WELL INSTALLATION REPORT

Site No. 3520
4200 Wheaton Way
Bremerton, Washington
Cleanup Site ID. 10880
VCP No: NW2340
Facility Site ID# 86856327

Prepared for

Eagle Canyon Capital, LLC

March 9, 2018

Project No. 123155

Prepared by

ES ENGINEERING SERVICES
1 Park Plaza #1000, Irvine, CA 92614 | t 714.919.6500 | f 949.988.3514

TABLE OF CONTENTS

LIST OF FIGURES, TABLES AND APPENDICES

1.0 INTRODUCTION

On behalf of Eagle Canyon Capital, LLC (Eagle), ES Engineering Services, LLC (ES) is pleased to provide this *Well Installation Report* summarizing the well installation activities performed at Site No. 3520, located at 4200 Wheaton Way in Bremerton, Washington (**Figure 1**). Well Installation activities were conducted on January 22 and 23, 2018 and comprised the advancement and installation of three remediation wells (RW-1, RW-2 and RW-3). The wells were installed based on confirmation soil sampling results reported in the *Confirmation Soil Sampling Report,* dated March 30, 2017. Confirmation borings CB-1, CB-2 and CB-3 contained elevated hydrocarbons at varying depths condoning the installation of additional soil vapor extraction (SVE) wells to provide additional coverage for vapor extraction.

The scope of work performed included the drilling and installation of three remediation wells (RW-1 through RW-3) to assist in the extraction of remaining volatile organic carbons (VOCs) in soil beneath the Site. A limited amount of soil was sampled during the drilling of each well. Details regarding the well installation activities are contained within this report.

2.0 BACKGROUND

The following sections provide a brief site description, a summary of previous site assessment and remediation activities, and a description of the regional and site geology and hydrogeology.

2.1 Site Description

The Site is located at 4200 Wheaton Way in Bremerton, Washington in the northeast corner of the intersection of Wheaton Way (State Route 303) and Hollis Street. The Site is currently an active retail fuel station located on a 0.49-acre parcel. The Site configuration includes a convenience store, three pump islands with two dispensers each, a canopy and four underground storage tanks (USTs), including one 6,000 gallon tank used to store diesel fuel and three 12,000-gallon tanks used to store unleaded gasoline fuel. The site configuration is illustrated in **Figure 2.**

The Site is located within a mixed land-use area, bordered to the south by Hollis street and to the west by Wheaton Way. An empty parking lot associated with a closed down retail strip mall borders the site to the north. A sports bar and grill borders the site to the east. A restaurant and a retail cannabis store are located across Hollis Street to the south. A clothing retailer, tattoo parlor and retail collectibles store is located across State Route 303 to the west.

2.2 Previous Assessments and Remediation

The following historical summary is based on a review of available documents and summaries provided in the *Site Assessment and Closure Report*, dated October 13, 1997 prepared by Clearwater Group, Inc. (Clearwater), the *Focused Phase II Site Assessment Report,* dated May 30, 2010, the *Well Installation and Pilot Test Report*, dated June 21, 2011 and *Remediation System Status Reports* prepared by Environ Strategy Consultants, Inc. (Environ Strategy).

For reference, a summary of soil sample analytical results from Environ Strategy's and Clearwater's site assessment activities is provided in **Table 2**. In addition, the soil boring locations for each assessment relative to pertinent site features are shown on **Figure 2**.

In September and October 1996, the fuel distribution system (USTs and pump islands) at the subject site was upgraded which included the installation of a 6,000 gallon diesel UST, replacing the existing product distribution system and pump islands as well as installing an oil/water separator. During system upgrades, hydrocarbon-affected soil was encountered. Approximately, 450 tons of impacted soil was excavated and transported to a disposal facility in Tacoma, Washington during the installation of the diesel UST. The release was reported to Ecology and five verification soil samples were collected from the tank cavity for laboratory analysis. In addition, five soil samples were collected from the beneath the product lines and pump islands. The samples were analyzed for BTEX compounds and total petroleum hydrocarbons quantified as gasoline (TPH-Gx). Hydrocarbon impacts in excess of Washington's Model Toxics Control Act (MTCA) Method A Cleanup Levels (CULs) were identified in all ten soil samples. Specifically, the highest levels of fuel hydrocarbons were reported in a composite sample (identified as N&E Wall-8'), which was collected from the north and east sidewall of the diesel tank cavity at a depth of 8 feet. Sample N&E Wall-8' contained TPH-Gx at 7,220 milligrams per kilogram (mg/kg), benzene at 27.6 mg/kg, toluene at 191 mg/kg, ethylbenzene at 111 mg/kg and total xylenes at 626 mg/kg. The soil samples collected were not analyzed for TPH quantified as diesel or for lead.

In June 1997, Clearwater conducted subsurface site assessment activities. During Clearwater's investigation, 17 soil borings (GP-1 through GP-17) were installed at various locations around the site to delineate the extent of hydrocarbon-affected soil. Borings were terminated at a depth of 17 feet below ground surface (bgs) due to refusal. Twenty-six (26) soil samples collected from the borings were analyzed for TPH-Gx and BTEX compounds. Hydrocarbon-affected soil was detected in a majority of the soil borings. The highest concentration of TPH-Gx (1,410 mg/kg) was in a 10-foot sample from boring GP-7 located near the southwest corner of the tank cavity. Similarly, benzene was detected at a maximum level of 11.9 mg/kg in a 10-foot sample collected from GP-5 located east of the existing tank cavity.

In May 2010, Environ Strategy conducted an additional site assessment to evaluate subsurface conditions in the vicinity of the fuel distribution system. Six soil borings (identified as SB-1 through SB-6) were advanced, of which, borings SB-1, SB-2 and SB-3 were located near the existing tank cavity and advanced to a depth of 30 feet. Borings SB-4, SB-5 and SB-6 were drilled at the west end of the southern, central and northern pump islands, respectively, and extended to a depth of 25 feet at SB-4 and to 20 feet bgs at SB-5 and SB-6. The assessment findings are summarized below.

- Hydrocarbon staining and/or odor were observed in subsurface soil collected from Borings SB-2 through SB-6 at depths between 10 to 25 feet bgs.
- Based on visual/olfactory observations, relatively low PID readings (up to 380 ppm at SB-4-10) and comparatively low toluene levels detected in the soil samples, fuel hydrocarbons in soil appeared weathered and are likely associated with impacted soil previously identified during fuel system upgrades and Clearwater's site assessment conducted in 1996 and 1997, respectively.
- TPH-Gx was detected at a maximum concentration of 19,000 mg/kg in sample SB-4-10 (Boring SB-4 at 10 feet bgs), which exceeds the CUL of 30 mg/kg. However, TPH-Gx results from deeper samples SB-4-20 (430 mg/kg) and SB-4-25 (<10 mg/kg), suggested that the vertical extent of impact did not extend beyond a depth of 25 feet. Note that the CUL for TPH-Gx with and without the presence of benzene in the sample matrix is 30 mg/kg and 100 mg/kg, respectively.
- Benzene was detected at a maximum concentration of 2.9 mg/kg in sample SB-5-10 (Boring SB-5 at 10 feet bgs) which is above the CUL of 0.03 mg/kg. Toluene was detected at concentrations up to 6.5 mg/kg (sample SB-3-25), which is below the CUL of 7 mg/kg. Sample SB-4-10 contained the highest levels of ethylbenzene at 160 mg/kg and xylenes at 590 mg/kg, which are above their respective CULs of 6 mg/kg and 9 mg/kg. However, deeper soil samples (SB-4-20 and SB-4-25) contained ethylbenzene and xylenes concentrations that are below CULs. Methyl tert-butyl ether (MTBE) was not detected in any of the samples analyzed.
- Soil samples SB-4-10, SB-4-20 and SB-4-25 were further analyzed for the full-list of volatile organic compounds (VOCs). Neither ethylene dibromide (EDB) nor ethylene dichloride (EDC) were detected in these samples. Naphthalene was detected at 76 mg/kg in SB-4-10, which is above the cleanup standard of 5 mg/kg. Sample SB-4-20 contained naphthalene at 0.74 mg/kg and was non-detect in sample SB-4-25. Detectable levels of additional VOCs were reported in samples SB-4-10, SB-4-20 and SB-4-25. The MTCA Cleanup Regulation Table 740-1, "Method A Soil Cleanup Levels for Unrestricted Land Uses" does not designate CULs for the additional VOCs detected.
- Samples SB-4-10 and SB-4-25 were further analyzed for total lead. Sample SB-4-10 contained lead at 19 mg/kg, which is below the CUL of 250 mg/kg. Sample SB-4-25 did not contain detections for total lead.

Due to elevated levels of TPH-Gx detected in soil samples SB-3-25, SB-4-10, SB-5-10 and SB-6-10, the samples were further analyzed for total petroleum hydrocarbons quantified as diesel (TPH-Dx) and oil-range petroleum hydrocarbons (ORPH). Neither TPH-Dx nor ORPH were detected in the samples analyzed. Soil analytical results from previous assessment borings are summarized in **Table 2** and shown on **Figure 3**.

In March 2011, four SVE remediation wells (VE-1 through VE-4) were installed at the Site. In April 2011, remediation by SVE was tested at the Site and shown to be effective at removing hydrocarbons from subsurface soil. Based on pilot testing results, a permanent SVE system was installed at the Site and operations began in February 2012. From February 28, 2012 through February 28, 2014, an estimated 12,740 pounds of hydrocarbons were removed from the subsurface. Based on operational and monitoring (O&M) data, the SVE system was shut down on March 13, 2014 and confirmation soil sampling was proposed to evaluate soil conditions in follow-up to SVE operations and to further investigate groundwater conditions beneath the Site.

The *Workplan for Confirmation Sampling* (Workplan), dated February 15, 2014, proposing the installation of four confirmation borings was submitted to Ecology for review and comment. Opinion from Ecology on the Workplan was pending at the time of implementation of this scope of work; authorization to proceed was given by Eagle.

On December 10 and 21, 2016, ES advanced four confirmation soil borings (CB-1 through CB-4) around the dispensers and USTs to further characterize the nature and extent of soil contamination beneath the Site. Soil borings CB-1 through CB-4 confirmed the positive effects of the SVE system and also indicated residual impacts remain at concentrations above MTCA Method A CULs. Maximum TPH-Gx and benzene concentrations detected in soil from the 2016 confirmation borings are shown on **Figure 4**.

3.0 GEOLOGY AND HYDROGEOLOGY

The following sections summarize the regional geologic setting and the shallow, subsurface sedimentology, lithology and hydrogeological conditions beneath the Site.

3.1 Regional Setting

The Site is located in the City of Bremerton at an approximate elevation of 300 feet above mean sea level (amsl). The City of Bremerton is situated on a small peninsula within Puget Sound bordered by the Port Washington Narrows, Sinclair Inlet and Port Orchard to the west, south and east, respectively. The City of Bremerton is located within Kitsap County which includes a peninsula and multiple islands within the northern portion of the Puget Sound Trough. This lowland is located between the Olympic Mountains and the Cascade Range and primarily consists broad undulating plateaus that are separated by valleys and marine embayments. The plateau surfaces generally consist of rolling hills and ridges which had been carved and modified by periods of glaciation.

The geology of the northern portion of the Puget Sound trough consists primarily of consolidated rocks of the Tertiary and earlier age (Jack E. Sceva, 1957). The oldest outcrop in the Kitsap County is a sequence of basaltic flows which have been correlated to the volcanic rocks in British Columbia. These consolidated rocks are covered by unconsolidated deposits of clay, silt, sand, gravel and glacial till; partially filling the trough. These sediments were most likely deposited by water and ice during the Pleistocene glacial epoch.

3.2 Site Geology and Hydrogeology

Based on the findings of prior assessments, soils beneath the Site consist predominately of silty-sand, poorly-graded sand and well-graded sand with silt to approximately 55 feet bgs, the maximum depth explored at the Site. The gravel content generally increases with depth. During the January, 2018 well installations, soils encountered were generally grey to brown, non-plastic silty-sand to approximately 25 feet bgs and very dense gravelly sands were reported from 30 feet to 40 feet. The geology is generally consistent throughout the site.

Groundwater has not yet been encountered during any site assessment activities completed to date. A limited amount of isolated perched groundwater has been encountered in borings completed at the Site, however, sustainable amounts of usable groundwater have not been detected. ES conducted a search of the Ecology well log database in an attempt to determine the depth to static, regional groundwater. The database indicated of several wells near the Site.

- The nearest water well to the Site is a domestic water well, listed as being owned by Everett Edwards. This well appears to be located approximately 200 feet west of the Site, at 4163 Wheaton Way. This 6-inch diameter well was installed in 1986 to a total depth of approximately 276 feet bgs. A static water level of 142 feet below the top of the well casing (btoc) is recorded on the log and the land surface elevation is listed at 320 feet above mean sea level (amsl), however, this is believed to be an approximate elevation based on topographic maps available at the time this well was installed.
- A domestic water well, listed as being owned by Weaton Way Properties, appears to be located approximately 1,400 feet west-southwest of the Site. The well was reportedly completed with 36-inch casing to 53 feet bgs and was decommissioned in 2007. A static water level of 45 feet btoc was also indicated at that time. The ground elevation in the immediate area around the Wheaton Way Properties well is approximately 320 feet amsl.
- A domestic water well was installed in 1945 and is listed as being owned by E.C. Enhelder. The log indicates that the well was completed with 6-inch casing to a depth of 333 feet bgs. The log does not indicate that well screens or a pump were installed and does not list a depth to static water level. Although no address is listed for the wells location, it is estimated that the well was located approximately 1,500 feet west-northwest of the Site.
- Various other shallow resource protection wells are listed as being present within the vicinity of the Site, however, none of these wells indicate the presence of groundwater. The deepest of these wells is Well RW-3, which was installed during the current site assessment activities. Limited perched groundwater was encountered during installation of this well.

Groundwater is expected beneath the Site at approximately 100 feet bgs. This depth is expected to change very slightly with seasonal weather patterns.

4.0 SOIL BORINGS AND WELL INSTALLATION

Three remediation wells (RW-1 through RW-3) were installed to provide additional coverage for the vapor extraction system in order to further remediate hydrocarbon impacts associated with the Site. The approximate locations of the borings/wells are shown on **Figure 2**.

A description of the field activities, observations and analytical results are presented in the following sections.

4.1 Permitting, Pre-marking and Notifications

Prior to drilling, ES marked the proposed boring locations in white spray paint and the ONE CALL utility notification center was notified (ONE CALL TICKET #18019172, **Appendix A**). ONE CALL in turn notified member utility providers of ES's intent to drill and requested their subsurface utilities/structures be marked. ONE CALL members marked the Site prior to starting field activities.

All borings were located on private property. Notices of Intent to construct monitoring wells were filed with Ecology on behalf of Eagle, by the drilling contractor, prior to mobilizing to the Site. Ecology, Eagle and the service station were notified in advance of field activities.

4.2 Field Activities

Before commencing field activities, a daily "tailgate" site health and safety meeting was held with ES personnel and subcontracted employees. Site personnel were required to read and acknowledge understanding of the Project Health and Safety Plan (HASP) before initiating work. Copies of the daily health and safety forms and HASP signature page are included as **Appendix B.**

4.3 Soil Borings

Cascade Drilling, LP (Cascade) of Woodinville, Washington was contracted by ES for drilling and well installation services. ES oversaw Cascade during the advancement of Wells RW-1 through RW-3. Prior to drilling, the well locations were cleared for buried utilities and underground piping to a depth of five feet using a vacuum truck and hand tools. Borings RW-1 and RW-2 were advanced to a total depth of 40 feet bgs and soil boring RW-3 was advanced to 55 feet bgs. The borings were drilled using a truck mounted CME-75 drilling rig, equipped with 8-inch diameter hollow stem augers.

Soil samples were generally collected at ten-foot intervals using 18-inch long, 3-inch outside diameter, 2.5-inch inside diameter split-spoon samplers, driven with a 140-pound, down-hole hammer.

The recovered soil was described in accordance with the Unified Soil Classification System by a geologist licensed in Washington State.

Field screening for VOCs was performed by placing a disaggregated portion of each sample in a sealed plastic bag and monitoring the soil for headspace volatility using a photoionization detector (PID). The recorded descriptions, blow-counts, soil headspace PID readings and other visual and olfactory observations are presented in boring logs (**Appendix C**).

Three samples (RW-1-30, RW-2-30 and RW-3-20) were collected for analysis of extractable petroleum hydrocarbons (EPH) and volatile petroleum hydrocarbons (VPH). Each soil sample collected for laboratory analysis was prepared in accordance with Environmental Protection Agency (EPA) 5035 sampling method. Each laboratory sample consisted of three volatile organic analysis (VOA) vials, each containing a 5-gram soil aliquot and preservative in addition to one 4-ounce glass jar. Sample containers were immediately capped, sealed, labeled and stored in an ice chilled cooler. Samples were delivered to the analytical laboratory under chain-of-custody protocol.

Down-hole drilling equipment was steam-cleaned within a self-contained decontamination trailer and allowed to air dry prior to reuse. Additionally, sampling equipment was cleaned before and after each use in Liquinox® detergent (or equivalent) and allowed to air dry prior to reuse.

The field observations and subsurface soils encountered during drilling are summarized below:

- Soil borings RW-1 and RW-2 were drilled to a total depth of 40 feet bgs. Soil boring RW-3 was advanced to a total depth of 55 feet bgs.
- Soils encountered during drilling primarily consisted of silty-sand and gravelly sand. Sandy gravels, silt and sand were also encountered. In general, sands were medium dense to dense; loose sands were noted at approximately 10 feet bgs in well RW-2. Sands were primarily poorly sorted (well graded) in borings RW-1 and RW-2. Sands were reported as poorly graded in boring RW-3. Overall, grain sizes varied from silt to medium gravel.
- VOC concentrations detected during PID field screening ranged from 0.0 parts per million by volume (ppmV) to 652 ppmV. Based on visual and olfactory observations, fuel hydrocarbon odors and/or staining were noted in all three borings. However, strong to moderate odors were noted in soil samples collected at 20 feet (RW-3) and 30 feet (RW-1 and RW-2).
- Perched groundwater, potentially generated from weather conditions during drilling (heavy rain storms), was detected at approximately 27 feet bgs in borings RW-1 and RW-2; however, consistent, static groundwater was not detected beneath the Site.

Table 3 presents analytical results for soil samples collected during this assessment. Additional lithologic details are presented on the boring logs included as **Appendix C**.

4.4 WELL INSTALLATION

Remediation wells, RW-1 through RW-3, were constructed inside the annulus of the 8-inch augers using 4-inch diameter, flush-threaded schedule 40 polyvinyl chloride (PVC) well casing and 0.020-inch factory-slotted PVC well screen. Wells RW-1 and RW-2 were screened from approximately 25 feet bgs to 40 feet bgs and well RW-3 was screened from 40 feet bgs to 55 feet bgs. A filter pack consisting of #10/20 sand was placed from the bottom of the well to approximately 2 feet above the top of screen. The remaining annular space was filled with hydrated, 3/8-inch sodium bentonite chips to within 3 feet bgs. Concrete was then placed up to surface grade and each well was secured with a water tight, traffic rated well monument and a water tight well cap. The boring locations are shown in **Figures 2.**

Well construction details are summarized in **Table 1** and depicted on the boring logs included as **Appendix C**. Well construction diagrams are included as **Appendix D**.

5.0 ANALYTICAL RESULTS

The soil samples were transported under chain-of-custody documentation to Environmental Services Network Northwest (ESN) of Olympia, Washington, a State-certified environmental laboratory.

Soil samples were analyzed for EPH and VPH by Northwest Method NWEPH and NWVPH, respectively. These samples were collected for the potential use in MTCA Method B regulation calculations. The analytical data has been tabulated in **Table 3**. Laboratory analytical reports are provided as **Appendix E.**

6.0 WASTE MANAGEMENT

Soil cuttings and decontamination water generated during drilling, well installation and development activities were placed into Department of Transportation (DOT)-approved 55-gallon steel drums and were labeled, sealed, and temporarily stored at the Site pending disposal. Fifteen (15) drums of soil cuttings and 4 drums of water were generated during the field activities. Fifteen drums of investigation derived waste were removed from the Site on March 5, 2018. The remaining drums will be removed from the Site in the near future. The non-hazardous waste manifests documenting the transportation of the waste drums will be forwarded upon request.

7.0 CONTAMINATION DISTRIBUTION AND RECOMMENDATIONS

Previous site investigations have documented soil contamination resulting from onsite fueling operations. Historically, the extent of the soil contamination has been limited to the southern portion of the Site, west of the dispenser islands and east of the USTs. The October 2016 confirmation borings affirmed the positive effects of the SVE system and revealed remaining residual impacts within the contamination plume at depths deeper than previously investigated.

The remediation wells (RW-1 through RW-3) installed at the Site were screened at deeper intervals and are intended to address the deeper remaining hydrocarbons. ES intends to rehabilitate/ repair the existing SVE piping and equipment as well as connect the newly installed remediation wells prior to reinstating SVE operations. Routine operations and maintenance will be reinstated upon restarting the SVE system and the data collected will be used to optimize system performance and evaluate remedial progress. Once the concentrations of influent COCs are sufficiently reduced, ES may recommend rebound testing or additional soil borings to confirm successful remediation efforts and to fully characterize the Site.

9.0 CLOSURE

ES is pleased to be of service to Eagle and Ecology. If there are questions regarding this report or if additional information is required, please do not hesitate to contact ES at (714) 919-6500.

Respectfully submitted,

Nicholas Olivier, LG
Project Geologist

NICHOLAS J. OLIVIER

Laura Skow, PG
Project Manager

LAURA B. SKOW

10.0 REFERENCES

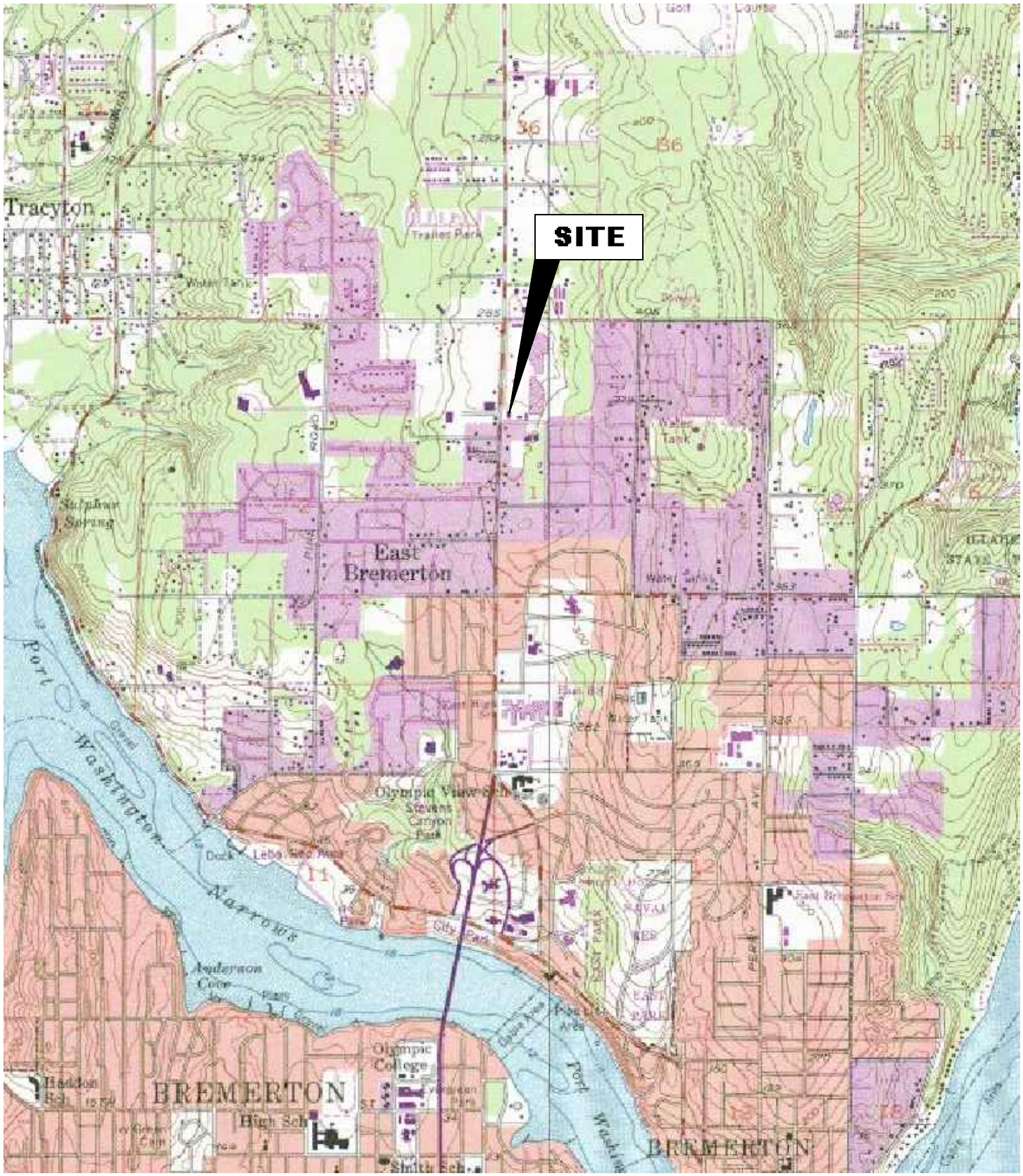
Antea Group, 2015, *Soil Investigation Report, Former Platinum Energy Service Station #2603131, 4808 Highway 303, Bremerton, Washington*, May 1, 2015.

ES Engineering Services, LLC. 2017. *Confirmation Soil Sampling Report, Site No. 3520, 4200 Wheaton Way, Bremerton, Washington,* March 30, 2017.

Sceva, Jack E. "Geology and Groundwater Resources of Kitsap County Washington." pubs.usgs.gov/wsp/1413/report.pdf.

WELL REPORTS, 2018, Washington State Department of Ecology (accessed March 2018).

FIGURES



Map Information: Maptech
Terrain Navigator—2nd Ed.—San Juan Island
Olympic Peninsula/Sea—Tac (WA)
42°36'10"N 122°37'42"W

ES ENGINEERING SERVICES
1036 W. Taft Avenue, Orange, CA 92865 | t 714.919.6500 | f 714.919.6501

N

0 2000

APPROX. SCALE: 1" = 2000'

FIGURE 1

SITE LOCATION MAP

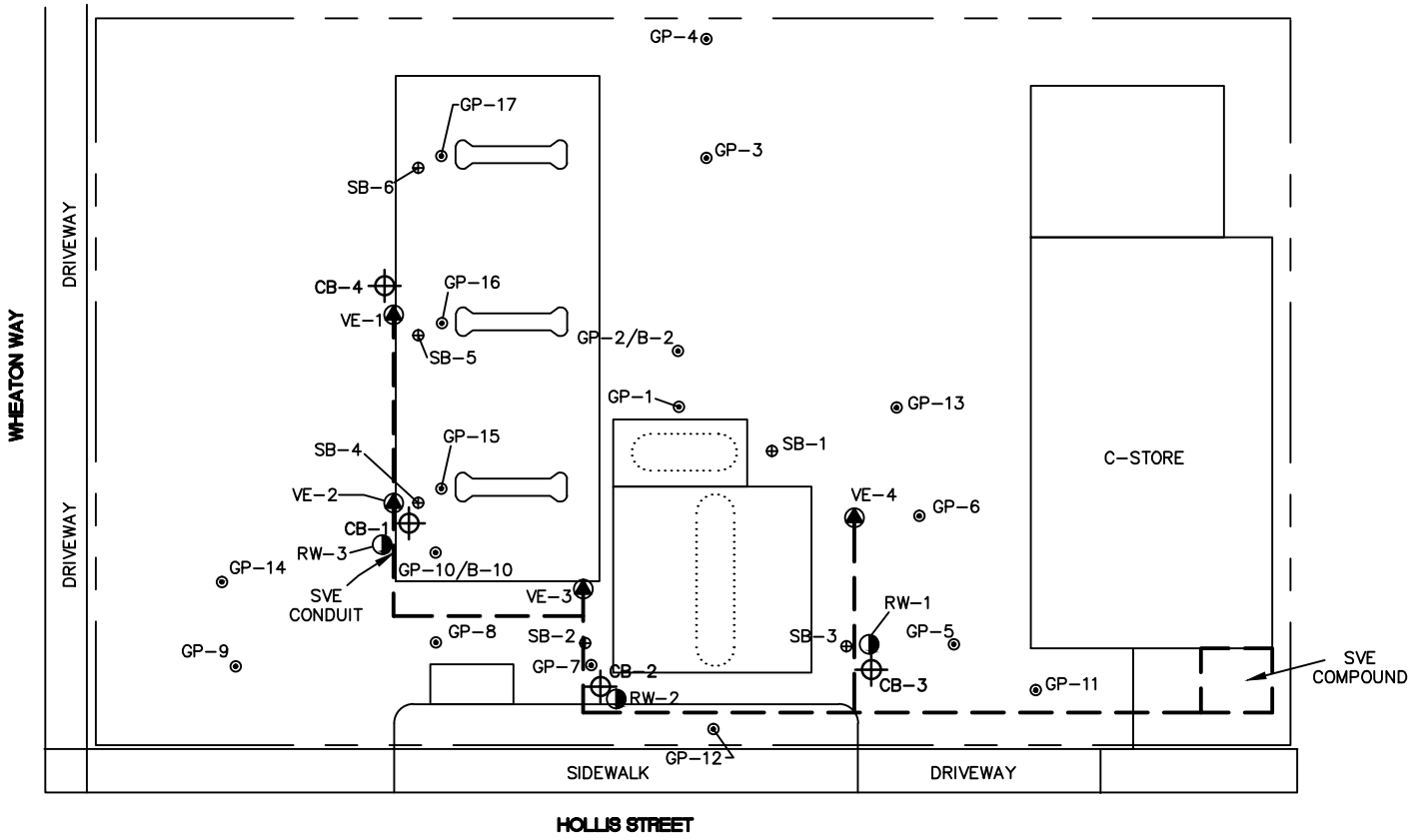
Site No. 3520
4200 Wheaton Way
Bremerton, Washington

DATE DRAWN
03/16/2017

PROJECT NO.
623

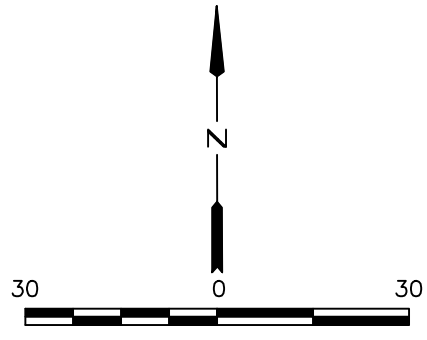
FILE NO.
623F1—SLM

W:\03_Site Assessment & Remediation\Eagle Canyon (PC&F)\01—3520 — Wheaton Way, Bremerton WA (#623)\Topo, Terrain, Maps\CAD\623F1—SLM.dwg



LEGEND

SB-1 ⊕	Soil Boring (Environ Strategy, 2010)
GP-1 ⊙	Soil Boring (Clearwater, 1997)
◑	Remediation Well
◭	Soil Vapor Extraction Well
▭	Underground Storage Tank
▭	Pump Island
⊕	Confirmation Soil Boring (ES Engineering, 2016)
SVE	Soil Vapor Extraction



APPROXIMATE SCALE: 1" = 30'

ES ENGINEERING SERVICES
1 Park Plaza, Suite 1000, Irvine, CA 92614 | t 714.919.6500 | f 949.988.3514

FIGURE 2

SITE PLAN PLAN SHOWING SOIL BORING AND WELL LOCATIONS

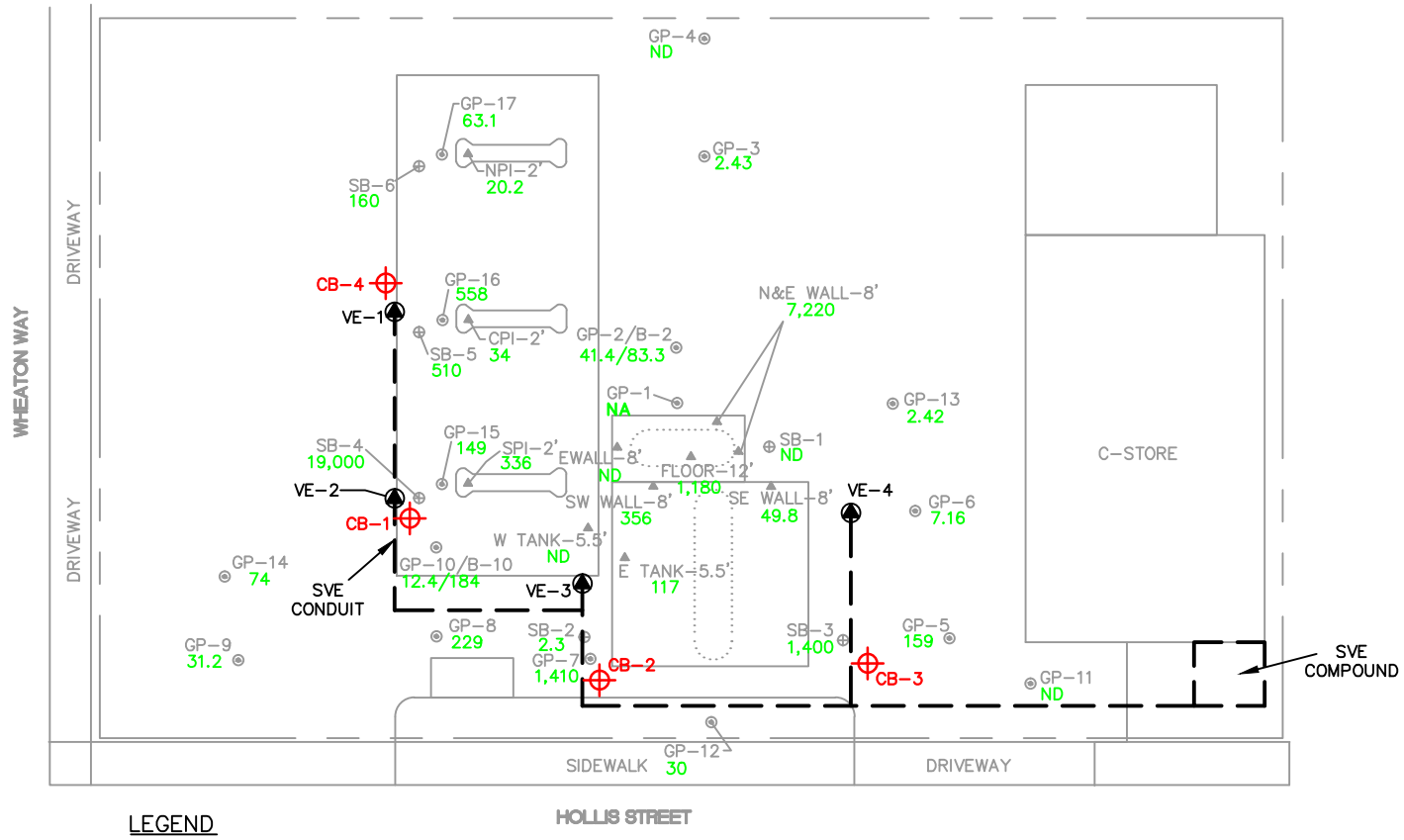
Site No. 3520
4200 Wheaton Way
Bremerton, Washington

DATE DRAWN
02/12/2018

PROJECT NO.
623

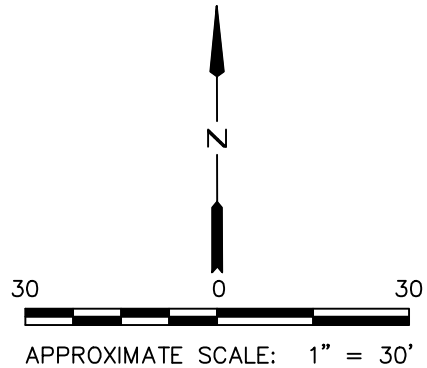
FILE NO.
623F2-SP

C:\Users\asrihiran\Desktop\Kris's Folder\623.dwg



LEGEND

SB-1 ⊕	Soil Boring (Environ Strategy, 2010)
GP-1 ⊙	Soil Boring (Clearwater, 1997)
▲	Soil Vapor Extraction Well
▲	Verification Soil Sample (Clearwater, 1997)
⬭	Underground Storage Tank
⬭	Pump Island
⊕	Confirmation Soil Boring (ES Engineering, 2016)
74	Highest TPH-Gx Concentration in Soil (See Table 2 For Additional Details)
mg/kg	Milligrams per Kilogram
ND	Not Detected At or Above The Listed Laboratory Method Detection Limit
NA	Not Analyzed/Not Available
SVE	Soil Vapor Extraction



APPROXIMATE SCALE: 1" = 30'

ES ENGINEERING SERVICES
1 Park Plaza, Suite 1000, Irvine, CA 92614 | t 714.919.6500 | f 714.919.6501

FIGURE 3

SITE PLAN PLAN SHOWING HIGHEST HISTORICAL TPH-Gx CONCENTRATIONS IN SOIL

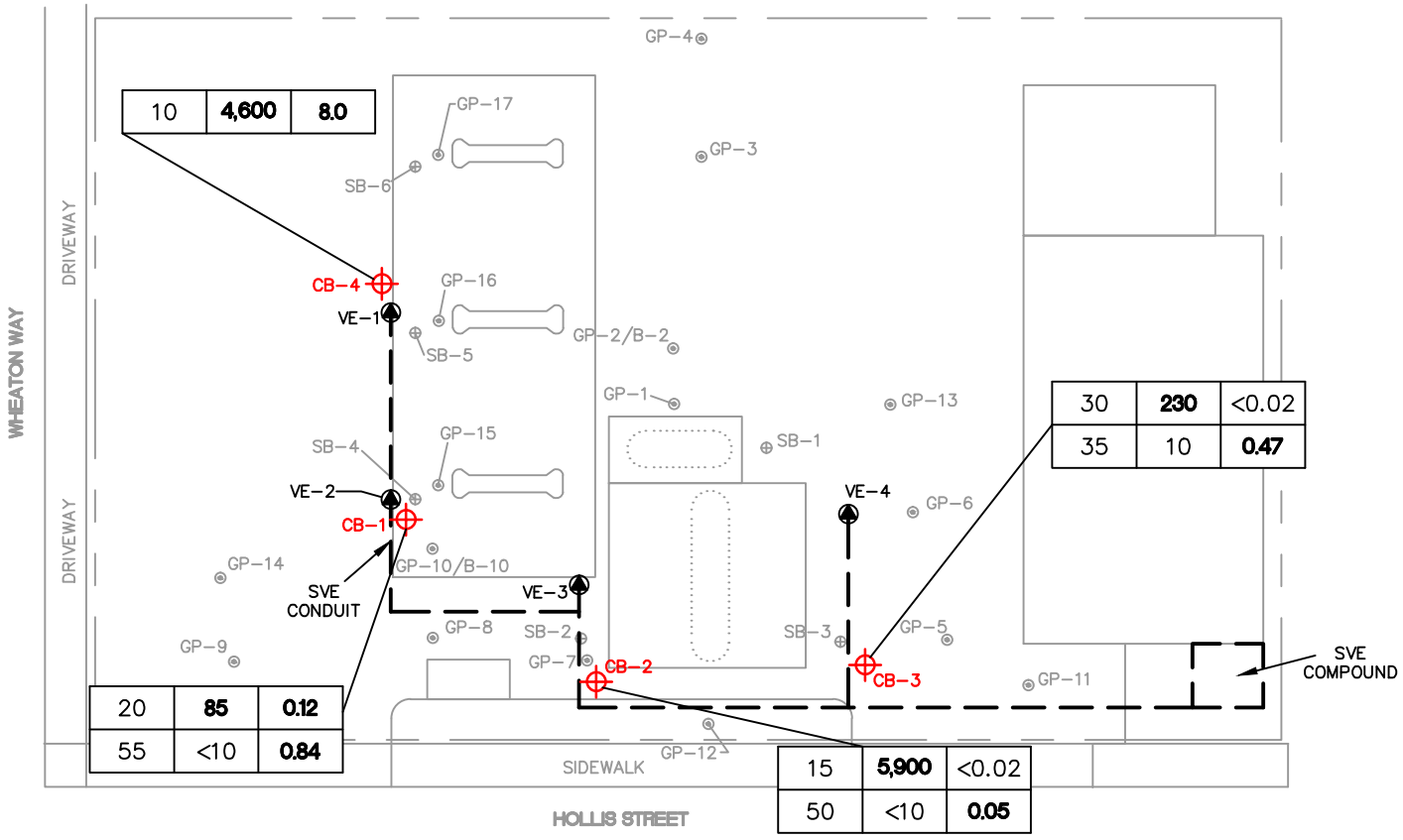
Site No. 3520
4200 Wheaton Way
Bremerton, Washington

DATE DRAWN 03/16/2017

PROJECT NO. 623

FILE NO. 623F3-TPH

W:\03_Site Assessment & Remediation\Eagle Canyon (PC&F)\01-3520 - Wheaton Way, Bremerton WA (#623)\Reports\2016 Confirmation Soil Sampling Report\DWGs\623.dwg



LEGEND

SB–1 ⊕	Soil Boring (Environ Strategy, 2010)
GP–1 ⊙	Soil Boring (Clearwater, 1997)
▲	Soil Vapor Extraction Well
⬭	Underground Storage Tank
▭	Pump Island
⊕	Confirmation Soil Boring (ES Engineering, 2016)
TPH–Gx	Total Petroleum Hydrocarbons as Gasoline
Conc.	Concentration
ft bgs	Feet Below Ground Surface
SVE	Soil Vapor Extraction
<10	Not Detected At or Above The Listed Laboratory Method Detection Limits

Depth ft bgs	TPH–Gx Conc.	Benzene Conc.
15	5,900	<0.02
50	<10	0.05

Concentrations measured in milligrams per kilogram (mg/kg)

Concentrations in **BOLD** exceed MTCA cleanup levels

N

30 0 30

APPROXIMATE SCALE: 1" = 30'

ES ENGINEERING SERVICES
1 Park Plaza, Suite 1000, Irvine, CA 92614 | t 714.919.6500 | f 714.919.6501

FIGURE 4

SITE PLAN PLAN SHOWING MAXIMUM TPH–Gx AND BENZENE CONCENTRATIONS IN SOIL

Site No. 3520
4200 Wheaton Way
Bremerton, Washington

DATE DRAWN 03/16/2017

PROJECT NO. 623

FILE NO. 623F4–TPHB

W:\03_Site Assessment & Remediation\Eagle Canyon (PC&F)\01–3520 – Wheaton Way, Bremerton WA (#623)\Reports\2016 Confirmation Soil Sampling Report\DWGs\623.dwg

TABLES

TABLE 1

Well Construction Details
Station No. 3520
Bremerton, Washington
Page 1 of 1

Well ID	Soil Boring ID	Ecology Well ID Tag No.	Consultant	Date Installed	Total Boring Depth (feet)	Total Well Depth (feet)	Well Type - Casing Diameter (inches)	Screen Interval (feet)	Slot Size (inches)	Sealing Material	Casing Elevation (feet amsl)
RW-1	RW-1	BKF-100	ES	01/22/18	40.0	40.0	4.0	25.0-40.0	0.020	Bentonite	--
RW-2	RW-2	BKF-101	ES	01/23/18	40.0	40.0	4.0	25.0-40.0	0.020	Bentonite	--
RW-3	RW-3	BKF-102	ES	01/23/18	55.0	55.0	4.0	40.0-55.0	0.020	Bentonite	--

Notes:
amsl: above mean sea level
ES: ES Engineering Services, LLC
MW: monitoring well

Table 2
Summary of Soil Sample Results
Site No. 3520
Bremerton, Washington

Sample ID	Sample Date	Depth (ft bgs)	PID (ppmV)	TPH-Ox (mg/kg)	TPH-Dx (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total Pb (mg/kg)
				NWTPH-Dx		NWTPH-Gx	EPA Method 8260B/8020A				
Additional Site Assessment - Clearwater, June 1997											
GP-1	6/17/97	0-4	--	--	--	--	--	--	--	--	--
GP-1	6/17/97	4-8	--	--	--	--	--	--	--	--	--
GP-1	6/17/97	8-12	--	--	--	--	--	--	--	--	--
GP-2	6/17/97	0-4	131	--	--	--	--	--	--	--	--
GP-2	6/17/97	4-8	26	--	--	--	--	--	--	--	--
GP-2	6/17/97	8-12	1,454	--	--	--	--	--	--	--	--
GP-2	6/17/97	12-15.5	130	--	--	41.4	ND	ND	0.0846	0.854	--
B-2	6/17/97	10	1,454	--	--	83.3	ND	0.0886	0.141	0.14	--
GP-3	6/17/97	0-4	28	--	--	--	--	--	--	--	--
GP-3	6/17/97	4-8	12	--	--	--	--	--	--	--	--
GP-3	6/17/97	8-12	21	--	--	2.43	ND	ND	ND	ND	--
GP-3	6/17/97	12-14	13	--	--	ND	ND	ND	ND	ND	--
GP-4	6/17/97	0-4	7	--	--	--	--	--	--	--	--
GP-4	6/17/97	4-8	16	--	--	--	--	--	--	--	--
GP-4	6/17/97	8-9.5	5	--	--	ND	ND	ND	ND	ND	--
GP-5	6/17/97	5	40	--	--	--	--	--	--	--	--
GP-5	6/17/97	10	1,489	--	--	**159**	**11.9**	**26.5**	2.66	**14.5**	--
GP-5	6/17/97	15	122	--	--	ND	ND	ND	ND	ND	--
GP-6	6/17/97	5	8	--	--	--	--	--	--	--	--
GP-6	6/17/97	10	74	--	--	7.16	ND	0.254	0.101	0.692	--
GP-7	6/17/97	5	42	--	--	--	--	--	--	--	--
GP-7	6/17/97	10	1,343	--	--	**1,410**	**4.68**	**37.1**	**19.3**	**135**	--
GP-7	6/17/97	15	256	--	--	**30.8**	**2.12**	3.95	0.492	3.19	--

Table 2
Summary of Soil Sample Results
Site No. 3520
Bremerton, Washington

Sample ID	Sample Date	Depth (ft bgs)	PID (ppmV)	TPH-Ox (mg/kg)	TPH-Dx (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total Pb (mg/kg)
				NWTPH-Dx		NWTPH-Gx	EPA Method 8260B/8020A				
GP-8	6/17/97	5	24	--	--	--	--	--	--	--	--
GP-8	6/17/97	10	957	--	--	**166**	ND	0.767	2.18	**13.8**	--
GP-8	6/17/97	15	96	--	--	**229**	ND	4.25	3.99	**23.3**	--
GP-9	6/17/97	5	15	--	--	--	--	--	--	--	--
GP-9	6/17/97	10	48	--	--	31.2	ND	ND	ND	ND	--
GP-10	6/17/97	5	29	--	--	--	--	--	--	--	--
GP-10	6/17/97	15	57	--	--	12.4	**0.317**	2.08	0.223	1.42	--
B-10	6/17/97	10	1,676	--	--	**184**	**0.266**	2.36	1.68	**9.11**	--
GP-11	6/18/97	5	3	--	--	--	--	--	--	--	--
GP-11	6/18/97	10	158	--	--	--	--	--	--	--	--
GP-11	6/18/97	15	5	--	--	ND	ND	ND	ND	ND	--
GP-12	6/18/97	5	25	--	--	--	--	--	--	--	--
GP-12	6/18/97	10	207	--	--	--	--	--	--	--	--
GP-12	6/18/97	15	1,044	--	--	**30**	**2.07**	6.21	0.248	3.13	--
GP-12	6/18/97	20	11	--	--	2.53	ND	0.0809	ND	0.113	--
GP-13	6/18/97	5	8	--	--	--	--	--	--	--	--
GP-13	6/18/97	10	9	--	--	2.42	ND	ND	ND	ND	--
GP-14	6/18/97	5	14	--	--	--	--	--	--	--	--
GP-14	6/18/97	10	95	--	--	**74**	**0.186**	0.298	0.819	3.52	--
GP-15	6/18/97	5	178	--	--	--	--	--	--	--	--
GP-15	6/18/97	10	808	--	--	**149**	**0.799**	6.1	1.61	**9.59**	--
GP-16	6/18/97	5	34	--	--	2.25	ND	ND	ND	ND	--
GP-16	6/18/97	10	1,081	--	--	**558**	**5.68**	**23.3**	**8.47**	**44.1**	--
GP-17	6/18/97	5	126	--	--	--	--	--	--	--	--
GP-17	6/18/97	10	329	--	--	**63.1**	**1.5**	1.08	0.765	3.15	--

Table 2
Summary of Soil Sample Results
Site No. 3520
Bremerton, Washington
Page 3 of 5

Sample ID	Sample Date	Depth (ft bgs)	PID (ppmV)	TPH-Ox (mg/kg)	TPH-Dx (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total Pb (mg/kg)
				NWTPH-Dx		NWTPH-Gx	EPA Method 8260B/8020A				
SS-1	9/26/97	--	--	--	--	**2,110**	**2.61**	**77.9**	**40.9**	**230**	--
SS-2	9/26/97	--	--	--	--	11.7	ND	ND	ND	0.520	--
FLOOR-12'	9/26/97	12	--	--	--	**1,180**	**6.87**	**49.7**	**17.2**	**72.6**	--
SW WALL-8'	9/26/97	8	--	--	--	**356**	**4.85**	**13.5**	5.4	**30.3**	--
SE WALL-8'	9/26/97	8	--	--	--	**49.8**	**6.95**	5.67	0.83	5.01	--
N&E WALL-8'	9/26/97	8	--	--	--	**7,220**	**27.6**	**191**	**111**	**626**	--
E WALL-8'	9/26/97	8	--	--	--	ND	**1.16**	0.358	0.134	0.546	--
E TANK-5.5'	10/10/96	5.5	--	--	--	**117**	**1.07**	**12.9**	2.68	**13.4**	--
W TANK-5.5'	10/10/96	5.5	--	--	--	ND	**0.278**	0.0642	ND	1.85	--
SPI-2'	10/1/96	2	--	--	--	**336**	ND	0.246	0.54	4.75	--
CPI-2'	10/1/96	2	--	--	--	34	ND	ND	0.11	0.613	--
NPI-2'	10/1/96	2	--	--	--	20.2	ND	0.103	0.0872	1.06	--
Focused Phase II - ES, May 2010											
SB-1-15	5/11/10	15	<10	--	--	<10	0.03	<0.05	<0.05	0.09	--
SB-1-30	5/11/10	30	<10	--	--	<10	0.02	<0.05	<0.05	0.09	--
SB-2-15	5/11/10	15	<10	--	--	2.3	**0.20**	0.78	0.12	0.55	--
SB-2-30	5/11/10	30	<10	--	--	<10	0.03	<0.05	<0.05	0.06	--
SB-3-20	5/11/10	20	94	--	--	<10	<0.02	0.07	0.06	0.32	--
SB-3-25	5/11/10	25	<10	<100	<50	**1,400**	**0.13**	6.5	**11**	**51**	--
SB-3-30	5/11/10	30	<10	--	--	<10	0.03	0.11	0.05	0.24	--
SB-4-10	5/11/10	10	380	<100	<50	**19,000**	**1.5**	0.19	**160**	**590**	19
SB-4-20	5/11/10	20	220	--	--	**430**	0.029	0.024	0.55	3.6	--
SB-4-25	5/11/10	25	<10	--	--	<10	0.021	<0.05	0.055	0.24	<5.0

Table 2
Summary of Soil Sample Results
Site No. 3520
Bremerton, Washington
Page 4 of 5

Sample ID	Sample Date	Depth (ft bgs)	PID (ppmV)	TPH-Ox (mg/kg)	TPH-Dx (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total Pb (mg/kg)
				NWTPH-Dx		NWTPH-Gx	EPA Method 8260B/8020A				
SB-5-10	5/11/10	10	350	<100	<50	**510**	**2.9**	4.0	6.0	**30**	--
SB-5-20	5/11/10	20	<10	--	--	5.0*	**0.08**	0.26	0.09	0.47	--
SB-6-10	5/11/10	10	20	<100	<50	**160**	**0.17**	<0.05	1.7	1.4	--
SB-6-20	5/11/10	20	<10	--	--	<10	**0.05**	<0.05	<0.05	0.05	--
Soil Vapor Extraction Well Installation - ES, March 2011											
VE-1-30	3/31/11	30	105	<100	<50	<10	<0.02	<0.05	<0.05	0.17	--
VE-2-30	3/31/11	30	171	<100	<50	<10	<0.02	0.082	<0.05	0.18	<5.0
Confirmation Soil Borings - ES, December 2016											
CB-1-15	12/20/16	15	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--
CB-1-20	12/20/16	20	1,023	--	--	**85**	**0.12**	**1.1**	0.53	3.1	--
CB-1-30	12/20/16	30	21.3	--	--	<10	<0.02	0.08	<0.05	<0.15	--
CB-1-40	12/20/16	40	233.0	--	--	<10	**0.04**	0.46	0.15	0.97	--
CB-1-50	12/20/16	50	269.5	--	--	<10	**0.11**	0.33	0.19	1.0	--
CB-1-55	12/20/16	55	83.9	--	--	<10	**0.84**	<0.05	0.28	<0.15	--
CB-1-60	12/20/16	60	8.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--
CB-2-5	12/20/16	5	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--
CB-2-10	12/20/16	10	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--
CB-2-15	12/20/16	15	333.2	--	--	**5,900**	<0.02	4.9	**40**	**240**	--
CB-2-20	12/20/16	20	633.4	--	--	18	<0.02	<0.05	<0.05	0.16	--
CB-2-30	12/20/16	30	87.8	--	--	<10	<0.02	<0.05	<0.05	<0.15	--
CB-2-40	12/20/16	40	74.1	--	--	<10	<0.02	<0.05	<0.05	0.19	--
CB-2-50	12/20/16	50	8.3	--	--	<10	**0.05**	<0.05	0.12	<0.15	--
CB-3-10	12/21/16	10	35.8	--	--	<10	<0.02	<0.05	0.05	<0.15	--
CB-3-15	12/21/16	15	0.4	--	--	<10	<0.02	<0.05	<0.05	<0.15	--

Table 2
Summary of Soil Sample Results
Site No. 3520
Bremerton, Washington

Sample ID	Sample Date	Depth (ft bgs)	PID (ppmV)	TPH-Ox (mg/kg)	TPH-Dx (mg/kg)	TPH-Gx (mg/kg)	B (mg/kg)	T (mg/kg)	E (mg/kg)	X (mg/kg)	Total Pb (mg/kg)
				NWTPH-Dx		NWTPH-Gx	EPA Method 8260B/8020A				
CB-3-20	12/21/16	20	1.5	--	--	<10	<0.02	<0.05	<0.05	<0.15	--
CB-3-30	12/21/16	30	118.6	--	--	**230**	<0.02	0.74	2.5	**15**	--
CB-3-35	12/21/16	35	163.0	--	--	10	**0.47**	0.51	0.12	0.75	--
CB-3-45	12/21/16	45	2.1	--	--	<10	<0.02	<0.05	<0.05	<0.15	--
CB-4-5	12/21/16	5	0.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--
CB-4-10	12/21/16	10	1,117	--	--	**4,600**	**8.0**	**150**	**92**	**510**	--
CB-4-15	12/21/16	15	33.0	--	--	<10	<0.02	0.14	0.09	0.52	--
CB-4-20	12/21/16	20	85.6	--	--	10	<0.02	0.14	0.09	0.63	--
CB-4-25	12/21/16	25	2.4	--	--	<10	**0.06**	0.13	<0.05	0.13	--
CB-4-30	12/21/16	30	2.0	--	--	<10	<0.02	<0.05	<0.05	<0.15	--
MTCA Method A Cleanup Goals[1]				2,000	2,000	100/30[2]	0.03	7	6	9	250

Notes:

Bold where detections exceed MTCA Method A Cleanup levels

(1): MTCA Method A Table 740-1 for unrestricted land use, WAC 173-340-900 Tables

(2): 100 mg/kg when benzene is absent and 30 mg/kg when present

*: result reported as detection but below the reporting limit

--: not analyzed / not measured

<: not detected at or above laboratory reporting limit

BTEX: benzene, toluene, ethylbenzene, total xylenes; analyzed by EPA Method 8260B; samples analyzed prior to May 2010 were analyzed by EPA Method 8020A

ft bgs: feet below ground surface

mg/kg: milligrams per kilogram

MTCA: Washinton State Model Toxics Control Act Method A Cleanup Guidelines

ND: not detected at the listed laboratory reporting limit, no reporting limit listed

ppmV: parts per million by volume

Total Pb: total lead analyzed by EPA Method 6020

TPH-Gx: total gasoline-range petroleum hydrocarbons, analyzed by Northwest Method NWTPH-Gx, EPA Methods 5030/8015

TPH-Dx: total diesel-range petroleum hydrocarbons, analyzed by Northwest Method NWTPH-Dx, EPA Methods 3550/8015

TPH-Ox: total oil-range petroleum hydrocarbons, analyzed by Northwest Method NWTPH-Dx, EPA Method 418.1 Modified

TABLE 3

Summary of EPH/VPH Soil Analytical Results
Site No. 3520
Bremerton, Washington

Sample ID	Sample Date	Depth (ft bgs)	C5-C6 Aliphatics	>C6-C8 Aliphatics	>C8-C10 Aliphatics	>C8-C10 Aromatics	Hexane	>C8-C10 Aliphatics	>C10-C12 Aliphatics	>C12-C16 Aliphatics	>C16-C21 Aliphatics	>C21-C34 Aliphatics	>C8-C10 Aromatics	>C10-C12 Aromatics	>C12-C16 Aromatics	>C16-C21 Aromatics	>C21-C34 Aromatics
			Method: NWVPH, mg/kg					Method: NWEPH, mg/kg									
RW-1-30	1/22/18	30.0	<5.0	**43**	<5.0	**200**	<0.20	**10**	<5.0	**5.3**	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
RW-2-30	1/23/18	30.0	<5.0	<5.0	<5.0	**11**	<0.20	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
RW-3-20	1/23/18	20.0	<25	**100**	<25	**630**	<1.0	**27**	**12**	<5.0	<5.0	<5.0	**21**	**13**	<5.0	<5.0	<5.0

Notes:
<: not detected at, or above, laboratory reporting limit
ft bgs: feet below ground surface
mg/kg: milligrams per kilogram

APPENDIX A
One Call Ticket #18019172

Nicholas Olivier

From: wa@occinc.com
Sent: Wednesday, January 17, 2018 8:27 AM
To: Nicholas Olivier
Subject: Ticket: 18019172

WASHINGTON UTILITY NOTIFICATION CENTER

DO NOT REPLY TO THIS EMAIL

Washington Ticket#:	18019172	**2 FULL BUSINESS DAYS**			
Transmit Date:	1/17/18	**Time:**	8:27 AM		
Original Call Date:	1/17/18	**Time:**	7:17 AM	**Type:**	WEB
Work to Begin Date:	1/22/18	**Time:**	7:00 AM		

Caller Information

Company:	ES ENGINEERING SERVICES LLC	**Type:**	NON-MEMBER
Contact Name:	NICK OLIVIER	**Phone:**	(253) 508-1085
Alt. Contact:	NICK OLIVIER - 1ST CALL	**Phone:**	(253) 508-1085
Best Time:		**Fax:**	
Address:	4150 'B' PLACE NORTHWEST; AUBURN, WA 98001		
Caller Email:	NOLIVIER@ES-ONLINE.COM		

Dig Site Information

Type of Work:	SOIL BORINGS
Work Being Done For:	ENVIRONMENTAL SITE ASSESSMENT

Dig Site Location

County:	KITSAP	**State:**	WA
Place:	BREMERTON		
Address / Street:	4200 WHEATON WAY		
Nearest Intersection:	HOLLIS ST		

Location of Work:

WORK IS TO TAKE PLACE ON THE GAS STATION PROPERTY. PLEASE MARK ANY AND ALL UTILITIES LEADING UP TO THE PROPERTY BOUNDARY INCLUDING UTILITIES IN THE SIDEWALK ETC. SITE PLAN IS ATTACHED SHOING SOIL BORING LOCATIONS. CORNERS OF PROPERTY MARKED IN WHITE PAINT.

GO TO LINK TO OBTAIN ADDITIONAL INFORMATION THAT WAS PROVIDED BY THE EXCAVATOR REGARDING THIS LOCATION.

Remarks:

AREA MARKED IN WHITE

Caller Twp:	24N	**Rng:**	1E	**Sect-Qtr:**	24-SW-NW		
Map Twp:	25N	**Rng:**	1E	**Sect-Qtr:**	35-SE,36-SW		
Map Twp:	24N	**Rng:**	1E	**Sect-Qtr:**	2-NE,1-NW		
Excavation Coordinates for # Polygons: 1							
Poly 1: NW Lat:	47.6068880	**Lon:**	-122.6291280	**SE Lat:**	47.6026060	**Lon:**	-122.6278247

Members Notified

District	Company	Marking Concerns	Customer Service	Repair
BREM01	CITY OF BREMERTON	(360)473-5920	(360)473-5318	(360)473-5318

BRMSIG01	CITY OF BREMERTON-PW/ELC	(360)473-5920	(360)473-5920	(360)473-5333
CC7711	COMCAST CABLE	(800)762-0592	(800)266-2278	(855)537-6296
CNG06	CASCADE NATURAL GAS BREMERTON	(360)373-1405	(888)522-1130	(888)522-1130
KITDPW01	KITSAP COUNTY PUBLIC WORKS	(360)337-5777	(360)337-5777	(360)337-5777
KITDPW03	KITSAP COUNTY PUBLIC WORKS	(360)337-5777	(360)337-5777	(360)337-5777
NOPER01	NORTH PERRY AVE WATER DIST	(360)373-9508	(360)373-9508	(360)373-9508
PUGE04	PUGET SOUND ENERGY ELECTRIC	(888)728-9343	(888)225-5773	(888)225-5773
QLNWA18	CTLQL-CENTURYLINK	(800)778-9140	(800)283-4237	(800)573-1311

Excavator Responsibilities

* Please click on the following link to verify and confirm that the area covered represents the correct and complete work site area.
  Link To Map for C_EMAIL

* If the area covered is incomplete or inaccurate, it is your responsibility to notify the center immediately to update and correct the locate. Failure to do so could result in a delay or an incomplete utility locate.

* Any other utilities or notification centers not listed, you will need to contact separately.

APPENDIX B
Health and Safety Signature Pages

14.0 ACKNOWLEDGMENT AND UNDERSTANDING OF PLAN

This health & safety plan was prepared by the undersigned, having successfully completed OSHA standard 29 CFR 1910.120 40-hour hazardous materials health & safety training.

Site Health & Safety Officer: Laura Skow

Program Manager: Dane Nygaard

I UNDERSTAND AND AGREE TO THE ABOVE PLAN

	Name & Company	Date
Contractors:		
Geologist/Field Technicians:	Nick Olivier	12/20/2016
	Cody Henderson	12/20/2016
	Paul Tannard Rankins	12/20/2016
	Wesley Kennedy	12/20/2016
Other:	Cody Brooks	12/20/2016
	James Gable	12/20/16
	Robert Deboard	1/20/08
	Brian Houser	1-22-16

SITE SAFETY BRIEFING FORM

Site: 3520

Date: 1/23/18 Time: 7:30

Project No: 123155

Task: well installation Health/Safety Officer: Nick Olivier

Person Providing Briefing: Nick Olivier

Topics:

- ☐ Site HASP
- ☐ Chemical Hazards
- ☒ Equipment Hazards
- ☐ Electrical Hazards
- ☒ ~~Heat~~ Cold Stress
- ☒ Personal Decontamination
- ☒ Personal Hygiene
- ☐ Employee Rights/Responsibilities
- ☒ Hazard Evaluations
- ☐ Emergency Response Procedures

Persons in Attendance: (Name/Organization)

Wesley Kennedy Cascade

Bryan Hauser Cascade

James Cook Cascade

Persons in Attendance: (Name/Organization)

Notes/Comments:

environmental services

SITE SAFETY BRIEFING FORM

Site: 3520

Date: 1/24/18 Time: 8:00

Project No: 123155

Task: well installation Health/Safety Officer: Nick Olivier

Person Providing Briefing: Nick Olivier

Topics:

- ☐ Site HASP
- ☒ Chemical Hazards
- ☒ Equipment Hazards
- ☐ Electrical Hazards
- ☒ ~~Heat~~ Stress Cold
- ☒ Personal Decontamination
- ☒ Personal Hygiene
- ☒ Employee Rights/Responsibilities
- ☐ Hazard Evaluations
- ☐ Emergency Response Procedures

Persons in Attendance: (Name/Organization)

Wesley Kennedy Cascade

Bryan Hoyt

James Cobb Cascade

Persons in Attendance: (Name/Organization)

Notes/Comments:

environmental services

APPENDIX C
Soil Boring Logs

SOIL BORING LOG **Boring No.: RW-1** **Sheet 1 of 2**

Client	Eagle Canyon Capital, LLC	Date	1/22/2018
Address	4200 Wheaton Way	Driller	Cascade Drilling, LP rig type: CME-75
	Bremerton, Washington	Drilling Foreman	James Goble
		Method	Hollow stem auger hole diam.: 8 inches
Logged By:	Nick Olivier	Project No.	123155

Well Pack	sand (#10/20): 23 ft to 40 ft	Well Construction	casing: 0 ft to 25 ft screen: 25 ft to 40 ft
	chips: 3 ft to 23 ft		casing diam.: 4 in screen slot: 0.020 in
	grout: NA	Depth to GW:	approximately 28 ft (perched)
	concrete: 0 ft to 3 ft	Total Depth of Boring	40.0 ft

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Construct.	Depth Scale	Lithology	Descriptions of Materials and Conditions	PID (ppmV)
						1		3" asphalt at surface 3" to 2' gravelly fill	
						2	SM	Silty sand with gravel (SM); medium dark brown; moist; no hydrocarbon odor	
						3			
						4			
Soil		n/a				5			0.0
						6			
						7			
						8			
						9			
						10	SM / ML	Silty sand / silt (SM / ML); grey/ brown; moist; mottled; medium stiff; silt with	
Soil		5				X		low plasticity; very slight hydrocarbon odor	1.7
		8				11			
		9				12			
						13			
						14			
						15			
						16			
						17		Rig Chatter	
						18			
						19			
						20			

Concrete
Bentonite Grout
Bentonite Chips
#10/12 Sand
Blank Casing
Screened Casing

Comments:
Ecology Well ID: BKF-100
Water Level = 22.25 feet btoc

SOIL BORING LOG **Boring No.:** **RW-1** **Sheet 2 of 2**

Client	Eagle Canyon Capital, LLC	Date	1/22/2018
Address	4200 Wheaton Way	Driller	Cascade Drilling, LP rig type: CME-75
	Bremerton, Washington	Drilling Foreman	James Goble
		Method	Hollow stem auger hole diam.: 8 inches
Logged By:	Nick Olivier	Project No.	123155

Well Pack	sand (#10/20): 23' to 40 '	Well Construction	casing: 0 to 25' screen: 25' to 40'
	chips: 3' to 23'		casing diam.: 4" screen slot: 0.020 inch
	grout: NA	Depth to GW:	approximately 28 feet (Perched)
	concrete: 0 to 3'	Total Depth of Boring	40.0 Feet

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Construct.	Depth Scale	Lithology	Descriptions of Materials and Conditions	PID (PPM)
Soil		41 34				X 21	SW	Silty gravelly sand (SW); grey/brown; moist; very dense; mottled; well-graded; very slight hydrocarbon odor	5.3
		50				22			
						23			
						24			
						25			
						26			
						27			
						28		rig-chatter	
						29		Driller reports possible water at 28.5 feet bgs (possibly perched in gravel)	
						30			652
Soil		14 30				X 31	SW	Gravelly sand (SW); grey; very dense; wet; fine to medium gravels	
		22				32			
						33			
						34			
						35			
						36			
						37			
						38			
		13				39			
		16 26				X 40	ML	Silt (ML); medium dark grey; wet; low plasticity; few sands; no hydrocarbon odor	7.1

Concrete
Neat Cement
Bentonite Chips
#10/20 Sand
Blank Casing
Screened Casing

Comments:
Ecology Well ID: BKF-100
Water Level = 22.25 feet btoc

SOIL BORING LOG **Boring No.: RW-2** **Sheet 1 of 2**

Client	Eagle Canyon Capital, LLC	Date	1/23/2018
Address	4200 Wheaton Way	Driller	Cascade Drilling, LP rig type: CME-75
	Bremerton, Washington	Drilling Foreman	James Goble
		Method	Hollow stem auger hole diam.: 8 inches
Logged By:	Nick Olivier	Project No.	123155

Well Pack	sand (#10/20): 23 ft to 40 ft	Well Construction	casing: 0 ft to 25 ft screen: 25 ft to 40 ft
	chips: 3 ft to 23 ft		casing diam.: 4 in screen slot: 0.020 in
	grout: NA	Depth to GW:	approximately 20 ft (perched)
	concrete: 0 ft to 3 ft	Total Depth of Boring	40.0 ft

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Construct.	Depth Scale	Lithology	Descriptions of Materials and Conditions	PID (ppmV)
						1		3" asphalt at surface	
						2		3" to 2' gravelly silty sand fill	
						3			
						4			
						5			
Soil		n/a				X 6			0.0
						7			
						8			
						9			
						10			
Soil		4				X	SM	Silty sand; gray / brown; moist; loose; no hydrocarbon odor	0.0
		4				11			
		5				12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

Concrete
Bentonite Grout
Bentonite Chips
#10/20 Sand
Blank Casing
Screened Casing

Comments:
Ecology Well ID: BKF-101
Water Level = 29.05 feet btoc on 1/24/18

SOIL BORING LOG **Boring No.:** **RW-2** **Sheet 2 of 2**

Client	Eagle Canyon Capital, LLC	Date	1/23/2018
Address	4200 Wheaton Way	Driller	Cascade Drilling, LP rig type: CME-75
	Bremerton, Washington	Drilling Foreman	James Goble
		Method	Hollow stem auger hole diam.: 8 inches
Logged By:	Nick Olivier	Project No.	123155

Well Pack	sand (#10/20): 23' to 40 '	Well Construction	casing: 0 to 25' screen: 25' to 40'
	chips: 3' to 23'		casing diam.: 4" screen slot: 0.020 inch
	grout: NA	Depth to GW:	approximately 20 feet (Perched)
	concrete: 0 to 3'	Total Depth of Boring	40.0 Feet

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Construct.	Depth Scale	Lithology	Descriptions of Materials and Conditions	PID (PPM)
Soil		11 16				X 21	GW	Sandy, silty gravel (GW); grey; well graded; wet; moderate hydrocarbon odor	75.1
		21				22			
						23			
						24			
						25			
						26			
						27			
						28			
						29			
						30			134
Soil		13 20				X 31	SW	Gravelly sand (SW); grey; very dense; moist/wet; fine to medium gravels; well graded sand; moderate hydrocarbon odor	
		20				32			
						33			
						34			
						35			
						36			
						37			
						38			
		13				39			
Soil		15 17				X 40	SW/SP	Sand (SW/SP); grey; wet; well graded sand; slight to moderate hydrocarbon odor	64.1

Concrete
Neat Cement
Bentonite Chips
#10/20 Sand
Blank Casing
Screened Casing

Comments:
Ecology Well ID: BKF-101
Water Level = 29.05 feet btoc on 1/24/18

SOIL BORING LOG **Boring No.:** **RW-3** **Sheet 1 of 3**

Client	Eagle Canyon Capital, LLC	Date	1/23/2018
Address	4200 Wheaton Way	Driller	Cascade Drilling, LP rig type: CME-75
	Bremerton, Washington	Drilling Foreman	James Goble
		Method	Hollow stem auger hole diam.: 8 inches
Logged By:	Nick Olivier	Project No.	123155

Well Pack	sand (#10/20): 38 ft to 55 ft	Well Construction	casing: 0 ft to 40 ft screen: 40 ft to 55 ft
	chips: 3 ft to 38 ft		casing diam.: 4 in screen slot: 0.020 in
	grout: NA	Depth to GW:	--
	concrete: 0 ft to 3 ft	Total Depth of Boring	55 feet bgs

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Construct.	Depth Scale	Lithology	Descriptions of Materials and Conditions	PID (ppmV)
						1		3" asphalt at surface	
						2		3" to 2.5' gravelly fill	
						3			
						4			
						5			
Soil		n/a				X 6			0.0
						7			
						8			
						9			
						10			
Soil		6				X 11	SM	Silty sand; gray; moist; medium dense	164
		5							
		6				12			
						13			
						14			
						15			
						16			
						17			
						18			
						19			
						20			

Concrete
Bentonite Grout
Bentonite Chips
#10/20 Sand
Blank Casing
Screened Casing

Comments:
Ecology Well ID: BKF-102
Water Level = 29.90 feet btoc on 1/24/18

SOIL BORING LOG **Boring No.: RW-3** **Sheet 2 of 3**

Client	Eagle Canyon Capital, LLC	Date	1/23/2018
Address	4200 Wheaton Way	Driller	Cascade Drilling, LP rig type: CME-75
	Bremerton, Washington	Drilling Foreman	James Goble
		Method	Hollow stem auger hole diam.: 8 inches
Logged By:	Nick Olivier	Project No.	123155

Well Pack	sand (#10/20): 38 ft to 55 ft	Well Construction	casing: 0 ft to 40 ft screen: 40 ft to 55 ft
	chips: 3 ft to 38 ft		casing diam.: 4 in screen slot: 0.020 inch
	grout: NA	Depth to GW:	--
	concrete: 0 ft to 3 ft	Total Depth of Boring	55 feet bgs

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Construct.	Depth Scale	Lithology	Descriptions of Materials and Conditions	PID (PPM)
		13				X 21	SM / SP	Silty sand with gravel (SM); brown/grey; moist; medium dense; subangular; fine to coarse grained; strong hydrocarbon odor	301
		21				22			
		23				23			
						24			
						25			
						26			
						27			
						28			
						29			
						30			81.1
		20				X 31	SP	Sand (SP); gray, moist, medium dense; poorly graded; very slight hydrocarbon odor	
		18				32			
		33				33			
						34			
						35			
						36			
						37			
						38			
						39			
						X 40			

Concrete
Neat Cement
Bentonite Chips
#10/20 Sand
Blank Casing
Screened Casing

Comments:
Ecology Well ID: BKF-102
Water Level = 29.90 feet btoc on 1/24/18

SOIL BORING LOG **Boring No.:** **RW-3** **Sheet 3 of 3**

Client	Eagle Canyon Capital, LLC	Date	1/23/2018
Address	4200 Wheaton Way	Driller	Cascade Drilling, LP rig type: CME-75
	Bremerton, Washington	Drilling Foreman	James Goble
		Method	Hollow stem auger hole diam.: 8 inches
Logged By:	Nick Olivier	Project No.	123155

Well Pack	sand (#10/20): 38 ft to 55 ft	Well Construction	casing: 0 ft to 40 ft screen: 40 ft to 55 ft
	chips: 3 ft to 38 ft		casing diam.: 4 in screen slot: 0.020 inch
	grout: NA	Depth to GW:	--
	concrete: 0 ft to 3 ft	Total Depth of Boring	55 feet bgs

Sample Type	Sample No.	Blow Count	Sample Time	Sample Recov.	Well Construct.	Depth Scale	Lithology	Descriptions of Materials and Conditions	PID (PPM)
		21 27				X 41	SP	Sand (SP); grey; medium dense; moist; poorly graded; slight hydrocarbon odor	60.2
		27				42			
						43			
						44			
						45			
						46			
						47			
						48			
						49			
						50			36.4
		21 29				X 51	SP	Sand (SP); grey; medium dense; moist; poorly graded; slight hydrocarbon odor	
		34				52			
						53			
						54			
						55			
						56			
						57			
						58			
						59			
						60			

Concrete
Neat Cement
Bentonite Chips
#10/20 Sand
Blank Casing
Screened Casing

Comments:
Ecology Well ID: BKF-102
Water Level = 29.90 feet btoc on 1/24/18

APPENDIX D
Well Construction Diagram

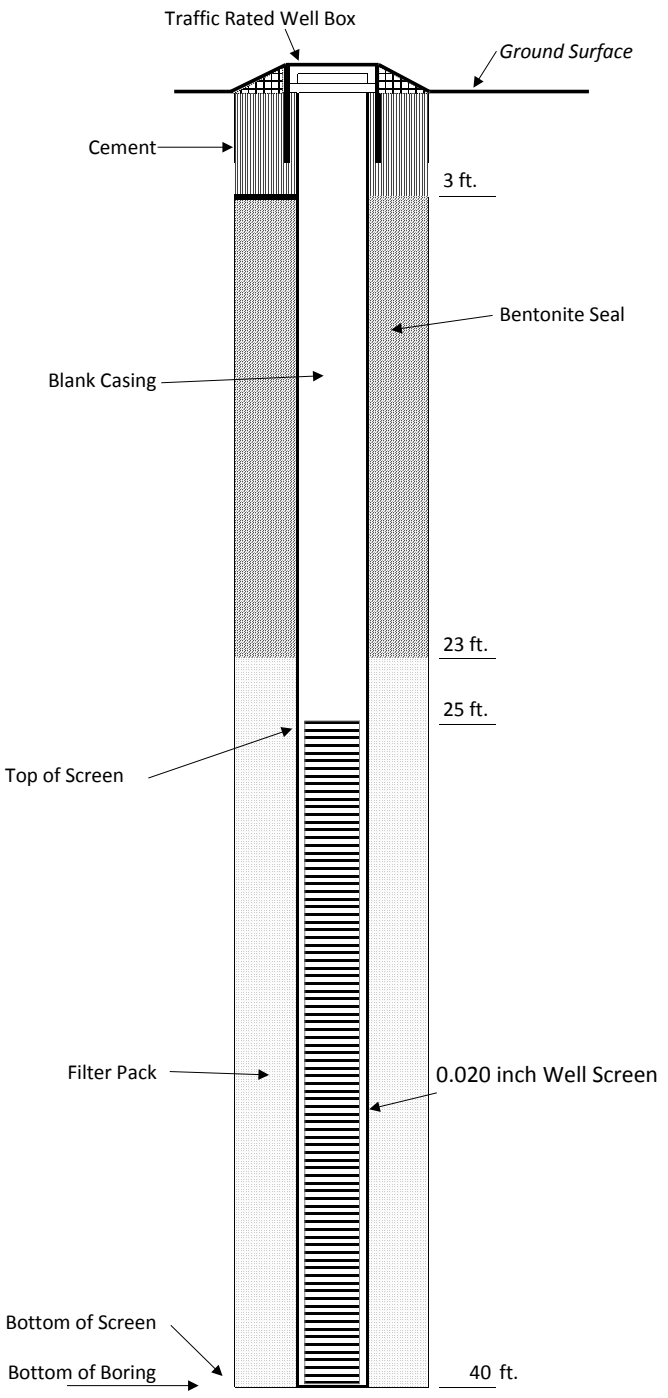
WELL CONSTRUCTION DETAILS

WELL NUMBER: RW-1

WELL TYPE: Remediation Well

SURFACE ELEV (ft. above MSL):

CASING ELEV (ft. above MSL):



DRILLING SUMMARY

INSTALLATION DATE:	1/22/2018
DRILLING COMPANY:	Cascade Drilling
DRILLING RIG TYPE:	Hollow Stem Auger
TOTAL DEPTH DRILLED:	40 ft.

CONSTRUCTION DETAILS

BOREHOLE DIAMETER:	8-inch
TOTAL WELL DEPTH:	40 ft.
BLANK CASING TYPE:	PVC
BLANK CASING DIAMETER:	4-inch
TOTAL BLANK CASING LENGTH:	25 ft.
SCREEN TYPE:	PVC
SCREEN SLOT SIZE:	0.020-inch
SCREEN LENGTH:	15 ft.
SUMP LENGTH:	--
PROTECTIVE CASING STICKUP:	--
GROUT MATERIAL:	--
SEAL MATERIAL	Bentonite Chips
FILTER MATERIAL:	#2/12 Sand
COMMENTS:	

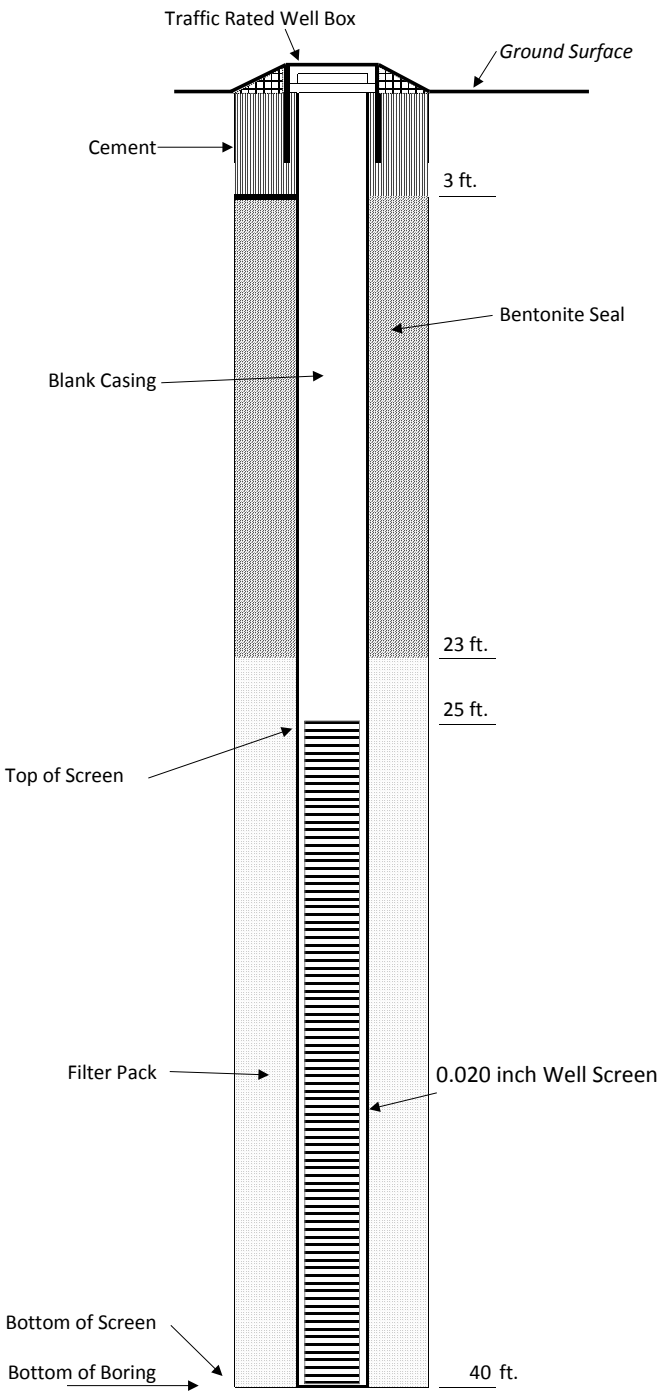
WELL CONSTRUCTION DETAILS

WELL NUMBER: RW-2

WELL TYPE: Remediation Well

SURFACE ELEV (ft. above MSL):

CASING ELEV (ft. above MSL):



DRILLING SUMMARY

INSTALLATION DATE:	1/23/2018
DRILLING COMPANY:	Cascade Drilling
DRILLING RIG TYPE:	Hollow Stem Auger
TOTAL DEPTH DRILLED:	40 ft.

CONSTRUCTION DETAILS

BOREHOLE DIAMETER:	8-inch
TOTAL WELL DEPTH:	40 ft.
BLANK CASING TYPE:	PVC
BLANK CASING DIAMETER:	4-inch
TOTAL BLANK CASING LENGTH:	25 ft.
SCREEN TYPE:	PVC
SCREEN SLOT SIZE:	0.020-inch
SCREEN LENGTH:	15 ft.
SUMP LENGTH:	--
PROTECTIVE CASING STICKUP:	--
GROUT MATERIAL:	--
SEAL MATERIAL	Bentonite Chips
FILTER MATERIAL:	#2/12 Sand
COMMENTS:	

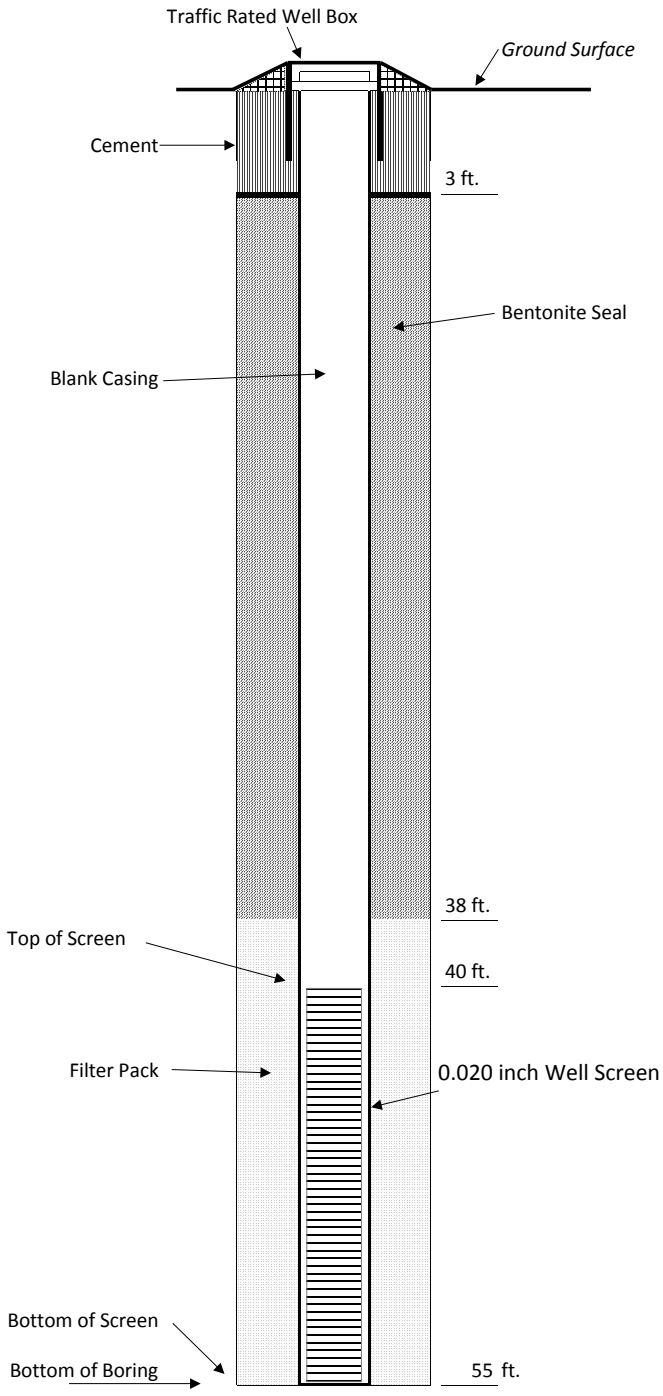
WELL CONSTRUCTION DETAILS

WELL NUMBER: RW-3

WELL TYPE: Remediation Well

SURFACE ELEV (ft. above MSL):

CASING ELEV (ft. above MSL):



DRILLING SUMMARY

INSTALLATION DATE:	1/23/2018
DRILLING COMPANY:	Cascade Drilling
DRILLING RIG TYPE:	Hollow Stem Auger
TOTAL DEPTH DRILLED:	55 ft.

CONSTRUCTION DETAILS

BOREHOLE DIAMETER:	8-inch
TOTAL WELL DEPTH:	55 ft.
BLANK CASING TYPE:	PVC
BLANK CASING DIAMETER:	4-inch
TOTAL BLANK CASING LENGTH:	40 ft.
SCREEN TYPE:	PVC
SCREEN SLOT SIZE:	0.020-inch
SCREEN LENGTH:	15 ft.
SUMP LENGTH:	--
PROTECTIVE CASING STICKUP:	--
GROUT MATERIAL:	--
SEAL MATERIAL	Bentonite Chips
FILTER MATERIAL:	#2/12 Sand
COMMENTS:	

APPENDIX E
Laboratory Analytical Report

January 30, 2018

Mr. Steve League
ESN
1210 Eastside St SE, Suite 200
Olympia, WA 98501

Dear Mr. League,

On January 25th, 3 samples were received by our laboratory and assigned our laboratory project number EV18010154. The project was identified as your Project #123155 - Site No. 3520. 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

Glen Perry
Technical Manager

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	ESN 1210 Eastside St SE, Suite 200 Olympia, WA 98501	DATE: ALS JOB#: ALS SAMPLE#:	1/30/2018 EV18010154 EV18010154-01
CLIENT CONTACT:	Steve Loague	DATE RECEIVED:	01/25/2018
CLIENT PROJECT:	Project #123155 - Site No. 3520	COLLECTION DATE:	1/23/2018 3:00:00 PM
CLIENT SAMPLE ID	RW-1-30	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	U	5.0	1	MG/KG	01/30/2018	SNC
>C6-C8 Aliphatics	NWVPH	**43**	5.0	1	MG/KG	01/30/2018	SNC
>C8-C10 Aliphatics	NWVPH	U	5.0	1	MG/KG	01/30/2018	SNC
>C8-C10 Aromatics	NWVPH	**200**	5.0	1	MG/KG	01/30/2018	SNC
Hexane	NWVPH	U	0.20	1	MG/KG	01/30/2018	SNC
>C8-C10 Aliphatics	NWEPH	**10**	5.0	1	MG/KG	01/26/2018	EBS
>C10-C12 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C12-C16 Aliphatics	NWEPH	**5.3**	5.0	1	MG/KG	01/26/2018	EBS
>C16-C21 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C21-C34 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C8-C10 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C16-C21 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C21-C34 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT - Aliphatic	NWVPH	**91.3**	01/30/2018	SNC
TFT - Aromatic	NWVPH	**101**	01/30/2018	SNC
TFT - Hexane	NWVPH	**100**	01/30/2018	SNC
C25	NWEPH	**115**	01/26/2018	EBS
p-Terphenyl	NWEPH	**83.0**	01/26/2018	EBS

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

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	ESN 1210 Eastside St SE, Suite 200 Olympia, WA 98501	DATE: ALS JOB#: ALS SAMPLE#:	1/30/2018 EV18010154 EV18010154-02
CLIENT CONTACT:	Steve Loague	DATE RECEIVED:	01/25/2018
CLIENT PROJECT:	Project #123155 - Site No. 3520	COLLECTION DATE:	1/23/2018 3:10:00 PM
CLIENT SAMPLE ID	RW-2-30	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	U	5.0	1	MG/KG	01/29/2018	SNC
>C6-C8 Aliphatics	NWVPH	U	5.0	1	MG/KG	01/29/2018	SNC
>C8-C10 Aliphatics	NWVPH	U	5.0	1	MG/KG	01/29/2018	SNC
>C8-C10 Aromatics	NWVPH	**11**	5.0	1	MG/KG	01/29/2018	SNC
Hexane	NWVPH	U	0.20	1	MG/KG	01/29/2018	SNC
>C8-C10 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C10-C12 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C12-C16 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C16-C21 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C21-C34 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C8-C10 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C10-C12 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C16-C21 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C21-C34 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT - Aliphatic	NWVPH	**91.1**	01/29/2018	SNC
TFT - Aromatic	NWVPH	**94.4**	01/29/2018	SNC
TFT - Hexane	NWVPH	**93.2**	01/29/2018	SNC
C25	NWEPH	**117**	01/26/2018	EBS
p-Terphenyl	NWEPH	**77.0**	01/26/2018	EBS

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

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	ESN 1210 Eastside St SE, Suite 200 Olympia, WA 98501	DATE: ALS JOB#: ALS SAMPLE#:	1/30/2018 EV18010154 EV18010154-03
CLIENT CONTACT:	Steve Loague	DATE RECEIVED:	01/25/2018
CLIENT PROJECT:	Project #123155 - Site No. 3520	COLLECTION DATE:	1/23/2018 3:20:00 PM
CLIENT SAMPLE ID	RW-3-20	WDOE ACCREDITATION:	C601

SAMPLE DATA RESULTS

ANALYTE	METHOD	RESULTS	REPORTING LIMITS	DILUTION FACTOR	UNITS	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	U	25	5	MG/KG	01/30/2018	SNC
>C6-C8 Aliphatics	NWVPH	**100**	25	5	MG/KG	01/30/2018	SNC
>C8-C10 Aliphatics	NWVPH	U	25	5	MG/KG	01/30/2018	SNC
>C8-C10 Aromatics	NWVPH	**630**	25	5	MG/KG	01/30/2018	SNC
Hexane	NWVPH	U	1.0	5	MG/KG	01/30/2018	SNC
>C8-C10 Aliphatics	NWEPH	**27**	5.0	1	MG/KG	01/26/2018	EBS
>C10-C12 Aliphatics	NWEPH	**12**	5.0	1	MG/KG	01/26/2018	EBS
>C12-C16 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C16-C21 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C21-C34 Aliphatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C8-C10 Aromatics	NWEPH	**21**	5.0	1	MG/KG	01/26/2018	EBS
>C10-C12 Aromatics	NWEPH	**13**	5.0	1	MG/KG	01/26/2018	EBS
>C12-C16 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C16-C21 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS
>C21-C34 Aromatics	NWEPH	U	5.0	1	MG/KG	01/26/2018	EBS

SURROGATE	METHOD	%REC	ANALYSIS DATE	ANALYSIS BY
TFT - Aliphatic 5X Dilution	NWVPH	**90.9**	01/30/2018	SNC
TFT - Aromatic 5X Dilution	NWVPH	**112**	01/30/2018	SNC
TFT - Hexane 5X Dilution	NWVPH	**108**	01/30/2018	SNC
C25	NWEPH	**123**	01/26/2018	EBS
p-Terphenyl	NWEPH	**87.0**	01/26/2018	EBS

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

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT:	ESN 1210 Eastside St SE, Suite 200 Olympia, WA 98501	DATE:	1/30/2018
		ALS SDG#:	EV18010154
		WDOE ACCREDITATION:	C601
CLIENT CONTACT:	Steve Loague		
CLIENT PROJECT:	Project #123155 - Site No. 3520		

LABORATORY BLANK RESULTS

MBLK-309845 - Batch R309845 - Soil by NWVPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics	NWVPH	U	MG/KG	5.0	01/29/2018	SNC
>C6-C8 Aliphatics	NWVPH	U	MG/KG	5.0	01/29/2018	SNC
>C8-C10 Aliphatics	NWVPH	U	MG/KG	5.0	01/29/2018	SNC
>C8-C10 Aromatics	NWVPH	U	MG/KG	5.0	01/29/2018	SNC
Hexane	NWVPH	U	MG/KG	0.20	01/29/2018	SNC

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

MBLK-309851 - Batch R309851 - Soil by NWEPH

ANALYTE	METHOD	RESULTS	UNITS	REPORTING LIMITS	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics	NWEPH	U	MG/KG	5.0	01/26/2018	EBS
>C10-C12 Aliphatics	NWEPH	U	MG/KG	5.0	01/26/2018	EBS
>C12-C16 Aliphatics	NWEPH	U	MG/KG	5.0	01/26/2018	EBS
>C16-C21 Aliphatics	NWEPH	U	MG/KG	5.0	01/26/2018	EBS
>C21-C34 Aliphatics	NWEPH	U	MG/KG	5.0	01/26/2018	EBS
>C8-C10 Aromatics	NWEPH	U	MG/KG	5.0	01/26/2018	EBS
>C10-C12 Aromatics	NWEPH	U	MG/KG	5.0	01/26/2018	EBS
>C12-C16 Aromatics	NWEPH	U	MG/KG	5.0	01/26/2018	EBS
>C16-C21 Aromatics	NWEPH	U	MG/KG	5.0	01/26/2018	EBS
>C21-C34 Aromatics	NWEPH	U	MG/KG	5.0	01/26/2018	EBS

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

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ALS Environmental

CERTIFICATE OF ANALYSIS

CLIENT: ESN
1210 Eastside St SE, Suite 200
Olympia, WA 98501
CLIENT CONTACT: Steve Loague
CLIENT PROJECT: Project #123155 - Site No. 3520

DATE: 1/30/2018
ALS SDG#: EV18010154
WDOE ACCREDITATION: C601

LABORATORY CONTROL SAMPLE RESULTS

ALS Test Batch ID: R309845 - Soil by NWVPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
C5-C6 Aliphatics - BS	NWVPH	**97.2**			70	130	01/29/2018	SNC
C5-C6 Aliphatics - BSD	NWVPH	**99.3**	**2**		70	130	01/29/2018	SNC
>C6-C8 Aliphatics - BS	NWVPH	**98.4**			70	130	01/29/2018	SNC
>C6-C8 Aliphatics - BSD	NWVPH	**98.3**	**0**		70	130	01/29/2018	SNC
>C8-C10 Aliphatics - BS	NWVPH	**95.4**			70	130	01/29/2018	SNC
>C8-C10 Aliphatics - BSD	NWVPH	**94.4**	**1**		70	130	01/29/2018	SNC
>C8-C10 Aromatics - BS	NWVPH	**97.7**			70	130	01/29/2018	SNC
>C8-C10 Aromatics - BSD	NWVPH	**97.7**	**0**		70	130	01/29/2018	SNC
Hexane - BS	NWVPH	**75.4**			70	130	01/29/2018	SNC
Hexane - BSD	NWVPH	**77.7**	**3**		70	130	01/29/2018	SNC

ALS Test Batch ID: R309851 - Soil by NWEPH

SPIKED COMPOUND	METHOD	%REC	RPD	QUAL	LIMITS MIN	LIMITS MAX	ANALYSIS DATE	ANALYSIS BY
>C8-C10 Aliphatics - BS	NWEPH	**84.0**			70	130	01/29/2018	EBS
>C8-C10 Aliphatics - BSD	NWEPH	**89.0**	**6**		70	130	01/29/2018	EBS
>C10-C12 Aliphatics - BS	NWEPH	**92.0**			70	130	01/29/2018	EBS
>C10-C12 Aliphatics - BSD	NWEPH	**100**	**8**		70	130	01/29/2018	EBS
>C12-C16 Aliphatics - BS	NWEPH	**97.0**			70	130	01/29/2018	EBS
>C12-C16 Aliphatics - BSD	NWEPH	**107**	**10**		70	130	01/29/2018	EBS
>C16-C21 Aliphatics - BS	NWEPH	**98.0**			70	130	01/29/2018	EBS
>C16-C21 Aliphatics - BSD	NWEPH	**109**	**11**		70	130	01/29/2018	EBS
>C21-C34 Aliphatics - BS	NWEPH	**78.0**			70	130	01/29/2018	EBS
>C21-C34 Aliphatics - BSD	NWEPH	**94.0**	**19**		70	130	01/29/2018	EBS
>C8-C10 Aromatics - BS	NWEPH	**80.0**			70	130	01/29/2018	EBS
>C8-C10 Aromatics - BSD	NWEPH	**80.0**	**0**		70	130	01/29/2018	EBS
>C10-C12 Aromatics - BS	NWEPH	**81.0**			70	130	01/29/2018	EBS
>C10-C12 Aromatics - BSD	NWEPH	**91.0**	**12**		70	130	01/29/2018	EBS
>C12-C16 Aromatics - BS	NWEPH	**84.0**			70	130	01/29/2018	EBS
>C12-C16 Aromatics - BSD	NWEPH	**101**	**18**		70	130	01/29/2018	EBS
>C16-C21 Aromatics - BS	NWEPH	**85.0**			70	130	01/29/2018	EBS
>C16-C21 Aromatics - BSD	NWEPH	**104**	**20**		70	130	01/29/2018	EBS
>C21-C34 Aromatics - BS	NWEPH	**88.0**			70	130	01/29/2018	EBS
>C21-C34 Aromatics - BSD	NWEPH	**105**	**18**		70	130	01/29/2018	EBS

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

CERTIFICATE OF ANALYSIS

APPROVED BY

Technical Manager

ADDRESS 8620 Holly Drive, Suite 100, Everett, WA 9820 | PHONE 425-356-2600 | FAX 425-356-2626
ALS Group USA, Corp dba ALS Environmental

ESN NORTHWEST, INC. — Environmental Services Network

CHAIN-OF-CUSTODY RECORD

EV1801015 4

CLIENT: ESN Northwest
ADDRESS: 1210 Eastside Street SE, Suite 200, Olympia, WA 98501
PHONE: 360-459-4670
LAB@ESNNW.COM
CLIENT PROJECT #: 123155 PROJECT MANAGER: STEVE

DATE: 1-24-18 PAGE 1 OF 1
PROJECT NAME: SITE NO 3520
LOCATION: BREMERTON
COLLECTOR: NICK C DATE OF COLLECTION: 1/23/18

Sample Number	Depth	Time	Sample Type	Container Type	TPH - HCID	TPH - Diesel & Oil	TPH - Gasoline	BTEX	VOC 8260CL	VOC 8260	SemiVol 8270	PAH's 8270	PCB's 8082	CL Pesticides 8081	RCRA 8 Metals	MTCA 5 Metals	Pb	Asbestos - PLM	GRO Suite	DRO Suite	WO Suite	EPH	VPH	NOTES	Total Number of Containers	Laboratory Note Number
1. RW-1-30	30	1500	SOIL	JAR/VOA																	X	X				
2. RW-2-30	30	1510	↓	↓																	X	X				
3. RW-3-20	20	1520	↓	↓																	X	X				
4.																										
5.																										
6.																										
7.																										
8.																										
9.																										
10.																										
11.																										
12.																										
13.																										
14.																										
15.																										
16.																										
17.																										
18.																										

RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME
[signature]	01-24-18 1313	Shawn Robinson	1/25/18 4:15 pm
RELINQUISHED BY (Signature)	DATE/TIME	RECEIVED BY (Signature)	DATE/TIME

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:
Report Range Only
STD TAT

Turn Around Time: 24 HR 48 HR 5 DAY

1210 Eastside Street SE, Suite 200
Olympia, Washington 98501
Phone: 360-459-4670
Fax: 360-459-3432
Website: www.esnnw.com
E-Mail: info@esnnw.com