

Former Underground Storage Tank Area – Supplemental Assessment Report

Blue Heron Paper Mill Property
419-427 Main Street
Oregon City, Oregon

Cooperative Agreement Number
BF-01J99101



Prepared for:
Confederated Tribes of the Grand Ronde
Community of Oregon

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Prepared by:
Stantec Consulting Services Inc.

Project/File: 185705769

**Former Underground Storage Tank Area – Supplement Assessment Report
Blue Heron Paper Mill Property**

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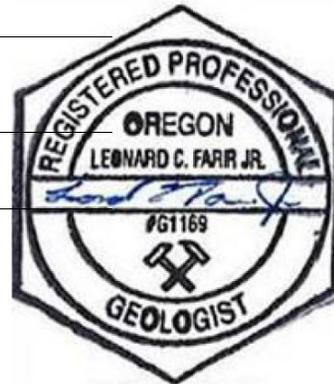
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Introduction

On behalf of the Confederated Tribes of the Grand Ronde Community of Oregon (CTGR), Stantec Consulting Services Inc. (Stantec) submits this Former Underground Storage Tank (UST) Area – Supplemental Assessment Report, to the Oregon Department of Environmental Quality (DEQ) to address data gaps identified in the former UST area at the former Blue Heron Paper Mill site (Property). The scope of the assessment described herein was developed to address comments received from the DEQ in response to the Draft Soil and Groundwater Focused Remedial Investigation Report submitted to the DEQ on February 26, 2024 by WSP USA Environment & Infrastructure Inc. (WSP). Assessment activities completed were in general accordance with Stantec’s Site-Specific Sampling and Analysis Plan (SAP) Addendum Revision 1, which was submitted to the DEQ on November 7, 2024.

The completed work at the Property was funded through CTGR’s United States Environmental Protection Agency (EPA) Brownfield Multipurpose Grant (EPA Cooperative Agreement Number BF-01J99101). All work described herein was completed in accordance with the Master Quality Assurance Project Plan (QAPP, Stantec, 2022) prepared for CTGR’s Brownfield Project approved by the DEQ on May 17, 2022 and by the EPA on May 23, 2022.

1 Background

The Property is located at 419 - 427 Main Street, Oregon City, Oregon 97045. The Property location is shown on **Figure 1**. A Property Layout showing buildings, roadways, and notable Property features, is shown on **Figure 2**.

The Property is located on the southeast bank of the Willamette River, abutting Willamette Falls. The Property is occupied by multiple vacant buildings with limited vegetation along the shore of the Willamette River. Regionally, the Property is in a valley carved by the Willamette River. Property geology is dominated by Columbia River Basalt (CRB), which is present at or near the ground surface. CRB flows are characterized as dense, hard to very hard, locally vesicular, black to dark gray in color, with oxidized fractures. The Property itself sits on the Sentinel Bluffs Member of the Grand Ronde Basalt Formation. The Sentinel Bluffs Member is approximately 400 feet thick with interflow zones defining multiple flows that comprise this CRB Member. Soil is sparse at the Property and largely consists of pockets of fill present at varying thicknesses from a few feet up to 30 feet (Wood, 2021).

Between March and October 2023 Stantec and WSP completed a focused remedial investigation (RI) at the Property to implement the assessment activities proposed in the Overarching Work Plan (Wood, 2021). Stantec was responsible for RI activities in the northern portion of the Property and identified contamination in seven areas. Although each of these areas of contamination were not fully delineated, no additional sampling is recommended in these areas because there is no known point source of contamination in these areas. Further, the nature and magnitude of contamination in these areas indicates a low potential for contaminants to migrate to the Willamette River. Additional findings and results from the RI are summarized



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Objective

in WSP's Draft Soil and Groundwater Focused Remedial Investigation Report (WSP, 2024a), submitted to the DEQ on February 26, 2024.

Stantec completed UST decommissioning by removal activities in October 2023 for two 12,000-gallon tanks located beneath the floor slab of the former Millwright Shop (**Figure 2**). Results of the UST decommissioning are summarized below and presented in full in Stantec's Underground Storage Tank Removal Report, Revision 1 (Stantec, 2024), submitted to the DEQ on April 10, 2024. In addition, soil and groundwater sample results from the UST removal were summarized in WSP's draft focused RI report as follows.

"Based on the Maul, Foster & Alongi, Inc. (MFA, 2017), Stantec (2023), and WSP (2023) sampling, soil and groundwater contamination remain near the former USTs (**Tables 1 through 3**). It is expected that soil contamination extends radially outward from the former tank cavity, and after several feet distance becomes confined to the 'smear' zone (estimated to extend from about 5 feet below ground surface [bgs] to the top of the basalt). The lateral extent of soil contamination has not been defined to the north, west, or south, and this represents a data gap. Groundwater contamination is expected to be limited to the shallow/perched water present on top of the basalt and to extend in the presumed bedrock downslope direction toward the Willamette River. The groundwater plume is not defined in any direction, and this constitutes a data gap." (WSP, 2024a).

Based on analytical results from the 2023 UST removal and detected compounds in historical samples collected in the vicinity of the USTs, contaminants of concern (COCs) identified for the former UST system include diesel-range organics (DRO), oil-range organics (ORO), lead, and polycyclic aromatic hydrocarbons (PAHs). No DEQ Risk-Based Concentration (RBC) exceedances were reported in a groundwater sample collected from within the UST cavity. Individual RBC exceedances in soil samples collected during RI and UST removal activities are presented in **Tables 1 and 2**.

Additional Property history is included in the *Underground Storage Tank Removal Report* (Stantec, 2024a) and the *Draft Soil and Groundwater Focused Remedial Investigation Report* (WSP, 2024a).

2 Objective

The additional subsurface investigation described herein was completed to address the data gaps identified following the 2023 UST removal: 1) the lateral extent of free product [oil non-aqueous phase liquid (NAPL)] to the north, west and south of the UST pit, and 2) the potential for impacted groundwater sourced from the former UST area to migrate to the Willamette River located approximately 200 feet to the west.



3 Pre-Field Activities

3.1 Utility Clearance

Prior to any intrusive subsurface activities, the public utility notification center was contacted, and a dig ticket was issued for the portion of the Property where borings were proposed. Further, Stantec retained Applied Professional Services as a private utility locator to assess each proposed boring location for the presence of subsurface utilities and/or obstructions using a combination of ground penetrating radar and electromagnetic line locating instruments.

3.2 Archaeological Monitoring

In accordance with the existing *Cultural Monitoring Summary for the Inadvertent Discovery Plan of Ancestral Remains and Cultural Materials* prepared by the CTGR, a Stantec archaeologist was present at the Property during all phases of ground disturbance.

Historic building materials including concrete and brick were noted within all of the borings completed, and 31 historic artifacts were collected as part of this project. The collected artifacts included glass fragments, ceramic fragments, a graphite fragment, a leather strap fragment, a metal nail, a champagne bottle base, and a Lea & Perrins Worcestershire glass bottle stopper. Additionally, three faunal bone fragments were identified and collected with the two larger fragments possibly being deer rib fragments, while the smaller fragment was not identifiable. The collected artifacts will be returned to the CTGR.

A copy of the Archaeological Monitoring Report prepared by Stantec is provided in **Appendix A**.

3.3 Health and Safety

A Site-Specific Health and Safety Plan (HASP), as required by Oregon Occupational Safety and Health Division (OR-OSHA) Safety and Health Act and 40 Code of Federal Regulations 1910.120 was prepared to describe field sampling activity safety protocols for Stantec employees engaged in the project. At the start of each day of field sampling activities, a “tailgate” meeting was held, and safety protocols reviewed.

4 Subsurface Assessment

Drilling activities were conducted at the Property between November 26th and December 4th, 2024, under the direction of a Stantec Oregon-registered geologist. Drilling services were provided by Holt Services, Inc. (Holt) of Vancouver, Washington, an Oregon Water Resources Department (OWRD)-licensed well driller. All boring/sampling locations are depicted on **Figure 3**, and boring logs are included as **Appendix B**.



4.1 Direct-Push Drilling and Soil Sample Collection

Soil borings BH-RI-S68 through BH-RI-S74 were advanced on November 26, 2024 by Holt utilizing a track-mounted GeoProbe® 7822DT direct-push drill rig in the locations indicated on **Figure 3**. All soil borings were advanced until drilling refusal was encountered at depths ranging from 6 feet bgs (BH-RI-S72) to 13 feet bgs (BH-RI-S68).

During drilling and sample collection, soil from each boring was observed for visual and olfactory evidence of petroleum impacts. Photoionization detector (PID) readings were collected approximately every 2.5 vertical feet from soil in each boring in accordance with the QAPP. No staining/odors and/or elevated PID readings were observed in soil borings except for boring BH-RI-S68, where some heavy oil impacts (odor, sheen, blebs, and oil skins on gravel) were observed from 9 feet bgs to the total boring depth of 13 feet bgs. Note that no sample was collected from the terminal depth in boring BH-RI-S68 due to the presence of gravels with no soil matrix.

Photo 1 – Soil core BH-RI-S68, depth interval 10'-13' bgs, with oil staining on gravel



One additional step-out boring (BH-RI-S74) was advanced approximately 25 feet west-northwest of BH-RI-S68 to assess the presence of heavy oil (**Figure 3**). No oil was observed in step-out boring BH-RI-S74.

A shallow soil sample was collected from each direct-push boring from 2 to 3 feet bgs. Additional deeper soil samples were collected from five of the seven borings (BH-RI-S68 through BH-RI-S70, BH-RI-S73 and BH-RI-S74). No deeper soil samples were collected from borings BH-RI-S71 and BH-RI-S72 due to shallow refusal at approximately 6 feet bgs. Lithologic descriptions, results of field screening and soil sample intervals are presented on the boring logs in **Appendix B**.

Select soil samples were submitted to Apex Labs for analysis of:

- DRO and ORO by Method NWTPH-Dx;
- PAHs by EPA Method 8270E selective ion monitoring (SIM); and



- Total arsenic and total lead by EPA Method 6020B.

4.2 Sonic Drilling and Groundwater Monitoring Well Installation

To address data gap #2 and facilitate the collection of groundwater samples, Stantec oversaw the installation of two groundwater monitoring wells on December 4, 2024 by Holt using a sonic drill rig:

- BH-MW-4: immediately downgradient of the UST area; and
- BH-MW-5: sentry well adjacent to the Willamette River north of the UST area.

In addition, WSP staff oversaw the installation of sentry wells BH-MW-2 and BH-MW-3 adjacent to the Willamette River west of the UST area.

Groundwater monitoring wells within the former UST area are depicted on **Figure 3**.

4.2.1 Well Installation

Well bores BH-MW-4 and BH-MW-5 were advanced approximately 2 feet into the upper surface of the basalt bedrock (total depths of 10 feet and 29 feet bgs, respectively). Well construction consisted of two-inch diameter polyvinyl chloride (PVC) well casing. BH-MW-4 was constructed with a 5-foot screen, and BH-MW-5 was constructed with a 10-foot well screen. Additional well construction details are included on the boring logs (**Appendix B**).

Wells BH-MW-2 and BH-MW-3, installed under the direction of WSP, were advanced approximately 5 feet into bedrock to total depths of 35 feet bgs and 40 feet bgs, respectively. Both wells were completed as two-inch diameter PVC casing and a 10-foot screened interval.

4.2.2 Soil Sample Collection

During advancement of the BH-MW-4 and BH-MW-5 well bores, shallow soil samples were collected from both borings at a depth of 2 to 3 feet bgs. An additional soil sample was collected near the total depth of each well bore from the soil immediately overlying the basalt bedrock (7 to 8 feet bgs for BH-MW-4 and 27 to 28 feet bgs for BH-MW-5).

Duplicate soil sample BH-RI-FD05 was collected from well bore BH-MW-5, paired with the 27 to 28-foot bgs sample.

4.2.3 Well Development and Survey

Prior to the collection of groundwater samples from wells BH-MW-4 and BH-MW-5, Stantec completed well development in accordance with DEQ's guidance document *Groundwater Monitoring Well Drilling, Construction and Decommissioning*, (DEQ 1992) and Stantec's standard operating procedure (SOP)



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ES3.03 included in the QAPP. Development consisted of surging the well casing by repeatedly passing a two-inch surge block across the well screen interval in each well. Following surging, development was completed by using a submersible electric pump to purge approximately six well casing volumes from each well.

During development, measurements of turbidity, temperature, pH, electrical conductivity, dissolved oxygen and oxidation reduction potential were collected for each approximately one gallon of water purged. Chemically stable groundwater conditions were determined in the field by the Stantec registered geologist when measured field parameters stabilized within five percent of the previous measurement for at least three successive borehole volumes. Groundwater well development logs are provided in **Appendix C**.

The relative elevation of all wells in the former UST area (BH-MW-2 through BH-MW-5) were measured by WSP on December 19, 2024.

5 Groundwater Monitoring Events

As of April 2025, Stantec and WSP have completed two quarterly groundwater monitoring events at the Property – fourth quarter 2024 on December 19, 2024 and first quarter 2025 on March 21, 2025. During each groundwater monitoring event, Stantec and WSP coordinate to gauge, purge and sample all site wells (MW-1 through MW-5) within the same 12-hour period. All Stantec groundwater sampling activities were completed in accordance with SOP ES4.03 included in the QAPP.

Based on depth-to-water data collected from the well network in the UST assessment area (BH-MW-2 through BH-MW-5), the inferred uppermost groundwater surface appears to flow steeply, mimicking the top-of-basalt surface, towards the Willamette River. Groundwater elevations, gradient and flow direction showed little variation between the fourth quarter 2024 and first quarter 2025 monitoring events. Groundwater elevation contour figures produced by WSP for both groundwater monitoring events are included in **Appendix D**.

Field groundwater data collection sheets are included as **Appendix C**. Groundwater samples collected by WSP from wells BH-MW-2 and BH-MW-3 and by Stantec from wells BH-MW-4 and BH-MW-5 were submitted to Apex Labs for analysis of:

- DRO and ORO by Method NWTPH-Dx;
- PAHs by EPA Method 8270E (Large Volume Injection); and
- Total and dissolved arsenic and total lead by EPA Method 6020B.



6 Laboratory Testing Results

6.1 Soil Testing Results

A total of 17 soil samples were collected (including one duplicate) from seven direct-push borings and two sonic borings. Soil analytical results are described by analyte group in the subsections that follow. All laboratory reports are provided in **Appendix E**. Analytical results, past and present, from the UST removal and UST area assessment described herein are presented in **Table 1** and **Table 2**.

6.1.1 Petroleum Hydrocarbons - Soil

Eight soil samples collected from direct-push borings were analyzed for DRO and ORO. Detectable concentrations of DRO and ORO were reported in samples collected from borings BH-RI-S68 at 9'-10', BH-RI-S70 at 7.5'-8.5', BH-RI-S72 at 2'-3' and BH-RI-S74 at 9'-10'. No detectable concentrations of petroleum hydrocarbons were reported in the four soil samples collected and analyzed from the sonic borings advanced for groundwater monitoring well installation.

The highest detection of total DRO + ORO was reported in BH-RI-S70-7.5'-8.5' at a concentration of 14,200 milligrams per kilogram (mg/kg). This reported detection exceeded the clean fill screening value and the site-specific RBC calculated for the direct contact pathway for residential and occupational receptors. No other reported concentrations of total DRO + ORO exceeded applicable RBCs (**Table 1**).

6.1.2 Metals - Soil

Twelve soil samples collected from the direct-push and sonic borings were analyzed for arsenic and lead. Detectable concentrations of arsenic were reported in 75% of the samples analyzed and concentrations of lead were reported in all samples analyzed (**Table 1**).

Arsenic

Detected concentrations of arsenic ranged from 1.13 mg/kg (BH-RI-MW-5-2'-3') to 244 mg/kg (BH-RI-S74-9'-10'). Four samples contained a reported arsenic concentration exceeding the Portland Basin background concentration of 8.8 mg/kg:

- BH-RI-S68-9'-10' (10.7 mg/kg), exceeded background and direct contact RBCs for residential and occupational receptors;
- BH-RI-S70-7.5'-8.5' (16.4 mg/kg), exceeded background and direct contact RBCs for residential, occupational and construction worker receptors;
- BH-RI-S72-2'-3' (28.2 mg/kg), exceeded background and direct contact RBCs for residential, occupational and construction worker receptors; and



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- BH-RI-S74-9'-10' (244 mg/kg), exceeded background and direct contact RBCs for residential, occupational and construction worker receptors.

Lead

Detected concentrations of lead ranged from 1.17 mg/kg (BH-RI-MW-5-2'-3') to 1,040 mg/kg (BH-RI-S68-9'-10'). Three samples contained a reported lead concentration exceeding the Portland Basin background concentration of 28 mg/kg:

- BH-RI-S68-9'-10' (1,040 mg/kg), exceeded background and direct contact RBCs for residential, occupational and construction/excavation worker receptors;
- BH-RI-S70-7.5'-8.5' (817 mg/kg), exceeded background and direct contact RBCs for residential, occupational and construction/excavation worker receptors; and
- BH-RI-S72-2'-3' (304 mg/kg), exceeded background and direct contact RBC for residential receptors.

Four samples (BH-RI-S68-9'-10', BH-RI-S70-7.5'-8.5', BH-RI-S72-2'-3' and BH-RI-S74-9'-10') were additionally analyzed for lead using the Toxic Characteristic Leaching Procedure (TCLP). The highest TCLP lead result was reported as 0.122 milligram per liter (mg/L), well below the trigger level for characteristic hazardous waste of 5 mg/L.

6.1.3 Polycyclic Aromatic Hydrocarbons - Soil

Twelve soil samples collected from the direct-push and sonic borings were analyzed for PAHs. Four soil samples (BH-RI-S68-9'-10', BH-RI-S70-7.5'-8.5', BH-RI-S72-2'-3' and BH-RI-S74-9'-10') contained PAH constituent concentrations exceeding one or more applicable screening value (**Table 2**).

The concentration of total PAHs reported in sample BH-RI-S72-2'-3' (78.2 mg/kg) exceeded the Portland Harbor Site Wide Remedial Action Level (RAL) of 30 mg/kg.

The calculated benzo[a]pyrene Toxic Equivalence Factor (TEF) for samples BH-RI-S68-9'-10' (0.215 mg/kg) and BH-RI-S70-7.5'-8.5' (0.399 mg/kg) exceeded the direct contact RBC for residential receptors of 0.11 mg/kg. Further, the calculated benzo[a]pyrene TEF for sample BH-RI-S72-2'-3' (16.5 mg/kg) exceeded the direct contact RBC for residential and occupational receptors.

6.2 Groundwater Testing Results

A total of four groundwater samples have been collected by Stantec from Property monitoring wells, one each from MW-4 and MW-5 during the fourth quarter 2024 and first quarter 2025 monitoring events. Four additional groundwater samples have been collected by WSP from the UST assessment area (monitoring wells MW-2 and MW-3) during the fourth quarter 2024 and first quarter 2025 monitoring events.



Monitoring well locations are indicated on **Figure 3**. Past and present groundwater analytical results are provided in **Table 3**. Groundwater laboratory reports are provided in **Appendix E**.

6.2.1 Petroleum Hydrocarbons - Groundwater

Concentrations of DRO and ORO in quarterly groundwater samples collected by Stantec and WSP were reported below laboratory detection limits in all samples except for the following:

- BH-MW-4, fourth quarter 2024 sample: DRO 290 micrograms per liter (ug/L); and
- BH-MW-4, first quarter 2025 sample: ORO 543 ug/L.

Results of petroleum hydrocarbon analysis for groundwater are presented in **Table 3**.

6.2.2 Metals – Groundwater

Concentrations of total and dissolved arsenic and lead were reported above laboratory reporting limits in approximately 50% of quarterly groundwater samples collected and analyzed from the UST area monitoring well network. All detected concentrations of arsenic were below the only potentially applicable human health groundwater RBC (groundwater in excavation), and below the chronic ecological RBC for arsenic 150 ug/L..

All detected concentrations of lead were below the only potentially applicable human health groundwater RBC (groundwater in excavation). Total lead concentrations in all samples exceeded the chronic ecological RBC for lead of 0.54 ug/L. Dissolved lead concentrations only in the BH-RI-MW-2 fourth quarter 2024 and BH-RI-MW-4 first quarter 2025 samples exceed the chronic ecological RBC for lead.

Results of metals analysis for groundwater are presented in **Table 3**.

6.2.3 Polynuclear Aromatic Hydrocarbons – Groundwater

All fourth quarter 2024 groundwater samples collected from wells BH-RI-MW-2 through BH-RI-MW-5 were analyzed for PAHs. First quarter 2025 groundwater samples collected from wells BH-RI-MW-4 and BH-RI-MW-5 were analyzed for PAHs. All concentrations of PAHs were reported below laboratory reporting limits.

Results of PAH analysis for groundwater are summarized in **Table 3**.

7 Conclusions and Recommendations

The additional subsurface investigation described herein was completed to address the data gaps identified following the 2023 UST removal: 1) the lateral extent of free product (oil NAPL) to the north, west and south of the UST pit, and 2) the potential for impacted groundwater sourced from the former UST area to migrate to the Willamette River located approximately 200 feet to the west.



7.1 Conclusions

Data Gap #1 - Soil

In the seven direct-push borings advanced to the west and south of the former UST pit, oil NAPL was only observed in boring BH-RI-S68. Step-out boring BH-RI-S74, advanced 25 feet west of BH-RI-S68 did not contain observable oil NAPL. In addition, no oil NAPL was observed in RI boring BH-S58, advanced on the eastern side of the UST pit by WSP in August 2023 (**Figure 3**). Accordingly, the known subsurface extent of NAPL to the west, south and east of the former UST location has been adequately delineated and is limited to an area no greater than 30 feet laterally from the sidewalls of the 2023 UST pit excavation as indicated on **Figure 3**. The northern extent of NAPL is not known at this time due to the presence of a building directly north of the former UST area.

Further, concentrations of total DRO + ORO, arsenic and lead were reported in excess of clean fill screening values and direct contact RBCs. This is consistent with soil sample results from the 2023 Remedial Investigation in this portion of the Property (WSP 2024a).

Data Gap #2 - Groundwater

The only laboratory detection of DRO (an ORO concentration of 543 ug/L was detected in BH-RI-MW-4 during the first quarter of 2025) in quarterly groundwater samples collected to date was reported at a concentration of 290 ug/L in the fourth quarter 2024 sample collected from well BH-RI-MW-4, located approximately 20 feet west of the former UST pit, in a cross- to down-gradient position relative to the source area (**Appendix D**). In comparison, the grab groundwater sample collected directly from the UST pit in October 2023 during removal activities contained a reported DRO concentration of 6,280 ug/L, or a 182% reduction in DRO concentration.

7.2 Recommendations

Data Gap #1 - Soil

Stantec understands that the CTGR anticipates mass removal of soil in the UST area of the Property as part of greater Property redevelopment and additional assessment/remediation will occur at that time.

Once the building to the north of the former UST location is razed, Stantec recommends completing additional direct-push borings in the former building footprint to complete lateral delineation of oil NAPL emanating from the former USTs.

Soil concentrations exceeding clean fill and RBC screening values will require management and proper disposal. Prior to Property redevelopment, Stantec recommends developing a contaminated media management plan (CMMP) to designate soil disposal options, worker protection measures and hazard mitigation.



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Data Gap #2 - Groundwater

Quarterly samples collected from the UST area monitoring well network to date indicate a significant reduction in petroleum hydrocarbon concentrations in a relatively short distance from the former UST pit. Further, petroleum hydrocarbons have not been detected in samples collected from the groundwater wells located near the Willamette River (BH-RI-MW-2, BH-RI-MW-3 and BH-RI-MW-5).

Based on the groundwater dataset to date, petroleum compounds sourced from the former UST system do not appear to have migrated laterally to the extent necessary to impact the Willamette River.

8 References

Oregon DEQ 2019. Clean Fill Determinations. Approved February 21, 2019.

Stantec 2022. Master Quality Assurance Project Plan (Revision 1), Former Blue Heron Mill Site, 419-427 Main Street, Oregon City, Oregon. May 13, 2022.

Stantec 2024a. Underground Storage Tank Removal Report, Former Blue Heron Paper Mill, 419-427 Main Street, Oregon City, Oregon. January 22, 2024.

Stantec 2024b. Site-Specific Sampling and Analysis Plan Addendum Revision 1, Underground Storage Tank Area, Former Blue Heron Paper Mill, Oregon City. November 7, 2024.

Wood 2021. Overarching Work Plan (Revision 1), Former Blue Heron Paper Company Mill. July 9, 2021.

WSP 2024a. Draft Soil and Groundwater Focused Remedial Investigation Report, Former Blue Heron Paper Company Mill, 419-427 Main Street, Oregon City, Oregon 97045, WSP Project No. 261M135588. February 26, 2024.

WSP 2024b. Groundwater Monitoring Well Installation – RI Southern Portion of Site - Addendum #1, CTGR Former Blue Heron Paper Mill, Oregon City, (PPA # 19-12; Former ECSI # 4811, EPA CA # BF-01J99101). October 1, 2024.



Tables



TABLE 1
Soil Sample Analytical Results - TPH, Metals, and Detected VOCs
Former Blue Heron Mill Property, North Portion
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Sample ID	Date Sampled	Petroleum Hydrocarbons				Metals					VOCs				
		NWTPH-Gx (Gasoline)	NWTPH-Dx (Diesel)	NWTPH-Dx (Heavy Oil)	Total Diesel/Heavy Oil	Arsenic	Cadmium	Chromium	Lead	TCLP Lead	Iso-Propylbenzene	n-Butylbenzene	n-Propylbenzene	o-Xylene	sec-Butylbenzene
2023 UST Removal Samples															
B21UST-N-2'	10/27/2023	7.60 U	365	53.8 U	365	--	0.288 U	19.6	21.1	--	0.076 U	0.076 U	0.038 U	0.038 U	0.076 U
B21UST-N-8'	10/27/2023	235	49,900	4,930 U	49,900	--	0.240 U	17.9	36.7	--	0.0734	0.392	0.153	0.0532	0.154
B21UST-W-2'	10/27/2023	--	115 U	510	510	--	0.234 U	15.2	10.3	--	--	--	--	--	--
B21UST-W-5'	10/27/2023	235	13,400	4,670 U	13,400	--	0.247 U	16.6	38.7	--	0.0578 U	0.332	0.0589	0.0381	0.213
FBH-DUP102723 (FD of B21UST-W-5')	10/27/2023	224	15,400	4,610 U	15,400	--	0.252 U	17.3	48.9	--	0.0617 U	0.302	0.0506	0.0339	0.193
B21UST-W-8'	10/27/2023	13.7	319 J+	60.7 U	319	--	0.317 U	18.9	83.1	--	0.087 U	0.087 U	0.0435 U	0.0435 U	0.087 U
B21UST-S-2'	10/27/2023	--	2,430 U	7,610	7,610	--	0.282	25.5	156	--	--	--	--	--	--
B21UST-S-6'	10/27/2023	--	2,270 U	16,100	16,100	--	0.262 U	20.8	85.0	--	--	--	--	--	--
B21UST-E-2'	10/27/2023	--	450 U	1,220	1,220	--	0.267	30.4	117	--	--	--	--	--	--
B21UST-E-8'	10/27/2023	--	2,480 U	23,000	23,000	--	0.297 U	21.2	79.1	--	--	--	--	--	--
2024 UST Data Gap Investigation															
BH-RI-S68-2'-3'	11/26/2024	--	19.0 U	37.9 U	--	1.96	--	--	4.37	--	--	--	--	--	--
BH-RI-S68-9'-10'	11/26/2024	--	36.8	57.8	94.6	10.7	--	--	1,040	0.0500 U	--	--	--	--	--
BH-RI-S69-9'-10'	11/26/2024	--	24.0 U	48.1 U	--	2.71	--	--	11.5	--	--	--	--	--	--
BH-RI-S70-2'-3'	11/26/2024	--	18.3 U	36.6 U	--	3.89	--	--	9.12	--	--	--	--	--	--
BH-RI-S70-7.5'-8.5'	11/26/2024	--	2,230 U	14,200	14,200	16.4	--	--	817	0.0629	--	--	--	--	--
BH-RI-S72-2'-3'	11/26/2024	--	120 U	965	965	28.2	--	--	304	0.0500 U	--	--	--	--	--
BH-RI-S73-8'-9'	11/26/2024	--	25.0 U	50.1 U	--	3.12	--	--	3.57	--	--	--	--	--	--
BH-RI-S74-9'-10'	11/26/2024	--	401	454 U	401	244	--	--	21.8	0.122	--	--	--	--	--
BH-RI-MW-4-7'-8'	12/4/2025	--	19.8 U	39.7 U	--	1.24 U	--	--	15.3	--	--	--	--	--	--
BH-RI-MW-5-2'-3'	12/4/2025	--	17.7 U	35.5 U	--	1.13	--	--	1.17	--	--	--	--	--	--
BH-RI-MW-5-27'-28'	12/4/2025	--	20.7 U	41.4 U	--	1.22 U	--	--	3.31	--	--	--	--	--	--
BH-RI-FD05 (FD of BH-RI-MW-5-27'-28')	12/4/2025	--	19.6 U	39.3 U	--	1.25 U	--	--	3.45	--	--	--	--	--	--
Clean Fill/Background Screening Values		1,300 ¹	See Site-Specific Value	NA	1,300 ¹	8.8	0.63	76	28	--	96	190	72	1.0	350
Soil Ingestion, Dermal Contact, and Inhalation RBC - Residential		1,300 ¹	See Site-Specific RBC	NA	1,300 ¹	0.43	78	120,000	400	--	3,500	NA	NA	1,400.0	NA
Soil Ingestion, Dermal Contact, and Inhalation RBC - Occupational		20,000 ¹	See Site-Specific RBC	NA	20,000 ¹	1.9	1,100	NA	800	--	57,000	NA	NA	25,000	NA
Soil Ingestion, Dermal Contact, and Inhalation RBC - Construction Worker		6,900 ¹	See Site-Specific RBC	NA	6,900 ¹	15	350	530,000	800	--	27,000	NA	NA	20,000	NA
Soil Ingestion, Dermal Contact, and Inhalation RBC - Excavation Worker		>Max ¹	See Site-Specific RBC	NA	>Max ¹	420	9,700	NA	800	--	750,000	NA	NA	560,000	NA
RCRA TCLP Trigger Concentration (20x Rule)		NA	NA	NA	NA	100	20	100	100	--	NA	NA	NA	NA	NA
Portland Harbor Site Wide RAL		NA	NA	NA	NA	NA	NA	NA	NA	--	NA	NA	NA	NA	NA
Portland Harbor PTW Threshold		NA	NA	NA	NA	NA	NA	NA	NA	--	NA	NA	NA	NA	NA
Portland Harbor Navigation Channel RAL		NA	NA	NA	NA	NA	NA	NA	NA	--	NA	NA	NA	NA	NA

Notes:
1. Site-Specific RBC calculated based on EPH/VP testing of three soil samples using procedure described in DEQ guidance. The values provided are the lowest of the three site-specific values calculated.
All results expressed as milligrams per kilogram, except for leachate samples which are reported in milligrams per liter.
bold = indicates concentrations detected above method reporting limits
shaded gray = indicates concentration exceeds clean fill/background screening value
highlighted yellow = indicates concentration exceeds background and residential direct contact RBC
highlighted orange = indicates concentration exceeds background and construction worker direct contact RBC
highlighted red = indicates concentration exceeds background and occupational direct contact RBC
highlighted blue = indicates concentration exceeds TCLP Trigger Concentration
highlighted purple = indicates concentration exceeds Portland Harbor Site Wide RAL

FD = field duplicate
mg/L = milligrams per liter
NA = Not Available, no screening value is listed for this analyte.
RCRA = Resource Conservation and Recovery Act
TCLP = Toxic Characteristic Leaching Procedure

J = The result is an estimated value; "+" indicates a potential positive bias
U = Not detected, the associated value is the method reporting limit

Clean Fill/Background Screening Values (Portland Basin), Oregon DEQ April 2019 revision
RBCs = Oregon DEQ Risk-Based Concentrations; May 2018, amended June 2023, except TPH RBCs, which are site-specific based on EPH/VP testing
RCRA TCLP = Resource Conservation and Recovery Act toxicity characteristic waste screening levels (40 Code of Federal Regulations 261.24)
Portland Harbor Remedial Action Levels (RAL) and Principal Threat Waste (PTW) Screening Values; USEPA 2017, amended May 2020

TABLE 2
Soil Sample Analytical Results - Polycyclic Aromatic Hydrocarbons
Former Blue Heron Mill Property, North Portion
Oregon City, Oregon

Sample ID	Date Sampled	1-Methy-naphthalene	2-Methyl-naphthalene	Anthracene	Benzo(a)-anthracene	Benzo(a)-pyrene	Benzo(b)-fluoranthene	Benzo(g,h,i)-perylene	Benzo(k)-fluoranthene	Chrysene	Dibenz(a,h)-anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Total PAHs	Benzo[a]-pyrene TEF	
2023 UST Removal Samples																			
B21UST-N-2'	8/21/2023	0.0545	0.0128 U	0.0154 U	0.024	0.0167	0.0153	0.0149	0.0128 U	0.0499	0.0128 U	0.0249	0.0164	0.0128 U	0.0512	0.0784	0.346	0.021	
B21UST-N-8'	8/21/2023	30.9	0.857	4.00 U	3.16	1.13	0.881	0.364	0.172	6.65	0.217	2.68	7.14	0.257	17.0	8.89	80.3	1.79	
B21UST-W-2'	8/21/2023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
B21UST-W-5'	8/21/2023	2.28	0.114 U	0.434 U	0.281	0.165	0.197	0.114 U	0.114 U	1.00	0.114 U	0.481	2.98	0.114 U	2.39	1.05	9.82	0.214	
FBH-DUP102723 (FD of B21UST-W-5')	8/21/2023	1.94	0.338	0.356 U	0.243	0.135	0.156	0.0677	0.0584 U	0.771	0.0584 U	0.384	2.29	0.0584 U	2.12	0.815	9.26	0.176	
B21UST-W-8'	8/21/2023	0.104	0.0172	0.0346	0.0392	0.0372	0.0461	0.0667	0.0145 U	0.0667	0.0145 U	0.0685	0.042	0.0477	0.179	0.104	0.853	0.0512	
B21UST-S-2'	8/21/2023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
B21UST-S-6'	8/21/2023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
B21UST-E-2'	8/21/2023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
B21UST-E-8'	8/21/2023	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
2024 UST Data Gap Investigation																			
BH-RI-S68-2'-3'	11/26/2024	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	0.00929 U	--	--
BH-RI-S68-9'-10'	11/26/2024	0.0138 U	0.0138 U	0.0138 U	0.0424	0.145	0.181	0.355	0.0523	0.0614	0.0198	0.0443	0.0138 U	0.242	0.0218	0.0530	1.218	0.215	
BH-RI-S69-9'-10'	11/26/2024	0.0120 U	0.0120 U	0.0120 U	0.0791	0.0672	0.0820	0.0338	0.0307	0.0763	0.0120 U	0.104	0.0120 U	0.0330	0.0323	0.105	0.643	0.087	
BH-RI-S70-2'-3'	11/26/2024	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	0.00960 U	--	--
BH-RI-S70-7.5'-8.5'	11/26/2024	0.0624	0.0704	0.153	0.293	0.276	0.309	0.164	0.111	0.389	0.0446	0.566	0.0982	0.155	0.840	0.791	4.323	0.399	
BH-RI-S72-2'-3'	11/26/2024	0.124 U	0.124 U	0.233	2.770	11.9	10.700	21.500	3.550	3.170	1.450	2.950	0.124 U	15.800	0.525	3.620	78.2	16.5	
BH-RI-S73-8'-9'	11/26/2024	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	0.0131 U	--	--
BH-RI-S74-9'-10'	11/26/2024	0.0121 U	0.0121 U	0.0603	0.0371	0.111	0.0542	0.0704	0.0124	0.0958	0.0121 U	0.382	0.0165	0.067	0.0121 U	0.0929	--	--	
BH-RI-MW-4-7'-8'	12/4/2025	0.0103 U	0.0103 U	0.0141	0.0336	0.0291	0.0385	0.0208	0.0120	0.0428	0.0103 U	0.0613	0.0103 U	0.0198	0.0790	0.0847	0.436	0.039	
BH-RI-MW-5-2'-3'	12/4/2025	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	0.00905 U	--	--
BH-RI-MW-5-27'-28'	12/4/2025	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	0.0100 U	--	--
BH-RI-FD05 (FD of BH-RI-MW-5-27'-28')	12/4/2025	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	0.00976 U	--	--
Clean Fill Screening Values		0.36	11	6.8	0.73	0.11	1.1	25	11	3.1	0.11	10	3.7	1.1	5.5	10	NA	0.11	
Soil Ingestion, Dermal Contact, and Inhalation RBC - Residential		NA	NA	23,000	1.10	0.11	1.1	NA	11	110	0.11	2,400	3,100	1.1	NA	1,800	NA	0.11	
Soil Ingestion, Dermal Contact, and Inhalation RBC - Occupational		NA	NA	350,000	21	2.1	21	NA	210	2,100	2.1	30,000	47,000	21	NA	23,000	NA	2.1	
Soil Ingestion, Dermal Contact, and Inhalation RBC - Construction Worker		NA	NA	110,000	170	17	170	NA	1,700	17,000	17	10,000	14,000	170	NA	7,500	NA	17	
Soil Ingestion, Dermal Contact, and Inhalation RBC - Excavation Worker		NA	NA	NA	4,800	490	4,900	NA	49,000	490,000	490	280,000	390,000	4,900	NA	210,000	NA	490	
Volatilization to Outdoor Air RBC - Urban Residential		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Volatilization to Outdoor Air RBC - Occupational		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
RCRA TCLP Trigger Concentration (20x Rule)		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Portland Harbor Site Wide RAL		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	30	NA	
Portland Harbor PTW Threshold		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	774	
Portland Harbor Navigation Channel RAL		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	170	NA	

Notes:
All results expressed as milligrams per kilogram, except for leachate samples which are reporting in milligrams per liter
bold = indicates concentrations detected above method reporting limits
shaded gray = indicates concentration exceeds clean fill screening value
highlighted yellow = indicates concentration exceeds residential direct contact RBC
highlighted orange = indicates concentration exceeds occupational direct contact RBC
highlighted red = indicates concentration exceeds construction worker direct contact RBC
highlighted purple = indicates concentration exceeds Portland Harbor Site Wide RAL

FD = field duplicate
mg/L = milligrams per liter
NA = Not Available, no screening value is listed for this analyte.
RCRA = Resource Conservation and Recovery Act
TCLP = Toxic Characteristic Leaching Procedure
TEF = Toxic Equivalence Factor

J = The result is an estimated value; "+" indicates a potential positive bias
U = Not detected, the associated value is the method reporting limit

Clean Fill/Background Screening Values (Portland Basin), Oregon DEQ April 2019 revision
RBCs = Oregon DEQ Risk-Based Concentrations; May 2018, amended June 2023
RCRA TCLP = Resource Conservation and Recovery Act toxicity characteristic waste screening levels (40 Code of Federal Regulations 261.24)
Portland Harbor Remedial Action Levels (RAL) and Principal Threat Waste (PTW) Screening Values; USEPA 2017, ammended May 2020

TABLE 3
Groundwater Sample Analytical Results - TPH, Detected VOCs, Metals and PAHs
Former Blue Heron Mill Property, North Portion
Oregon City, Oregon

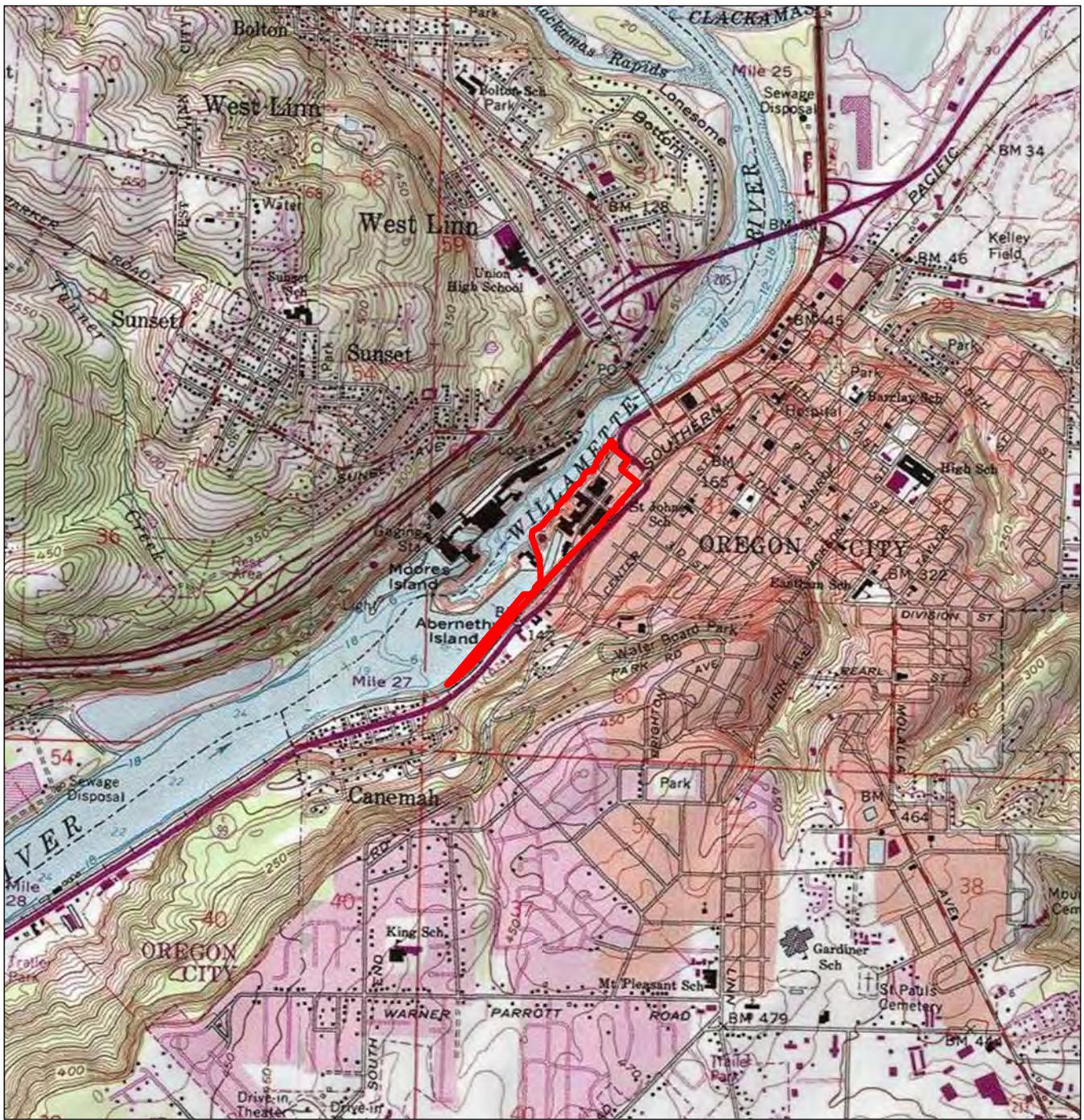
Sample ID	Date Sampled	Depth to groundwater (feet below TOC)	Groundwater Elevation (feet amsl)	NWTPH-Dx (Diesel)	NWTPH-Dx (Heavy Oil)	Benzene	o-Xylene	Total Arsenic	Dissolved Arsenic	Total Chromium	Total Lead	Dissolved Lead	Acenaphthene	Fluorene	1-Methylnaphthalene	Benzo[a]-pyrene TEQ
2023 UST Removal Sample Results																
B21UST-Pit Water	10/30/2023	--	--	6,280	421 U	0.230	0.590	--	--	6.20	12.3	--	1.53	0.719	4.60	--
Selected Sentry Groundwater Monitoring Well Sample Results (WSP)																
BH-MW-2 (41.04)	12/19/2024	26.40	14.64	194 U	388 U	0.200 U	0.500 U	1.86	1.58	--	7.22	0.958	0.0323 U	0.0323 U	0.0646 U	--
	3/21/2025	27.00	14.04	192 U	385 U	0.200 U	1.50 U	1.00 U	1.00 U	--	0.835	0.200 U	--	--	--	--
BH-MW-3 (40.15)	12/19/2024	24.75	15.40	196 U	392 U	0.200 U	0.500 U	1.00 U	1.00 U	--	2.90	0.200 U	0.0331 U	0.0331 U	0.0662 U	--
	3/21/2025	24.53	15.62	192 U	385 U	0.200 U	1.50 U	1.00 U	1.00 U	--	0.651	0.200 U	--	--	--	--
Source Area and Sentry Groundwater Monitoring Well Sample Results (Stantec)																
BH-MW-4 (43.07)	12/19/2024	4.65	38.43	290	426 U	--	--	1.07	1.00 U	--	1.77	0.200 U	0.0392 U	0.0392 U	0.0785 U	--
	3/21/2025	3.70	39.37	208 U	543	--	--	3.03	1.00 U	--	17.3	0.725	0.0373 U	0.0373 U	0.0745 U	--
BH-MW-5 (48.18)	12/19/2024	18.55	29.63	204 U	408 U	--	--	29.0	26.9	--	3.67	0.200 U	0.0380 U	0.0380 U	0.0761 U	--
	3/21/2025	18.41	29.77	200 U	400 U	--	--	36.1	25.5	--	3.81	0.200 U	0.0356 U	0.0356 U	0.0713 U	--
Ingestion & Inhalation from Tapwater RBC - Residential	--	--	--	100	NA	2.1	190	0.052	0.052	250,000	15	15	2,500	3,100	NA	NA
Ingestion & Inhalation from Tapwater RBC - Urban Residential	--	--	--	NA	NA	2.0	710	0.21	0.21	110,000	15	15	2,400	1,400	NA	NA
Ingestion & Inhalation from Tapwater RBC - Occupational	--	--	--	NA	NA	2.1	830	0.31	0.31	250,000	15	15	2,500	1,300	NA	NA
Volatilization to Outdoor Air RBC - Residential	--	--	--	NA	NA	3,100	NA	NV	NV	NA	NA	NA	NA	NA	NA	NA
Volatilization to Outdoor Air RBC - Urban Residential	--	--	--	NA	NA	7,400	NA	NV	NV	NA	NA	NA	NA	NA	NA	NA
Volatilization to Outdoor Air RBC - Occupational	--	--	--	NA	NA	14,000	NA	NV	NV	NA	NA	NA	NA	NA	NA	NA
Chronic Vapor Intrusion RBC - Residential	--	--	--	400	NA	12	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chronic Vapor Intrusion RBC - Commercial	--	--	--	NA	NA	52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GW in Excavation RBC - Construction & Excavation Worker	--	--	--	NA	NA	1,800	23,000	6,300	6,300	NA	>S	>S	NA	NA	NA	NA
Ecological - Chronic RBC for Water	--	--	--	640	NA	NA	NA	150	150	24	0.54	0.54	NA	NA	NA	0.06

Notes:
All results expressed as micrograms per liter (ug/L)
TOC = top of [well] casing
amsl = above mean sea level
bold = indicates concentrations detected above method reporting limits
highlighted yellow = indicates detected concentration exceeds one or more potentially applicable RBCs
highlighted orange = indicates concentration exceeds Chronic Ecological RBC
FD = field duplicate
NA = Not Available, no screening value is listed for this analyte.
PAHs = polycyclic aromatic hydrocarbons
TEQ = Toxic Equivalence Quotient
J = The result is an estimated value
(48.18) = Top of well casing elevation, feet amsl

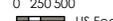
RBCs = Oregon DEQ Risk-Based Concentrations, Revision: May 2018 amended June 2023
Risk Based Concentrations for Water, DEQ Guidance for Conducting Ecological Risk Assessments (September, 2020)

Figures





 Property Boundary

0 250 500
 US Feet
 1 inch equals 2,000 feet
 (at original document size of 8.5x11)



Project Location
 419 - 427 Main Street
 Oregon City, Oregon

Prepared by NZ on : 2025-01-24

Client/Project

Confederated Tribes of the Grand Ronde
 Blue Heron

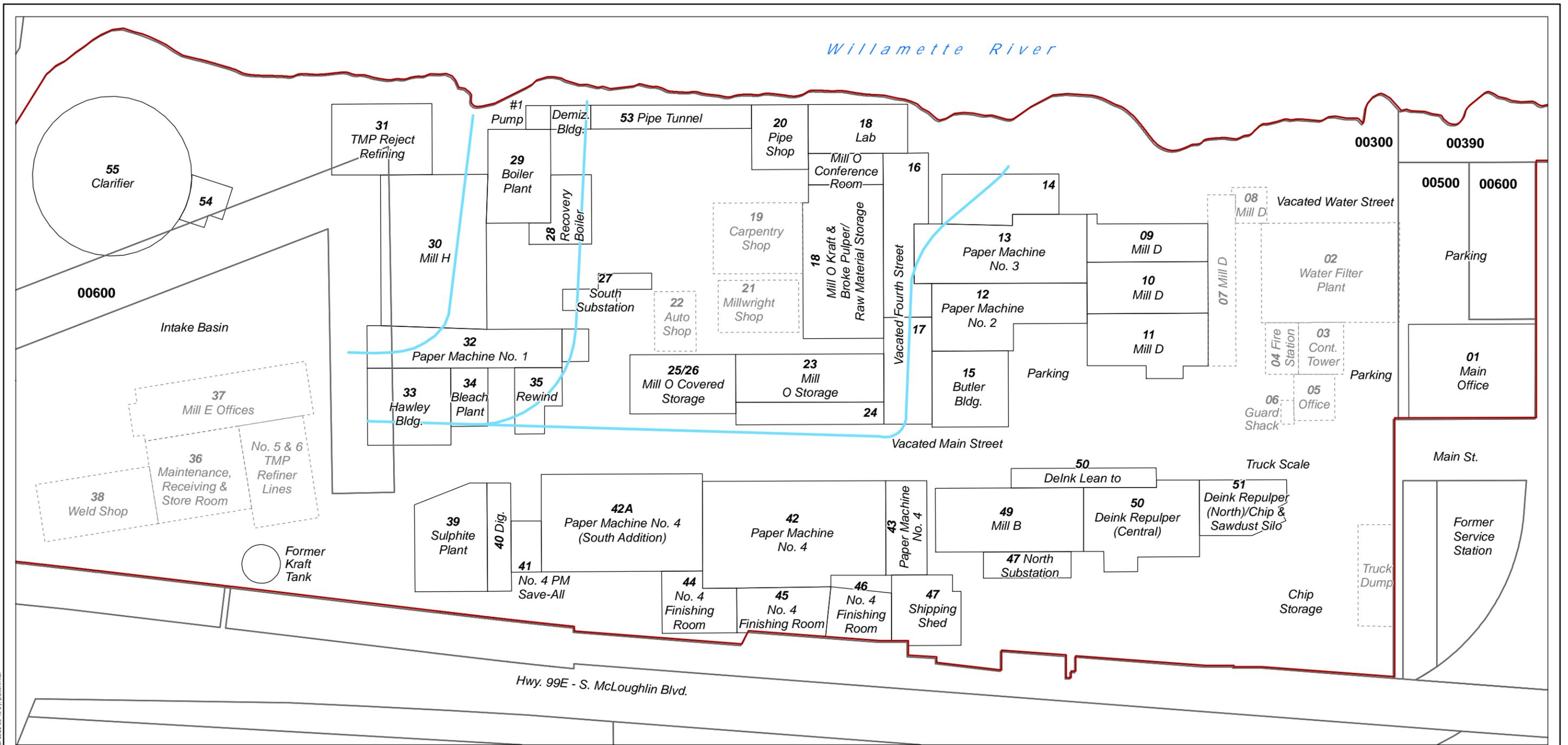
Figure No.
 1

Title
Location Map

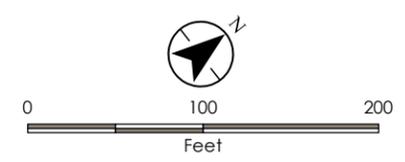
Notes
 1. Coordinate System: NAD 1983 2011 Oregon Statewide
 Lambert Ft Intl
 2. Credits: Stantec, 2023.

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- Site Boundary
- Demolished
- Extant
- Tailrace (approximate)
- Tax Lot

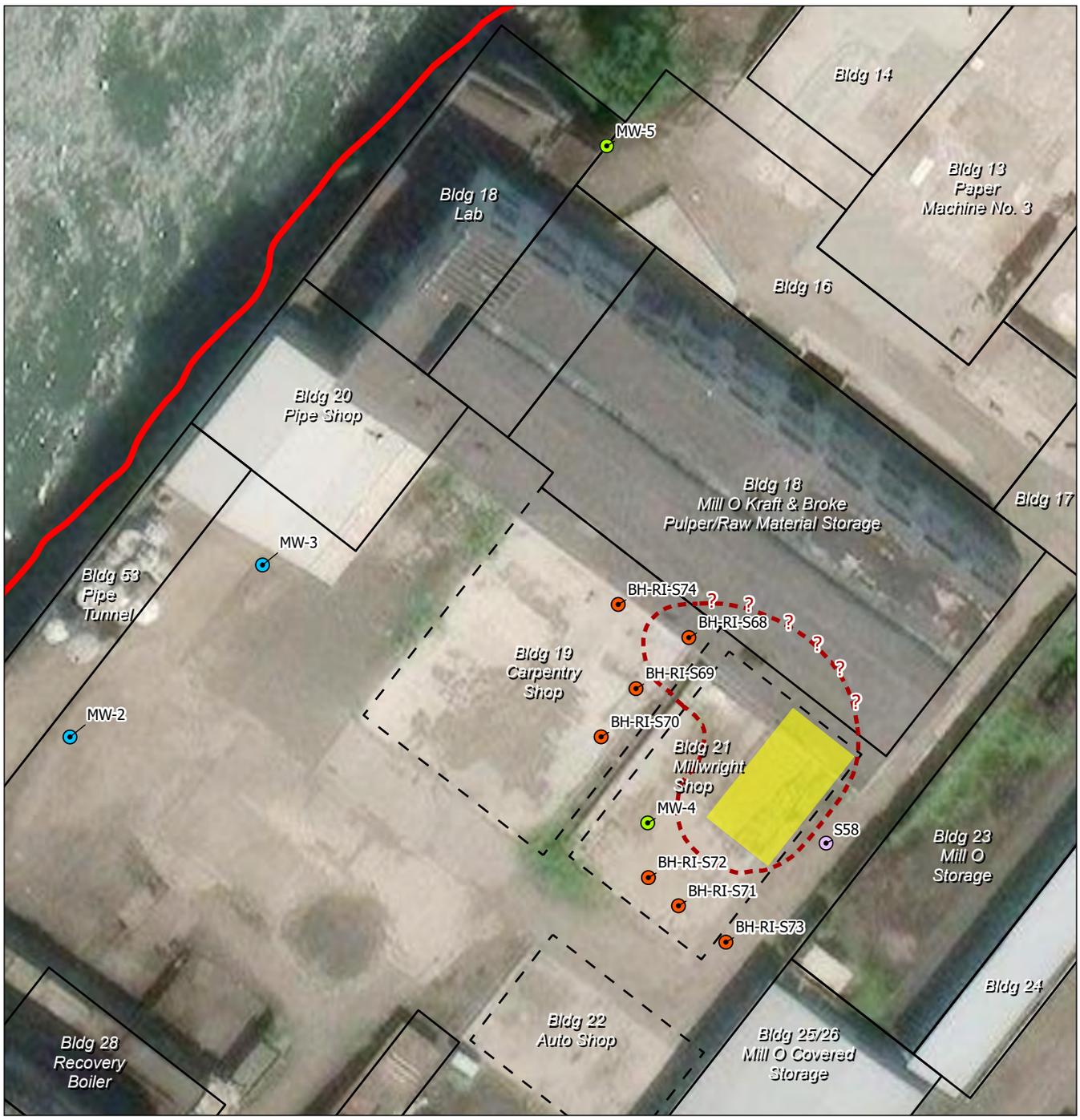


Project Location: Oregon City, Oregon
 Prepared by PG on 2022-03-31
 TR by LF on 2022-03-31

Client/Project: Confederated Tribes of the Grand Ronde
 Former Blue Heron Property

Figure No.: 2
 Title: Property Layout

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.



- APE
- Direct Push Bore Location
- Monitoring Well Location (Stantec)
- Monitoring Well Location (WSP)
- 2023 Remedial Investigation boring location (WSP)
- Approximate extent of free phase oil
- Existing Building
- Demolished Building
- 2024 UST Excavation Area

0 25 50 US Feet
 1 inch equals 50 feet
 (at original document size of 8.5x11)



Project Location: 419 - 427 Main Street, Oregon City, Oregon
 Prepared by NZ on: 2025-04-15

Client/Project: Confederated Tribes of the Grand Ronde Blue Heron

Figure No. 3

**2024 Additional Assessment
 Underground Storage Tank Area**

Notes
 1. Coordinate System: NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl
 2. Credits: Stantec, 2023.

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Appendix A Archaeological Monitoring Reporting



To: Mr. Briece Edwards
9615 Grand Ronde Road,
Grand Ronde, OR 97347

From: Stantec Consulting Services
601 Second Avenue, Suite 1400
Portland, OR 97204

Project/File: Blue Heron Mill - No. 185705769 Date: February 4, 2025

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring

1 Project Description and Location

In November and December 2024, Stantec Consulting Services Inc. (Stantec) and WSP USA Environment & Infrastructure Inc. (WSP) conducted environmental sampling as part of an addendum to the previous Site-Specific Sampling and Analysis Plan (SAP). The addendum was required to address data gaps and comments identified by the Oregon Department of Environmental Quality (DEQ) within the Draft Soil and Groundwater Focused Remedial Investigation Report submitted in February 2024 on the former Underground Storage Tank (UST) area at the former Blue Heron Paper Mill site (Property). This new work was completed on the behalf of the Confederate Tribes of the Grand Ronde Community of Oregon (CTGR), with funding through CTGR's United States Environmental Protection Agency (EPA) Brownfield Multipurpose Grant (BF-01J99101) (Stantec 2024).

The Property is located at 419-427 Main Street, Oregon City, Oregon 97045. The Area of Potential Impact (API) for the project, which consists of the site boundary around the Blue Heron Paper Mill, is 24.488 acres. The Property is located along the southeastern bank of the Willamette River and abuts Willamette Falls. The Property consists of multiple vacant buildings associated with the historic Oregon City Main Street and the former Blue Heron Paper Mill. Stantec completed UST decommissioning by removal activities in October 2023 for two 12,000-gallon tanks located beneath the floor slab of the former Millwright Shop, which was reported on and submitted to the DEQ in April 2024. The results of sampling during this work revealed soil and groundwater contamination near the former USTs, and additional sampling was recommended within the area around this location to evaluate if this contamination has the potential to migrate through groundwater to the Willamette River. This additional sampling was proposed by Stantec to consist of six direct-push borings to the west and south of the former UST pit and the installation of five total groundwater monitoring wells, two proposed by Stantec (MW-4 and MW-5) and three proposed by WSP (MW-1, MW-2, and MW-3). Due to the presence of an archaeological site and a Traditional Cultural Property within the API, the Confederated Tribes of the Grand Ronde requested cultural monitoring be required for all ground disturbing work associated with this testing. The cultural monitoring of this work was completed by Stantec on November 26, December 2, 3, and 4 2024.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring

2 Physical and Cultural Background

2.1 Previously Recorded Resources

A review of Oregon State Historic Preservation Office's Oregon Archaeological Records Remote Access (OARRA) database of the project area identifies one archaeological site (35CL415; Oregon City Woolen Mill) and one Traditional Cultural Property directly within the project area. The archaeological site, 35CL415, is a multicomponent site with the historic component consisting of the Oregon City Woolen Mill which dates to 1865, and the precontact component consisting of a lithic scatter and several artifacts which were radiocarbon dated to approximately 1490 ± 30 years BP. Of the historic component of the site, besides 19th and 20th century historic artifacts and refuse identified in excavations within the footprint of the structure, only the large basalt masonry foundations remain of the two buildings associated with the Woolen Mill, as the brick upper stories of the South and North mill structures were demolished in 1980 (Hart 2017). The site is unevaluated for the NRHP and therefore is assumed eligible.

The area within the project area and extending around Willamette Falls is considered a cultural significant area to the Grand Ronde, Siletz, Warm Springs, and Yakama tribes. Because of this Traditional Cultural Property (TCP) and the presence of site 35CL415, cultural monitoring was required for all ground disturbance work within the project area.

2.2 Geology

The property is located on the southeast bank of the Willamette River, abutting Willamette Falls. It is occupied by multiple vacant buildings with limited vegetation along the shore of the Willamette River. Regionally, the property is in a valley carved by the Willamette River into multiple flows of the Columbia River Basalt. The basalt flows are characterized as dense, hard to very hard, locally vesicular, fine-grained, and black to dark gray in color with oxidized fractures. The property itself sits on the Sentinel Bluffs unit of the Grand Ronde Formation. The Sentinel Bluff Bluffs unit is approximately 400 feet thick with interflow zones defining multiple flows that constitute this unit. Soil is sparse at the property and largely consists of pockets of fill present at varying depths from a few feet up to 30 feet below ground surface (Wood 2021).

2.3 Precontact History

The Clackamas and Clowwewalla people, who lived in the project vicinity before contact with Euroamericans, were predominantly dependent on fishing. The Clowwewalla people remained year-round at Willamette Falls, which were originally called tumwata (Confederated Tribes of the Grande Ronde 2025b). Fish taken within the area were predominantly salmon, lampreys, and sturgeon; the land around the falls also had important additional food sources including camas lilies, tarweed seeds, acorns, deer, elk, geese, and ducks (Beckham nd). The area was originally used as an important meeting point for the tribes who lived within the Willamette Valley and along the Columbia estuary (Beckham nd).

2.4 Development of Oregon City

In 1819, the United States and Spain entered into the Transcontinental Treaty, in which Spain ceded its claim to Oregon Country, strengthening the claim of the United States (Office of the Historian nd). The first wagon train, the Whitman missionary party, set out in 1836, and thousands of wagon trains soon followed the route that became the Oregon Trail (Hudson 1977; National Park Service [NPS] 2025). In 1841, the United States Congress passed the Distribution-Preemption Act, allowing settlers to claim up to 160 acres

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring

of land in Oregon Country, and later purchase the property after residing on the land for 14 months (Riddle 2010). In 1846, so many American families traveled west and settled that the British ceded their claim on Oregon Country to the United States. Oregon Country thereafter was known as the Oregon Territory (NPS 2025).

American settlers began moving into the Oregon Territory in droves after September 27, 1850, when the United States government enacted the Donation Land Claim Act of 1850. The act allowed white men 18 years or older to claim 320 acres of land if they resided on the property prior to December 1, 1850. Married couples could receive double the acreage, with half of the land in the wife's name. Various iterations and extensions of the act were used to continue to draw settlers into the territory. In 1853, the territory was split along the Columbia River, creating the Washington and Oregon territories (Riddle 2010).

The Donation Land Claim Act encouraged American settlement of the Willamette River Valley, a wide and long swath of generally flat and fertile land in central Oregon. The valley provided ideal settlement conditions and was described as “Edenic” by early settlers (Mulcahy 2005).

In 1829, Dr. John McLoughlin, chief factor of the Hudson's Bay Company at Fort Vancouver, sent workers to the falls to blast a millrace and construct a sawmill (Beckham nd). His plan was to use the power of the Willamette River to cut lumber and to establish a fishery to catch and preserve salmon. The Hudson's Bay Company needed building materials for both local use and export, as well as salmon to feed its hungry workers at Fort Vancouver.

McLoughlin's workmen blasted a millrace with black powder to channel part of the river into wheels to drive the saws in the lumber mill (Beckham nd). Using dipnets and employing additional Native dipnetters, the men caught migrating salmon, cleaned and salted them, and packed them in barrels. Annual runs of smelt and lampreys also came to the base of the falls, as did sturgeon. Methodist missionaries arrived in western Oregon around 1836 and saw the potential for preaching to a large Native American population working and trading at Willamette Falls (Beckham nd). Although the Hudson's Bay Company was well-established at the site, the Methodists, with McLoughlin's permission, established a mission, store, and church on the Hudson's Bay Company claim (Beckham nd) in 1840. Their American settlement was soon in direct competition with the British enterprise. Aware that the territory south of the Columbia River might well become part of the United States, McLoughlin in 1842 laid personal claim to the east bank of the river at Willamette Falls (Beckham nd). He hired J.M. Hudspeth to survey Oregon City; the small community was the first formally platted town in the Pacific Northwest and grew rapidly (Beckham nd). Each year the town grew as overland emigrants arrived from the Oregon Trail, with the emigration of 1843 consisting of about 875 people. The number in 1844 was 1,200; in 1845 new arrivals were estimated at over 3,000 (Beckham nd). Others arrived by sea. By the terms of the Oregon Treaty of 1846, the Pacific Northwest (Oregon and Washington) became part of the United States (Beckham nd).

2.4.1 Paper Industry

In 1866, the Pioneer Paper Manufacturing Company began making paper using two Loeffel wheels and waterpower to transform rags and straw into paper (Beckham nd). The firm failed in 1867, and in 1889 the Willamette Falls Pulp and Paper Company began production of 20 tons of pulp per day and shipped its product to California (Beckham nd). It commenced paper production in 1890, the same year that a disastrous flood devastated major parts of the Crown Mill, another paper mill on the west bank of the Willamette River. Within a few years, however, both mills were running at capacity (Beckham nd). In 1908, Willard P. Hawley left Crown Paper and turned to the east bank of the river. He purchased property along the south end of Main Street, where he established Hawley Pulp and Paper Company (Beckham nd). He leased Station A, the electrical plant at the falls, acquired the old flour mill and its water rights, and by 1909 used the sulphite process to manufacture paper (Beckham nd). To develop the site, he gave the McLoughlin House to a non-profit organization, which moved it in 1909 to the second terrace in the city

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring

(Beckham nd). The Hawley Pulp and Paper Company defined the east bank of the river at the falls for the twentieth century.

Labor disputes arose during World War I and disrupted production on both sides of the river. The tensions erupted into street fighting on June 22, 1918, after which management broke the unions (Beckham nd). The hundreds of workers did not reorganize until 1937. The Hawley heirs sold the plant in 1948, with the Times-Mirror Corporation eventually buying out the multiple interests by 1950 to create Publishers Paper, a wholly owned subsidiary (Beckham nd).

The sulphite process used for pulping led to chemical discharges into the Willamette River. Journalist Tom McCall, later governor of Oregon, grasped the problem and documented it in "Pollution in Paradise," an exposé of environmental problems throughout Oregon (Beckham nd). In 1972, the mill won a well-earned Cleaning Up Pollution award from Governor McCall (Beckham nd).

The Jefferson Smurfit Corporation purchased the mill in 1986 and sold it to its workers in 2000, who with investors created Blue Heron Paper Company (Beckham nd). Because of commitments to the environment and shortages in wood fiber, Blue Heron Paper Company concentrated on processing wastepaper. It produced newsprint, bags, towels, high brights, and specialty papers. The company faced stiff competition from China for used paper and suffered shortages of wood fiber (Beckham nd). Blue Heron Paper Company filed for Chapter 11 bankruptcy in 2009 and closed on February 23, 2011, ending 125 years of continuous paper mill use of the site (Beckham nd).

3 Cultural Monitoring

3.1 Monitoring Methods

Stantec Secretary of the Interior (SOI) qualified archaeologist Erin Niles, MA, served as the archaeological monitor. Cultural resource monitoring was conducted on November 26, December 2, 3, and 4 2024. Monitoring was required by the Confederate Tribes of the Grand Ronde during all ground disturbing work within the project area. Ground disturbing work for this project consisted of the completion of seven boreholes as part of the sampling of the area around the former UST location and the boring and installation of five groundwater wells.

Six direct-push borings (BH-RI-S68 through BH-FI-S73) were proposed by Stantec to the west and south of the former UST locations. These bores were excavated using a direct push drill rig to a maximum of 15 feet (ft) below surface or until refusal was reached. Each boring was advanced in five-foot increments, with the soils being brought to a table to be examined for each five-foot stretch. The soil cores were collected by the rig in clear plastic tubes, which were approximately two inches in diameter. These tubes were cut in half on a table for the Stantec registered geologist to study. The geologist would study the soils in the cores, make notes, and then take samples as needed. Once the geologist was finished with the sample the archaeological monitor would search through the sample by hand to identify any cultural materials.

If the samples acquired in borings BH-RI-S68 through BH-FI-S71 were observed to have gross contamination an additional "step-out" boring would be completed approximately 25 ft to the northeast of the original contaminated bore towards the Willamette River. A second "step-out" bore would then be required if the first additional bore also was observed to be grossly contaminated. For bores BH-RI-S72 and BH-RI-S73 no additional "step-out" borings would be completed as multiple borings were completed previously southwest of these two locations (Stantec 2024).

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring

For the groundwater monitoring wells, Stantec proposes two locations (MW-4 and MW-5) and WSP proposed an additional three (MW-1, MW-2, and MW-3). These wells were to be excavated until the basalt bedrock surface was reached using a sonic drill. The sampling process was similar to the direct-push borings, however for the sonic drill samples were collected in plastic bags and were typically 8 inches in diameter and collected in 10 ft intervals. These bagged samples were still brought to a table and cut open for the WSP or Stantec geologist to examine. Like the borings, the geologist would study the soils, take notes, and take samples as needed. Once the geologist was finished with the sample the archaeological monitor would search through the sample by hand to identify any cultural materials.

Due to the contamination of the soil, nitril or latex gloves were worn whenever handling the soil. Any diagnostic cultural materials were collected by the archaeological monitor. The remainder of the samples were dumped into large metal drums to be removed from the site safely.

The Stantec archaeological monitor completed a cultural resources monitoring log and provided information on any cultural resources encountered, soil observations, actions taken, and recommendations. The archaeologist also took photographs of each bore locations and of the cores observed whenever possible (**Attachment B Photographs**).

3.2 Monitoring Results

The direct-push boring of BH-RI-S68 through BH-FI-S73 were completed on November 26, 2024. The crew started with BH-RI-S68, which was identified as a contaminated sample. As a result a “step-out” bore was deemed necessary, and so BH-RI-S74 was added approximately 25 ft southwest from BH-RI-S68. This bore did not identify any contamination, and work continued with BH-RI-S69 with the crew working in numerical order for the remainder of the bores. No gross contamination was identified for the remainder of the borings and no additional “step-out” bores were completed. See **table 1** below for details on the borings completed.

Table 1. Overview of all Direct-Push Borings

Bore Name	Latitude	Longitude	End Depth (ftbs)	Cultural Materials	CM identified	Depth of CM
BH-RI-S68	45.355169	-122.6125567	12	Negative	None	N/A
BH-RI-S69	45.355122	-122.6126221	7	Positive	Brick fragments	7ftbs
BH-RI-S70	45.355078	-122.6126648	8.5	Positive	Brick fragments	8.5ftbs
BH-RI-S71	45.354839	-122.6126614	6.5	Positive	Brick fragments and wood pulp	Brick: 5ftbs; Wood: 5.5-6ftbs
BH-RI-S72	45.354953	-122.6126001	6	Negative	None	N/A
BH-RI-S73	45.354897	-122.6124996	9	Negative	None	N/A

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring

BH-RI-S74	45.355197	-122.6126475	10.5	Positive	Burnt wood fragments and brick fragments	Wood: 6ftbs and 8ftbs; Brick: 8ftbs
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Within the direct-push borings the only cultural materials identified were brick and wood fragments, none of which were diagnostic. Concrete and gravel fill was noted within all of the borings. No artifacts were collected from any of the borings.

From December 2 through 4, 2024 the groundwater monitoring wells were drilled and installed, with the WSP geologist installing MW-01 on December 2 and MW-02 and MW-03 on December 3. The Stantec geologist installed MW-04 and MW-05 on December 4th. See **Table 2** below for summary of the monitoring wells.

Table 2. Overview of all Monitoring Wells.

MW Name	Latitude	Longitude	End Depth (ftbs)	Cultural Materials	CM identified	Depth of CM
MW-01	45.353148	-122.613594	30	Positive	Wood material compressed with concrete and gravel	8-20 ftbs
MW-02	45.355065	-122.613339	40	Positive	Brick and wood fragments, metal scrap, metal nail, leather strap fragment.	Metal scrap: 5ftbs; Wood: 30-35ftbs; Nail: 23ftbs; Leather Strap: 31ftbs
MW-03	45.355224	-122.613100	35	Negative	Concrete and gravel.	N/A
MW-04	45.354839	-122.6126614	10	Negative	Concrete and wood material.	N/A
MW-05	45.354953	-122.6126001	27	Positive	2 Ceramic sherds, metal nail, brick fragments, green, aqua, and amber glass fragments, potential faunal bone fragments, graphite fragment, charcoal and wood fragments.	Ceramic and nail: 19ftbs; Brick: 17-18 and 19ftbs; Glass, bone, and charcoal: 22ftbs

Within the monitoring wells most of the cultural materials noted were building materials and debris including concrete, wood, and brick fragments. MW-02 and MW-05 contained the only cultural material which was collected, see **Table 3** below for more details.

Table 3. Collected Artifact Detail Overview

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring

Artifact	Material	MW Identified In	Depth Identified (ftbs)	Count	Measurements
Strap Fragment	Leather	MW-02	31	1	4 1/3 in long by 2 1/4 in wide, approx. 1/8 in thick.
White Ware Sherds	Ceramic	MW-05	19	2	Large piece: 1 in long, 3/4 in wide, 3/8 in thick.
Nail	Metal	MW-05	19	1	3 1/8 in in length
Champagne Bottle Base	Green Glass	MW-05	22	1	Diameter at base 3 3/4 in, diameter at top 1 1/2 in, height 2 in
Glass Lea and Perrins' Worcestershire Sauce Bottle Stopper	Aqua Glass	MW-05	22	2 fragments	Diameter at top 1 in, 1/4 in thick. Stopper length 1 1/16 in, 1/2 in thick.
Graphite fragment	Graphite	MW-05	22	1	1/2 in long, 3/16 in wide, 1/16 in thick
Assorted Glass Fragments	Green, colorless, and amber stained (burnt) glass	MW-05	22	16 green glass fragments, 2 colorless glass fragments, 2 amber stained-glass fragments	N/A
Faunal Bones	Bone	MW-05	22	3 fragments	N/A

The cultural material that was identified in MW-05 at 22ftbs was within a dark greyish brown silty sand soil with evidence of burning present, including large pieces of charcoal. Of the collected cultural material, the champagne bottle base and glass bottle stopper were the only diagnostic items. The Champagne bottle base had no makers' marks or embossing, however it consisted of a large and defined push-up with evidence of a mamelon, a vent hole created to help with air venting during the molding process, in the center of the push up (Boow 1991). This indicates that the bottle likely dates to the late 19th to early 20th

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring

centuries, as mid to late 20th century champagne bottles tend to have much smaller push-ups and less obvious to non-existent mamelons (MacDougall 1990).

The aqua glass bottle stopper was embossed with what appeared to be “LEA- PERRIN-“ in a circular shape around the top of the stopper. This indicates that it is a stopper for a Lea and Perrins Worcestershire Sauce bottle. Lea and Perrins originally used plain corks to seal their bottles in the early 19th century, however in the 1840’s glass stoppers began to be mass-produced and so likely this is when Lea and Perrins also adopted the glass stopper for their bottle closure. The stopper would have been covered in cork, and was used by the company for their Worcestershire bottles until 1957-1958 when Lea and Perrins replaced the stopper with their modern patent polyethylene pour plug and plastic screw-type closure (Alyluia 1973;Lunn 1981). Additionally, Lea and Perrins manufactured their bottles in the 19th century and early 20th century using ‘common green bottle’ glass, which varied in shade from light green to the turquoise that is seen on this artifact (**Attachment B Photographs**) and switched to predominantly colorless glass in the 1920s (Lunn 1981). As a result, the stopper likely also dates to the late 19th to early 20th century.

Three faunal remains were identified with two possible deer rib fragments. The smallest fragment is unidentifiable due to its size. All the bones appear to have been heavily burned. (**Attachment B Photographs**).

Soils within the bores consisted of silty sand and silt, ranging in color from dark brown to reddish brown to greyish brown. A dark grey silty clay was identified within MW-3 from 20-30ftbs just above bedrock. Imported gravel was present directly under the asphalt and concrete slabs, with the monitoring well bores identifying deeper layers of concrete, building materials, and disturbed soils down to bedrock. The inclusions present within the soils varied greatly in size and quantity with some layers consisting of less than five percent and others consisting of 90 percent gravel and cobble inclusions. The inclusions were most commonly subangular, subrounded, or rounded, with more angular and subangular inclusion being present closer to the surface and in areas where greater concentrations of building materials were identified. The bedrock consisted of basalt and most natural stones that were identified consisted of basalt and other volcanic rock materials.

Building materials, including concrete, wood, and brick fragments, were identified throughout all of the monitoring wells up to or close to bedrock in each well, with cultural artifacts been collected from depths including 31 ftbs and 22 ftbs, which in both cases were within 5ft of where bedrock was identified. This indicates that the soils within the site are disturbed by construction materials and debris to these depths. The Blue Heron site has established tunnels and underground facilities and is located within an area which has been built up several times throughout the historic period, which likely contributed to the depth of disturbance identified within the soils excavated within the monitoring wells.

4 Summary

Stantec archaeologist Erin Niles monitored the ground disturbing activities associated with the environmental sampling work completed on the Blue Heron Paper Mill property in Oregon City, Oregon. This work involved the completion of seven push-drill boreholes to depths ranging from 6 ftbgs to 12 ftbgs, and the drilling and installation of five monitoring wells ranging in depths from 10ftbs to 40ftbgs. Cultural monitoring of these activities was required by the Confederated Tribes of the Grand Ronde due to the presence of an archaeological site and a Traditional Cultural Property within the API. Soils observed consisted of majority silty sand with silt and silty clay also observed.

Historic building materials including concrete and brick were noted within all of the bores completed, and 31 historic artifacts were collected as part of this project. The collected artifacts included glass fragments, ceramic fragments, a graphite fragment, a leather strap fragment, a metal nail, a champagne bottle base,

February 4, 2025

Briece Edwards, Confederated Tribes of the Grand Ronde Community of Oregon (CTGR)

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Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring

and a Lea & Perrins Worcestershire glass bottle stopper. Additionally, three faunal bone fragments were identified and collected with the two larger fragments possibly being deer rib fragments, while the smaller fragment was not identifiable. The collected artifacts will be returned to the Confederated Tribes of the Grand Ronde. Stantec understands that the ground disturbing work for the Blue Heron project is complete and has no further management recommendations for the project.

Sincerely,

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Attachment:

Attachment A: Project Location Maps

Attachment B: Monitoring Photos

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Stantec Consulting Services Inc.

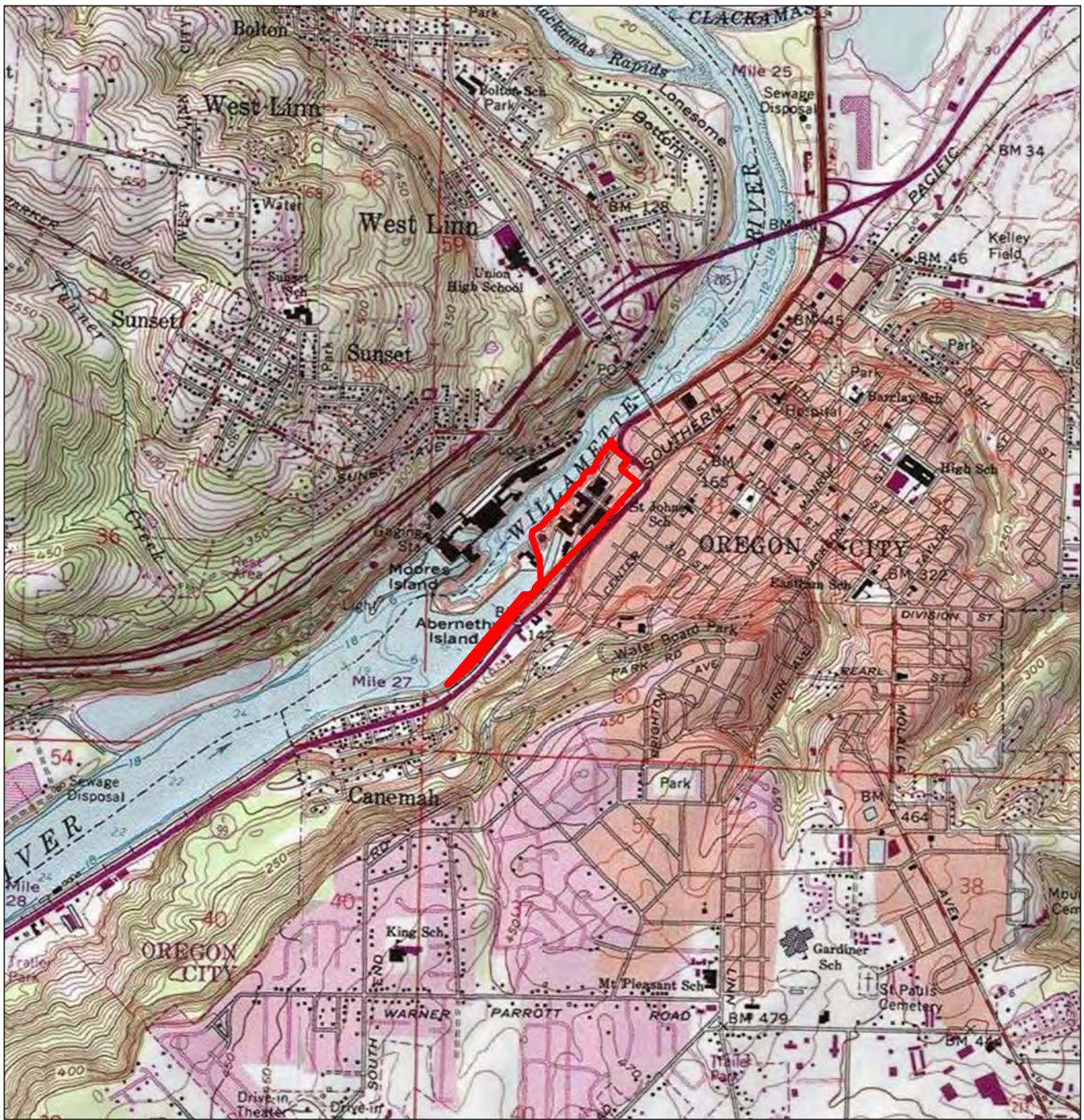
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Wood

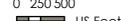
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Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring

Appendix A: Project Maps



 API

0 250 500
 US Feet
 1 inch equals 2,000 feet
 (at original document size of 8.5x11)



Project Location
 419 - 427 Main Street
 Oregon City, Oregon

Prepared by NZ on : 2025-01-24

Client/Project

Confederated Tribes of the Grand Ronde
 Blue Heron

Figure No.
 1

Title
Location Map

Notes
 1. Coordinate System: NAD 1983 2011 Oregon Statewide
 Lambert Ft Intl
 2. Credits: Stantec, 2023.

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0 100 200 US Feet
 1 inch equals 229 feet
 (at original document size of 8.5x11)



Project Location
 419 - 427 Main Street
 Oregon City, Oregon

Prepared by NZ on : 2025-01-24

Client/Project

Confederated Tribes of the Grand Ronde
 Blue Heron

Figure No.

2

Title

Project Site Map

Notes
 1. Coordinate System: NAD 1983 2011 Oregon Statewide
 Lambert FT Intl
 2. Credits: Stantec, 2023.

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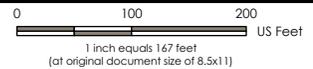


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Notes
 1. Coordinate System: NAD 1983 2011 Oregon Statewide Lambert Ft Intl
 2. Credits: Stantec, 2023.

- API
- Direct Push Bore Location
- Monitoring Well Location (Stantec)
- Monitoring Well Location (WSP)



Project Location
 419 - 427 Main Street
 Oregon City, Oregon

Prepared by NZ on : 2025-01-24

Client/Project

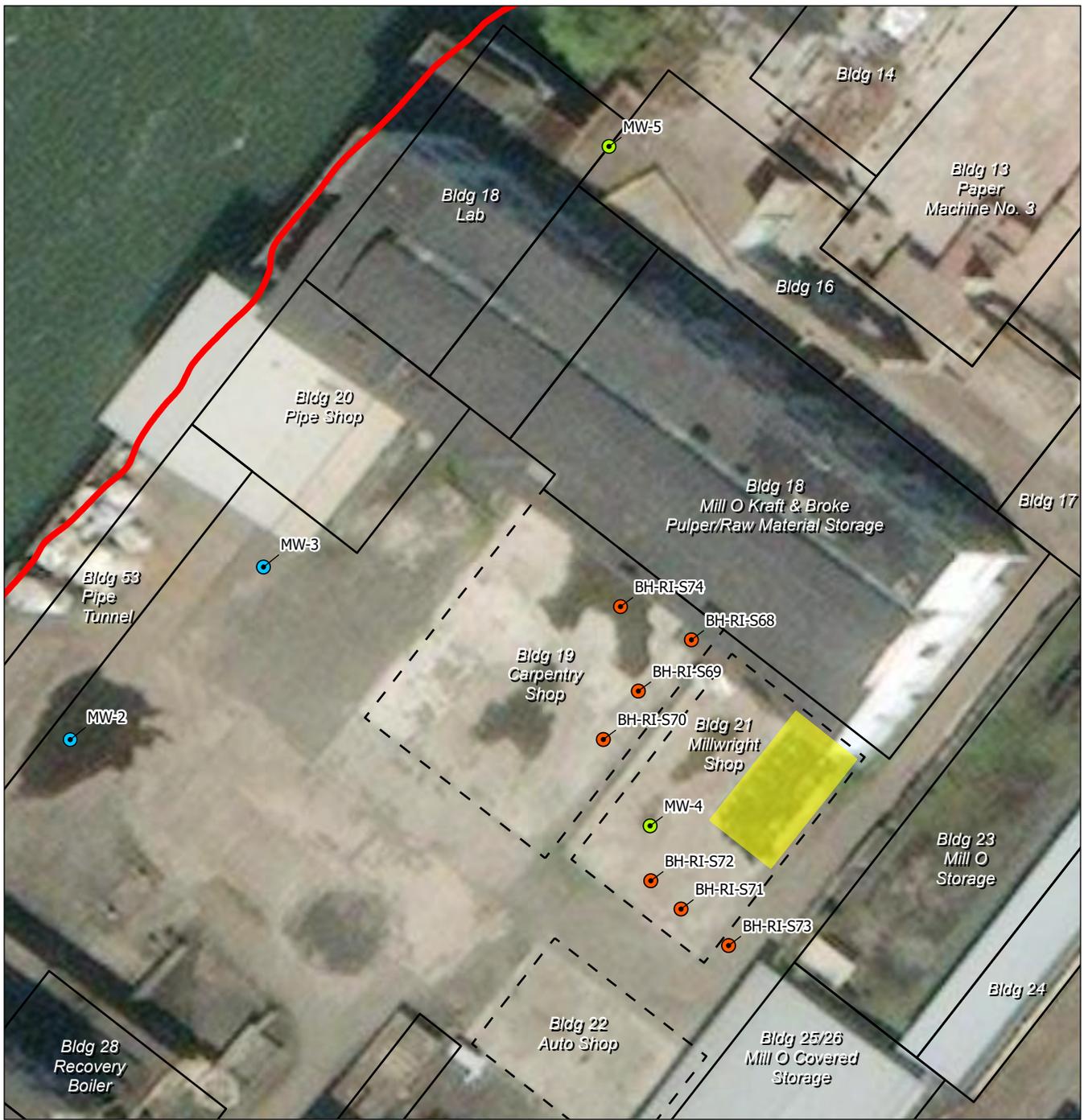
Confederated Tribes of the Grand Ronde
 Blue Heron

Figure No.

3

Title

Monitoring Location Map



- API
- Direct Push Bore Location
- Monitoring Well Location (Stantec)
- Monitoring Well Location (WSP)
- Existing Building
- Demolished Building
- 2024 UST Excavation Area

0 25 50 US Feet
 1 inch equals 50 feet
 (at original document size of 8.5x11)



Project Location: 419 - 427 Main Street, Oregon City, Oregon
 Prepared by NZ on: 2025-01-24

Client/Project: Confederated Tribes of the Grand Ronde Blue Heron

Figure No.: 4

Title: **Monitoring Site Map**

Notes
 1. Coordinate System: NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl
 2. Credits: Stantec, 2023.

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Disclaimer: This document has been prepared based on information provided by others as cited in the Notes section. Stantec has not verified the accuracy and/or completeness of this information and shall not be responsible for any errors or omissions which may be incorporated herein as a result. Stantec assumes no responsibility for data supplied in electronic format, and the recipient accepts full responsibility for verifying the accuracy and completeness of the data.



-  API
-  Monitoring Well Location (WSP)
-  Existing Building
-  Demolished Building

0 25 50 US Feet
 1 inch equals 50 feet
 (at original document size of 8.5x11)

 **Stantec** 

Project Location: 419 - 427 Main Street, Oregon City, Oregon
 Prepared by NZ on: 2025-01-24

Client/Project

Confederated Tribes of the Grand Ronde
 Blue Heron

Figure No. **4**

Title **Monitoring Site Map**

Notes
 1. Coordinate System: NAD 1983 2011 StatePlane Oregon North FIPS 3601 Ft Intl
 2. Credits: Stantec, 2023.

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Appendix B: Monitoring Photos



Photo 01. Overview of direct-push bore location S68 before work began, view northeast.



Photo 02. Overview of sample taken from S68 showing contamination present from oil in soil.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 03. Overview of direct-push bore location S69 showing boring work being completed, view west.



Photo 04. Overview of sample taken from S69 showing concrete and gravel layers present in soil.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 05. Overview of direct-push bore S70 showing boring work being completed, view northwest.



Photo 06. Overview of sample from S70 showing brick fragments and concrete present in the soil.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 07. Overview of direct-push bore S74, the step out bore added in due to contamination identified in S68, view southeast.



Photo 08. Overview of sample from S74 showing soil changes from brown silty sand to dark grey silty sand with minimal brick fragments present.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 09. Overview of direct-push bore S71 location before work began, view south.



Photo 10. Overview of sample from S71 showing decomposing wood pulp material present in the center of the sample.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 11. Overview of direct-push bore S72 showing boring work being completed, view south.



Photo 12. Overview of sample from S72 showing heavy concrete presence within the sample.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 13. Overview of direct-push bore S73 location before work started, view north.



Photo 14. Overview of sample from S73 showing dark brown silty sand and dark greyish brown silty sand soils present.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 15. Overview of sample from monitoring well MW-1 showing large section of wood material identified.



Photo 16. Close up of the transition from the wooded layer to silty sand soil in MW-1.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 17. Overview of monitoring well location MW-1 covered in a tarp after monitoring well was installed, view north.



Photo 18. Overview of monitoring well location MW-2 showing boring work being completed, view northwest.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 19. Overview of samples taken from MW-2 showing concrete and silty sand soil with large cobbles and high gravel inclusions.



Photo 20. Overview of samples taken from MW-3 showing large pieces of concrete, basalt, and other cobbles present.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 21. Overview of samples taken from MW-3 showing dark grey silty clay and silty sand soils with high cobble inclusions.



Photo 22. Overview of monitoring well location MW-3 showing well fully installed, view east.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 23. Overview of samples taken from MW-4 showing soil changes and concrete present.



Photo 24. Close up of a sample from MW-4 showing brick and wood material present in the soil.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 25. Overview of monitoring well location MW-4 showing boring work being completed, view northwest.



Photo 26. Overview of monitoring well location MW-5 before work was completed, view southwest.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 27. Overview of samples from MW-5 showing heavy concrete and cobble inclusions, with ceramic sherd identified visible in bottom left sample.



Photo 28. Overview of samples from MW-5 showing grey silty sand soil in which the majority of the collected artifacts were identified and collected from.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 29. Ceramic sherd identified and collected from MW-5.



Photo 30. Ceramic sherd identified and collected from MW-5.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 31. Metal nail fragment identified and collected from MW-5.



Photo 32. Aqua glass stopper identified and collected from MW-5.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 33. Aqua glass stopper identified and collected from MW-5.

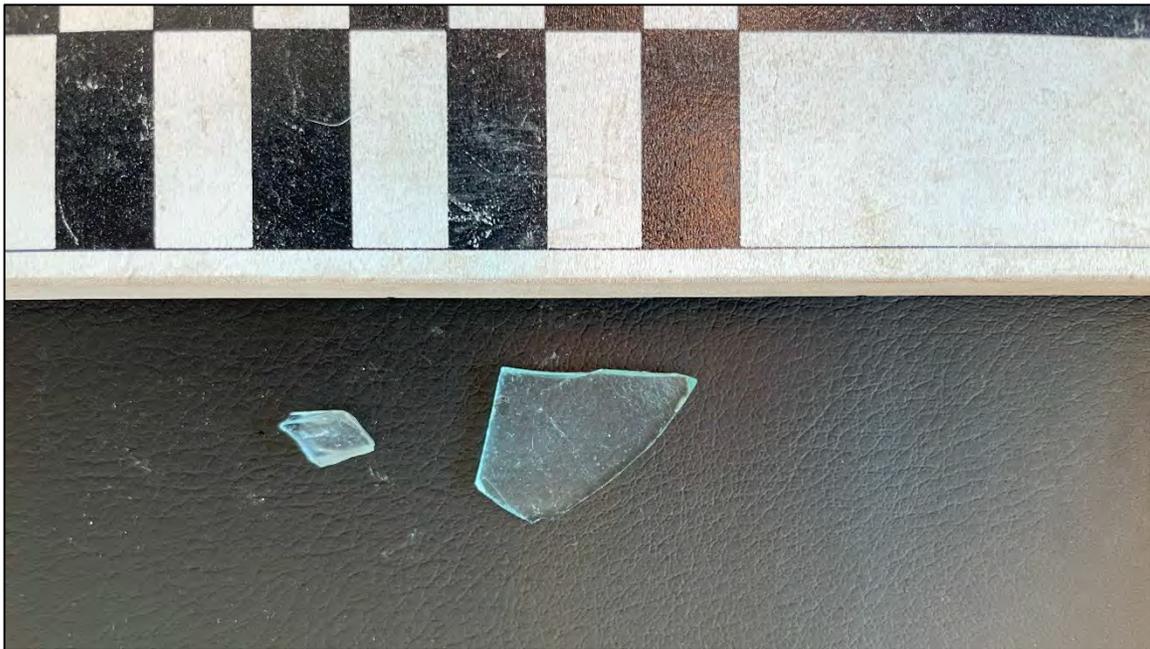


Photo 34. Colorless glass fragments identified and collected from MW-5.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring

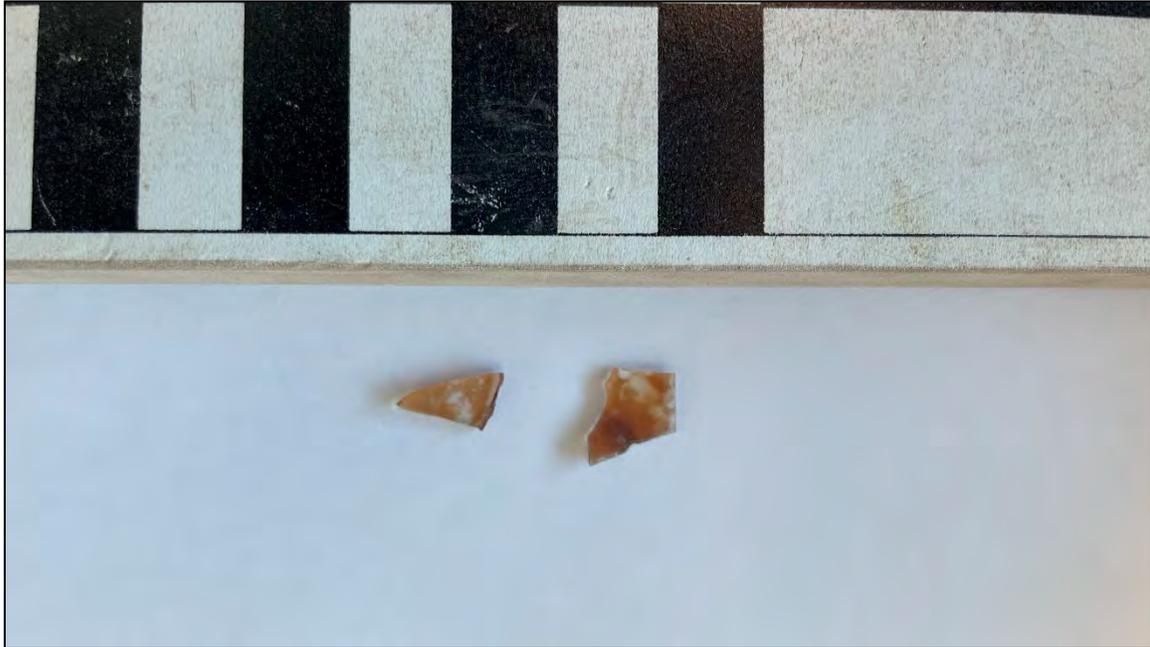


Photo 35. Stained, burnt glass fragments identified and collected from MW-5.



Photo 36. Graphite fragment identified and collected from MW-5.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 37. Green glass fragments likely part of champagne bottle identified and collected from MW-5.



Photo 38. Green glass champagne bottle base showing push up, identified and collected from MW-5.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 39. Green glass champagne bottle base showing inside of push up, identified and collected from MW-5.



Photo 40. Leather strap fragment identified and collected from MW-2.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 41. Leather strap fragment identified and collected from MW-2.



Photo 42. Burnt faunal bone fragments identified and collected from MW-5.

Reference: Blue Heron Mill Environmental Testing – Archaeological Monitoring



Photo 43. Burnt faunal bone fragments identified and collected from MW-5.



Photo 44. Small faunal bone fragment identified and collected from MW-5.

Appendix B Boring Logs



PROJECT: **Blue Heron UST Area Additional Assessment**
 LOCATION: **Oregon City, Oregon**
 PROJECT NUMBER: **185705769**

BOREHOLE ID:
BH-RI-S68 
 PAGE 1 OF 1

DRILLING: STARTED **11/26/24** COMPLETED: **11/26/24**
 DRILLING COMPANY: **Holt Services, Inc.**
 DRILLING EQUIPMENT: **Geoprobe 7822DT**
 DRILLING METHOD: **Direct-Push**
 SAMPLING EQUIPMENT: **Acetate liner**

NORTHING (ft): **5022479** EASTING (ft): **530348.3**
 GROUND ELEV (ft): **Not Surveyed** TOC ELEV (ft): **N/A**
 INITIAL DTW (ft): **Perched (10' - 11')** BOREHOLE DEPTH (ft): **13**
 STATIC DTW (ft): **N/A** WELL DEPTH (ft): **N/A**
 WELL CASING DIA. (in): **N/A** BOREHOLE DIA.(in): **3.0**
 LOGGED BY: **RM** CHECKED BY: **LF**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			8" concrete slab						
		ML	SANDY SILT WITH GRAVEL ; ML; dark brown; low plasticity; firm; moist; no odor; angular		BH-RI-S68-2'-3' @1005	5/5		0.0	
5		SP	SILTY SAND ; SP; dark brown; medium dense; moist; no odor; no gravel Reddish brown					0.0	5
		SP	SILTY SAND WITH GRAVEL ; SP; some small-medium angular gravel Some concrete debris Slight oil odor; trace oil blebs on gravel		BH-RI-S68-9'-10' @1010	5/5		0.0	
10			Perched water from 10' to 11' with slight sheen					0.3	10
		GP	POORLY GRADED GRAVEL WITH SAND ; GP; very moist; angular; some oil staining/skins on gravel			3/5		4.1	
			Refusal at 13 feet. Borehole terminated at 13 feet.						
15									

GEO FORM 304 BLUE HERON.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 12/26/24

PROJECT: **Blue Heron UST Area Additional Assessment**
 LOCATION: **Oregon City, Oregon**
 PROJECT NUMBER: **185705769**

BOREHOLE ID:
BH-RI-S69 
 PAGE 1 OF 1

DRILLING: STARTED **11/26/24** COMPLETED: **11/26/24**
 DRILLING COMPANY: **Holt Services, Inc.**
 DRILLING EQUIPMENT: **Geoprobe 7822DT**
 DRILLING METHOD: **Direct-Push**
 SAMPLING EQUIPMENT: **Acetate liner**

NORTHING (ft): **5022474** EASTING (ft): **530343.2**
 GROUND ELEV (ft): **Not Surveyed** TOC ELEV (ft): **N/A**
 INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **10**
 STATIC DTW (ft): **N/A** WELL DEPTH (ft): **N/A**
 WELL CASING DIA. (in): **N/A** BOREHOLE DIA.(in): **3.0**
 LOGGED BY: **RM** CHECKED BY: **LF**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			8" concrete slab						
		ML	SANDY SILT WITH GRAVEL ; ML; dark brown; low plasticity; firm; moist; no odor; angular		BH-RI-S69-2'-3' @1030	5/5		0.0	
5		SP	SILTY SAND ; SP; dark brown; medium dense; moist; no odor; no gravel					0.0	5
		SP	SAND WITH GRAVEL ; SP; moist; no odor; angular; small to medium gravel		BH-RI-S69-9'-10' @1040	5/5		0.0	
10			Refusal at 10 feet. Borehole terminated at 10 feet.						10

PROJECT: **Blue Heron UST Area Additional Assessment**
 LOCATION: **Oregon City, Oregon**
 PROJECT NUMBER: **185705769**

BOREHOLE ID:
BH-RI-S70 
 PAGE 1 OF 1

DRILLING: STARTED **11/26/24** COMPLETED: **11/26/24**
 DRILLING COMPANY: **Holt Services, Inc.**
 DRILLING EQUIPMENT: **Geoprobe 7822DT**
 DRILLING METHOD: **Direct-Push**
 SAMPLING EQUIPMENT: **Acetate liner**

NORTHING (ft): **5022469** EASTING (ft): **530339.9**
 GROUND ELEV (ft): **Not Surveyed** TOC ELEV (ft): **N/A**
 INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **8.5**
 STATIC DTW (ft): **N/A** WELL DEPTH (ft): **N/A**
 WELL CASING DIA. (in): **N/A** BOREHOLE DIA.(in): **3.0**
 LOGGED BY: **RM** CHECKED BY: **LF**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			8" concrete slab						
5		ML	SANDY SILT WITH GRAVEL ; ML; dark brown; low plasticity; firm; moist; no odor; angular		BH-RI-S70-2'-3' @1050	5/5		0.0	5
		SP	SILTY SAND ; SP; dark brown; medium dense; moist; no odor; no gravel Trace wood debris 7.5' - 8.25' Reddish brown		BH-RI-S70-7.5'-8.5' @1055	3.5/5		0.0	
10	Refusal at 8.5 feet. Borehole terminated at 8.5 feet.								
15									

PROJECT: **Blue Heron UST Area Additional Assessment**
 LOCATION: **Oregon City, Oregon**
 PROJECT NUMBER: **185705769**

BOREHOLE ID:
BH-RI-S71 
 PAGE 1 OF 1

DRILLING: STARTED **11/26/24** COMPLETED: **11/26/24**
 DRILLING COMPANY: **Holt Services, Inc.**
 DRILLING EQUIPMENT: **Geoprobe 7822DT**
 DRILLING METHOD: **Direct-Push**
 SAMPLING EQUIPMENT: **Acetate liner**

NORTHING (ft): **5022452** EASTING (ft): **530348.1**
 GROUND ELEV (ft): **Not Surveyed** TOC ELEV (ft): **N/A**
 INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **6.5**
 STATIC DTW (ft): **N/A** WELL DEPTH (ft): **N/A**
 WELL CASING DIA. (in): **N/A** BOREHOLE DIA.(in): **3.0**
 LOGGED BY: **RM** CHECKED BY: **LF**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			8" concrete slab						
		ML	SANDY SILT WITH GRAVEL ; ML; dark brown; low plasticity; firm; moist; no odor		BH-RI-S71-2'-3' @1140	5/5		0.0	
			Wood and masonry debris @ 4.0' - 4.5'						
5		SP	SILTY SAND ; SP; dark brown; medium dense; moist; no odor; angular; Trace wood and masonry debris			1.5/5		0.0	5

Refusal at 6.5 feet. Borehole terminated at 6.5 feet.

10
15

PROJECT: **Blue Heron UST Area Additional Assessment**
 LOCATION: **Oregon City, Oregon**
 PROJECT NUMBER: **185705769**

BOREHOLE ID:
BH-RI-S72 
 PAGE 1 OF 1

DRILLING: STARTED **11/26/24** COMPLETED: **11/26/24**
 DRILLING COMPANY: **Holt Services, Inc.**
 DRILLING EQUIPMENT: **Geoprobe 7822DT**
 DRILLING METHOD: **Direct-Push**
 SAMPLING EQUIPMENT: **Acetate liner**

NORTHING (ft): **5022455** EASTING (ft): **530345.1**
 GROUND ELEV (ft): **Not Surveyed** TOC ELEV (ft): **N/A**
 INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **6**
 STATIC DTW (ft): **N/A** WELL DEPTH (ft): **N/A**
 WELL CASING DIA. (in): **N/A** BOREHOLE DIA.(in): **3.0**
 LOGGED BY: **RM** CHECKED BY: **LF**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			8" concrete slab						
		ML	SANDY SILT WITH GRAVEL ; ML; dark brown; low plasticity; firm; moist; no odor; small to medium angular gravel; some concrete drebris		BH-RI-S72-2'-3' @1200	5/5		0.0	
5			Concrete debris up to 2" diameter			1/5		0.0	5

Refusal at 6 feet. Borehole terminated at 6 feet.

10
15

PROJECT: **Blue Heron UST Area Additional Assessment**
 LOCATION: **Oregon City, Oregon**
 PROJECT NUMBER: **185705769**

BOREHOLE ID:
 PAGE 1 OF 1 **BH-RI-S73** 

DRILLING: STARTED **11/26/24** COMPLETED: **11/26/24**
 DRILLING COMPANY: **Holt Services, Inc.**
 DRILLING EQUIPMENT: **Geoprobe 7822DT**
 DRILLING METHOD: **Direct-Push**
 SAMPLING EQUIPMENT: **Acetate liner**

NORTHING (ft): **5022449** EASTING (ft): **530353**
 GROUND ELEV (ft): **Not Surveyed** TOC ELEV (ft): **N/A**
 INITIAL DTW (ft): **Not Encountered** BOREHOLE DEPTH (ft): **9**
 STATIC DTW (ft): **N/A** WELL DEPTH (ft): **N/A**
 WELL CASING DIA. (in): **N/A** BOREHOLE DIA.(in): **3.0**
 LOGGED BY: **RM** CHECKED BY: **LF**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			4" asphalt, 2" base gravel						
		ML	SANDY SILT WITH GRAVEL ; ML; dark brown; low plasticity; firm; moist; no odor; angular; small - medium gravel; trace concrete debris		BH-RI-S73-2'-3' @1230	5/5		0.0	
5		SP	SILTY SAND ; SP; dark brown; medium dense; moist; no odor; no gravel Grayish brown; very moist Some medium angular gravel		BH-RI-S73-8'-9' @1245	4/5		0.0	5

Refusal at 9 feet. Borehole terminated at 9 feet.

10
15

PROJECT: **Blue Heron UST Area Additional Assessment**
 LOCATION: **Oregon City, Oregon**
 PROJECT NUMBER: **185705769**

BOREHOLE ID:

BH-RI-S74



PAGE 1 OF 1

DRILLING: STARTED **11/26/24** COMPLETED: **11/26/24**

NORTHING (ft): **5022482**

EASTING (ft): **530341.2**

GROUND ELEV (ft): **Not Surveyed**

TOC ELEV (ft): **N/A**

DRILLING COMPANY: **Holt Services, Inc.**

INITIAL DTW (ft): **Not Encountered**

BOREHOLE DEPTH (ft): **10.5**

DRILLING EQUIPMENT: **Geoprobe 7822DT**

STATIC DTW (ft): **N/A**

WELL DEPTH (ft): **N/A**

DRILLING METHOD: **Direct-Push**

WELL CASING DIA. (in): **N/A**

BOREHOLE DIA.(in): **3.0**

SAMPLING EQUIPMENT: **Acetate liner**

LOGGED BY: **RM**

CHECKED BY: **LF**

Time & Depth (feet)	Graphic Log	USCS	Description	Sample	Time Sample ID	Measured Recov. (feet)	Blow Count	Headspace PID (units)	Depth (feet)
			8" concrete slab						
5		ML	SANDY SILT WITH GRAVEL ; ML; dark brown; low plasticity; firm; moist; no odor; angular		BH-RI-S74-2'-3' @1110	5/5		0.0	5
10		SP	SILTY SAND ; SP; brown; medium dense; moist; no odor; no gravel Gray to dark gray; trace wood debris Some medium angular gravel		BH-RI-S74-9'-10' @1115	5/5		0.0	10
						0.5/5		0.3	10

Step-out boring 25' northwest of BH-RI-S68
 Refusal at 10.5 feet. Borehole terminated at 10.5 feet.

PROJECT: **Blue Heron UST Area Additional Assessment**
 LOCATION: **Oregon City, Oregon**
 PROJECT NUMBER: **185705769**

BOREHOLE ID:

MW-4



PAGE 1 OF 1

DRILLING: STARTED **12/4/24** COMPLETED: **12/4/24**

NORTHING (ft): **5022460.24**

EASTING (ft): **530344.82**

GROUND ELEV (ft): **Not Surveyed**

TOC ELEV (ft): **43.07**

DRILLING COMPANY: **Holt Services Inc.**

INITIAL DTW (ft): **7.00**

BOREHOLE DEPTH (ft): **10**

DRILLING EQUIPMENT: **Terra Sonic 150 CC**

STATIC DTW (ft): **5.15**

WELL DEPTH (ft): **10.00**

DRILLING METHOD: **Sonic**

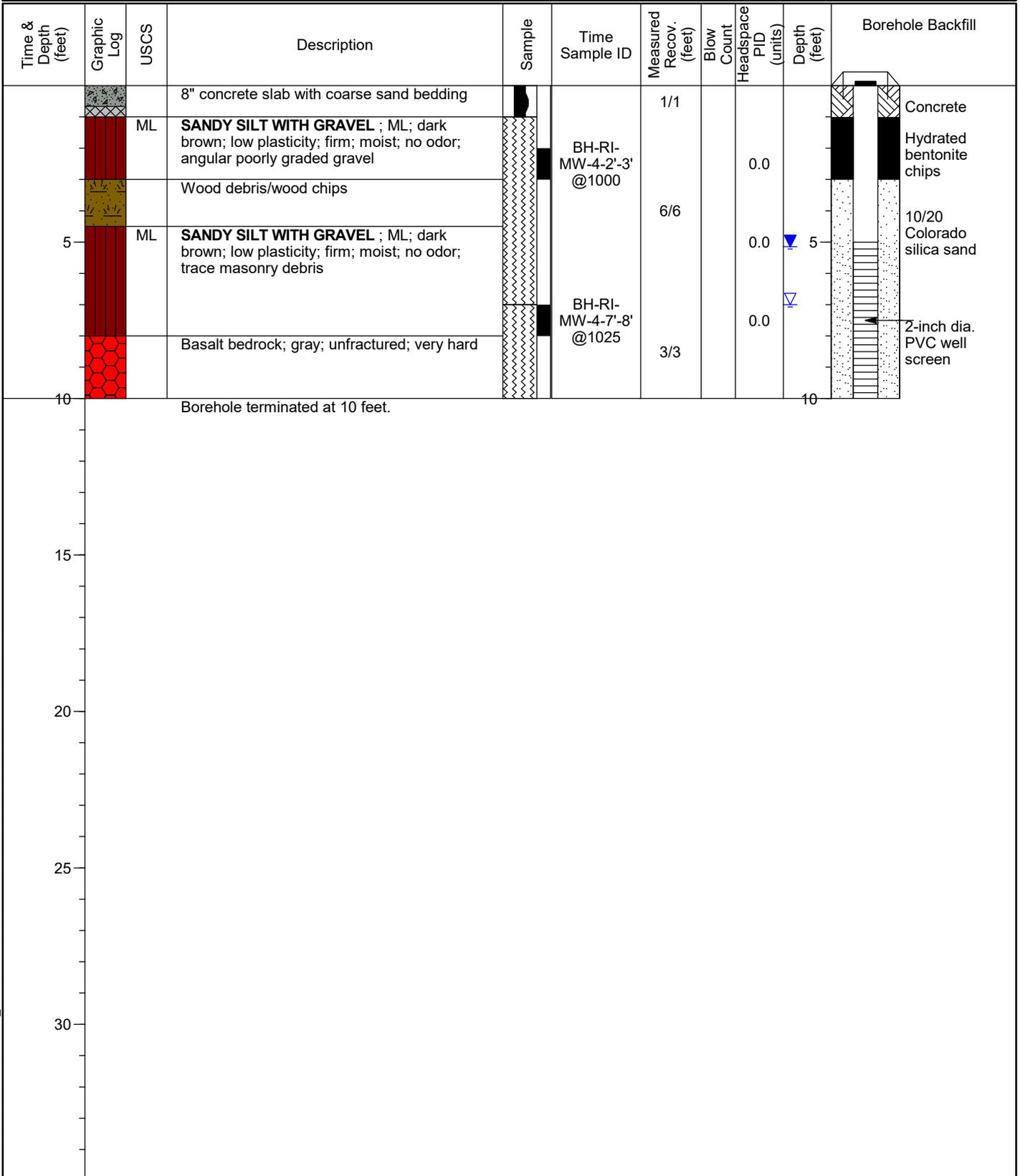
WELL CASING DIA. (in): **2.0**

BOREHOLE DIA.(in): **4.0**

SAMPLING EQUIPMENT: **Core barrel liners**

LOGGED BY: **RM**

CHECKED BY: **LF**



PROJECT: **Blue Heron UST Area Additional Assessment**
 LOCATION: **Oregon City, Oregon**
 PROJECT NUMBER: **185705769**

BOREHOLE ID:

MW-5



DRILLING: STARTED **12/4/24** COMPLETED: **12/4/24**

PAGE 1 OF 1

NORTHING (ft): **5022527.46**

EASTING (ft): **530338.66**

GROUND ELEV (ft): **Not Surveyed**

TOC ELEV (ft): **48.18**

DRILLING COMPANY: **Holt Services Inc.**

INITIAL DTW (ft): **24.50**

BOREHOLE DEPTH (ft): **29**

DRILLING EQUIPMENT: **Terra Sonic 150 CC**

STATIC DTW (ft): **18.66**

WELL DEPTH (ft): **29.00**

DRILLING METHOD: **Sonic**

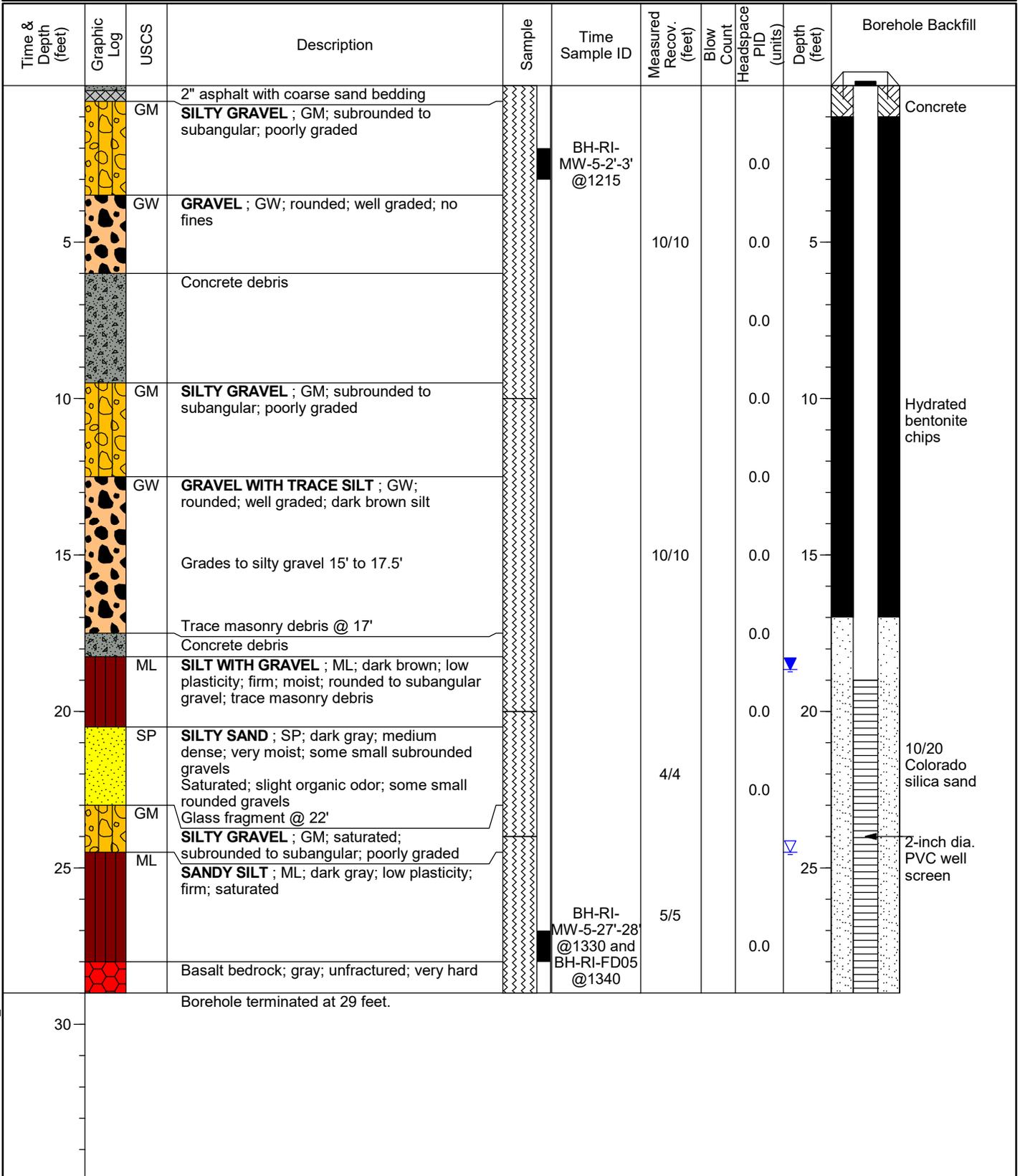
WELL CASING DIA. (in): **2.0**

BOREHOLE DIA.(in): **4.0**

SAMPLING EQUIPMENT: **Core barrel liners**

LOGGED BY: **RM**

CHECKED BY: **LF**



GEO FORM 304 BLUE HERON_GWM WELLS.GPJ STANTEC ENVIRO TEMPLATE 010509.GDT 1/13/25

Appendix C Well Development and Groundwater Monitoring Field Data Sheets





ESFF2.08 - WELL DEVELOPMENT / PURGING

Project Name: FORMER BLUE HERON
 Project Manager: LEN FARR
 Field Personnel: ROBERT MCALISTER

Project Number: 185705769
 Date: 12/16/24
 Weather: CLOUDY

Well ID: MW-4

Location Description: _____

Pre-Development Water Level (Feet BTOC): 5.15 Well Total Depth (Feet BTOC): ~~9.95~~ 9.95 Water Column (feet): 4.80 Total Volume Purged from Well (gallons): 4.5
 Post-Development Water Level (Feet BTOC): 4.64 Well Diameter (inches): 2 [2" dia. = 0.5 gal/foot (3 well volumes) OR 0.82 gal/foot (5 well volumes)]
 [4" dia. = 2.0 gal/foot (3 well volumes) OR 3.25 gal/foot (5 well volumes)]

PURGING METHOD: Low-Flow (Peristaltic Pump) Watterra Manual Watterra Hydrolift Submersible Pump (Model _____) Bailer Other _____

Time	Pump Intake Depth (feet BTOC)	Cumulative Volume Removed (gal)	Water Level (feet BTOC)	Temperature (°C)	Conductivity (µS/cm or mS/cm)	DO meter reading (mg/L)	pH (Std. Units)	Oxid./Red. Potential [ORP] (mV)	Turbidity (NTU)	Color (visual)	Comments
			Stabilization based on:	± 3%	± 3%	± 10% or 0.2 mg/L	± 0.1 unit	± 10 mV	± 10%		
1 930	~ 8'	1	7.31	15.8	514	2.99	6.58	-47.9	85	CLEAR	
2 942		2	7.71	16.1	460	1.66	6.59	-63.0	57	"	
3 955		3	8.13	16.1	457	2.04	6.55	-61.1	59	"	
4 1010		4	8.27	16.1	452	2.00	6.55	-59.5	55	"	5 WELL VOLUMES
5 1016	↓	4.5	8.82	16.1	448	1.97	6.54	-57.9	55	"	DRY @ 4.5 GAL
6											
7											
8											
9											
10											

Date/Time of Bentonite Seal Installation: 12/4/24 01400

Well Screen Interval: ~ 5' - 10'

Additional Well Details: _____

Was Well Screen Surged During Development? YES - 15 MINS

Purge Water Disposal: DRUMS

General Comments / Well Recovery (low, medium, high) / Well Conditions: _____

Quality Control:

This form is complete () & legible ().

check (✓)

Signatures:

(field personnel)

Signatures:

(project manager)

12/16/24

(date)

(date)



ESFF2.08 - WELL DEVELOPMENT / PURGING

Project Name: FORMER BLUE HERON
Project Manager: LEN FARR
Field Personnel: ROBERT MCALISTER

Project Number: 185705769
Date: 12/16/24
Weather: CLOUDY

Well ID: MW-5

Location Description:

Pre-Development Water Level (Feet BTOC): 18.66
Well Total Depth (Feet BTOC): 28.35
Post-Development Water Level (Feet BTOC): 18.55
Well Diameter (inches): 2

Water Column (feet): 9.65
Total Volume Purged from Well (gallons): 12
[2" dia. = 0.5 gal/foot (3 well volumes) OR 0.82 gal/foot (5 well volumes)]
[4" dia. = 2.0 gal/foot (3 well volumes) OR 3.25 gal/foot (5 well volumes)]

PURGING METHOD: [X] Low-Flow (Peristaltic Pump) [] Watterra Manual [] Watterra Hydrolift [] Submersible Pump (Model) [] Bailor [] Other

Table with 12 columns: Time, Pump Intake Depth (feet BTOC), Cumulative Volume Removed (gal), Water Level (feet BTOC), Temperature (°C), Conductivity (µS/cm or mS/cm), DO meter reading (mg/L), pH (Std. Units), Oxid./Red. Potential [ORP] (mV), Turbidity (NTU), Color (visual), Comments. Rows 1-10 contain data points for purging progress.

Date/Time of Bentonite Seal Installation: 12/4/24 @ 1400
Well Screen Interval: ~18'-28"
Additional Well Details:

Was Well Screen Surged During Development? YES - 15 MINS
Purge Water Disposal: DRUMS

General Comments / Well Recovery (low, medium, high) / Well Conditions: NO SCREEN/ODOR

Quality Control: This form is complete () & legible ().
check ()
Signatures: [Signature] (field personnel)
Signatures: (project manager)
Date: 12/16/24 (date)



Water Sample Field Data Sheet

Portland Office
601 SW 2nd Avenue, Suite 1400

Project Name: Former Blue Heron Paper Mill **Project No.:** 185705769
Project Manager: Len Farr **Lab:** APEX
Field Technician: Robert McAlister **Well ID:** BH-MW-4

Date Purged: 12/19/24 Start (2400hr): 1040 End (2400hr): 1120
Date Sampled: 12/19/24 Sample Time (2400hr): 1105
Sample Type: GRAB Low-Flow Used? YES

Casing Diameter: 2" 3" 4"
Casing Volume (Gallons per foot): (0.17) (0.38) (0.67)

Depth to Bottom (ft): 9.95
Depth to Water (ft): 4.64
Water Column Height (ft): 5.31 Actual Purge (gal): ~ 1/2

Field Measurements								
Flowrate (L/min)	Time (24-Hr)	Temp (°C)	pH (units)	Conductivity (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft/ BTOC)
0.1	1050	15.3	6.02	378	1.12	18.9	71	5.04
	1055	15.5	6.04	385	1.17	24.1	62	5.25
	1100	15.6	6.05	388	1.12	26.8	52	5.37
	1105	15.5	6.09	391	1.15	28.7	50	5.41

Calculated Variance of Final Three Samples:
Temp: < 1% pH: ±0.05 Conductivity: 1.5% DO: ±0.05 O.R.P.: ±4.6 Turbidity: 19%

Acceptable Variance Limits:
Temp: 3% pH: ±0.1 unit Conductivity: 3% DO: 0.3 mg/L O.R.P.: ±10 mV Turbidity: 10%

Depth to Purge Intake During Purge: ~ 8' Sample DTW: 5.41

Quantity of Sample Vessel & Preservative:	Analyses:
NWTPH-Dx	2x 1 L AMBERS (HCl)
PAHS	2x 250 mL AMBERS (NONE)
TOTAL AS+PB	2x 250 mL POLY (HNO ₃)
DISSOLVED AS+PB	1x 250 mL POLY (HNO ₃ , FILTERED)

Purging Equipment:	Sampling Equipment:
Peristaltic Pump/YSI Pro Plus Multimeter	Peristaltic Pump

Flow Through Cell Disconnected Prior to Sample Collection?: Yes No
Well Pad Condition: NEW Well Casing Condition: NEW
Well Vault Condition: NEW Seal Present?: Y Bolts Present?: 2 OF 2
Well Integrity: GOOD Well Tag: L136319

Notes: _____
Signature: [Signature] Page 1 of 2

Project Name: Former Blue Heron Paper Mill		Project No.: 185705769	
Project Manager: Len Farr		Lab: APEX	
Field Technician: Robert McAlister		Well ID: XXXX BH-MW-5	
Date Purged: 12/19/24	Start (2400hr): 940	End (2400hr): 1030	
Date Sampled: 12/19/24	Sample Time (2400hr): 1015		
Sample Type: GRAB	Low-Flow Used? YES		
Casing Diameter:	2" <input checked="" type="checkbox"/>	3" <input type="checkbox"/>	4" <input type="checkbox"/>
Casing Volume (Gallons per foot):	(0.17)	(0.38)	(0.67)
Depth to Bottom (ft): 28.35			
Depth to Water (ft): 18.55			
Water Column Height (ft): 9.80	Actual Purge (gal): ~1/2		

Field Measurements

Flowrate (L/min)	Time (24-Hr)	Temp (°C)	pH (units)	Conductivity (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft/ BTOC)
0.1 ↓	955	12.2	7.16	298	8.75	49.2	128	18.74
	1000	12.2	7.10	293	7.73	12.3	71	18.75
	1005	12.2	7.09	292	7.08	-7.8	34	18.77
	1010	12.3	7.09	291	7.06	-12.2	31	18.79
	1015	12.3	7.09	291	7.05	-13.3	27	18.81

Calculated Variance of Final Three Samples:

Temp: <1% pH: ±0.0 Conductivity: <1% DO: ±0.03 O.R.P.: ±5.5 Turbidity: 26%

Acceptable Variance Limits:

Temp: 3% pH: ±0.1 unit Conductivity: 3% DO: 0.3 mg/L O.R.P.: ±10 mV Turbidity: 10%

Depth to Purge Intake During Purge: ~24' **Sample DTW:** 18.81

Quantity of Sample Vessel & Preservative:	Analyses:
NWTPH-DX	2X 1 L AMBERS (HCl)
PAH	2X 250 mL AMBERS (NONE)
TOTAL AS + PB	2X 250 mL POLY (HNO ₃)
DISSOLVED AS + PB	1X 250 mL POLY (HNO ₃ ; FILTERED)

Purging Equipment:	Sampling Equipment:
Peristaltic Pump/YSI Pro Plus Multimeter	Peristaltic Pump

Flow Through Cell Disconnected Prior to Sample Collection?: Yes No

Well Pad Condition: NEW **Well Casing Condition:** ~~GOOD~~ NEW

Well Vault Condition: NEW **Seal Present?:** Y **Bolts Present?:** 2 of 2

Well Integrity: GOOD **Well Tag:** L132360

Notes:

 Signature: 

Project Name: Former Blue Heron Paper Mill	Project No.: 185705769
Project Manager: Len Farr	Lab: APEX
Field Technician: Robert McAlister	Well ID: MW-4

Date Purged: <u>3/21/25</u>	Start (2400hr): <u>1000</u>	End (2400hr): <u>1020</u>
Date Sampled: <u>3/21/25</u>	Sample Time (2400hr): <u>1030</u>	
Sample Type: <u>GRAB</u>	Low-Flow Used?: <u>YES</u>	

Casing Diameter:	2" <input checked="" type="checkbox"/>	3" <input type="checkbox"/>	4" <input type="checkbox"/>
Casing Volume (Gallons per foot):	(0.17)	(0.38)	(0.67)

Depth to Bottom (ft): <u>9.45</u>	
Depth to Water (ft): <u>3.70</u>	
Water Column Height (ft): <u>6.25</u>	Actual Purge (gal): <u>~1/2</u>

Field Measurements

Flowrate (L/min)	Time (24-Hr)	Temp (°C)	pH (units)	Conductivity (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft/ BTOC)
0.1	1007	12.3	6.17	619	1.01	32.4	53	3.70
↓	1012	12.3	6.21	607	1.12	29.7	31	3.70
	1017	12.1	6.23	599	1.17	25.3	30	3.70
	1022	12.1	6.22	597	1.18	28.3	30	3.70

Calculated Variance of Final Three Samples:
 Temp: 1.7% pH: ±0.02 Conductivity: 1.7% DO: ±0.06 O.R.P.: ±17.4 Turbidity: ~~±3%~~

Acceptable Variance Limits:
 Temp: 3% pH: ±0.1 unit Conductivity: 3% DO: 0.3 mg/L O.R.P.: ±10 mV Turbidity: 10%

Depth to Purge Intake During Purge: ~8' Sample DTW: 3.70

Quantity of Sample Vessel & Preservative:	Analyses:
DX LITER AMBERS	DX
PAHS " "	PAHS
TOTAL As+Pb POLY	TOTAL As+Pb
DISSOLVED As+Pb "	DISSOLVED As+Pb

Purging Equipment:	Sampling Equipment:
Peristaltic Pump/YSI Pro Plus Multimeter	Peristaltic Pump

Flow Through Cell Disconnected Prior to Sample Collection?: Yes No

Well Pad Condition: <u>GOOD</u>	Well Casing Condition: <u>GOOD</u>
Well Vault Condition: <u>GOOD</u>	Seal Present?: <u>Y</u> Bolts Present?: <u>2 of 2</u>
Well Integrity: <u>GOOD</u>	Well Tag: <u>L136319</u>

Project Name: Former Blue Heron Paper Mill	Project No.: 185705769
Project Manager: Len Farr	Lab: APEX
Field Technician: Robert McAlister	Well ID: BH-MW-5

Date Purged: <u>3/21/25</u>	Start (2400hr): <u>1040</u>	End (2400hr): <u>1100</u>
Date Sampled: <u>3/21/25</u>	Sample Time (2400hr): <u>1105</u>	
Sample Type: <u>GRAB</u>	Low-Flow Used? <u>YES</u>	

Casing Diameter:	2" X	3" _____	4" _____
Casing Volume (Gallons per foot):	(0.17)	(0.38)	(0.67)

Depth to Bottom (ft): <u>28.35</u>		
Depth to Water (ft): <u>18.41</u>		
Water Column Height (ft): <u>9.94</u>		Actual Purge (gal): <u>~1/2</u>

Field Measurements

Flowrate (L/min)	Time (24-Hr)	Temp (°C)	pH (units)	Conductivity (µS/cm)	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft/ BTOC)
0.1	1045	12.5	7.13	261	6.72	19.7	74	18.45
↓	1050	12.3	7.01	273	7.01	0.7	52	18.45
↓	1055	12.3	6.97	279	7.04	-12.9	50	18.46
↓	1100	12.2	6.99	283	7.06	-13.7	50	18.46

Calculated Variance of Final Three Samples:
 Temp: <1% pH: ±0.04 Conductivity: 3.5% DO: ±0.05 O.R.P.: ±14.4 Turbidity: 4%

Acceptable Variance Limits:
 Temp: 3% pH: ±0.1 unit Conductivity: 3% DO: 0.3 mg/L O.R.P.: ±10 mV Turbidity: 10%

Depth to Purge Intake During Purge: ~24' Sample DTW: 18.46

Quantity of Sample Vessel & Preservative:	Analyses:
LITER AMBERS	DX
" "	PAH
POLY	TOTAL AS + Pb
" "	DISSOLVED AS + Pb

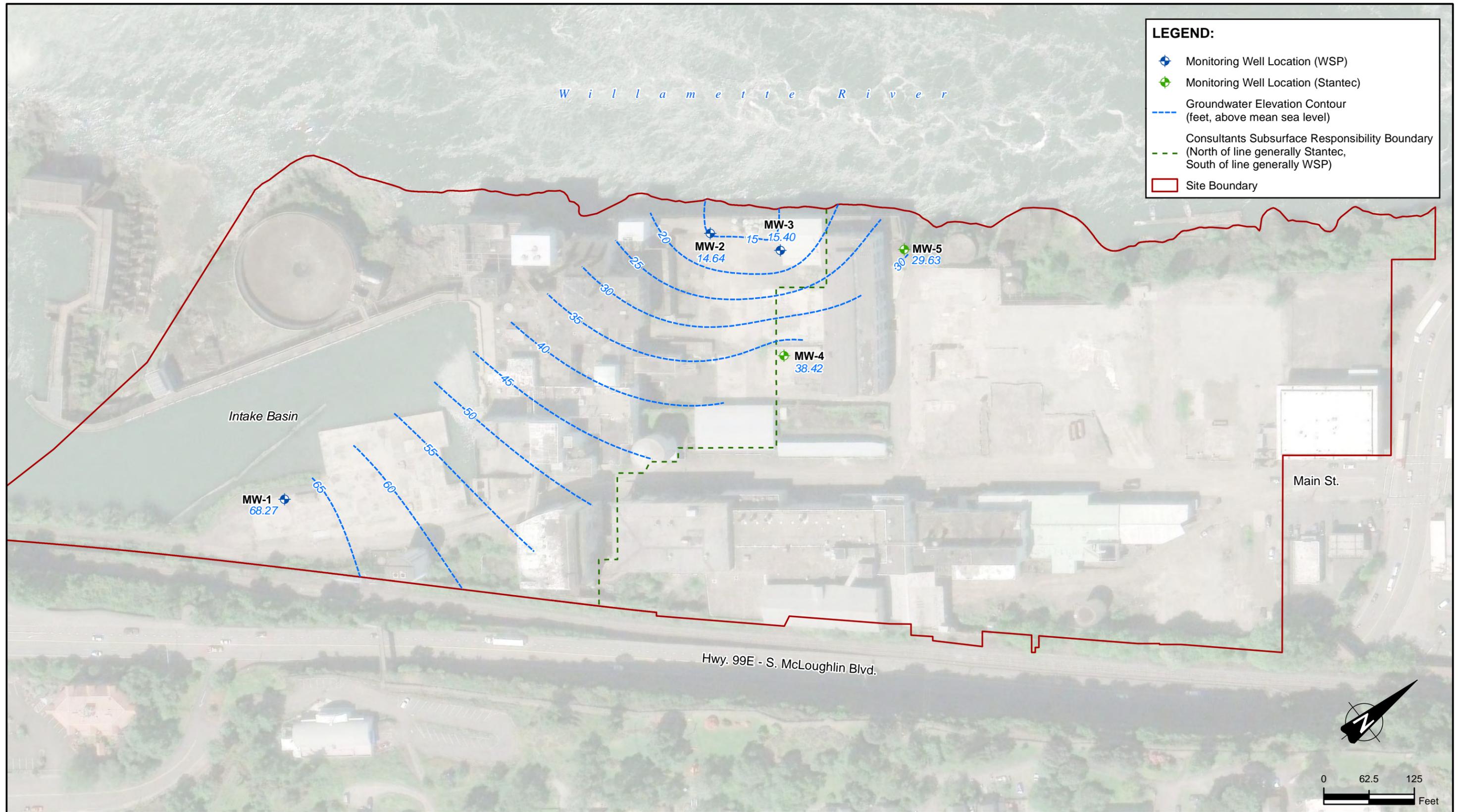
Purging Equipment:	Sampling Equipment:
Peristaltic Pump/YSI Pro Plus Multimeter	Peristaltic Pump

Flow Through Cell Disconnected Prior to Sample Collection?: Yes X No _____

Well Pad Condition: <u>GOOD</u>	Well Casing Condition: <u>GOOD</u>
Well Vault Condition: <u>GOOD</u>	Seal Present?: <u>Y</u> Bolts Present?: <u>2 OF 2</u>
Well Integrity: <u>GOOD</u>	Well Tag: <u>L132360</u>

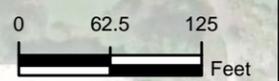
Appendix D Groundwater Elevation Contour Figures (Prepared by WSP)





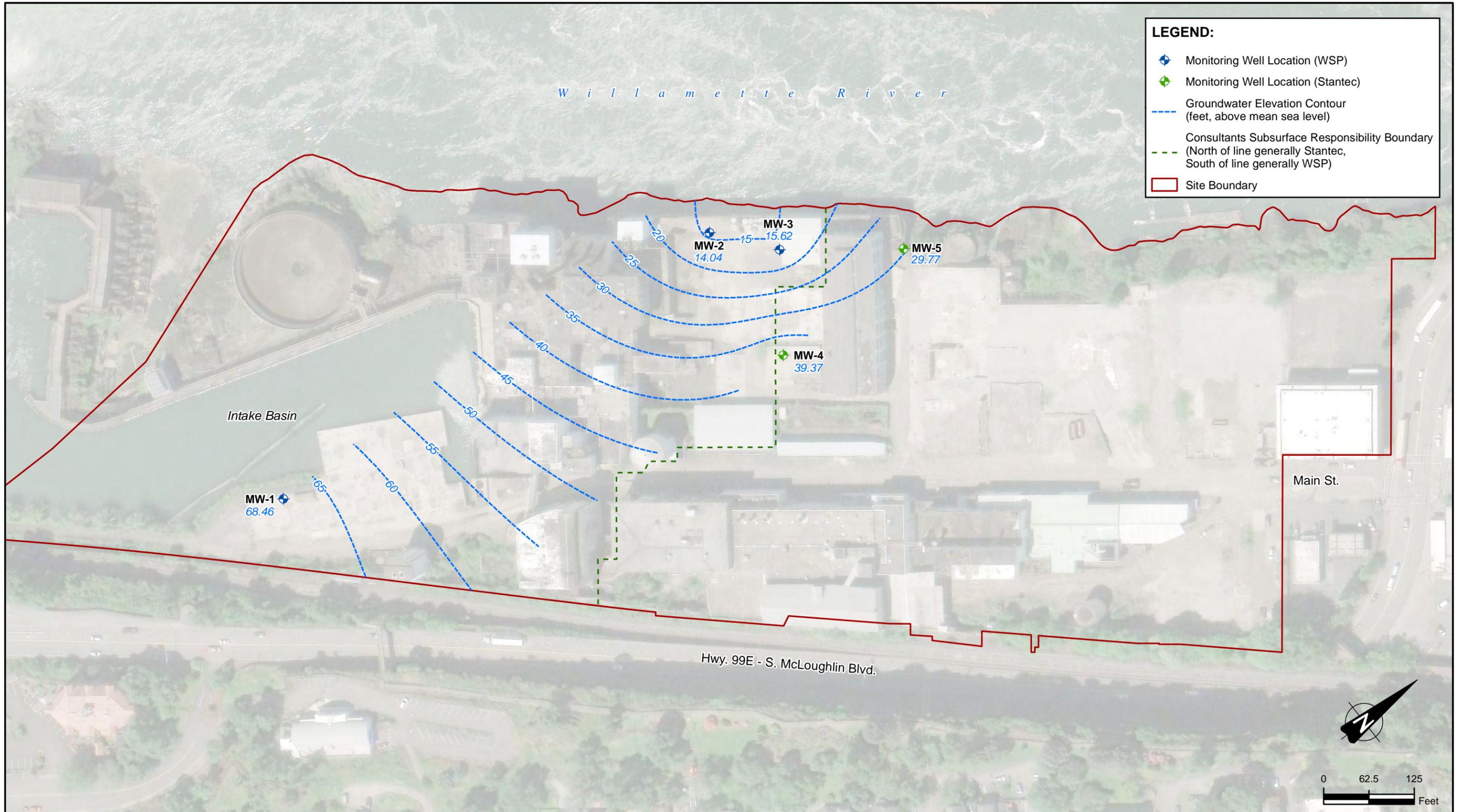
LEGEND:

- ⊕ Monitoring Well Location (WSP)
- ⊕ Monitoring Well Location (Stantec)
- Groundwater Elevation Contour (feet, above mean sea level)
- Consultants Subsurface Responsibility Boundary (North of line generally Stantec, South of line generally WSP)
- Site Boundary



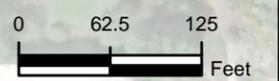
<p>CONFEDERATED TRIBES OF THE GRAND RONDE</p>		<p>FORMER BLUE HERON PAPER MILL 419-427 MAIN STREET, OREGON CITY, OREGON</p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="font-size: small;">DATE</td> <td>APRIL 2025</td> </tr> <tr> <td style="font-size: small;">SCALE</td> <td>1" = 125'</td> </tr> <tr> <td style="font-size: small;">PROJECT NO.</td> <td>961M13558.04</td> </tr> <tr> <td style="font-size: small;">FIGURE</td> <td style="text-align: center;">1</td> </tr> </table>	DATE	APRIL 2025	SCALE	1" = 125'	PROJECT NO.	961M13558.04	FIGURE	1
		DATE	APRIL 2025								
SCALE	1" = 125'										
PROJECT NO.	961M13558.04										
FIGURE	1										
<p>WSP USA 15862 SW 72nd Ave., Suite 150 Portland, OR 97224</p>	<p>GROUNDWATER ELEVATION CONTOURS DECEMBER 19, 2024</p>										

DRAWN BY: PM CHECKED BY: JKH



LEGEND:

- ◆ Monitoring Well Location (WSP)
- ◆ Monitoring Well Location (Stantec)
- Groundwater Elevation Contour (feet, above mean sea level)
- Consultants Subsurface Responsibility Boundary (North of line generally Stantec, South of line generally WSP)
- Site Boundary



DRAWN BY: PM CHECKED BY: JKH

	<p>CONFEDERATED TRIBES OF THE GRAND RONDE</p>		<p>FORMER BLUE HERON PAPER MILL 419-427 MAIN STREET, OREGON CITY, OREGON</p>	<p>DATE APRIL 2025</p>
	<p>WSP USA 15862 SW 72nd Ave., Suite 150 Portland, OR 97224</p>		<p>GROUNDWATER ELEVATION CONTOURS MARCH 21, 2025</p>	<p>SCALE 1" = 125'</p>
				<p>PROJECT NO. 961M13558.04</p>
				<p>FIGURE 1</p>

Appendix E Laboratory Analytical Reports





ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Friday, January 3, 2025
Len Farr
Stantec Portland
601 SW 2nd Ave Suite 1400
Portland, OR 97204

RE: A4K1723 - Blue Heron Focused Remedial Investigation - 185705769

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A4K1723, which was received by the laboratory on 11/27/2024 at 1:00:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information	
<p><u>Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.</u></p> <p>(See Cooler Receipt Form for details)</p>	
<p>Default Cooler</p>	<p style="text-align: center; border-bottom: 1px solid black;">5.7 degC</p>

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

The results in this report apply to the samples analyzed in accordance with the chain of custody document(s) and updated by any subsequent written communications. This analytical report must be reproduced in its entirety.

Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH-RI-S68-2'-3'	A4K1723-01	Soil	11/26/24 10:05	11/27/24 13:00
BH-RI-S68-9'-10'	A4K1723-02	Soil	11/26/24 10:10	11/27/24 13:00
BH-RI-S69-9'-10'	A4K1723-04	Soil	11/26/24 10:40	11/27/24 13:00
BH-RI-S70-2'-3'	A4K1723-05	Soil	11/26/24 10:50	11/27/24 13:00
BH-RI-S70-7.5'-8.5'	A4K1723-06	Soil	11/26/24 10:55	11/27/24 13:00
BH-RI-S72-2'-3'	A4K1723-08	Soil	11/26/24 12:00	11/27/24 13:00
BH-RI-S73-8'-9'	A4K1723-10	Soil	11/26/24 12:45	11/27/24 13:00
BH-RI-S74-9'-10'	A4K1723-12	Soil	11/26/24 11:15	11/27/24 13:00

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
--	---	---

ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-S68-2'-3' (A4K1723-01)				Matrix: Soil		Batch: 24L0162		
Diesel	ND	---	19.0	mg/kg dry	1	12/05/24 21:40	NWTPH-Dx	
Oil	ND	---	37.9	mg/kg dry	1	12/05/24 21:40	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>12/05/24 21:40</i>	<i>NWTPH-Dx</i>
BH-RI-S68-9'-10' (A4K1723-02)				Matrix: Soil		Batch: 24L0057		
Diesel	36.8	---	26.8	mg/kg dry	1	12/03/24 23:12	NWTPH-Dx	F-17
Oil	57.8	---	53.6	mg/kg dry	1	12/03/24 23:12	NWTPH-Dx	F-17
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>12/03/24 23:12</i>	<i>NWTPH-Dx</i>
BH-RI-S69-9'-10' (A4K1723-04)				Matrix: Soil		Batch: 24L0057		
Diesel	ND	---	24.0	mg/kg dry	1	12/03/24 23:52	NWTPH-Dx	
Oil	ND	---	48.1	mg/kg dry	1	12/03/24 23:52	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 84 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>12/03/24 23:52</i>	<i>NWTPH-Dx</i>
BH-RI-S70-2'-3' (A4K1723-05)				Matrix: Soil		Batch: 24L0162		
Diesel	ND	---	18.3	mg/kg dry	1	12/05/24 22:20	NWTPH-Dx	
Oil	ND	---	36.6	mg/kg dry	1	12/05/24 22:20	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>12/05/24 22:20</i>	<i>NWTPH-Dx</i>
BH-RI-S70-7.5'-8.5' (A4K1723-06)				Matrix: Soil		Batch: 24L0057		
Diesel	ND	---	2230	mg/kg dry	100	12/04/24 00:32	NWTPH-Dx	
Oil	14200	---	4450	mg/kg dry	100	12/04/24 00:32	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: %</i>		<i>Limits: 50-150 %</i>		<i>100</i>	<i>12/04/24 00:32</i>	<i>NWTPH-Dx S-01</i>
BH-RI-S72-2'-3' (A4K1723-08RE1)				Matrix: Soil		Batch: 24L0162		
Diesel	ND	---	120	mg/kg dry	5	12/06/24 07:23	NWTPH-Dx	
Oil	965	---	240	mg/kg dry	5	12/06/24 07:23	NWTPH-Dx	F-13
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 88 %</i>		<i>Limits: 50-150 %</i>		<i>5</i>	<i>12/06/24 07:23</i>	<i>NWTPH-Dx S-05</i>
BH-RI-S73-8'-9' (A4K1723-10)				Matrix: Soil		Batch: 24L0057		
Diesel	ND	---	25.0	mg/kg dry	1	12/03/24 22:11	NWTPH-Dx	
Oil	ND	---	50.1	mg/kg dry	1	12/03/24 22:11	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 79 %</i>		<i>Limits: 50-150 %</i>		<i>1</i>	<i>12/03/24 22:11</i>	<i>NWTPH-Dx</i>

Apex Laboratories

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-S74-9'-10' (A4K1723-12)				Matrix: Soil		Batch: 24L0057		
Diesel	401	---	227	mg/kg dry	10	12/03/24 22:31	NWTPH-Dx	F-11
Oil	ND	---	454	mg/kg dry	10	12/03/24 22:31	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 50-150 %</i>	<i>10</i>	<i>12/03/24 22:31</i>	<i>NWTPH-Dx</i>	<i>S-05</i>

Apex Laboratories

Philip Nerenberg, Lab Director

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Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-S68-2'-3' (A4K1723-01)				Matrix: Soil		Batch: 24L0110		
Acenaphthene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Acenaphthylene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Anthracene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Benz(a)anthracene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Benzo(a)pyrene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Benzo(b)fluoranthene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Benzo(k)fluoranthene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Benzo(g,h,i)perylene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Chrysene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Dibenz(a,h)anthracene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Fluoranthene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Fluorene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
1-Methylnaphthalene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
2-Methylnaphthalene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Naphthalene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Phenanthrene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Pyrene	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
Dibenzofuran	ND	---	9.29	ug/kg dry	1	12/04/24 15:35	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>12/04/24 15:35</i>	<i>EPA 8270E SIM</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>88 %</i>		<i>54-127 %</i>		<i>1</i>	<i>12/04/24 15:35</i>	<i>EPA 8270E SIM</i>

BH-RI-S68-9'-10' (A4K1723-02)				Matrix: Soil		Batch: 24L0062		
Acenaphthene	ND	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
Acenaphthylene	ND	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
Anthracene	ND	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
Benz(a)anthracene	42.4	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
Benzo(a)pyrene	145	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	Q-42
Benzo(b)fluoranthene	181	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	Q-42
Benzo(k)fluoranthene	52.3	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	M-05
Benzo(g,h,i)perylene	355	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	Q-42
Chrysene	61.4	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
Dibenz(a,h)anthracene	19.8	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-S68-9'-10' (A4K1723-02)				Matrix: Soil		Batch: 24L0062		
Fluoranthene	44.3	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
Fluorene	ND	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	242	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	Q-42
1-Methylnaphthalene	ND	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
2-Methylnaphthalene	ND	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
Naphthalene	36.0	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
Phenanthrene	21.8	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
Pyrene	53.0	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
Dibenzofuran	ND	---	13.8	ug/kg dry	1	12/03/24 14:54	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 86 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>12/03/24 14:54</i>	<i>EPA 8270E SIM</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>80 %</i>		<i>54-127 %</i>		<i>1</i>	<i>12/03/24 14:54</i>	<i>EPA 8270E SIM</i>
BH-RI-S69-9'-10' (A4K1723-04)				Matrix: Soil		Batch: 24L0062		
Acenaphthene	ND	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Acenaphthylene	ND	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Anthracene	ND	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Benz(a)anthracene	79.1	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Benzo(a)pyrene	67.2	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Benzo(b)fluoranthene	82.0	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	M-05
Benzo(k)fluoranthene	30.7	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	M-05
Benzo(g,h,i)perylene	33.8	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Chrysene	76.3	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Dibenz(a,h)anthracene	ND	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Fluoranthene	104	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Fluorene	ND	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	33.0	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
1-Methylnaphthalene	ND	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
2-Methylnaphthalene	ND	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Naphthalene	ND	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Phenanthrene	32.3	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Pyrene	105	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
Dibenzofuran	ND	---	12.0	ug/kg dry	1	12/03/24 17:00	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 81 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>12/03/24 17:00</i>	<i>EPA 8270E SIM</i>

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

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ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-S69-9'-10' (A4K1723-04)				Matrix: Soil		Batch: 24L0062		
<i>Surrogate: p-Terphenyl-d14 (Surr)</i>		<i>Recovery: 72 %</i>		<i>Limits: 54-127 %</i>		<i>1</i>	<i>12/03/24 17:00</i>	<i>EPA 8270E SIM</i>
BH-RI-S70-2'-3' (A4K1723-05)				Matrix: Soil		Batch: 24L0110		
Acenaphthene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Acenaphthylene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Anthracene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Benz(a)anthracene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Benzo(a)pyrene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Benzo(b)fluoranthene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Benzo(k)fluoranthene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Benzo(g,h,i)perylene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Chrysene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Dibenz(a,h)anthracene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Fluoranthene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Fluorene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
1-Methylnaphthalene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
2-Methylnaphthalene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Naphthalene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Phenanthrene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Pyrene	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
Dibenzofuran	ND	---	9.60	ug/kg dry	1	12/04/24 17:16	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>12/04/24 17:16</i>	<i>EPA 8270E SIM</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>85 %</i>		<i>54-127 %</i>		<i>1</i>	<i>12/04/24 17:16</i>	<i>EPA 8270E SIM</i>

BH-RI-S70-7.5'-8.5' (A4K1723-06)				Matrix: Soil		Batch: 24L0062		
Acenaphthene	98.9	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Acenaphthylene	ND	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Anthracene	153	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Benz(a)anthracene	293	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Benzo(a)pyrene	276	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Benzo(b)fluoranthene	309	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	M-05
Benzo(k)fluoranthene	111	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	M-05
Benzo(g,h,i)perylene	164	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	

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Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
			Matrix: Soil			Batch: 24L0062		
BH-RI-S70-7.5'-8.5' (A4K1723-06)								
Chrysene	389	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Dibenz(a,h)anthracene	44.6	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Fluoranthene	566	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Fluorene	98.2	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	155	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
1-Methylnaphthalene	62.4	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
2-Methylnaphthalene	70.4	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Naphthalene	70.4	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Phenanthrene	840	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Pyrene	791	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
Dibenzofuran	ND	---	43.6	ug/kg dry	4	12/03/24 16:35	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 89 %</i>		<i>Limits: 44-120 %</i>		<i>4</i>	<i>12/03/24 16:35</i>	<i>EPA 8270E SIM</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>86 %</i>		<i>54-127 %</i>		<i>4</i>	<i>12/03/24 16:35</i>	<i>EPA 8270E SIM</i>

			Matrix: Soil			Batch: 24L0110		
BH-RI-S72-2'-3' (A4K1723-08)								
Acenaphthene	ND	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Acenaphthylene	197	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Anthracene	233	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Benz(a)anthracene	2770	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Benzo(a)pyrene	11900	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Benzo(b)fluoranthene	10700	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	M-05
Benzo(k)fluoranthene	3550	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	M-05
Benzo(g,h,i)perylene	21500	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Chrysene	3170	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Dibenz(a,h)anthracene	1450	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Fluoranthene	2950	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Fluorene	ND	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	15800	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
1-Methylnaphthalene	ND	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
2-Methylnaphthalene	ND	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Naphthalene	ND	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Phenanthrene	525	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
Pyrene	3620	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	

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Philip Nerenberg, Lab Director

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ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-S72-2'-3' (A4K1723-08)				Matrix: Soil		Batch: 24L0110		
Dibenzofuran	ND	---	124	ug/kg dry	10	12/04/24 16:26	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 87 %</i>		<i>Limits: 44-120 %</i>	<i>10</i>	<i>12/04/24 16:26</i>	<i>EPA 8270E SIM</i>	
<i>p-Terphenyl-d14 (Surr)</i>		<i>83 %</i>		<i>54-127 %</i>	<i>10</i>	<i>12/04/24 16:26</i>	<i>EPA 8270E SIM</i>	
BH-RI-S73-8'-9' (A4K1723-10)				Matrix: Soil		Batch: 24L0062		
Acenaphthene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Acenaphthylene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Anthracene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Benz(a)anthracene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Benzo(a)pyrene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Benzo(b)fluoranthene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Benzo(k)fluoranthene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Benzo(g,h,i)perylene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Chrysene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Dibenz(a,h)anthracene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Fluoranthene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Fluorene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
1-Methylnaphthalene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
2-Methylnaphthalene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Naphthalene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Phenanthrene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Pyrene	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
Dibenzofuran	ND	---	13.1	ug/kg dry	1	12/03/24 17:25	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 44-120 %</i>	<i>1</i>	<i>12/03/24 17:25</i>	<i>EPA 8270E SIM</i>	
<i>p-Terphenyl-d14 (Surr)</i>		<i>81 %</i>		<i>54-127 %</i>	<i>1</i>	<i>12/03/24 17:25</i>	<i>EPA 8270E SIM</i>	
BH-RI-S74-9'-10' (A4K1723-12)				Matrix: Soil		Batch: 24L0062		
Acenaphthene	ND	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Acenaphthylene	47.0	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Anthracene	60.3	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Benz(a)anthracene	37.1	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	M-05
Benzo(a)pyrene	111	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Benzo(b)fluoranthene	54.2	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	M-05

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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-S74-9'-10' (A4K1723-12)				Matrix: Soil		Batch: 24L0062		
Benzo(k)fluoranthene	12.4	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	M-05
Benzo(g,h,i)perylene	70.4	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Chrysene	95.8	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	M-05
Dibenz(a,h)anthracene	ND	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Fluoranthene	38.2	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Fluorene	16.5	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	67.0	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
1-Methylnaphthalene	ND	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
2-Methylnaphthalene	ND	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Naphthalene	20.4	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Phenanthrene	ND	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Pyrene	92.9	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
Dibenzofuran	ND	---	12.1	ug/kg dry	1	12/03/24 15:44	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>			<i>Recovery: 77 %</i>	<i>Limits: 44-120 %</i>	<i>1</i>	<i>12/03/24 15:44</i>	<i>EPA 8270E SIM</i>	
<i>p-Terphenyl-d14 (Surr)</i>			<i>71 %</i>	<i>54-127 %</i>	<i>1</i>	<i>12/03/24 15:44</i>	<i>EPA 8270E SIM</i>	

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ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-S68-2'-3' (A4K1723-01) Matrix: Soil								
Batch: 24L0312								
Arsenic	1.96	---	1.17	mg/kg dry	10	12/10/24 22:50	EPA 6020B	
Lead	4.37	---	0.234	mg/kg dry	10	12/10/24 22:50	EPA 6020B	
BH-RI-S68-9'-10' (A4K1723-02) Matrix: Soil								
Batch: 24L0312								
Arsenic	10.7	---	1.65	mg/kg dry	10	12/10/24 23:21	EPA 6020B	
BH-RI-S68-9'-10' (A4K1723-02RE1) Matrix: Soil								
Batch: 24L0312								
Lead	1040	---	3.30	mg/kg dry	100	12/11/24 12:03	EPA 6020B	
BH-RI-S69-9'-10' (A4K1723-04) Matrix: Soil								
Batch: 24L0312								
Arsenic	2.71	---	1.47	mg/kg dry	10	12/10/24 23:28	EPA 6020B	
Lead	11.5	---	0.294	mg/kg dry	10	12/10/24 23:28	EPA 6020B	
BH-RI-S70-2'-3' (A4K1723-05) Matrix: Soil								
Batch: 24L0312								
Arsenic	3.89	---	1.08	mg/kg dry	10	12/10/24 23:33	EPA 6020B	
Lead	9.12	---	0.216	mg/kg dry	10	12/10/24 23:33	EPA 6020B	
BH-RI-S70-7.5'-8.5' (A4K1723-06) Matrix: Soil								
Batch: 24L0312								
Arsenic	16.4	---	1.30	mg/kg dry	10	12/10/24 23:38	EPA 6020B	
BH-RI-S70-7.5'-8.5' (A4K1723-06RE1) Matrix: Soil								
Batch: 24L0312								
Lead	817	---	2.60	mg/kg dry	100	12/11/24 12:08	EPA 6020B	
BH-RI-S72-2'-3' (A4K1723-08) Matrix: Soil								
Batch: 24L0312								
Arsenic	28.2	---	1.47	mg/kg dry	10	12/10/24 23:45	EPA 6020B	
Lead	304	---	0.294	mg/kg dry	10	12/10/24 23:45	EPA 6020B	
BH-RI-S73-8'-9' (A4K1723-10) Matrix: Soil								

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-S73-8'-9' (A4K1723-10)				Matrix: Soil				
Batch: 24L0312								
Arsenic	3.12	---	1.51	mg/kg dry	10	12/10/24 23:50	EPA 6020B	
Lead	3.57	---	0.303	mg/kg dry	10	12/10/24 23:50	EPA 6020B	
BH-RI-S74-9'-10' (A4K1723-12)				Matrix: Soil				
Batch: 24L0312								
Arsenic	244	---	1.31	mg/kg dry	10	12/10/24 23:56	EPA 6020B	
Lead	21.8	---	0.262	mg/kg dry	10	12/10/24 23:56	EPA 6020B	

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ANALYTICAL SAMPLE RESULTS

TCLP Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
BH-RI-S68-9'-10' (A4K1723-02)				Matrix: Soil					
Batch: 25A0034									
Lead	ND	---	0.0500	mg/L	10	01/03/25 00:20	1311/6020B		
BH-RI-S70-7.5'-8.5' (A4K1723-06)				Matrix: Soil					
Batch: 25A0034									
Lead	0.0629	---	0.0500	mg/L	10	01/03/25 00:47	1311/6020B		
BH-RI-S72-2'-3' (A4K1723-08)				Matrix: Soil					
Batch: 25A0034									
Lead	ND	---	0.0500	mg/L	10	01/03/25 00:52	1311/6020B		
BH-RI-S74-9'-10' (A4K1723-12)				Matrix: Soil					
Batch: 25A0034									
Arsenic	0.122	---	0.100	mg/L	10	01/03/25 00:57	1311/6020B		

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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight									
Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
BH-RI-S68-2'-3' (A4K1723-01)				Matrix: Soil		Batch: 24L0104			
% Solids	91.4	---	1.00	%	1	12/05/24 05:41	EPA 8000D		
BH-RI-S68-9'-10' (A4K1723-02)				Matrix: Soil		Batch: 24L0029			
% Solids	63.6	---	1.00	%	1	12/03/24 05:32	EPA 8000D		
BH-RI-S69-9'-10' (A4K1723-04)				Matrix: Soil		Batch: 24L0029			
% Solids	72.0	---	1.00	%	1	12/03/24 05:32	EPA 8000D		
BH-RI-S70-2'-3' (A4K1723-05)				Matrix: Soil		Batch: 24L0104			
% Solids	92.1	---	1.00	%	1	12/05/24 05:41	EPA 8000D		
BH-RI-S70-7.5'-8.5' (A4K1723-06)				Matrix: Soil		Batch: 24L0029			
% Solids	81.0	---	1.00	%	1	12/03/24 05:32	EPA 8000D		
BH-RI-S72-2'-3' (A4K1723-08)				Matrix: Soil		Batch: 24L0104			
% Solids	70.8	---	1.00	%	1	12/05/24 05:41	EPA 8000D		
BH-RI-S73-8'-9' (A4K1723-10)				Matrix: Soil		Batch: 24L0029			
% Solids	69.1	---	1.00	%	1	12/03/24 05:32	EPA 8000D		
BH-RI-S74-9'-10' (A4K1723-12)				Matrix: Soil		Batch: 24L0029			
% Solids	74.5	---	1.00	%	1	12/03/24 05:32	EPA 8000D		

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0057 - EPA 3546 (Fuels)						Soil						
Blank (24L0057-BLK1)						Prepared: 12/03/24 09:04 Analyzed: 12/03/24 19:49						
<u>NWTPH-Dx</u>												
Diesel	ND	---	20.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	40.0	mg/kg wet	1	---	---	---	---	---	---	
Mineral Oil	ND	---	40.0	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
LCS (24L0057-BS1)						Prepared: 12/03/24 09:04 Analyzed: 12/03/24 20:09						
<u>NWTPH-Dx</u>												
Diesel	121	---	20.0	mg/kg wet	1	125	---	97	38-132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (24L0057-DUP1)						Prepared: 12/03/24 09:04 Analyzed: 12/03/24 23:12						
<u>QC Source Sample: Non-SDG (A4K1703-01)</u>												
Diesel	ND	---	19.5	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	---	39.0	mg/kg dry	1	---	ND	---	---	---	30%	
Mineral Oil	444	---	39.0	mg/kg dry	1	---	483	---	---	8	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 89 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (24L0057-DUP2)						Prepared: 12/03/24 09:04 Analyzed: 12/04/24 00:32						
<u>QC Source Sample: Non-SDG (A4L0806-21)</u>												
Diesel	ND	---	23.4	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	---	46.7	mg/kg dry	1	---	ND	---	---	---	30%	
Mineral Oil	ND	---	46.7	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 87 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Batch 24L0162 - EPA 3546 (Fuels)						Soil						
Blank (24L0162-BLK1)						Prepared: 12/05/24 10:52 Analyzed: 12/05/24 20:59						
<u>NWTPH-Dx</u>												
Diesel	ND	---	20.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	40.0	mg/kg wet	1	---	---	---	---	---	---	
Mineral Oil	ND	---	40.0	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 84 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0162 - EPA 3546 (Fuels)						Soil						
LCS (24L0162-BS1)						Prepared: 12/05/24 10:52 Analyzed: 12/05/24 21:19						
<u>NWTPH-Dx</u>												
Diesel	107	---	20.0	mg/kg wet	1	125	---	86	38-132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 87 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (24L0162-DUP1)						Prepared: 12/05/24 10:52 Analyzed: 12/05/24 22:00						
<u>QC Source Sample: BH-RI-S68-2'-3' (A4K1723-01)</u>												
<u>NWTPH-Dx</u>												
Diesel	ND	---	18.7	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	---	37.3	mg/kg dry	1	---	ND	---	---	---	30%	
Mineral Oil	ND	---	37.3	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 83 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (24L0162-DUP3)						Prepared: 12/05/24 10:52 Analyzed: 12/06/24 08:14						
<u>QC Source Sample: Non-SDG (A4L0922-01RE1)</u>												
Diesel	ND	---	225	mg/kg dry	10	---	ND	---	---	---	30%	
Oil	1590	---	450	mg/kg dry	10	---	1330	---	---	---	18	30%
Mineral Oil	472	---	450	mg/kg dry	10	---	398	---	---	---	17	30%
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 77 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 10x</i>						<i>S-05</i>

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0062 - EPA 3546												
Soil												
Blank (24L0062-BLK1)												
Prepared: 12/03/24 10:35 Analyzed: 12/03/24 14:04												
<u>EPA 8270E SIM</u>												
Acenaphthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Acenaphthylene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Anthracene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benz(a)anthracene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(b)fluoranthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(k)fluoranthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Chrysene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Dibenz(a,h)anthracene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Fluoranthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Fluorene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
1-Methylnaphthalene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
2-Methylnaphthalene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Naphthalene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Phenanthrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Pyrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Dibenzofuran	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Surr: 2-Fluorobiphenyl (Surr)		Recovery: 94 %		Limits: 44-120 %		Dilution: 1x						
p-Terphenyl-d14 (Surr)		92 %		54-127 %		"						

LCS (24L0062-BS1)												
Prepared: 12/03/24 10:35 Analyzed: 12/03/24 14:29												
<u>EPA 8270E SIM</u>												
Acenaphthene	792	---	10.0	ug/kg wet	1	800	---	99	40-123%	---	---	---
Acenaphthylene	788	---	10.0	ug/kg wet	1	800	---	99	32-132%	---	---	---
Anthracene	799	---	10.0	ug/kg wet	1	800	---	100	47-123%	---	---	---
Benz(a)anthracene	764	---	10.0	ug/kg wet	1	800	---	95	49-126%	---	---	---
Benzo(a)pyrene	832	---	10.0	ug/kg wet	1	800	---	104	45-129%	---	---	---
Benzo(b)fluoranthene	810	---	10.0	ug/kg wet	1	800	---	101	45-132%	---	---	---
Benzo(k)fluoranthene	816	---	10.0	ug/kg wet	1	800	---	102	47-132%	---	---	---
Benzo(g,h,i)perylene	734	---	10.0	ug/kg wet	1	800	---	92	43-134%	---	---	---
Chrysene	788	---	10.0	ug/kg wet	1	800	---	98	50-124%	---	---	---

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0062 - EPA 3546						Soil						
LCS (24L0062-BS1)			Prepared: 12/03/24 10:35			Analyzed: 12/03/24 14:29						
Dibenz(a,h)anthracene	794	---	10.0	ug/kg wet	1	800	---	99	45-134%	---	---	
Fluoranthene	841	---	10.0	ug/kg wet	1	800	---	105	50-127%	---	---	
Fluorene	799	---	10.0	ug/kg wet	1	800	---	100	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	747	---	10.0	ug/kg wet	1	800	---	93	45-133%	---	---	
1-Methylnaphthalene	758	---	10.0	ug/kg wet	1	800	---	95	40-120%	---	---	
2-Methylnaphthalene	737	---	10.0	ug/kg wet	1	800	---	92	38-122%	---	---	
Naphthalene	762	---	10.0	ug/kg wet	1	800	---	95	35-123%	---	---	
Phenanthrene	777	---	10.0	ug/kg wet	1	800	---	97	50-121%	---	---	
Pyrene	848	---	10.0	ug/kg wet	1	800	---	106	47-127%	---	---	
Dibenzofuran	782	---	10.0	ug/kg wet	1	800	---	98	44-120%	---	---	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>82 %</i>		<i>54-127 %</i>		"						

Duplicate (24L0062-DUP1)			Prepared: 12/03/24 10:35			Analyzed: 12/03/24 15:19						
QC Source Sample: BH-RI-S68-9'-10' (A4K1723-02)												
EPA 8270E SIM												
Acenaphthene	ND	---	13.5	ug/kg dry	1	---	ND	---	---	---	30%	
Acenaphthylene	ND	---	13.5	ug/kg dry	1	---	ND	---	---	---	30%	
Anthracene	ND	---	13.5	ug/kg dry	1	---	ND	---	---	---	30%	
Benz(a)anthracene	29.3	---	13.5	ug/kg dry	1	---	42.4	---	---	37	30%	Q-05
Benzo(a)pyrene	98.1	---	13.5	ug/kg dry	1	---	145	---	---	38	30%	Q-17
Benzo(b)fluoranthene	115	---	13.5	ug/kg dry	1	---	181	---	---	44	30%	Q-17
Benzo(k)fluoranthene	33.6	---	13.5	ug/kg dry	1	---	52.3	---	---	44	30%	M-05, Q-05
Benzo(g,h,i)perylene	250	---	13.5	ug/kg dry	1	---	355	---	---	35	30%	Q-17
Chrysene	41.8	---	13.5	ug/kg dry	1	---	61.4	---	---	38	30%	Q-05
Dibenz(a,h)anthracene	13.9	---	13.5	ug/kg dry	1	---	19.8	---	---	35	30%	Q-05
Fluoranthene	31.3	---	13.5	ug/kg dry	1	---	44.3	---	---	35	30%	Q-05
Fluorene	ND	---	13.5	ug/kg dry	1	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	169	---	13.5	ug/kg dry	1	---	242	---	---	36	30%	Q-17
1-Methylnaphthalene	ND	---	13.5	ug/kg dry	1	---	ND	---	---	---	30%	
2-Methylnaphthalene	ND	---	13.5	ug/kg dry	1	---	ND	---	---	---	30%	
Naphthalene	20.7	---	13.5	ug/kg dry	1	---	36.0	---	---	54	30%	Q-05
Phenanthrene	16.8	---	13.5	ug/kg dry	1	---	21.8	---	---	26	30%	
Pyrene	53.2	---	13.5	ug/kg dry	1	---	53.0	---	---	0.3	30%	

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ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0062 - EPA 3546						Soil						
Duplicate (24L0062-DUP1)						Prepared: 12/03/24 10:35 Analyzed: 12/03/24 15:19						
QC Source Sample: BH-RI-S68-9'-10' (A4K1723-02)												
Dibenzofuran	ND	---	13.5	ug/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 77 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>68 %</i>		<i>54-127 %</i>		<i>"</i>						

Matrix Spike (24L0062-MS1)						Prepared: 12/03/24 10:35 Analyzed: 12/03/24 16:10						
QC Source Sample: BH-RI-S74-9'-10' (A4K1723-12)												
EPA 8270E SIM												
Acenaphthene	881	---	11.5	ug/kg dry	1	924	ND	95	40-123%	---	---	
Acenaphthylene	974	---	11.5	ug/kg dry	1	924	47.0	100	32-132%	---	---	
Anthracene	958	---	11.5	ug/kg dry	1	924	60.3	97	47-123%	---	---	
Benz(a)anthracene	931	---	11.5	ug/kg dry	1	924	37.1	97	49-126%	---	---	
Benzo(a)pyrene	1130	---	11.5	ug/kg dry	1	924	111	111	45-129%	---	---	
Benzo(b)fluoranthene	959	---	11.5	ug/kg dry	1	924	54.2	98	45-132%	---	---	
Benzo(k)fluoranthene	925	---	11.5	ug/kg dry	1	924	12.4	99	47-132%	---	---	
Benzo(g,h,i)perylene	847	---	11.5	ug/kg dry	1	924	70.4	84	43-134%	---	---	
Chrysene	1010	---	11.5	ug/kg dry	1	924	95.8	99	50-124%	---	---	
Dibenz(a,h)anthracene	912	---	11.5	ug/kg dry	1	924	11.8	97	45-134%	---	---	
Fluoranthene	1010	---	11.5	ug/kg dry	1	924	38.2	105	50-127%	---	---	
Fluorene	931	---	11.5	ug/kg dry	1	924	16.5	99	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	910	---	11.5	ug/kg dry	1	924	67.0	91	45-133%	---	---	
1-Methylnaphthalene	841	---	11.5	ug/kg dry	1	924	ND	91	40-120%	---	---	
2-Methylnaphthalene	843	---	11.5	ug/kg dry	1	924	11.7	90	38-122%	---	---	
Naphthalene	892	---	11.5	ug/kg dry	1	924	20.4	94	35-123%	---	---	
Phenanthrene	861	---	11.5	ug/kg dry	1	924	ND	93	50-121%	---	---	
Pyrene	1110	---	11.5	ug/kg dry	1	924	92.9	110	47-127%	---	---	
Dibenzofuran	889	---	11.5	ug/kg dry	1	924	8.80	95	44-120%	---	---	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 87 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>79 %</i>		<i>54-127 %</i>		<i>"</i>						

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Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0110 - EPA 3546												
Soil												
Blank (24L0110-BLK1)												
Prepared: 12/04/24 10:49 Analyzed: 12/04/24 14:45												
<u>EPA 8270E SIM</u>												
Acenaphthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Acenaphthylene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Anthracene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benz(a)anthracene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(b)fluoranthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(k)fluoranthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Chrysene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Dibenz(a,h)anthracene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Fluoranthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Fluorene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
1-Methylnaphthalene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
2-Methylnaphthalene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Naphthalene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Phenanthrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Pyrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Dibenzofuran	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 100 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>93 %</i>		<i>54-127 %</i>		<i>"</i>						

LCS (24L0110-BS1)												
Prepared: 12/04/24 10:49 Analyzed: 12/04/24 15:10												
<u>EPA 8270E SIM</u>												
Acenaphthene	828	---	10.0	ug/kg wet	1	800	---	104	40-123%	---	---	---
Acenaphthylene	841	---	10.0	ug/kg wet	1	800	---	105	32-132%	---	---	---
Anthracene	868	---	10.0	ug/kg wet	1	800	---	109	47-123%	---	---	---
Benz(a)anthracene	819	---	10.0	ug/kg wet	1	800	---	102	49-126%	---	---	---
Benzo(a)pyrene	893	---	10.0	ug/kg wet	1	800	---	112	45-129%	---	---	---
Benzo(b)fluoranthene	929	---	10.0	ug/kg wet	1	800	---	116	45-132%	---	---	---
Benzo(k)fluoranthene	953	---	10.0	ug/kg wet	1	800	---	119	47-132%	---	---	---
Benzo(g,h,i)perylene	763	---	10.0	ug/kg wet	1	800	---	95	43-134%	---	---	---
Chrysene	855	---	10.0	ug/kg wet	1	800	---	107	50-124%	---	---	---

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Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0110 - EPA 3546						Soil						
LCS (24L0110-BS1)			Prepared: 12/04/24 10:49			Analyzed: 12/04/24 15:10						
Dibenz(a,h)anthracene	856	---	10.0	ug/kg wet	1	800	---	107	45-134%	---	---	
Fluoranthene	936	---	10.0	ug/kg wet	1	800	---	117	50-127%	---	---	
Fluorene	863	---	10.0	ug/kg wet	1	800	---	108	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	804	---	10.0	ug/kg wet	1	800	---	101	45-133%	---	---	
1-Methylnaphthalene	801	---	10.0	ug/kg wet	1	800	---	100	40-120%	---	---	
2-Methylnaphthalene	790	---	10.0	ug/kg wet	1	800	---	99	38-122%	---	---	
Naphthalene	808	---	10.0	ug/kg wet	1	800	---	101	35-123%	---	---	
Phenanthrene	850	---	10.0	ug/kg wet	1	800	---	106	50-121%	---	---	
Pyrene	944	---	10.0	ug/kg wet	1	800	---	118	47-127%	---	---	
Dibenzofuran	835	---	10.0	ug/kg wet	1	800	---	104	44-120%	---	---	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>88 %</i>		<i>54-127 %</i>		"						

Duplicate (24L0110-DUP1) Prepared: 12/04/24 10:49 Analyzed: 12/04/24 16:00

QC Source Sample: BH-RI-S68-2'-3' (A4K1723-01)

EPA 8270E SIM

Acenaphthene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Acenaphthylene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Anthracene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Benz(a)anthracene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Benzo(a)pyrene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Benzo(b)fluoranthene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Benzo(k)fluoranthene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Benzo(g,h,i)perylene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Chrysene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Dibenz(a,h)anthracene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Fluoranthene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Fluorene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Indeno(1,2,3-cd)pyrene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
1-Methylnaphthalene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
2-Methylnaphthalene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Naphthalene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Phenanthrene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%
Pyrene	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%

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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0110 - EPA 3546						Soil						
Duplicate (24L0110-DUP1)						Prepared: 12/04/24 10:49 Analyzed: 12/04/24 16:00						
QC Source Sample: BH-RI-S68-2'-3' (A4K1723-01)												
Dibenzofuran	ND	---	9.38	ug/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 90 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>87 %</i>		<i>54-127 %</i>		<i>"</i>						

Matrix Spike (24L0110-MS1)						Prepared: 12/04/24 10:49 Analyzed: 12/04/24 16:51						
QC Source Sample: BH-RI-S72-2'-3' (A4K1723-08)												
EPA 8270E SIM												
Acenaphthene	1040	---	127	ug/kg dry	10	1020	ND	102	40-123%	---	---	
Acenaphthylene	1120	---	127	ug/kg dry	10	1020	197	90	32-132%	---	---	
Anthracene	1160	---	127	ug/kg dry	10	1020	233	91	47-123%	---	---	
Benz(a)anthracene	2160	---	127	ug/kg dry	10	1020	2770	-59	49-126%	---	---	Q-03
Benzo(a)pyrene	5840	---	127	ug/kg dry	10	1020	11900	-596	45-129%	---	---	Q-03
Benzo(b)fluoranthene	5490	---	127	ug/kg dry	10	1020	10700	-514	45-132%	---	---	Q-03
Benzo(k)fluoranthene	2680	---	127	ug/kg dry	10	1020	3550	-85	47-132%	---	---	Q-03
Benzo(g,h,i)perylene	9690	---	127	ug/kg dry	10	1020	21500	-1160	43-134%	---	---	Q-03
Chrysene	2380	---	127	ug/kg dry	10	1020	3170	-78	50-124%	---	---	Q-03
Dibenz(a,h)anthracene	1550	---	127	ug/kg dry	10	1020	1450	10	45-134%	---	---	Q-03
Fluoranthene	2320	---	127	ug/kg dry	10	1020	2950	-62	50-127%	---	---	Q-03
Fluorene	1070	---	127	ug/kg dry	10	1020	ND	105	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	7600	---	127	ug/kg dry	10	1020	15800	-809	45-133%	---	---	Q-03
1-Methylnaphthalene	985	---	127	ug/kg dry	10	1020	ND	97	40-120%	---	---	
2-Methylnaphthalene	979	---	127	ug/kg dry	10	1020	ND	96	38-122%	---	---	
Naphthalene	1050	---	127	ug/kg dry	10	1020	79.1	95	35-123%	---	---	
Phenanthrene	1240	---	127	ug/kg dry	10	1020	525	71	50-121%	---	---	
Pyrene	2590	---	127	ug/kg dry	10	1020	3620	-100	47-127%	---	---	Q-03
Dibenzofuran	1050	---	127	ug/kg dry	10	1020	ND	103	44-120%	---	---	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 91 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 10x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>88 %</i>		<i>54-127 %</i>		<i>"</i>						

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Philip Nerenberg, Lab Director

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0312 - EPA 3051A						Soil						
Blank (24L0312-BLK1)						Prepared: 12/10/24 08:41 Analyzed: 12/10/24 22:34						
<u>EPA 6020B</u>												
Arsenic	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Lead	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
LCS (24L0312-BS1)						Prepared: 12/10/24 08:41 Analyzed: 12/10/24 22:44						
<u>EPA 6020B</u>												
Arsenic	49.3	---	1.00	mg/kg wet	10	50.0	---	99	80-120%	---	---	
Lead	53.6	---	0.200	mg/kg wet	10	50.0	---	107	80-120%	---	---	
Duplicate (24L0312-DUP1)						Prepared: 12/10/24 08:41 Analyzed: 12/10/24 22:55						
<u>QC Source Sample: BH-RI-S68-2'-3' (A4K1723-01)</u>												
<u>EPA 6020B</u>												
Arsenic	1.67	---	1.03	mg/kg dry	10	---	1.96	---	---	16	20%	
Lead	4.13	---	0.206	mg/kg dry	10	---	4.37	---	---	6	20%	
Matrix Spike (24L0312-MS1)						Prepared: 12/10/24 08:41 Analyzed: 12/10/24 23:00						
<u>QC Source Sample: BH-RI-S68-2'-3' (A4K1723-01)</u>												
<u>EPA 6020B</u>												
Arsenic	55.4	---	1.10	mg/kg dry	10	54.9	1.96	97	75-125%	---	---	
Lead	58.6	---	0.220	mg/kg dry	10	54.9	4.37	99	75-125%	---	---	

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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

TCLP Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 25A0034 - EPA 1311/3015A						Soil						
Blank (25A0034-BLK1)			Prepared: 01/02/25 11:25 Analyzed: 01/03/25 00:10									
<u>1311/6020B</u>												
Arsenic	ND	---	0.100	mg/L	10	---	---	---	---	---	---	TCLP
Lead	ND	---	0.0500	mg/L	10	---	---	---	---	---	---	TCLP
LCS (25A0034-BS1)			Prepared: 01/02/25 11:25 Analyzed: 01/03/25 00:15									
<u>1311/6020B</u>												
Arsenic	5.07	---	0.100	mg/L	10	5.00	---	101	80-120%	---	---	TCLP
Lead	5.09	---	0.0500	mg/L	10	5.00	---	102	80-120%	---	---	TCLP
Duplicate (25A0034-DUP1)			Prepared: 01/02/25 11:25 Analyzed: 01/03/25 00:25									
<u>QC Source Sample: BH-RI-S68-9'-10' (A4K1723-02)</u>												
<u>1311/6020B</u>												
Arsenic	ND	---	0.100	mg/L	10	---	ND	---	---	---	20%	
Lead	ND	---	0.0500	mg/L	10	---	0.0339	---	---	***	20%	
Matrix Spike (25A0034-MS1)			Prepared: 01/02/25 11:25 Analyzed: 01/03/25 00:41									
<u>QC Source Sample: BH-RI-S68-9'-10' (A4K1723-02)</u>												
<u>1311/6020B</u>												
Arsenic	5.18	---	0.100	mg/L	10	5.00	ND	104	50-150%	---	---	
Lead	5.20	---	0.0500	mg/L	10	5.00	0.0339	103	50-150%	---	---	
Matrix Spike (25A0034-MS2)			Prepared: 01/02/25 11:25 Analyzed: 01/03/25 01:08									
<u>QC Source Sample: Non-SDG (A4L1258-01)</u>												
<u>1311/6020B</u>												
Arsenic	5.14	---	0.100	mg/L	10	5.00	ND	103	50-150%	---	---	
Lead	5.26	---	0.0500	mg/L	10	5.00	0.130	103	50-150%	---	---	

Apex Laboratories

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

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6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0029 - Dry Weight Prep (EPA 8000D)						Soil						
Duplicate (24L0029-DUP1)			Prepared: 12/02/24 12:14 Analyzed: 12/03/24 05:32									
<u>QC Source Sample: Non-SDG (A4K1714-01)</u>												
% Solids	73.4	---	1.00	%	1	---	73.6	---	---	0.3	10%	
Duplicate (24L0029-DUP2)			Prepared: 12/02/24 12:14 Analyzed: 12/03/24 05:32									
<u>QC Source Sample: Non-SDG (A4K1714-02)</u>												
% Solids	40.6	---	1.00	%	1	---	43.6	---	---	7	10%	
Duplicate (24L0029-DUP3)			Prepared: 12/02/24 12:14 Analyzed: 12/03/24 05:32									
<u>QC Source Sample: Non-SDG (A4K1714-03)</u>												
% Solids	72.2	---	1.00	%	1	---	71.0	---	---	2	10%	
Duplicate (24L0029-DUP4)			Prepared: 12/02/24 18:25 Analyzed: 12/03/24 05:32									
<u>QC Source Sample: Non-SDG (A4L0820-01)</u>												
% Solids	71.9	---	1.00	%	1	---	72.0	---	---	0.07	10%	

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 24L0104 - Dry Weight Prep (EPA 8000D)						Soil							
Duplicate (24L0104-DUP1)			Prepared: 12/04/24 09:12 Analyzed: 12/05/24 05:41						COMP				
<u>QC Source Sample: Non-SDG (A4J1487-AL)</u>													
% Solids	85.0	---	1.00	%	1	---	84.9	---	---	0.1	10%		
Duplicate (24L0104-DUP2)			Prepared: 12/04/24 09:12 Analyzed: 12/05/24 05:41						COMP				
<u>QC Source Sample: Non-SDG (A4J1487-AM)</u>													
% Solids	85.2	---	1.00	%	1	---	84.9	---	---	0.4	10%		
Duplicate (24L0104-DUP3)			Prepared: 12/04/24 09:12 Analyzed: 12/05/24 05:41						COMP				
<u>QC Source Sample: Non-SDG (A4J1487-AN)</u>													
% Solids	84.1	---	1.00	%	1	---	84.1	---	---	0.05	10%		
Duplicate (24L0104-DUP4)			Prepared: 12/04/24 09:12 Analyzed: 12/05/24 05:41						COMP				
<u>QC Source Sample: Non-SDG (A4J1487-AO)</u>													
% Solids	85.0	---	1.00	%	1	---	84.5	---	---	0.6	10%		
Duplicate (24L0104-DUP5)			Prepared: 12/04/24 18:58 Analyzed: 12/05/24 05:41						COMP				
<u>QC Source Sample: Non-SDG (A4L0899-01)</u>													
% Solids	78.9	---	1.00	%	1	---	85.3	---	---	8	10%		
Duplicate (24L0104-DUP6)			Prepared: 12/04/24 18:58 Analyzed: 12/05/24 05:41						COMP				
<u>QC Source Sample: Non-SDG (A4L0915-02)</u>													
% Solids	80.6	---	1.00	%	1	---	81.5	---	---	1	10%		

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 24L0057</u>							
A4K1723-02	Soil	NWTPH-Dx	11/26/24 10:10	12/03/24 09:04	11.73g/5mL	10g/5mL	0.85
A4K1723-04	Soil	NWTPH-Dx	11/26/24 10:40	12/03/24 09:04	11.56g/5mL	10g/5mL	0.87
A4K1723-06	Soil	NWTPH-Dx	11/26/24 10:55	12/03/24 09:04	11.09g/5mL	10g/5mL	0.90
A4K1723-10	Soil	NWTPH-Dx	11/26/24 12:45	12/03/24 09:04	11.56g/5mL	10g/5mL	0.87
A4K1723-12	Soil	NWTPH-Dx	11/26/24 11:15	12/03/24 09:04	11.82g/5mL	10g/5mL	0.85
<u>Batch: 24L0162</u>							
A4K1723-01	Soil	NWTPH-Dx	11/26/24 10:05	12/05/24 10:52	11.54g/5mL	10g/5mL	0.87
A4K1723-05	Soil	NWTPH-Dx	11/26/24 10:50	12/05/24 10:52	11.88g/5mL	10g/5mL	0.84
A4K1723-08RE1	Soil	NWTPH-Dx	11/26/24 12:00	12/05/24 10:52	11.79g/5mL	10g/5mL	0.85

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 24L0062</u>							
A4K1723-02	Soil	EPA 8270E SIM	11/26/24 10:10	12/03/24 10:35	11.41g/5mL	10g/5mL	0.88
A4K1723-04	Soil	EPA 8270E SIM	11/26/24 10:40	12/03/24 10:35	11.59g/5mL	10g/5mL	0.86
A4K1723-06	Soil	EPA 8270E SIM	11/26/24 10:55	12/03/24 10:35	11.32g/5mL	10g/5mL	0.88
A4K1723-10	Soil	EPA 8270E SIM	11/26/24 12:45	12/03/24 10:35	11.02g/5mL	10g/5mL	0.91
A4K1723-12	Soil	EPA 8270E SIM	11/26/24 11:15	12/03/24 10:35	11.12g/5mL	10g/5mL	0.90
<u>Batch: 24L0110</u>							
A4K1723-01	Soil	EPA 8270E SIM	11/26/24 10:05	12/04/24 10:49	11.78g/5mL	10g/5mL	0.85
A4K1723-05	Soil	EPA 8270E SIM	11/26/24 10:50	12/04/24 10:49	11.31g/5mL	10g/5mL	0.88
A4K1723-08	Soil	EPA 8270E SIM	11/26/24 12:00	12/04/24 10:49	11.36g/5mL	10g/5mL	0.88

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 24L0312</u>							
A4K1723-01	Soil	EPA 6020B	11/26/24 10:05	12/10/24 08:41	0.468g/50mL	0.5g/50mL	1.07
A4K1723-02	Soil	EPA 6020B	11/26/24 10:10	12/10/24 08:41	0.476g/50mL	0.5g/50mL	1.05
A4K1723-02RE1	Soil	EPA 6020B	11/26/24 10:10	12/10/24 08:41	0.476g/50mL	0.5g/50mL	1.05
A4K1723-04	Soil	EPA 6020B	11/26/24 10:40	12/10/24 08:41	0.472g/50mL	0.5g/50mL	1.06
A4K1723-05	Soil	EPA 6020B	11/26/24 10:50	12/10/24 08:41	0.503g/50mL	0.5g/50mL	0.99

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SAMPLE PREPARATION INFORMATION

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3051A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
A4K1723-06	Soil	EPA 6020B	11/26/24 10:55	12/10/24 08:41	0.475g/50mL	0.5g/50mL	1.05
A4K1723-06RE1	Soil	EPA 6020B	11/26/24 10:55	12/10/24 08:41	0.475g/50mL	0.5g/50mL	1.05
A4K1723-08	Soil	EPA 6020B	11/26/24 12:00	12/10/24 08:41	0.481g/50mL	0.5g/50mL	1.04
A4K1723-10	Soil	EPA 6020B	11/26/24 12:45	12/10/24 08:41	0.478g/50mL	0.5g/50mL	1.05
A4K1723-12	Soil	EPA 6020B	11/26/24 11:15	12/10/24 08:41	0.512g/50mL	0.5g/50mL	0.98

TCLP Metals by EPA 6020B (ICPMS)

Prep: EPA 1311/3015A					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 25A0034</u>							
A4K1723-02	Soil	1311/6020B	11/26/24 10:10	01/02/25 11:25	10mL/50mL	10mL/50mL	1.00
A4K1723-06	Soil	1311/6020B	11/26/24 10:55	01/02/25 11:25	10mL/50mL	10mL/50mL	1.00
A4K1723-08	Soil	1311/6020B	11/26/24 12:00	01/02/25 11:25	10mL/50mL	10mL/50mL	1.00
A4K1723-12	Soil	1311/6020B	11/26/24 11:15	01/02/25 11:25	10mL/50mL	10mL/50mL	1.00

Percent Dry Weight

Prep: Dry Weight Prep (EPA 8000D)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 24L0029</u>							
A4K1723-02	Soil	EPA 8000D	11/26/24 10:10	12/02/24 12:14	1g	1g	1.00
A4K1723-04	Soil	EPA 8000D	11/26/24 10:40	12/02/24 12:14	1g	1g	1.00
A4K1723-06	Soil	EPA 8000D	11/26/24 10:55	12/02/24 12:14	1g	1g	1.00
A4K1723-10	Soil	EPA 8000D	11/26/24 12:45	12/02/24 12:14	1g	1g	1.00
A4K1723-12	Soil	EPA 8000D	11/26/24 11:15	12/02/24 12:14	1g	1g	1.00
<u>Batch: 24L0104</u>							
A4K1723-01	Soil	EPA 8000D	11/26/24 10:05	12/04/24 09:12	1g	1g	1.00
A4K1723-05	Soil	EPA 8000D	11/26/24 10:50	12/04/24 09:12	1g	1g	1.00
A4K1723-08	Soil	EPA 8000D	11/26/24 12:00	12/04/24 09:12	1g	1g	1.00

TCLP Extraction by EPA 1311

Prep: EPA 1311 (TCLP)					Sample	Default	RL Prep
Lab Number	Matrix	Method	Sampled	Prepared	Initial/Final	Initial/Final	Factor
<u>Batch: 24L1092</u>							
A4K1723-02	Soil	EPA 1311	11/26/24 10:10	01/01/25 12:31	99.9g/2000g	100g/2000g	NA

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SAMPLE PREPARATION INFORMATION

TCLP Extraction by EPA 1311

Prep: EPA 1311 (TCLP)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
A4K1723-06	Soil	EPA 1311	11/26/24 10:55	01/01/25 12:31	100g/2001g	100g/2000g	NA
A4K1723-08	Soil	EPA 1311	11/26/24 12:00	01/01/25 12:31	99.9g/2002g	100g/2000g	NA
A4K1723-12	Soil	EPA 1311	11/26/24 11:15	01/01/25 12:31	100g/2003g	100g/2000g	NA

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

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Table with 3 columns: Client (Stantec Portland), Project (Blue Heron Focused Remedial Investigation), and Report ID (A4K1723 - 01 03 25 1509).

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- COMP Analyzed sample is a composite of discrete samples that was performed in the laboratory.
CONT The Sample Container provided for this analysis was not provided by Apex Laboratories, and has not been verified as part of the Apex Quality System.
F-11 The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component.
F-13 The chromatographic pattern does not resemble the fuel standard used for quantitation
F-17 No fuel pattern detected. The Diesel result represents carbon range C10 to C25, and the Oil result represents >C25 to C40.
M-05 Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
Q-03 Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
Q-05 Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
Q-17 RPD between original and duplicate sample, or spike duplicates, is outside of established control limits.
Q-42 Matrix Spike and/or Duplicate analysis was performed on this sample. % Recovery or RPD for this analyte is outside laboratory control limits. (Refer to the QC Section of Analytical Report.)
S-01 Surrogate recovery for this sample is not available due to sample dilution required from high analyte concentration and/or matrix interference.
S-05 Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.
TCLP This batch QC sample was prepared with TCLP or SPLP fluid from preparation batch 24L1092.

Apex Laboratories

Philip Nerenberg (signature)

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Validated Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.

The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.

"dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")

See Percent Solids section for details of dry weight analysis.

"wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.

" " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

Results for Volatiles analyses on soils and sediments that are reported on a "dry weight" basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an "As Received" basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to one half of the Reporting Limit (RL). Blank results for gravimetric analyses are evaluated to the Reporting Level, not to half of the Reporting Level.

- For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
- For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.

For further details, please request a copy of this document.

- Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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Decanted Samples:

Soils/Sediments:

Unless TCLP analysis is required or there is notification otherwise for a specific project, all Soil and Sediments containing excess water are decanted prior to analysis in order to provide the most representative sample for analysis.

Water Samples:

Water samples containing solids and sediment may need to be decanted in order to eliminate these particulates from the water extractions. In the case of organics extractions, a solvent rinse of the container will not be performed.

Volatiles Soils (5035s)

Samples that are field preserved by 5035 for volatiles are dry weight corrected using the same dry weight correction as for normal analyses. In the case of decanted samples, the dry weight may be performed on a decanted sample, while the aliquot for 5035 may not have been treated the same way. If this is a concern, please submit separate containers for dry weight analysis for volatiles can be provided.

All samples decanted in the laboratory are noted in this report with the DCNT qualifier indicating the sample was decanted.

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LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) -
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
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All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4K1723 - 01 03 25 1509
--	---	---

APEX LABS
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # A4K1723 COC 2 of 2

Project Name: **BLUE HERON ASP, VST**

Project #: _____ PO # _____

Phone: _____ Email: _____

Project Mgr: _____

Company: **STANTEC**

Sampled by: **ROBERT MICALISTER**

Site Location: _____

State: OR

County: CLATSOP

SAMPLE ID: BH-03-574-2'-3'
574-9'-10'

DATE: 11/26
11/15

TIME: 1110
1115

MATRIX: 1

OF CONTAINERS: 1

DATE: 11/26

TIME: 1110

DATE: 11/26

TIME: 1115

DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-DX	NWTPH-CX	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8278 SIM PAHs	8278 Semi-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	AL, Sb, As, Ba, Be, Bi, Cd, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, P, Se, Ag, Na, Ti, V, Zn	TOTAL DISS. TCLP	TCLP Metals (9)	Hold Sample	Frozen Archive
					<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 5 Day 1 Day 2 Day 3 Day Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY:		RECEIVED BY:	
Signature: _____	Date: _____	Signature: <u>[Signature]</u>	Date: <u>11/27/24</u>
Printed Name: <u>ROBERT MICALISTER</u>	Time: <u>1300</u>	Printed Name: <u>Kathryn Morrison</u>	Time: <u>13:00</u>
Company: <u>STANTEC</u>		Company: <u>Apex</u>	

Form 1-002 R-00

Apex Laboratories

Philip Nerenberg

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Thursday, December 26, 2024

Len Farr
Stantec Portland
601 SW 2nd Ave Suite 1400
Portland, OR 97204

RE: A4L0957 - Blue Heron Focused Remedial Investigation - 185705769

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A4L0957, which was received by the laboratory on 12/5/2024 at 1:30:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information	
<p><u>Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.</u></p> <p>(See Cooler Receipt Form for details)</p>	
<p>Default Cooler</p> <hr style="width: 80%; margin-left: 0;"/>	<p>3.6 degC</p>

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

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503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4L0957 - 12 26 24 1143
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH-RI-MW-4-7'-8'	A4L0957-02	Soil	12/04/24 10:25	12/05/24 13:30
BH-RI-MW-5-2'-3'	A4L0957-03	Soil	12/04/24 12:15	12/05/24 13:30
BH-RI-MW-5-27'-28'	A4L0957-04	Soil	12/04/24 13:30	12/05/24 13:30
BH-RI-FD05	A4L0957-05	Soil	12/04/24 13:40	12/05/24 13:30

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Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4L0957 - 12 26 24 1143
--	---	---

ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-MW-4-7'-8' (A4L0957-02)				Matrix: Soil		Batch: 24L0196		
Diesel	ND	---	19.8	mg/kg dry	1	12/06/24 21:19	NWTPH-Dx	
Oil	ND	---	39.7	mg/kg dry	1	12/06/24 21:19	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 89 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/06/24 21:19</i>	<i>NWTPH-Dx</i>	
BH-RI-MW-5-2'-3' (A4L0957-03)				Matrix: Soil		Batch: 24L0196		
Diesel	ND	---	17.7	mg/kg dry	1	12/06/24 22:00	NWTPH-Dx	
Oil	ND	---	35.5	mg/kg dry	1	12/06/24 22:00	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 94 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/06/24 22:00</i>	<i>NWTPH-Dx</i>	
BH-RI-MW-5-27'-28' (A4L0957-04)				Matrix: Soil		Batch: 24L0196		
Diesel	ND	---	20.7	mg/kg dry	1	12/06/24 22:20	NWTPH-Dx	
Oil	ND	---	41.4	mg/kg dry	1	12/06/24 22:20	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 91 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/06/24 22:20</i>	<i>NWTPH-Dx</i>	
BH-RI-FD05 (A4L0957-05)				Matrix: Soil		Batch: 24L0196		
Diesel	ND	---	19.6	mg/kg dry	1	12/06/24 23:02	NWTPH-Dx	
Oil	ND	---	39.3	mg/kg dry	1	12/06/24 23:02	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 81 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>12/06/24 23:02</i>	<i>NWTPH-Dx</i>	

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Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

Apex Laboratories, LLC

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Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4L0957 - 12 26 24 1143
--	---	---

ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-MW-4-7'-8' (A4L0957-02)				Matrix: Soil		Batch: 24L0214		
Acenaphthene	ND	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Acenaphthylene	ND	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Anthracene	14.1	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Benz(a)anthracene	33.6	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Benzo(a)pyrene	29.1	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Benzo(b)fluoranthene	38.5	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	M-05
Benzo(k)fluoranthene	12.0	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	M-05
Benzo(g,h,i)perylene	20.8	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Chrysene	42.8	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Dibenz(a,h)anthracene	ND	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Fluoranthene	61.3	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Fluorene	ND	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	19.8	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
1-Methylnaphthalene	ND	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
2-Methylnaphthalene	ND	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Naphthalene	ND	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Phenanthrene	79.0	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Pyrene	84.7	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
Dibenzofuran	ND	---	10.3	ug/kg dry	1	12/06/24 16:14	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 72 %</i>		<i>Limits: 44-120 %</i>		<i>1</i>	<i>12/06/24 16:14</i>	<i>EPA 8270E SIM</i>
<i>p-Terphenyl-d14 (Surr)</i>		<i>66 %</i>		<i>54-127 %</i>		<i>1</i>	<i>12/06/24 16:14</i>	<i>EPA 8270E SIM</i>

BH-RI-MW-5-2'-3' (A4L0957-03)				Matrix: Soil		Batch: 24L0214		
Acenaphthene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Acenaphthylene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Anthracene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Benz(a)anthracene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Benzo(a)pyrene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Benzo(b)fluoranthene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Benzo(k)fluoranthene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Benzo(g,h,i)perylene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Chrysene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Dibenz(a,h)anthracene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4L0957 - 12 26 24 1143
--	---	---

ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-MW-5-2'-3' (A4L0957-03)				Matrix: Soil		Batch: 24L0214		
Fluoranthene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Fluorene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
1-Methylnaphthalene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
2-Methylnaphthalene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Naphthalene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Phenanthrene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Pyrene	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
Dibenzofuran	ND	---	9.05	ug/kg dry	1	12/06/24 16:40	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>			<i>Recovery: 83 %</i>	<i>Limits: 44-120 %</i>	<i>1</i>	<i>12/06/24 16:40</i>	<i>EPA 8270E SIM</i>	
<i>p-Terphenyl-d14 (Surr)</i>			<i>85 %</i>	<i>54-127 %</i>	<i>1</i>	<i>12/06/24 16:40</i>	<i>EPA 8270E SIM</i>	
BH-RI-MW-5-27'-28' (A4L0957-04)				Matrix: Soil		Batch: 24L0214		
Acenaphthene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Acenaphthylene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Anthracene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Benz(a)anthracene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Benzo(a)pyrene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Benzo(b)fluoranthene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Benzo(k)fluoranthene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Benzo(g,h,i)perylene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Chrysene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Dibenz(a,h)anthracene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Fluoranthene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Fluorene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
1-Methylnaphthalene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
2-Methylnaphthalene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Naphthalene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Phenanthrene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Pyrene	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
Dibenzofuran	ND	---	10.0	ug/kg dry	1	12/06/24 17:05	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>			<i>Recovery: 83 %</i>	<i>Limits: 44-120 %</i>	<i>1</i>	<i>12/06/24 17:05</i>	<i>EPA 8270E SIM</i>	
<i>p-Terphenyl-d14 (Surr)</i>			<i>81 %</i>	<i>54-127 %</i>	<i>1</i>	<i>12/06/24 17:05</i>	<i>EPA 8270E SIM</i>	

Apex Laboratories

Philip Nerenberg, Lab Director

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ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4L0957 - 12 26 24 1143
--	---	---

ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-MW-5-27'-28' (A4L0957-04)			Matrix: Soil			Batch: 24L0214		
BH-RI-FD05 (A4L0957-05)			Matrix: Soil			Batch: 24L0214		
Acenaphthene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Acenaphthylene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Anthracene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Benz(a)anthracene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Benzo(a)pyrene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Benzo(b)fluoranthene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Benzo(k)fluoranthene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Benzo(g,h,i)perylene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Chrysene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Dibenz(a,h)anthracene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Fluoranthene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Fluorene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Indeno(1,2,3-cd)pyrene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
1-Methylnaphthalene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
2-Methylnaphthalene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Naphthalene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Phenanthrene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Pyrene	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
Dibenzofuran	ND	---	9.76	ug/kg dry	1	12/06/24 17:30	EPA 8270E SIM	
<i>Surrogate: 2-Fluorobiphenyl (Surr)</i>			<i>Recovery: 88 %</i>	<i>Limits: 44-120 %</i>	<i>1</i>	<i>12/06/24 17:30</i>	<i>EPA 8270E SIM</i>	
<i>p-Terphenyl-d14 (Surr)</i>			<i>88 %</i>	<i>54-127 %</i>	<i>1</i>	<i>12/06/24 17:30</i>	<i>EPA 8270E SIM</i>	

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Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4L0957 - 12 26 24 1143
--	---	---

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-MW-4-7'-8' (A4L0957-02)				Matrix: Soil				
Batch: 24L0557								
Arsenic	ND	---	1.24	mg/kg dry	10	12/16/24 22:53	EPA 6020B	
Lead	15.3	---	0.249	mg/kg dry	10	12/16/24 22:53	EPA 6020B	
BH-RI-MW-5-2'-3' (A4L0957-03)				Matrix: Soil				
Batch: 24L0557								
Arsenic	1.13	---	1.10	mg/kg dry	10	12/16/24 22:59	EPA 6020B	
Lead	1.17	---	0.221	mg/kg dry	10	12/16/24 22:59	EPA 6020B	
BH-RI-MW-5-27'-28' (A4L0957-04)				Matrix: Soil				
Batch: 24L0557								
Arsenic	ND	---	1.22	mg/kg dry	10	12/16/24 23:04	EPA 6020B	
Lead	3.31	---	0.244	mg/kg dry	10	12/16/24 23:04	EPA 6020B	
BH-RI-FD05 (A4L0957-05)				Matrix: Soil				
Batch: 24L0557								
Arsenic	ND	---	1.25	mg/kg dry	10	12/16/24 23:09	EPA 6020B	
Lead	3.45	---	0.249	mg/kg dry	10	12/16/24 23:09	EPA 6020B	

Apex Laboratories

Philip Nerenberg, Lab Director

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503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4L0957 - 12 26 24 1143
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ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-RI-MW-4-7'-8' (A4L0957-02)				Matrix: Soil		Batch: 24L0212		
% Solids	87.2	---	1.00	%	1	12/09/24 05:54	EPA 8000D	
BH-RI-MW-5-2'-3' (A4L0957-03)				Matrix: Soil		Batch: 24L0212		
% Solids	95.2	---	1.00	%	1	12/09/24 05:54	EPA 8000D	
BH-RI-MW-5-27'-28' (A4L0957-04)				Matrix: Soil		Batch: 24L0212		
% Solids	86.0	---	1.00	%	1	12/09/24 05:54	EPA 8000D	
BH-RI-FD05 (A4L0957-05)				Matrix: Soil		Batch: 24L0212		
% Solids	88.0	---	1.00	%	1	12/09/24 05:54	EPA 8000D	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0196 - EPA 3546 (Fuels)						Soil						
Blank (24L0196-BLK1)						Prepared: 12/06/24 06:51 Analyzed: 12/06/24 19:57						
<u>NWTPH-Dx</u>												
Diesel	ND	---	20.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	40.0	mg/kg wet	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 84 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
LCS (24L0196-BS1)						Prepared: 12/06/24 06:51 Analyzed: 12/06/24 20:17						
<u>NWTPH-Dx</u>												
Diesel	105	---	20.0	mg/kg wet	1	125	---	84	38-132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 84 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (24L0196-DUP1)						Prepared: 12/06/24 06:51 Analyzed: 12/07/24 00:44						
<u>QC Source Sample: Non-SDG (A4L0929-01)</u>												
Diesel	ND	---	22.3	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	112	---	44.7	mg/kg dry	1	---	128	---	---	13	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 71 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
Duplicate (24L0196-DUP2)						Prepared: 12/06/24 06:51 Analyzed: 12/06/24 23:22						
<u>QC Source Sample: BH-RI-FD05 (A4L0957-05)</u>												
<u>NWTPH-Dx</u>												
Diesel	ND	---	19.4	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	ND	---	38.8	mg/kg dry	1	---	ND	---	---	---	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 82 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0214 - EPA 3546						Soil						
Blank (24L0214-BLK1)			Prepared: 12/06/24 10:31 Analyzed: 12/06/24 13:11									
<u>EPA 8270E SIM</u>												
Acenaphthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Acenaphthylene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Anthracene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benz(a)anthracene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(b)fluoranthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(k)fluoranthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Chrysene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Dibenz(a,h)anthracene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Fluoranthene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Fluorene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
1-Methylnaphthalene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
2-Methylnaphthalene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Naphthalene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Phenanthrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Pyrene	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
Dibenzofuran	ND	---	10.0	ug/kg wet	1	---	---	---	---	---	---	---
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>95 %</i>		<i>54-127 %</i>		"						

LCS (24L0214-BS1)						Prepared: 12/06/24 10:31 Analyzed: 12/06/24 13:36						
<u>EPA 8270E SIM</u>												
Acenaphthene	774	---	10.0	ug/kg wet	1	800	---	97	40-123%	---	---	---
Acenaphthylene	760	---	10.0	ug/kg wet	1	800	---	95	32-132%	---	---	---
Anthracene	778	---	10.0	ug/kg wet	1	800	---	97	47-123%	---	---	---
Benz(a)anthracene	726	---	10.0	ug/kg wet	1	800	---	91	49-126%	---	---	---
Benzo(a)pyrene	758	---	10.0	ug/kg wet	1	800	---	95	45-129%	---	---	---
Benzo(b)fluoranthene	832	---	10.0	ug/kg wet	1	800	---	104	45-132%	---	---	---
Benzo(k)fluoranthene	840	---	10.0	ug/kg wet	1	800	---	105	47-132%	---	---	---
Benzo(g,h,i)perylene	762	---	10.0	ug/kg wet	1	800	---	95	43-134%	---	---	---
Chrysene	757	---	10.0	ug/kg wet	1	800	---	95	50-124%	---	---	---

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0214 - EPA 3546						Soil						
LCS (24L0214-BS1)			Prepared: 12/06/24 10:31			Analyzed: 12/06/24 13:36						
Dibenz(a,h)anthracene	752	---	10.0	ug/kg wet	1	800	---	94	45-134%	---	---	
Fluoranthene	835	---	10.0	ug/kg wet	1	800	---	104	50-127%	---	---	
Fluorene	777	---	10.0	ug/kg wet	1	800	---	97	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	772	---	10.0	ug/kg wet	1	800	---	96	45-133%	---	---	
1-Methylnaphthalene	742	---	10.0	ug/kg wet	1	800	---	93	40-120%	---	---	
2-Methylnaphthalene	724	---	10.0	ug/kg wet	1	800	---	90	38-122%	---	---	
Naphthalene	755	---	10.0	ug/kg wet	1	800	---	94	35-123%	---	---	
Phenanthrene	767	---	10.0	ug/kg wet	1	800	---	96	50-121%	---	---	
Pyrene	845	---	10.0	ug/kg wet	1	800	---	106	47-127%	---	---	
Dibenzofuran	764	---	10.0	ug/kg wet	1	800	---	96	44-120%	---	---	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>89 %</i>		<i>54-127 %</i>		"						

Duplicate (24L0214-DUP1)			Prepared: 12/06/24 10:31			Analyzed: 12/06/24 14:33						
QC Source Sample: Non-SDG (A4L0929-01)												
Acenaphthene	ND	---	10.9	ug/kg dry	1	---	ND	---	---	---	30%	
Acenaphthylene	ND	---	10.9	ug/kg dry	1	---	7.43	---	---	***	30%	Q-05
Anthracene	ND	---	10.9	ug/kg dry	1	---	ND	---	---	---	30%	
Benz(a)anthracene	ND	---	10.9	ug/kg dry	1	---	ND	---	---	---	30%	Q-05
Benzo(a)pyrene	ND	---	10.9	ug/kg dry	1	---	ND	---	---	---	30%	
Benzo(b)fluoranthene	13.6	---	10.9	ug/kg dry	1	---	9.26	---	---	38	30%	Q-05
Benzo(k)fluoranthene	ND	---	10.9	ug/kg dry	1	---	ND	---	---	---	30%	
Benzo(g,h,i)perylene	11.4	---	10.9	ug/kg dry	1	---	8.37	---	---	30	30%	
Chrysene	ND	---	10.9	ug/kg dry	1	---	6.96	---	---	***	30%	
Dibenz(a,h)anthracene	ND	---	10.9	ug/kg dry	1	---	ND	---	---	---	30%	
Fluoranthene	15.3	---	10.9	ug/kg dry	1	---	10.5	---	---	37	30%	Q-05
Fluorene	ND	---	10.9	ug/kg dry	1	---	ND	---	---	---	30%	
Indeno(1,2,3-cd)pyrene	ND	---	10.9	ug/kg dry	1	---	7.91	---	---	***	30%	
1-Methylnaphthalene	24.9	---	10.9	ug/kg dry	1	---	19.5	---	---	25	30%	
2-Methylnaphthalene	93.1	---	10.9	ug/kg dry	1	---	62.9	---	---	39	30%	Q-17
Naphthalene	227	---	10.9	ug/kg dry	1	---	127	---	---	56	30%	Q-17
Phenanthrene	24.1	---	10.9	ug/kg dry	1	---	17.9	---	---	29	30%	
Pyrene	16.3	---	10.9	ug/kg dry	1	---	11.4	---	---	35	30%	Q-05
Dibenzofuran	ND	---	10.9	ug/kg dry	1	---	ND	---	---	---	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0214 - EPA 3546						Soil						
Duplicate (24L0214-DUP1)						Prepared: 12/06/24 10:31 Analyzed: 12/06/24 14:33						
QC Source Sample: Non-SDG (A4L0929-01)												
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 82 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>82 %</i>		<i>54-127 %</i>		<i>"</i>						

Matrix Spike (24L0214-MS1)						Prepared: 12/06/24 10:31 Analyzed: 12/06/24 15:24						
QC Source Sample: Non-SDG (A4L0929-02)												
EPA 8270E SIM												
Acenaphthene	755	---	10.4	ug/kg dry	1	832	ND	91	40-123%	---	---	
Acenaphthylene	762	---	10.4	ug/kg dry	1	832	ND	92	32-132%	---	---	
Anthracene	760	---	10.4	ug/kg dry	1	832	ND	91	47-123%	---	---	
Benz(a)anthracene	716	---	10.4	ug/kg dry	1	832	ND	86	49-126%	---	---	
Benzo(a)pyrene	765	---	10.4	ug/kg dry	1	832	ND	92	45-129%	---	---	
Benzo(b)fluoranthene	795	---	10.4	ug/kg dry	1	832	ND	96	45-132%	---	---	
Benzo(k)fluoranthene	807	---	10.4	ug/kg dry	1	832	ND	97	47-132%	---	---	
Benzo(g,h,i)perylene	693	---	10.4	ug/kg dry	1	832	ND	83	43-134%	---	---	
Chrysene	736	---	10.4	ug/kg dry	1	832	ND	88	50-124%	---	---	
Dibenz(a,h)anthracene	733	---	10.4	ug/kg dry	1	832	ND	88	45-134%	---	---	
Fluoranthene	803	---	10.4	ug/kg dry	1	832	ND	97	50-127%	---	---	
Fluorene	769	---	10.4	ug/kg dry	1	832	ND	92	43-125%	---	---	
Indeno(1,2,3-cd)pyrene	701	---	10.4	ug/kg dry	1	832	ND	84	45-133%	---	---	
1-Methylnaphthalene	746	---	10.4	ug/kg dry	1	832	ND	90	40-120%	---	---	
2-Methylnaphthalene	727	---	10.4	ug/kg dry	1	832	ND	87	38-122%	---	---	
Naphthalene	771	---	10.4	ug/kg dry	1	832	ND	93	35-123%	---	---	
Phenanthrene	745	---	10.4	ug/kg dry	1	832	ND	90	50-121%	---	---	
Pyrene	832	---	10.4	ug/kg dry	1	832	ND	100	47-127%	---	---	
Dibenzofuran	743	---	10.4	ug/kg dry	1	832	ND	89	44-120%	---	---	
<i>Surr: 2-Fluorobiphenyl (Surr)</i>		<i>Recovery: 92 %</i>		<i>Limits: 44-120 %</i>		<i>Dilution: 1x</i>						
<i>p-Terphenyl-d14 (Surr)</i>		<i>85 %</i>		<i>54-127 %</i>		<i>"</i>						

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0557 - EPA 3051A						Soil						
Blank (24L0557-BLK1)			Prepared: 12/16/24 08:47 Analyzed: 12/16/24 22:06									
<u>EPA 6020B</u>												
Arsenic	ND	---	1.00	mg/kg wet	10	---	---	---	---	---	---	
Lead	ND	---	0.200	mg/kg wet	10	---	---	---	---	---	---	
LCS (24L0557-BS1)			Prepared: 12/16/24 08:47 Analyzed: 12/16/24 22:11									
<u>EPA 6020B</u>												
Arsenic	49.8	---	1.00	mg/kg wet	10	50.0	---	100	80-120%	---	---	
Lead	52.9	---	0.200	mg/kg wet	10	50.0	---	106	80-120%	---	---	
Duplicate (24L0557-DUP1)			Prepared: 12/16/24 08:47 Analyzed: 12/16/24 22:27									
<u>QC Source Sample: Non-SDG (A4L0926-01)</u>												
Arsenic	4.40	---	1.21	mg/kg dry	10	---	7.22	---	---	48	20%	Q-04
Duplicate (24L0557-DUP2)			Prepared: 12/16/24 08:47 Analyzed: 12/17/24 22:07									
<u>QC Source Sample: Non-SDG (A4L0926-01RE1)</u>												
Lead	1240	---	2.41	mg/kg dry	100	---	875	---	---	35	20%	Q-04, Q-16
Matrix Spike (24L0557-MS1)			Prepared: 12/16/24 08:47 Analyzed: 12/16/24 22:32									
<u>QC Source Sample: Non-SDG (A4L0926-01)</u>												
<u>EPA 6020B</u>												
Arsenic	71.5	---	1.35	mg/kg dry	10	67.7	7.22	95	75-125%	---	---	
Lead	1170	---	0.271	mg/kg dry	10	67.7	897	410	75-125%	---	---	E

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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes	
Batch 24L0212 - Dry Weight Prep (EPA 8000D)						Soil							
Duplicate (24L0212-DUP1)			Prepared: 12/06/24 10:15 Analyzed: 12/09/24 05:54						CONT				
<u>QC Source Sample: Non-SDG (A4L0923-01)</u>													
% Solids	76.3	---	1.00	%	1	---	74.2	---	---	3	10%		
Duplicate (24L0212-DUP2)			Prepared: 12/06/24 10:15 Analyzed: 12/09/24 05:54						CONT				
<u>QC Source Sample: Non-SDG (A4L0923-02)</u>													
% Solids	74.5	---	1.00	%	1	---	75.7	---	---	2	10%		
Duplicate (24L0212-DUP3)			Prepared: 12/06/24 10:15 Analyzed: 12/09/24 05:54						CONT				
<u>QC Source Sample: Non-SDG (A4L0923-03)</u>													
% Solids	64.0	---	1.00	%	1	---	64.4	---	---	0.6	10%		
Duplicate (24L0212-DUP4)			Prepared: 12/06/24 10:15 Analyzed: 12/09/24 05:54						CONT				
<u>QC Source Sample: Non-SDG (A4L0943-02)</u>													
% Solids	71.3	---	1.00	%	1	---	70.4	---	---	1	10%		
Duplicate (24L0212-DUP5)			Prepared: 12/06/24 19:22 Analyzed: 12/09/24 05:54						CONT				
<u>QC Source Sample: Non-SDG (A4L1005-01)</u>													
% Solids	78.9	---	1.00	%	1	---	79.3	---	---	0.5	10%		
Duplicate (24L0212-DUP6)			Prepared: 12/06/24 19:22 Analyzed: 12/09/24 05:54						CONT				
<u>QC Source Sample: Non-SDG (A4L1006-01)</u>													
% Solids	76.4	---	1.00	%	1	---	76.5	---	---	0.1	10%		
Duplicate (24L0212-DUP7)			Prepared: 12/06/24 19:22 Analyzed: 12/09/24 05:54						CONT				
<u>QC Source Sample: Non-SDG (A4L1007-01)</u>													
% Solids	89.9	---	1.00	%	1	---	91.1	---	---	1	10%		

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3546 (Fuels)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 24L0196</u>							
A4L0957-02	Soil	NWTPH-Dx	12/04/24 10:25	12/06/24 06:51	11.56g/5mL	10g/5mL	0.87
A4L0957-03	Soil	NWTPH-Dx	12/04/24 12:15	12/06/24 06:51	11.84g/5mL	10g/5mL	0.85
A4L0957-04	Soil	NWTPH-Dx	12/04/24 13:30	12/06/24 06:51	11.23g/5mL	10g/5mL	0.89
A4L0957-05	Soil	NWTPH-Dx	12/04/24 13:40	12/06/24 06:51	11.57g/5mL	10g/5mL	0.86

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (SIM)

Prep: EPA 3546

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 24L0214</u>							
A4L0957-02	Soil	EPA 8270E SIM	12/04/24 10:25	12/06/24 10:31	11.15g/5mL	10g/5mL	0.90
A4L0957-03	Soil	EPA 8270E SIM	12/04/24 12:15	12/06/24 10:31	11.6g/5mL	10g/5mL	0.86
A4L0957-04	Soil	EPA 8270E SIM	12/04/24 13:30	12/06/24 10:31	11.63g/5mL	10g/5mL	0.86
A4L0957-05	Soil	EPA 8270E SIM	12/04/24 13:40	12/06/24 10:31	11.64g/5mL	10g/5mL	0.86

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 24L0557</u>							
A4L0957-02	Soil	EPA 6020B	12/04/24 10:25	12/16/24 08:47	0.461g/50mL	0.5g/50mL	1.08
A4L0957-03	Soil	EPA 6020B	12/04/24 12:15	12/16/24 08:47	0.476g/50mL	0.5g/50mL	1.05
A4L0957-04	Soil	EPA 6020B	12/04/24 13:30	12/16/24 08:47	0.477g/50mL	0.5g/50mL	1.05
A4L0957-05	Soil	EPA 6020B	12/04/24 13:40	12/16/24 08:47	0.456g/50mL	0.5g/50mL	1.10

Percent Dry Weight

Prep: Dry Weight Prep (EPA 8000D)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 24L0212</u>							
A4L0957-02	Soil	EPA 8000D	12/04/24 10:25	12/06/24 10:15	1g	1g	1.00
A4L0957-03	Soil	EPA 8000D	12/04/24 12:15	12/06/24 10:15	1g	1g	1.00
A4L0957-04	Soil	EPA 8000D	12/04/24 13:30	12/06/24 10:15	1g	1g	1.00
A4L0957-05	Soil	EPA 8000D	12/04/24 13:40	12/06/24 10:15	1g	1g	1.00

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4L0957 - 12 26 24 1143
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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- CONT** The Sample Container provided for this analysis was not provided by Apex Laboratories, and has not been verified as part of the Apex Quality System.
- E** Estimated Value. The result is above the calibration range of the instrument.
- M-05** Estimated results. Peak separation for structural isomers is insufficient for accurate quantification.
- Q-04** Spike recovery and/or RPD is outside control limits due to a non-homogeneous sample matrix.
- Q-05** Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
- Q-16** Reanalysis of an original Batch QC sample.
- Q-17** RPD between original and duplicate sample, or spike duplicates, is outside of established control limits.

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Validated Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
 - "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
 - "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
 - " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.
- Results for Volatiles analyses on soils and sediments that are reported on a "dry weight" basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an "As Received" basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to one half of the Reporting Limit (RL). Blank results for gravimetric analyses are evaluated to the Reporting Level, not to half of the Reporting Level.

- For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
- For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.

For further details, please request a copy of this document.

- Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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Decanted Samples:

Soils/Sediments:

Unless TCLP analysis is required or there is notification otherwise for a specific project, all Soil and Sediments containing excess water are decanted prior to analysis in order to provide the most representative sample for analysis.

Water Samples:

Water samples containing solids and sediment may need to be decanted in order to eliminate these particulates from the water extractions. In the case of organics extractions, a solvent rinse of the container will not be performed.

Volatiles Soils (5035s)

Samples that are field preserved by 5035 for volatiles are dry weight corrected using the same dry weight correction as for normal analyses. In the case of decanted samples, the dry weight may be performed on a decanted sample, while the aliquot for 5035 may not have been treated the same way. If this is a concern, please submit separate containers for dry weight analysis for volatiles can be provided.

All samples decanted in the laboratory are noted in this report with the DCNT qualifier indicating the sample was decanted.

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LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) -
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
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All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

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APEX LABS
6700 SW Sandburg St, Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Lab # August coc 1 of 1

Project Name: BLUE HERON WELL INSTALL Project #: 185705769

Project Mgr: LEW FARR Phone: 714 686 4435 Email: STANTEC.COM

Company: STANTEC Address: 601 SW 2nd Suite 1400 PDX

Sampled by: ROBERT MCALISTER

Site Location: _____
State: OR County: CLATSOP

SAMPLE ID	DATE	TIME	# OF CONTAINERS	MATRIX	SPECIAL INSTRUCTIONS:			
					1 Day	2 Day	3 Day	Other
BH-RJ-MW-4-2'-3'	12/4	1000	1	Soil				
BH-RJ-MW-4-7'-8'		1025						
BH-RJ-MW-5-2'-3'		1215						
BH-RJ-MW-5-27'-36'		1330						
BH-RJ-FD05		1340						

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 5 Day Standard

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: <u>TR</u> Date: <u>12/5/24</u>	RECEIVED BY: Signature: <u>[Signature]</u> Date: <u>12/5/24</u>
Printed Name: <u>ROBERT MCALISTER</u> Time: <u>1330</u>	Printed Name: <u>ALISSA WILLOW</u> Time: <u>1330</u>
Company: <u>STANTEC</u>	Company: <u>Apex</u>

Apex Laboratories

Philip Nerenberg

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APEX LABS COOLER RECEIPT FORM

Client: Stantec Element WO#: A4L0957

Project/Project #: Blue Heron Well Install 185705769

Delivery Info:
 Date/time received: 12/5/14 @ 1330 By: APW
 Delivered by: Apex: Client ESS FedEx UPS Radio Morgan SDS Evergreen Other
 From USDA Regulated Origin? Yes No

Cooler Inspection Date/time inspected: 12/5/14 @ 1330 By: APW
 Chain of Custody included? Yes No
 Signed/dated by client? Yes No
 Contains USDA Reg. Soils? Yes No Unsure (email RegSoils)

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>3.6</u>						
Custody seals? (Y/N)	<u>N</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>N</u>						
Ice type: (Gel/Real/Other)	<u>Real</u>						
Condition (In/Out):	<u>In</u>						

Cooler out of temp? (Y/N) Possible reason why: _____
 Green dots applied to out of temperature samples? Yes/No _____
 Out of temperature samples form initiated? Yes/No _____

Sample Inspection: Date/time inspected: 12/5/14 @ 1550 By: APW
 All samples intact? Yes No Comments: _____

 Bottle labels/COCs agree? Yes No Comments: _____

 COC/container discrepancies form initiated? Yes No
 Containers/volumes received appropriate for analysis? Yes No Comments: _____

 Do VOA vials have visible headspace? Yes No NA
 Comments: _____
 Water samples: pH checked: Yes No NA pH appropriate? Yes No NA pH ID: _____
 Comments: _____

Labeled by: APW Witness: JAM Cooler Inspected by: APW
 Form Y-003 R-02



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Thursday, January 9, 2025

Len Farr
Stantec Portland
601 SW 2nd Ave Suite 1400
Portland, OR 97204

RE: A4L1596 - Blue Heron Focused Remedial Investigation - 185705769

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A4L1596, which was received by the laboratory on 12/20/2024 at 9:40:00AM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Cooler Receipt Information	
<u>Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling.</u>	
(See Cooler Receipt Form for details)	
<u>Default Cooler</u>	2.1 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.

All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

Philip Nerenberg, Lab Director

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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH-MW-4	A4L1596-01	Water	12/19/24 11:05	12/20/24 09:40
BH-MW-5	A4L1596-02	Water	12/19/24 10:15	12/20/24 09:40

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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-MW-4 (A4L1596-01)			Matrix: Water			Batch: 25A0002		
Diesel	0.290	---	0.213	mg/L	1	01/03/25 00:13	NWTPH-Dx	F-11
Oil	ND	---	0.426	mg/L	1	01/03/25 00:13	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 88 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>01/03/25 00:13</i>	<i>NWTPH-Dx</i>	
BH-MW-5 (A4L1596-02)			Matrix: Water			Batch: 25A0002		
Diesel	ND	---	0.204	mg/L	1	01/03/25 00:59	NWTPH-Dx	
Oil	ND	---	0.408	mg/L	1	01/03/25 00:59	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 88 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>01/03/25 00:59</i>	<i>NWTPH-Dx</i>	

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ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-MW-4 (A4L1596-01)				Matrix: Water		Batch: 24L0827		DCNT
Acenaphthene	ND	---	0.0392	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Acenaphthylene	ND	---	0.0392	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Anthracene	ND	---	0.0392	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.0196	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.0196	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.0196	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.0196	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.0392	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Chrysene	ND	---	0.0196	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.0196	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Fluoranthene	ND	---	0.0392	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Fluorene	ND	---	0.0392	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.0196	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.0785	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.0785	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Naphthalene	ND	---	0.0785	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Phenanthrene	ND	---	0.0785	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Pyrene	ND	---	0.0392	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
Dibenzofuran	ND	---	0.0392	ug/L	1	12/27/24 16:21	EPA 8270E LVI	
<i>Surrogate: Acenaphthylene-d8 (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 78-134 %</i>		<i>1</i>	<i>12/27/24 16:21</i>	<i>EPA 8270E LVI</i>
<i>Benzo(a)pyrene-d12 (Surr)</i>		<i>113 %</i>		<i>80-132 %</i>		<i>1</i>	<i>12/27/24 16:21</i>	<i>EPA 8270E LVI</i>

BH-MW-5 (A4L1596-02)				Matrix: Water		Batch: 24L0827		DCNT
Acenaphthene	ND	---	0.0380	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Acenaphthylene	ND	---	0.0380	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Anthracene	ND	---	0.0380	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.0190	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.0190	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.0190	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.0190	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.0380	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Chrysene	ND	---	0.0190	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.0190	ug/L	1	12/27/24 16:53	EPA 8270E LVI	

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Philip Nerenberg, Lab Director

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
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503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4L1596 - 01 09 25 1343
--	---	---

ANALYTICAL SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-MW-5 (A4L1596-02)				Matrix: Water		Batch: 24L0827		DCNT
Fluoranthene	ND	---	0.0380	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Fluorene	ND	---	0.0380	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.0190	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.0761	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.0761	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Naphthalene	ND	---	0.0761	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Phenanthrene	ND	---	0.0761	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Pyrene	ND	---	0.0380	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
Dibenzofuran	ND	---	0.0380	ug/L	1	12/27/24 16:53	EPA 8270E LVI	
<i>Surrogate: Acenaphthylene-d8 (Surr)</i>		<i>Recovery: 98 %</i>		<i>Limits: 78-134 %</i>		<i>1</i>	<i>12/27/24 16:53</i>	<i>EPA 8270E LVI</i>
<i>Benzo(a)pyrene-d12 (Surr)</i>		<i>111 %</i>		<i>80-132 %</i>		<i>1</i>	<i>12/27/24 16:53</i>	<i>EPA 8270E LVI</i>

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
BH-MW-4 (A4L1596-01)		Matrix: Water							
Batch: 25A0144									
Arsenic	1.07	---	1.00	ug/L	1	01/08/25 00:52	EPA 6020B		
Lead	1.77	---	0.200	ug/L	1	01/08/25 00:52	EPA 6020B		
BH-MW-5 (A4L1596-02)		Matrix: Water							
Batch: 25A0144									
Arsenic	29.0	---	1.00	ug/L	1	01/08/25 00:57	EPA 6020B		
Lead	3.67	---	0.200	ug/L	1	01/08/25 00:57	EPA 6020B		

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ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes	
BH-MW-4 (A4L1596-01)				Matrix: Water					
Batch: 24L1102									
Arsenic	ND	---	1.00	ug/L	1	01/03/25 05:21	EPA 6020B (Diss)		
Lead	ND	---	0.200	ug/L	1	01/03/25 05:21	EPA 6020B (Diss)		
BH-MW-5 (A4L1596-02)				Matrix: Water					
Batch: 24L1102									
Arsenic	26.9	---	1.00	ug/L	1	01/03/25 05:27	EPA 6020B (Diss)		
Lead	ND	---	0.200	ug/L	1	01/03/25 05:27	EPA 6020B (Diss)		

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 25A0002 - EPA 3510C (Fuels/Acid Ext.)						Water						
Blank (25A0002-BLK1)			Prepared: 01/02/25 06:42 Analyzed: 01/02/25 21:53									
<u>NWTPH-Dx</u>												
Diesel	ND	---	0.0800	mg/L	1	---	---	---	---	---	---	
Oil	ND	---	0.160	mg/L	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 93 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
LCS (25A0002-BS1)			Prepared: 01/02/25 06:42 Analyzed: 01/02/25 22:16									
<u>NWTPH-Dx</u>												
Diesel	0.360	---	0.0800	mg/L	1	0.500	---	72	36-132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
LCS Dup (25A0002-BSD1)			Prepared: 01/02/25 06:42 Analyzed: 01/02/25 22:39									Q-19
<u>NWTPH-Dx</u>												
Diesel	0.371	---	0.0800	mg/L	1	0.500	---	74	36-132%	3	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0827 - EPA 3511 (Bottle Extraction)						Water						
Blank (24L0827-BLK1)			Prepared: 12/23/24 07:01 Analyzed: 12/24/24 13:33									
<u>EPA 8270E LVI</u>												
Acenaphthene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Acenaphthylene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Anthracene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Benz(a)anthracene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Benzo(b)fluoranthene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Benzo(k)fluoranthene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Chrysene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Dibenz(a,h)anthracene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Fluoranthene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Fluorene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
1-Methylnaphthalene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	---
2-Methylnaphthalene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	---
Naphthalene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	---
Phenanthrene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	---
Pyrene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Carbazole	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Dibenzofuran	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Surr: Acenaphthylene-d8 (Surr)		Recovery: 97 %		Limits: 78-134 %		Dilution: 1x						
Benzo(a)pyrene-d12 (Surr)		108 %		80-132 %		"						

LCS (24L0827-BS1)			Prepared: 12/23/24 07:01 Analyzed: 12/24/24 14:05									
<u>EPA 8270E LVI</u>												
Acenaphthene	1.65	---	0.0320	ug/L	1	1.60	---	103	80-120%	---	---	---
Acenaphthylene	1.57	---	0.0320	ug/L	1	1.60	---	98	80-124%	---	---	---
Anthracene	1.55	---	0.0320	ug/L	1	1.60	---	97	80-123%	---	---	---
Benz(a)anthracene	1.70	---	0.0160	ug/L	1	1.60	---	106	80-122%	---	---	---
Benzo(a)pyrene	1.68	---	0.0160	ug/L	1	1.60	---	105	80-129%	---	---	---
Benzo(b)fluoranthene	1.68	---	0.0160	ug/L	1	1.60	---	105	80-124%	---	---	---
Benzo(k)fluoranthene	1.66	---	0.0160	ug/L	1	1.60	---	104	80-125%	---	---	---
Benzo(g,h,i)perylene	1.78	---	0.0320	ug/L	1	1.60	---	111	80-120%	---	---	---

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--	---	---

QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0827 - EPA 3511 (Bottle Extraction)						Water						
LCS (24L0827-BS1)			Prepared: 12/23/24 07:01			Analyzed: 12/24/24 14:05						
Chrysene	1.57	---	0.0160	ug/L	1	1.60	---	98	80-120%	---	---	
Dibenz(a,h)anthracene	1.58	---	0.0160	ug/L	1	1.60	---	99	80-120%	---	---	
Fluoranthene	1.60	---	0.0320	ug/L	1	1.60	---	100	80-126%	---	---	
Fluorene	1.80	---	0.0320	ug/L	1	1.60	---	112	77-127%	---	---	
Indeno(1,2,3-cd)pyrene	1.58	---	0.0160	ug/L	1	1.60	---	99	80-121%	---	---	
1-Methylnaphthalene	1.63	---	0.0640	ug/L	1	1.60	---	102	53-148%	---	---	
2-Methylnaphthalene	1.60	---	0.0640	ug/L	1	1.60	---	100	48-150%	---	---	
Naphthalene	1.69	---	0.0640	ug/L	1	1.60	---	106	78-120%	---	---	
Phenanthrene	1.59	---	0.0640	ug/L	1	1.60	---	99	80-120%	---	---	
Pyrene	1.58	---	0.0320	ug/L	1	1.60	---	99	80-125%	---	---	
Carbazole	1.58	---	0.0320	ug/L	1	1.60	---	99	65-141%	---	---	
Dibenzofuran	1.58	---	0.0320	ug/L	1	1.60	---	99	76-121%	---	---	
<i>Surr: Acenaphthylene-d8 (Surr)</i>		<i>Recovery: 94 %</i>		<i>Limits: 78-134 %</i>		<i>Dilution: 1x</i>						
<i>Benzo(a)pyrene-d12 (Surr)</i>		<i>107 %</i>		<i>80-132 %</i>		"						

LCS Dup (24L0827-BSD1)			Prepared: 12/23/24 07:01			Analyzed: 12/24/24 14:38						Q-19
EPA 8270E LVI												
Acenaphthene	1.69	---	0.0320	ug/L	1	1.60	---	106	80-120%	3	30%	
Acenaphthylene	1.61	---	0.0320	ug/L	1	1.60	---	101	80-124%	3	30%	
Anthracene	1.59	---	0.0320	ug/L	1	1.60	---	99	80-123%	3	30%	
Benz(a)anthracene	1.71	---	0.0160	ug/L	1	1.60	---	107	80-122%	1	30%	
Benzo(a)pyrene	1.75	---	0.0160	ug/L	1	1.60	---	109	80-129%	4	30%	
Benzo(b)fluoranthene	1.73	---	0.0160	ug/L	1	1.60	---	108	80-124%	3	30%	
Benzo(k)fluoranthene	1.70	---	0.0160	ug/L	1	1.60	---	106	80-125%	2	30%	
Benzo(g,h,i)perylene	1.77	---	0.0320	ug/L	1	1.60	---	111	80-120%	0.4	30%	
Chrysene	1.61	---	0.0160	ug/L	1	1.60	---	100	80-120%	3	30%	
Dibenz(a,h)anthracene	1.63	---	0.0160	ug/L	1	1.60	---	102	80-120%	3	30%	
Fluoranthene	1.64	---	0.0320	ug/L	1	1.60	---	102	80-126%	2	30%	
Fluorene	1.94	---	0.0320	ug/L	1	1.60	---	121	77-127%	8	30%	
Indeno(1,2,3-cd)pyrene	1.60	---	0.0160	ug/L	1	1.60	---	100	80-121%	1	30%	
1-Methylnaphthalene	1.76	---	0.0640	ug/L	1	1.60	---	110	53-148%	8	30%	
2-Methylnaphthalene	1.76	---	0.0640	ug/L	1	1.60	---	110	48-150%	10	30%	
Naphthalene	1.68	---	0.0640	ug/L	1	1.60	---	105	78-120%	0.4	30%	
Phenanthrene	1.64	---	0.0640	ug/L	1	1.60	---	102	80-120%	3	30%	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L0827 - EPA 3511 (Bottle Extraction)						Water						
LCS Dup (24L0827-BSD1)					Prepared: 12/23/24 07:01		Analyzed: 12/24/24 14:38		Q-19			
Pyrene	1.61	---	0.0320	ug/L	1	1.60	---	100	80-125%	2	30%	
Carbazole	1.64	---	0.0320	ug/L	1	1.60	---	102	65-141%	4	30%	
Dibenzofuran	1.70	---	0.0320	ug/L	1	1.60	---	106	76-121%	7	30%	
<i>Surr: Acenaphthylene-d8 (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 78-134 %</i>		<i>Dilution: 1x</i>						
<i>Benzo(a)pyrene-d12 (Surr)</i>		<i>107 %</i>		<i>80-132 %</i>		<i>"</i>						

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 25A0144 - EPA 3015A						Water						
Blank (25A0144-BLK1)			Prepared: 01/07/25 07:54 Analyzed: 01/07/25 23:26									
<u>EPA 6020B</u>												
Arsenic	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
LCS (25A0144-BS1)			Prepared: 01/07/25 07:54 Analyzed: 01/07/25 23:31									
<u>EPA 6020B</u>												
Arsenic	54.4	---	1.00	ug/L	1	55.6	---	98	80-120%	---	---	
Lead	55.9	---	0.200	ug/L	1	55.6	---	101	80-120%	---	---	
Duplicate (25A0144-DUP1)			Prepared: 01/07/25 07:54 Analyzed: 01/08/25 01:45									
<u>QC Source Sample: Non-SDG (A4L1785-01)</u>												
Arsenic	1.06	---	1.00	ug/L	1	---	1.01	---	---	6	20%	
Lead	ND	---	0.200	ug/L	1	---	ND	---	---	---	20%	
Matrix Spike (25A0144-MS1)			Prepared: 01/07/25 07:54 Analyzed: 01/08/25 01:52									
<u>QC Source Sample: Non-SDG (A4L1785-01)</u>												
<u>EPA 6020B</u>												
Arsenic	57.2	---	1.00	ug/L	1	55.6	1.01	101	75-125%	---	---	
Lead	53.3	---	0.200	ug/L	1	55.6	ND	96	75-125%	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 24L1102 - Matrix Matched Direct Inject						Water						
Blank (24L1102-BLK1)						Prepared: 12/31/24 14:56 Analyzed: 01/03/25 03:57						
<u>EPA 6020B (Diss)</u>												
Arsenic	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
LCS (24L1102-BS1)						Prepared: 12/31/24 14:56 Analyzed: 01/03/25 04:02						
<u>EPA 6020B (Diss)</u>												
Arsenic	53.9	---	1.00	ug/L	1	55.6	---	97	80-120%	---	---	
Lead	55.5	---	0.200	ug/L	1	55.6	---	100	80-120%	---	---	
Duplicate (24L1102-DUP1)						Prepared: 12/31/24 14:56 Analyzed: 01/03/25 04:13						
<u>QC Source Sample: Non-SDG (A4L1549-04)</u>												
Arsenic	ND	---	1.00	ug/L	1	---	0.806	---	---	***	20%	
Lead	ND	---	0.200	ug/L	1	---	ND	---	---	---	20%	
Matrix Spike (24L1102-MS1)						Prepared: 12/31/24 14:56 Analyzed: 01/03/25 04:18						
<u>QC Source Sample: Non-SDG (A4L1549-04)</u>												
<u>EPA 6020B (Diss)</u>												
Arsenic	54.6	---	1.00	ug/L	1	55.6	0.806	97	75-125%	---	---	
Lead	55.2	---	0.200	ug/L	1	55.6	ND	99	75-125%	---	---	

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ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A4L1596 - 01 09 25 1343
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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3510C (Fuels/Acid Ext.)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 25A0002</u>							
A4L1596-01	Water	NWTPH-Dx	12/19/24 11:05	01/02/25 06:42	940mL/5mL	1000mL/5mL	1.06
A4L1596-02	Water	NWTPH-Dx	12/19/24 10:15	01/02/25 06:42	980mL/5mL	1000mL/5mL	1.02

Polyaromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Prep: EPA 3511 (Bottle Extraction)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 24L0827</u>							
A4L1596-01	Water	EPA 8270E LVI	12/19/24 11:05	12/23/24 07:01	101.93mL/5mL	125mL/5mL	1.23
A4L1596-02	Water	EPA 8270E LVI	12/19/24 10:15	12/23/24 07:01	105.17mL/5mL	125mL/5mL	1.19

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 25A0144</u>							
A4L1596-01	Water	EPA 6020B	12/19/24 11:05	01/07/25 07:54	45mL/50mL	45mL/50mL	1.00
A4L1596-02	Water	EPA 6020B	12/19/24 10:15	01/07/25 07:54	45mL/50mL	45mL/50mL	1.00

Dissolved Metals by EPA 6020B (ICPMS)

Prep: Matrix Matched Direct Inject

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 24L1102</u>							
A4L1596-01	Water	EPA 6020B (Diss)	12/19/24 11:05	12/31/24 14:56	45mL/50mL	45mL/50mL	1.00
A4L1596-02	Water	EPA 6020B (Diss)	12/19/24 10:15	12/31/24 14:56	45mL/50mL	45mL/50mL	1.00

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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- DCNT** Sample decanted due to the presence of sediment in water samples, or water in sediment or soil samples. (Note: Decanted aqueous sample bottles are not solvent rinsed.)
- F-11** The hydrocarbon pattern indicates possible weathered diesel, mineral oil, or a contribution from a related component.
- Q-19** Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Validated Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as "dry", "wet", or " " (blank) designation.
 - "dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
 - "wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
 - " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.
- Results for Volatiles analyses on soils and sediments that are reported on a "dry weight" basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an "As Received" basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to one half of the Reporting Limit (RL). Blank results for gravimetric analyses are evaluated to the Reporting Level, not to half of the Reporting Level.

- For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
- For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.

For further details, please request a copy of this document.

- Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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Decanted Samples:

Soils/Sediments:

Unless TCLP analysis is required or there is notification otherwise for a specific project, all Soil and Sediments containing excess water are decanted prior to analysis in order to provide the most representative sample for analysis.

Water Samples:

Water samples containing solids and sediment may need to be decanted in order to eliminate these particulates from the water extractions. In the case of organics extractions, a solvent rinse of the container will not be performed.

Volatiles Soils (5035s)

Samples that are field preserved by 5035 for volatiles are dry weight corrected using the same dry weight correction as for normal analyses. In the case of decanted samples, the dry weight may be performed on a decanted sample, while the aliquot for 5035 may not have been treated the same way. If this is a concern, please submit separate containers for dry weight analysis for volatiles can be provided.

All samples decanted in the laboratory are noted in this report with the DCNT qualifier indicating the sample was decanted.

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Philip Nerenberg, Lab Director



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LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) -
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
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All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

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Philip Nerenberg, Lab Director



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APEX LABS
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323

CHAIN OF CUSTODY

Company: **STANTEC** Project Mgr: **LEN FARR** Project Name: **BLUE HERON GWM** Project #: **185705769**

Address: **601 SW 2nd AVE SUITE 1400, PDX** Phone: **714 686 4435** Email: **C.STANTEC.COM** PO #

Sampled by: **ROBERT MCALISTER**

Site Location:
State: **OR**
County: **CLATSOP**

SAMPLE ID
BH-MW-4
BH-MW-5

DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-FCID	NWTPH-DX	NWTPH-GX	8260 BTEX	8260 RBDM VOCs	8260 Halo VOCs	8260 VOCs Full List	8270 SIM PAHs	8270 Semt-Vols Full List	8082 PCBs	8081 Pesticides	RCRA Metals (8)	Priority Metals (13)	AL, Sb, As, Ba, Be, Cd, Cr, Cu, Fe, Ni, Hg, Mg, Mn, Mo, Ni, Se, Sr, Na, TL, V, Zn	TOTAL (DISS.)	TCLP Metals (8)	Hold Sample	Frozen Archive	
12/19	1105	As	6		X						X											
1015																						

ANALYSIS REQUEST

SPECIAL INSTRUCTIONS:

Standard Turn Around Time (TAT) = 10 Business Days

TAT Requested (circle): 1 Day 2 Day 3 Day 5 Day Standard Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: <i>[Signature]</i> Printed Name: ROBERT MCALISTER Company: STANTEC	RECEIVED BY: Signature: <i>[Signature]</i> Printed Name: ALYSSA WILSON Company: STANTEC
Date: 12/20/24 Time: 940	Date: _____ Time: _____

Apex Laboratories

Philip Nerenberg

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APEX LABS COOLER RECEIPT FORM

Client: Stantec Element WO#: A4 L1596

Project/Project #: Blue Heron GWM 185705769

Delivery Info:
 Date/time received: 12/20/14 @ 0940 By: AW
 Delivered by: Apex Client ESS FedEx UPS Radio Morgan SDS Evergreen Other
 From USDA Regulated Origin? Yes No

Cooler Inspection Date/time inspected: 12/20/14 @ 0940 By: AW
 Chain of Custody included? Yes No
 Signed/dated by client? Yes No
 Contains USDA Reg. Soils? Yes No Unsure (email RegSoils)

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>2.1</u>						
Custody seals? (Y/N)	<u>N</u>						
Received on ice? (Y/N)	<u>Y</u>						
Temp. blanks? (Y/N)	<u>Y</u>						
Ice type: (Gel/Real/Other)	<u>Real</u>						
Condition (In/Out):	<u>In</u>						

Cooler out of temp? Possible reason why: _____
 Green dots applied to out of temperature samples? Yes No
 Out of temperature samples form initiated? Yes No

Sample Inspection: Date/time inspected: 12/20/14 @ 1014 By: AW
 All samples intact? Yes No Comments: _____

 Bottle labels/COCs agree? Yes No Comments: _____

 COC/container discrepancies form initiated? Yes No
 Containers/volumes received appropriate for analysis? Yes No Comments: _____

 Do VOA vials have visible headspace? Yes No NA
 Comments: _____
 Water samples: pH checked: Yes No NA pH appropriate? Yes No NA pH ID: AD31170
 Comments: _____

Labeled by: AW Witness: AW Cooler Inspected by: AW
Form Y-003 R-02



ANALYTICAL REPORT

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Friday, April 11, 2025

Len Farr
Stantec Portland
601 SW 2nd Ave Suite 1400
Portland, OR 97204

RE: A5C1735 - Blue Heron Focused Remedial Investigation - 185705769

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A5C1735, which was received by the laboratory on 3/21/2025 at 12:00:00PM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: pnerenberg@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample receipt, unless prior arrangements have been made.

Table with 1 column: Cooler Receipt Information. Content includes: Acceptable Receipt Temperature is less than, or equal to, 6 degC (not frozen), or received on ice the same day as sampling. (See Cooler Receipt Form for details). Default Cooler 1.0 degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report. All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.



Apex Laboratories

Philip Nerenberg (signature)

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Philip Nerenberg, Lab Director



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Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A5C1735 - 04 11 25 1300
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ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH-MW-4	A5C1735-01	Water	03/21/25 10:30	03/21/25 12:00
BH-MW-5	A5C1735-02	Water	03/21/25 11:05	03/21/25 12:00

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ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-MW-4 (A5C1735-01)				Matrix: Water		Batch: 25C0982		DCNT
Diesel	ND	---	0.208	mg/L	1	03/26/25 00:22	NWTPH-Dx	
Oil	0.543	---	0.417	mg/L	1	03/26/25 00:22	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 93 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>03/26/25 00:22</i>	<i>NWTPH-Dx</i>	
BH-MW-5 (A5C1735-02)				Matrix: Water		Batch: 25C0982		
Diesel	ND	---	0.200	mg/L	1	03/25/25 20:43	NWTPH-Dx	
Oil	ND	---	0.400	mg/L	1	03/25/25 20:43	NWTPH-Dx	
<i>Surrogate: o-Terphenyl (Surr)</i>			<i>Recovery: 90 %</i>	<i>Limits: 50-150 %</i>	<i>1</i>	<i>03/25/25 20:43</i>	<i>NWTPH-Dx</i>	

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ANALYTICAL SAMPLE RESULTS

Polycyclic Aromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-MW-4 (A5C1735-01)				Matrix: Water		Batch: 25C1033		DCNT
Acenaphthene	ND	---	0.0373	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Acenaphthylene	ND	---	0.0373	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Anthracene	ND	---	0.0373	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.0186	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.0186	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.0186	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.0186	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.0373	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Chrysene	ND	---	0.0186	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.0186	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Fluoranthene	ND	---	0.0373	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Fluorene	ND	---	0.0373	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.0186	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.0745	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.0745	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Naphthalene	ND	---	0.0745	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Phenanthrene	ND	---	0.0745	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Pyrene	ND	---	0.0373	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
Dibenzofuran	ND	---	0.0373	ug/L	1	03/31/25 17:46	EPA 8270E LVI	
<i>Surrogate: Acenaphthylene-d8 (Surr)</i>			<i>Recovery: 84 %</i>	<i>Limits: 78-134 %</i>	<i>1</i>	<i>03/31/25 17:46</i>	<i>EPA 8270E LVI</i>	
<i>Benzo(a)pyrene-d12 (Surr)</i>			<i>98 %</i>	<i>80-132 %</i>	<i>1</i>	<i>03/31/25 17:46</i>	<i>EPA 8270E LVI</i>	

BH-MW-5 (A5C1735-02)				Matrix: Water		Batch: 25C1033		DCNT
Acenaphthene	ND	---	0.0356	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Acenaphthylene	ND	---	0.0356	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Anthracene	ND	---	0.0356	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Benz(a)anthracene	ND	---	0.0178	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Benzo(a)pyrene	ND	---	0.0178	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Benzo(b)fluoranthene	ND	---	0.0178	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Benzo(k)fluoranthene	ND	---	0.0178	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Benzo(g,h,i)perylene	ND	---	0.0356	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Chrysene	ND	---	0.0178	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Dibenz(a,h)anthracene	ND	---	0.0178	ug/L	1	03/31/25 18:19	EPA 8270E LVI	

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Philip Nerenberg, Lab Director



ANALYTICAL REPORT

Apex Laboratories, LLC

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503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A5C1735 - 04 11 25 1300
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ANALYTICAL SAMPLE RESULTS

Polycyclic Aromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-MW-5 (A5C1735-02)				Matrix: Water		Batch: 25C1033		DCNT
Fluoranthene	ND	---	0.0356	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Fluorene	ND	---	0.0356	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Indeno(1,2,3-cd)pyrene	ND	---	0.0178	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
1-Methylnaphthalene	ND	---	0.0713	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
2-Methylnaphthalene	ND	---	0.0713	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Naphthalene	ND	---	0.0713	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Phenanthrene	ND	---	0.0713	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Pyrene	ND	---	0.0356	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
Dibenzofuran	ND	---	0.0356	ug/L	1	03/31/25 18:19	EPA 8270E LVI	
<i>Surrogate: Acenaphthylene-d8 (Surr)</i>			<i>Recovery: 84 %</i>	<i>Limits: 78-134 %</i>	<i>1</i>	<i>03/31/25 18:19</i>	<i>EPA 8270E LVI</i>	
<i>Benzo(a)pyrene-d12 (Surr)</i>			<i>94 %</i>	<i>80-132 %</i>	<i>1</i>	<i>03/31/25 18:19</i>	<i>EPA 8270E LVI</i>	

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ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-MW-4 (A5C1735-01)				Matrix: Water				
Batch: 25D0383								
Arsenic	3.03	---	1.00	ug/L	1	04/10/25 13:23	EPA 6020B	
Lead	17.3	---	0.200	ug/L	1	04/10/25 13:23	EPA 6020B	B
BH-MW-5 (A5C1735-02)				Matrix: Water				
Batch: 25D0383								
Arsenic	36.1	---	1.00	ug/L	1	04/10/25 13:28	EPA 6020B	
Lead	3.81	---	0.200	ug/L	1	04/10/25 13:28	EPA 6020B	B

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ANALYTICAL SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
BH-MW-4 (A5C1735-01)				Matrix: Water				
Batch: 25D0198								
Arsenic	ND	---	1.00	ug/L	1	04/05/25 03:59	EPA 6020B (Diss)	
Lead	0.725	---	0.200	ug/L	1	04/05/25 03:59	EPA 6020B (Diss)	
BH-MW-5 (A5C1735-02)				Matrix: Water				
Batch: 25D0198								
Arsenic	25.5	---	1.00	ug/L	1	04/05/25 04:04	EPA 6020B (Diss)	
Lead	ND	---	0.200	ug/L	1	04/05/25 04:04	EPA 6020B (Diss)	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 25C0982 - EPA 3510C (Fuels/Acid Ext.)						Water						
Blank (25C0982-BLK1)			Prepared: 03/25/25 06:24 Analyzed: 03/25/25 19:05									
<u>NWTPH-Dx</u>												
Diesel	ND	---	0.200	mg/L	1	---	---	---	---	---	---	
Oil	ND	---	0.400	mg/L	1	---	---	---	---	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 96 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
LCS (25C0982-BS1)			Prepared: 03/25/25 06:24 Analyzed: 03/25/25 19:30									
<u>NWTPH-Dx</u>												
Diesel	1.05	---	0.200	mg/L	1	1.25	---	84	36-132%	---	---	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						
LCS Dup (25C0982-BSD1)			Prepared: 03/25/25 06:24 Analyzed: 03/25/25 19:54									Q-19
<u>NWTPH-Dx</u>												
Diesel	1.03	---	0.200	mg/L	1	1.25	---	82	36-132%	2	30%	
<i>Surr: o-Terphenyl (Surr)</i>		<i>Recovery: 97 %</i>		<i>Limits: 50-150 %</i>		<i>Dilution: 1x</i>						

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polycyclic Aromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 25C1033 - EPA 3511 (Bottle Extraction)						Water						
Blank (25C1033-BLK1)			Prepared: 03/26/25 07:37 Analyzed: 03/27/25 18:54									
<u>EPA 8270E LVI</u>												
Acenaphthene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Acenaphthylene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Anthracene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Benz(a)anthracene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Benzo(a)pyrene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Benzo(b)fluoranthene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Benzo(k)fluoranthene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Benzo(g,h,i)perylene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Chrysene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Dibenz(a,h)anthracene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
Fluoranthene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Fluorene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Indeno(1,2,3-cd)pyrene	ND	---	0.0160	ug/L	1	---	---	---	---	---	---	---
1-Methylnaphthalene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	---
2-Methylnaphthalene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	---
Naphthalene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	---
Phenanthrene	ND	---	0.0640	ug/L	1	---	---	---	---	---	---	---
Pyrene	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Carbazole	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
Dibenzofuran	ND	---	0.0320	ug/L	1	---	---	---	---	---	---	---
<i>Surr: Acenaphthylene-d8 (Surr)</i>		<i>Recovery: 95 %</i>		<i>Limits: 78-134 %</i>		<i>Dilution: 1x</i>						
<i>Benzo(a)pyrene-d12 (Surr)</i>		<i>89 %</i>		<i>80-132 %</i>		<i>"</i>						

LCS (25C1033-BS1)			Prepared: 03/26/25 07:37 Analyzed: 03/27/25 19:27									
<u>EPA 8270E LVI</u>												
Acenaphthene	1.41	---	0.0320	ug/L	1	1.60	---	88	80-120%	---	---	---
Acenaphthylene	1.39	---	0.0320	ug/L	1	1.60	---	87	80-124%	---	---	---
Anthracene	1.33	---	0.0320	ug/L	1	1.60	---	83	80-123%	---	---	---
Benz(a)anthracene	1.36	---	0.0160	ug/L	1	1.60	---	85	80-122%	---	---	---
Benzo(a)pyrene	1.43	---	0.0160	ug/L	1	1.60	---	89	80-129%	---	---	---
Benzo(b)fluoranthene	1.31	---	0.0160	ug/L	1	1.60	---	82	80-124%	---	---	---
Benzo(k)fluoranthene	1.33	---	0.0160	ug/L	1	1.60	---	83	80-125%	---	---	---
Benzo(g,h,i)perylene	1.36	---	0.0320	ug/L	1	1.60	---	85	80-120%	---	---	---

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polycyclic Aromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 25C1033 - EPA 3511 (Bottle Extraction)						Water						
LCS (25C1033-BS1)						Prepared: 03/26/25 07:37 Analyzed: 03/27/25 19:27						
Chrysene	1.33	---	0.0160	ug/L	1	1.60	---	83	80-120%	---	---	
Dibenz(a,h)anthracene	1.30	---	0.0160	ug/L	1	1.60	---	81	80-120%	---	---	
Fluoranthene	1.38	---	0.0320	ug/L	1	1.60	---	86	80-126%	---	---	
Fluorene	1.42	---	0.0320	ug/L	1	1.60	---	89	77-127%	---	---	
Indeno(1,2,3-cd)pyrene	1.40	---	0.0160	ug/L	1	1.60	---	87	80-121%	---	---	
1-Methylnaphthalene	1.41	---	0.0640	ug/L	1	1.60	---	88	53-148%	---	---	
2-Methylnaphthalene	1.43	---	0.0640	ug/L	1	1.60	---	90	48-150%	---	---	
Naphthalene	1.41	---	0.0640	ug/L	1	1.60	---	88	78-120%	---	---	
Phenanthrene	1.33	---	0.0640	ug/L	1	1.60	---	83	80-120%	---	---	
Pyrene	1.38	---	0.0320	ug/L	1	1.60	---	86	80-125%	---	---	
Carbazole	1.41	---	0.0320	ug/L	1	1.60	---	88	65-141%	---	---	
Dibenzofuran	1.36	---	0.0320	ug/L	1	1.60	---	85	76-121%	---	---	

Surr: Acenaphthylene-d8 (Surr) Recovery: 91 % Limits: 78-134 % Dilution: 1x
 Benzo(a)pyrene-d12 (Surr) 91 % 80-132 % "

Matrix Spike (25C1033-MS1) Prepared: 03/26/25 07:37 Analyzed: 03/27/25 20:31

QC Source Sample: Non-SDG (A5C1656-01)

EPA 8270E LVI

Acenaphthene	62.2	---	0.377	ug/L	10	1.88	63.4	-62	80-120%	---	---	Q-03
Acenaphthylene	6.14	---	0.377	ug/L	10	1.88	4.27	99	80-124%	---	---	
Anthracene	3.02	---	0.377	ug/L	10	1.88	0.958	109	80-123%	---	---	
Benz(a)anthracene	1.98	---	0.188	ug/L	10	1.88	ND	105	80-122%	---	---	
Benzo(a)pyrene	1.71	---	0.188	ug/L	10	1.88	ND	91	80-129%	---	---	
Benzo(b)fluoranthene	1.87	---	0.188	ug/L	10	1.88	ND	99	80-124%	---	---	
Benzo(k)fluoranthene	1.86	---	0.188	ug/L	10	1.88	ND	99	80-125%	---	---	
Benzo(g,h,i)perylene	1.99	---	0.377	ug/L	10	1.88	ND	106	80-120%	---	---	
Chrysene	1.97	---	0.188	ug/L	10	1.88	ND	105	80-120%	---	---	
Dibenz(a,h)anthracene	1.82	---	0.188	ug/L	10	1.88	ND	96	80-120%	---	---	
Fluoranthene	2.46	---	0.377	ug/L	10	1.88	0.520	103	80-126%	---	---	
Fluorene	14.7	---	0.377	ug/L	10	1.88	14.2	26	77-127%	---	---	Q-03
Indeno(1,2,3-cd)pyrene	2.09	---	0.188	ug/L	10	1.88	ND	111	80-121%	---	---	
1-Methylnaphthalene	42.9	---	0.754	ug/L	10	1.88	43.2	-17	53-148%	---	---	Q-03
2-Methylnaphthalene	39.9	---	0.754	ug/L	10	1.88	41.0	-63	48-150%	---	---	Q-03
Naphthalene	68.5	---	0.754	ug/L	10	1.88	72.2	-196	78-120%	---	---	Q-03

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QUALITY CONTROL (QC) SAMPLE RESULTS

Polycyclic Aromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 25C1033 - EPA 3511 (Bottle Extraction)						Water						
Matrix Spike (25C1033-MS1)			Prepared: 03/26/25 07:37 Analyzed: 03/27/25 20:31									
QC Source Sample: Non-SDG (A5C1656-01)												
Phenanthrene	10.2	---	0.754	ug/L	10	1.88	9.02	65	80-120%	---	---	Q-03
Pyrene	2.33	---	0.377	ug/L	10	1.88	0.347	105	80-125%	---	---	
Carbazole	9.07	---	0.377	ug/L	10	1.88	8.18	47	65-141%	---	---	Q-03
Dibenzofuran	11.7	---	0.377	ug/L	10	1.88	10.9	44	76-121%	---	---	Q-03
Surr: Acenaphthylene-d8 (Surr)		Recovery: 16 %		Limits: 78-134 %		Dilution: 10x					S-05	
Benzo(a)pyrene-d12 (Surr)		96 %		80-132 %		"					S-05	

Matrix Spike Dup (25C1033-MSD1)			Prepared: 03/26/25 07:37 Analyzed: 03/27/25 21:04									
QC Source Sample: Non-SDG (A5C1656-01)												
Acenaphthene	60.3	---	0.387	ug/L	10	1.93	63.4	-160	80-120%	3	30%	Q-03
Acenaphthylene	5.37	---	0.387	ug/L	10	1.93	4.27	57	80-124%	13	30%	Q-03
Anthracene	2.98	---	0.387	ug/L	10	1.93	0.958	105	80-123%	1	30%	
Benz(a)anthracene	2.04	---	0.193	ug/L	10	1.93	ND	106	80-122%	3	30%	
Benzo(a)pyrene	1.89	---	0.193	ug/L	10	1.93	ND	98	80-129%	10	30%	
Benzo(b)fluoranthene	1.92	---	0.193	ug/L	10	1.93	ND	100	80-124%	3	30%	
Benzo(k)fluoranthene	1.89	---	0.193	ug/L	10	1.93	ND	98	80-125%	2	30%	
Benzo(g,h,i)perylene	1.87	---	0.387	ug/L	10	1.93	ND	97	80-120%	6	30%	
Chrysene	1.97	---	0.193	ug/L	10	1.93	ND	102	80-120%	0.4	30%	
Dibenz(a,h)anthracene	1.85	---	0.193	ug/L	10	1.93	ND	96	80-120%	1	30%	
Fluoranthene	2.48	---	0.387	ug/L	10	1.93	0.520	102	80-126%	0.8	30%	
Fluorene	14.9	---	0.387	ug/L	10	1.93	14.2	33	77-127%	1	30%	Q-03
Indeno(1,2,3-cd)pyrene	2.08	---	0.193	ug/L	10	1.93	ND	108	80-121%	0.4	30%	
1-Methylnaphthalene	41.7	---	0.773	ug/L	10	1.93	43.2	-79	53-148%	3	30%	Q-03
2-Methylnaphthalene	39.0	---	0.773	ug/L	10	1.93	41.0	-107	48-150%	2	30%	Q-03
Naphthalene	68.2	---	0.773	ug/L	10	1.93	72.2	-207	78-120%	0.4	30%	Q-03
Phenanthrene	9.80	---	0.773	ug/L	10	1.93	9.02	40	80-120%	4	30%	Q-03
Pyrene	2.30	---	0.387	ug/L	10	1.93	0.347	101	80-125%	1	30%	
Carbazole	9.75	---	0.387	ug/L	10	1.93	8.18	81	65-141%	7	30%	
Dibenzofuran	11.4	---	0.387	ug/L	10	1.93	10.9	27	76-121%	3	30%	Q-03
Surr: Acenaphthylene-d8 (Surr)		Recovery: 0.8 %		Limits: 78-134 %		Dilution: 10x					S-05	
Benzo(a)pyrene-d12 (Surr)		100 %		80-132 %		"					S-05	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 25D0383 - EPA 3015A						Water						
Blank (25D0383-BLK1)						Prepared: 04/09/25 13:17 Analyzed: 04/10/25 11:34						
<u>EPA 6020B</u>												
Arsenic	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Lead	0.242	---	0.200	ug/L	1	---	---	---	---	---	---	B
LCS (25D0383-BS1)						Prepared: 04/09/25 13:17 Analyzed: 04/10/25 11:40						
<u>EPA 6020B</u>												
Arsenic	55.4	---	1.00	ug/L	1	55.6	---	100	80-120%	---	---	
Lead	56.1	---	0.200	ug/L	1	55.6	---	101	80-120%	---	---	B
Duplicate (25D0383-DUP1)						Prepared: 04/09/25 13:17 Analyzed: 04/10/25 12:18						
<u>QC Source Sample: Non-SDG (A5C1638-07)</u>												
Arsenic	4.32	---	1.00	ug/L	1	---	4.40	---	---	2	20%	
Lead	0.428	---	0.200	ug/L	1	---	0.386	---	---	10	20%	B
Matrix Spike (25D0383-MS1)						Prepared: 04/09/25 13:17 Analyzed: 04/10/25 13:55						
<u>QC Source Sample: Non-SDG (A5C1757-04)</u>												
<u>EPA 6020B</u>												
Arsenic	91.5	---	1.00	ug/L	1	55.6	37.6	97	75-125%	---	---	
Lead	55.2	---	0.200	ug/L	1	55.6	0.598	98	75-125%	---	---	B

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6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
ORELAP ID: OR100062

Stantec Portland 601 SW 2nd Ave Suite 1400 Portland, OR 97204	Project: Blue Heron Focused Remedial Investigation Project Number: 185705769 Project Manager: Len Farr	Report ID: A5C1735 - 04 11 25 1300
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QUALITY CONTROL (QC) SAMPLE RESULTS

Dissolved Metals by EPA 6020B (ICPMS)

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 25D0198 - Matrix Matched Direct Inject						Water						
Blank (25D0198-BLK1)			Prepared: 04/04/25 09:32 Analyzed: 04/05/25 02:15									
<u>EPA 6020B (Diss)</u>												
Arsenic	ND	---	1.00	ug/L	1	---	---	---	---	---	---	
Lead	ND	---	0.200	ug/L	1	---	---	---	---	---	---	
LCS (25D0198-BS1)			Prepared: 04/04/25 09:32 Analyzed: 04/05/25 02:21									
<u>EPA 6020B (Diss)</u>												
Arsenic	54.3	---	1.00	ug/L	1	55.6	---	98	80-120%	---	---	
Lead	55.9	---	0.200	ug/L	1	55.6	---	101	80-120%	---	---	
Duplicate (25D0198-DUP1)			Prepared: 04/04/25 09:32 Analyzed: 04/05/25 02:32									
<u>QC Source Sample: Non-SDG (A5C1716-06)</u>												
Arsenic	ND	---	1.00	ug/L	1	---	ND	---	---	---	20%	
Lead	ND	---	0.200	ug/L	1	---	ND	---	---	---	20%	
Matrix Spike (25D0198-MS1)			Prepared: 04/04/25 09:32 Analyzed: 04/05/25 02:37									
<u>QC Source Sample: Non-SDG (A5C1716-06)</u>												
<u>EPA 6020B (Diss)</u>												
Arsenic	54.3	---	1.00	ug/L	1	55.6	ND	98	75-125%	---	---	
Lead	55.1	---	0.200	ug/L	1	55.6	ND	99	75-125%	---	---	

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Philip Nerenberg, Lab Director

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SAMPLE PREPARATION INFORMATION

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Prep: EPA 3510C (Fuels/Acid Ext.)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 25C0982</u>							
A5C1735-01	Water	NWTPH-Dx	03/21/25 10:30	03/25/25 06:24	960mL/5mL	1000mL/5mL	1.04
A5C1735-02	Water	NWTPH-Dx	03/21/25 11:05	03/25/25 06:24	1000mL/5mL	1000mL/5mL	1.00

Polycyclic Aromatic Hydrocarbons (PAHs) by EPA 8270E (Large Volume Injection)

Prep: EPA 3511 (Bottle Extraction)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 25C1033</u>							
A5C1735-01	Water	EPA 8270E LVI	03/21/25 10:30	03/26/25 07:39	107.36mL/5mL	125mL/5mL	1.16
A5C1735-02	Water	EPA 8270E LVI	03/21/25 11:05	03/26/25 07:39	112.24mL/5mL	125mL/5mL	1.11

Total Metals by EPA 6020B (ICPMS)

Prep: EPA 3015A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 25D0383</u>							
A5C1735-01	Water	EPA 6020B	03/21/25 10:30	04/09/25 13:17	45mL/50mL	45mL/50mL	1.00
A5C1735-02	Water	EPA 6020B	03/21/25 11:05	04/09/25 13:17	45mL/50mL	45mL/50mL	1.00

Dissolved Metals by EPA 6020B (ICPMS)

Prep: Matrix Matched Direct Inject

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
<u>Batch: 25D0198</u>							
A5C1735-01	Water	EPA 6020B (Diss)	03/21/25 10:30	04/04/25 09:32	45mL/50mL	45mL/50mL	1.00
A5C1735-02	Water	EPA 6020B (Diss)	03/21/25 11:05	04/04/25 09:32	45mL/50mL	45mL/50mL	1.00

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QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

- B** Analyte detected in an associated blank at a level above the MRL. (See Notes and Conventions below.)
- DCNT** Sample decanted due to the presence of sediment in water samples, or water in sediment or soil samples. (Note: Decanted aqueous sample bottles are not solvent rinsed.)
- Q-03** Spike recovery and/or RPD is outside control limits due to the high concentration of analyte present in the sample.
- Q-19** Blank Spike Duplicate (BSD) sample analyzed in place of Matrix Spike/Duplicate samples due to limited sample amount available for analysis.
- S-05** Surrogate recovery is estimated due to sample dilution required for high analyte concentration and/or matrix interference.

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REPORTING NOTES AND CONVENTIONS:

Apex Laboratories

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Abbreviations:

- DET Analyte DETECTED at or above the detection or reporting limit.
- ND Analyte NOT DETECTED at or above the detection or reporting limit.
- NR Result Not Reported
- RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Validated Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting and Detection Limits: Default Limits

Default Reporting and Detection Limits are based on 100% dry weight with the minimum dilution for the analysis. Reporting and Detection Limits are raised due to moisture content, additional dilutions required for analysis, matrix interferences and in other cases, as necessary.

Reporting Conventions:

- Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.
 - " dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.
 - " wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.
 - " " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.
- Results for Volatiles analyses on soils and sediments that are reported on a "dry weight" basis include the water miscible solvent (WMS) correction referenced in the EPA 8000 Method guidance documents. Solid and Liquid samples reported on an "As Received" basis do not have the WMS correction applied, as dry weight was not performed.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) may not be included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

- " --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.
- " *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

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REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to one half of the Reporting Limit (RL). Blank results for gravimetric analyses are evaluated to the Reporting Level, not to half of the Reporting Level.

- For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
- For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.

For further details, please request a copy of this document.

- Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level, if results are not reported to the MDL.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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Decanted Samples:

Soils/Sediments:

Unless TCLP analysis is required or there is notification otherwise for a specific project, all Soil and Sediments containing excess water are decanted prior to analysis in order to provide the most representative sample for analysis.

Water Samples:

Water samples containing solids and sediment may need to be decanted in order to eliminate these particulates from the water extractions. In the case of organics extractions, a solvent rinse of the container will not be performed.

Volatiles Soils (5035s)

Samples that are field preserved by 5035 for volatiles are dry weight corrected using the same dry weight correction as for normal analyses. In the case of decanted samples, the dry weight may be performed on a decanted sample, while the aliquot for 5035 may not have been treated the same way. If this is a concern, please submit separate containers for dry weight analysis for volatiles can be provided.

All samples decanted in the laboratory are noted in this report with the DCNT qualifier indicating the sample was decanted.

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LABORATORY ACCREDITATION INFORMATION

ORELAP Certification ID: OR100062 (Primary Accreditation) -
EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation
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All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation. Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provided by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

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APEX LABS		CHAIN OF CUSTODY		Lab # <u>ASC1735</u> COC <u>1</u> of <u>1</u>	
6700 SW Sandburg St., Tigard, OR 97223 Ph: 503-718-2323		Project Mgr: LEN FARR		Project Name: BLUE HERON	
Company: STANTEC		Phone: 714 686 4435 Email: @STANTEC.COM		Project #: 185705769	
Address: 601 SW 2nd AVE, SUITE 1400 PDX		Sampled by: ROBERT MCKALISTER		NO #	
State Sampled: OR WA		ANALYSIS REQUEST			
Other		8270E PAHS	<input checked="" type="checkbox"/>	8081B Pest	
County: CLATSOP		8260D VOCs Full List		8082A PCBs	
		8260D HMO VOCs		8270E Semi-Vols Full List	
		8260D RDM VOCs		8270E PAHS	
		8260D BTEX		8260D VOCs Full List	
		NWTPH-CX		8260D HMO VOCs	
		NWTPH-DX	<input checked="" type="checkbox"/>	8260D RDM VOCs	
		NWTPH-HCID		8260D BTEX	
		# OF CONTAINERS	6	NWTPH-CX	
		MATRIX	Ag	NWTPH-DX	
		TIME	1030	NWTPH-HCID	
		DATE	3/21/25		
		SAMPLE ID			
1	BH-MW-4		1030		
2	BH-MW-5		1105		
3					
4					
5					
6					
7					
8					
9					
10					

Normal Turn Around Time (TAT) = 10 Business Days →

***** RUSH - Request** → Indicate Date Needed: _____

*****Rush TAT requests may incur additional cost**

For TAT calculations, samples received after 3pm will be considered received the next business day.
Data will be reported by 6pm. Samples with <72 hrs of hold time may be surcharged.

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: _____	RECEIVED BY: _____
Signature: <i>[Signature]</i>	Signature: _____
Date: 3/21/25	Date: 3/21/25
Printed Name: ROBERT MCKALISTER	Printed Name: _____
Time: 1200	Time: 1200
Company: STANTEC	Company: _____

SPECIAL INSTRUCTIONS:

RESULTS TO:
ROBERT MCKALISTER @STANTEC.COM

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APEX LABS COOLER RECEIPT FORM

Client: stantec Element WO#: A5 C1735

Project/Project #: Blue Heron 185 70576 9

Delivery Info:
 Date/time received: 3/21/25 @ 1200 By: EST
 Delivered by: Apex Client ESS FedEx UPS Radio Morgan SDS Evergreen Other _____
 From USDA Regulated Origin? Yes _____ No _____

Cooler Inspection Date/time inspected: 3/21/25 @ 1213 By: EST
 Chain of Custody included? Yes No _____
 Signed/dated by client? Yes No _____
 Contains USDA Reg. Soils? Yes _____ No Unsure (email RegSoils) _____

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	<u>1.0</u>	_____	_____	_____	_____	_____	_____
Custody seals? (Y/N)	<u>N</u>	_____	_____	_____	_____	_____	_____
Received on ice? (Y/N)	<u>Y</u>	_____	_____	_____	_____	_____	_____
Temp. blanks? (Y/N)	<u>Y</u>	_____	_____	_____	_____	_____	_____
Ice type: (Gel/Real/Other)	<u>Real</u>	_____	_____	_____	_____	_____	_____
Condition (In/Out):	<u>In</u>	_____	_____	_____	_____	_____	_____

Cooler out of temp? (Y/N) Possible reason why: _____
 Green dots applied to out of temperature samples? Yes No _____
 Out of temperature samples form initiated? Yes No _____

Sample Inspection: Date/time inspected: 3/21/25 @ 1237 By: APW
 All samples intact? Yes No _____ Comments: _____

Bottle labels/COCs agree? Yes No _____ Comments: _____

COC/container discrepancies form initiated? Yes _____ No
 Containers/volumes received appropriate for analysis? Yes No _____ Comments: _____

Do VOA vials have visible headspace? Yes _____ No _____ NA
 Comments: _____

Water samples: pH checked: Yes No _____ NA _____ pH appropriate? Yes No _____ NA _____ pH ID: ADST172
 Comments: _____

Labeled by: APW Witness: [Signature] Cooler Inspected by: APW
 Form Y-003 R-02

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With every community, we redefine what's possible.



Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

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