May 15, 2018

Garin Schrieve
Washington State Department of Ecology
Southwest Regional Office
P.O. Box 47600
Olympia, Washington 98504

Via email: garin.schieve@ecy.wa.gov

Regarding: Annual Monitoring Report
Ecology Facility Site ID #28, Cleanup Site ID #2272
Nippon Dynawave Packaging - Chlor-Alkali Plant Site
3535 Industrial Way
Longview, Washington
PBS Project No. 17759.000 Phase 0002

Dear Mr. Schrieve:

This letter report serves as the annual report for the Nippon Dynawave Packaging Company (NDP) Chlor-Alkali site (site) located at 3535 Industrial Way in Longview, Washington. The Compliance Monitoring Plan[1] specifies that an annual compliance monitoring report is to be prepared summarizing the results of groundwater monitoring, additional work, and notable changes to site conditions for the monitoring period. This report provides a summary of work completed at the site from April 1, 2017 to March 31, 2018.

SITE LOCATION

The Chlor-Alkali site is located within the Nippon Dynawave Packaging mill complex, which consists of the kraft pulp and paper mill, as well as the liquid packaging paper and extruder operations. The Nippon Dynawave Packaging facility is surrounded by industrial facilities, including the North Pacific Paper Corporation (NORPAC) facility and Weyerhaeuser lumber mill to the east and the Weyerhaeuser truck shop to the west. A portion of the site is currently leased by Axiall Corporation (Axiall) from Nippon Dynawave Packaging. The entire facility is zoned as heavy industrial. Figure 1 shows the site location.

The Chlor-Alkali site is comprised of the area within the Agreed Order[2] and associated Restrictive Covenant related to historical mercury contamination. The area under the Restrictive Covenant includes the entire portion of the site leased to Axiall, a portion of the truck shop parcel owned by Weyerhaeuser, and portions of the Nippon Dynawave Packaging mill complex. The extent of the Restrictive Covenant and the properties within the area are shown in Figure 2.

OPERATIONAL HISTORY

As a result of the historical operations prior to 1976 (production of chlorine and sodium hydroxide for use by the pulp and paper industry), mercury was released to the site from equipment and process leaks and spills. Historical

[1] CH2MHILL. (September 2004). Chlor-Alkali Plant – Compliance Monitoring Plan. Prepared for Weyerhaeuser Company. Longview, Washington.
[2] Washington State Department of Ecology. (2004). Agreed Order No. DE 1037.

operations and contaminant sources were removed when chlorine production in the No. 1 Cell Room ceased in 1975 (remediation of surface impoundments began in 1972). In 1976, the mercury cells in the No. 2 Cell Room were converted to diaphragm cells (a non mercury-based process). Cell Room No. 1, where historical mercury processing occurred, was demolished in 1991 and Cell Room No. 2 continued to operate until 1999. Chlor-Alkali production ceased at the facility in March 1999.

In1985, the Washington State Department of Ecology (Ecology) designated the Chlor-Alkali plant as a medium priority on the Washington hazardous waste site list (Cleanup Site #2272, Facility Site ID #28) due to mercury concentrations exceeding the Environmental Protection Agency (EPA) maximum contaminant level (MCL) in groundwater wells. Groundwater has been sampled at the site since 1991. Mercury present at the site is inorganic, has relatively low mobility, and is considered the only constituent of concern at the site.

In 2005, Ecology approved a long-term monitoring plan. After reviewing the 2010 Groundwater Monitoring Report, a revised monitoring schedule was proposed by Ecology in 2011. Under the revised schedule, one year of quarterly sampling was to be completed once every five years. The western monitoring wells (MW wells) would only be sampled once during the sample year. Groundwater sampling under this schedule was completed in 2014.

In December 2015, Ecology approved a revised long-term monitoring schedule and decommissioning of the western monitoring wells (MW-1 to MW-4). The revised long-term monitoring schedule consists of a single monitoring event to be conducted once every five years. The western monitoring wells (MW-1 to MW-4) were decommissioned in February 2016.

The current Compliance Monitoring Plan for the site specifies that an annual compliance monitoring report is to be prepared summarizing the results of groundwater monitoring, additional work, and notable changes to site conditions for the monitoring period.

SITE GEOLOGY AND HYDROGEOLOGY

Geology

The site is located on the floodplain of the Columbia River. Over the years, dredged sediment and gravel fill have been placed across portions of the site at a thickness of between 2 and 20 feet. Alluvium underlying the fill consists of silt, sandy silt, and silty sand. Fine-grained alluvial deposits predominate to a depth of approximately 200 feet, where the alluvium becomes generally a coarse-grained mixture of sand, gravel, and cobbles. Flows of the Columbia River Basalt Group underlie the alluvium.

The site is flat and overlies a remnant of Mount Coffin, an isolated basalt erosional peak that was leveled and covered with a thin layer of fill before the plant was built. Basalt at the site is encountered at variable depths because of the buried remnant of Mt. Coffin, ranging from less than 5 feet at the Mt. Coffin remnant to greater than 300 feet elsewhere.

Hydrogeology

Groundwater occurring in alluvium is referred to as alluvial (or alluvial zone) groundwater, and groundwater occurring in basalt as basalt (or basalt zone) groundwater. These zones do not exist in a “layer cake” arrangement at the site. Instead, the buried but steep relief associated with the remnant of Mt. Coffin allows basalt groundwater and alluvial groundwater to occur side-by-side in the southern portion of the site. Groundwater in both of these

zones discharges to the Columbia River, which lies on the west boundary of the site and which controls the base level of the local and regional hydrologic systems.

Groundwater occurs in the upper part of the fill and alluvium deposits under unconfined conditions at depths of 8 to 15 feet below ground surface (bgs) in the west area and 2.5 to 4.5 feet bgs in the more easterly former No. 1 Cell Room area. Groundwater elevations in the upper finer-grained part of the alluvium, as determined by site monitoring wells, are controlled by seasonal variations in precipitation and, to a lesser extent, by fluctuations in the Columbia River stage. Figure 2 presents the location of existing monitoring wells at the site.

In general, groundwater elevations tend to be highest in spring and lowest in late summer or early fall. Based on the Remedial Investigation (RI) findings, the hydraulic gradient in the alluvium ranges from 0.04 to 0.008 feet per feet, the hydraulic conductivity is estimated at 28 feet per day, and the horizontal groundwater flow velocity ranges from 1 to 6 feet per day.

The direction of groundwater flow varies across the site but is generally toward the river, as is the stormwater flow direction. In the central and western portions of the site, groundwater generally flows to the west-southwest. In the eastern portion of the site, groundwater in the alluvium flows around the less permeable, buried remnant of Mt. Coffin, with south-southeasterly flow east of Mt. Coffin and west to southwesterly flow west of Mt. Coffin. The area where the elevation of basalt exceeds 10 feet (that is, basalt is present within 10 feet of the surface) exhibits a greater effect on shallow groundwater flow, as noted in the RI. Based on RI findings, the hydraulic gradient in the basalt zone is estimated at 0.03 feet/feet, the hydraulic conductivity is estimated at 6×10^3 feet/day, and the horizontal groundwater flow velocity is estimated at approximately 0.004 feet/day.

Below a depth of approximately 200 feet, groundwater occurs in a confined alluvial aquifer. The total thickness of this aquifer is poorly documented, but is at least 130 feet thick.

NATURE AND EXTENT OF CONTAMINATION IN GROUNDWATER

The mercury released to the environment at the Chlor-Alkali plant was elemental and inorganic, with relatively low mobility. Elemental mercury is very dense and readily sinks under gravity through openings in media through which it travels (e.g. large pores, fractures, joints). Mercury stops moving when it encounters a pore or fracture too small for it to enter. The residual mercury will then slowly dissolve into groundwater or soil pore water. In the unsaturated zone, mercury also will enter the vapor phase. Because of its density, high surface tension, presence as a separate-phase liquid, and accumulation in basalt fractures, active mercury remediation at the site is inherently complex and difficult.

Use of mercury at the plant ceased in 1976, and all of the processes and equipment using mercury have been either converted to another type of process or removed. As a result, there are no remaining sources of mercury at the site other than the residual from the earlier releases.

The distribution of mercury in the two water-bearing zones (alluvial groundwater and basalt groundwater) is predominantly a result of the proximity of the zones to historical sources (particularly, the former No. 1 Cell Room and former surface impoundment area) and of groundwater flow. Site groundwater sampling results have shown that mercury concentrations are generally below detection limits in all areas of the site except at the former No. 1 Cell Room and former surface impoundment area. In these areas, 2014 groundwater sampling results indicate that mercury concentration in alluvial and basalt groundwater range from below the detection limit of 0.2 micrograms per liter (µg/L) to up to 57 µg/L.

Results from the RI include the following additional information:

- Mercury concentration in groundwater are remaining steady or decreasing with time. The rate of decrease is slowest in the area of the former No. 1 Cell Room and the former surface impoundments. Except for in these areas, mercury concentrations are at or below the drinking water maximum contaminant level (MCL) of 2 µg/L for mercury.
- Potential explanations for the slow decrease in mercury concentrations in the area of the former No. 1 Cell Room include the following:
    - The amount of groundwater flux (and therefore the rate of flushing) is limited because the asphalt cap reduces rainfall infiltration, and the permeability of the basalt and alluvium fill above the basalt is very low.
    - It is possible that small amounts of elemental mercury may be present below the water table as isolated globules in basalt fractures. If present, these globules could serve as an ongoing source of dissolved mercury in basalt groundwater.
- Although transient fluctuations in mercury concentrations may occur as a result of unusually high groundwater levels and rainfall conditions, concentrations in groundwater are not expected to increase substantially over time. The original mercury sources were removed from the plant 35 years ago. Additional mercury sources were addressed in subsequent removal actions. Furthermore, results from soil and groundwater sampling suggest that leaching of mercury from soil to groundwater by infiltration and percolation of precipitation is not a major factor influencing mercury concentrations in groundwater.
- Mercury is not present in groundwater upgradient of the former No. 1 Cell Room and former surface impoundment area based on semiannual groundwater sampling data from monitoring wells CH-7 and CH-8 collected from 1998 to 2009.
- The basalt portion of the shallow aquifer contains higher mercury concentrations than the alluvial aquifer, but transmits less groundwater flow; therefore, mercury flux contributed by the basalt aquifer constitutes a relatively insignificant amount of mercury to the surrounding groundwater and Columbia River.

RECENT SITE ACTIVITIES

The following section summarizes recent site activities, including the current groundwater monitoring program and recent site redevelopment activities.

Groundwater Monitoring Program

In accordance with the long-term monitoring program for the site, groundwater monitoring activities were not conducted for the current annual period (January to December 2017). Based on the revised schedule and the approved 2015 Annual Report, one single monitoring event for the site will occur in the first quarter of 2019. Figure 2 presents the locations of the current groundwater monitoring well network.

Additional Work

Nippon Coffin Rock Substation

In 2016, Nippon Dynawave Packaging submitted notification to Ecology for proposed construction activities related to the Coffin Rock substation. The project was completed in June 2017 and included construction of two power poles for a new electric transmission line and expansion of the Coffin Rock substation. These project areas are located in the northeast portion of the site.

Soil and groundwater samples were collected in February and March 2017 from the proposed excavation areas in order to determine appropriate waste management and to develop waste profiles. A description of these sampling activities was included in the Annual Monitoring Report[3] for the 2016 to 2017 reporting period.

On June 8, 2017, PBS mobilized to the site to collect soil and groundwater samples from the two proposed power pole locations, referred to as poles 3 and 4. Pole 3 is located west of the warehouse building and pole 4 is located east of the warehouse building. One three-point composite soil sample was collected from each pole location. The stockpiled material from pole 3 was excavated from depths of approximately 0 to 4 feet and the stockpiled material from pole 4 was excavated from depths of approximately 0 to 3 feet. One groundwater sample was collected using a mini disposable bailer from a depth of approximately 3 to 4 feet. Soil and groundwater sample locations are shown in Figure 3.

Soil samples were submitted for initial analysis for diesel- and heavy oil-range petroleum hydrocarbons by NWTPH-Dx, gasoline-range hydrocarbons by NWTPH-Gx, and Resource Conservation and Recovery Act (RCRA) metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). The groundwater sample was submitted for analysis of total mercury.

Soil samples from each pole location showed detectable levels of total mercury. Specifically, both soil samples were above the site-specific screening level of 4 milligrams per kilogram (mg/kg) and were analyzed for leachable mercury by toxicity characteristic leaching procedure (TCLP). All soil samples analyzed by TCLP were below the limit of 0.2 mg/kg. Based on soil sample results, it was determined that soil from the areas sampled could be disposed of as non-hazardous solid waste. Soil was removed from the site and disposed of at the Cowlitz County Headquarters Landfill in Castle Rock, Washington.

Results of groundwater sampling indicated a concentration of total mercury above the limit of 0.2 milligrams per liter (mg/L). Due to these results, Nippon Dynawave Packaging revised the design of the substation expansion area in order to minimize the excavation depth and need for dewatering groundwater during construction. Soil and groundwater laboratory reports are included in Attachment 1.

Weyerhaeuser Truck Shop

In March 2018, Weyerhaeuser began construction of a modular building at the Weyerhaeuser Truck Shop. The majority of work for this project was conducted west of the site, across Hoehne Avenue. Project areas within the Restrictive Covenant area included a utility trench and asphalt repairs to the parking lot located south of the existing truck maintenance shop. The project involved subsurface excavation work not considered emergency repair or routine maintenance. Weyerhaeuser submitted notification to Ecology in March 2018. On March 5, 2018, PBS mobilized to the site to collect soil samples. One four-point composite sample (SS01-030518) was collected from the proposed parking lot resurfacing area located south of the maintenance shop. One three-point composite sample (SS02-030518) was collected from a stockpile consisting of materials excavated from the utility trench.

Soil samples were submitted for analysis for diesel- and heavy oil-range petroleum hydrocarbons by NWTPH-Dx, gasoline-range hydrocarbons by NWTPH-Gx, and RCRA metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). Both soil samples showed detectable levels of total mercury, but concentrations were below the screening level of 4 mg/kg. Based on soil sample results, it was determined that soil from both

[3] PBS Engineering and Environmental. (May 31, 2017). Annual Monitoring Report.

areas could be disposed of as non-hazardous solid waste. Soil was removed from the site and disposed of at the Cowlitz County Headquarters Landfill.

Impervious Conditions
Site activities associated with the Coffin Rock substation project resulted in the removal of an approximately 1,100 square foot building and replacement of approximately 1,200 square feet of impervious surfaces for a net increase of impervious surface of 100 square feet. Site activities at the Weyerhaeuser truck shop did not affect the total amount of impervious area at the site. The total impervious area remains unchanged (approximately 28.2 acres) from that reported last year. The extent of existing impermeable surfaces is shown in Figure 4.

Please feel free to contact me at 503.806.2253 or mark.leece@pbsusa.com with any questions or comments.

Sincerely,

Digitally signed
by Mark Leece
Date: 2018.05.15
17:32:04 -07'00'

Mark Leece, PE
Principal Engineer

cc: Greg Bean, Nippon Dynawave Packaging
Brian Wood, Nippon Dynawave Packaging
Luke Hart, Axiall
Carol Wiseman, Weyerhaeuser
Paul Gianotti, Weyerhaeuser
Anthony Rizzo, Weyerhaeuser
Jack Carter, Weyerhaeuser
Kim Wigfield, Ecology
Lizbeth Saldivar, PBS Engineering and Environmental

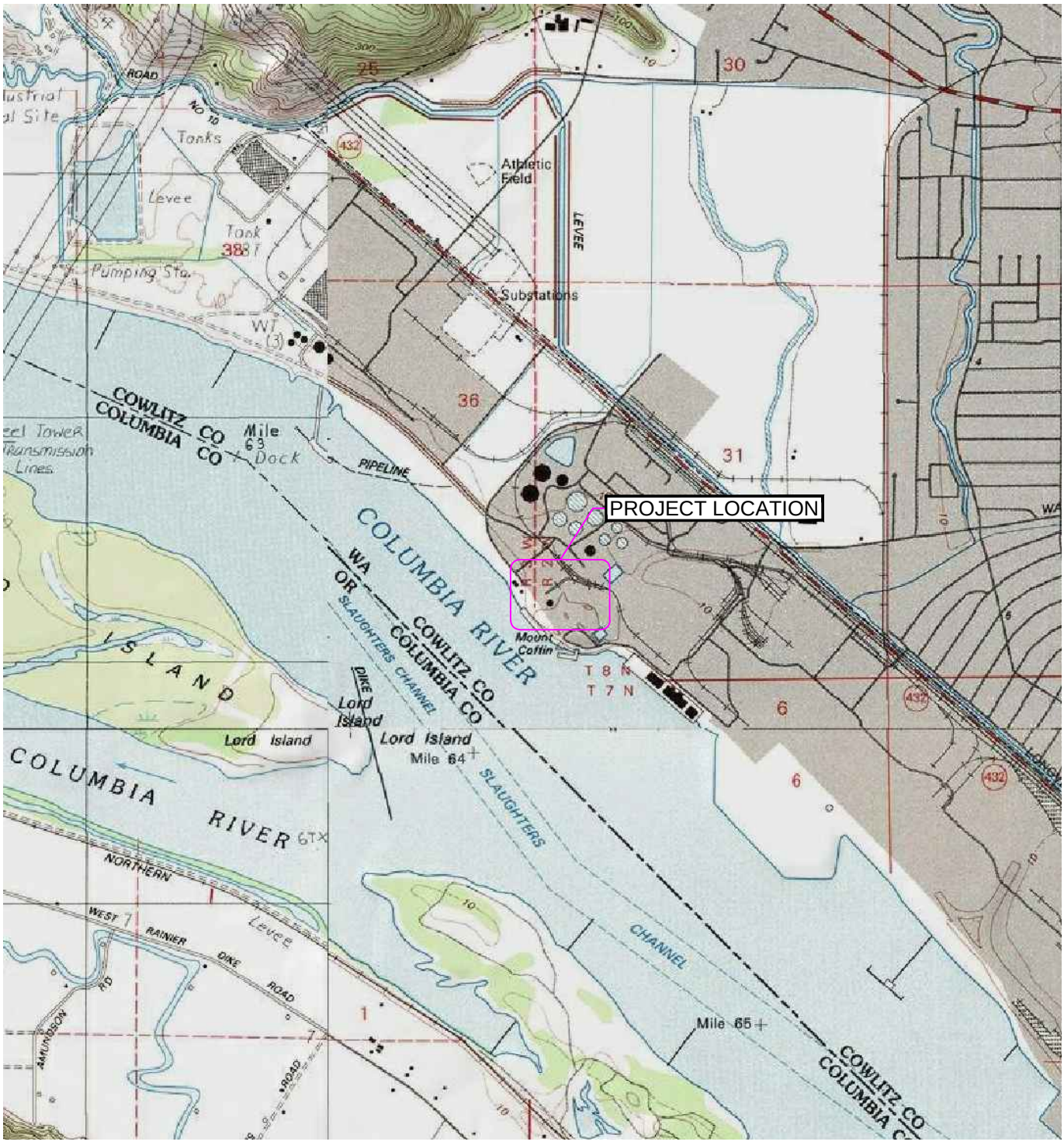
Attachment(s): Figure 1. Vicinity Map
Figure 2. Site Plan
Figure 3. Soil and Groundwater Sample Locations
Figure 4. Impervious Surfaces

Attachment 1. Laboratory Reports and Chain-of-Custody Documentation

LS:ML

FIGURES

Figure 1. Vicinity Map
Figure 2. Site Plan
Figure 3. Soil and Groundwater Sample Locations
Figure 4. Impervious Surfaces



SOURCE: USGS KELSO WA OR QUADRANGLE 1990.

SCALE: 1" = 2,000'

0' 1,000' 2,000' 4,000'

PREPARED FOR: NIPPON DYNAWAVE PACKAGING

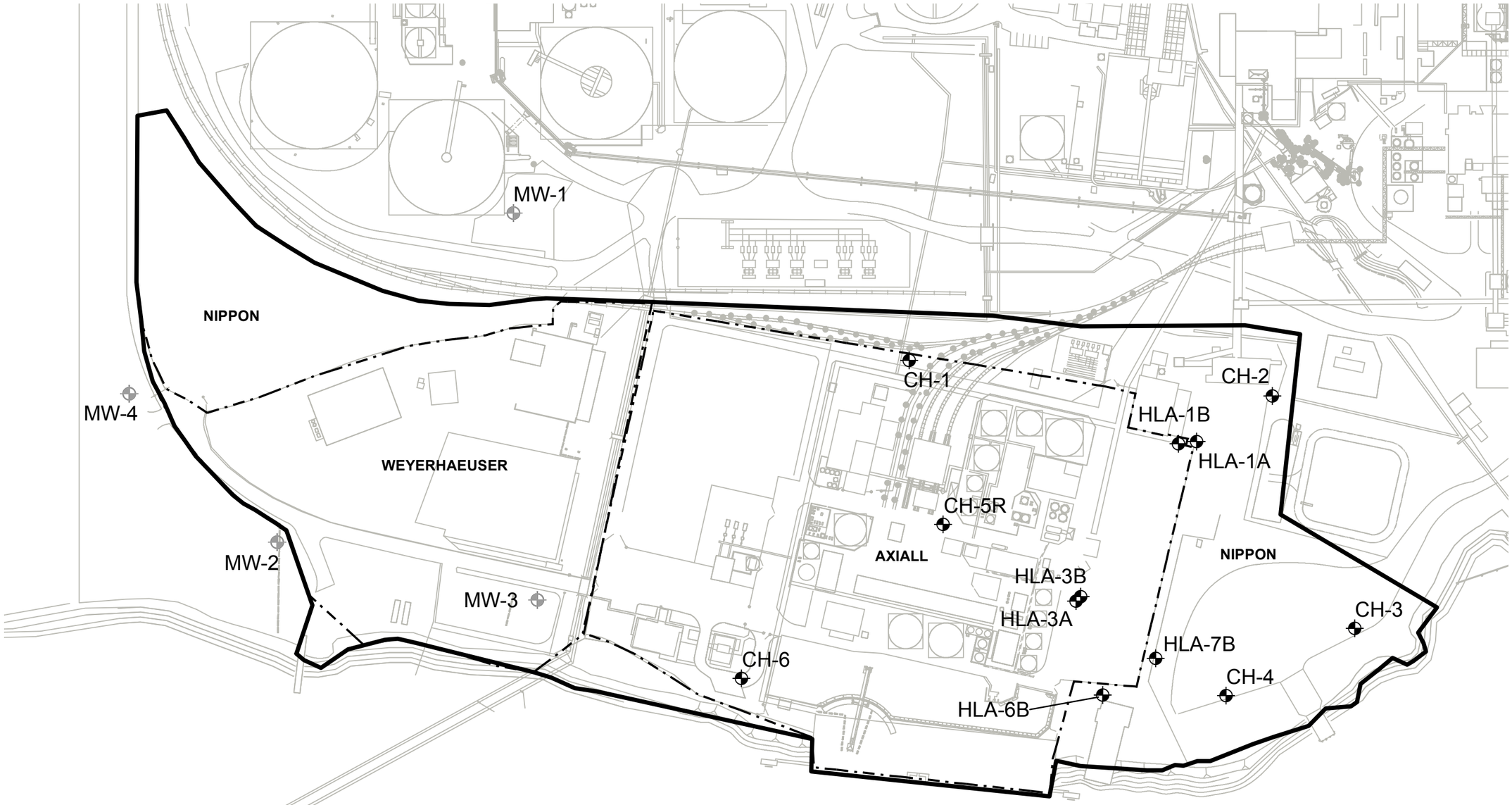
PBS

VICINITY MAP

3535 INDUSTRIAL WAY
LONGVIEW, WASHINGTON

APRIL 2017
17759.000

FIGURE
1



LEGEND

- Extent of Restrictive Covenant
- Property Boundaries
- Monitoring Well
- Monitoring Wells Decommissioned in March 2016

1 inch = 200 feet

0 100 200 400'

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PBS Engineering and Environmental Inc.
4412 SW Corbett Avenue
Portland, OR 97239
503.248.1939
pbsusa.com

PBS

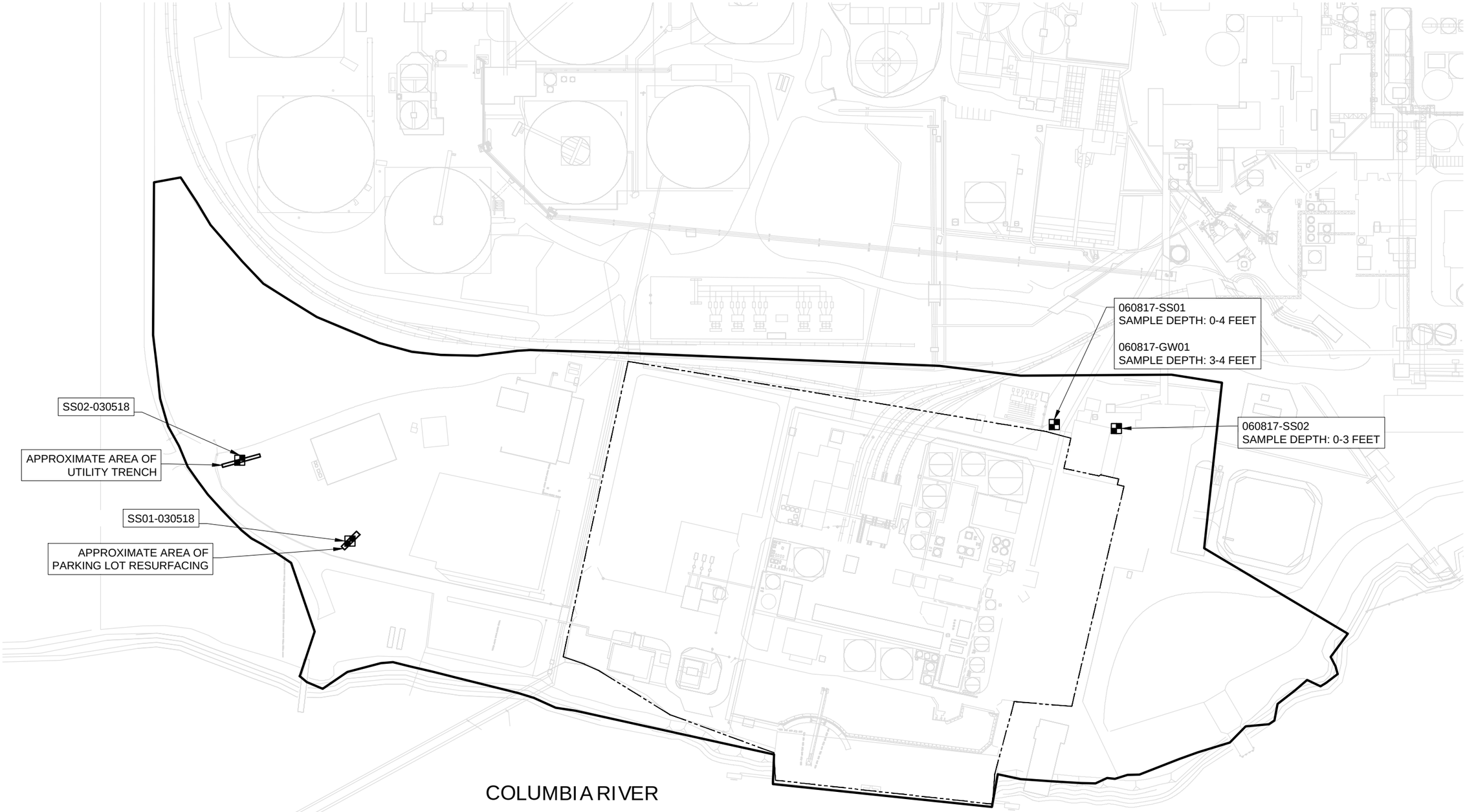
SITE PLAN

CHLOR-ALKALI PLANT

3535 INDUSTRIAL WAY, LONGVIEW, WASHINGTON

PROJECT
17759.000
DATE
MAY 2017
FIGURE
2

L:\Projects\17000\17700-17799\17759\17759-000\GIS\Maps\17759.000_Figure2_Site Plan.mxd



LEGEND

- EXTENT OF RESTRICTIVE COVENANT
- AXIALL FACILITY
- SAMPLE LOCATION

SITE PLAN

SCALE: 1" = 200'

0 100' 200' 400'

PREPARED FOR: NIPPON DYNAWAVE PACKAGING

Full Size Sheet Format Is 11x17; If Printed Size Is Not 11x17, Then This Sheet Format Has Been Modified & Indicated Drawing Scale Is Not Accurate.

PBS Engineering and Environmental Inc.
2517 Eastlake Ave East, Ste 100
Seattle, WA 98102
206.233.9639
pbsusa.com

PBS

SOIL SAMPLE LOCATIONS

CHLOR-ALKALI PLANT

3535 INDUSTRIAL WAY, LONGVIEW, WASHINGTON

PROJECT
17759.000
DATE
APRIL 2018
FIGURE
3

Filename: L:\Projects\17000\17700-17799\17759\17759-000\DWG\17759.000_FIG 3_2018.dwg Layout Tab: 11X17 DRAWINGS User: Lizbeth Saldivar CAD Plot Date/Time: 4/30/2018 2:16:45 PM

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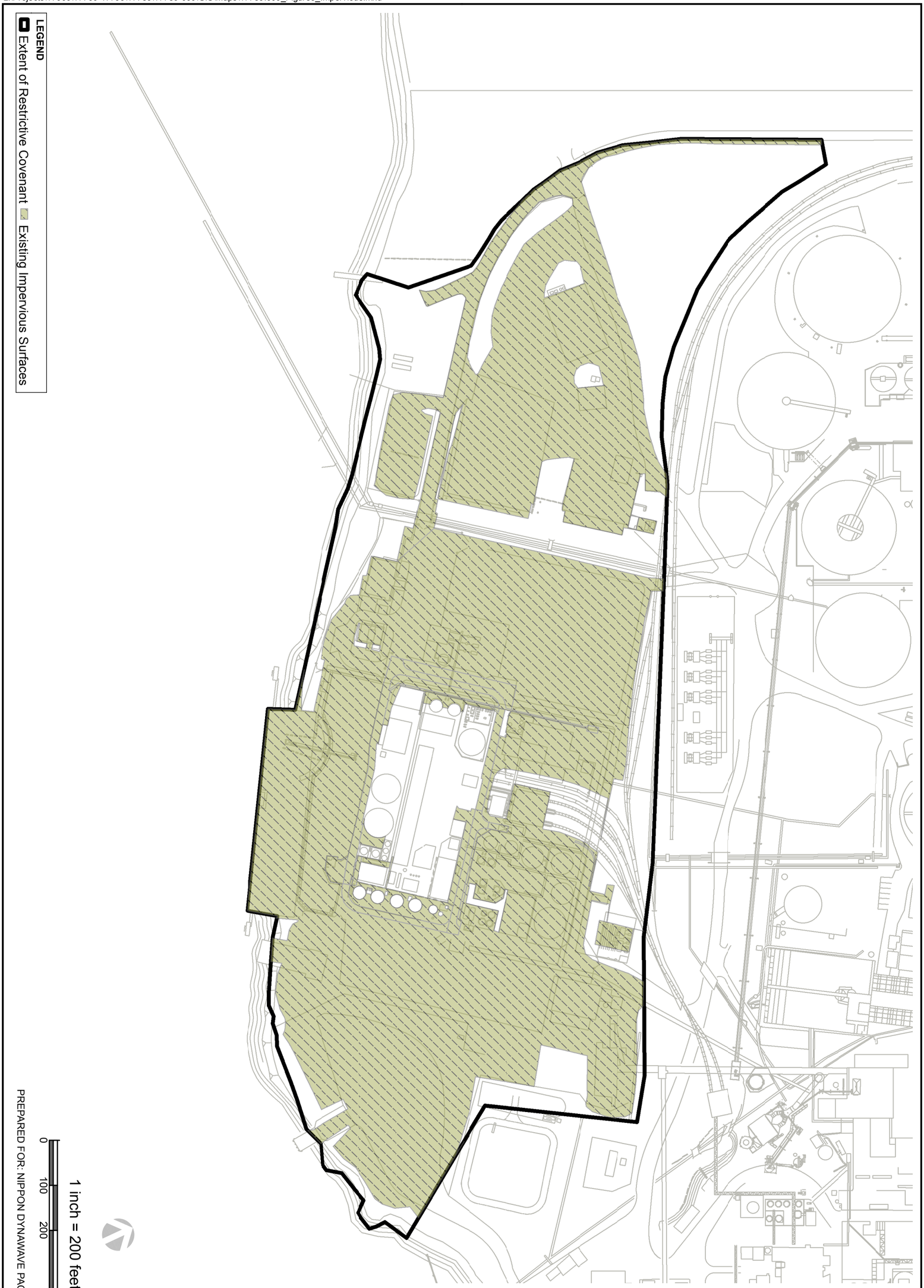

PREPARED FOR: NIPPON DYNAWAVE PACKAGING

IMPERVIOUS SURFACES

CHLOR-ALKALI PLANT

3535 INDUSTRIAL WAY, LONGVIEW, WASHINGTON

FIGURE	DATE	PROJECT
4	MAY 2017	17759.000

PBS Engineering and Environmental Inc.
4412 SW Corbett Avenue
Portland, OR 97239
503.248.1939

pbsusa.com

ATTACHMENT 1

Laboratory Reports and Chain-of-Custody Documentation

ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

June 14, 2017

Analytical Report for Service Request No: K1705898

Mark Leece
PBS Engineering and Environmental
4412 SW Corbett Ave
Portland, OR 97239

RE: Nippon Coffin Rock / 17745.000

Dear Mark,

Enclosed are the results of the sample(s) submitted to our laboratory June 08, 2017
For your reference, these analyses have been assigned our service request number **K1705898.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Chris Leaf
Project Manager

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Metals

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Chain of Custody

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068
Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.: K1705898

Project Manager:	Mark Leece	**Bill to:**	PO NUMBER:
Client Name:	PBS Eng. + Env.	**Company:**	PBS Eng. + Env.
Address:	4412 SW Corbett Ave	**Address:**	4412 SW Corbett Ave
City, State ZIP:	Portland, OR 97239	**City, State ZIP:**	Portland, OR 97239
Email:	mark.leece@pbsusa.com **Phone:**	**Email:**	
Project Name:	NIPPON Coffin Rock		
Project Number:	17745.000		
P.O. Number:			
Sampler's Name:	Lizbeth Saldivar		

SAMPLE RECEIPT

Temperature (°C):		Temp Blank Present			
Received Intact:	Yes	No	N/A	Wet Ice / Blue Ice	
Cooler Custody Seals:	Yes	No	N/A	Total Containers:	
Sample Custody Seals:	Yes	No	N/A		

REQUESTED ANALYSIS

TAT

- [x] Routine (5501 & 5502)
- [ ] Same Day ***
- [ ] Next Day ***
- [ ] 3 Day 48-HR.
- [ ] 5 Day GW01

*** Please call for availability

Due Date:

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	Total Mercury	NWTPH-Dx Silica gel	NWTPH-Gx	RCRA Metals	Comments
060817-SS01	Soil	6/8/17	1430		4		X	X	X	
060817-SS02	Soil	↓	1445		4		X	X	X	
060817-GW01	GW		1500		1	X				

LS

Dissolved	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr
Total	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr

Additional Methods Available Upon Request

RELINQUISHED BY			RECEIVED BY		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
Lizbeth Saldivar		6/8/17/16:10			6/8/17 1610

Routine TAT for SS01 and SS02. 48-hr TAT for GW01.
Email results to lizbeth.saldivar@pbsusa.com

Revised: 6/7/2017

PC JM

Cooler Receipt and Preservation Form

Client PBS Eng & Env Service Request K17 05898

Received: 6/8/17 Opened: 6/8/17 By: BR Unloaded: 6/8/17 By: BR

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____

If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
12.6	12.8	—	—	+0.2	349				

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N

   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

SHORT HOLD TIME

7/25/16 *Page ____ of ____*

Metals

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Analytical Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705898
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/17 15:00
Sample Matrix:	Water	**Date Received:**	06/08/17 16:10
Sample Name:	060817-GW01	**Basis:**	NA
Lab Code:	K1705898-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	**2210**	ug/L	200	1000	06/12/17 07:38	06/10/17	

Analytical Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705898
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ1707583-01		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	ug/L	0.20	1	06/12/17 07:11	06/10/17	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705898
Project	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/17
Sample Matrix:	Water	**Date Received:**	06/08/17
		Date Analyzed:	06/12/17

Replicate Sample Summary

Total Metals

Sample Name:	060817-GW01	**Units:**	ug/L
Lab Code:	K1705898-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1707583-03 Result	Average	RPD	RPD Limit
Mercury	7470A	200	2210	2170	2190	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 06/13/17 9:14:46 AM Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705898
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/17
Sample Matrix:	Water	**Date Received:**	06/08/17
		Date Analyzed:	06/12/17
		Date Extracted:	06/10/17

Matrix Spike Summary
Total Metals

Sample Name:	060817-GW01	**Units:**	ug/L
Lab Code:	K1705898-001	**Basis:**	NA
Analysis Method:	7470A		
Prep Method:	Method		

Matrix Spike
KQ1707583-04

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Mercury	2210	2100	5	-2200 #	75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 06/13/17 9:14:46 AM Superset Reference:

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705898
Project:	Nippon Coffin Rock/17745.000	**Date Analyzed:**	06/12/17
Sample Matrix:	Water		

Lab Control Sample Summary
Total Metals

Units:ug/L
Basis:NA

Lab Control Sample
KQ1707583-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7470A	4.54	5.00	91	80-120

ALS Environmental
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July 03, 2017

Analytical Report for Service Request No: K1705899

Chad Koepfle
PBS Engineering and Environmental
4412 SW Corbett Ave
Portland, OR 97239

RE: Nippon Coffin Rock / 17745.000

Dear Chad,

Enclosed are the results of the sample(s) submitted to our laboratory June 08, 2017
For your reference, these analyses have been assigned our service request number **K1705899.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Chris Leaf
Project Manager

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

ALS ENVIRONMENTAL

Client:	PBS Engineering & Environmental	**Service Request No.:**	K1705899
Project:	Nippon Coffin Rock / 17745.000	**Date Received:**	06/08/2017
Sample Matrix:	Soil		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II data deliverables. When appropriate to the method, method blank results have been reported with each analytical test. Surrogate recoveries have been reported for all applicable organic analyses. Additional quality control analyses reported herein include: Laboratory Duplicate (DUP), Matrix Spike (MS), Matrix/Duplicate Matrix Spike (MS/DMS), Laboratory Control Sample (LCS), and Laboratory/Duplicate Laboratory Control Sample (LCS/DLCS).

Sample Receipt

Two soil samples were received for analysis at ALS Environmental on 06/08/2017. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Total Metals

Relative Percent Difference Exceptions:
The Relative Percent Difference (RPD) for the replicate analysis of Lead in sample 060817-SS01 was outside the normal ALS control limits. The variability in the results was attributed to the heterogeneous character of the sample. Standard mixing techniques were used, but were not sufficient for complete homogenization of this sample.

No other anomalies associated with the analysis of these samples were observed.

Diesel Range Organics by Method NWTPH-Dx

No anomalies associated with the analysis of these samples were observed.

Gasoline Range Organics by Method NWTPH-Gx

No anomalies associated with the analysis of these samples were observed.

Approved by_____

Chain of Custody

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Chain of Custody

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Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.: K1705899

Project Manager:	Mark Leece	**Bill to:**	PO NUMBER:
Client Name:	PBS Eng. + Env.	**Company:**	PBS Eng. + Env.
Address:	4412 SW Corbett Ave	**Address:**	4412 SW Corbett Ave
City, State ZIP:	Portland, OR 97239	**City, State ZIP:**	Portland, OR 97239
Email:	mark.leece@pbsusa.com	**Phone:**	**Email:**
Project Name:	NIPPON Coffin Rock		
Project Number:	17745.000		
P.O. Number:			
Sampler's Name:	Lizbeth Saldivar		

SAMPLE RECEIPT

Temperature (°C):			Temp Blank Present		
Received Intact:	Yes	No	N/A	Wet Ice / Blue Ice	
Cooler Custody Seals:	Yes	No	N/A	Total Containers:	
Sample Custody Seals:	Yes	No	N/A		

REQUESTED ANALYSIS

TAT

- [x] Routine (SS01 & SS02)
- [ ] Same Day ***
- [ ] Next Day ***
- [ ] 3 Day 48-HR
- [ ] 5 Day GW01

*** Please call for availability

Due Date:

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	Total Mercury	NWTPH-Dx Filtered	NWTPH-Gx	RCRA Metals	Comments
060817-SS01	Soil	6/8/17	1430		4		X	X	X	
060817-SS02	Soil	↓	1445		4		X	X	X	
060817-GW01	GW	↓	1500		1	X				

LS

Dissolved	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr
Total	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr

Additional Methods Available Upon Request

RELINQUISHED BY			RECEIVED BY		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
Lizbeth Saldivar		6/8/17/16:10			6/8/17 16:10

Routine TAT for SS01 and SS02. 48-hr TAT for GW01.
Email results to lizbeth.saldivar@pbsusa.com

PC JM

Cooler Receipt and Preservation Form

Client PBS Eng & Env Service Request *K17* 05899

Received: 4/18/17 Opened: 4/18/17 By: BR Unloaded: 4/18/17 By: BR

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
12.6	12.8	—	—	+0.2	349			NA	

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

SHORT HOLD TIME

7/25/16 *Page ____ of ____*

Total Solids

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Analytical Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/8/17
Sample Matrix:	Soil	**Date Received:**	06/8/17
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	Dil.	Date Analyzed	Q
060817-SS01	K1705899-001	**81.6**	-	1	06/09/17 17:15	
060817-SS02	K1705899-002	**81.5**	-	1	06/09/17 17:15	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project	Nippon Coffin Rock/17745.000	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
Analysis Method:	160.3 Modified	**Units:**	Percent
Prep Method:	None	**Basis:**	As Received

Replicate Sample Summary
Inorganic Parameters

Sample Name:	Lab Code:	MRL	Sample Result	Duplicate Result	Average	RPD	RPD Limit	Date Analyzed
Batch QC	K1705806-001DUP	-	50.2	49.9	50.1	<1	20	06/09/17
Batch QC	K1705925-002DUP	-	70.4	70.4	70.4	<1	20	06/09/17

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Metals

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Analytical Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/17 14:30
Sample Matrix:	Soil	**Date Received:**	06/08/17 16:10
Sample Name:	060817-SS01	**Basis:**	Dry
Lab Code:	K1705899-001		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**1.37**	mg/Kg	0.47	5	06/16/17 10:22	06/09/17	
Barium	6020A	**53.1**	mg/Kg	0.047	5	06/16/17 10:22	06/09/17	
Cadmium	6020A	**0.057**	mg/Kg	0.019	5	06/16/17 10:22	06/09/17	
Chromium	6020A	**9.95**	mg/Kg	0.19	5	06/16/17 10:22	06/09/17	
Lead	6020A	**4.19**	mg/Kg	0.047	5	06/16/17 10:22	06/09/17	
Mercury	7471B	**8.54**	mg/Kg	0.28	20	06/12/17 15:15	06/10/17	
Selenium	6020A	ND	U mg/Kg	0.94	5	06/16/17 10:22	06/09/17	
Silver	6020A	**0.021**	mg/Kg	0.019	5	06/16/17 10:22	06/09/17	

Analytical Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/17 14:45
Sample Matrix:	Soil	**Date Received:**	06/08/17 16:10
Sample Name:	060817-SS02	**Basis:**	Dry
Lab Code:	K1705899-002		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	**2.16**	mg/Kg	0.58	5	06/16/17 10:40	06/09/17	
Barium	6020A	**78.9**	mg/Kg	0.058	5	06/16/17 10:40	06/09/17	
Cadmium	6020A	**0.131**	mg/Kg	0.023	5	06/16/17 10:40	06/09/17	
Chromium	6020A	**11.1**	mg/Kg	0.23	5	06/16/17 10:40	06/09/17	
Lead	6020A	**3.92**	mg/Kg	0.058	5	06/16/17 10:40	06/09/17	
Mercury	7471B	**65.0**	mg/Kg	1.3	100	06/12/17 15:17	06/10/17	
Selenium	6020A	ND	U mg/Kg	1.2	5	06/16/17 10:40	06/09/17	
Silver	6020A	**0.098**	mg/Kg	0.023	5	06/16/17 10:40	06/09/17	

Analytical Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1707612-01		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic	6020A	ND U	mg/Kg	0.5	5	06/16/17 10:15	06/09/17	
Barium	6020A	ND U	mg/Kg	0.05	5	06/16/17 10:15	06/09/17	
Cadmium	6020A	ND U	mg/Kg	0.020	5	06/16/17 10:15	06/09/17	
Chromium	6020A	ND U	mg/Kg	0.20	5	06/16/17 10:15	06/09/17	
Lead	6020A	ND U	mg/Kg	0.05	5	06/16/17 10:15	06/09/17	
Selenium	6020A	ND U	mg/Kg	1.0	5	06/16/17 10:15	06/09/17	
Silver	6020A	ND U	mg/Kg	0.020	5	06/16/17 10:15	06/09/17	

Analytical Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	Dry
Lab Code:	KQ1707526-05		

Total Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7471B	ND U	mg/Kg	0.02	1	06/12/17 11:49	06/10/17	

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QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/17
Sample Matrix:	Soil	**Date Received:**	06/08/17
		Date Analyzed:	06/16/17

Replicate Sample Summary

Total Metals

Sample Name:	060817-SS01	**Units:**	mg/Kg
Lab Code:	K1705899-001	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1707612-03 Result	Average	RPD	RPD Limit
Arsenic	6020A	0.49	1.37	1.44	1.41	5	20
Barium	6020A	0.049	53.1	62.9	58.0	17	20
Cadmium	6020A	0.020	0.057	0.070	0.064	20	20
Chromium	6020A	0.20	9.95	10.4	10.2	4	20
Lead	6020A	0.049	4.19	5.75	4.97	31 *	20
Selenium	6020A	0.98	ND U	ND U	ND	-	20
Silver	6020A	0.020	0.021	0.027	0.024	24 #	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project	Nippon Coffin Rock/17745.000	**Date Collected:**	NA
Sample Matrix:	Sediment	**Date Received:**	NA
		Date Analyzed:	06/12/17

Replicate Sample Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1705806-001	**Basis:**	Dry

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1707526-01 Result	Average	RPD	RPD Limit
Mercury	7471B	0.017	0.292	0.315	0.304	7	20

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QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/17
Sample Matrix:	Soil	**Date Received:**	06/08/17
		Date Analyzed:	06/16/17
		Date Extracted:	06/9/17

Matrix Spike Summary
Total Metals

Sample Name:	060817-SS01	**Units:**	mg/Kg
Lab Code:	K1705899-001	**Basis:**	Dry
Analysis Method:	6020A		
Prep Method:	EPA 3050B		

Matrix Spike
KQ1707612-04

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	1.37	101	99.8	100	75-125
Barium	53.1	263	200	105	75-125
Cadmium	0.057	9.98	9.98	99	75-125
Chromium	9.95	47.7	40.0	95	75-125
Lead	4.19	93.6	99.8	90	75-125
Selenium	ND U	95.9	99.8	96	75-125
Silver	0.021	9.55	9.98	95	75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 06/22/17 2:29:30 PM Superset Reference:

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	N/A
Sample Matrix:	Sediment	**Date Received:**	N/A
		Date Analyzed:	06/12/17
		Date Extracted:	06/10/17

Matrix Spike Summary
Total Metals

Sample Name:	Batch QC	**Units:**	mg/Kg
Lab Code:	K1705806-001	**Basis:**	Dry
Analysis Method:	7471B		
Prep Method:	Method		

Matrix Spike
KQ1707526-02

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Mercury	0.292	0.631	0.349	97	80-120

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client: PBS Engineering and Environmental
Project: Nippon Coffin Rock/17745.000
Sample Matrix: Soil

Service Request: K1705899
Date Analyzed: 06/16/17

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1707612-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Arsenic	6020A	101	93.8	108	69-145
Barium	6020A	310	293	106	74-126
Cadmium	6020A	149	139	107	73-127
Chromium	6020A	177	173	102	71-130
Lead	6020A	117	124	94	72-127
Selenium	6020A	153	147	104	68-132
Silver	6020A	40.4	39.0	104	66-134

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QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Analyzed:**	06/12/17
Sample Matrix:	Soil		

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1707526-07

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7471B	0.508	0.500	102	80-120

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QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Analyzed:**	06/12/17
Sample Matrix:	Soil		

Lab Control Sample Summary
Total Metals

Units:mg/Kg
Basis: Dry

Lab Control Sample
KQ1707526-09

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7471B	7.39	7.10	104	51-149

Diesel and Residual Range Organics

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www.alsglobal.com

Analytical Results

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/2017
Sample Matrix:	Soil	**Date Received:**	06/08/2017

Diesel and Residual Range Organics

Sample Name:	060817-SS01	**Units:**	mg/Kg
Lab Code:	K1705899-001	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	31	1	06/12/17	06/22/17	KWG1704819	
Residual Range Organics (RRO)	ND	U	130	1	06/12/17	06/22/17	KWG1704819	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	100	50-150	06/22/17	Acceptable
n-Triacontane	87	50-150	06/22/17	Acceptable

Comments:

Analytical Results

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/2017
Sample Matrix:	Soil	**Date Received:**	06/08/2017

Diesel and Residual Range Organics

Sample Name:	060817-SS02	**Units:**	mg/Kg
Lab Code:	K1705899-002	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	31	1	06/12/17	06/22/17	KWG1704819	
Residual Range Organics (RRO)	**250**	O	130	1	06/12/17	06/22/17	KWG1704819	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	90	50-150	06/22/17	Acceptable
n-Triacontane	83	50-150	06/22/17	Acceptable

Comments:

Analytical Results

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	NA
Sample Matrix:	Sludge, solid	**Date Received:**	NA

Diesel and Residual Range Organics

Sample Name:	Method Blank	**Units:**	mg/Kg
Lab Code:	KWG1704819-3	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	25	1	06/12/17	06/22/17	KWG1704819	
Residual Range Organics (RRO)	ND	U	99	1	06/12/17	06/22/17	KWG1704819	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	50-150	06/22/17	Acceptable
n-Triacontane	74	50-150	06/22/17	Acceptable

Comments:

Client: PBS Engineering and Environmental **Service Request:** K1705899
Project: Nippon Coffin Rock/17745.000
Sample Matrix: Soil

Surrogate Recovery Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3550B **Units:** Percent
Analysis Method: NWTPH-Dx **Level:** Low

Sample Name	Lab Code	Sur1	Sur2
060817-SS01	K1705899-001	100	87
060817-SS02	K1705899-002	90	83
060817-SS01DUP	KWG1704819-1	107	97
Method Blank	KWG1704819-3	87	74
Lab Control Sample	KWG1704819-2	105	94

Surrogate Recovery Control Limits (%)

Sur1	o-Terphenyl	50-150
Sur2	n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

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QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Extracted:**	06/12/2017
Sample Matrix:	Soil	**Date Analyzed:**	06/22/2017

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name:	060817-SS01	**Units:**	mg/Kg
Lab Code:	K1705899-001	**Basis:**	Dry
Extraction Method:	EPA 3550B	**Level:**	Low
Analysis Method:	NWTPH-Dx	**Extraction Lot:**	KWG1704819

			060817-SS01DUP KWG1704819-1			
			Duplicate Sample			
Analyte Name	**MRL**	**Sample Result**	**Result**	**Average**	**Relative Percent Difference**	**RPD Limit**
Diesel Range Organics (DRO)	31	ND	ND	ND	-	40
Residual Range Organics (RRO)	130	ND	ND	ND	-	40

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Extracted:**	06/12/2017
Sample Matrix:	Sludge, solid	**Date Analyzed:**	06/22/2017

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method:	EPA 3550B	**Units:**	mg/Kg
Analysis Method:	NWTPH-Dx	**Basis:**	Dry
		Level:	Low
		Extraction Lot:	KWG1704819

Lab Control Sample
KWG1704819-2
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Diesel Range Organics (DRO)	241	267	90	42-134
Residual Range Organics (RRO)	108	133	81	48-141

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Gasoline Range Organics

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Analytical Results

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/2017
Sample Matrix:	Soil	**Date Received:**	06/08/2017

Gasoline Range Organics

Sample Name:	060817-SS01	**Units:**	mg/Kg
Lab Code:	K1705899-001	**Basis:**	Dry
Extraction Method:	EPA 5030A/5030B	**Level:**	Med
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	6.9	1	06/21/17	06/21/17	KWG1705161	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	87	50-150	06/21/17	Acceptable

Comments:

Analytical Results

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/2017
Sample Matrix:	Soil	**Date Received:**	06/08/2017

Gasoline Range Organics

Sample Name:	060817-SS02	**Units:**	mg/Kg
Lab Code:	K1705899-002	**Basis:**	Dry
Extraction Method:	EPA 5030A/5030B	**Level:**	Med
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	7.1	1	06/21/17	06/21/17	KWG1705161	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	89	50-150	06/21/17	Acceptable

Comments:

Analytical Results

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA

Gasoline Range Organics

Sample Name:	Method Blank	**Units:**	mg/Kg
Lab Code:	KWG1705161-3	**Basis:**	Dry
Extraction Method:	EPA 5030A/5030B	**Level:**	Med
Analysis Method:	NWTPH-Gx		

Analyte Name	Result	Q	MRL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Gasoline Range Organics-NWTPH	ND	U	10	1	06/21/17	06/22/17	KWG1705161	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
4-Bromofluorobenzene	82	50-150	06/22/17	Acceptable

Comments:

QA/QC Report

Client: PBS Engineering and Environmental
Project: Nippon Coffin Rock/17745.000
Sample Matrix: Soil

Service Request: K1705899

Surrogate Recovery Summary
Gasoline Range Organics

Extraction Method: EPA 5030A/5030B
Analysis Method: NWTPH-Gx

Units: Percent
Level: Med

Sample Name	Lab Code	Sur1
060817-SS01	K1705899-001	87
060817-SS02	K1705899-002	89
060817-SS01DUP	KWG1705161-1	94
Method Blank	KWG1705161-3	82
Lab Control Sample	KWG1705161-2	79

Surrogate Recovery Control Limits (%)

Sur1 = 4-Bromofluorobenzene 50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Extracted:**	06/21/2017
Sample Matrix:	Soil	**Date Analyzed:**	06/21/2017

Duplicate Sample Summary
Gasoline Range Organics

Sample Name:	060817-SS01	**Units:**	mg/Kg
Lab Code:	K1705899-001	**Basis:**	Dry
Extraction Method:	EPA 5030A/5030B	**Level:**	Med
Analysis Method:	NWTPH-Gx	**Extraction Lot:**	KWG1705161

			060817-SS01DUP KWG1705161-1 Duplicate Sample			
Analyte Name	**MRL**	**Sample Result**	**Result**	**Average**	**Relative Percent Difference**	**RPD Limit**
Gasoline Range Organics-NWTPH	7.1	ND	ND	ND	-	40

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QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1705899
Project:	Nippon Coffin Rock/17745.000	**Date Extracted:**	06/21/2017
Sample Matrix:	Soil	**Date Analyzed:**	06/22/2017

Lab Control Spike Summary
Gasoline Range Organics

Extraction Method:	EPA 5030A/5030B	**Units:**	mg/Kg
Analysis Method:	NWTPH-Gx	**Basis:**	Dry
		Level:	Med
		Extraction Lot:	KWG1705161

Lab Control Sample
KWG1705161-2
Lab Control Spike

Analyte Name	Result	Spike Amount	%Rec	%Rec Limits
Gasoline Range Organics-NWTPH	39.2	50.0	78	76-114

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July 11, 2017

Analytical Report for Service Request No: K1706885

Chad Koepfle
PBS Engineering and Environmental
4412 SW Corbett Ave
Portland, OR 97239

RE: Nippon Coffin Rock / 17745.000

Dear Chad,

Enclosed are the results of the sample(s) submitted to our laboratory June 08, 2017
For your reference, these analyses have been assigned our service request number **K1706885.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3275. You may also contact me via email at Chris.Leaf@ALSGlobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

for Chris Leaf
Project Manager

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water-	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Chain of Custody

ALS Environmental—Kelso Laboratory
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Chain of Custody

ADDRESS 1317 South 13th Ave., Kelso, WA 98626
PHONE 1 360 577 7222 FAX 1 360 636 1068
Part of the ALS Group A Campbell Brothers Limited Company

Work Order No.: 1705899 (6886)

Project Manager:	Mark Leece	**Bill to:**	PO NUMBER:
Client Name:	PBS Eng. + Env.	**Company:**	PBS Eng. + Env.
Address:	4412 SW Corbett Ave	**Address:**	4412 SW Corbett Ave
City, State ZIP:	Portland, OR 97239	**City, State ZIP:**	Portland, OR 97239
Email:	mark.leece@pbsusa.com **Phone:**	**Email:**	
Project Name:	WJ Nippon Coffin Rock		
Project Number:	17745.000		
P.O. Number:			
Sampler's Name:	Lizbeth Saldivar		

SAMPLE RECEIPT

Temperature (°C):			Temp Blank Present		
Received Intact:	Yes	No	N/A	Wet Ice / Blue Ice	
Cooler Custody Seals:	Yes	No	N/A	Total Containers:	
Sample Custody Seals:	Yes	No	N/A		

REQUESTED ANALYSIS

TAT
- [x] Routine (SS01 & SS02)
- [ ] Same Day ***
- [ ] Next Day ***
- [ ] 3 Day 48-HR*
- [ ] 5 Day GW01

*** Please call for availability

Due Date:

Sample Identification	Matrix	Date Sampled	Time Sampled	Lab ID	No. of Containers	Total Mercury	NWTPH-Dx Silica gel	NWTPH-Gx	RCRA Metals	Comments
060817-SS01	Soil	6/8/17	1430		4		X	X	X	
060817-SS02	Soil	↓	1445		4		X	X	X	
060817-GW01	GW	↓	1500		1	X				

LS

Dissolved	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr
Total	Ag, Al, As, B, Ba, Be, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Tl, V, Zn, Zr

Additional Methods Available Upon Request

RELINQUISHED BY			RECEIVED BY		
Print Name	Signature	Date/Time	Print Name	Signature	Date/Time
Lizbeth Saldivar		6/8/17/16:10			6/8/17 16:10

Routine TAT for SS01 and SS02. 48-hr TAT for GW01.
Email results to lizbeth.saldivar@pbsusa.com

Revised: 6/7/2017

6885 PC JM

Cooler Receipt and Preservation Form

Client PBS Eng & Env Service Request K17 05899

Received: 6/18/17 Opened: 6/18/17 By: BR Unloaded: 6/18/17 By: BR

1. Samples were received via? *USPS* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
12.0	12.3	—	—	+0.3	34				

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? *Indicate in the table below.* NA Y N
   If applicable, tissue samples were received: *Frozen* *Partially Thawed* *Thawed*
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Per client request, samples are to be analyzed for TCLP Hg on expedited TAT. The assignment was made as soon as the lab confirmed all original tests were complete. - CL 6/30/17.

SHORT HOLD TIME

Metals

ALS Environmental—Kelso Laboratory
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www.alsglobal.com

Analytical Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1706885
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/17 14:30
Sample Matrix:	Soil	**Date Received:**	06/08/17 16:10
Sample Name:	060817-SS01	**Basis:**	NA
Lab Code:	K1706885-001		

TCLP Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	mg/L	0.0010	1	07/07/17 10:55	07/07/17	

Analytical Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1706885
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/17 14:45
Sample Matrix:	Soil	**Date Received:**	06/08/17 16:10
Sample Name:	060817-SS02	**Basis:**	NA
Lab Code:	K1706885-002		

TCLP Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	mg/L	0.0010	1	07/07/17 11:00	07/07/17	

Analytical Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1706885
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	NA
Sample Matrix:	Soil	**Date Received:**	NA
Sample Name:	Method Blank	**Basis:**	NA
Lab Code:	KQ1709117-01		

TCLP Metals

Analyte Name	Analysis Method	Result	Units	MRL	Dil.	Date Analyzed	Date Extracted	Q
Mercury	7470A	ND U	mg/L	0.0010	1	07/07/17 10:46	07/07/17	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1706885
Project	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/17
Sample Matrix:	Soil	**Date Received:**	06/08/17
		Date Analyzed:	07/07/17

Replicate Sample Summary
TCLP Metals

Sample Name:	060817-SS01	**Units:**	mg/L
Lab Code:	K1706885-001	**Basis:**	NA

Analyte Name	Analysis Method	MRL	Sample Result	Duplicate Sample KQ1709117-05 Result	Average	RPD	RPD Limit
Mercury	7470A	0.0010	ND U	ND U	NC	NC	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client:	PBS Engineering and Environmental	**Service Request:**	K1706885
Project:	Nippon Coffin Rock/17745.000	**Date Collected:**	06/08/17
Sample Matrix:	Soil	**Date Received:**	06/08/17
		Date Analyzed:	07/7/17
		Date Extracted:	07/7/17

Matrix Spike Summary
TCLP Metals

Sample Name:	060817-SS01	**Units:**	mg/L
Lab Code:	K1706885-001	**Basis:**	NA
Analysis Method:	7470A		
Prep Method:	Method		

Matrix Spike
KQ1709117-06

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Mercury	ND U	0.0048	0.0050	95	75-125

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: PBS Engineering and Environmental
Project: Nippon Coffin Rock/17745.000
Sample Matrix: Soil

Service Request: K1706885
Date Analyzed: 07/07/17

Lab Control Sample Summary
TCLP Metals

Units:mg/L
Basis:NA

Lab Control Sample
KQ1709117-02

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Mercury	7470A	0.0047	0.0050	94	80-120

Apex Labs

12232 S.W. Garden Place
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503-718-0333 Fax

Wednesday, March 7, 2018

Lizbeth Saldivar
PBS Engineering and Environmental
4412 SW Corbett Ave
Portland, OR 97239

RE: Longview / 70862.001

Enclosed are the results of analyses for work order A8C0128, which was received by the laboratory on 3/5/2018 at 12:00:00PM.

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

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

Apex Laboratories

Lisa A Domenighini

Lisa Domenighini, Client Services Manager

Apex Labs

12232 S.W. Garden Place
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PBS Engineering and Environmental	Project: **Longview**	
4412 SW Corbett Ave	Project Number: 70862.001	**Reported:**
Portland, OR 97239	Project Manager: Lizbeth Saldivar	03/07/18 11:51

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01-030518	A8C0128-01	Soil	03/05/18 09:30	03/05/18 12:00
SS02-030518	A8C0128-02	Soil	03/05/18 10:20	03/05/18 12:00

Apex Laboratories

Lisa Domenighini, Client Services Manager

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PBS Engineering and Environmental	Project: **Longview**	
4412 SW Corbett Ave	Project Number: 70862.001	**Reported:**
Portland, OR 97239	Project Manager: Lizbeth Saldivar	03/07/18 11:51

ANALYTICAL SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SS01-030518 (A8C0128-01)			**Matrix: Soil**		**Batch: 8030467**			
Diesel	ND	---	25.0	mg/kg dry	1	03/05/18 23:47	NWTPH-Dx	
Oil	**187**	---	50.0	"	"	"	"	F-03
Surrogate: o-Terphenyl (Surr)			*Recovery: 96 %*	*Limits: 50-150 %*	"	"	"	
SS02-030518 (A8C0128-02)			**Matrix: Soil**		**Batch: 8030467**			
Diesel	ND	---	25.0	mg/kg dry	1	03/06/18 00:50	NWTPH-Dx	
Oil	ND	---	50.0	"	"	"	"	
Surrogate: o-Terphenyl (Surr)			*Recovery: 86 %*	*Limits: 50-150 %*	"	"	"	

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PBS Engineering and Environmental	Project: **Longview**	
4412 SW Corbett Ave	Project Number: 70862.001	**Reported:**
Portland, OR 97239	Project Manager: Lizbeth Saldivar	03/07/18 11:51

ANALYTICAL SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SS01-030518 (A8C0128-01)			**Matrix: Soil**		**Batch: 8030439**			
Gasoline Range Organics	ND	---	5.02	mg/kg dry	50	03/05/18 17:17	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 107 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*99 %*	*Limits: 50-150 %*	"	"	"	
SS02-030518 (A8C0128-02)			**Matrix: Soil**		**Batch: 8030439**			
Gasoline Range Organics	ND	---	5.72	mg/kg dry	50	03/05/18 17:43	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)			*Recovery: 109 %*	*Limits: 50-150 %*	1	"	"	
1,4-Difluorobenzene (Sur)			*101 %*	*Limits: 50-150 %*	"	"	"	

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PBS Engineering and Environmental	Project: **Longview**	
4412 SW Corbett Ave	Project Number: 70862.001	**Reported:**
Portland, OR 97239	Project Manager: Lizbeth Saldivar	03/07/18 11:51

ANALYTICAL SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SS01-030518 (A8C0128-01)			**Matrix: Soil**					
Batch: 8030464								
Arsenic	**24.1**	---	1.17	mg/kg dry	10	03/05/18 15:40	EPA 6020A	
Barium	**45.9**	---	1.17	"	"	"	"	
Cadmium	**0.234**	---	0.234	"	"	"	"	
Chromium	**38.5**	---	1.17	"	"	"	"	
Lead	**6.00**	---	0.234	"	"	"	"	
Mercury	**1.14**	---	0.0938	"	"	"	"	
Selenium	ND	---	1.17	"	"	"	"	
Silver	ND	---	0.234	"	"	"	"	
SS02-030518 (A8C0128-02)			**Matrix: Soil**					
Batch: 8030464								
Arsenic	**1.80**	---	1.25	mg/kg dry	10	03/05/18 15:44	EPA 6020A	
Barium	**49.4**	---	1.25	"	"	"	"	
Cadmium	ND	---	0.250	"	"	"	"	
Chromium	**7.77**	---	1.25	"	"	"	"	
Lead	**4.74**	---	0.250	"	"	"	"	
Mercury	**0.212**	---	0.100	"	"	"	"	
Selenium	ND	---	1.25	"	"	"	"	
Silver	ND	---	0.250	"	"	"	"	

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PBS Engineering and Environmental	Project: **Longview**	
4412 SW Corbett Ave	Project Number: 70862.001	**Reported:**
Portland, OR 97239	Project Manager: Lizbeth Saldivar	03/07/18 11:51

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Date Analyzed	Method	Notes
SS01-030518 (A8C0128-01)			**Matrix: Soil**		**Batch: 8030459**			
% Solids	**88.1**	---	1.00	% by Weight	1	03/06/18 08:36	EPA 8000C	
SS02-030518 (A8C0128-02)			**Matrix: Soil**		**Batch: 8030459**			
% Solids	**88.6**	---	1.00	% by Weight	1	03/06/18 08:36	EPA 8000C	

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PBS Engineering and Environmental	Project: **Longview**	
4412 SW Corbett Ave	Project Number: 70862.001	**Reported:**
Portland, OR 97239	Project Manager: Lizbeth Saldivar	03/07/18 11:51

QUALITY CONTROL (QC) SAMPLE RESULTS

Diesel and/or Oil Hydrocarbons by NWTPH-Dx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8030467 - EPA 3546 (Fuels)							**Soil**					
Blank (8030467-BLK1)					Prepared: 03/05/18 14:57 Analyzed: 03/05/18 23:05							
NWTPH-Dx												
Diesel	ND	---	25.0	mg/kg wet	1	---	---	---	---	---	---	
Oil	ND	---	50.0	"	"	---	---	---	---	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 102 %*	*Limits: 50-150 %*			*Dilution: 1x*					
LCS (8030467-BS1)					Prepared: 03/05/18 14:57 Analyzed: 03/05/18 23:26							
NWTPH-Dx												
Diesel	114	---	25.0	mg/kg wet	1	125	---	91	76-115%	---	---	
Surr: o-Terphenyl (Surr)			*Recovery: 96 %*	*Limits: 50-150 %*			*Dilution: 1x*					
Duplicate (8030467-DUP1)					Prepared: 03/05/18 14:57 Analyzed: 03/06/18 00:08							
QC Source Sample: SS01-030518 (A8C0128-01)												
NWTPH-Dx												
Diesel	ND	---	25.0	mg/kg dry	1	---	ND	---	---	---	30%	
Oil	**185**	---	50.0	"	"	---	187	---	---	2	30%	F-03
Surr: o-Terphenyl (Surr)			*Recovery: 89 %*	*Limits: 50-150 %*			*Dilution: 1x*					

Apex Laboratories

Lisa Domenighini, Client Services Manager

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PBS Engineering and Environmental	Project: **Longview**	
4412 SW Corbett Ave	Project Number: 70862.001	**Reported:**
Portland, OR 97239	Project Manager: Lizbeth Saldivar	03/07/18 11:51

QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8030439 - EPA 5035A									Soil			
Blank (8030439-BLK1)					Prepared: 03/05/18 09:15 Analyzed: 03/05/18 11:34							
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	3.33	mg/kg wet	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 103 %*		*Limits: 50-150 %*				*Dilution: 1x*			
1,4-Difluorobenzene (Sur)			*96 %*		*50-150 %*				*"*			
LCS (8030439-BS2)					Prepared: 03/05/18 09:15 Analyzed: 03/05/18 10:08							
NWTPH-Gx (MS)												
Gasoline Range Organics	28.4	---	5.00	mg/kg wet	50	25.0	---	113	80-120%	---	---	
Surr: 4-Bromofluorobenzene (Sur)			*Recovery: 105 %*		*Limits: 50-150 %*				*Dilution: 1x*			
1,4-Difluorobenzene (Sur)			*99 %*		*50-150 %*				*"*			

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Lisa Domenighini, Client Services Manager

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503-718-2323 Phone
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PBS Engineering and Environmental	Project: **Longview**	
4412 SW Corbett Ave	Project Number: 70862.001	**Reported:**
Portland, OR 97239	Project Manager: Lizbeth Saldivar	03/07/18 11:51

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8030464 - EPA 3051A							Soil					
Blank (8030464-BLK1)					Prepared: 03/05/18 14:10		Analyzed: 03/05/18 15:30					
EPA 6020A												
Arsenic	ND	---	0.962	mg/kg wet	10	---	---	---	---	---	---	
Barium	ND	---	0.962	"	"	---	---	---	---	---	---	
Cadmium	ND	---	0.192	"	"	---	---	---	---	---	---	
Chromium	ND	---	0.962	"	"	---	---	---	---	---	---	
Lead	ND	---	0.192	"	"	---	---	---	---	---	---	
Mercury	ND	---	0.0769	"	"	---	---	---	---	---	---	
Selenium	ND	---	0.962	"	"	---	---	---	---	---	---	B-02
Silver	ND	---	0.192	"	"	---	---	---	---	---	---	
LCS (8030464-BS1)					Prepared: 03/05/18 14:10		Analyzed: 03/05/18 15:35					
EPA 6020A												
Arsenic	50.8	---	1.00	mg/kg wet	10	50.0	---	101	80-120%	---	---	
Barium	52.2	---	1.00	"	"	"	---	104	"	---	---	
Cadmium	51.9	---	0.200	"	"	"	---	104	"	---	---	
Chromium	53.4	---	1.00	"	"	"	---	107	"	---	---	
Lead	53.1	---	0.200	"	"	"	---	106	"	---	---	
Mercury	1.02	---	0.0800	"	"	1.00	---	102	"	---	---	
Selenium	25.2	---	1.00	"	"	25.0	---	101	"	---	---	B-02
Silver	25.2	---	0.200	"	"	"	---	101	"	---	---	
Duplicate (8030464-DUP1)					Prepared: 03/05/18 14:10		Analyzed: 03/05/18 15:49					
QC Source Sample: SS02-030518 (A8C0128-02)												
EPA 6020A												
Arsenic	**1.92**	---	1.10	mg/kg dry	10	---	1.80	---	---	6	40%	
Barium	**73.7**	---	1.10	"	"	---	49.4	---	---	40	40%	
Cadmium	ND	---	0.220	"	"	---	ND	---	---	---	40%	
Chromium	**8.51**	---	1.10	"	"	---	7.77	---	---	9	40%	
Lead	**4.48**	---	0.220	"	"	---	4.74	---	---	5	40%	
Mercury	**0.232**	---	0.0880	"	"	---	0.212	---	---	9	40%	
Selenium	ND	---	1.10	"	"	---	ND	---	---	---	40%	
Silver	ND	---	0.220	"	"	---	ND	---	---	---	40%	
Matrix Spike (8030464-MS1)					Prepared: 03/05/18 14:10		Analyzed: 03/05/18 16:03					
QC Source Sample: SS02-030518 (A8C0128-02)												
EPA 6020A												

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Portland, OR 97239	Project Manager: Lizbeth Saldivar	03/07/18 11:51

QUALITY CONTROL (QC) SAMPLE RESULTS

Total Metals by EPA 6020 (ICPMS)

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8030464 - EPA 3051A							**Soil**					
Matrix Spike (8030464-MS1)					Prepared: 03/05/18 14:10 Analyzed: 03/05/18 16:03							
QC Source Sample: SS02-030518 (A8C0128-02)												
EPA 6020A												
Arsenic	58.9	---	1.22	mg/kg dry	10	61.0	1.80	94	75-125%	---	---	
Barium	108	---	1.22	"	"	"	49.4	96	"	---	---	
Cadmium	61.2	---	0.244	"	"	"	ND	100	"	---	---	
Chromium	67.8	---	1.22	"	"	"	7.77	98	"	---	---	
Lead	65.5	---	0.244	"	"	"	4.74	100	"	---	---	
Mercury	1.41	---	0.0975	"	"	1.22	0.212	99	"	---	---	
Selenium	30.4	---	1.22	"	"	30.4	ND	100	"	---	---	B-02
Silver	29.5	---	0.244	"	"	"	ND	97	"	---	---	

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QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	MDL	Reporting Limit	Units	Dil.	Spike Amount	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 8030459 - Total Solids (Dry Weight)												**Soil**

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
Batch: 8030467							
A8C0128-01	Soil	NWTPH-Dx	03/05/18 09:30	03/05/18 14:57	10.74g/5mL	10g/5mL	0.93
A8C0128-02	Soil	NWTPH-Dx	03/05/18 10:20	03/05/18 14:57	10.75g/5mL	10g/5mL	0.93

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 8030439							
A8C0128-01	Soil	NWTPH-Gx (MS)	03/05/18 09:30	03/05/18 09:30	26.13g/20mL	5g/5mL	0.77
A8C0128-02	Soil	NWTPH-Gx (MS)	03/05/18 10:20	03/05/18 10:20	16.67g/15mL	5g/5mL	0.90

Total Metals by EPA 6020 (ICPMS)

Prep: EPA 3051A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 8030464							
A8C0128-01	Soil	EPA 6020A	03/05/18 09:30	03/05/18 14:10	0.484g/50mL	0.5g/50mL	1.03
A8C0128-02	Soil	EPA 6020A	03/05/18 10:20	03/05/18 14:10	0.451g/50mL	0.5g/50mL	1.11

Percent Dry Weight

Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 8030459							
A8C0128-01	Soil	EPA 8000C	03/05/18 09:30	03/05/18 12:52	1N/A/1N/A	1N/A/1N/A	NA
A8C0128-02	Soil	EPA 8000C	03/05/18 10:20	03/05/18 12:52	1N/A/1N/A	1N/A/1N/A	NA

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Notes and Definitions

Qualifiers:

B-02	Analyte detected in an associated blank at a level between one-half the MRL and the MRL. (See Notes and Conventions below.)
F-03	The result for this hydrocarbon range is elevated due to the presence of individual analyte peaks in the quantitation range that are not representative of the fuel pattern reported.

Notes and Conventions:

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis. Results listed as 'wet' or without 'dry'designation are not dry weight corrected.
RPD	Relative Percent Difference
MDL	If MDL is not listed, data has been evaluated to the Method Reporting Limit only.
WMSC	Water Miscible Solvent Correction has been applied to Results and MRLs for volatiles soil samples per EPA 8000C.
Batch QC	Unless specifically requested, this report contains only results for Batch QC derived from client samples included in this report. All analyses were performed with the appropriate Batch QC (including Sample Duplicates, Matrix Spikes and/or Matrix Spike Duplicates) in order to meet or exceed method and regulatory requirements. Any exceptions to this will be qualified in this report. Complete Batch QC results are available upon request. In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) is analyzed to demonstrate accuracy and precision of the extraction and analysis.
Blank Policy	Apex assesses blank data for potential high bias down to a level equal to ½ the method reporting limit (MRL), except for conventional chemistry and HCID analyses which are assessed only to the MRL. Sample results flagged with a B or B-02 qualifier are potentially biased high if they 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. For accurate comparison of volatile results to the level found in the blank; water sample results should be divided by the dilution factor, and soil sample results should be divided by 1/50 of the sample dilution to account for the sample prep factor. Results qualified as reported below the MRL may include a potential high bias if associated with a B or B-02 qualified blank. B and B-02 qualifications are not applied to J qualified results reported below the MRL.
---	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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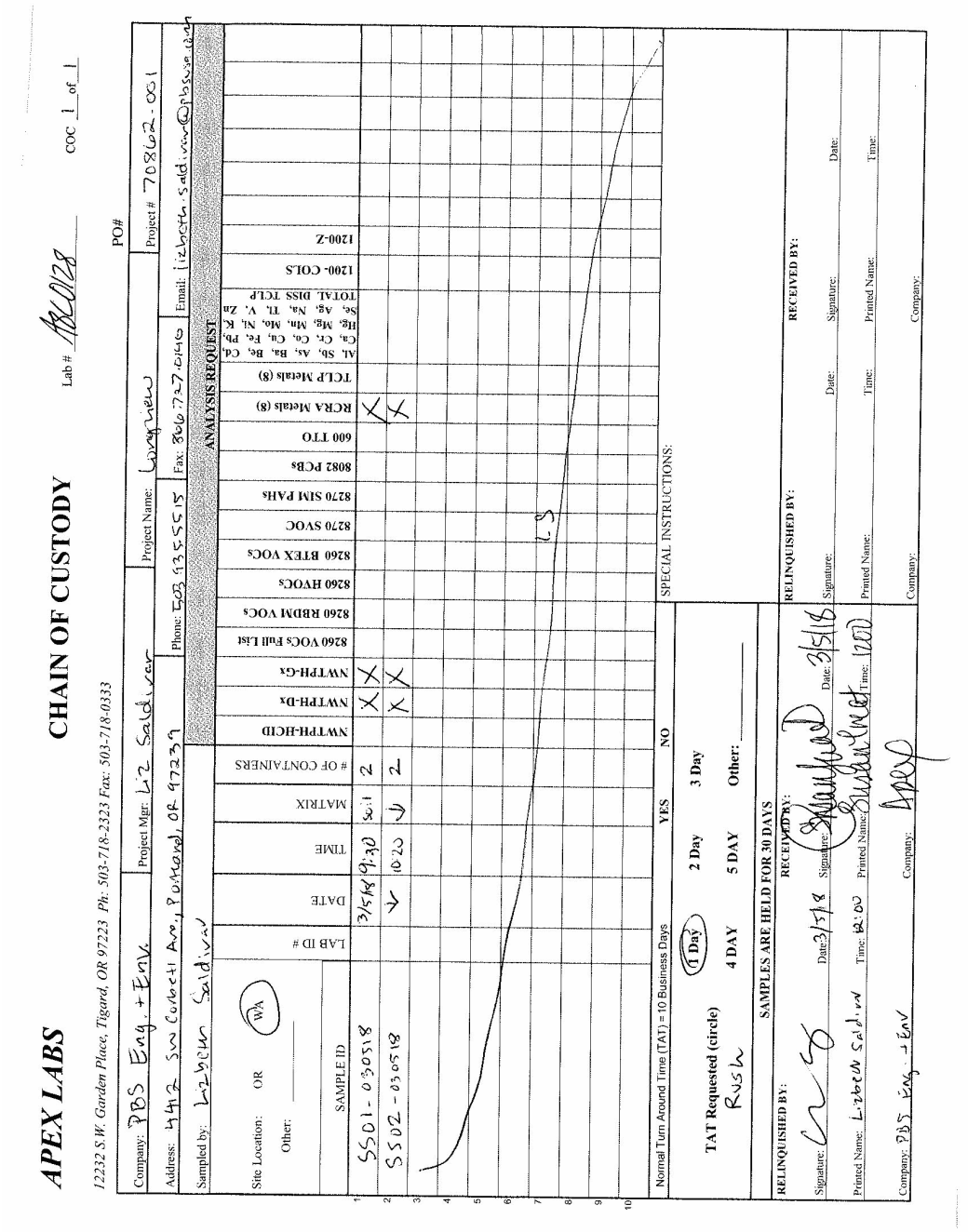

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APEX LABS COOLER RECEIPT FORM

Client: PBS Element WO#: A8 C0128

Project/Project #: Longview

Delivery info:

Date/Time Received: 3/5/18 @ 1200 By: (8)

Delivered by: Apex____Client ✓ ESS____FedEx____UPS____Swift____Senvoy ____SDS____Other_____

Cooler Inspection Inspected by: (8) : 3/5/18 @ 1200

Chain of Custody Included? Yes ✓ No ___ Custody Seals? Yes_____ No ✓

Signed/Dated by Client? Yes ✓ No ___

Signed/Dated by Apex? Yes ✓ No ___

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (deg. C)	—						
Received on Ice? (Y/N)	(Y)						
Temp. Blanks? (Y/N)	2.3						
Ice Type: (Gel/Real/Other)	(Gel)						
Condition:	good						

Cooler out of temp? (Y/N) Possible reason why:_____

If some coolers are in temp and some out, were green dot applied to out of temperature samples? Yes/No/NA

Samples Inspection: Inspected by: (8) : 3/5/18 @ 1205

All Samples Intact? Yes ✓ No ___ Comments:_____

Bottle Labels/COCs agree? Yes ✓ No ___ Comments: _____

Containers/Volumes Received Appropriate for Analysis? Yes ✓ No ___ Comments:

Do VOA Vials have Visible Headspace? Yes ___ No ___ NA ✓

Comments_____

Water Samples: pH Checked and Appropriate (except VOAs): Yes___No___NA ✓

Comments: _____

Additional Information: _____

Labeled by: (8) Witness: Cooler Inspected by: (8) See Project Contact Form: Y