

GROUNDWATER MONITORING REPORT

Fourth Quarter 2018 – Fourth Consecutive Sampling Event

Gig Harbor Transmission
14610 Purdy Drive Northwest
Gig Harbor, Washington 98332

Facility/Site No.: 11876
Cleanup Site No.: 1952
VCP Project No.: SW1590

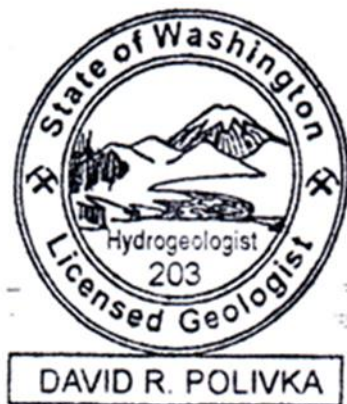
January 11, 2019

Prepared For:

Tracey Larson
14610 Purdy Drive Northwest
Gig Harbor, Washington 98332

Kaden Reed
Sr. Environmental Technician

David Polivka, L.G.
Senior Environmental Geologist



Prepared by:

ECI | Environmental Services
PO Box 153
Fox Island, Washington 98333
Office: (253) 238-9270
ECI Project No.: 0359-01-05

Table of Contents

1.0 INTRODUCTION 1

 1.1 Property Description/Location 1

 1.2 Physical Setting..... 1

 1.2.1 Regional Geology 1

 1.2.2 Regional Hydrogeology 2

 1.3 Previous Investigations / Interim Actions..... 2

 1.3.1 Tacoma Pierce County Health Department 2009 – Site Hazard Assessment 2

 1.3.2 Alkai Consultants 2010 – Phase I Environmental Site Assessment..... 2

 1.3.3 Environmental Management Services 2010 – Interim Cleanup Action and Confirmation Sampling..... 3

 1.3.4 EcoCon, Inc. 2017 – Phase I ESA..... 4

 1.3.5 EcoCon, Inc. 2017 – Focused Subsurface Investigation 4

 1.3.6 EcoCon, Inc. 2018 – Groundwater Monitoring Well Installation 5

 1.3.7 EcoCon, Inc. First Quarter 2018 – Quarterly Groundwater Monitoring 5

 1.3.8 EcoCon, Inc. Second Quarter 2018 – Quarterly Groundwater Monitoring 6

 1.3.9 EcoCon, Inc. Third Quarter 2018 – Quarterly Groundwater Monitoring..... 6

2.0 GROUNDWATER MONITORING PROGRAM 7

 2.1 Regulatory Compliance..... 7

 2.2 Contaminants of Concern (COCs) and Cleanup Levels 7

 2.3 Fourth Quarter Sampling Activities 8

 2.4 Analytical Results..... 8

3.0 CONCLUSION 9

 3.1 Opinion 9

List of Tables

Table 1: Project Contaminants of Concern 8

Table 2: Summary of Soil Analytical Results.....Appendix C

Table 3: Summary of Groundwater Analytical Results.....Appendix C

List of Appendices

Appendix A - Project Figures

- Figure 1: Site Location Map
- Figure 2: Site Topographic Map
- Figure 3: Groundwater Sample Location Map

Appendix B: Project Documentation

- Groundwater Sampling Documentation

Appendix C: Project Tables

- Table 2: Summary of Soil Analytical Results
- Table 3: Summary of Compliance Groundwater Analytical Results

Appendix D: Project Analytical Results

- Laboratory Analytical Report
- Chain of Custody

1.0 INTRODUCTION

EcoCon, Inc. (ECI) has prepared this Groundwater Monitoring Report to document the fourth consecutive compliance groundwater sampling event conducted on November 29, 2018 and December 19, 2018, at 14610 Purdy Drive Northwest in Gig Harbor, Washington (the Property/ Subject Property/Site) (Figures 1 and 2; Appendix A). This report details field activities and observations, sampling activities, chemical analysis, and provides conclusions and recommendations.

1.1 Property Description/Location

The Property consists of a commercial lot, 0.36 acres in size, currently improved with two structures. Both structures are occupied by Gig Harbor Transmission. The service garage was reportedly constructed in 1951 with the second structure, primarily used as storage, erected in 1975.

According to the USGS, Burley, WA topographic map (2014), the central elevation of the Property is at approximately 50 feet above mean sea level (NAD83/WGS84). The ground surface (or topography) at the Property generally slopes towards the Burley Lagoon to the west and southwest. The vicinity of the Property also gradually slopes towards the Burley Lagoon to the west and southwest.

As established in WAC 173-340-200, a “Site” is defined by the full lateral and vertical extent of contamination that has resulted from a release of hazardous substances. Based on the findings of environmental investigations and results of previous remedial actions discussed within this report, this Site had been defined as soil contaminated with: oil-range organics (ORO); polycyclic aromatic hydrocarbons (PAHs); and total lead. As discussed within this report, the release was associated with a leaking aboveground hydraulic lift, and the area of impact was limited to two drainage trenches adjacent to this site feature.

1.2 Physical Setting

1.2.1 Regional Geology

The Site is located in the region of the Puget Lowlands; an elongated topographic and structural depression filled with complex sequences of glacial and nonglacial sediments that overlie bedrock. Continental ice sheets up to 3,000 feet thick covered portions of the Puget Lowland several times during the Quaternary period. Retreating ice carved new landscapes, rechanneled rivers, drained or formed lakes, and deposited glacial drift including till and outwash (WA DNR, 2002).

Based on previous investigations conducted by Environmental Management Services (EMS) discussed in Section 1.3, the Site’s surface geology varies across the Site. South of the Site’s main structure, shallow soils consist of clayey sands and concrete fill within a former underground storage tank (UST) pit to clayey, gravelly sand to clay (till) at depth. The soils in boring B2, located in the southwest area of the exterior lift area on the Property, consisted of clayey, silty, and gravelly sand fill to approximately 15 feet below ground surface (bgs). The shallow soils around location B6, in front of the north working bay, consisted of clayey, silty, and gravelly sand fill to a depth of 14 feet bgs.

Groundwater Monitoring Report
Fourth Quarter 2018 – Fourth Consecutive Sampling Event

14610 Purdy Drive Northwest
Gig Harbor, Washington 98332

January 11, 2019

1.2.2 Regional Hydrogeology

The primary aquifers in the Puget Sound region are typically overlain by relatively impermeable glacial till deposits that are present at or near the ground surface. Within these till deposits are localized areas or lenses of water-bearing sands and gravels that may result in a shallow, perched water table. Lateral and vertical migration of shallow groundwater may be impeded by the relatively impermeable nature of the till and by the sometimes-discontinuous nature of the perched water-bearing sands and gravel. Perched and discontinuous zones of shallow groundwater may be seasonally or perennially present, depending on site-specific conditions.

Shallow groundwater flow directions fluctuate and tend to follow topographic gradient but are also affected by seasonal high-water tables and variable soil porosity characteristics. Groundwater migration pathways may also follow underground conduits.

A review of Washington State Department of Ecology (Ecology) well logs for the Site vicinity within one-eighth of a mile indicates depth to the first water bearing zone at approximately 33 feet bgs and a second water bearing zone at depths greater than 110 feet bgs. At the Subject Site, shallow groundwater (a perched water table) ranges from approximately 8.5 to 10.5 feet bgs. It appears to be seasonal and exists as discontinuous lenses. No settling ponds, lagoons, surface impoundments, wetlands or natural catch basins were observed at the Site or surrounding properties.

1.3 Previous Investigations / Interim Actions

1.3.1 Tacoma Pierce County Health Department 2009 – Site Hazard Assessment

In 2009, the Tacoma Pierce County Health Department (TPCHD) visited the Property and collected soil samples from a drainage trench adjacent to the north Property boundary (abutting a concrete pad containing an exterior hydraulic hoist) and a drainage trench on the western side of the main service garage. Both areas receive runoff from the vicinity of the uncovered, aboveground hydraulic hoist. The soil samples collected contained concentrations of ORO, PAHs, cadmium, and/or lead above their respective Model Toxics Control Act (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Use. The exact location of the samples within the trenches was not provided in the TPCHD records.

1.3.2 Alkai Consultants 2010 – Phase I Environmental Site Assessment

In January of 2010, a Phase I Environmental Site Assessment (ESA) was conducted by Alkai Consultants, LLC (Alkai). Within the Phase I ESA report, two Recognized Environmental Conditions (RECs) were identified. The first REC was contamination previously discovered by the TPCHD within the drainage trenches on the Property. The second REC was “Environmental Cleanup Liens” or “Activity and Use Limitations” filed against the Subject Property. ECI reviewed available records at the Pierce County Recorder’s Office and was not able to identify any “Environmental Cleanup Liens” or “Activity and Use Limitations” filed against the Subject Property in the records available.

The Alkai Phase I ESA report also included details pertaining to the decommissioning of four underground storage tanks (USTs) on the Property in 1989. According to Alkai, one 10,000-gallon UST, one 5,000-gallon

Groundwater Monitoring Report
Fourth Quarter 2018 – Fourth Consecutive Sampling Event

14610 Purdy Drive Northwest
Gig Harbor, Washington 98332

January 11, 2019

UST, two 2,000-gallon USTs, and all of the associated piping and dispenser islands were tested for leaks prior to being decommissioned. The PetroTite Tank Testing representative onsite reported that all four USTs and associated piping did not have detectable leaks. During the decommissioning, holes or damage was not identified on the USTs and contamination was not observed in the surrounding soil. Two soil samples were reportedly collected from the bottom of the tank pits and analyzed as verification; however, the laboratory analytical report was not included within the Alkai Phase I ESA report that was reviewed. Groundwater was reportedly not encountered during the decommissioning of the USTs.

1.3.3 Environmental Management Services 2010 – Interim Cleanup Action and Confirmation Sampling

In February of 2010, the owner of the Property had the contaminated soil that was identified by the TPCHD within the two drainage trenches excavated and removed.

EMS subsequently completed a Phase II Subsurface Investigation to evaluate the effectiveness of the interim cleanup action. The Phase II Subsurface Investigation involved the advancement of six (6) soil borings (B1, B2, B3, B4, B5 and B6) on the Property using direct push drilling techniques. Borings B1, B3, B4 and B5 were placed on the south side of the site building. Boring B2 was placed in the southwest area of the exterior lift area and B6 was placed in front of the north working bay. EMS also collected four (4) surface soil samples (T1-T4) from the north trench along the exterior lift area and the trench running parallel to the west side of the main building. One (1) surface soil sample was collected just off the sidewalk south of the building office area (SS1).

Shallow groundwater was encountered in five (5) of the six (6) borings in isolated, perched lenses. Groundwater was encountered in boring B1 at 9 feet bgs, in boring B2 at 8.5 feet bgs, in boring B4 at 11.5 feet bgs, in boring B5 at 10.5 feet bgs and in boring B6 at 9.5 feet bgs. Groundwater was not encountered in boring B3. At the completion of the drilling, each boring was backfilled with bentonite pellets and sealed at the surface with an asphalt or concrete plug and patch.

Ten (10) soil samples and three (3) water samples were collected from the soil borings and five (5) discrete soil samples were collected using hand tools. The boring locations, sample locations and sample depths, were selected based on historical site use to best characterize the subsurface.

Selected soil and groundwater samples were analyzed for: diesel-range organics (DRO) and ORO by Ecology Method NWTPH-Dx; gasoline-range organics (GRO) by Ecology Method NWTPH-Gx; benzene, toluene, ethylbenzene, and xylenes (BTEX) by EPA Method 8021b, metals (lead, chromium, and cadmium) by EPA Method 6020; and/or PAHs by EPA Method 8270C.

Analytical results reported metal concentrations in the five (5) shallow soil samples (T1, T2, T3, T4 and SS1) above the laboratory's reporting limit but below the MTCA Method A Soil Cleanup Levels. The other contaminants of concern were detected above their respective laboratory reporting limits in the samples analyzed. A summary of the laboratory analytical results is provided on Table 2 in Appendix C.

None of the groundwater samples contained detectable concentrations of petroleum related contaminants. The groundwater sample collected from boring B2 contained a concentration of lead above

Groundwater Monitoring Report
Fourth Quarter 2018 – Fourth Consecutive Sampling Event

14610 Purdy Drive Northwest
Gig Harbor, Washington 98332

January 11, 2019

the MTCA Method A Cleanup Level. However, the concentration was considered anomalous as suspended solids within reconnaissance groundwater samples will typically bias metal concentrations high, and none of the carrier contaminants of concern were detected.

Based on these results, EMS concluded that the contamination identified by TPCHD in 2009 had been successfully remediated. The northern drainage trench was then filled with clean soil to surface grade and the western drainage trench filled to approximately 6-inches bgs. Oil absorbent socks were lined within the western drainage trench to avoid further contamination.

1.3.4 EcoCon, Inc. 2017 – Phase I ESA

In January of 2017, a Phase I ESA was conducted by EcoCon, Inc (ECI) in connection to a potential purchase of the Property. ECI noted that the exterior hydraulic hoist was still uncovered and noted some oil staining on the concrete pad. Oil absorbent socks were present within the western drainage trench; however, ECI did not consider this to be a sufficient engineering control to avoid potential contamination from the leaking hoist. The exposed soils to the north of the hydraulic pad, where the northern drainage trench formerly existed, also were identified as a potential receptor for contaminated runoff. One REC was identified during the assessment in reference to the leaking hoist and lack of secondary containment.

ECI recommended additional assessment of the western trench, and former northern trench areas, to determine if impacts from the leaking hoist had occurred since the interim cleanup action was conducted in 2010.

1.3.5 EcoCon, Inc. 2017 – Focused Subsurface Investigation

On January 24, 2017, ECI collected four (4) near surface soil samples (TN1-6, TN1-12; TS1-6; and TS2-6) using stainless steel hand tools (spade and trowel). The sample locations were strategically selected along the trench lines, within the areas of concern previously identified by the TPCHD and ECI's Phase I ESA. The samples were collected at depths between 6 and 12 inches bgs.

Four (4) soil samples were submitted to the Libby Environmental, of Olympia Washington, and analyzed for one or more of the following COCs:

- GRO by NWTPH-Gx;
- BTEX by EPA Method 8260C; and/or
- DRO and ORO by Northwest Method NWTPH-Dx.

Soil sample TS1-6 contained a concentration of ORO above its MTCA Method Cleanup Level of 2,000 mg/kg. The three remaining soil samples also contained concentrations of ORO; however, they were below the MTCA Method A Cleanup Level. Other COCs were not detected above their respective laboratory reporting limits in any of the four samples. A summary of the laboratory analytical results is provided on Table 2 in Appendix C.

As required in Table 830-1 in MTCA, an additional sample (TS1-6B) was collected in the vicinity of TS1-6 and analyzed for:

ECI | Environmental Services
O: (866) 730-9369 F: (253) 369-6228 E: info@ecocononline.com

Page 4

Groundwater Monitoring Report
Fourth Quarter 2018 – Fourth Consecutive Sampling Event

14610 Purdy Drive Northwest
Gig Harbor, Washington 98332

January 11, 2019

- DRO and ORO by Northwest Method NWTPH-Dx;
- Volatile Organic Compounds by EPA Method 8260C;
- Polychlorinated Biphenyls (PCBs) by EPA Method 8082;
- PAHs by EPA Method EPA Method 8270 (SIM); and
- Total lead by EPA Method 7010 Series.

The soil sample contained concentrations of ORO, PAHs, and lead above their respective MTCA Method A Cleanup Level. The remaining contaminants were not detected above their respective laboratory reporting limits. A summary of the laboratory analytical results is provided on Table 2 in Appendix C.

1.3.6 EcoCon, Inc. 2018 – Groundwater Monitoring Well Installation

In January of 2018, at the request of Ecology, ECI supervised the installation of groundwater monitoring well MW1 on the Property by ESN. Ecology had indicated that if a “properly” constructed monitoring well was installed at the Property near boring B2 and if four (4) consecutive quarters of “clean” groundwater samples were obtained that they would likely be able to issue a “no further action” (NFA) determination. MW1 was advanced to approximately fourteen (14) feet bgs before encountering groundwater. After encountering groundwater, the groundwater level rose within the boring to approximately seven (7) feet bgs.

MW1 was installed with approximately ten (10) feet of screen and backfilled with sand to approximately one (1) foot above the screened interval. Hydrated bentonite chips were then inserted within the boring up to approximately one (1) foot bgs. A four (4) inch monitoring well monument was installed over the groundwater monitoring well (MW1) with the surrounding concrete given a slight elevation so accumulated surface run-off does not congregate on top of the groundwater monitoring well, (Appendix A, Figure 3).

1.3.7 EcoCon, Inc. First Quarter 2018 – Quarterly Groundwater Monitoring

On February 5, 2018, ECI collected groundwater samples from the groundwater monitoring well (MW1) on the Property, as part of the first of four consecutive groundwater monitoring events. The groundwater sample was collected in accordance with American Society of Testing and Materials (ASTM) *Guideline D6771-02 “Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Groundwater Quality Investigations”*.

The collected groundwater sample from MW1 was submitted to Libby Environmental, of Olympia, Washington and analyzed for site specific COCs which were identified as:

- Diesel-range organics (DRO);
- Oil-range organics (ORO);
- Total cPAHs;
- Total and dissolved cadmium;

Groundwater Monitoring Report
Fourth Quarter 2018 – Fourth Consecutive Sampling Event

14610 Purdy Drive Northwest
Gig Harbor, Washington 98332

January 11, 2019

- Total and dissolved chromium/hexavalent chromium; and
- Total and dissolved lead.

The analysis of the groundwater sample collected from MW1 indicated that the concentrations of the Site's COCs were below their respective laboratory reporting limits which are below the respective MTCA Method A Cleanup Levels. A summary of the laboratory analytical results, as well as results from previous groundwater sampling events, is provided in Table 3 in Appendix C.

1.3.8 EcoCon, Inc. Second Quarter 2018 – Quarterly Groundwater Monitoring

On May 8, 2018 and June 19, 2018, ECI collected groundwater samples from the groundwater monitoring well (MW1) on the Property, as part of the second of four consecutive groundwater monitoring events. The groundwater sample was collected in accordance with American Society of Testing and Materials (ASTM) Guideline D6771-02 "*Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground-Water Quality Investigations*".

The collected groundwater sample from MW1 was submitted to Libby Environmental, of Olympia, Washington and analyzed for site specific COCs which were identified as:

- Diesel-range organics (DRO);
- Oil-range organics (ORO);
- Total and dissolved chromium; and
- Total and dissolved lead.

The analysis of the groundwater sample collected from MW1 indicated that the concentrations of the Site's COCs were below their respective laboratory reporting limits which are below their respective MTCA Method A Cleanup Levels. A summary of the laboratory analytical results, as well as results from previous groundwater sampling events, is provided in Table 3 in Appendix C.

1.3.9 EcoCon, Inc. Third Quarter 2018 – Quarterly Groundwater Monitoring

On August 7, 2018, ECI attempted to collect groundwater samples from the groundwater monitoring well (MW1) on the Property, as part of the third of four consecutive groundwater monitoring events. However, groundwater was not detected within the groundwater monitoring well (MW1) done to the maximum depth of 13.3 feet bgs. The lack of detectable groundwater this quarter implied that the shallow groundwater levels in the vicinity of MW1 are likely perched and are only seasonally present.

A summary of the laboratory analytical results from previous groundwater sampling events, is provided in Table 2 in Appendix C.

2.0 GROUNDWATER MONITORING PROGRAM

2.1 Regulatory Compliance

This groundwater-monitoring program is being performed at the request of Ecology as part of an independent action being conducted through Ecology's Voluntary Cleanup Program (VCP). The purpose of the voluntary cleanup action is to comply with the requirements of MTCA Cleanup Regulations, as established in Chapter 340 of Title 173 of the Washington Administrative Code (WAC 173-340), to protect human health and the environment. According to Ecology, once four (4) consecutive quarters of compliant, post-remediation groundwater analytical data are achieved, the groundwater beneath the Property will be considered compliant with MTCA cleanup requirements.

This report documents the fourth of four consecutive quarterly sampling events. The results of this groundwater sampling event and previous groundwater sampling events are available in Table 2, Appendix C.

2.2 Contaminants of Concern (COCs) and Cleanup Levels

The analytical results from the first groundwater monitoring event, on February 5, 2018, indicated that the concentrations of the identified COCs were below their respective laboratory reporting limits which are below their respective MTCA Method A Cleanup Levels. Therefore, satisfying the requirements provided by Ecology according to a Department of Ecology Opinion Letter, dated September 27, 2017:

“Groundwater samples collected from the new monitoring well should be analyzed for: Heavy oil, cPAHs, total and dissolved cadmium, total and dissolved chromium, hexavalent chromium, and total lead and dissolved lead.

- 1. If the concentration of cPAHs from the first sampling event is less than the laboratory PQL, then cPAHs only need to be sampled for once in groundwater.*
- 2. If the concentration of hexavalent chromium from the first sampling event is less than the laboratory PQL, then hexavalent chromium only needs to be sampled for once in groundwater.*
- 3. If the concentration of cadmium from the first sampling event is less than the laboratory PQL, then cadmium only needs to be sampled for once in groundwater.”*

For the fourth quarterly sampling event, ECI adjusted the COCs to match the updated requirements.

Based upon the results of previous investigations, the COCs and respective cleanup levels for the Site are presented below:

Table 1: Project Contaminants of Concern

MTCA Method-A Cleanup Levels for Groundwater (MTCA Cleanup Regulation 173-340-900: Tables 720-1)	
Contaminant of Concern (COCs)	Groundwater Cleanup Levels µg/L
Diesel-Range Organics (DRO)	500
Oil-Range Organics (ORO)	500
Total and Dissolved Chromium	50
Total and Dissolved Lead	15

2.3 Fourth Quarter Sampling Activities

Groundwater sampling was completed on November 29, 2018 and December 19, 2018. On November 29, 2018, groundwater sampling was initially attempted, however, groundwater was not detected within the groundwater monitoring well (MW1) down to the maximum depth of 13.3 feet bgs. Therefore, ECI returned to the site on December 19, 2018, to collect a groundwater sample. This was after a significant precipitation event in the region.

A groundwater sample was collected in accordance with American Society of Testing and Materials (ASTM) Guideline D6771-02 “Standard Practice for Low-Flow Purging and Sampling for Wells and Devices Used for Ground-Water Quality Investigations”.

ECI field staff followed the procedures described below when collecting groundwater samples:

- The cap from the monitoring well was removed and the groundwater level was allowed to equilibrate to atmospheric pressure for a minimum of 20 minutes.
- The depth to groundwater in the monitoring well was measured relative to the top of the well casing using an electronic water-level meter.
- The monitoring well was purged at a low-flow rate (100 to 300 milliliters per minute) using a peristaltic pump and dedicated polyethylene tubing. Temperature, pH, turbidity, dissolved oxygen and specific conductivity were monitored during purging using a water quality meter to determine when these parameters stabilized.

A sample was collected in new laboratory-provided analyte-specific sample containers and assigned a unique a sample identification number. The sample was placed in a climate-controlled container and maintained at or below 4° Celsius until it was delivered to the laboratory under industry standard chain of custody protocol.

2.4 Analytical Results

One groundwater sample was submitted to Libby Environmental, of Olympia, Washington and analyzed for the site-specific COCs. Analytical methods were consistent with those presented in Section 2.2.

The analysis of the collected groundwater sample did reveal concentrations of the identified COCs above their respective laboratory reporting limits which are below the MTCA Method A Cleanup Levels. A summary of the laboratory analytical results, as well as both soil and groundwater analytical results from previous environmental investigations, is provided in Table 2 and Table 3 in Appendix C and shown on Figure 4; Appendix A.

3.0 CONCLUSION

On December 19, 2018, a confirmation/compliance groundwater sample was collected from the groundwater monitoring well installed at the Site (MW1). The sample was collected to evaluate the groundwater quality. The groundwater sample analytical results reported concentrations of all COCs below their applicable MTCA Method A Cleanup Levels.

3.1 Opinion

This groundwater monitoring event documents the fourth consecutive groundwater monitoring event that Ecology has requested. According to the analytical results of samples collected from all four quarters, concentrations of the identified COCs were not reported to above their respective laboratory reporting limits which are below their respective MTCA Method A Cleanup Levels. ECI will submit our findings to Ecology and seek a “No Further Action” determination based on the groundwater sampling results being in compliance with the substantive requirements outlined in WAC 173-340.

List of Appendices

Appendix A - Project Figures

Figure 1: Site Location Map

Figure 2: Site Topographic Map

Figure 3 : Groundwater Sample Location Map

Appendix B: Project Documentation

Groundwater Sampling Documentation

Appendix C: Project Tables

Table 2 : Summary of Soil Analytical Results

Table 3: Summary of Compliance Groundwater Analytical Results

Appendix D: Project Analytical Results

Laboratory Analytical Report

Chain of Custody

Appendix A: Project Figures

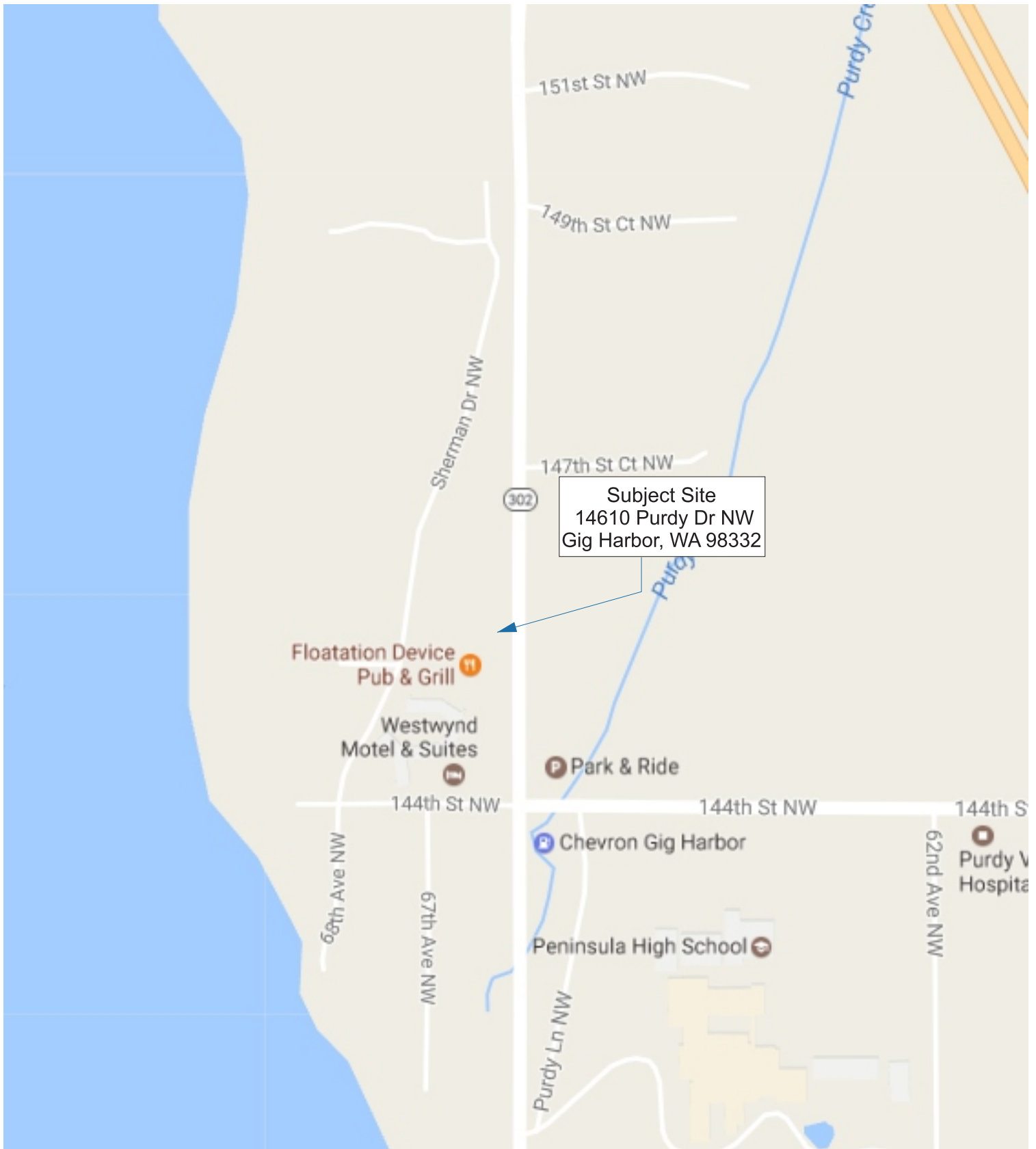
Figure 1: Site Location Map

Figure 2: Site Topographic Map

Figure 3 : Groundwater Sample Location Map

Appendix A

Project Figures



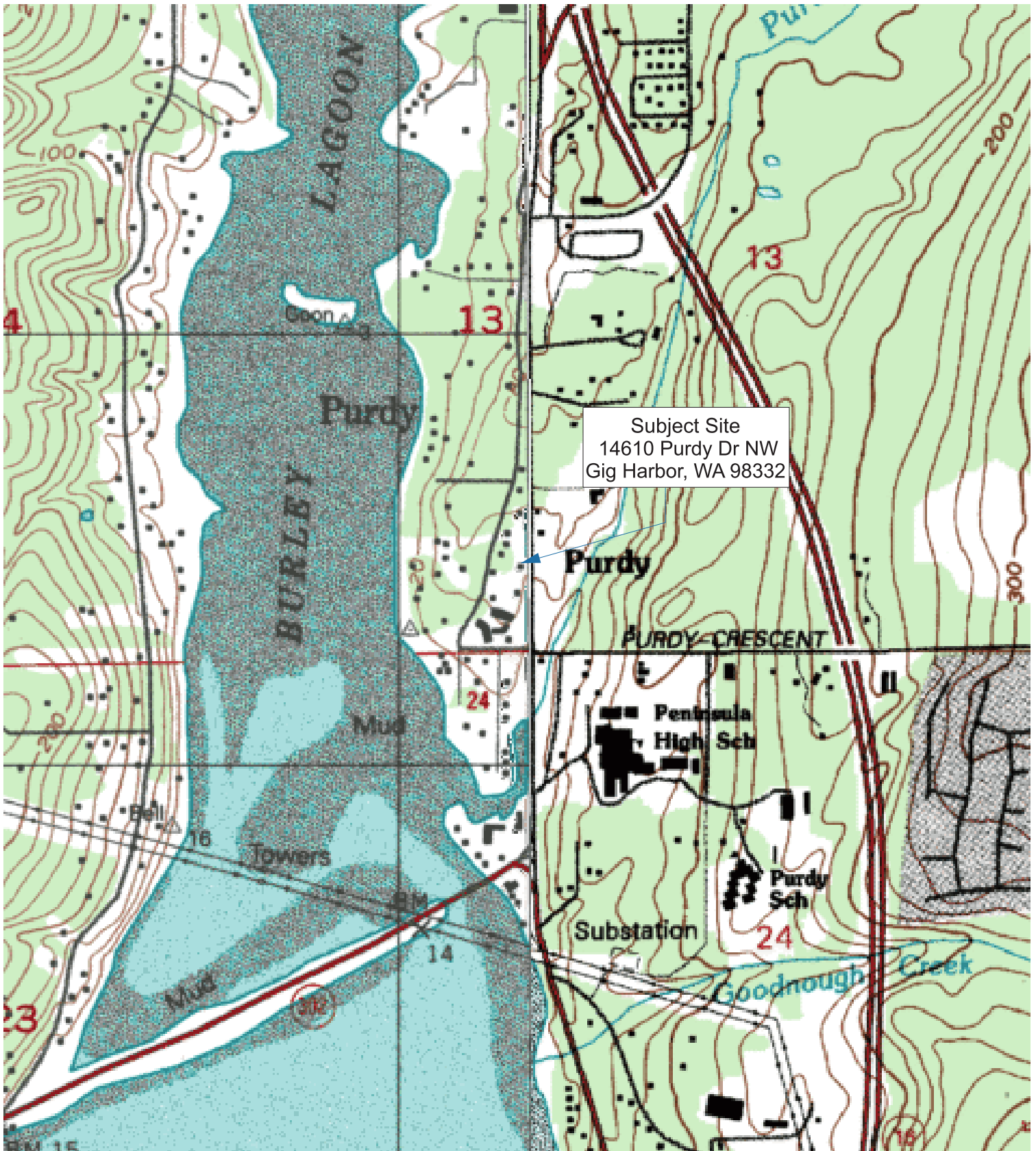
Subject Site
 14610 Purdy Dr NW
 Gig Harbor, WA 98332



Site Location Map
 Quarterly Groundwater Sampling
 14610 Purdy Dr NW
 Gig Harbor, WA 98332

Date: December 28, 2018
 Completed By: K. Spencer
 Reviewed By: S. Spencer
 Version: ECI-001
 Project No.: 0359-01-04

Figure No.:
01
 Sheet 01 of 03



Subject Site
 14610 Purdy Dr NW
 Gig Harbor, WA 98332

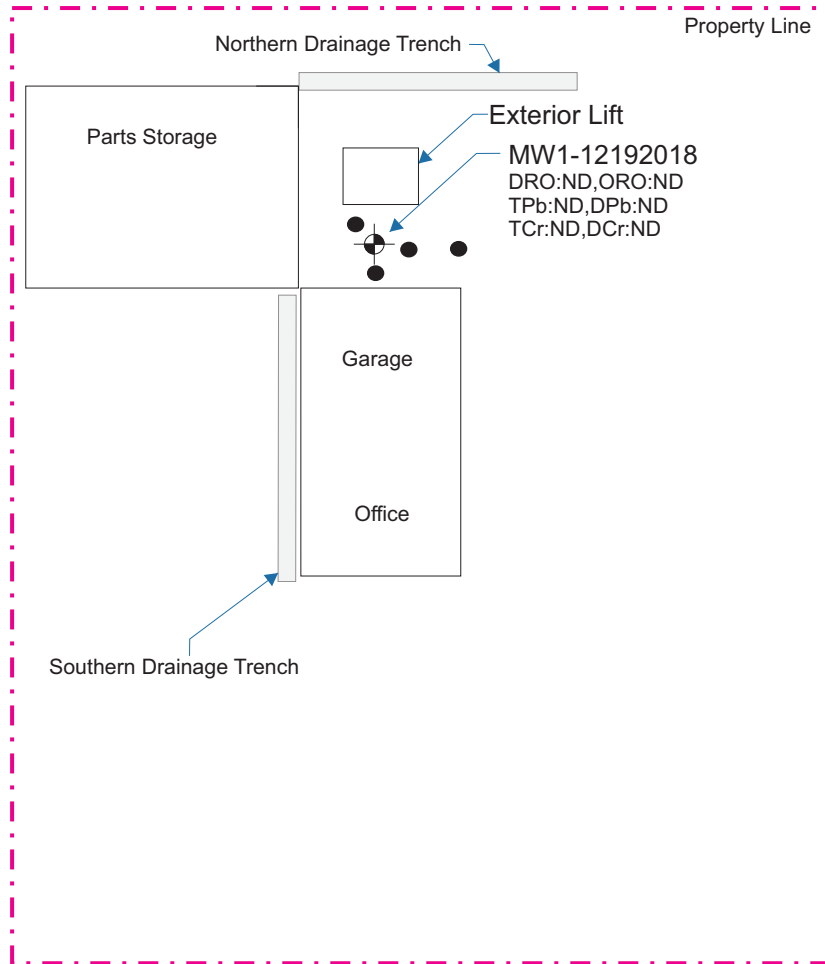


Site Topographic Map
 Quarterly Groundwater Sampling
 14610 Purdy Dr NW
 Gig Harbor, WA 98332

Date: December 28, 2018
 Completed By: K. Spencer
 Reviewed By: S. Spencer
 Version: ECI-001
 Project No.: 0359-01-04

Figure No.:
02
 Sheet 02 of 03





State Hwy 302

Explanation

-  Monitoring Well Location
-  October 5, 2017 Attempted Monitoring Well Installation Locations



Groundwater Sample Location Map
 Quarterly Groundwater Sampling
 14610 Purdy Dr NW
 Gig Harbor, WA 98332

Date: December 28, 2018
 Completed By: K. Spencer
 Reviewed By: S. Spencer
 Version: ECI-001
 Project No.: 0359-01-04

03
 Sheet 03 of 03

Appendix B: Project Documents

Groundwater Sampling Documentation

Appendix B

Project Documents

ECI MONITORING WELL PURGE AND SAMPLE FORM						Date: 11/29/2018
Project Name: Gig Harbor Transmission		Project No.: 0359-01-05		Well No.: MW1		
Field Personnel: KJR			Static Water Level: N/A			
Water Level Measurement Method: E-Tape						
Time Start Purge: N/A		Time End Purge: N/A		Time Sampled: N/A		
Measuring Point Description: TOC						
Purge Method: N/A				Purge Depth: N/A		
Well Volume Calculation (Fill in before purging)	Total Depth (ft)	Depth to Water (ft)	Water Column (ft)	Multiplier for Casing Diameter (in) (Circle) $V = (d^2h/77.01)$		Casing Volume (gal)
	13.3	N/A				
Time	N/A					
Volume Purged (mL)	N/A					
pH (0.1)	N/A					
Temperature C. (3%)	N/A					
Conductivity uS/cm (3%)	N/A					
Turbidity (10%)	N/A					
Dissolved Oxygen	N/A					
ORP	N/A					
Color	N/A					
Odor/Sheen	N/A					
Comments: Groundwater was not detected within the Monitoring Well Casing.						
Percent Recovery:			Depth to Water at Sampling (ft): N/A			
Sampling Equipment: N/A						
Sample No.	No. of Containers	Container Type	Preservative	Field Filtration	Analysis Request (Method)	Comments
Total Discharge (gal): N/A		Disposal Method: N/A		Drum Designation(s)/Volume:		
WELL HEAD CONDITIONS CHECKLIST (Circle YES or NO - if NO, add comments)						
Well Security Devices OK (Bollards, Christy Lid, Casing Lid and Lock): YES / NO						
Inside of Well Head and Outer Casing Dry: YES / NO						
Well Casing: YES / NO						
Notes:						

ECI MONITORING WELL PURGE AND SAMPLE FORM						Date: 12/19/2018
Project Name: Gig Harbor Transmission		Project No.: 0359-01-05		Well No.: MW1		
Field Personnel: KJR			Static Water Level: 11.19			
Water Level Measurement Method: E-Tape						
Time Start Purge: 2:00 PM		Time End Purge: N/A		Time Sampled: 2:20 PM		
Measuring Point Description: TOC						
Purge Method: Low Flow				Purge Depth: Middle of the screen		
Well Volume Calculation (Fill in before purging)	Total Depth (ft)	Depth to Water (ft)	Water Column (ft)	Multiplier for Casing Diameter (in) (Circle) $V = (d^2h/77.01)$		Casing Volume (gal)
	13.3	11.19				
Time	N/A					
Volume Purged (mL)	N/A					
pH (0.1)	N/A					
Temperature C. (3%)	N/A					
Conductivity uS/cm (3%)	N/A					
Turbidity (10%)	N/A					
Dissolved Oxygen	N/A					
ORP	N/A					
Color	Clear					
Odor/Sheen	None					
Comments: No parameters were collected prior to sampling due to the limited groundwater found within the monitoring well. Groundwater purged dry multiple times while collecting the necessary groundwater volume for the analytical glassware.						
Percent Recovery:			Depth to Water at Sampling (ft): N/A			
Sampling Equipment: Peristaltic						
Sample No.	No. of Containers	Container Type	Preservative	Field Filtration	Analysis Request (Method)	Comments
MW1	3	Multi	HNO3	N	Multiple	
Total Discharge (gal): 0		Disposal Method: N/A		Drum Designation(s)/Volume:		
WELL HEAD CONDITIONS CHECKLIST (Circle YES or NO - if NO, add comments)						
Well Security Devices OK (Bollards, Christy Lid, Casing Lid and Lock): YES / NO						
Inside of Well Head and Outer Casing Dry: YES / NO						
Well Casing: YES / NO						
Notes:						

Appendix C: Project Tables

Table 2: Summary of Soil Analytical Results

Table 3: Summary of Compliance Groundwater Analytical Results

Appendix C Project Tables

Table 2: Summary of Soil Analytical Results
Gig Harbor Transmission
14610 Purdy Drive Northwest
Gig Harbor, Washington 98332

Sample ID	Sample Date	Sample Depth (Feet)	Total Petroleum Hydrocarbons (mg/kg)			Volatile Organic Compounds (mg/kg)				Carcinogenic PAHs (mg/kg)							Metals (mg/kg)								
			Gasoline-Range	Diesel-Range	Oil-Range	Benzene	Toluene	Ethylbenzene	Total Xylenes	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenzo(a,h)anthracene	Total cPAHs*	Arsenic	Barium	Cadmium	Total Chromium	Lead	Mercury	Selenium	Silver
TPCHD 2009 - Site Inspection																									
S1-surface-031209	3/12/2009	Surface	<25	<31	180	<0.0012	<0.0062	<0.0012	<0.0037	<0.0083	<0.0083	<0.0083	<0.0083	<0.0083	<0.0083	<0.0083	ND	<13	100	<0.63	57	120	<0.31	<13	<0.63
S2-surface-031209	3/12/2009	Surface	<270	<4,200	29,000	<0.0013	<0.0065	<0.0013	<0.0026	0.094	0.21	0.33	<0.090	0.13	0.11	<0.090	0.20	<14	130	8.8	30	400	0.53	<14	<0.68
EMS 2010 - Phase II Subsurface Investigation																									
B1-10-021010	2/10/2010	10	<5	<20	<50	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B2-8-021010	2/10/2010	8	--	<20	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B3-10-021010	2/10/2010	10	<5	<20	<50	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B4-11-021010	2/10/2010	11	<5	<20	<50	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B5-14-021010	2/10/2010	14	<5	<20	<50	<0.02	<0.05	<0.05	<0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
B6-8-021010	2/10/2010	8	--	<20	<50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
SS1	2/10/2010	0.5-1	--	<20	<50	--	--	--	--	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	--	--	--	0.6	3.4	17	--	--	--
T1	2/10/2010	0.5-1	--	--	--	--	--	--	--	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	--	--	--	0.5	8.4	35	--	--	--
T2	2/10/2010	0.5-1	--	--	--	--	--	--	--	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	--	--	--	0.3	13	20	--	--	--
T3	2/10/2010	0.5-1	--	--	--	--	--	--	--	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	--	--	--	0.4	35	53	--	--	--
T4	2/10/2010	0.5-1	--	--	--	--	--	--	--	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	<0.08	--	--	--	1.2	33	30	--	--	--
ECI 2017 - Focused Subsurface Investigation																									
TN1-6	1/24/2017	0.5	--	<50	1,040	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TS1-6	1/24/2017	0.5	<10	<50	3,440	<0.02	<0.1	<0.05	<0.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TS1-12	1/24/2017	1	--	<50	638	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TS2-6	1/24/2017	0.5	--	<50	714	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TS1-6B	1/24/2017	0.5	--	<50	5,660	--	--	--	--	<0.0703	0.156	0.174	<0.0703	0.0868	<0.0703	<0.0703	0.13	--	--	--	--	660	--	--	--
ECI 2017 - Confirmation Soil Sampling																									
EX1-18	4/4/2017	1.5	--	<50	1,170	--	--	--	--	<0.0451	<0.0451	<0.0451	<0.0451	<0.0451	<0.0451	<0.0451	ND	--	--	--	--	100	--	--	--
EX2-18	4/4/2017	1.5	--	<50	<250	--	--	--	--	<0.0466	<0.0466	<0.0466	<0.0466	<0.0466	<0.0466	<0.0466	ND	--	--	--	--	55	--	--	--
MTCA Method A Cleanup Levels			100	2,000	2,000	0.03	7	6	9	NA	NA	NA	NA	0.1	NA	NA	0.1	20	NA	2	2,000	250	2	NA	NA

ND: Not detected above laboratory reporting limit

*: Total Concentration using the toxicity equivalency methodology in WAC 173-340-708 (8)

Bold: Contaminant Detected Above Laboratory Reporting Limit

Red: Contaminant Concentration Exceeds MTCA Method A Cleanup Level

--: Not Analyzed



Practical Environmental Compliance Solutions

Offices In: Anchorage | Tacoma | Portland

Table 3: Summary of Groundwater Analytical Results
Gig Harbor Transmission
14610 Purdy Drive Northwest
Gig Harbor, Washington 98332

Sample ID	Sample Date	Total Petroleum Hydrocarbons (µg/L)			Volatile Organic Compounds (µg/L)				Carcinogenic PAHs (µg/L)							Metals (µg/L)							
		Gasoline-Range	Diesel-Range	Oil-Range	Benzene	Toluene	Ethylbenzene	Total Xylenes	Benz(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenz(a,h)anthracene	Total cPAHs ¹	Hexavalent Chromium	Dissolved Cadmium	Total Cadmium	Dissolved Chromium	Total Chromium	Dissolved Lead	Total Lead
ECI 2017 - Focused Subsurface Investigation																							
B1H2O	2/10/2010	<50	<100	<200	<1	<1	<1	<2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
B2H2O	2/10/2010	<50	<100	<200	<1	<1	<1	<2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	--	--	<0.4	--	50	35²	
B6H2O	2/10/2010	<50	<100	<200	<1	<1	<1	<2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	ND	--	--	--	--	--	--	
ECI 2018 - Groundwater Monitoring																							
MW1	2/5/2018	--	<200	<400	--	--	--	--	<0.0998	<0.0998	<0.0998	<0.0998	<0.0998	<0.0998	<0.0998	ND	<0.01	<0.5	<0.5	<5	<5	<5	<5
MW1	5/8/2018	--	<200	<400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	6/19/2018	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5	<5	<5	<5
MW1	8/7/2018*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	11/29/2018*	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
MW1	12/19/2018	--	<200	<400	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	<5	<5	<5	<5
MTCA Method A Cleanup Levels		800	500	500	5	1,000	700	1,000	NA	NA	NA	NA	0.1	NA	NA	0.1	50	5	5	50	50	15	15

ND: Not detected above laboratory reporting limit

¹: Total Concentration using the toxicity equivalency methodology in WAC 173-340-708 (8)

²: Concentration is considered anomolous. Reconnaissance groundwater samples tend to bias metal concentrations high due to presence of suspended solids.

--: Not Analyzed

*: No groundwater was detected when the groundwater monitoring well was accessed

Appendix D: Project Analytical Results

Laboratory Analytical Report

Chain of Custody

Appendix D Project Analytical Results



Libby Environmental, Inc.

4139 Libby Road NE • Olympia, WA 98506-2518

December 26, 2018

Stephen Spencer
ECI
P.O. Box 153
Fox Island, WA 98333

Dear Mr. Spencer:

Please find enclosed the analytical data report for the Gig Harbor Transmission Project located in Gig Harbor, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of in 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
Senior Chemist
Libby Environmental, Inc.

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

4139 Libby Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 12/19/18 Page: 1 of 1

Client: ECI

Project Manager: Stephen Spencer

Address: PO Box 153

Project Name: Gig Harbor Transmission

City: Fox Island State: WA Zip: 98333

Location: Gig Harbor City, State: Gig Harbor, WA

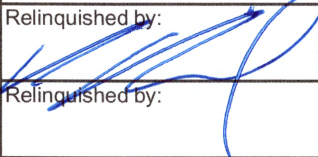
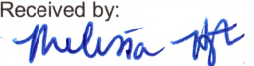
Phone: Fax:

Collector: Kyrin Reed Date of Collection: 12/19/18

Client Project # 0359-01-05

Email: kreed@eciconus.com / sspencer@eciconus.com

Sample Number	Depth	Time	Sample Type	Container Type	Analytes											Field Notes									
					VOC 8260	NWTPH-Gx	BTEX 8021	NWTPH-HCID	NWTPH-Dx	c PAH 8270	PAH 8270	Semi Vol 8270	PCB 8082	MTC 5 Metals	RCRA 8 Metals		Total Chromium/As	Dissolved Chromium							
1	MW1	1430	w	multi					X																
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									
13																									
14																									
15																									
16																									
17																									

Relinquished by: 	Date / Time: 12/19/18 1515	Received by: 	Date / Time: 12/19/18 1515	Sample Receipt Good Condition? <input checked="" type="radio"/> Y <input type="radio"/> N Temp. °C Seals Intact? Y <input type="radio"/> N <input checked="" type="radio"/> N/A Total Number of Containers	Remarks:
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		
Relinquished by:	Date / Time:	Received by:	Date / Time:		

Libby Environmental, Inc.

4139 Libby Road NE

Olympia, WA 98506

Phone: (360) 352-2110

FAX: (360) 352-4154

Email: libbyenv@gmail.com

GIG HARBOR TRANSMISSION PROJECT

ECI

Gig Harbor, Washington

Libby Project # L181219-5

Client Project # 0359-01-05

Analyses of Diesel & Oil (NWTPH-Dx/Dx Extended) in Water

Sample Number	Date Analyzed	Surrogate Recovery (%)	Diesel ($\mu\text{g/L}$)	Oil ($\mu\text{g/L}$)
Method Blank	12/20/18	104	nd	nd
MW1	12/20/18	94	nd	nd
MW1 Dup	12/20/18	96	nd	nd
Practical Quantitation Limit			200	400

"nd" Indicates not detected at the listed detection limits.

"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE (2-F Biphenyl): 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

Libby Environmental, Inc.

GIG HARBOR TRANSMISSION PROJECT
ECI
Gig Harbor, Washington
Libby Project # L181219-5
Client Project # 0359-01-05

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

Analyses of Total Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead ($\mu\text{g/L}$)	Chromium ($\mu\text{g/L}$)
Method Blank	12/20/18	nd	nd
MW1	12/20/18	nd	nd
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE

Olympia, WA 98506

Phone: (360) 352-2110

FAX: (360) 352-4154

Email: libbyenv@gmail.com

GIG HARBOR TRANSMISSION PROJECT

ECI

Gig Harbor, Washington

Libby Project # L181219-5

Client Project # 0359-01-05

QA/QC for Total Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Chromium (% Recovery)
LCS	12/20/18	85%	95%
L181219-4 MS	12/20/18	110%	92%
L181219-4 MSD	12/20/18	116%	90%
RPD	12/20/18	5%	2%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%

ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

GIG HARBOR TRANSMISSION PROJECT
ECI
Gig Harbor, Washington
Libby Project # L181219-5
Client Project # 0359-01-05

4139 Libby Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

Analyses of Dissolved Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (µg/L)	Chromium (µg/L)
Method Blank	12/20/18	nd	nd
MW1	12/20/18	nd	nd
Practical Quantitation Limit		5.0	5.0

"nd" Indicates not detected at the listed detection limits.

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE

Olympia, WA 98506

Phone: (360) 352-2110

FAX: (360) 352-4154

Email: libbyenv@gmail.com

GIG HARBOR TRANSMISSION PROJECT

ECI

Gig Harbor, Washington

Libby Project # L181219-5

Client Project # 0359-01-05

QA/QC for Dissolved Metals in Water by EPA Method 7010 Series

Sample Number	Date Analyzed	Lead (% Recovery)	Chromium (% Recovery)
LCS	12/20/18	85%	95%
L181219-4 MS	12/20/18	110%	92%
L181219-4 MSD	12/20/18	116%	90%
RPD	12/20/18	5%	2%

ACCEPTABLE RECOVERY LIMITS FOR MATRIX SPIKES: 75%-125%

ACCEPTABLE RPD IS 20%

ANALYSES PERFORMED BY: Dirk Peterson

Libby Environmental, Inc.

4139 Libby Road NE

Olympia, WA 98506

Phone: (360) 352-2110

FAX: (360) 352-4154

Email: libbyenv@gmail.com

GIG HARBOR TRANSMISSION PROJECT ECI

Libby Project # L181219-5

Date Received 12/19/2018

Time Received 3:15 PM

Received By MH

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody is complete? Yes No
2. How was the sample delivered? Hand Delivered Picked Up Shipped

Log In

3. Cooler or Shipping Container is present. Yes No N/A
4. Cooler or Shipping Container is in good condition. Yes No N/A
5. Cooler or Shipping Container has Custody Seals present. Yes No N/A
6. Was an attempt made to cool the samples? Yes No N/A
7. Temperature of cooler (0°C to 8°C recommended) 1.0 °C
8. Temperature of sample(s) (0°C to 8°C recommended) 7.0 °C
9. Did all containers arrive in good condition (unbroken)? Yes No
10. Is it clear what analyses were requested? Yes No
11. Did container labels match Chain of Custody? Yes No
12. Are matrices correctly identified on Chain of Custody? Yes No
13. Are correct containers used for the analysis indicated? Yes No
14. Is there sufficient sample volume for indicated analysis? Yes No
15. Were all containers properly preserved per each analysis? Yes No
16. Were VOA vials collected correctly (no headspace)? Yes No N/A
17. Were all holding times able to be met? Yes No

Discrepancies/ Notes

18. Was client notified of all discrepancies? Yes No N/A

Person Notified: _____

Date: _____

By Whom: _____

Via: _____

Regarding: _____

19. Comments. _____

