two buildings are provided in Appendix A.

In response to the 2017 Periodic Review recommendations, Landau prepared a Soil and Groundwater Characterization Work Plan (Landau 2019). The work plan also documented soil characterization activities that the County conducted voluntarily to determine future sales limitations of the Site if residual soil contamination were present following the 1997 Site cleanup activities. Implementation of the work plan was conducted in January 2020, and results were described in a Soil and Groundwater Characterization Report (Landau 2020). Ecology provided comments on the characterization report on July 30, 2020 (Welty 2020), and recommended that additional groundwater characterization be conducted at the Site to further investigate whether contamination is migrating off the property and to identify seasonal trends in groundwater elevation and petroleum hydrocarbon concentrations.

In August 2020, Landau conducted a groundwater elevation survey on behalf of the County at three existing monitoring wells (MW-1, MW-2, and MW-3) to collect dry-season groundwater elevation data that could be compared to future dry-season data. The results of the August 2020 groundwater elevation survey are incorporated into this report.

In May 2021, Landau prepared an addendum (Addendum 1) to the 2019 work plan (Landau 2021) to address Ecology's recommendations following the 2020 soil and groundwater investigation. Ecology provided comments on Addendum 1 via email prior to finalization. Ecology noted that groundwater sample #3 collected in 1996 greatly exceeded cleanup levels (CULs) for gasoline and benzene and requested a new groundwater sample from near the location where the 1996 sample #3 was collected (Welty 2021). Ecology also recommended resampling existing wells MW-1, MW-2, and MW-3, and the installation and sampling of two new wells to target areas where lower laboratory reporting limits were needed to determine compliance.

The 2019 Soil and Groundwater Characterization Work Plan and Addendum 1 are collectively referred to as the "work plans." The scope of the groundwater characterization was developed by Landau in coordination with the County and Ecology and included installation and development of two groundwater monitoring wells and collection and analysis of groundwater samples from all five Site monitoring wells. The investigation was conducted in accordance with the scope of work and procedures included in the Ecology-approved work plans developed for the Site. The following sections present the project background, and a summary of investigation activities and results.

2.0 SITE BACKGROUND

According to a letter sent to the County (Golder 1996), contamination at the Site was first identified in June and August 1996 when soil and groundwater sampling was conducted in bus parking areas and around former and existing Site fuel underground storage tanks. Total petroleum hydrocarbons (TPH) in the gasoline range (TPH-G) and diesel and oil ranges (TPH-D and TPH-O) were detected in both soil and groundwater at concentrations above the Model Toxics Control Act (MTCA) Method A CUL that were established at the time.

After the 1996 investigation, the County excavated and disposed of contaminated soil from accessible areas of the Site in the summer of 1997. Some residual contamination was left in place below or adjacent to Site infrastructure, such as storm drain and water main lines, the western fence line, within the fenced former Water District compound, and under Building 2 (Figure 2). The residual contaminated soil left in place was documented in a restrictive covenant (Kitsap County 2000), which limits activities that could lead to human contact with residual contamination. A Site cap (i.e., pavement) was later installed as an engineering control to provide a physical barrier between residual contamination and potential human receptors (Ecology 2018b).

After completion of the 1997 remedial excavation, quarterly surface water monitoring was conducted at Dogfish Creek (located north of the Site across Bond Road and Bernt Road) and storm drain outfalls adjacent to the north and east of the Site (Ecology 2019). The monitoring was conducted to evaluate the potential for groundwater contamination, resulting from groundwater contact with the residual impacted soil, to migrate into storm water systems and the creek. Discontinuation of surface water monitoring was approved by Ecology in July 2000 (Ecology 2000) and since then, Ecology oversight has consisted of subsequent periodic 5-year reviews.

In 2004, the Washington State Department of Transportation (WSDOT) initiated a Preliminary Site Investigation (Landau 2004) to evaluate a portion of the property being acquired by WSDOT for roadway widening and the construction of bioswales to treat stormwater associated with roadway runoff. The Preliminary Site Investigation included collection and analysis of subsurface soil and groundwater samples along the former northwestern and southwestern fence lines of the Site (groundwater sampling locations shown on Figure 2). Soil sampling results identified detections of TPH-G, benzene, and ethylbenzene in two of the 12 samples (DP-2 and DP-11) but none of the results were above the MTCA Method A CULs that Ecology established in 2001. No analytes were detected above laboratory reporting limits in the groundwater samples collected (DP-6, DP-9, and DP-10). The bioswale and roadway widening construction activities were completed in 2007 (Ecology 2018b). The MTCA Method A CULs established in 2001 were lower than the 1996 CULs for both soil and groundwater.

During the 2006 Periodic Review, Ecology requested an additional round of surface water sampling to confirm conditions in Dogfish Creek. Benzene was detected in one sample collected during this event

at a concentration exceeding the calculated MTCA Method A cleanup criteria for surface water (Ecology 2018b). Ecology indicated that this detection may be the result of roadway runoff or a combination of contaminated groundwater migration and runoff (Ecology 2018a). Based on the additional sampling results, the Site passed Ecology's 2006 periodic review, and further surface water sampling was not deemed necessary.

Ecology's 2018 periodic review requested a follow-up groundwater investigation to evaluate the possibility of contaminated groundwater migrating off the property. Ecology also noted during the review that analytical methodologies had become more advanced since groundwater samples were collected in 1996 and that 2004 groundwater sampling conducted as part of the WSDOT roadway and bioswale expansion were not in close proximity to areas where residual contamination was left in place (Ecology 2018b). The County decided to conduct additional soil characterization activities in 2020 to determine options for future sale of the property. Soil characterization activities and certain groundwater characterization activities were completed by Landau and presented to both the County and Ecology (Landau 2020). The additional groundwater characterization described in this report was required by Ecology to determine if contaminated groundwater was migrating off the property.

2.1 Site Features and Uses

The Site has been used by the County for more than 50 years as a maintenance shop and material, vehicle, and equipment storage location for its maintenance operations. However, portions of the Site have also been used by the local Water District and City of Poulsbo (City) for water storage and sewer easement purposes. The westernmost corner of the Site is no longer in use by the Water District , but the City still maintains a sewer line easement in the northern corner of the Site. The significant surface features and approximate locations of subsurface utilities are shown on Figure 2.

Stormwater runoff generally flows into stormwater catchment basins located throughout the Site, and into an adjacent bioswale located along the southwestern edge of the existing fence line. Stormwater collected into the bioswale either infiltrates or presumably flows northwest, under Bond Road/State Route 305, and into Dogfish Creek (Figures 2 through 6).

3.0 CHARACTERIZATION ACTIVITIES

The following subsections describe field activities that were conducted on Site, including locating utilities; installing, developing, surveying, and sampling five permanent groundwater monitoring wells; and disposing of investigation-derived waste (IDW) generated during these activities.

3.1 Utility Locating

Prior to initiation of drilling or any other intrusive subsurface activity, each drilling location was checked for potential conflicts with underground utilities. A public locate service was contacted to locate underground utilities at the Site. After public utilities were marked, a private utility locate service was retained to identify conductible and private underground utilities in an approximately 10-foot radius around each proposed drilling location.

3.2 Groundwater Characterization Activities

Ecology's periodic review requested that data be gathered to determine the groundwater flow direction and to determine the potential for contaminant migration off the property. Two new groundwater monitoring wells were installed, developed, and surveyed to aid in achieving the characterization objectives. Groundwater samples were collected from all five (three existing and two new) Site monitoring wells to assess groundwater quality conditions. During the groundwater sampling event, a groundwater elevation survey was also conducted to identify groundwater flow direction. Sampling locations are shown on Figure 3.

3.2.1 Groundwater Monitoring Well Installation and Development

Groundwater monitoring wells MW-4 and MW-5 were installed on June 22, 2021 using hollow-stem auger drilling techniques by a licensed driller, in accordance with the Minimum Standards for Construction and Maintenance of Wells (Chapter 173-160 of the Washington Administrative Code). Well MW-5 was installed as close to the existing fence line as possible, and near the location where the 1996 groundwater sample #3 was collected. Oversight of well installation activities was conducted by a Landau environmental professional familiar with environmental sampling and construction of resource protection wells. The monitoring wells were constructed in accordance with the work plans and to depths near 9.5 feet (ft) below ground surface (bgs). The wells were completed at the ground surface with flush-mounted protective monuments. Monitoring well construction details and Ecology identification tag numbers are provided on the boring logs (Appendix B).

The monitoring wells were developed on June 25, 2021, at least 48 hours after installation to allow the well seals to properly set. At least 5 well casing volumes were removed from each well using a 12-volt submersible (i.e., whaler) pump. Well development activities were completed by a Landau environmental professional and included measurement and recording of groundwater parameters (pH, temperature, conductivity, and turbidity) during and upon completion of well development.

3.2.2 Well Survey and Groundwater Elevation Survey

After well development, a level loop survey of the top-of-well casing elevations for MW-4 and MW-5 was conducted to facilitate preparation of a relative groundwater elevation contour map. The survey was performed using a transit level and surveying rod. The top of casing (TOC) elevations were derived using known elevation reference points (i.e., existing monitoring wells) provided by the County.

3.2.3 Groundwater Sampling and Analyses

Groundwater samples were collected from five permanent monitoring wells (MW-1, MW-2, MW-3, MW-4, and MW-5) using low-flow groundwater sampling procedures and in accordance with the work plans (Landau 2019, 2021). Groundwater samples from the monitoring wells were collected at least 72 hours after well development to allow for groundwater equilibration with the surrounding aquifer.

Samples were collected into laboratory-provided sample containers and delivered in a chilled cooler under standard chain-of-custody protocols to Analytical Laboratory Services (ALS) for analysis.

All samples were analyzed for:

- TPH-G using the Northwest total petroleum hydrocarbon extended-range gasoline method and TPH-D and TPH-O using the Northwest total petroleum hydrocarbon extended-range diesel method
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) using US Environmental Protection Agency Method 8021.

One duplicate groundwater sample was collected at MW-4 for quality assurance purposes and was analyzed for the same parameters as the other groundwater samples. One laboratory-provided trip blank was analyzed for volatile compounds (TPH-G and BTEX).

Extra sample volume was collected and submitted to ALS for potential follow-up TPH-D and TPH-O analysis using silica gel cleanup methodology, but none of the initial TPH results exceeded the MTCA Method A CULs.

No soil samples were analyzed because field screening identified no evidence of soil contamination during drilling associated with monitoring well installations.

3.2.4 Oil/Water Separator Inspection

During the January 2020 sampling event, the oil/water separator located between wells MW-3 and MW-4 (Figure 2) was full and there was a large pool of water covering the area that blocked access to the separator. The sample collected from GW-SB-8 in January 2020 had detected concentrations of TPH-D and the TPH-O, and the reporting limit (RL) was elevated due to interference issues at the laboratory. To evaluate potential impacts associated with the oil/water separator flooding, Landau

conducted a visual inspection of the structure during the August 2021 field activities. The results of the inspection are summarized in Section 4.0 below.

3.3 Waste Management

IDW materials generated during characterization consisted of drilling cuttings and slurries, and purged groundwater. The waste materials were segregated according to media type, and stored on Site in labeled, steel drums. Landau coordinated with a local disposal company and the County to have these drums transported off Site to an appropriate disposal facility. The IDW was characterized and disposed of at a RCRA Subtitle D (solid waste) disposal facility. A copy of the disposal manifest is provided in Appendix C.

3.4 Results

This section presents the results of the August 2021 sampling event, which consists of groundwater elevation data and groundwater analytical data. Groundwater elevation data collected during previous characterization field events are also included to provide both dry-season (August 2020 and 2021) and wet-season (January 2020) results.

3.4.1 Groundwater Elevation Results

Cumulative groundwater elevation results from the January 2020, August 2020, and August 2021 sampling events indicate Site groundwater flow directions ranging from west/west-southwest to northwest, with a more westerly flow, toward the adjacent drainage ditch during the dry season. During the wet season, when precipitation is more frequent, the Site groundwater elevations indicate a flow direction toward Dogfish Creek to the northwest. Dogfish Creek generally flows from the northeast to the southwest.

August 2021 groundwater depths ranged from 3.22 ft (MW-3) to 6.06 ft (MW-1) bgs. The wet-season groundwater depths measured in January 2020 ranged from 1.91 ft (MW-3) to 3.30 ft (MW-1) bgs (Table 1).

Monitoring well TOC elevations, groundwater depths, and elevation results collected in January 2020, August 2020, and August 2021 are summarized in Table 1. Groundwater flow directions observed at the Site during the three events are shown on Figures 4, 5, and 6.

3.4.2 Groundwater Analytical Results

Laboratory analytical results for the 2021 sampling event indicate the following:

- TPH-D was detected in samples collected from two of the five groundwater sampling locations at concentrations of 130 micrograms per liter (µg/L) at MW-3 and 150 µg/L at MW-5, which are less than the MTCA Method A CUL (500 µg/L). For the results where TPH-D was not detected above the RL (130 µg/L), the RLs were below the CUL.

- TPH-O was detected at a concentration of 340 µg/L in the groundwater sample collected from MW-2, which is below the CUL (500 µg/L). For the results where TPH-O was not detected above the RL (250 µg/L), the RLs were below the CUL.
- TPH-G and BTEX were not detected above their respective laboratory RLs in any of the groundwater samples, and RLs were below the applicable MTCA Method A CULs.

A copy of the laboratory analytical report is provided in Appendix D.

4.0 CONCLUSIONS AND DISCUSSION

The groundwater characterization activities that were conducted per Ecology's request included characterization of groundwater flow direction and analysis of Site groundwater to determine whether contaminated groundwater is migrating off Site. Based on the results of the flow characterization activities, groundwater flow direction is predominantly to the west to northwest, with seasonal fluctuations more to the west (or west-southwest) in the dry season and more to the northwest in the wet season. Cumulative groundwater elevation data from January 2020, August 2020, and August 2021 indicate that analytical results from monitoring wells MW-1, MW-4, and MW-5 are representative of groundwater conditions as the groundwater flows off the Site during the dry season (Figures 5 and 6) and monitoring well MW-3 is also representative of flow off the Site during the wet season (Figure 4).

Sampling results from both dry-season and wet-season sampling events demonstrate that concentrations of TPH-D and TPH-O are below applicable CULs and that TPH-G and BTEX were not detected in Site groundwater (Table 2). Results from downgradient wells MW-1, MW-3, MW-4, and MW-5 show that TPH-O is not present in Site groundwater as it migrates off the property. Results from wells MW-3 and MW-5 indicate the presence of low-level concentrations of TPH-D (below the CUL) near the downgradient edge of the Site. Data for MW-1 from January 2020 (see Table 2) also indicate low-level TPH-D concentrations in Site groundwater in the former Water District area. However, TPH-D was not detected in the August 2021 sample or the grab sample collected from temporary well location GW-SB-1 (downgradient of MW-1) in January 2020 (Table 2).

Monitoring wells MW-3 and MW-4 are located closest to existing utilities where residual contamination was thought to be left in place following the soil removal activities in 1997. Samples collected from these two wells during the most recent event in August 2021 show that TPH is either not present (MW-4), or it is present at concentrations equal to the laboratory reporting limit (MW-3; 130 µg/L for TPH-D) and well below the CUL. The dry-season sampling conducted at MW-3 and MW-4 indicate that groundwater near the oil/water separator has not been impacted by the pooling occurring in the surrounding area.

In summary, cumulative results from samples collected between January 2020 and August 2021 indicate TPH concentrations in Site groundwater are below laboratory RLs and/or below the MTCA Method A CULs (Table 2). Additionally, laboratory reporting limits for the August 2021 analyses were all confirmed to be below the MTCA Method A CULs. The groundwater characterization activities and results summarized in this report are consistent with the scope of work provided in the Ecology-approved work plans and have addressed Ecology recommendations provided in the 2017 Periodic Review and comments on the 2020 Soil and Groundwater Characterization Report.

Cumulative groundwater monitoring results indicate that the risk to human health and the environment from Site groundwater is negligible. These results indicated that TPH was not detected at

concentrations exceeding applicable CULs in any of the groundwater samples, including those collected from downgradient sampling locations (MW-1, MW-3, MW-4, and MW-5). This indicates that there is no migration of contamination above cleanup levels off the property or to surface water. Based on these results, Landau and the County request a determination from Ecology that groundwater characterization has been completed at the Site, Ecology requests associated with the 2017 Periodic Review have been satisfied, and that additional Site characterization efforts are not required.

5.0 USE OF THIS REPORT

This groundwater characterization report has been prepared for the exclusive use of Kitsap County and applicable regulatory agencies for specific application to the North Road Shop site. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of Landau. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by Landau, shall be at the user's sole risk. Landau warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. Landau makes no other warranty, either express or implied.

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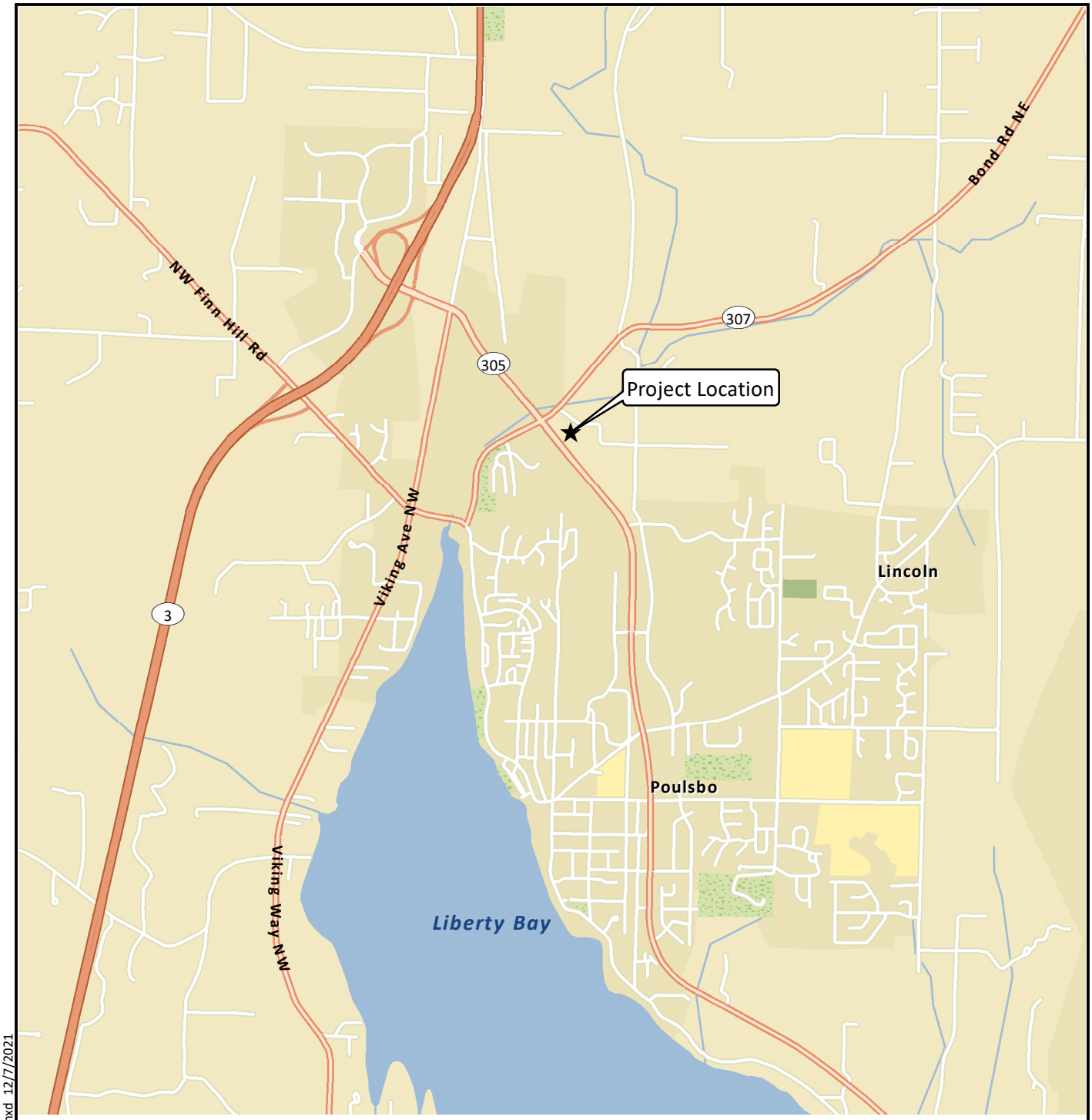

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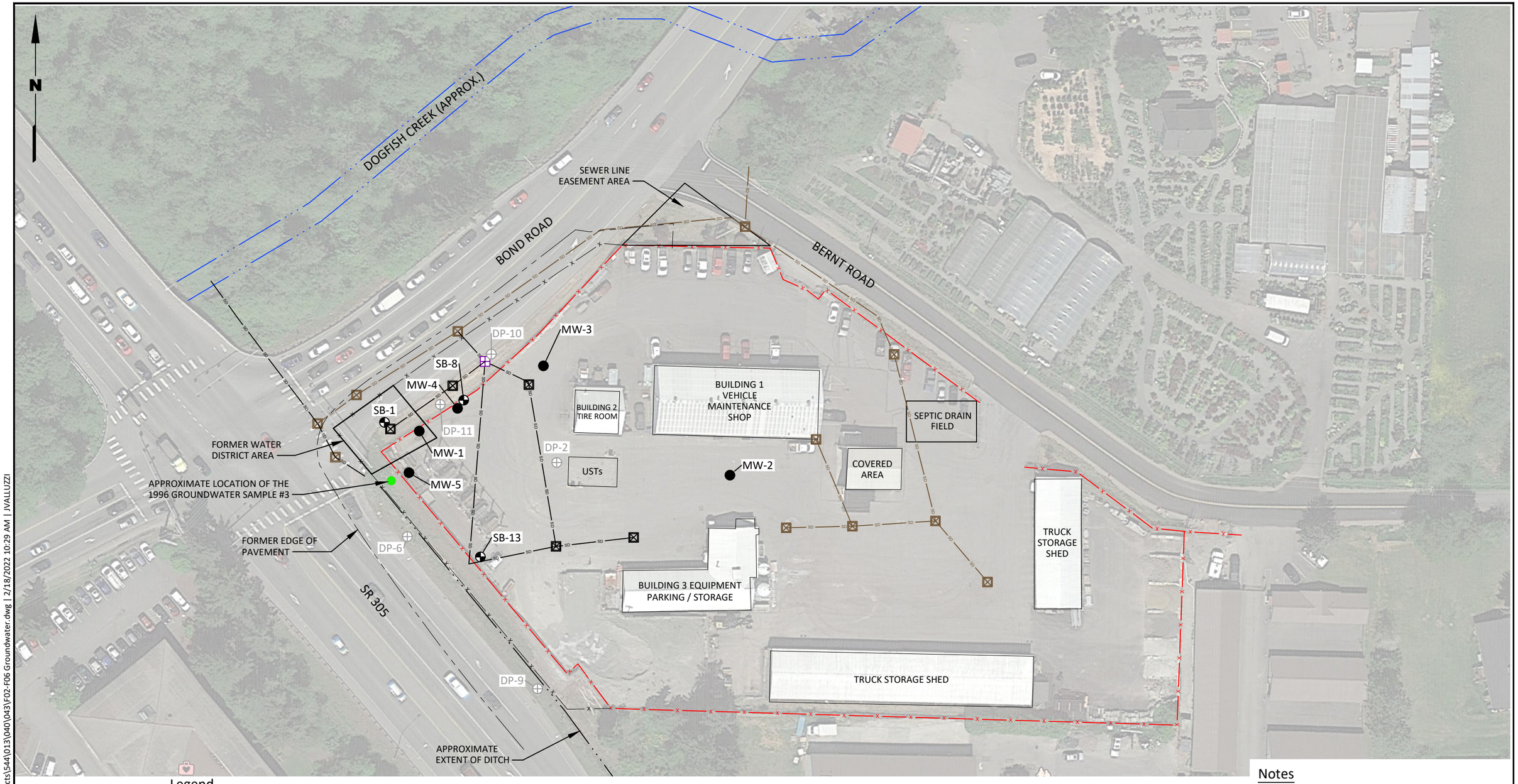
North Road Shop Groundwater Investigation Poulsbo, Washington	**Vicinity Map**	Figure 1



Legend

- Catch Basin (Confirmed during 2020 Investigation)
- Approximate Location of Catch Basin (Based on Information from Previous Reports)
- Existing Storm Drain (Confirmed during 2020 Investigation)
- Approximate Location of Storm Drain (Based on Information from Previous Reports)
- Existing Fence
- Former Fence
- Former Edge of Pavement
- DP-1: 2004 Previous Soil Boring Location
- SB-8: 2019 Groundwater Grab Sampling Location
- MW-1: Monitoring Well Location
- Oil/Water Separator

0 70 140

Scale in Feet

Source: Kitsap County Topo, 2002; Bing Aerial Imagery, 2019

Notes

1. UST = Underground Storage Tank
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

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North Road Shop Groundwater Investigation Poulsbo, Washington	**Current and Relevant Historical Sampling Locations**	Figure 2

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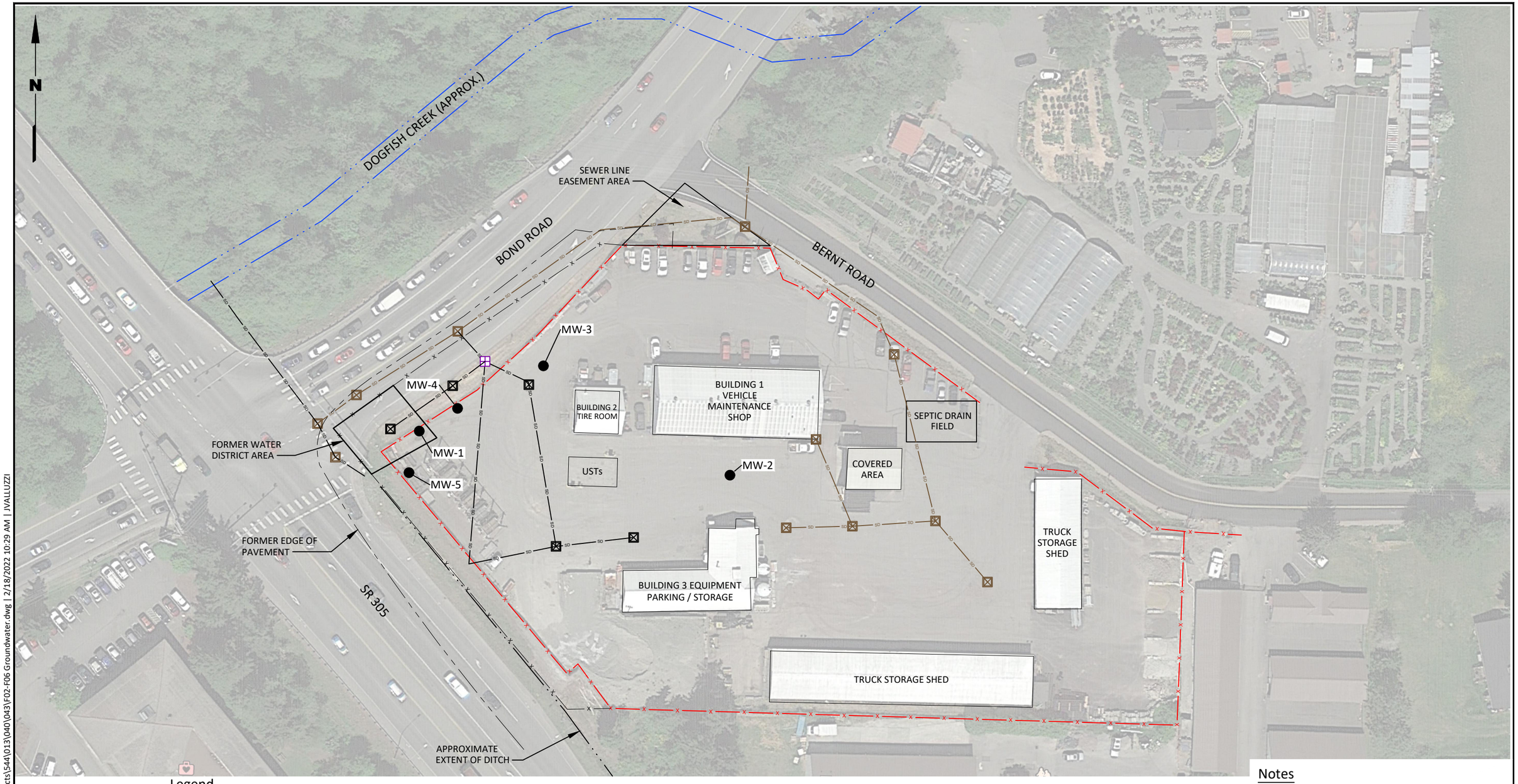

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- Oil/Water Separator

0 70 140

Scale in Feet

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Source: Kitsap County Topo, 2002; Bing Aerial Imagery, 2019

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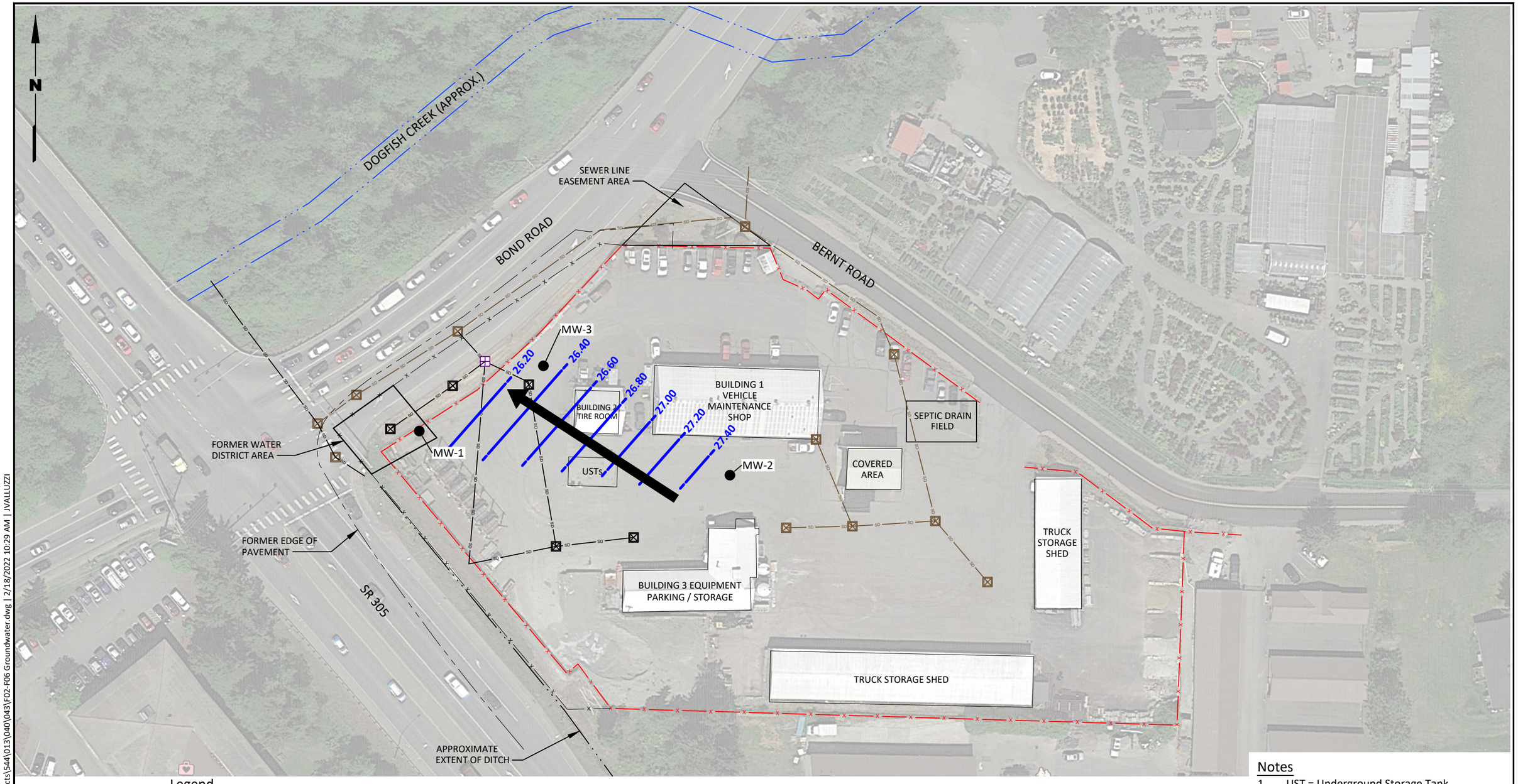
North Road Shop Groundwater Investigation Poulsbo, Washington	**2021 Sampling Locations**	Figure 3



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- Approximate Location of Storm Drain (Based on Information from Previous Reports)
- Existing Fence
- Former Fence
- Former Edge of Pavement
- 23.5 — Groundwater Contour Line and Elevation in Feet, bgs (below ground surface) (Datum = NGVD 29)
- MW-1 — Monitoring Well Location
- Oil/Water Separator
- Groundwater Flow Direction

0 70 140
Scale in Feet

Source: Kitsap County Topo, 2002; Bing Aerial Imagery, 2019

Notes

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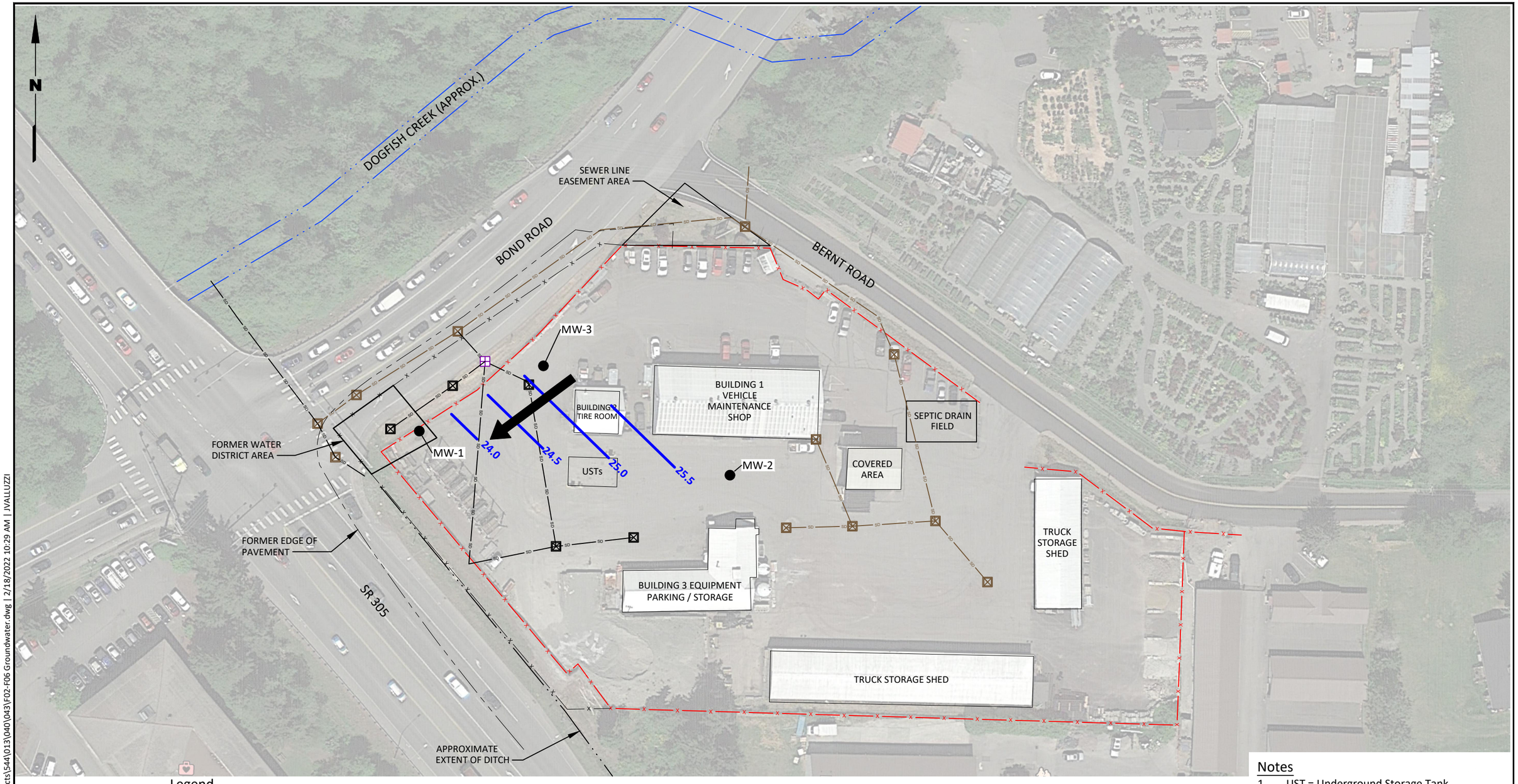
North Road Shop
Groundwater Investigation
Poulsbo, Washington

Groundwater Elevation Contours January 2020

Figure 4



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North Road Shop
Groundwater Investigation
Poulsbo, Washington

Groundwater Elevation Contours
August 2020

Figure
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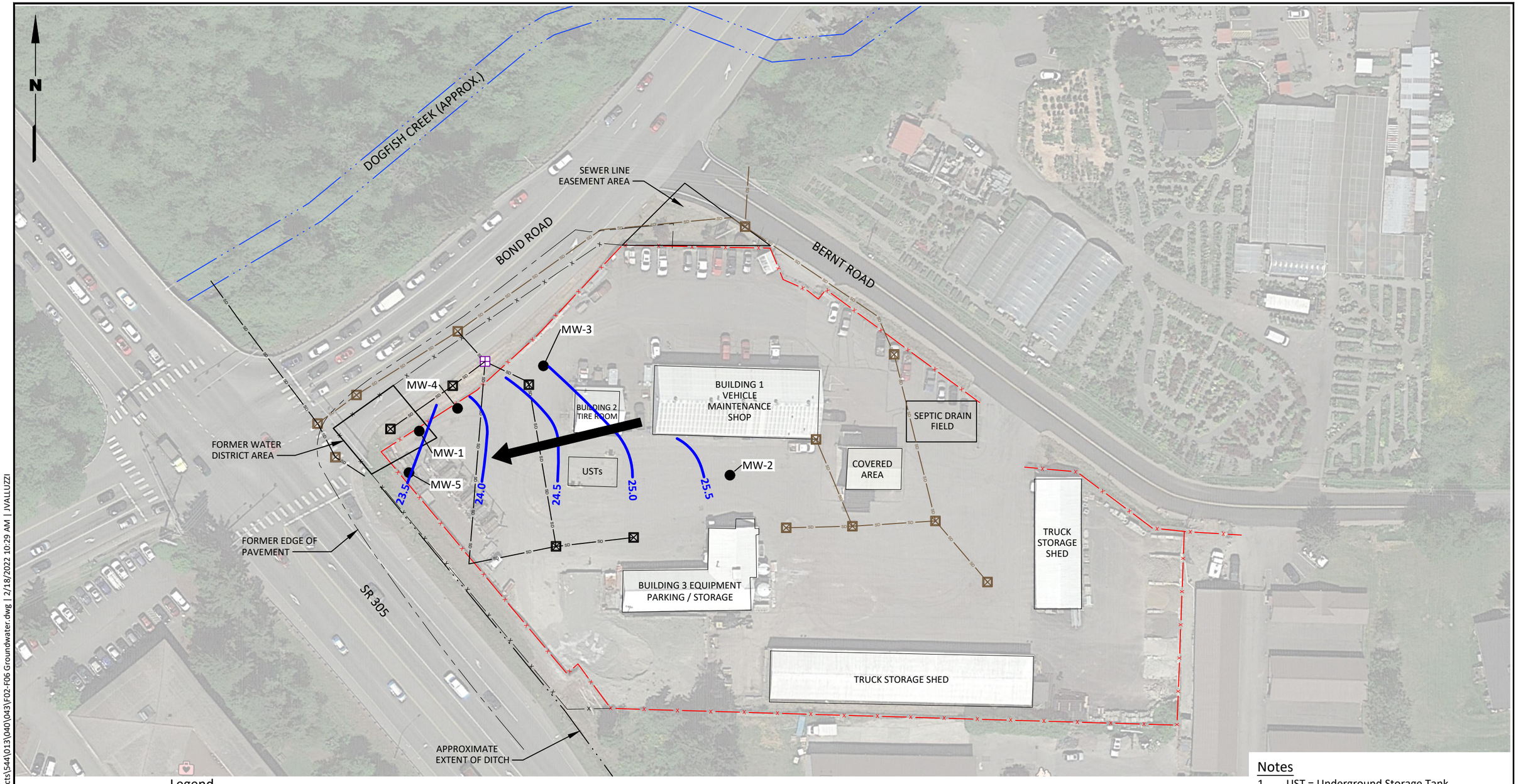

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1. UST = Underground Storage Tank
2. NGVD = National Geodetic Vertical Datum of 1929
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

LANDAU ASSOCIATES

North Road Shop
Groundwater Investigation
Poulsbo, Washington

Groundwater Elevation Contours August 2021

Figure 6

Table 1
Cumulative Groundwater Elevations
Kitsap County North Road Shop
Poulsbo, Washington

Monitoring Well	Date	TOC Elevation (ft)	Depth to Ground Water (ft from TOC)	Groundwater Elevation (ft)	Comment
MW-1	1/29/2020	29.30	3.30	26.00	
MW-1	8/26/2020		5.74	23.56	No product detected
MW-1	8/26/2021		6.06	23.24	
MW-2	1/29/2020	29.77	2.20	27.57	
MW-2	8/26/2020		3.85	25.92	No product detected
MW-2	8/26/2021		4.06	25.71	
MW-3	1/29/2020	28.21	1.91	26.30	
MW-3	8/26/2020		2.95	25.26	No product detected
MW-3	8/26/2021		3.22	24.99	
MW-4	8/26/2021	28.27	4.45	23.82	No product detected
MW-5	8/26/2021	29.23	5.77	23.46	No product detected

Abbreviations:

ft = feet

TOC = top of casing

Table 2
Cumulative Groundwater Analytical Results
2020 through 2021
Kitsap County North Road Shop
Poulsbo, Washington

Analyte	MTCA Method A Cleanup Level	Field Sample ID, Laboratory SDG, Sampling Date, Sample Type											
		GW-SB-1 EV20010102 1/22/2020 N	GW-SB-8 EV20010114 1/23/2020 N	GW-SB-13 EV20010114 1/23/2020 N	MW-1 EV20010162 1/29/2020 N	MW-1 EV21080123 8/26/2021 N	MW-2 EV20010162 1/29/2020 N	MW-2 EV21080123 8/26/2021 N	MW-3 EV20010162 1/29/2020 N	MW-3 EV21080123 8/26/2021 N	MW-4 EV21080123 8/26/2021 N	MW-4 EV21080123 8/26/2021 FD	MW-5 EV21080123 8/26/2021 N
Total Petroleum Hydrocarbons (µg/L; NWTPH-Dx/-Gx)													
Gasoline-Range Organics	800/1,000 (a)	50 U	50 U	50 U	**160**	50 U	50 U	50 U	50 U	50 U	50 U	50 U	50 U
Diesel-Range Organics	500	130 U	**230**	**180**	**230**	130 U	**340**	130 U	**170**	**130**	130 U	130 U	**150**
Motor Oil-Range Organics	500	250 U	590 U (b)	250 U	250 U	250 U	250 U	**340**	250 U	250 U	250 U	250 U	250 U
Volatiles (µg/L; SW-846 8021B)													
Benzene	5.0	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Ethylbenzene	700	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Toluene	1,000	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
Xylenes, Total	1,000	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U

Notes:

U = The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.

Bold text indicates detected analyte.

(a) MTCA Method A cleanup level is 1,000 µg/L if benzene is not present; otherwise the cleanup level is 800 µg/L.

(b) The laboratory reporting limit was elevated due to a detection of motor oil-range organics in the laboratory method blank.

Abbreviations/Acronyms:

FD = field duplication

ID = Identification

µg/L = micrograms per liter

MTCA = Model Toxics Control Act

N = primary sample

NWTPH-Dx = Northwest total petroleum hydrocarbon extended-range diesel analytical method

NWTPH-Gx = Northwest total petroleum hydrocarbon extended-range gasoline analytical method

SDG = sample delivery group

APPENDIX A

Selected Site Photographs

1. Capped area of east truck storage shop.

2. Capped area of south truck storage shed.

LANDAU ASSOCIATES

North Road Shop
Groundwater Investigation
Poulsbo, Washington

Selected Site Photographs

Figure
A-1

3. Capped area of Building 3.

APPENDIX B

Boring Logs with Well Details

Soil Classification System

MAJOR DIVISIONS			GRAPHIC SYMBOL	USCS LETTER SYMBOL[1]	TYPICAL DESCRIPTIONS [2][3]
COARSE-GRAINED SOIL (More than 50% of material is larger than No. 200 sieve size)	GRAVEL AND GRAVELLY SOIL (More than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (Little or no fines)		GW	Well-graded gravel; gravel/sand mixture(s); little or no fines
				GP	Poorly graded gravel; gravel/sand mixture(s); little or no fines
		GRAVEL WITH FINES (Appreciable amount of fines)		GM	Silty gravel; gravel/sand/silt mixture(s)
				GC	Clayey gravel; gravel/sand/clay mixture(s)
	SAND AND SANDY SOIL (More than 50% of coarse fraction passed through No. 4 sieve)	CLEAN SAND (Little or no fines)		SW	Well-graded sand; gravelly sand; little or no fines
				SP	Poorly graded sand; gravelly sand; little or no fines
		SAND WITH FINES (Appreciable amount of fines)		SM	Silty sand; sand/silt mixture(s)
				SC	Clayey sand; sand/clay mixture(s)
FINE-GRAINED SOIL (More than 50% of material is smaller than No. 200 sieve size)	SILT AND CLAY (Liquid limit less than 50)			ML	Inorganic silt and very fine sand; rock flour; silty or clayey fine sand or clayey silt with slight plasticity
				CL	Inorganic clay of low to medium plasticity; gravelly clay; sandy clay; silty clay; lean clay
				OL	Organic silt; organic, silty clay of low plasticity
	SILT AND CLAY (Liquid limit greater than 50)			MH	Inorganic silt; micaceous or diatomaceous fine sand
				CH	Inorganic clay of high plasticity; fat clay
				OH	Organic clay of medium to high plasticity; organic silt
	HIGHLY ORGANIC SOIL			PT	Peat; humus; swamp soil with high organic content

OTHER MATERIALS	GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
PAVEMENT		AC or PC	Asphalt concrete pavement or Portland cement pavement
ROCK		RK	Rock (See Rock Classification)
WOOD		WD	Wood, lumber, wood chips
DEBRIS		DB	Construction debris, garbage

Notes:
1. USCS letter symbols correspond to symbols used by the Unified Soil Classification System and ASTM classification methods. Dual letter symbols (e.g., SP-SM for sand or gravel) indicate soil with an estimated 5-15% fines. Multiple letter symbols (e.g., ML/CL) indicate borderline or multiple soil classifications.
2. Soil descriptions are based on the general approach presented in the Standard Practice for Description and Identification of Soils (Visual-Manual Procedure), outlined in ASTM D 2488. Where laboratory index testing has been conducted, soil classifications are based on the Standard Test Method for Classification of Soils for Engineering Purposes, as outlined in ASTM D 2487.
3. Soil description terminology is based on visual estimates (in the absence of laboratory test data) of the percentages of each soil type and is defined as follows:

Primary Constituent:	> 50% - "GRAVEL," "SAND," "SILT," "CLAY," etc.
Secondary Constituents:	> 30% and ≤ 50% - "very gravelly," "very sandy," "very silty," etc.
	> 15% and ≤ 30% - "gravelly," "sandy," "silty," etc.
Additional Constituents:	> 5% and ≤ 15% - "with gravel," "with sand," "with silt," etc.
	≤ 5% - "with trace gravel," "with trace sand," "with trace silt," etc., or not noted.

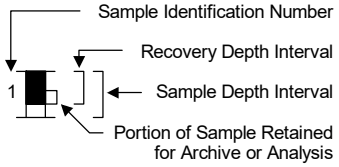
4. Soil density or consistency descriptions are based on judgement using a combination of sampler penetration blow counts, drilling or excavating conditions, field tests, and laboratory tests, as appropriate.

Drilling and Sampling Key

SAMPLER TYPE

Code	Description
a	3.25-inch O.D., 2.42-inch I.D. Split Spoon
b	2.00-inch O.D., 1.50-inch I.D. Split Spoon
c	Shelby Tube
d	Grab Sample
e	Single-Tube Core Barrel
f	Double-Tube Core Barrel
g	2.50-inch O.D., 2.00-inch I.D. WSDOT
h	3.00-inch O.D., 2.375-inch I.D. Mod. California
i	Other - See text if applicable
1	300-lb Hammer, 30-inch Drop
2	140-lb Hammer, 30-inch Drop
3	Pushed
4	Vibrocore (Rotosonic/Geoprobe)
5	Other - See text if applicable

SAMPLE NUMBER & INTERVAL



Field and Lab Test Data

Code	Description
PP = 1.0	Pocket Penetrometer, tsf
TV = 0.5	Torvane, tsf
PID = 100	Photoionization Detector VOC screening, ppm
W = 10	Moisture Content, %
D = 120	Dry Density, pcf
-200 = 60	Material smaller than No. 200 sieve, %
GS	Grain Size - See separate figure for data
AL	Atterberg Limits - See separate figure for data
GT	Other Geotechnical Testing
CA	Chemical Analysis

Groundwater

▽ Approximate water level at time of drilling (ATD)

▼ Approximate water level at time after drilling/excavation/well

LANDAU ASSOCIATES

North Road Shop
Poulsbo, Washington

Soil Classification System and Key

Figure B-1

MW-4

SAMPLE DATA | **SOIL PROFILE** | **GROUNDWATER**

Drilling Method: Hollow-Stem Auger

Ground Elevation (ft): Not determined

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Soil Description
0						AC	**(ASPHALT)**
				0.0		GP-GM	Brown, sandy GRAVEL with silt; no odor, no sheen (medium dense, dry) **(FILL)**
				0.0			-Dark asphalt-like material at 1.5 ft
2						ML	Gray, sandy SILT; no odor, no sheen (dense, damp)
				0.0			- 2 inch layer of pea gravel at 2.25 ft
							- becomes wet at 2.7 ft
4						GM	Brown, silty, fine GRAVEL with sand; no odor, no sheen (medium dense, wet) **(ALLUVIUM)**
6				0.0		SM	Brownish gray, very silty, fine SAND with gravel; no odor, no sheen (dense, wet)
						SP-SM	Gray, medium SAND with silt; no odor, no sheen (medium dense, wet)
8							- 2 inch silt lense at 9 ft
				0.0			
10							
12							

Water Level: ATD

Monitoring Well Detail (DOE#: BNF585)

8 in

- Flush-mounted monument with locking cap
- Concrete Seal
- Bentonite chips
- 2-inch diameter, Schedule 40, PVC well casing
- 10/20 Colorado sand pack
- 2-inch diameter, Schedule 40, PVC screen (0.010-inch slot size)
- Threaded end cap
- Native backfill

Boring Completed 06/22/21
Total Depth of Boring = 10.0 ft.

Monitoring Well Completed 06/22/21
Total Depth of Monitoring Well = 9.3 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0544013.020.022 5/18/22 N:\PROJECTS\000_DORMANT-INACTIVE PROJECTS\0544013-INACTIVE.GPJ WELL LOG

LANDAU ASSOCIATES

North Road Shop
Poulsbo, Washington

Log of Monitoring Well MW-4

Figure B-2

MW-5

SAMPLE DATA | **SOIL PROFILE** | **GROUNDWATER**

Drilling Method: Hollow-Stem Auger

Ground Elevation (ft): Not determined

Depth (ft)	Sample Number & Interval	Sampler Type	Blows/Foot	PID (ppm)	Graphic Symbol	USCS Symbol	Description
0						AC	**(ASPHALT)**
				0.0		GP-GM	Brownish gray, sandy GRAVEL with silt; no odor, no sheen (medium dense, dry) **(FILL)**
				0.0			
2							No Recovery from 2.5-5 ft
4						ML	Gray, sandy SILT with trace gravel; no odor no sheen (dense, wet) **(ALLUVIUM)**
				0.0			
6						SP-SM	Gray, medium to coarse SAND with silt; no odor, no sheen (medium dense, wet) -grades to silty
8				0.0			
10							No Recovery
12							

Water Level: ATD

Monitoring Well Detail (DOE#: BNF565)

8 in

- Flush-mounted monument with locking cap
- Concrete Seal
- Bentonite chips
- 2-inch diameter, Schedule 40, PVC well casing
- 10/20 Colorado sand pack
- 2-inch diameter, Schedule 40, PVC screen (0.010-inch slot size)
- Threaded end cap
- Native backfill

Boring Completed 06/22/21
Total Depth of Boring = 10.0 ft.

Monitoring Well Completed 06/22/21
Total Depth of Monitoring Well = 9.3 ft.

Notes:
1. Stratigraphic contacts are based on field interpretations and are approximate.
2. Reference to the text of this report is necessary for a proper understanding of subsurface conditions.
3. Refer to "Soil Classification System and Key" figure for explanation of graphics and symbols.

0544013.020.022 5/18/22 N:\PROJECTS\000_DORMANT-INACTIVE PROJECTS\0544013-INACTIVE.GPJ WELL LOG

LANDAU ASSOCIATES

North Road Shop
Poulsbo, Washington

Log of Monitoring Well MW-5

Figure B-3

APPENDIX C

Waste Disposal Manifest

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
NoneRequired	1	(800) 337-7455	KCDPW-IDW-12-14-21

GENERATOR

5. Generator's Name and Mailing Address
Kitsap Co. Dept Of Public Works
614 Division St -36
Port Orchard, WA 98366
360.710.2524 Attn: Ron Moore

Generator's Site Address (if different than mailing address)
301 NE Bernt RD
Poulsbo, WA 98370

Generator's Phone:

6. Transporter 1 Company Name
DH Environmental, Inc.
U.S. EPA ID Number
WAH000047217

7. Transporter 2 Company Name
U.S. EPA ID Number

8. Designated Facility Name and Site Address
Republic Services of America
5400 W Marginal Way SW
Seattle, WA 98106
(206) 933-5618
U.S. EPA ID Number
N/A

Facility's Phone:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1.	Material Not Regulated by DOT (non-regulated IDW water)	02	DM	400	P	
2.	Material Not Regulated by Dot (non-regulated IDW soil)	02	DM	900	P	
3.						
4.						

13. Special Handling Instructions and Additional Information
1) DH-LND-KCPW-IDW-Water -255gal
2) DH-LND-KCPW-IDW-SOIL 1-16gal
1-55gal

14. **GENERATOR'S/OFFEROR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: X Greg Dixon
Signature: X
Month: 12 Day: 14 Year: 2021

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Jake Heatherly
Signature:
Month: 12 Day: 14 Year: 21

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Michael Hawthorne
Signature: Michael Hawthorne
Month: 12 Day: 15 Year: 21

TRANSPORTER #1

APPENDIX D

Laboratory Analytical Report

August 31, 2021

Ms. Stephanie Renando
Landau Associates, Inc.
155 NE 100th St, Ste 302
Seattle, WA 98125

Dear Ms. Renando,

On August 26th, 7 samples were received by our laboratory and assigned our laboratory project number EV21080123. The project was identified as your NRB Soil/GW Inv / 0544013.040.042. The sample identification and requested analyses are outlined on the attached chain of custody record.

No abnormalities or nonconformances were observed during the analyses of the project samples.

Please do not hesitate to call me if you have any questions or if I can be of further assistance.

Sincerely,

ALS Laboratory Group

Carl Nott
Professional Scientist

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Landau Associates, Inc. 155 NE 100th St, Ste 302 Seattle, WA 98125	DATE: ALS JOB#: ALS SAMPLE#:	8/31/2021 EV21080123 EV21080123-01
CLIENT CONTACT:	Stephanie Renando	DATE RECEIVED:	08/26/2021
CLIENT PROJECT:	NRB Soil/GW Inv / 0544013.040.042	COLLECTION DATE:	8/26/2021 7:45:00 AM
CLIENT SAMPLE ID	MW-2-210826	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range (C5-C12)	NWTPH-GX	U	50	1	UG/L	08/30/2021	KLS
Benzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Toluene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Ethylbenzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Xylenes	EPA-8021	U	3.0	1	UG/L	08/30/2021	KLS
TPH-Diesel Range (C12-C24)	NWTPH-DX	U	130	1	UG/L	08/30/2021	JNF
TPH-Oil Range (C24-C40)	NWTPH-DX	**340**	250	1	UG/L	08/30/2021	JNF

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**90.5**	08/30/2021	KLS
TFT	EPA-8021	**80.4**	08/30/2021	KLS
C25	NWTPH-DX	**73.5**	08/30/2021	JNF

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains an unidentified oil range product.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Landau Associates, Inc. 155 NE 100th St, Ste 302 Seattle, WA 98125	DATE: ALS JOB#: ALS SAMPLE#:	8/31/2021 EV21080123 EV21080123-02
CLIENT CONTACT:	Stephanie Renando	DATE RECEIVED:	08/26/2021
CLIENT PROJECT:	NRB Soil/GW Inv / 0544013.040.042	COLLECTION DATE:	8/26/2021 8:00:00 AM
CLIENT SAMPLE ID	DUP-210826	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range (C5-C12)	NWTPH-GX	U	50	1	UG/L	08/30/2021	KLS
Benzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Toluene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Ethylbenzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Xylenes	EPA-8021	U	3.0	1	UG/L	08/30/2021	KLS
TPH-Diesel Range (C12-C24)	NWTPH-DX	U	130	1	UG/L	08/30/2021	JNF
TPH-Oil Range (C24-C40)	NWTPH-DX	U	250	1	UG/L	08/30/2021	JNF

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**97.0**	08/30/2021	KLS
TFT	EPA-8021	**88.0**	08/30/2021	KLS
C25	NWTPH-DX	**87.1**	08/30/2021	JNF

U - Analyte analyzed for but not detected at level above reporting limit.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Landau Associates, Inc. 155 NE 100th St, Ste 302 Seattle, WA 98125	DATE: ALS JOB#: ALS SAMPLE#:	8/31/2021 EV21080123 EV21080123-03
CLIENT CONTACT:	Stephanie Renando	DATE RECEIVED:	08/26/2021
CLIENT PROJECT:	NRB Soil/GW Inv / 0544013.040.042	COLLECTION DATE:	8/26/2021 8:50:00 AM
CLIENT SAMPLE ID	MW-3-210826	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range (C5-C12)	NWTPH-GX	U	50	1	UG/L	08/30/2021	KLS
Benzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Toluene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Ethylbenzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Xylenes	EPA-8021	U	3.0	1	UG/L	08/30/2021	KLS
TPH-Diesel Range (C12-C24)	NWTPH-DX	**130**	130	1	UG/L	08/30/2021	JNF
TPH-Oil Range (C24-C40)	NWTPH-DX	U	250	1	UG/L	08/30/2021	JNF

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**96.6**	08/30/2021	KLS
TFT	EPA-8021	**90.0**	08/30/2021	KLS
C25	NWTPH-DX	**83.7**	08/30/2021	JNF

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains an unidentified diesel range product.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Landau Associates, Inc. 155 NE 100th St, Ste 302 Seattle, WA 98125	DATE: ALS JOB#: ALS SAMPLE#:	8/31/2021 EV21080123 EV21080123-04
CLIENT CONTACT:	Stephanie Renando	DATE RECEIVED:	08/26/2021
CLIENT PROJECT:	NRB Soil/GW Inv / 0544013.040.042	COLLECTION DATE:	8/26/2021 9:30:00 AM
CLIENT SAMPLE ID	MW-4-210826	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range (C5-C12)	NWTPH-GX	U	50	1	UG/L	08/30/2021	KLS
Benzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Toluene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Ethylbenzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Xylenes	EPA-8021	U	3.0	1	UG/L	08/30/2021	KLS
TPH-Diesel Range (C12-C24)	NWTPH-DX	U	130	1	UG/L	08/30/2021	JNF
TPH-Oil Range (C24-C40)	NWTPH-DX	U	250	1	UG/L	08/30/2021	JNF

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**97.1**	08/30/2021	KLS
TFT	EPA-8021	**91.9**	08/30/2021	KLS
C25	NWTPH-DX	**84.4**	08/30/2021	JNF

U - Analyte analyzed for but not detected at level above reporting limit.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Landau Associates, Inc. 155 NE 100th St, Ste 302 Seattle, WA 98125	DATE: ALS JOB#: ALS SAMPLE#:	8/31/2021 EV21080123 EV21080123-05
CLIENT CONTACT:	Stephanie Renando	DATE RECEIVED:	08/26/2021
CLIENT PROJECT:	NRB Soil/GW Inv / 0544013.040.042	COLLECTION DATE:	8/26/2021 10:20:00 AM
CLIENT SAMPLE ID	MW-1-210826	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range (C5-C12)	NWTPH-GX	U	50	1	UG/L	08/30/2021	KLS
Benzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Toluene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Ethylbenzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Xylenes	EPA-8021	U	3.0	1	UG/L	08/30/2021	KLS
TPH-Diesel Range (C12-C24)	NWTPH-DX	U	130	1	UG/L	08/30/2021	JNF
TPH-Oil Range (C24-C40)	NWTPH-DX	U	250	1	UG/L	08/30/2021	JNF

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**97.4**	08/30/2021	KLS
TFT	EPA-8021	**88.4**	08/30/2021	KLS
C25	NWTPH-DX	**89.8**	08/30/2021	JNF

U - Analyte analyzed for but not detected at level above reporting limit.

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 98208 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	Landau Associates, Inc. 155 NE 100th St, Ste 302 Seattle, WA 98125	DATE: ALS JOB#: ALS SAMPLE#:	8/31/2021 EV21080123 EV21080123-06
CLIENT CONTACT:	Stephanie Renando	DATE RECEIVED:	08/26/2021
CLIENT PROJECT:	NRB Soil/GW Inv / 0544013.040.042	COLLECTION DATE:	8/26/2021 11:05:00 AM
CLIENT SAMPLE ID	MW-5-210826	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range (C5-C12)	NWTPH-GX	U	50	1	UG/L	08/30/2021	KLS
Benzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Toluene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Ethylbenzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Xylenes	EPA-8021	U	3.0	1	UG/L	08/30/2021	KLS
TPH-Diesel Range (C12-C24)	NWTPH-DX	**150**	130	1	UG/L	08/30/2021	JNF
TPH-Oil Range (C24-C40)	NWTPH-DX	U	250	1	UG/L	08/30/2021	JNF

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**96.3**	08/30/2021	KLS
TFT	EPA-8021	**88.2**	08/30/2021	KLS
C25	NWTPH-DX	**83.1**	08/30/2021	JNF

U - Analyte analyzed for but not detected at level above reporting limit.
Chromatogram indicates that it is likely that sample contains an unidentified diesel range product.

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CERTIFICATE OF ANALYSIS

CLIENT:	Landau Associates, Inc. 155 NE 100th St, Ste 302 Seattle, WA 98125	DATE: ALS JOB#: ALS SAMPLE#:	8/31/2021 EV21080123 EV21080123-07
CLIENT CONTACT:	Stephanie Renando	DATE RECEIVED:	08/26/2021
CLIENT PROJECT:	NRB Soil/GW Inv / 0544013.040.042	COLLECTION DATE:	8/26/2021
CLIENT SAMPLE ID	Trip Blanks	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range (C5-C12)	NWTPH-GX	U	50	1	UG/L	08/30/2021	KLS
Benzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Toluene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Ethylbenzene	EPA-8021	U	1.0	1	UG/L	08/30/2021	KLS
Xylenes	EPA-8021	U	3.0	1	UG/L	08/30/2021	KLS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT	NWTPH-GX	**98.2**	08/30/2021	KLS
TFT	EPA-8021	**89.2**	08/30/2021	KLS

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Landau Associates, Inc. 155 NE 100th St, Ste 302 Seattle, WA 98125	DATE:	8/31/2021
		ALS SDG#:	EV21080123
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Stephanie Renando		
CLIENT PROJECT:	NRB Soil/GW Inv / 0544013.040.042		

LABORATORY BLANK RESULTS

MBG-083021W - Batch 169697 - Water by NWTPH-GX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range (C5-C12)	NWTPH-GX	U	UG/L	50	08/30/2021	KLS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-083021W - Batch 169697 - Water by EPA-8021

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
Benzene	EPA-8021	U	UG/L	1.0	08/30/2021	KLS
Toluene	EPA-8021	U	UG/L	1.0	08/30/2021	KLS
Ethylbenzene	EPA-8021	U	UG/L	1.0	08/30/2021	KLS
Xylenes	EPA-8021	U	UG/L	3.0	08/30/2021	KLS

U - Analyte analyzed for but not detected at level above reporting limit.

MB-082721W - Batch 169706 - Water by NWTPH-DX

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range (C12-C24)	NWTPH-DX	U	UG/L	130	08/30/2021	JNF
TPH-Oil Range (C24-C40)	NWTPH-DX	U	UG/L	250	08/30/2021	JNF

U - Analyte analyzed for but not detected at level above reporting limit.

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CERTIFICATE OF ANALYSIS

CLIENT:	Landau Associates, Inc. 155 NE 100th St, Ste 302 Seattle, WA 98125	DATE:	8/31/2021
		ALS SDG#:	EV21080123
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Stephanie Renando		
CLIENT PROJECT:	NRB Soil/GW Inv / 0544013.040.042		

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: 169697 - Water by NWTPH-GX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Volatile Range (C5-C12) - BS	NWTPH-GX	**89.1**			66.5	122.7	08/30/2021	KLS
TPH-Volatile Range (C5-C12) - BSD	NWTPH-GX	**91.1**	**2**		66.5	122.7	08/30/2021	KLS

ALS Test Batch ID: 169697 - Water by EPA-8021

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
Benzene - BS	EPA-8021	**98.1**			83	120	08/30/2021	KLS
Benzene - BSD	EPA-8021	**100**	**2**		83	120	08/30/2021	KLS
Toluene - BS	EPA-8021	**100**			85	115	08/30/2021	KLS
Toluene - BSD	EPA-8021	**101**	**1**		85	115	08/30/2021	KLS
Ethylbenzene - BS	EPA-8021	**93.9**			85	113	08/30/2021	KLS
Ethylbenzene - BSD	EPA-8021	**95.2**	**1**		85	113	08/30/2021	KLS
Xylenes - BS	EPA-8021	**98.1**			85	116	08/30/2021	KLS
Xylenes - BSD	EPA-8021	**99.5**	**1**		85	116	08/30/2021	KLS

ALS Test Batch ID: 169706 - Water by NWTPH-DX

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range (C12-C24) - BS	NWTPH-DX	**82.8**			67	125.2	08/30/2021	JNF
TPH-Diesel Range (C12-C24) - BSD	NWTPH-DX	**87.5**	**6**		67	125.2	08/30/2021	JNF

APPROVED BY

Professional Scientist

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EV21080123

Chain-of-Custody Record

LANDAU ASSOCIATES

- [x] North Seattle (206) 631-8660
- [ ] Tacoma (253) 926-2493
- [ ] Olympia (360) 791-3178
- [ ] Spokane (509) 327-9737
- [ ] Portland (503) 542-1080
- [ ] _____

Date 8-26-2021

Page 1 of 1

Turnaround Time: Standard X / Accelerated _____

Project Name NRB soil/GW Inv Project No. 0544013.040.042

Project Location/Event Poulsbo, WA / Semi annual GW Event

Sampler's Name Armando Huerta

Project Contact Stephanie Renando

Send Results To S. Renando

Special Handling Requirements: _____

Shipment Method: Drop-off

Stored on ice: (Yes) / No

	Sample I.D.	Date	Time	Matrix	No. of Containers	NWTPH-Dx (w/ SGC)	NWTPH-Gx	BTEX (8021)	VOCs (EPA 8260)	Observations/Comments
1	MW-2-210826	8/26/21	745	AQ	4	X	X	X		
2	DUP-210826	8/26/21	800	AQ	4	X	X	X		
3	MW-3-210826	8/26/21	850	AQ	4	X	X	X		
4	MW-4-210826	8/26/21	930	AQ	4	X	X	X		
5	MW-1-210826	8/26/21	1020	AQ	4	X	X	X		
6	MW-5-210826	8/26/21	1105	AQ	4	X	X	X		
7	Trip blanks	—	—	AQ	2		X	X		

Testing Parameters

- [ ] Allow water samples to settle, collect aliquot from clear portion
- [ ] NWTPH-Dx - Acid wash cleanup
- [ ] - Silica gel cleanup
- [ ] Dissolved metal samples were field filtered

Other * Save Volume for Potential follow up

Relinquished by	Received by	Relinquished by	Received by
Signature	Signature	Signature	Signature
Printed Name Armando	Printed Name Shannon Huffman	Printed Name	Printed Name
Company LAI	Company AVS	Company	Company
Date 8-26-21 Time 1338	Date 8/26/21 Time 1342	Date Time	Date Time

WHITE COPY - Laboratory YELLOW COPY - Project File PINK COPY - Client Representative

10/2018

ALS ENVIRONMENTAL

Sample Receiving Checklist

Client: Landau ALS Job #: EV2108012 3

Project: NRB Soil/GW Inv. 0544013.040.042

Received Date: 8/26/2021 Received Time: 1342 By: SMH/CCN

Type of shipping container: Cooler X (2) Box ____ Other ____

Shipped via: FedEx Ground ____ UPS ____ Mail ____ Courier ____ Hand Delivered X
FedEx Express ____

	Yes	No	N/A
Were custody seals on outside of shipping container?	____	X	____
If yes, how many? ____ Where? ____			
Custody seal date: ____ Seal name: ____			
Was Chain of Custody properly filled out (ink, signed, dated, etc.)?	X	____	____
Did all bottles have labels?	X	____	____
Did all bottle labels and tags agree with Chain of Custody?	X	____	____
Were samples received within hold time?	X	____	____
Did all bottles arrive in good condition (unbroken, etc.)?	X	____	____
Was sufficient amount of sample sent for the tests indicated?	X	____	____
Was correct preservation added to samples?	X	____	____

If no, Sample Control added preservative to the following:

Sample Number	Reagent	Analyte

Were VOA vials checked for absence of air bubbles?	X	____	____
Bubbles present in sample #: none.			

Temperature of cooler upon receipt: (1) 5.5 > on ice (2) 5.6 (Cold) Cool Ambient N/A

Explain any discrepancies: ____

Was client contacted? ____ Who was called? ____ By whom? ____ Date: ____

Outcome of call: ____