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December 2018
Fourth Quarter Groundwater Monitoring Report

Proposed Grays Harbor Potash Export Facility Project
Hoquiam, Washington

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DECEMBER 2018
FOURTH QUARTER GROUNDWATER MONITORING REPORT

Proposed Grays Harbor Potash Export Facility Project
Hoquiam, Washington

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LIST OF ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
BHP	BHP Billiton Canada, Inc.
City	City of Hoquiam
COC	chemical of concern
CUL	cleanup level
ESA	environmental site assessment
MTCA	Model Toxics Control Act
MLLW	mean lower low water
NWTPHDx/Gx	northwest total petroleum hydrocarbons-diesel- and gasoline-range
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PID	photoionization detector
Port	Port of Grays Harbor
REC	recognized environmental concern
SAP	Sampling and Analysis Plan
TEQ	toxic equivalency
VOC	volatile organic compounds

DECEMBER 2018
FOURTH QUARTER GROUNDWATER MONITORING REPORT
PROPOSED GRAYS HARBOR POTASH EXPORT FACILITY PROJECT
HOQUIAM, WASHINGTON

1.0 INTRODUCTION

This report summarizes the groundwater sampling activities completed in December 2018 for the fourth quarter of monitoring for wells MW-1 through MW-4 and third-quarter sampling of MW-5 through MW-7 in Hoquiam, Washington, on behalf of BHP Billiton Canada, Inc. (BHP). BHP is considering a long-term lease and redevelopment of the Port of Grays Harbor (Port) Terminal 3 and surrounding parcels in Hoquiam, Washington (herein referred to as "the site;" see Figure 1), for use as a potash export facility.

The site is approximately 200 acres and is located on Airport Way between Paulson Road and South Adams Street in Hoquiam, Washington. The site is owned by the Port, the City of Hoquiam (City), and private property owners. Historically, the site was used as a foundry for pulp and paper equipment (Emerson/Adams property) and a log storage and log export facility (former Rayonier). The majority of the site is currently unused with a log storage and wood chip processing facility (Willis Enterprises) on the southeast portion of the site, the City's inert waste landfill on the east portion of the site, a whiskey distillery on the northeast portion of the site, and the City's former wastewater pond on the southwest portion of the site. The current site conditions are shown in Figure 2.

BergerABAM completed a Phase I Environmental Site Assessment (ESA) of the project area in July 2017 and identified three site uses as recognized environmental concerns (RECs): (1) the former Rayonier log export facility, (2) Lamb Grays Harbor Company's (Emerson/Adams property) former foundry, and (3) the City's inert waste landfill. These results triggered a focused Phase II ESA soil and groundwater investigation in August/September 2017 followed by quarterly groundwater monitoring.

The results of the Phase II ESA investigation indicated that arsenic, chromium, and lead concentrations in groundwater samples collected from temporary wells exceeded the applicable Model Toxics Control Act (MTCA) cleanup levels (CULs).[1] Installation of permanent groundwater monitoring wells and quarterly groundwater monitoring was recommended to (1) confirm the initial findings, (2) establish a baseline, and (3) evaluate dissolved metal concentrations over time (e.g., seasonal fluctuations) to evaluate potential issues during construction dewatering.

[1] Difficult sampling conditions from the temporary wells (screen is in direct contact with soil) cause samples to be turbid and can cause false positives for total and dissolved metals analysis.

Three monitoring wells (MW-1 through MW-3) were installed in March 2018 and an additional three groundwater monitoring wells (MW-5 through MW-7) were installed in June 2018 to evaluate groundwater conditions at the site. A previously installed monitoring well on the Emerson/Adams property, MW-4, was also sampled as part of quarterly groundwater monitoring. Groundwater samples were collected to evaluate groundwater conditions at the site and potential seasonal fluctuations of contaminants of concern (COCs).

The results from the previously collected groundwater (and soil) samples collected at the site are summarized in the:

- First Quarter – March 2018 Groundwater Monitoring Well Installation and Quarterly Monitoring Summary Report (BergerABAM, April 2018),
- Additional Site Investigation and Second Quarter Groundwater Monitoring Report (BergerABAM, July 2018), and
- September 2018 Third Quarter Groundwater Monitoring Report (BergerABAM, October 2018).

See Tables 4 and 5 for a summary of COCs with concentrations exceeding the applicable regulatory criteria from previously completed groundwater sampling.

BergerABAM purged and sampled seven groundwater monitoring wells (MW-1 through MW-7) to evaluate groundwater conditions at the site. The groundwater samples were submitted to the chemical analytical laboratory (Analytical Resources, Inc. [ARI] of Tukwila, Washington) for analysis of dissolved metals and dioxins/furans.

2.0 MONITORING WELL SAMPLING

Groundwater sampling representing the fourth quarter of monitoring for wells MW-1 through MW-4 and third-quarter sampling of MW-5 through MW-7 was completed on 18 and 19 December 2018. The well locations are shown on Figure 2.

2.1 Groundwater Sampling Methods

Groundwater levels were measured in each monitoring well prior to purging during each sampling event. Groundwater levels were measured relative to the casing rim elevations to the nearest 0.01 foot using an electric water-level indicator. The direction of shallow groundwater flow at the site was interpreted based on field measurements and site topography as shown on Figure 3.

Groundwater samples were collected from monitoring wells using a peristaltic pump and dedicated Teflon-lined polyethylene tubing.

The wells were purged prior to sample collection using low-flow/low-turbidity sampling techniques to minimize the suspension of sediment in the groundwater. The

flow rate was less than 1 liter per minute. A multiple parameter meter was used to monitor the following water quality parameters during purging.

- Electrical Conductivity
- Dissolved Oxygen
- pH
- Salinity
- Turbidity
- Temperature

Groundwater samples were collected after these parameters stabilized so that measured values varied less than 10 percent for three consecutive measurements. The stabilized field measurements were documented in the field log book.

Groundwater samples were collected into laboratory-provided sample containers (no preservative) for dissolved metals (to be lab filtered) and the other COCs identified in Section 1.0.. The samples were collected directly from water flowing from the sampler tubing using the low-flow methodology described above. Each sample container was securely capped, labeled, and placed in a cooler with ice immediately upon collection. The well casing plug and monument cover lid were secured after each sampling event.

3.0 RESULTS – GROUNDWATER MONITORING DECEMBER 2018

Groundwater samples collected from monitoring wells (MW-1 through MW-7) were submitted for analysis of dissolved RCRA 8 metals and dioxins/furans (see Appendix A for chemical analytical methods). Groundwater elevations were measured in each well at the prior to purging to evaluate current depth to groundwater and flow direction, as discussed below.

3.1 Groundwater Flow Conditions

Groundwater elevations ranged from Elevation 13.16 mean lower low water (MLLW) to Elevation 12.99 MLLW. The observed groundwater elevations indicate the groundwater flow direction was trending north/northeast at the time of the sampling event. The general flow direction is consistent with conditions measured during the previously completed groundwater monitoring events. Groundwater elevations are shown in Table 1 and Figure 3.

3.2 Chemical Analytical Results

3.2.1 Groundwater

Groundwater samples were submitted to the chemical analytical laboratory (ARI) for analysis of dissolved RCRA 8 metals and dioxins/furans.

The chemical analytical results were compared to the following (where criteria have been established).

- MTCA Methods A, B, and/or C CULs for groundwater

- Acute and chronic marine water aquatic life criteria for metals
- Acute and chronic freshwater aquatic life criteria for metals

The evaluation of acute and chronic marine and freshwater aquatic life criteria is needed for potential dewatering water disposal requirements. Acute and chronic marine and freshwater aquatic life criteria has not been established for dioxins/furans.

The groundwater chemical analytical results from the December 2018 sampling event are summarized below and in Table 3. The laboratory chemical analytical data report is included as Appendix A (Analytical Resources, Inc. 2018).

Results Relative to MTCA Criteria for Groundwater Quality

- Dissolved arsenic was detected in the groundwater samples collected from the monitoring wells at concentrations ranging from 0.119 µg/L (MW-3) to 11.2 µg/L (MW-4). The concentrations of arsenic in one of the groundwater samples (MW-4) was greater than MTCA Methods A, B, and/or C CULs for arsenic (5 µg/L, 4.8 µg/L, and 10.5 µg/L, respectively) (Figure 4).
- The remaining dissolved metals analyzed (barium, cadmium, chromium, lead, mercury, and silver) and dioxins/furans were either not detected or were detected at concentrations less than the applicable MTCA CULs in all of the groundwater samples collected.

Concentrations of analytes appear to exhibit seasonal variations with lower concentrations detected during rainier seasons. This is likely related to higher groundwater elevations during this period. Results Relative to Acute and Chronic Marine and Freshwater Aquatic Life Criteria

- The dissolved metals analyzed (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver) and dioxins/furans were either not detected or were detected at concentrations less than the acute and chronic marine and freshwater aquatic life criteria (where established).

4.0 POTENTIAL SOURCES OF CONTAMINANTS IN GROUNDWATER

4.1 Metals in Groundwater

Potential sources of the arsenic detected in groundwater at the site could include non-point on- and/or off-site sources, such as the use of agricultural fertilizers and pesticides at the site or other non-point sources that migrated through rainwater and groundwater from areas upgradient of the site. The arsenic detected in the groundwater sample collected from MW-4 could be the result of operations related to the nearby foundry..

5.0 LIMITATIONS

This report has been prepared for BHP for their use in evaluating and documenting the groundwater conditions at the proposed Grays Harbor Potash Export Facility. Environmental conditions may vary between the locations sampled or with time. The

conditions described in this evaluation represent the areas sampled at the time of the investigation. Subsurface conditions may vary between explorations or with time.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with the generally accepted environmental science practices for groundwater characterization at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

BergerABAM has prepared this report for use solely by BHP. This report is not intended for use or reliance on by other parties with which BergerABAM has no contractual relationship.

BergerABAM accepts no duty or responsibility to any party other than BHP and disclaims all liability of any nature whatsoever to any other party with respect to use of this report.

6.0 REFERENCES

Analytical Resources, Inc. 2018. "Analytical Data Report for the BHP Grays Harbor Potash Facility Project." January 2018.

BergerABAM. 2018. "First Quarter – March 2018 Groundwater Monitoring Well Installation and Quarterly Monitoring Summary Report." April 2018.

BergerABAM. 2018. "Additional Site Investigation and Second Quarter Groundwater Monitoring Report." July 2018.

BergerABAM. 2018. "September 2018 Third Quarter Groundwater Monitoring Report." October 2018.

Washington State Department of Ecology. 2013. "Model Toxics Control Act Regulation and Statute: MTCA Cleanup Regulation Chapter 173-340 WAC, Model Toxics Control Act Chapter 70.105D RCW, Uniform Environmental Covenants Act Chapter 64.70 RCW."

Washington State Department of Ecology. 2017. "Model Toxics Control Act Regulation and Statute: Water Quality Standards for Surface Waters of the State of Washington Chapter 173-201A WAC."

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Tables

TABLE 1. SUMMARY OF GROUNDWATER ELEVATIONS

PROPOSED GRAYS HARBOR POTASH EXPORT FACILITY - TERMINAL 3

HOQUIAM, WASHINGTON

Monitoring Well[1] and TOC Elevation	Time Sampled	Tide Stage (ft MLLW)	Depth of Water from TOC (feet)	Groundwater Elevation (feet MLLW)
Date Monitored: 3/28/18				
MW-1 - 21.73 ft	8:37 AM	7.04	6.1	17.27
MW-2 - 19.30 ft	11:45 AM	9.98	8.55	12.39
MW-3 - 23.12 ft	10:52 AM	9.9	5.86	18.9
MW-4 - 14.02 ft	9:56 AM	9.02	2.5	13.6
Date Monitored: 6/28/18				
MW-1 - 21.73 ft	8:20 AM	-0.90	8.64	14.73
MW-2 - 19.30 ft	8:47 AM	-0.53	7.99	12.95
MW-3 - 23.12 ft	8:40 AM	-0.63	6.4	18.36
MW-4 - 14.02 ft	8:30 AM	-0.79	2.53	13.13
MW-5 - 21.19 ft	9:06 AM	-0.15	8.12	14.71
MW-6 - 19.40 ft	8:59 AM	-0.29	7.21	13.83
MW-7 - 20.40 ft	8:55 AM	-0.41	9.14	12.90
Date Monitored: 9/11/18				
MW-1 - 21.73 ft	5:19 PM	8.48	10.87	12.5
MW-2 - 19.30 ft	5:53 PM	7.14	9.53	11.41
MW-3 - 23.12 ft	5:29 PM	8.11	6.89	17.87
MW-4 - 14.02 ft	5:08 PM	8.87	4.2	11.46
MW-5 - 21.19 ft	5:47 PM	7.39	8.98	13.85
MW-6 - 19.40 ft	5:43 PM	7.55	7.31	13.73
MW-7 - 20.40 ft	5:37 PM	7.80	10.72	11.32
Date Monitored: 12/18/18				
MW-1 - 21.73 ft	2:34 PM	2.68	6.08	17.29
MW-2 - 19.30 ft	2:53 PM	2.21	7.95	12.99
MW-3 - 23.12 ft	2:45 PM	2.40	5.12	19.64
MW-4 - 14.02 ft	2:23 PM	2.98	2.5	13.16
MW-5 - 21.19 ft	3:10 PM	1.89	6.21	16.62
MW-6 - 19.40 ft	3:05 PM	1.97	5.93	15.11
MW-7 - 20.40 ft	2:56 PM	2.15	6.39	15.65

[1]Sampled by BergerABAM, see Figure 2 for well locations.

TOC = top of casing

Tide stage obtained from NOAA Tide predictions for station 9441187:
https://tidesandcurrents.noaa.gov/noaatidepredictions.html?id=9441187&units=standard&bdate=20180328&edate=20180328&timezone=LST/LDT&clock=12hour&datum=MLLW&interval=hilo&action=dailychart

TABLE 2. METALS IN GROUNDWATER[1]

PROPOSED GRAYS HARBOR POTASH EXPORT FACILITY - TERMINAL 3

HOQUIAM, WASHINGTON

Sample Identification	Date	Metals (µg/L)							
		Arsenic	Barium	Cadmium	Chromium[2] (III)	Lead	Mercury	Selenium	Silver
MW-1	12/19/2019	**1.75**	**4.77**	<0.10	**0.511**	**0.208**	<0.0001	<0.50	<0.20
MW-2	12/19/2019	**1.85 D**	**7.73**	<0.50	**4.55**	<0.50	<0.0001	**2.81 D**	<1.0
MW-3	12/19/2019	**0.119 J**	**0.904**	<0.10	**0.469 J**	<0.10	<0.0001	<0.50	<0.20
MW-4	12/19/2019	**11.2 D**	**13.9 D**	<0.20	**7.61 D**	<0.20	<0.0001	<1.0	<0.40
MW-5	12/19/2019	**0.161 J**	**5.05**	<0.10	<0.50	<0.10	<0.0001	<0.50	<0.20
MW-6	12/19/2019	**0.149 J**	**11.9**	<0.10	<0.50	<0.10	<0.0001	<0.50	<0.20
MW-7	12/19/2019	**1.98**	**12.3**	<0.10	**0.498 J**	<0.10	<0.0001	<0.50	<0.20
MTCA Method A Cleanup Level[3]		5	NE	5	50	15	2	NE	NE
MTCA Method B Cleanup Level[3]		4.8	3,200	8	NE[3]	NE	NE	80	80
MTCA Method C (Industrial) Cleanup Level[3]		10.5	7,000	17.5	50*	15*	2*	175	175
Marine Water Aquatic Life Criteria - Acute[4]		69	NE	42	NE	210	1.8	290	1.9
Marine Water Aquatic Life Criteria - Chronic[4]		36	NE	9.3	NE	8.1	0.025	71	NE
Freshwater Aquatic Life Criteria - Acute[4]		360	NE	(l,c, dd)	176.31	(q, c, dd)	2.1	20	(y, a, dd)
Freshwater Aquatic Life Criteria - Chronic[4]		190	NE	(j, d, dd)	57.19	(r, d, dd)	0.012	5	NE

TABLE 2. METALS IN GROUNDWATER[1]

PROPOSED GRAYS HARBOR POTASH EXPORT FACILITY - TERMINAL 3

HOQUIAM, WASHINGTON

Notes:

[1]Chemical Analysis was performed by Analytical Resources, Inc.; The laboratory report is included as Appendix A.

[2] = Analyzed for chromium VI which was not detected; Therefore the reported value represents chromium III.

[3]Washington State Department of Ecology Model Toxics Control Act (MTCA) Cleanup Levels. Non cancer values are used unless otherwise noted. https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx

[4]Washington State Department of Ecology Toxics Substances Criteria. https://fortress.wa.gov/ecy/publications/SummaryPages/0610091.html

* MTCA Method A clean up level for unrestricted site use is listed because the MTCA Method C industrial clean up level is not established.

µg/l = microgram per liter

Bold indicates the analyte was detected at a concentration greater than the laboratory method reporting limits

NE = Not established

<2 = The The analyte was not detected. The associated numerical value is the sample quantitation limit.

– = not analyzed

D = The reported value is from a dilution

J = Estimated concentration value detected below the reporting limit.

Highlighted cell indicates the detected concentration is greater than the applicable MTCA cleanup level.

Footnotes**:

a An instantaneous concentration not to be exceeded at any time.

c A 1-hour average concentration not to be exceeded more than once every three years on the average.

d A 4-day average concentration not to be exceeded more than once every three years on the average.

l ≤ (0.944)(e(1.128[ln(hardness)]-3.828)) at hardness = 100. Conversion factor (CF) of 0.944 is hardness dependent. CF is calculated for other hardnesses as follows: CF = 1.136672 - [(ln hardness)(0.041838)].

j ≤ (0.909)(e(0.7852[ln(hardness)]-3.490)) at hardness = 100. Conversions factor (CF) of 0.909 is hardness dependent. CF is calculated for other hardnesses as follows: CF = 1.101672 - [(ln hardness)(0.041838)].

q ≤ (0.791)(e(1.273[ln(hardness)] - 1.460)) at hardness = 100. Conversion factor (CF) of 0.791 is hardness dependent. CF is calculated for other hardnesses as follows: CF = 1.46203 - [(ln hardness)(0.145712)].

r ≤ (0.791)(e(1.273[ln(hardness)] - 4.705)) at hardness = 100. Conversion factor (CF) of 0.791 is hardness dependent. CF is calculated for other hardnesses as follows: CF = 1.46203 - [(ln hardness)(0.145712)].

y ≤ (0.85)(e(1.72[ln(hardness)] - 6.52))

to calculate total recoverable effluent limits unless the seasonal partitioning of the dissolved to total metals in the ambient water are known. When this information is absent, these metals criteria shall be applied as total recoverable values, determined by back-calculation, using the conversion factors incorporated in the criterion equations. Metals criteria may be adjusted on a site-specific basis when data are made available to the department clearly demonstrating the effective use of the water effects ratio approach

** Footnotes extracted from Table 240 of Washington State Department of Ecology Toxics Substances Criteria. https://fortress.wa.gov/ecy/publications/SummaryPages/0610091.html

TABLE 3. SELECT DIOXINS/FURANS IN GROUNDWATER[1]

PROPOSED GRAYS HARBOR POTASH EXPORT FACILITY - TERMINAL 3

HOQUIAM, WASHINGTON

Sample Identification	Date	DIOXINS/FURANS (pg/L)		
		2,3,7,8-TCDD	OCDD	Total TEQ of dioxins/furans
MW-1	12/19/2018	<9.52	**13.3**	**0.06**
MW-2	12/19/2018	<9.58	**5.4**	**0.01**
MW-3	12/19/2018	<9.56	**18.9**	**0.04**
MW-4	12/19/2018	<9.57	**11.3**	**0.003**
MW-5	12/19/2018	<9.30	**2.51**	**0.0008**
MW-6	12/19/2018	<9.30	**2.43**	**0.0007**
MW-7	12/19/2018	<9.30	**4.56**	**0.001**
MTCA Method A Groundwater Cleanup Level[2]		NE	NE	NE
MTCA Method B Groundwater Cleanup Level[2]		0.673	NE	0.673
MTCA Method C Groundwater Cleanup Level*		6.73	NE	6.73

[1]Chemical Analysis was performed by Analytical Resources, Inc; The laboratory report is included as Appendix A.

[2]Washington State Department of Ecology Model Toxics Control Act (MTCA) Cleanup Levels. Cancer values are used unless otherwise noted. https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx

* The MTCA Method C clean up level is listed because the MTCA Method A industrial clean up level is not established.

pg/L = pictogram per liter

<5 = The analyte was not detected. The associated numerical value is the sample quantitation limit.

EMPC Estimated Maximum Possible Concentration qualifier for HRGCMS Dioxin

J = Estimated concentration value detected below the reporting limit

TABLE 4. METALS IN GROUNDWATER[1]
QUARTERLY COMPARISION - ARSENIC
PROPOSED GRAYS HARBOR POTASH EXPORT FACILITY - TERMINAL 3
HOQUIAM, WASHINGTON

Sample Identification[2]	1st Quarter		2nd Quarter		3rd Quarter		4th Quarter	
	Groundwater Elevation (ft MLLW)	Arsenic (µg/L)	Groundwater Elevation (ft MLLW)	Arsenic (µg/L)	Groundwater Elevation (ft MLLW)	Arsenic (µg/L)	Groundwater Elevation (ft MLLW)	Arsenic (µg/L)
MW-1	17.27	5.6**	14.73	41*	12.5	5.1**	17.29	1.75
MW-2	12.39	49*	12.95	60*	11.41	15.4*	12.99	1.85
MW-3	18.9	<2.0	18.36	<2.0	17.87	0.25	19.64	0.119
MW-4	13.6	17*	13.13	32*	11.46	18.8*	13.16	11.2*
MW-5	N/A	--	14.71	4.9	13.85	1.58	16.62	0.161
MW-6	N/A	--	13.83	8.6**	13.73	2.37	15.11	0.149
MW-7	N/A	--	12.90	14*	11.32	13.9*	15.65	1.98
MTCA Method A Cleanup Level[3]	5							
MTCA Method B Cleanup Level[3]	4.8							
MTCA Method C Cleanup Level	10.5							
Marine Water Aquatic Life Criteria - Acute[4]	69							
Marine Water Aquatic Life Criteria - Chronic[4]	36							
Freshwater Aquatic Life Criteria - Acute[4]	360							
Freshwater Aquatic Life Criteria - Chronic[4]	190							

TABLE 4. METALS IN GROUNDWATER[1]
QUARTERLY COMPARISION - ARSENIC
PROPOSED GRAYS HARBOR POTASH EXPORT FACILITY - TERMINAL 3
HOQUIAM, WASHINGTON

Notes:

[1]Chemical Analysis was performed by Environmental Services Network Northwest; The laboratory report is included as Appendix A.

[2] = Samples were lab filtered

[3]Washington State Department of Ecology Model Toxics Control Act (MTCA) Cleanup Levels. Non cancer values are used unless otherwise noted. https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx

[4]Washington State Department of Ecology Toxics Substances Criteria. https://fortress.wa.gov/ecy/publications/SummaryPages/0610091.html

µg/l = microgram per liter

Bold indicates the analyte was detected at a concentration greater than the laboratory method reporting limits.

<2 = The analyte was not detected. The associated numerical value is the sample quantitation limit.

N/A = Not applicable

-- = not analyzed

Highlighted cell indicates the detected concentration is greater than the applicable MTCA cleanup level.

*Concentrations exceed MTCA Method A, B and C criteria

**Concentration exceeds MTCA Method A and B criteria

TABLE 5. DIOXINS/FURANS IN GROUNDWATER[1]
QUARTERLY COMPARISION
PROPOSED GRAYS HARBOR POTASH EXPORT FACILITY - TERMINAL 3
HOQUIAM, WASHINGTON

Sample Identification	3rd Quarter		4th Quarter	
	Groundwater Elevation (ft MLLW)	Total TEQ of dioxins/furans (pg/L)	Groundwater Elevation (ft MLLW)	Total TEQ of dioxins/furans (pg/L)
MW-1	12.5	**7.91**	17.29	**0.06**
MW-2	11.41	**0.05**	12.99	**0.01**
MW-3	17.87	**9.56**	19.64	**0.04**
MW-4	11.46	**0.04**	13.16	**0.003**
MW-5	13.85	**2.92**	16.62	**0.0008**
MW-6	13.73	**0.10**	15.11	**0.0007**
MW-7	11.32	**0.03**	15.65	**0.001**
MTCA Method A Cleanup Level[3]	NE			
MTCA Method B Cleanup Level[3]	0.673			
MTCA Method C Cleanup Level[3]	6.73			

Notes:

[1]Chemical Analysis was performed by Environmental Services Network Northwest; The laboratory report is included as Appendix A.

[3]Washington State Department of Ecology Model Toxics Control Act (MTCA) Cleanup Levels. Cancer values are used unless otherwise noted. https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx

pg/L = pictogram per liter

Bold indicates the analyte was detected at a concentration greater than the laboratory method reporting limits.

<2 = The analyte was not detected. The associated numerical value is the sample quantitation limit.

NE = Not established

Highlighted cell indicates the detected concentration is greater than the applicable MTCA cleanup level.

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Figures

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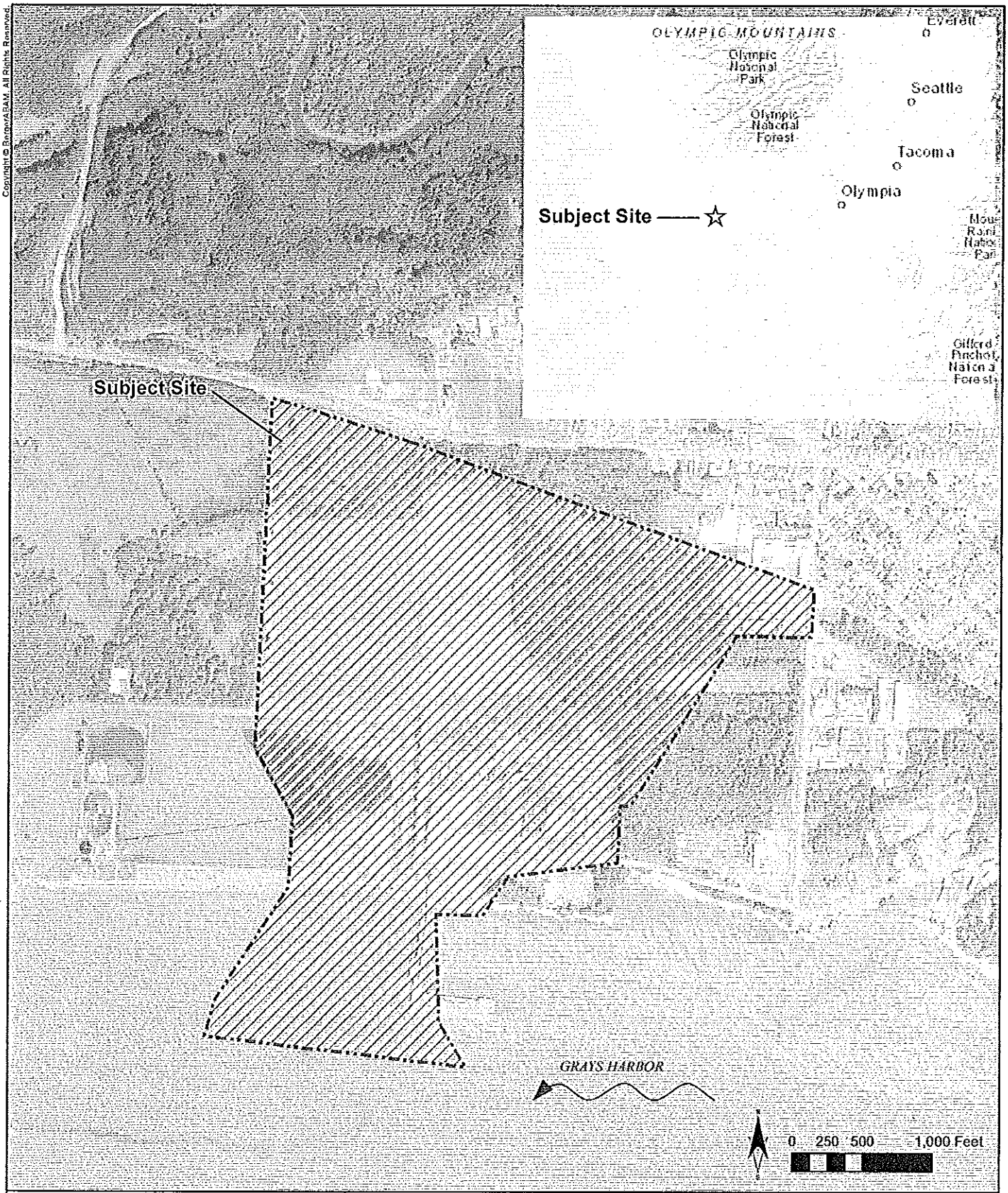


PURPOSE: Construct a bulk potash export/outbound logistics facility. Evaluate groundwater conditions at the site.
IN: Hoquiam COUNTY OF: Grays Harbor
STATE: WA
APPLICANT: BHP Billiton Canada Inc.
ADJACENT PROPERTY OWNERS: USA, City of Hoquiam, Port of Grays Harbor, Adams Street Hoquiam LLC, Emerson Street Hoquiam LLC

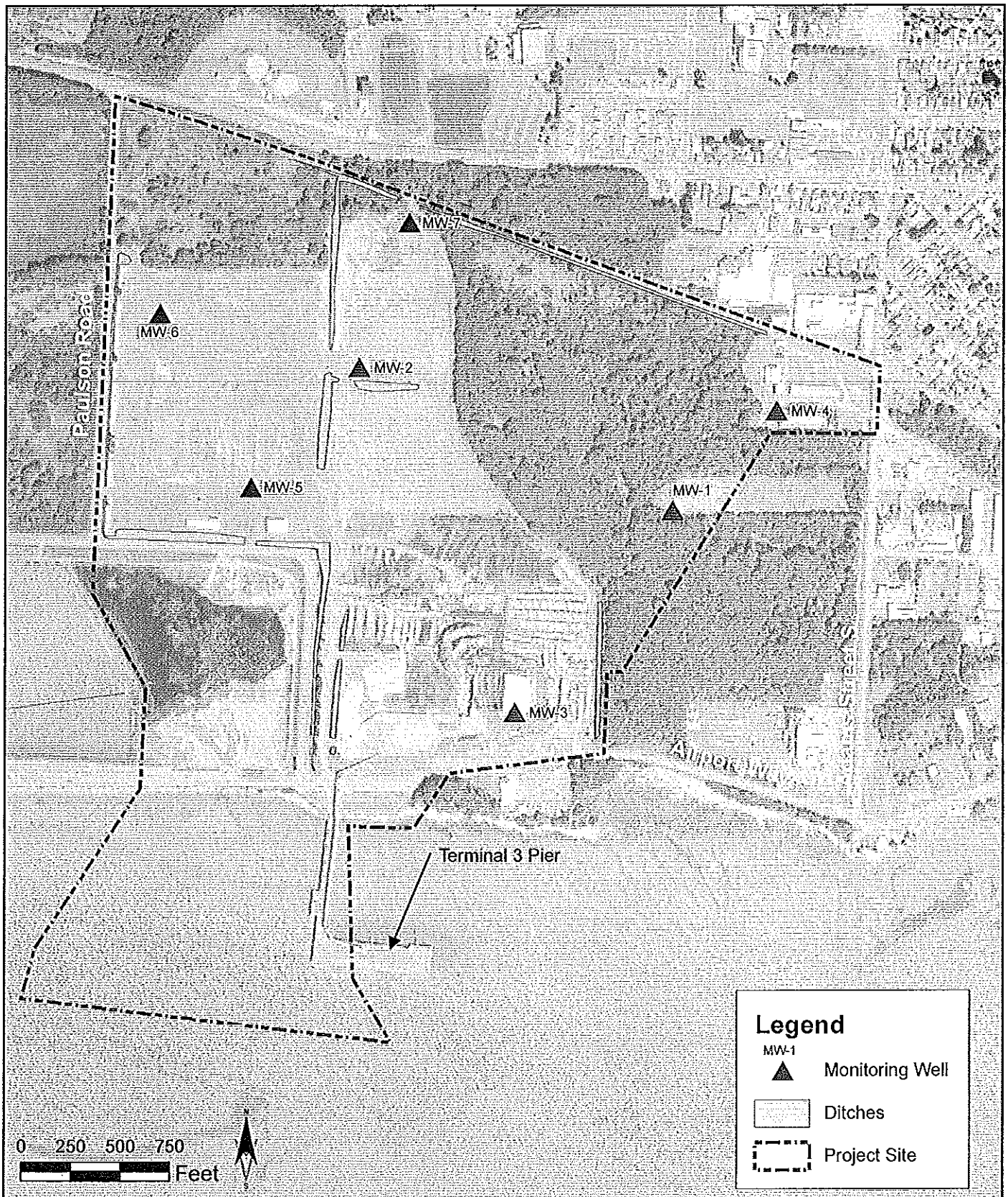
Figure 1: Vicinity Map
December 2018 Fourth Quarter Groundwater Monitoring Report

BHP BergerABAM

USACE Reference No:NWS-2017-715
PROJECT: Proposed Grays Harbor Potash Export Facility: Soil and ground water investigation
LATITUDE: 46° 58' 42"
LONGITUDE: -123° 54' 44"
DATUM: NAD_1983_StatePlane_Washington

Figure 1 of 4 January 2019

Path: Q:\Vancouver\2017\A17.020200\GIS\02_MXD\Mitigation\Groundwater\Groundwater Monitoring\December 2018\Fig_1 Site Vicinity Map.mxd



PURPOSE: Construct a bulk potash export/outbound logistics facility. Evaluate groundwater conditions at the site.
IN: Hoquiam COUNTY OF: Grays Harbor
STATE: WA
APPLICANT: BHP Billiton Canada Inc.
ADJACENT PROPERTY OWNERS: USA, City of Hoquiam, Port of Grays Harbor, Adams Street Hoquiam LLC, Emerson Street Hoquiam LLC

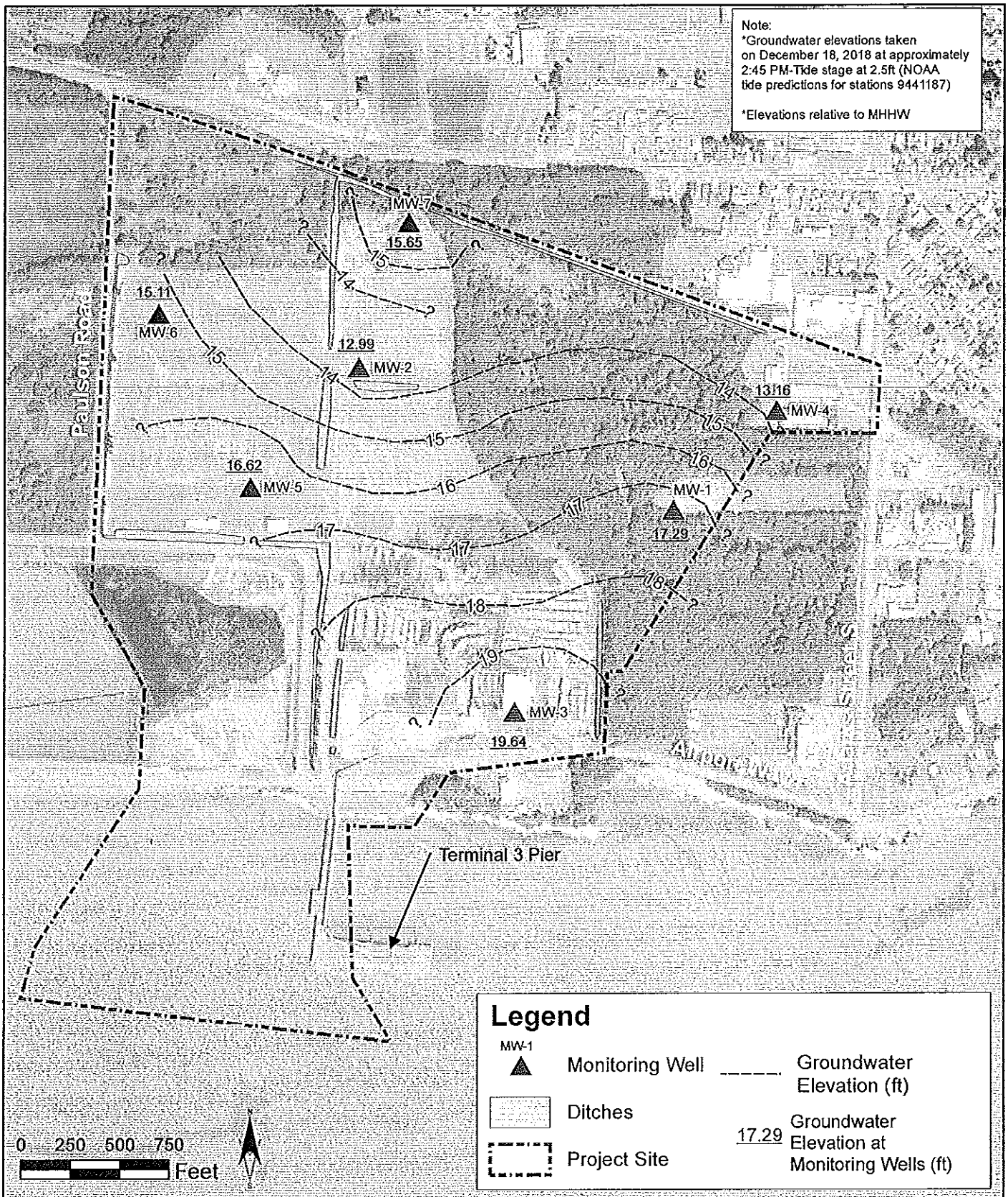
Figure 2: Site Plan - Monitoring Well Locations
December 2018 Fourth Quarter Groundwater Monitoring Report

BHP BergerABAM

USACE Reference No: NWS-2017-715
PROJECT: Proposed Grays Harbor Potash Export Facility: Soil and ground water investigation
LATITUDE: 46° 58' 42"
LONGITUDE: -123° 54' 44"
DATUM: NAD_1983_StatePlane_Washington

Figure 2 of 4 January 2019

Path: Q:\Vancouver\2017\A17.020200\GIS\02_MXD\Mitigation\Groudwater\Groundwater Monitoring\December2018\Fig2_Site Plan Monitoring.mxd



PURPOSE: Construct a bulk potash export/outbound logistics facility. Evaluate groundwater conditions at the site.
IN: Hoquiam COUNTY OF: Grays Harbor
STATE: WA
APPLICANT: BHP Billiton Canada Inc.
ADJACENT PROPERTY OWNERS: USA, City of Hoquiam, Port of Grays Harbor, Adams Street Hoquiam LLC, Emerson Street Hoquiam LLC

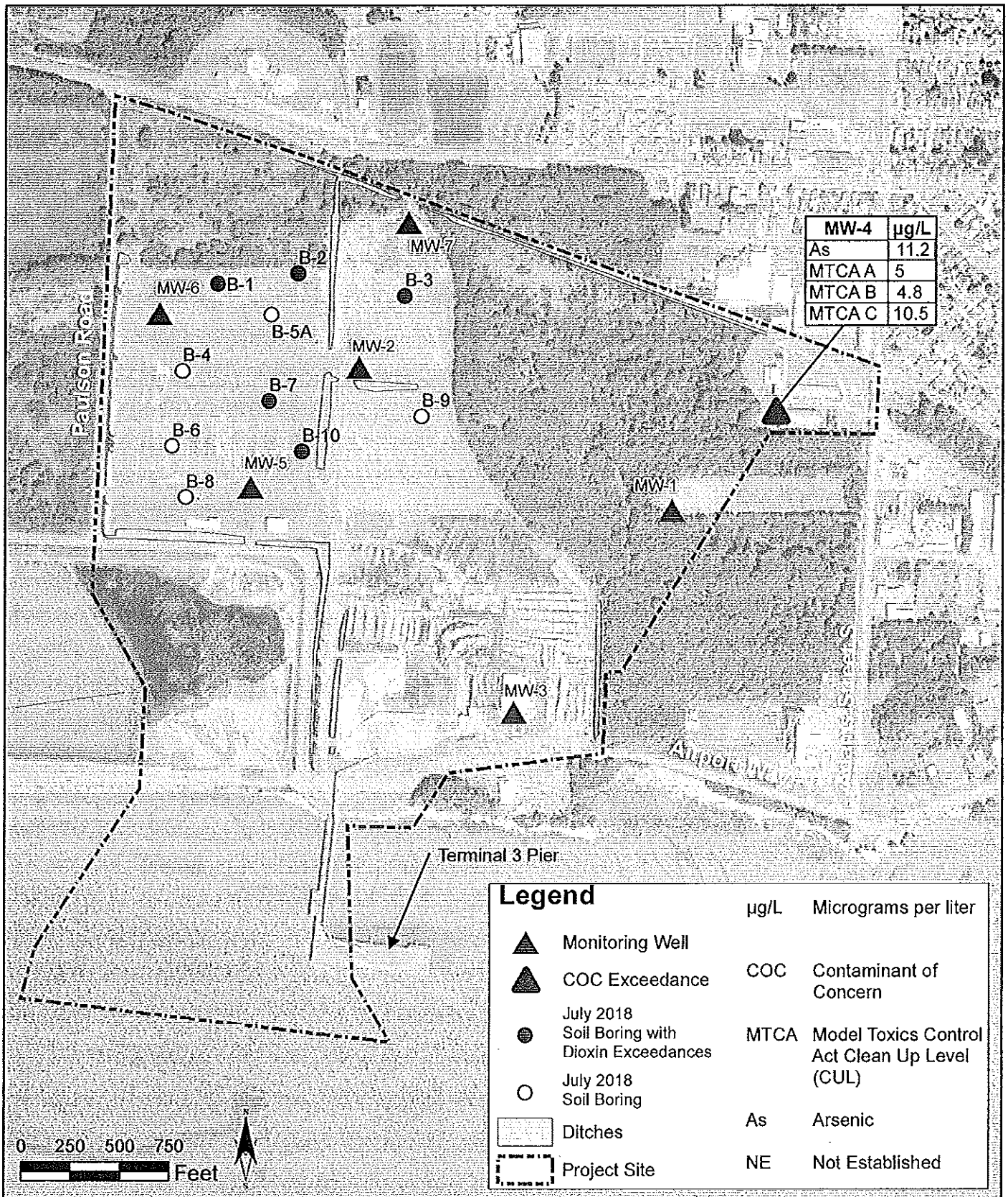
Figure 3: Groundwater Elevations & Estimated Groundwater Contours
December 2018 Fourth Quarter Groundwater Monitoring Report

BHP BergerABAM

USACE Reference No:NWS-2017-715
PROJECT: Proposed Grays Harbor Potash Export Facility: Soil and ground water investigation
LATITUDE: 46° 58' 42"
LONGITUDE: -123° 54' 44"
DATUM: NAD_1983_StatePlane_Washington

Figure 3 of 5 January 2019

Path: O:\Vancouver\2017\A17.020200\GIS\02_MXD\Mitigation\Groundwater\Groundwater Monitoring\December2018\Fig3_Groundwater elevations.mxd



PURPOSE: Construct a bulk potash export/outbound logistics facility. Evaluate groundwater conditions at the site.
IN: Hoquiam COUNTY OF: Grays Harbor
STATE: WA
APPLICANT: BHP Billiton Canada Inc.
ADJACENT PROPERTY OWNERS: USA, City of Hoquiam, Port of Grays Harbor, Adams Street Hoquiam LLC, Emerson Street Hoquiam LLC

Figure 4: Groundwater COC Exceedances of MTCA CULs
December 2018 Fourth Quarter Groundwater Monitoring Report

BHP BergerABAM

USACE Reference No:NWS-2017-715
PROJECT: Proposed Grays Harbor Potash Export Facility: Soil and ground water investigation
LATITUDE: 46° 58' 42"
LONGITUDE: -123° 54' 44"
DATUM: NAD_1983_StatePlane_Washington

Figure 4 of 4 January 2019

Path: Q:\Vancouver\2017\A17.020200\GIS\02_MXD\Mitigation\Groundwater\Groundwater Monitoring\December2018\Fig4_COC Exceedance.mxd

December 2018
Fourth Quarter Groundwater Monitoring Report
Proposed Grays Harbor Potash Export Facility
Hoquiam, Washington

Appendix A
Analytical Resources, Inc.
Chemical Analytical Laboratory Report

Analytical Resources, Incorporated
Analytical Chemists and Consultants

14 January.2019

Victoria England
BergerABAM
1301 Fifth Avenue, Suite 1200
Seattle, WA 98101

RE: BHP Grays Harbor Potash

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
18L0373	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in it- entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 18L0373	Turn-around Requested: STD	Page: 1 of 1	
ARI Client Company: Berger ABAM	Phone: 206-920-8307	Date:	Ice Present? Yes
Client Contact: Victoria England		No. of Coolers: 1	Cooler Temps: 4, 5
Client Project Name: BAP GRAYS HARBOR POTASH EXPORT FACILITY			
Client Project #: A17.0202.00	Samplers: AR		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Dioxins/Furans	Dissolved metals	Cr+6						Notes/Comments
T3 MW-1	12.19.18	9:31	WATER	3	X	X	X						NOT FIELD
T3 MW-2		11:34		3	X	X	X						FILTERED -
T3 MW-3		10:46		3	X	X	X						Please lab
T3 MW-4		10:10		3	X	X	X						filter

Comments/Special Instructions	Relinquished by (Signature)	Received by (Signature)	Relinquished by (Signature)	Received by (Signature)
	Printed Name: April Ryckman	Printed Name: Jacob Sinclair	Printed Name:	Printed Name:
	Company: Berger ABAM	Company: ARI	Company:	Company:
	Date & Time: 12/19/18 1530	Date & Time: 12/19/18 1530	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

WORK ORDER

18L0373

Client: BergerABAM | Project Manager: Amanda Volgardsen

Project: BHP Grays Harbor Potash | Project Number: [none]

Analysis	Due	TAT	Expires	Comments
18L0373-04 T3 MW-4 [Water] Sampled 19-Dec-2018 10:10				SRM
1613B Dioxin	01/07/2019	10	12/19/2019	
Chromium, Hexavalent, 7196A	01/07/2019	10	12/20/2018	
Filter 0.45 micron	01/07/2019	10	12/20/2018	
Filter 0.45 micron (Cr+6)	01/07/2019	10	12/20/2018	
Met Diss 6020A - Ag	01/07/2019	10	6/17/2019	
Met Diss 6020A - As UCT	01/07/2019	10	6/17/2019	
Met Diss 6020A - Ba	01/07/2019	10	6/17/2019	
Met Diss 6020A - Cd UCT	01/07/2019	10	6/17/2019	
Met Diss 6020A - Cr	01/07/2019	10	6/17/2019	
Met Diss 6020A - Pb	01/07/2019	10	6/17/2019	
Met Diss 6020A - Se UCT	01/07/2019	10	6/17/2019	
Met Diss 7470A Hg	01/07/2019	10	1/16/2019	

Preservation Confirmation

Container ID	Container Type	pH	
18L0373-01 A	Glass NM, Amber, 1000 mL		
18L0373-01 B	Glass NM, Amber, 1000 mL		
18L0373-01 C	HDPE NM, 500 mL	>2	Fail
18L0373-01 D	Small OJ, 500 mL		
18L0373-02 A	Glass NM, Amber, 1000 mL		
18L0373-02 B	Glass NM, Amber, 1000 mL		
18L0373-02 C	HDPE NM, 500 mL	>2	Fail
18L0373-02 D	Small OJ, 500 mL		
18L0373-03 A	Glass NM, Amber, 1000 mL		
18L0373-03 B	Glass NM, Amber, 1000 mL		
18L0373-03 C	HDPE NM, 500 mL	>2	Fail
18L0373-03 D	Small OJ, 500 mL		
18L0373-04 A	Glass NM, Amber, 1000 mL		
18L0373-04 B	Glass NM, Amber, 1000 mL		
18L0373-04 C	HDPE NM, 500 mL	>2	Fail
18L0373-04 D	Small OJ, 500 mL		

SBw
Preservation Confirmed By

12/19/18
Date

Filtered & preserved 1/3/19 -sm

Reviewed By

Date

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
T3 MW-1	18L0373-01	Water	19-Dec-2018 09:31	19-Dec-2018 15:30
T3 MW-2	18L0373-02	Water	19-Dec-2018 11:34	19-Dec-2018 15:30
T3 MW-3	18L0373-03	Water	19-Dec-2018 10:46	19-Dec-2018 15:30
T3 MW-4	18L0373-04	Water	19-Dec-2018 10:10	19-Dec-2018 15:30

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

Work Order Case Narrative

Sample receipt

Samples as listed on the preceding page were received December 19, 2018 under ARI work order 18L0373. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Dioxin/Furans - EPA Method 1613

The samples were extracted and analyzed within the recommended holding times. Analysis was performed using an application specific column developed by Restek. The RTX-Dloxin2 column has unique isomer separation for the 2378-TCDF, eliminating the need for confirmation analysis.

Initial and continuing calibrations were within method requirements.

Labeled internal standard areas were within limits.

The cleanup surrogate percent recoveries were within control limits.

The method blank contains reportable responses for various compounds below the reporting limits. Associated detected results have been flagged with "B" qualifiers. No further corrective action was taken.

The OPR (Ongoing Precision and Recovery) standard percent recoveries were within control limits.

Dissolved Metals - EPA Method 6020A

The samples were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank has Chromium detected below the reporting limit, but above the method detection limit. The Chromium has been flagged with a "J" qualifier on the method blank. There were no target metals detected above the reporting limits in the method blank. No further corrective action was taken.

The LCS percent recoveries were within control limits.

Dissolved Metals UCT-KED- EPA Method 6020A

The samples were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blanks were clean at the reporting limits.

The LCS percent recoveries were within control limits.

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

Dissolved Hg - EPA Method 7470A

The samples were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank was clean at the reporting limits.

The LCS percent recoveries were within control limits.

Hexavalent Chromium - EPA Method 7196A

The samples were prepared and analyzed within the recommended holding times.

Volume for the analysis was split from the dissolved metals bottle prior to analysis.

Initial and continuing calibrations were within method requirements.

The method blank was clean at the reporting limits.

The LCS percent recoveries were within control limits.

A matrix spike, matrix spike duplicate and duplicate were prepared in conjunction with sample T3 MW-1. The matrix spike and matrix spike duplicate have low spike recoveries, and the matrix spike duplicate has no recovery for the RPD. The QC was re-read to verify with data reported as is. This is likely due to matrix interference. The results are advisory. The duplicate RPD was within QC limits. No corrective action was taken.

WORK ORDER

18L0373

Client: BergerABAM | Project Manager: Amanda Volgardsen

Project: BHP Grays Harbor Potash | Project Number: [none]

Analysis	Due	TAT	Expires	Comments
18L0373-04 T3 MW-4 [Water] Sampled 19-Dec-2018 10:10				SRM
1613B Dioxin	01/07/2019	10	12/19/2019	
Chromium, Hexavalent, 7196A	01/07/2019	10	12/20/2018	
Filter 0.45 micron	01/07/2019	10	12/20/2018	
Filter 0.45 micron (Cr+6)	01/07/2019	10	12/20/2018	
Met Diss 6020A - Ag	01/07/2019	10	6/17/2019	
Met Diss 6020A - As UCT	01/07/2019	10	6/17/2019	
Met Diss 6020A - Ba	01/07/2019	10	6/17/2019	
Met Diss 6020A - Cd UCT	01/07/2019	10	6/17/2019	
Met Diss 6020A - Cr	01/07/2019	10	6/17/2019	
Met Diss 6020A - Pb	01/07/2019	10	6/17/2019	
Met Diss 6020A - Se UCT	01/07/2019	10	6/17/2019	
Met Diss 7470A Hg	01/07/2019	10	1/16/2019	

Preservation Confirmation

Container ID	Container Type	pH	
18L0373-01 A	Glass NM, Amber, 1000 mL		
18L0373-01 B	Glass NM, Amber, 1000 mL		
18L0373-01 C	HDPE NM, 500 mL	>2	Fail
18L0373-01 D	Small OJ, 500 mL		
18L0373-02 A	Glass NM, Amber, 1000 mL		
18L0373-02 B	Glass NM, Amber, 1000 mL		
18L0373-02 C	HDPE NM, 500 mL	>2	Fail
18L0373-02 D	Small OJ, 500 mL		
18L0373-03 A	Glass NM, Amber, 1000 mL		
18L0373-03 B	Glass NM, Amber, 1000 mL		
18L0373-03 C	HDPE NM, 500 mL	>2	Fail
18L0373-03 D	Small OJ, 500 mL		
18L0373-04 A	Glass NM, Amber, 1000 mL		
18L0373-04 B	Glass NM, Amber, 1000 mL		
18L0373-04 C	HDPE NM, 500 mL	>2	Fail
18L0373-04 D	Small OJ, 500 mL		

JBw — Preservation Confirmed By

12/19/18 — Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Berger ABAM Project Name: BHP Grays Harbor Potash Export Facility

COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 18L0373 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 4.5°C
Time: 1530

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 90520006

Cooler Accepted by: SBr Date: 12/19/18 Time: 1530

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... (Bubble Wrap) (Wet Ice) Gel Packs (Baggies) Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI: (NA) (YES) Date/Time: 12/19/18 1544 Equipment: Pour Split by: SBr

Samples Logged by: SBr Date: 12/19/18 Time: 1546

** Notify Project Manager of discrepancies or concerns **

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____

Small Air Bubbles ~ 2mm	Peabubbles 2-4 mm	LARGE Air Bubbles > 4 mm
• • •	o o o	⊗ ⊗ ⊗

Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-1

18L0373-01 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 09:31
Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 14:39

Sample Preparation:	Preparation Method: EPA 1613	
	Preparation Batch: BGL0754	Sample Size: 1050 mL
	Prepared: 04-Jan-2019	Final Volume: 20 uL
Sample Cleanup:	Cleanup Method: Silica Gel	
	Cleanup Batch: CHA0050	Initial Volume: 20 mL
	Cleaned: 07-Jan-2019	Final Volume: 20 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CHA0048	Initial Volume: 20 mL
	Cleaned: 05-Jan-2019	Final Volume: 20 mL
Sample Cleanup:	Cleanup Method: Florisil	
	Cleanup Batch: CHA0049	Initial Volume: 20 mL
	Cleaned: 07-Jan-2019	Final Volume: 20 mL

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes
2,3,7,8-TCDF			0.655-0.886	1.02	9.52	ND	pg/L	U
2,3,7,8-TCDD			0.655-0.886	0.82	9.52	ND	pg/L	U
1,2,3,7,8-PeCDF		0.730	1.318-1.783		9.52	1.04	pg/L	EMPC, J
2,3,4,7,8-PeCDF			1.318-1.783	0.72	9.52	ND	pg/L	U
1,2,3,7,8-PeCDD			1.318-1.783	0.77	9.52	ND	pg/L	U
1,2,3,4,7,8-HxCDF			1.054-1.426	0.69	9.52	ND	pg/L	U
1,2,3,6,7,8-HxCDF			1.054-1.426	0.65	9.52	ND	pg/L	U
2,3,4,6,7,8-HxCDF			1.054-1.426	0.65	9.52	ND	pg/L	U
1,2,3,7,8,9-HxCDF			1.054-1.426	0.85	9.52	ND	pg/L	U
1,2,3,4,7,8-HxCDD			1.054-1.426	1.01	9.52	ND	pg/L	U
1,2,3,6,7,8-HxCDD			1.054-1.426	0.91	9.52	ND	pg/L	U
1,2,3,7,8,9-HxCDD			1.054-1.426	1.00	9.52	ND	pg/L	U
1,2,3,4,6,7,8-HpCDF		1.590	0.893-1.208		9.52	0.72	pg/L	EMPC, J
1,2,3,4,7,8,9-HpCDF			0.893-1.208	0.88	9.52	ND	pg/L	U
1,2,3,4,6,7,8-HpCDD		2.468	0.893-1.208		9.52	1.94	pg/L	EMPC, J
OCDF			0.757-1.024	2.14	19.0	ND	pg/L	U
OCDD		0.891	0.757-1.024		19.0	13.3	pg/L	J, B
Homologue groups								
Total TCDF					9.52	ND	pg/L	U
Total TCDD					9.52	ND	pg/L	U
Total PeCDF					9.52	1.04	pg/L	
Total PeCDD					9.52	ND	pg/L	U
Total HxCDF					9.52	ND	pg/L	U
Total HxCDD					9.52	ND	pg/L	U
Total HpCDF					9.52	0.72	pg/L	
Total HpCDD					9.52	1.94	pg/L	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-1

18L0373-01 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 09:31
Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 14:39

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC):					1.31		
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC):					0.06		
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC = ND):					1.28		
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, EMPC = ND):					0.00		

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-1

18L0373-01 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 09:31

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 14:39

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Labeled compounds							
13C12-2,3,7,8-TCDF		*0.797*	*0.655-0.886*	*24-169 %*	*75.1*	*%*	
13C12-2,3,7,8-TCDD		*0.762*	*0.655-0.886*	*25-164 %*	*87.3*	*%*	
13C12-1,2,3,7,8-PeCDF		*1.600*	*1.318-1.783*	*24-185 %*	*82.1*	*%*	
13C12-2,3,4,7,8-PeCDF		*1.604*	*1.318-1.783*	*21-178 %*	*77.3*	*%*	
13C12-1,2,3,7,8-PeCDD		*1.745*	*1.318-1.783*	*25-181 %*	*77.0*	*%*	
13C12-1,2,3,4,7,8-HxCDF		*0.495*	*0.434-0.587*	*26-152 %*	*98.0*	*%*	
13C12-1,2,3,6,7,8-HxCDF		*0.508*	*0.434-0.587*	*26-123 %*	*106*	*%*	
13C12-2,3,4,6,7,8-HxCDF		*0.474*	*0.434-0.587*	*28-136 %*	*100*	*%*	
13C12-1,2,3,7,8,9-HxCDF		*0.504*	*0.434-0.587*	*29-147 %*	*85.7*	*%*	
13C12-1,2,3,4,7,8-HxCDD		*1.356*	*1.054-1.426*	*32-141 %*	*96.7*	*%*	
13C12-1,2,3,6,7,8-HxCDD		*1.310*	*1.054-1.426*	*28-130 %*	*107*	*%*	
13C12-1,2,3,4,6,7,8-HpCDF		*0.455*	*0.374-0.506*	*28-143 %*	*88.4*	*%*	
13C12-1,2,3,4,7,8,9-HpCDF		*0.440*	*0.374-0.506*	*26-138 %*	*82.9*	*%*	
13C12-1,2,3,4,6,7,8-HpCDD		*1.116*	*0.893-1.208*	*23-140 %*	*94.4*	*%*	
13C12-OCDD		*0.885*	*0.757-1.024*	*17-157 %*	*69.1*	*%*	
37Cl4-2,3,7,8-TCDD				*35-197 %*	*96.1*	*%*	

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-1

18L0373-01 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 09:31

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 14:39

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-1

18L0373-01 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A — Sampled: 12/19/2018 09:31
Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:09

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 — Sample Size: 25 mL
Prepared: 04-Jan-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0560	0.500	4.77	ug/L	
Chromium, Dissolved	7440-47-3	1	0.130	0.500	0.511	ug/L	
Lead, Dissolved	7439-92-1	1	0.0680	0.100	0.208	ug/L	
Silver, Dissolved	7440-22-4	1	0.0170	0.200	ND	ug/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-1

18L0373-01 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A UCT-KED — Sampled: 12/19/2018 09:31

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:09

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 Sample Size: 25 mL
Prepared: 04-Jan-2019 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	1.75	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Selenium, Dissolved	7782-49-2	1	0.440	0.500	ND	ug/L	U

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-1

18L0373-01 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A — Sampled: 12/19/2018 09:31
Instrument: CVAA Analyst: SKM — Analyzed: 01/04/2019 15:00

Sample Preparation: Preparation Method: TWM EPA 7470A
Preparation Batch: BHA0104 — Sample Size: 20 mL
Prepared: 04-Jan-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000100	ND	mg/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-1

18L0373-01 (Water)

Wet Chemistry

Method: EPA 7196A — Sampled: 12/19/2018 09:31
Instrument: UV1800-1 Analyst: BF — Analyzed: 12/19/2018 19:43

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGL0554 — Sample Size: 40 mL
Prepared: 19-Dec-2018 — Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-2

18L0373-02 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 11:34
Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 15:28

Sample Preparation:	Preparation Method: EPA 1613	
	Preparation Batch: BGL0754	Sample Size: 1044 mL
	Prepared: 04-Jan-2019	Final Volume: 20 uL
Sample Cleanup:	Cleanup Method: Silica Gel	
	Cleanup Batch: CHA0050	Initial Volume: 20 mL
	Cleaned: 07-Jan-2019	Final Volume: 20 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CHA0048	Initial Volume: 20 mL
	Cleaned: 05-Jan-2019	Final Volume: 20 mL
Sample Cleanup:	Cleanup Method: Florisil	
	Cleanup Batch: CHA0049	Initial Volume: 20 mL
	Cleaned: 07-Jan-2019	Final Volume: 20 mL

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes
2,3,7,8-TCDF			0.655-0.886	1.30	9.58	ND	pg/L	U
2,3,7,8-TCDD			0.655-0.886	0.74	9.58	ND	pg/L	U
1,2,3,7,8-PeCDF			1.318-1.783	0.74	9.58	ND	pg/L	U
2,3,4,7,8-PeCDF			1.318-1.783	0.72	9.58	ND	pg/L	U
1,2,3,7,8-PeCDD			1.318-1.783	0.89	9.58	ND	pg/L	U
1,2,3,4,7,8-HxCDF			1.054-1.426	0.75	9.58	ND	pg/L	U
1,2,3,6,7,8-HxCDF			1.054-1.426	0.71	9.58	ND	pg/L	U
2,3,4,6,7,8-HxCDF			1.054-1.426	0.72	9.58	ND	pg/L	U
1,2,3,7,8,9-HxCDF			1.054-1.426	0.87	9.58	ND	pg/L	U
1,2,3,4,7,8-HxCDD			1.054-1.426	0.84	9.58	ND	pg/L	U
1,2,3,6,7,8-HxCDD			1.054-1.426	0.79	9.58	ND	pg/L	U
1,2,3,7,8,9-HxCDD			1.054-1.426	0.85	9.58	ND	pg/L	U
1,2,3,4,6,7,8-HpCDF			0.893-1.208	0.49	9.58	ND	pg/L	U
1,2,3,4,7,8,9-HpCDF			0.893-1.208	0.69	9.58	ND	pg/L	U
1,2,3,4,6,7,8-HpCDD		1.126	0.893-1.208		9.58	1.11	pg/L	J
OCDF			0.757-1.024	2.01	19.2	ND	pg/L	U
OCDD		1.051	0.757-1.024		19.2	5.40	pg/L	EMPC, J, B
Homologue groups								
Total TCDF					9.58	ND	pg/L	U
Total TCDD					9.58	ND	pg/L	U
Total PeCDF					9.58	0.74	pg/L	
Total PeCDD					9.58	ND	pg/L	U
Total HxCDF					9.58	ND	pg/L	U
Total HxCDD					9.58	ND	pg/L	U
Total HpCDF					9.58	ND	pg/L	U
Total HpCDD					9.58	1.11	pg/L	

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-2

18L0373-02 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 11:34

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 15:28

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC):					1.29		
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC):					0.01		
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC = ND):					1.29		
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, EMPC = ND):					0.01		

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-2

18L0373-02 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 11:34

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 15:28

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Labeled compounds							
13C12-2,3,7,8-TCDF		*0.815*	*0.655-0.886*	*24-169 %*	*66.6*	*%*	
13C12-2,3,7,8-TCDD		*0.764*	*0.655-0.886*	*25-164 %*	*88.8*	*%*	
13C12-1,2,3,7,8-PeCDF		*1.524*	*1.318-1.783*	*24-185 %*	*87.0*	*%*	
13C12-2,3,4,7,8-PeCDF		*1.595*	*1.318-1.783*	*21-178 %*	*77.6*	*%*	
13C12-1,2,3,7,8-PeCDD		*1.717*	*1.318-1.783*	*25-181 %*	*73.3*	*%*	
13C12-1,2,3,4,7,8-HxCDF		*0.490*	*0.434-0.587*	*26-152 %*	*95.1*	*%*	
13C12-1,2,3,6,7,8-HxCDF		*0.506*	*0.434-0.587*	*26-123 %*	*101*	*%*	
13C12-2,3,4,6,7,8-HxCDF		*0.500*	*0.434-0.587*	*28-136 %*	*97.3*	*%*	
13C12-1,2,3,7,8,9-HxCDF		*0.505*	*0.434-0.587*	*29-147 %*	*87.5*	*%*	
13C12-1,2,3,4,7,8-HxCDD		*1.334*	*1.054-1.426*	*32-141 %*	*94.9*	*%*	
13C12-1,2,3,6,7,8-HxCDD		*1.340*	*1.054-1.426*	*28-130 %*	*104*	*%*	
13C12-1,2,3,4,6,7,8-HpCDF		*0.449*	*0.374-0.506*	*28-143 %*	*93.2*	*%*	
13C12-1,2,3,4,7,8,9-HpCDF		*0.439*	*0.374-0.506*	*26-138 %*	*94.7*	*%*	
13C12-1,2,3,4,6,7,8-HpCDD		*1.162*	*0.893-1.208*	*23-140 %*	*97.6*	*%*	
13C12-OCDD		*0.920*	*0.757-1.024*	*17-157 %*	*75.1*	*%*	
37Cl4-2,3,7,8-TCDD				*35-197 %*	*95.6*	*%*	

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-2

18L0373-02 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 11:34

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 15:28

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-2

18L0373-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A — Sampled: 12/19/2018 11:34
Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:14

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 — Sample Size: 25 mL
Prepared: 04-Jan-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0560	0.500	7.73	ug/L	
Chromium, Dissolved	7440-47-3	1	0.130	0.500	4.55	ug/L	
Lead, Dissolved	7439-92-1	5	0.340	0.500	ND	ug/L	U
Silver, Dissolved	7440-22-4	5	0.0850	1.00	ND	ug/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-2

18L0373-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A UCT-KED — Sampled: 12/19/2018 11:34

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/07/2019 18:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 Sample Size: 25 mL
Prepared: 04-Jan-2019 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	0.110	1.00	1.85	ug/L	D
Cadmium, Dissolved	7440-43-9	5	0.150	0.500	ND	ug/L	U
Selenium, Dissolved	7782-49-2	5	2.20	2.50	2.81	ug/L	D

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-2

18L0373-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A — Sampled: 12/19/2018 11:34

Instrument: CVAA Analyst: SKM — Analyzed: 01/04/2019 15:03

Sample Preparation: Preparation Method: TWM EPA 7470A
Preparation Batch: BHA0104 — Sample Size: 20 mL
Prepared: 04-Jan-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000100	ND	mg/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-2

18L0373-02 (Water)

Wet Chemistry

Method: EPA 7196A — Sampled: 12/19/2018 11:34
Instrument: UV1800-1 Analyst: BF — Analyzed: 12/19/2018 19:48

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGL0554 — Sample Size: 40 mL
Prepared: 19-Dec-2018 — Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-3

18L0373-03 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 10:46
Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 16:16

Sample Preparation:	Preparation Method: EPA 1613	
	Preparation Batch: BGL0754	Sample Size: 1046 mL
	Prepared: 04-Jan-2019	Final Volume: 20 uL
Sample Cleanup:	Cleanup Method: Silica Gel	
	Cleanup Batch: CHA0050	Initial Volume: 20 mL
	Cleaned: 07-Jan-2019	Final Volume: 20 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CHA0048	Initial Volume: 20 mL
	Cleaned: 05-Jan-2019	Final Volume: 20 mL
Sample Cleanup:	Cleanup Method: Florisil	
	Cleanup Batch: CHA0049	Initial Volume: 20 mL
	Cleaned: 07-Jan-2019	Final Volume: 20 mL

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes
2,3,7,8-TCDF			0.655-0.886	0.95	9.56	ND	pg/L	U
2,3,7,8-TCDD			0.655-0.886	0.70	9.56	ND	pg/L	U
1,2,3,7,8-PeCDF			1.318-1.783	0.55	9.56	ND	pg/L	U
2,3,4,7,8-PeCDF			1.318-1.783	0.51	9.56	ND	pg/L	U
1,2,3,7,8-PeCDD			1.318-1.783	0.68	9.56	ND	pg/L	U
1,2,3,4,7,8-HxCDF			1.054-1.426	0.60	9.56	ND	pg/L	U
1,2,3,6,7,8-HxCDF			1.054-1.426	0.53	9.56	ND	pg/L	U
2,3,4,6,7,8-HxCDF			1.054-1.426	0.60	9.56	ND	pg/L	U
1,2,3,7,8,9-HxCDF			1.054-1.426	0.71	9.56	ND	pg/L	U
1,2,3,4,7,8-HxCDD			1.054-1.426	0.63	9.56	ND	pg/L	U
1,2,3,6,7,8-HxCDD			1.054-1.426	0.59	9.56	ND	pg/L	U
1,2,3,7,8,9-HxCDD			1.054-1.426	0.64	9.56	ND	pg/L	U
1,2,3,4,6,7,8-HpCDF		0.974	0.893-1.208		9.56	1.45	pg/L	J
1,2,3,4,7,8,9-HpCDF			0.893-1.208	0.59	9.56	ND	pg/L	U
1,2,3,4,6,7,8-HpCDD		0.839	0.893-1.208		9.56	2.37	pg/L	EMPC, J
OCDF		0.569	0.757-1.024		19.1	1.72	pg/L	EMPC, J
OCDD		0.944	0.757-1.024		19.1	18.9	pg/L	J, B
Homologue groups								
Total TCDF					9.56	ND	pg/L	U
Total TCDD					9.56	ND	pg/L	U
Total PeCDF					9.56	0.85	pg/L	
Total PeCDD					9.56	ND	pg/L	U
Total HxCDF					9.56	0.77	pg/L	
Total HxCDD					9.56	ND	pg/L	U
Total HpCDF					9.56	3.53	pg/L	
Total HpCDD					9.56	4.98	pg/L	

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-3

18L0373-03 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 10:46

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 16:16

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC):					1.08		
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC):					0.04		
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC = ND):					1.07		
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, EMPC = ND):					0.02		

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-3

18L0373-03 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 10:46

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 16:16

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Labeled compounds							
13C12-2,3,7,8-TCDF		*0.783*	*0.655-0.886*	*24-169 %*	*75.8*	*%*	
13C12-2,3,7,8-TCDD		*0.757*	*0.655-0.886*	*25-164 %*	*88.8*	*%*	
13C12-1,2,3,7,8-PeCDF		*1.597*	*1.318-1.783*	*24-185 %*	*86.9*	*%*	
13C12-2,3,4,7,8-PeCDF		*1.594*	*1.318-1.783*	*21-178 %*	*81.1*	*%*	
13C12-1,2,3,7,8-PeCDD		*1.732*	*1.318-1.783*	*25-181 %*	*76.7*	*%*	
13C12-1,2,3,4,7,8-HxCDF		*0.503*	*0.434-0.587*	*26-152 %*	*90.0*	*%*	
13C12-1,2,3,6,7,8-HxCDF		*0.466*	*0.434-0.587*	*26-123 %*	*102*	*%*	
13C12-2,3,4,6,7,8-HxCDF		*0.497*	*0.434-0.587*	*28-136 %*	*92.4*	*%*	
13C12-1,2,3,7,8,9-HxCDF		*0.538*	*0.434-0.587*	*29-147 %*	*88.1*	*%*	
13C12-1,2,3,4,7,8-HxCDD		*1.306*	*1.054-1.426*	*32-141 %*	*88.5*	*%*	
13C12-1,2,3,6,7,8-HxCDD		*1.292*	*1.054-1.426*	*28-130 %*	*97.0*	*%*	
13C12-1,2,3,4,6,7,8-HpCDF		*0.458*	*0.374-0.506*	*28-143 %*	*88.6*	*%*	
13C12-1,2,3,4,7,8,9-HpCDF		*0.439*	*0.374-0.506*	*26-138 %*	*86.0*	*%*	
13C12-1,2,3,4,6,7,8-HpCDD		*1.050*	*0.893-1.208*	*23-140 %*	*90.8*	*%*	
13C12-OCDD		*0.915*	*0.757-1.024*	*17-157 %*	*74.0*	*%*	
37Cl4-2,3,7,8-TCDD				*35-197 %*	*96.1*	*%*	

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-3

18L0373-03 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 10:46

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 16:16

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-3

18L0373-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A — Sampled: 12/19/2018 10:46

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:19

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 Sample Size: 25 mL
Prepared: 04-Jan-2019 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0560	0.500	**0.904**	ug/L	
Chromium, Dissolved	7440-47-3	1	0.130	0.500	**0.469**	ug/L	J
Lead, Dissolved	7439-92-1	1	0.0680	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0170	0.200	ND	ug/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-3

18L0373-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A UCT-KED — Sampled: 12/19/2018 10:46
Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:19

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 — Sample Size: 25 mL
Prepared: 04-Jan-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	0.119	ug/L	J
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Selenium, Dissolved	7782-49-2	1	0.440	0.500	ND	ug/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-3

18L0373-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A — Sampled: 12/19/2018 10:46
Instrument: CVAA Analyst: SKM — Analyzed: 01/04/2019 15:05

Sample Preparation: Preparation Method: TWM EPA 7470A
Preparation Batch: BHA0104 — Sample Size: 20 mL
Prepared: 04-Jan-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000100	ND	mg/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-3

18L0373-03 (Water)

Wet Chemistry

Method: EPA 7196A — Sampled: 12/19/2018 10:46
Instrument: UV1800-1 Analyst: BF — Analyzed: 12/19/2018 19:49

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGL0554 — Sample Size: 40 mL
Prepared: 19-Dec-2018 — Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-4

18L0373-04 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 10:10
Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 17:05

Sample Preparation:	Preparation Method: EPA 1613	
	Preparation Batch: BGL0754	Sample Size: 1045 mL
	Prepared: 04-Jan-2019	Final Volume: 20 uL
Sample Cleanup:	Cleanup Method: Silica Gel	
	Cleanup Batch: CHA0050	Initial Volume: 20 mL
	Cleaned: 07-Jan-2019	Final Volume: 20 mL
Sample Cleanup:	Cleanup Method: Sulfuric Acid	
	Cleanup Batch: CHA0048	Initial Volume: 20 mL
	Cleaned: 05-Jan-2019	Final Volume: 20 mL
Sample Cleanup:	Cleanup Method: Florisil	
	Cleanup Batch: CHA0049	Initial Volume: 20 mL
	Cleaned: 07-Jan-2019	Final Volume: 20 mL

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes
2,3,7,8-TCDF			0.655-0.886	1.12	9.57	ND	pg/L	U
2,3,7,8-TCDD			0.655-0.886	0.73	9.57	ND	pg/L	U
1,2,3,7,8-PeCDF			1.318-1.783	0.70	9.57	ND	pg/L	U
2,3,4,7,8-PeCDF			1.318-1.783	0.66	9.57	ND	pg/L	U
1,2,3,7,8-PeCDD			1.318-1.783	0.92	9.57	ND	pg/L	U
1,2,3,4,7,8-HxCDF			1.054-1.426	0.63	9.57	ND	pg/L	U
1,2,3,6,7,8-HxCDF			1.054-1.426	0.60	9.57	ND	pg/L	U
2,3,4,6,7,8-HxCDF			1.054-1.426	0.61	9.57	ND	pg/L	U
1,2,3,7,8,9-HxCDF			1.054-1.426	0.70	9.57	ND	pg/L	U
1,2,3,4,7,8-HxCDD			1.054-1.426	0.80	9.57	ND	pg/L	U
1,2,3,6,7,8-HxCDD			1.054-1.426	0.76	9.57	ND	pg/L	U
1,2,3,7,8,9-HxCDD			1.054-1.426	0.82	9.57	ND	pg/L	U
1,2,3,4,6,7,8-HpCDF			0.893-1.208	0.45	9.57	ND	pg/L	U
1,2,3,4,7,8,9-HpCDF			0.893-1.208	0.60	9.57	ND	pg/L	U
1,2,3,4,6,7,8-HpCDD			0.893-1.208	0.86	9.57	ND	pg/L	U
OCDF			0.757-1.024	2.09	19.1	ND	pg/L	U
OCDD		1.102	0.757-1.024		19.1	11.3	pg/L	EMPC, J, B
Homologue groups								
Total TCDF					9.57	ND	pg/L	U
Total TCDD					9.57	ND	pg/L	U
Total PeCDF					9.57	ND	pg/L	U
Total PeCDD					9.57	ND	pg/L	U
Total HxCDF					9.57	ND	pg/L	U
Total HxCDD					9.57	ND	pg/L	U
Total HpCDF					9.57	ND	pg/L	U
Total HpCDD					9.57	0.95	pg/L	

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-4

18L0373-04 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 10:10

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 17:05

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC):				1.25			
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC):				0.00			
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC = ND):				1.25			
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, EMPC = ND):				0.00			

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-4

18L0373-04 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 10:10

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 17:05

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Labeled compounds							
13C12-2,3,7,8-TCDF		*0.780*	*0.655-0.886*	*24-169 %*	*81.2*	*%*	
13C12-2,3,7,8-TCDD		*0.767*	*0.655-0.886*	*25-164 %*	*84.7*	*%*	
13C12-1,2,3,7,8-PeCDF		*1.677*	*1.318-1.783*	*24-185 %*	*83.2*	*%*	
13C12-2,3,4,7,8-PeCDF		*1.584*	*1.318-1.783*	*21-178 %*	*74.3*	*%*	
13C12-1,2,3,7,8-PeCDD		*1.633*	*1.318-1.783*	*25-181 %*	*70.7*	*%*	
13C12-1,2,3,4,7,8-HxCDF		*0.500*	*0.434-0.587*	*26-152 %*	*85.7*	*%*	
13C12-1,2,3,6,7,8-HxCDF		*0.498*	*0.434-0.587*	*26-123 %*	*91.6*	*%*	
13C12-2,3,4,6,7,8-HxCDF		*0.514*	*0.434-0.587*	*28-136 %*	*85.9*	*%*	
13C12-1,2,3,7,8,9-HxCDF		*0.492*	*0.434-0.587*	*29-147 %*	*82.3*	*%*	
13C12-1,2,3,4,7,8-HxCDD		*1.283*	*1.054-1.426*	*32-141 %*	*88.4*	*%*	
13C12-1,2,3,6,7,8-HxCDD		*1.294*	*1.054-1.426*	*28-130 %*	*91.1*	*%*	
13C12-1,2,3,4,6,7,8-HpCDF		*0.441*	*0.374-0.506*	*28-143 %*	*75.0*	*%*	
13C12-1,2,3,4,7,8,9-HpCDF		*0.426*	*0.374-0.506*	*26-138 %*	*73.7*	*%*	
13C12-1,2,3,4,6,7,8-HpCDD		*1.083*	*0.893-1.208*	*23-140 %*	*78.7*	*%*	
13C12-OCDD		*0.898*	*0.757-1.024*	*17-157 %*	*62.0*	*%*	
37Cl4-2,3,7,8-TCDD				*35-197 %*	*91.6*	*%*	

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-4

18L0373-04 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 10:10

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/08/2019 17:05

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-4

18L0373-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A — Sampled: 12/19/2018 10:10
Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:24

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 — Sample Size: 25 mL
Prepared: 04-Jan-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	2	0.112	1.00	13.9	ug/L	D
Chromium, Dissolved	7440-47-3	2	0.260	1.00	7.61	ug/L	D
Lead, Dissolved	7439-92-1	2	0.136	0.200	ND	ug/L	U
Silver, Dissolved	7440-22-4	2	0.0340	0.400	ND	ug/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-4

18L0373-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A UCT-KED — Sampled: 12/19/2018 10:10

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:24

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 Sample Size: 25 mL
Prepared: 04-Jan-2019 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.0440	0.400	11.2	ug/L	D
Cadmium, Dissolved	7440-43-9	2	0.0600	0.200	ND	ug/L	U
Selenium, Dissolved	7782-49-2	2	0.880	1.00	ND	ug/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-4

18L0373-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A — Sampled: 12/19/2018 10:10
Instrument: CVAA Analyst: SKM — Analyzed: 01/04/2019 15:07

Sample Preparation: Preparation Method: TWM EPA 7470A
Preparation Batch: BHA0104 — Sample Size: 20 mL
Prepared: 04-Jan-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000100	ND	mg/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

T3 MW-4

18L0373-04 (Water)

Wet Chemistry

Method: EPA 7196A
Instrument: UV1800-1 Analyst: BF

Sampled: 12/19/2018 10:10
Analyzed: 12/19/2018 19:50

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGL0554
Prepared: 19-Dec-2018
Sample Size: 40 mL
Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

Dioxins/Furans - Quality Control

Batch BGL0754 - EPA 1613

Instrument: AUTOSPEC01 Analyst: pl

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGL0754-BLK1)				Prepared: 04-Jan-2019 Analyzed: 08-Jan-2019 12:14							
2,3,7,8-TCDF		0.655-0.886	1.05	10.0	ND	pg/L					U
2,3,7,8-TCDD		0.655-0.886	0.86	10.0	ND	pg/L					U
1,2,3,7,8-PeCDF		1.318-1.783	0.63	10.0	ND	pg/L					U
2,3,4,7,8-PeCDF		1.318-1.783	0.58	10.0	ND	pg/L					U
1,2,3,7,8-PeCDD		1.318-1.783	0.93	10.0	ND	pg/L					U
1,2,3,4,7,8-HxCDF		1.054-1.426	0.58	10.0	ND	pg/L					U
1,2,3,6,7,8-HxCDF		1.054-1.426	0.54	10.0	ND	pg/L					U
2,3,4,6,7,8-HxCDF		1.054-1.426	0.59	10.0	ND	pg/L					U
1,2,3,7,8,9-HxCDF	1.025	1.054-1.426		10.0	0.669	pg/L					EMPC, J
1,2,3,4,7,8-HxCDD		1.054-1.426	0.74	10.0	ND	pg/L					U
1,2,3,6,7,8-HxCDD		1.054-1.426	0.68	10.0	ND	pg/L					U
1,2,3,7,8,9-HxCDD		1.054-1.426	0.74	10.0	ND	pg/L					U
1,2,3,4,6,7,8-HpCDF		0.893-1.208	0.39	10.0	ND	pg/L					U
1,2,3,4,7,8,9-HpCDF		0.893-1.208	0.53	10.0	ND	pg/L					U
1,2,3,4,6,7,8-HpCDD		0.893-1.208	0.88	10.0	ND	pg/L					U
OCDF		0.757-1.024	1.91	20.0	ND	pg/L					U
OCDD	0.616	0.757-1.024		20.0	1.88	pg/L					EMPC, J
Homologue group											
Total TCDF				10.0	ND	pg/L					U
Total TCDD				10.0	ND	pg/L					U
Total PeCDF				10.0	ND	pg/L					U
Total PeCDD				10.0	ND	pg/L					U
Total HxCDF				10.0	0.669	pg/L					
Total HxCDD				10.0	ND	pg/L					U
Total HpCDF				10.0	ND	pg/L					U
Total HpCDD				10.0	ND	pg/L					U

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC):	0.13
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC):	0.07
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC=ND):	0.06
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0 EDL, EMPC=ND):	0.00

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

Dioxins/Furans - Quality Control

Batch BGL0754 - EPA 1613

Instrument: AUTOSPEC01 Analyst: pl

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGL0754-BLK1)				Prepared: 04-Jan-2019 Analyzed: 08-Jan-2019 12:14							
Labeled compounds											
13C12-2,3,7,8-TCDF	*0.799*	*0.655-0.886*			*88.2*			*24-169 %*			
13C12-2,3,7,8-TCDD	*0.768*	*0.655-0.886*			*91.2*			*25-164 %*			
13C12-1,2,3,7,8-PeCDF	*1.604*	*1.318-1.783*			*90.1*			*24-185 %*			
13C12-2,3,4,7,8-PeCDF	*1.568*	*1.318-1.783*			*84.1*			*21-178 %*			
13C12-1,2,3,7,8-PeCDD	*1.728*	*1.318-1.783*			*79.7*			*25-181 %*			
13C12-1,2,3,4,7,8-HxCDF	*0.502*	*0.434-0.587*			*101*			*26-152 %*			
13C12-1,2,3,6,7,8-HxCDF	*0.530*	*0.434-0.587*			*107*			*26-123 %*			
13C12-2,3,4,6,7,8-HxCDF	*0.514*	*0.434-0.587*			*100*			*28-136 %*			
13C12-1,2,3,7,8,9-HxCDF	*0.539*	*0.434-0.587*			*94.9*			*29-147 %*			
13C12-1,2,3,4,7,8-HxCDD	*1.313*	*1.054-1.426*			*103*			*32-141 %*			
13C12-1,2,3,6,7,8-HxCDD	*1.234*	*1.054-1.426*			*105*			*28-130 %*			
13C12-1,2,3,4,6,7,8-HpCDF	*0.449*	*0.374-0.506*			*95.5*			*28-143 %*			
13C12-1,2,3,4,7,8,9-HpCDF	*0.429*	*0.374-0.506*			*95.8*			*26-138 %*			
13C12-1,2,3,4,6,7,8-HpCDD	*1.111*	*0.893-1.208*			*94.6*			*23-140 %*			
13C12-OCDD	*0.966*	*0.757-1.024*			*81.0*			*17-157 %*			
37Cl4-2,3,7,8-TCDD					*101*			*35-197 %*			
LCS (BGL0754-BS1)				Prepared: 04-Jan-2019 Analyzed: 08-Jan-2019 13:02							
2,3,7,8-TCDF	0.737	0.655-0.886		10.0	194	pg/L	96.9	75-158 %			
2,3,7,8-TCDD	0.794	0.655-0.886		10.0	200	pg/L	100	67-158 %			
1,2,3,7,8-PeCDF	1.689	1.318-1.783		10.0	1030	pg/L	103	80-134 %			
2,3,4,7,8-PeCDF	1.709	1.318-1.783		10.0	1020	pg/L	102	68-160 %			
1,2,3,7,8-PeCDD	1.596	1.318-1.783		10.0	1050	pg/L	105	70-142 %			
1,2,3,4,7,8-HxCDF	1.265	1.054-1.426		10.0	1010	pg/L	101	72-134 %			
1,2,3,6,7,8-HxCDF	1.245	1.054-1.426		10.0	1030	pg/L	103	84-130 %			
2,3,4,6,7,8-HxCDF	1.276	1.054-1.426		10.0	1070	pg/L	107	70-156 %			
1,2,3,7,8,9-HxCDF	1.248	1.054-1.426		10.0	1050	pg/L	105	78-130 %			B
1,2,3,4,7,8-HxCDD	1.250	1.054-1.426		10.0	1030	pg/L	103	70-164 %			
1,2,3,6,7,8-HxCDD	1.296	1.054-1.426		10.0	1030	pg/L	103	76-134 %			
1,2,3,7,8,9-HxCDD	1.292	1.054-1.426		10.0	958	pg/L	95.8	64-162 %			
1,2,3,4,6,7,8-HpCDF	1.043	0.893-1.208		10.0	1000	pg/L	100	82-122 %			
1,2,3,4,7,8,9-HpCDF	1.080	0.893-1.208		10.0	1000	pg/L	100	78-138 %			
1,2,3,4,6,7,8-HpCDD	1.157	0.893-1.208		10.0	975	pg/L	97.5	70-140 %			
OCDF	0.923	0.757-1.024		20.0	2120	pg/L	106	63-170 %			
OCDD	0.953	0.757-1.024		20.0	1950	pg/L	97.3	78-144 %			B

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

Dioxins/Furans - Quality Control

Batch BGL0754 - EPA 1613

Instrument: AUTOSPEC01 Analyst: pl

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BGL0754-BS1)				Prepared: 04-Jan-2019 Analyzed: 08-Jan-2019 13:02							
Labeled compounds											
13C12-2,3,7,8-TCDF	*0.791*	*0.655-0.886*					*71.1*			*24-169 %*	
13C12-2,3,7,8-TCDD	*0.758*	*0.655-0.886*					*84.2*			*25-164 %*	
13C12-1,2,3,7,8-PeCDF	*1.617*	*1.318-1.783*					*80.3*			*24-185 %*	
13C12-2,3,4,7,8-PeCDF	*1.586*	*1.318-1.783*					*74.0*			*21-178 %*	
13C12-1,2,3,7,8-PeCDD	*1.746*	*1.318-1.783*					*71.9*			*25-181 %*	
13C12-1,2,3,4,7,8-HxCDF	*0.498*	*0.434-0.587*					*94.0*			*26-152 %*	
13C12-1,2,3,6,7,8-HxCDF	*0.516*	*0.434-0.587*					*99.7*			*26-123 %*	
13C12-2,3,4,6,7,8-HxCDF	*0.505*	*0.434-0.587*					*93.1*			*28-136 %*	
13C12-1,2,3,7,8,9-HxCDF	*0.542*	*0.434-0.587*					*87.3*			*29-147 %*	
13C12-1,2,3,4,7,8-HxCDD	*1.373*	*1.054-1.426*					*93.8*			*32-141 %*	
13C12-1,2,3,6,7,8-HxCDD	*1.239*	*1.054-1.426*					*98.6*			*28-130 %*	
13C12-1,2,3,4,6,7,8-HpCDF	*0.462*	*0.374-0.506*					*89.4*			*28-143 %*	
13C12-1,2,3,4,7,8,9-HpCDF	*0.425*	*0.374-0.506*					*90.9*			*26-138 %*	
13C12-1,2,3,4,6,7,8-HpCDD	*1.108*	*0.893-1.208*					*96.9*			*23-140 %*	
13C12-OCDD	*0.938*	*0.757-1.024*					*72.0*			*17-157 %*	
37Cl4-2,3,7,8-TCDD							*93.3*			*35-197 %*	

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BHA0102 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHA0102-BLK1)					Prepared: 04-Jan-2019 Analyzed: 05-Jan-2019 00:06							
Barium, Dissolved	135	ND	0.0560	0.500	ug/L							U
Barium, Dissolved	137	ND	0.0530	0.500	ug/L							U
Chromium, Dissolved	52	ND	0.130	0.500	ug/L							U
Chromium, Dissolved	53	0.0800	0.0700	0.500	ug/L							J
Arsenic, Dissolved	75a	ND	0.0220	0.200	ug/L							U
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L							U
Cadmium, Dissolved	114	ND	0.0400	0.100	ug/L							U
Selenium, Dissolved	78	ND	0.440	0.500	ug/L							U
Blank (BHA0102-BLK2)					Prepared: 04-Jan-2019 Analyzed: 07-Jan-2019 17:32							
Lead, Dissolved	208	ND	0.0680	0.100	ug/L							U
Silver, Dissolved	107	ND	0.0170	0.200	ug/L							U
LCS (BHA0102-BS1)					Prepared: 04-Jan-2019 Analyzed: 05-Jan-2019 00:11							
Barium, Dissolved	135	25.7	0.0560	0.500	ug/L	25.0		103	80-120			
Barium, Dissolved	137	25.3	0.0530	0.500	ug/L	25.0		101	80-120			
Chromium, Dissolved	52	25.5	0.130	0.500	ug/L	25.0		102	80-120			
Chromium, Dissolved	53	26.6	0.0700	0.500	ug/L	25.0		106	80-120			
Arsenic, Dissolved	75a	24.8	0.0220	0.200	ug/L	25.0		99.3	80-120			
Cadmium, Dissolved	111	26.0	0.0300	0.100	ug/L	25.0		104	80-120			
Cadmium, Dissolved	114	26.2	0.0400	0.100	ug/L	25.0		105	80-120			
Selenium, Dissolved	78	75.5	0.440	0.500	ug/L	80.0		94.4	80-120			
LCS (BHA0102-BS2)					Prepared: 04-Jan-2019 Analyzed: 07-Jan-2019 17:36							
Lead, Dissolved	208	26.0	0.0680	0.100	ug/L	25.0		104	80-120			
Silver, Dissolved	107	27.6	0.0170	0.200	ug/L	25.0		110	80-120			

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BHA0104 - TWM EPA 7470A

Instrument: CVAA Analyst: SKM

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHA0104-BLK1)				Prepared: 04-Jan-2019 Analyzed: 04-Jan-2019 14:51						
Mercury, Dissolved	ND	0.000100	mg/L							U
LCS (BHA0104-BS1)				Prepared: 04-Jan-2019 Analyzed: 04-Jan-2019 14:58						
Mercury, Dissolved	0.00230	0.000100	mg/L	0.00200		115	80-120			

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

Wet Chemistry - Quality Control

Batch BGL0554 - No Prep Wet Chem

Instrument: UV1800-1 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGL0554-BLK1)				Prepared: 19-Dec-2018 Analyzed: 19-Dec-2018 19:41							
Hexavalent Chromium	ND	0.013	0.013	mg/L							U
LCS (BGL0554-BS1)				Prepared: 19-Dec-2018 Analyzed: 19-Dec-2018 19:41							
Hexavalent Chromium	0.620	0.013	0.013	mg/L	0.625		99.2	85-115			D
Duplicate (BGL0554-DUP1)		Source: 18L0373-01		Prepared: 19-Dec-2018 Analyzed: 19-Dec-2018 19:43							
Hexavalent Chromium	ND	0.013	0.013	mg/L		ND					U
Matrix Spike (BGL0554-MS1)		Source: 18L0373-01		Prepared: 19-Dec-2018 Analyzed: 19-Dec-2018 19:44							
Hexavalent Chromium	0.013	0.013	0.013	mg/L	0.0625	ND	20.0	85-115			*, K, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BGL0554-MSD1)		Source: 18L0373-01		Prepared: 19-Dec-2018 Analyzed: 19-Dec-2018 19:44							
Hexavalent Chromium	0.013	0.013	0.013	mg/L	0.0625	ND	20.0	85-115	0.00		*, K, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Post Spike (BGL0554-PS1)		Source: 18L0373-01		Prepared: 19-Dec-2018 Analyzed: 19-Dec-2018 20:41							
Hexavalent Chromium	0.022			mg/L	0.0298	ND	26.9	85-115			*

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

Certified Analyses included in this Report

Analyte	Certifications
EPA 1613B in Water	
2,3,7,8-TCDF	DoD-ELAP,NELAP,WADOE
2,3,7,8-TCDD	DoD-ELAP,NELAP,WADOE
1,2,3,7,8-PeCDF	DoD-ELAP,NELAP,WADOE
2,3,4,7,8-PeCDF	DoD-ELAP,NELAP,WADOE
1,2,3,7,8-PeCDD	DoD-ELAP,NELAP,WADOE
1,2,3,4,7,8-HxCDF	DoD-ELAP,NELAP,WADOE
1,2,3,6,7,8-HxCDF	DoD-ELAP,NELAP,WADOE
2,3,4,6,7,8-HxCDF	DoD-ELAP,NELAP,WADOE
1,2,3,7,8,9-HxCDF	DoD-ELAP,NELAP,WADOE
1,2,3,4,7,8-HxCDD	DoD-ELAP,NELAP,WADOE
1,2,3,6,7,8-HxCDD	DoD-ELAP,NELAP,WADOE
1,2,3,7,8,9-HxCDD	DoD-ELAP,NELAP,WADOE
1,2,3,4,6,7,8-HpCDF	DoD-ELAP,NELAP,WADOE
1,2,3,4,7,8,9-HpCDF	DoD-ELAP,NELAP,WADOE
1,2,3,4,6,7,8-HpCDD	DoD-ELAP,NELAP,WADOE
OCDF	DoD-ELAP,NELAP,WADOE
OCDD	DoD-ELAP,NELAP,WADOE
Total TCDF	DoD-ELAP,NELAP
Total TCDD	DoD-ELAP,NELAP
Total PeCDF	DoD-ELAP,NELAP
Total PeCDD	DoD-ELAP,NELAP
Total HxCDF	DoD-ELAP,NELAP
Total HxCDD	DoD-ELAP,NELAP
Total HpCDF	DoD-ELAP,NELAP
Total HpCDD	DoD-ELAP,NELAP
13C12-2,3,7,8-TCDF	DoD-ELAP
13C12-2,3,7,8-TCDD	DoD-ELAP
13C12-1,2,3,7,8-PeCDF	DoD-ELAP
13C12-2,3,4,7,8-PeCDF	DoD-ELAP
13C12-1,2,3,7,8-PeCDD	DoD-ELAP
13C12-1,2,3,4,7,8-HxCDF	DoD-ELAP
13C12-1,2,3,6,7,8-HxCDF	DoD-ELAP
13C12-2,3,4,6,7,8-HxCDF	DoD-ELAP
13C12-1,2,3,7,8,9-HxCDF	DoD-ELAP
13C12-1,2,3,4,7,8-HxCDD	DoD-ELAP

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

13C12-1,2,3,6,7,8-HxCDD	DoD-ELAP
13C12-1,2,3,4,6,7,8-HpCDF	DoD-ELAP
13C12-1,2,3,4,7,8,9-HpCDF	DoD-ELAP
13C12-1,2,3,4,6,7,8-HpCDD	DoD-ELAP
13C12-OCDD	DoD-ELAP
37Cl4-2,3,7,8-TCDD	DoD-ELAP
EPA 6020A in Water	
Silver-107	WA-DW,DoD-ELAP,NELAP
Barium-135	NELAP,WADOE,DoD-ELAP,ADEC
Barium-137	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
EPA 6020A UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP
EPA 7196A in Water	
Hexavalent Chromium	DoD-ELAP,CALAP,NELAP,WADOE
EPA 7470A in Water	
Mercury	WADOE,NELAP,DoD-ELAP,CALAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	02/07/2019
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-011	05/12/2019
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	14-Jan-2019 16:17

Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
EMPC	Estimated Maximum Possible Concentration qualifier for HRGCMS Dioxin
J	Estimated concentration value detected below the reporting limit.
K	Hexavalent Chromium post spike performed on a pH adjusted sample to verify matrix interference.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
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
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

11 January 2019

Victoria England
BergerABAM
1301 Fifth Avenue, Suite 1200
Seattle, WA 98101

RE: BHP Grays Harbor Potash

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)	Associated SDG ID(s)
18L0374	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, Inc.

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in it entirety.

ACCREDITED IN ACCORDANCE WITH nelac Cert# 100006

PJLA Testing Accreditation # 66169

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 18L0374	Turn-around Requested: STD	Page: 1 of 1	
ARI Client Company: Berger ABAM	Phone: 206-920-8307	Date:	Ice Present? Yes
Client Contact: Victoria England		No. of Coolers: 1	Cooler Temps: 5.9°C
Client Project Name: BHP Grays Harbor Potash Export Facility			
Client Project #: A17.0202.00	Samplers: AR		

Analytical Resources, Incorporated
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)
www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested: Dioxins/Furans	Dissolved metals	Cr+6						Notes/Comments
T3 MW-5	12.19.18	10:27	Water	3	X	X	X						NOT FIELD
T3 MW-6	"	1127	"	3	X	X	X						FILTERED-
T3 MW-7	"	1208	"	3	X	X	X						Please lab
T3 MW-7-B	↓	1208	↓	1		X							Filter

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: April Ryckman	Printed Name: Jacqueline Lee	Printed Name:	Printed Name:
	Company: Berger ABAM	Company: ARI	Company:	Company:
	Date & Time: 12/19/18 1530	Date & Time: 12/20/18 1530	Date & Time:	Date & Time:

Limits of Liability: *ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.*

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

WORK ORDER

18L0374

Client: BergerABAM | Project Manager: Amanda Volgardsen

Project: BHP Grays Harbor Potash | Project Number: A17.0202.00

Analysis	Due	TAT	Expires	Comments
Met Diss 6020A - As UCT	01/07/2019	10	6/17/2019	
Met Diss 6020A - Ba	01/07/2019	10	6/17/2019	
Met Diss 6020A - Cd UCT	01/07/2019	10	6/17/2019	
Met Diss 6020A - Cr	01/07/2019	10	6/17/2019	
Met Diss 6020A - Pb	01/07/2019	10	6/17/2019	
Met Diss 6020A - Se UCT	01/07/2019	10	6/17/2019	
Met Diss 7470A Hg	01/07/2019	10	1/16/2019	

Preservation Confirmation

Container ID	Container Type	pH
18L0374-01 A	Glass NM, Amber, 1000 mL	
18L0374-01 B	Glass NM, Amber, 1000 mL	
18L0374-01 C	HDPE NM, 500 mL	>2 fail
18L0374-01 D	Small OJ, 500 mL	
18L0374-02 A	Glass NM, Amber, 1000 mL	
18L0374-02 B	Glass NM, Amber, 1000 mL	
18L0374-02 C	HDPE NM, 500 mL	>2 fail
18L0374-02 D	Small OJ, 500 mL	
18L0374-03 A	Glass NM, Amber, 1000 mL	
18L0374-03 B	Glass NM, Amber, 1000 mL	
18L0374-03 C	HDPE NM, 500 mL	>2 fail
18L0374-03 D	Small OJ, 500 mL	
18L0374-04 A	HDPE NM, 500 mL	>2 fail

Sof — Preservation Confirmed By

12-19-18 — Date

Filtered & preserved 1/3/19 -sm

Reviewed By

Date

Analytical Report

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
T3 MW-5	18L0374-01	Water	19-Dec-2018 10:27	19-Dec-2018 15:30
T3 MW-6	18L0374-02	Water	19-Dec-2018 11:27	19-Dec-2018 15:30
T3 MW-7	18L0374-03	Water	19-Dec-2018 12:08	19-Dec-2018 15:30
T3 MW-7-B	18L0374-04	Water	19-Dec-2018 12:08	19-Dec-2018 15:30

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

Work Order Case Narrative

Sample receipt

Samples as listed on the preceding page were received December 19, 2018 under ARI work order 18L0374. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Dioxin/Furans - EPA Method 1613

The samples were extracted and analyzed within the recommended holding times. Analysis was performed using an application specific column developed by Restek. The RTX-Dloxin2 column has unique isomer separation for the 2378-TCDF, eliminating the need for confirmation analysis.

Initial and continuing calibrations were within method requirements.

Labeled internal standard areas were within limits.

The cleanup surrogate percent recoveries were within control limits.

The method blank contains reportable responses for various compounds below the reporting limits. Associated detected results have been flagged with "B" qualifiers. No further corrective action was taken.

The OPR (Ongoing Precision and Recovery) standard percent recoveries were within control limits.

A duplicate was prepared in conjunction with sample T3 MW-5. The duplicate has high RPD for OCDD. The results are advisory. All other duplicate RPD were within QC limits. No corrective action was taken.

Dissolved Metals - EPA Method 6020A

The samples were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank has Chromium detected below the reporting limit, but above the method detection limit. The Chromium has been flagged with a "J" qualifier on the method blank. There were no target metals detected above the reporting limits in the method blank. No further corrective action was taken.

The LCS percent recoveries were within control limits.

Dissolved Metals UCT-KED- EPA Method 6020A

The samples were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

The method blanks were clean at the reporting limits.

The LCS percent recoveries were within control limits.

Dissolved Hg - EPA Method 7470A

The samples were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank was clean at the reporting limits.

The LCS percent recoveries were within control limits.

Hexavalent Chromium - EPA Method 7196A

The samples were prepared and analyzed within the recommended holding times.

Volume for the analysis was split from the dissolved metals bottle prior to analysis.

Initial and continuing calibrations were within method requirements.

The method blank was clean at the reporting limits.

The LCS percent recoveries were within control limits.

WORK ORDER

18L0374

Client: BergerABAM | Project Manager: Amanda Volgardsen

Project: BHP Grays Harbor Potash | Project Number: A17.0202.00

Analysis	Due	TAT	Expires	Comments
Met Diss 6020A - As UCT	01/07/2019	10	6/17/2019	
Met Diss 6020A - Ba	01/07/2019	10	6/17/2019	
Met Diss 6020A - Cd UCT	01/07/2019	10	6/17/2019	
Met Diss 6020A - Cr	01/07/2019	10	6/17/2019	
Met Diss 6020A - Pb	01/07/2019	10	6/17/2019	
Met Diss 6020A - Se UCT	01/07/2019	10	6/17/2019	
Met Diss 7470A Hg	01/07/2019	10	1/16/2019	

Preservation Confirmation

Container ID	Container Type	pH
18L0374-01 A	Glass NM, Amber, 1000 mL	
18L0374-01 B	Glass NM, Amber, 1000 mL	
18L0374-01 C	HDPE NM, 500 mL	>2 Fail
18L0374-01 D	Small OJ, 500 mL	
18L0374-02 A	Glass NM, Amber, 1000 mL	
18L0374-02 B	Glass NM, Amber, 1000 mL	
18L0374-02 C	HDPE NM, 500 mL	>2 Fail
18L0374-02 D	Small OJ, 500 mL	
18L0374-03 A	Glass NM, Amber, 1000 mL	
18L0374-03 B	Glass NM, Amber, 1000 mL	
18L0374-03 C	HDPE NM, 500 mL	>2 Fail
18L0374-03 D	Small OJ, 500 mL	
18L0374-04 A	HDPE NM, 500 mL	>2 Fail

Sef
Preservation Confirmed By

12-19-18
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: Berger ABAM — Project Name: BHP Grays Harbor Potash Export Facility

COC No(s): _____ (NA) — Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 18L0374 — Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of to cooler?	YES	(NO)
Were custody papers included with the cooler?	(YES)	NO
Were custody papers properly filled out (ink, signed, etc.)	(YES)	NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 5.9°C
Time: 1530

If cooler temperature is out of compliance fill out form 00070F — Temp Gun ID#: D99506

Cooler Accepted by: JSm — Date: 12/19/18 — Time: 1530

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler?		YES	(NO)
What kind of packing material was used? ... (Bubble Wrap) Wet Ice Gel Packs (Baggies) Foam Block Paper Other: _____			
Was sufficient ice used (if appropriate)?	NA	(YES)	NO
Were all bottles sealed in individual plastic bags?		YES	(NO)
Did all bottles arrive in good condition (unbroken)?		(YES)	NO
Were all bottle labels complete and legible?		(YES)	NO
Did the number of containers listed on COC match with the number of containers received?		(YES)	NO
Did all bottle labels and tags agree with custody papers?		(YES)	NO
Were all bottles used correct for the requested analyses?		(YES)	NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)...	NA	(YES)	NO
Were all VOC vials free of air bubbles?	(NA)	YES	NO
Was sufficient amount of sample sent in each bottle?		(YES)	NO
Date VOC Trip Blank was made at ARI	(NA)		

Was Sample Split by ARI: NA (YES) Date/Time: 12-19-18 Equipment: _____ Split by: SeS

Samples Logged by: SeS — Date: 12-19-18 — Time: 1601

*** Notify Project Manager of discrepancies or concerns ***

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____

Small → "sm" (< 2 mm)
Peabubbles → "pb" (2 to < 4 mm)
Large → "lg" (4 to < 6 mm)
Headspace → "hs" (> 6 mm)

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-5

18L0374-01 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 10:27
Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/04/2019 17:00

Sample Preparation:	Preparation Method: EPA 1613	
	Preparation Batch: BGL0752	Sample Size: 1075 mL
	Prepared: 02-Jan-2019	Final Volume: 20 uL
Sample Cleanup:	Cleanup Method: Silica Gel	
	Cleanup Batch: CHA0023	Initial Volume: 20 mL
	Cleaned: 03-Jan-2019	Final Volume: 20 mL
Sample Cleanup:	Cleanup Method: Florisil	
	Cleanup Batch: CHA0024	Initial Volume: 20 mL
	Cleaned: 03-Jan-2019	Final Volume: 20 mL

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes
2,3,7,8-TCDF			0.655-0.886	0.84	9.30	ND	pg/L	U
2,3,7,8-TCDD			0.655-0.886	0.73	9.30	ND	pg/L	U
1,2,3,7,8-PeCDF			1.318-1.783	0.68	9.30	ND	pg/L	U
2,3,4,7,8-PeCDF			1.318-1.783	0.63	9.30	ND	pg/L	U
1,2,3,7,8-PeCDD			1.318-1.783	0.76	9.30	ND	pg/L	U
1,2,3,4,7,8-HxCDF			1.054-1.426	0.53	9.30	ND	pg/L	U
1,2,3,6,7,8-HxCDF			1.054-1.426	0.50	9.30	ND	pg/L	U
2,3,4,6,7,8-HxCDF			1.054-1.426	0.52	9.30	ND	pg/L	U
1,2,3,7,8,9-HxCDF			1.054-1.426	0.64	9.30	ND	pg/L	U
1,2,3,4,7,8-HxCDD			1.054-1.426	0.75	9.30	ND	pg/L	U
1,2,3,6,7,8-HxCDD			1.054-1.426	0.70	9.30	ND	pg/L	U
1,2,3,7,8,9-HxCDD			1.054-1.426	0.76	9.30	ND	pg/L	U
1,2,3,4,6,7,8-HpCDF			0.893-1.208	0.51	9.30	ND	pg/L	U
1,2,3,4,7,8,9-HpCDF			0.893-1.208	0.74	9.30	ND	pg/L	U
1,2,3,4,6,7,8-HpCDD			0.893-1.208	1.10	9.30	ND	pg/L	U
OCDF			0.757-1.024	3.48	18.6	ND	pg/L	U
OCDD		0.966	0.757-1.024		18.6	2.51	pg/L	J, B
Homologue groups								
Total TCDF					9.30	ND	pg/L	U
Total TCDD					9.30	ND	pg/L	U
Total PeCDF					9.30	ND	pg/L	U
Total PeCDD					9.30	ND	pg/L	U
Total HxCDF					9.30	ND	pg/L	U
Total HxCDD					9.30	ND	pg/L	U
Total HpCDF					9.30	ND	pg/L	U
Total HpCDD					9.30	ND	pg/L	U

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.12
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.00
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC = ND): 1.12
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, EMPC = ND): 0.00

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-5

18L0374-01 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 10:27

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/04/2019 17:00

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Labeled compounds							
13C12-2,3,7,8-TCDF		*0.783*	*0.655-0.886*	*24-169 %*	*91.2*	*%*	
13C12-2,3,7,8-TCDD		*0.780*	*0.655-0.886*	*25-164 %*	*89.7*	*%*	
13C12-1,2,3,7,8-PeCDF		*1.584*	*1.318-1.783*	*24-185 %*	*87.4*	*%*	
13C12-2,3,4,7,8-PeCDF		*1.579*	*1.318-1.783*	*21-178 %*	*80.9*	*%*	
13C12-1,2,3,7,8-PeCDD		*1.708*	*1.318-1.783*	*25-181 %*	*78.1*	*%*	
13C12-1,2,3,4,7,8-HxCDF		*0.501*	*0.434-0.587*	*26-152 %*	*95.1*	*%*	
13C12-1,2,3,6,7,8-HxCDF		*0.495*	*0.434-0.587*	*26-123 %*	*106*	*%*	
13C12-2,3,4,6,7,8-HxCDF		*0.469*	*0.434-0.587*	*28-136 %*	*94.7*	*%*	
13C12-1,2,3,7,8,9-HxCDF		*0.504*	*0.434-0.587*	*29-147 %*	*85.5*	*%*	
13C12-1,2,3,4,7,8-HxCDD		*1.297*	*1.054-1.426*	*32-141 %*	*94.7*	*%*	
13C12-1,2,3,6,7,8-HxCDD		*1.262*	*1.054-1.426*	*28-130 %*	*103*	*%*	
13C12-1,2,3,4,6,7,8-HpCDF		*0.447*	*0.374-0.506*	*28-143 %*	*76.4*	*%*	
13C12-1,2,3,4,7,8,9-HpCDF		*0.435*	*0.374-0.506*	*26-138 %*	*77.0*	*%*	
13C12-1,2,3,4,6,7,8-HpCDD		*1.108*	*0.893-1.208*	*23-140 %*	*80.0*	*%*	
13C12-OCDD		*0.939*	*0.757-1.024*	*17-157 %*	*46.1*	*%*	
37Cl4-2,3,7,8-TCDD				*35-197 %*	*97.0*	*%*	

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-5

18L0374-01 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 10:27

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/04/2019 17:00

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-5

18L0374-01 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A — Sampled: 12/19/2018 10:27
Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:29

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 Sample Size: 25 mL
Prepared: 04-Jan-2019 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0560	0.500	5.05	ug/L	
Chromium, Dissolved	7440-47-3	1	0.130	0.500	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0680	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0170	0.200	ND	ug/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-5

18L0374-01 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A UCT-KED — Sampled: 12/19/2018 10:27
Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:29

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 Sample Size: 25 mL
Prepared: 04-Jan-2019 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	**0.161**	ug/L	J
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Selenium, Dissolved	7782-49-2	1	0.440	0.500	ND	ug/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-5

18L0374-01 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A — Sampled: 12/19/2018 10:27

Instrument: CVAA Analyst: SKM — Analyzed: 01/04/2019 15:09

Sample Preparation: Preparation Method: TWM EPA 7470A
Preparation Batch: BHA0104 — Sample Size: 20 mL
Prepared: 04-Jan-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000100	ND	mg/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-5

18L0374-01 (Water)

Wet Chemistry

Method: EPA 7196A — Sampled: 12/19/2018 10:27

Instrument: UV1800-1 Analyst: BF — Analyzed: 12/19/2018 19:55

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGL0554 — Sample Size: 40 mL
Prepared: 19-Dec-2018 — Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-6

18L0374-02 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 11:27
Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/04/2019 17:48

Sample Preparation:	Preparation Method: EPA 1613	
	Preparation Batch: BGL0752	Sample Size: 1075 mL
	Prepared: 02-Jan-2019	Final Volume: 20 uL
Sample Cleanup:	Cleanup Method: Silica Gel	
	Cleanup Batch: CHA0023	Initial Volume: 20 mL
	Cleaned: 03-Jan-2019	Final Volume: 20 mL
Sample Cleanup:	Cleanup Method: Florisil	
	Cleanup Batch: CHA0024	Initial Volume: 20 mL
	Cleaned: 03-Jan-2019	Final Volume: 20 mL

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes
2,3,7,8-TCDF			0.655-0.886	0.69	9.30	ND	pg/L	U
2,3,7,8-TCDD			0.655-0.886	0.59	9.30	ND	pg/L	U
1,2,3,7,8-PeCDF			1.318-1.783	0.52	9.30	ND	pg/L	U
2,3,4,7,8-PeCDF			1.318-1.783	0.48	9.30	ND	pg/L	U
1,2,3,7,8-PeCDD			1.318-1.783	0.67	9.30	ND	pg/L	U
1,2,3,4,7,8-HxCDF			1.054-1.426	0.47	9.30	ND	pg/L	U
1,2,3,6,7,8-HxCDF			1.054-1.426	0.45	9.30	ND	pg/L	U
2,3,4,6,7,8-HxCDF			1.054-1.426	0.48	9.30	ND	pg/L	U
1,2,3,7,8,9-HxCDF			1.054-1.426	0.56	9.30	ND	pg/L	U
1,2,3,4,7,8-HxCDD			1.054-1.426	0.60	9.30	ND	pg/L	U
1,2,3,6,7,8-HxCDD			1.054-1.426	0.55	9.30	ND	pg/L	U
1,2,3,7,8,9-HxCDD			1.054-1.426	0.60	9.30	ND	pg/L	U
1,2,3,4,6,7,8-HpCDF			0.893-1.208	0.28	9.30	ND	pg/L	U
1,2,3,4,7,8,9-HpCDF			0.893-1.208	0.42	9.30	ND	pg/L	U
1,2,3,4,6,7,8-HpCDD			0.893-1.208	0.80	9.30	ND	pg/L	U
OCDF			0.757-1.024	1.89	18.6	ND	pg/L	U
OCDD		1.094	0.757-1.024		18.6	2.43	pg/L	EMPC, J, B
Homologue groups								
Total TCDF					9.30	ND	pg/L	U
Total TCDD					9.30	ND	pg/L	U
Total PeCDF					9.30	ND	pg/L	U
Total PeCDD					9.30	ND	pg/L	U
Total HxCDF					9.30	ND	pg/L	U
Total HxCDD					9.30	ND	pg/L	U
Total HpCDF					9.30	ND	pg/L	U
Total HpCDD					9.30	ND	pg/L	U

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 0.94
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.00
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC = ND): 0.94
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, EMPC = ND): 0.00

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-6

18L0374-02 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 11:27

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/04/2019 17:48

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Labeled compounds							
13C12-2,3,7,8-TCDF		*0.799*	*0.655-0.886*	*24-169 %*	*90.5*	*%*	
13C12-2,3,7,8-TCDD		*0.767*	*0.655-0.886*	*25-164 %*	*89.7*	*%*	
13C12-1,2,3,7,8-PeCDF		*1.678*	*1.318-1.783*	*24-185 %*	*86.3*	*%*	
13C12-2,3,4,7,8-PeCDF		*1.583*	*1.318-1.783*	*21-178 %*	*81.7*	*%*	
13C12-1,2,3,7,8-PeCDD		*1.763*	*1.318-1.783*	*25-181 %*	*80.3*	*%*	
13C12-1,2,3,4,7,8-HxCDF		*0.493*	*0.434-0.587*	*26-152 %*	*93.3*	*%*	
13C12-1,2,3,6,7,8-HxCDF		*0.495*	*0.434-0.587*	*26-123 %*	*97.9*	*%*	
13C12-2,3,4,6,7,8-HxCDF		*0.518*	*0.434-0.587*	*28-136 %*	*93.8*	*%*	
13C12-1,2,3,7,8,9-HxCDF		*0.521*	*0.434-0.587*	*29-147 %*	*84.9*	*%*	
13C12-1,2,3,4,7,8-HxCDD		*1.297*	*1.054-1.426*	*32-141 %*	*91.7*	*%*	
13C12-1,2,3,6,7,8-HxCDD		*1.347*	*1.054-1.426*	*28-130 %*	*105*	*%*	
13C12-1,2,3,4,6,7,8-HpCDF		*0.459*	*0.374-0.506*	*28-143 %*	*77.9*	*%*	
13C12-1,2,3,4,7,8,9-HpCDF		*0.447*	*0.374-0.506*	*26-138 %*	*74.6*	*%*	
13C12-1,2,3,4,6,7,8-HpCDD		*1.049*	*0.893-1.208*	*23-140 %*	*76.6*	*%*	
13C12-OCDD		*0.936*	*0.757-1.024*	*17-157 %*	*49.2*	*%*	
37Cl4-2,3,7,8-TCDD				*35-197 %*	*93.9*	*%*	

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-6

18L0374-02 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 11:27

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/04/2019 17:48

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-6

18L0374-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A — Sampled: 12/19/2018 11:27

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:34

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 Sample Size: 25 mL
Prepared: 04-Jan-2019 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0560	0.500	11.9	ug/L	
Chromium, Dissolved	7440-47-3	1	0.130	0.500	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0680	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0170	0.200	ND	ug/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-6

18L0374-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A UCT-KED — Sampled: 12/19/2018 11:27

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:34

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 Sample Size: 25 mL
Prepared: 04-Jan-2019 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	0.149	ug/L	J
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Selenium, Dissolved	7782-49-2	1	0.440	0.500	ND	ug/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-6

18L0374-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A — Sampled: 12/19/2018 11:27

Instrument: CVAA Analyst: SKM — Analyzed: 01/04/2019 15:12

Sample Preparation: Preparation Method: TWM EPA 7470A
Preparation Batch: BHA0104 — Sample Size: 20 mL
Prepared: 04-Jan-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000100	ND	mg/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-6

18L0374-02 (Water)

Wet Chemistry

Method: EPA 7196A — Sampled: 12/19/2018 11:27
Instrument: UV1800-1 Analyst: BF — Analyzed: 12/19/2018 19:55

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGL0554 — Sample Size: 40 mL
Prepared: 19-Dec-2018 — Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-7

18L0374-03 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 12:08
Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/04/2019 18:37

Sample Preparation:	Preparation Method: EPA 1613	
	Preparation Batch: BGL0752	Sample Size: 1075 mL
	Prepared: 02-Jan-2019	Final Volume: 20 uL
Sample Cleanup:	Cleanup Method: Silica Gel	
	Cleanup Batch: CHA0023	Initial Volume: 20 mL
	Cleaned: 03-Jan-2019	Final Volume: 20 mL
Sample Cleanup:	Cleanup Method: Florisil	
	Cleanup Batch: CHA0024	Initial Volume: 20 mL
	Cleaned: 03-Jan-2019	Final Volume: 20 mL

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes
2,3,7,8-TCDF			0.655-0.886	0.86	9.30	ND	pg/L	U
2,3,7,8-TCDD			0.655-0.886	0.73	9.30	ND	pg/L	U
1,2,3,7,8-PeCDF			1.318-1.783	0.91	9.30	ND	pg/L	U
2,3,4,7,8-PeCDF			1.318-1.783	0.85	9.30	ND	pg/L	U
1,2,3,7,8-PeCDD			1.318-1.783	0.66	9.30	ND	pg/L	U
1,2,3,4,7,8-HxCDF			1.054-1.426	0.49	9.30	ND	pg/L	U
1,2,3,6,7,8-HxCDF			1.054-1.426	0.47	9.30	ND	pg/L	U
2,3,4,6,7,8-HxCDF			1.054-1.426	0.51	9.30	ND	pg/L	U
1,2,3,7,8,9-HxCDF			1.054-1.426	0.59	9.30	ND	pg/L	U
1,2,3,4,7,8-HxCDD			1.054-1.426	0.96	9.30	ND	pg/L	U
1,2,3,6,7,8-HxCDD			1.054-1.426	0.90	9.30	ND	pg/L	U
1,2,3,7,8,9-HxCDD			1.054-1.426	0.97	9.30	ND	pg/L	U
1,2,3,4,6,7,8-HpCDF			0.893-1.208	0.37	9.30	ND	pg/L	U
1,2,3,4,7,8,9-HpCDF			0.893-1.208	0.53	9.30	ND	pg/L	U
1,2,3,4,6,7,8-HpCDD			0.893-1.208	0.89	9.30	ND	pg/L	U
OCDF			0.757-1.024	2.81	18.6	ND	pg/L	U
OCDD		0.979	0.757-1.024		18.6	4.56	pg/L	J, B
Homologue groups								
Total TCDF					9.30	ND	pg/L	U
Total TCDD					9.30	ND	pg/L	U
Total PeCDF					9.30	ND	pg/L	U
Total PeCDD					9.30	ND	pg/L	U
Total HxCDF					9.30	ND	pg/L	U
Total HxCDD					9.30	ND	pg/L	U
Total HpCDF					9.30	ND	pg/L	U
Total HpCDD					9.30	ND	pg/L	U

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC): 1.13
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC): 0.00
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC = ND): 1.13
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, EMPC = ND): 0.00

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-7

18L0374-03 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 12:08

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/04/2019 18:37

Analyte	DF/Split	Ion Ratio	Ratio Limits	Reporting Limit	Result	Units	Notes
Labeled compounds							
13C12-2,3,7,8-TCDF		*0.784*	*0.655-0.886*	*24-169 %*	*73.2*	*%*	
13C12-2,3,7,8-TCDD		*0.773*	*0.655-0.886*	*25-164 %*	*71.8*	*%*	
13C12-1,2,3,7,8-PeCDF		*1.608*	*1.318-1.783*	*24-185 %*	*67.5*	*%*	
13C12-2,3,4,7,8-PeCDF		*1.585*	*1.318-1.783*	*21-178 %*	*64.0*	*%*	
13C12-1,2,3,7,8-PeCDD		*1.645*	*1.318-1.783*	*25-181 %*	*64.1*	*%*	
13C12-1,2,3,4,7,8-HxCDF		*0.495*	*0.434-0.587*	*26-152 %*	*75.6*	*%*	
13C12-1,2,3,6,7,8-HxCDF		*0.479*	*0.434-0.587*	*26-123 %*	*83.0*	*%*	
13C12-2,3,4,6,7,8-HxCDF		*0.499*	*0.434-0.587*	*28-136 %*	*75.1*	*%*	
13C12-1,2,3,7,8,9-HxCDF		*0.504*	*0.434-0.587*	*29-147 %*	*70.7*	*%*	
13C12-1,2,3,4,7,8-HxCDD		*1.255*	*1.054-1.426*	*32-141 %*	*74.9*	*%*	
13C12-1,2,3,6,7,8-HxCDD		*1.274*	*1.054-1.426*	*28-130 %*	*81.8*	*%*	
13C12-1,2,3,4,6,7,8-HpCDF		*0.443*	*0.374-0.506*	*28-143 %*	*65.7*	*%*	
13C12-1,2,3,4,7,8,9-HpCDF		*0.396*	*0.374-0.506*	*26-138 %*	*61.4*	*%*	
13C12-1,2,3,4,6,7,8-HpCDD		*1.045*	*0.893-1.208*	*23-140 %*	*62.5*	*%*	
13C12-OCDD		*0.882*	*0.757-1.024*	*17-157 %*	*39.6*	*%*	
37Cl4-2,3,7,8-TCDD				*35-197 %*	*86.7*	*%*	

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-7

18L0374-03 (Water)

Dioxins/Furans

Method: EPA 1613B — Sampled: 12/19/2018 12:08

Instrument: AUTOSPEC01 Analyst: pk — Analyzed: 01/04/2019 18:37

Analyte	DF/Split	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	Notes

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-7

18L0374-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A — Sampled: 12/19/2018 12:08
Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:39

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 Sample Size: 25 mL
Prepared: 04-Jan-2019 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0560	0.500	**12.3**	ug/L	
Chromium, Dissolved	7440-47-3	1	0.130	0.500	**0.498**	ug/L	J
Lead, Dissolved	7439-92-1	1	0.0680	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0170	0.200	ND	ug/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-7

18L0374-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A UCT-KED — Sampled: 12/19/2018 12:08
Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:39

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 Sample Size: 25 mL
Prepared: 04-Jan-2019 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	1.98	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Selenium, Dissolved	7782-49-2	1	0.440	0.500	ND	ug/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-7

18L0374-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A — Sampled: 12/19/2018 12:08
Instrument: CVAA Analyst: SKM — Analyzed: 01/04/2019 15:14

Sample Preparation: Preparation Method: TWM EPA 7470A
Preparation Batch: BHA0104 — Sample Size: 20 mL
Prepared: 04-Jan-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000100	ND	mg/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-7

18L0374-03 (Water)

Wet Chemistry

Method: EPA 7196A — Sampled: 12/19/2018 12:08
Instrument: UV1800-1 Analyst: BF — Analyzed: 12/19/2018 20:01

Sample Preparation: Preparation Method: No Prep Wet Chem
Preparation Batch: BGL0554 — Sample Size: 40 mL
Prepared: 19-Dec-2018 — Final Volume: 50 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexavalent Chromium	1854-02-99	1.25	0.013	0.013	ND	mg/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-7-B

18L0374-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A — Sampled: 12/19/2018 12:08

Instrument: ICPMS2 Analyst: MCB — Analyzed: 01/05/2019 01:44

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102 Sample Size: 25 mL
Prepared: 04-Jan-2019 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Barium, Dissolved	7440-39-3	1	0.0560	0.500	14.4	ug/L	
Chromium, Dissolved	7440-47-3	2	0.260	1.00	0.414	ug/L	D, J
Lead, Dissolved	7439-92-1	2	0.136	0.200	ND	ug/L	U
Silver, Dissolved	7440-22-4	2	0.0340	0.400	ND	ug/L	U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-7-B

18L0374-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020A UCT-KED
Instrument: ICPMS2 Analyst: MCB

Sampled: 12/19/2018 12:08
Analyzed: 01/05/2019 01:44

Sample Preparation:
Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BHA0102
Prepared: 04-Jan-2019
Sample Size: 25 mL
Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.0220	0.200	2.18	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Selenium, Dissolved	7782-49-2	1	0.440	0.500	ND	ug/L	U

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

T3 MW-7-B

18L0374-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A — Sampled: 12/19/2018 12:08
Instrument: CVAA Analyst: SKM — Analyzed: 01/04/2019 15:16

Sample Preparation: Preparation Method: TWM EPA 7470A
Preparation Batch: BHA0104 — Sample Size: 20 mL
Prepared: 04-Jan-2019 — Final Volume: 20 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000100	ND	mg/L	U

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

Dioxins/Furans - Quality Control

Batch BGL0752 - EPA 1613

Instrument: AUTOSPEC01 Analyst: pl

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGL0752-BLK1)				Prepared: 02-Jan-2018 Analyzed: 04-Jan-2019 12:57							
2,3,7,8-TCDF		0.655-0.886	0.68	10.0	ND	pg/L					U
2,3,7,8-TCDD		0.655-0.886	0.79	10.0	ND	pg/L					U
1,2,3,7,8-PeCDF	1.466	1.318-1.783		10.0	0.661	pg/L					J
2,3,4,7,8-PeCDF		1.318-1.783	0.77	10.0	ND	pg/L					U
1,2,3,7,8-PeCDD		1.318-1.783	1.03	10.0	ND	pg/L					U
1,2,3,4,7,8-HxCDF		1.054-1.426	0.59	10.0	ND	pg/L					U
1,2,3,6,7,8-HxCDF		1.054-1.426	0.57	10.0	ND	pg/L					U
2,3,4,6,7,8-HxCDF		1.054-1.426	0.63	10.0	ND	pg/L					U
1,2,3,7,8,9-HxCDF		1.054-1.426	0.74	10.0	ND	pg/L					U
1,2,3,4,7,8-HxCDD		1.054-1.426	0.93	10.0	ND	pg/L					U
1,2,3,6,7,8-HxCDD		1.054-1.426	0.87	10.0	ND	pg/L					U
1,2,3,7,8,9-HxCDD		1.054-1.426	0.93	10.0	ND	pg/L					U
1,2,3,4,6,7,8-HpCDF		0.893-1.208	0.51	10.0	ND	pg/L					U
1,2,3,4,7,8,9-HpCDF		0.893-1.208	0.82	10.0	ND	pg/L					U
1,2,3,4,6,7,8-HpCDD		0.893-1.208	1.15	10.0	ND	pg/L					U
OCDF		0.757-1.024	3.16	20.0	ND	pg/L					U
OCDD	0.808	0.757-1.024		20.0	4.54	pg/L					J
Homologue group											
Total TCDF				10.0	ND	pg/L					U
Total TCDD				10.0	ND	pg/L					U
Total PeCDF				10.0	0.661	pg/L					
Total PeCDD				10.0	ND	pg/L					U
Total HxCDF				10.0	ND	pg/L					U
Total HxCDD				10.0	ND	pg/L					U
Total HpCDF				10.0	ND	pg/L					U
Total HpCDD				10.0	ND	pg/L					U

Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, Including EMPC):	0.09
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0, Including EMPC):	0.02
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=1/2 EDL, EMPC=ND):	0.09
Total 2,3,7,8-TCDD Equivalence (WHO2005, ND=0 EDL, EMPC=ND):	0.00

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

Dioxins/Furans - Quality Control

Batch BGL0752 - EPA 1613

Instrument: AUTOSPEC01 Analyst: pl

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGL0752-BLK1)				Prepared: 02-Jan-2018 Analyzed: 04-Jan-2019 12:57							
Labeled compounds											
13C12-2,3,7,8-TCDF	*0.805*	*0.655-0.886*			*90.1*			*24-169 %*			
13C12-2,3,7,8-TCDD	*0.755*	*0.655-0.886*			*89.8*			*25-164 %*			
13C12-1,2,3,7,8-PeCDF	*1.590*	*1.318-1.783*			*82.2*			*24-185 %*			
13C12-2,3,4,7,8-PeCDF	*1.589*	*1.318-1.783*			*80.6*			*21-178 %*			
13C12-1,2,3,7,8-PeCDD	*1.685*	*1.318-1.783*			*76.6*			*25-181 %*			
13C12-1,2,3,4,7,8-HxCDF	*0.498*	*0.434-0.587*			*94.8*			*26-152 %*			
13C12-1,2,3,6,7,8-HxCDF	*0.469*	*0.434-0.587*			*102*			*26-123 %*			
13C12-2,3,4,6,7,8-HxCDF	*0.491*	*0.434-0.587*			*92.5*			*28-136 %*			
13C12-1,2,3,7,8,9-HxCDF	*0.479*	*0.434-0.587*			*82.5*			*29-147 %*			
13C12-1,2,3,4,7,8-HxCDD	*1.294*	*1.054-1.426*			*92.6*			*32-141 %*			
13C12-1,2,3,6,7,8-HxCDD	*1.347*	*1.054-1.426*			*106*			*28-130 %*			
13C12-1,2,3,4,6,7,8-HpCDF	*0.419*	*0.374-0.506*			*76.2*			*28-143 %*			
13C12-1,2,3,4,7,8,9-HpCDF	*0.439*	*0.374-0.506*			*69.1*			*26-138 %*			
13C12-1,2,3,4,6,7,8-HpCDD	*1.090*	*0.893-1.208*			*71.3*			*23-140 %*			
13C12-OCDD	*0.926*	*0.757-1.024*			*43.9*			*17-157 %*			
37Cl4-2,3,7,8-TCDD					*95.7*			*35-197 %*			
LCS (BGL0752-BS1)				Prepared: 02-Jan-2018 Analyzed: 04-Jan-2019 13:46							
2,3,7,8-TCDF	0.798	0.655-0.886		10.0	194	pg/L	97.2	75-158 %			
2,3,7,8-TCDD	0.803	0.655-0.886		10.0	193	pg/L	96.6	67-158 %			
1,2,3,7,8-PeCDF	1.656	1.318-1.783		10.0	934	pg/L	93.4	80-134 %			B
2,3,4,7,8-PeCDF	1.751	1.318-1.783		10.0	996	pg/L	99.6	68-160 %			
1,2,3,7,8-PeCDD	1.604	1.318-1.783		10.0	1020	pg/L	102	70-142 %			
1,2,3,4,7,8-HxCDF	1.253	1.054-1.426		10.0	969	pg/L	96.9	72-134 %			
1,2,3,6,7,8-HxCDF	1.252	1.054-1.426		10.0	1060	pg/L	106	84-130 %			
2,3,4,6,7,8-HxCDF	1.223	1.054-1.426		10.0	1000	pg/L	100	70-156 %			
1,2,3,7,8,9-HxCDF	1.247	1.054-1.426		10.0	952	pg/L	95.2	78-130 %			
1,2,3,4,7,8-HxCDD	1.226	1.054-1.426		10.0	999	pg/L	99.9	70-164 %			
1,2,3,6,7,8-HxCDD	1.208	1.054-1.426		10.0	1020	pg/L	102	76-134 %			
1,2,3,7,8,9-HxCDD	1.172	1.054-1.426		10.0	926	pg/L	92.6	64-162 %			
1,2,3,4,6,7,8-HpCDF	1.038	0.893-1.208		10.0	942	pg/L	94.2	82-122 %			
1,2,3,4,7,8,9-HpCDF	1.116	0.893-1.208		10.0	987	pg/L	98.7	78-138 %			
1,2,3,4,6,7,8-HpCDD	1.091	0.893-1.208		10.0	913	pg/L	91.3	70-140 %			
OCDF	0.978	0.757-1.024		20.0	2190	pg/L	109	63-170 %			
OCDD	0.973	0.757-1.024		20.0	1850	pg/L	92.4	78-144 %			B

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

Dioxins/Furans - Quality Control

Batch BGL0752 - EPA 1613

Instrument: AUTOSPEC01 Analyst: pl

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BGL0752-BS1)				Prepared: 02-Jan-2018 Analyzed: 04-Jan-2019 13:46							
Labeled compounds											
13C12-2,3,7,8-TCDF	*0.786*	*0.655-0.886*			*92.6*			*24-169 %*			
13C12-2,3,7,8-TCDD	*0.757*	*0.655-0.886*			*91.4*			*25-164 %*			
13C12-1,2,3,7,8-PeCDF	*1.689*	*1.318-1.783*			*87.1*			*24-185 %*			
13C12-2,3,4,7,8-PeCDF	*1.619*	*1.318-1.783*			*83.4*			*21-178 %*			
13C12-1,2,3,7,8-PeCDD	*1.626*	*1.318-1.783*			*81.5*			*25-181 %*			
13C12-1,2,3,4,7,8-HxCDF	*0.486*	*0.434-0.587*			*97.8*			*26-152 %*			
13C12-1,2,3,6,7,8-HxCDF	*0.505*	*0.434-0.587*			*100*			*26-123 %*			
13C12-2,3,4,6,7,8-HxCDF	*0.515*	*0.434-0.587*			*95.1*			*28-136 %*			
13C12-1,2,3,7,8,9-HxCDF	*0.529*	*0.434-0.587*			*88.7*			*29-147 %*			
13C12-1,2,3,4,7,8-HxCDD	*1.281*	*1.054-1.426*			*98.2*			*32-141 %*			
13C12-1,2,3,6,7,8-HxCDD	*1.373*	*1.054-1.426*			*106*			*28-130 %*			
13C12-1,2,3,4,6,7,8-HpCDF	*0.449*	*0.374-0.506*			*77.9*			*28-143 %*			
13C12-1,2,3,4,7,8,9-HpCDF	*0.440*	*0.374-0.506*			*71.3*			*26-138 %*			
13C12-1,2,3,4,6,7,8-HpCDD	*1.089*	*0.893-1.208*			*78.1*			*23-140 %*			
13C12-OCDD	*0.954*	*0.757-1.024*			*44.1*			*17-157 %*			
37Cl4-2,3,7,8-TCDD					*96.0*			*35-197 %*			
LCS Dup (BGL0752-BSD1)				Prepared: 02-Jan-2018 Analyzed: 04-Jan-2019 14:34							
2,3,7,8-TCDF	0.799	0.655-0.886		10.0	202	pg/L	101	75-158 %	3.69	25	
2,3,7,8-TCDD	0.780	0.655-0.886		10.0	194	pg/L	97.1	67-158 %	0.45	25	
1,2,3,7,8-PeCDF	1.676	1.318-1.783		10.0	986	pg/L	98.6	80-134 %	5.49	25	B
2,3,4,7,8-PeCDF	1.620	1.318-1.783		10.0	1010	pg/L	101	68-160 %	1.84	25	
1,2,3,7,8-PeCDD	1.579	1.318-1.783		10.0	1020	pg/L	102	70-142 %	0.27	25	
1,2,3,4,7,8-HxCDF	1.260	1.054-1.426		10.0	1000	pg/L	100	72-134 %	3.19	25	
1,2,3,6,7,8-HxCDF	1.273	1.054-1.426		10.0	1030	pg/L	103	84-130 %	3.17	25	
2,3,4,6,7,8-HxCDF	1.252	1.054-1.426		10.0	1010	pg/L	101	70-156 %	0.18	25	
1,2,3,7,8,9-HxCDF	1.285	1.054-1.426		10.0	1040	pg/L	104	78-130 %	8.82	25	
1,2,3,4,7,8-HxCDD	1.210	1.054-1.426		10.0	1050	pg/L	105	70-164 %	4.61	25	
1,2,3,6,7,8-HxCDD	1.272	1.054-1.426		10.0	1040	pg/L	104	76-134 %	1.47	25	
1,2,3,7,8,9-HxCDD	1.352	1.054-1.426		10.0	1010	pg/L	101	64-162 %	8.67	25	
1,2,3,4,6,7,8-HpCDF	1.059	0.893-1.208		10.0	960	pg/L	96.0	82-122 %	1.87	25	
1,2,3,4,7,8,9-HpCDF	1.142	0.893-1.208		10.0	1030	pg/L	103	78-138 %	4.71	25	
1,2,3,4,6,7,8-HpCDD	0.949	0.893-1.208		10.0	1010	pg/L	101	70-140 %	10.10	25	
OCDF	0.955	0.757-1.024		20.0	2030	pg/L	101	63-170 %	7.73	25	
OCDD	0.775	0.757-1.024		20.0	1880	pg/L	93.9	78-144 %	1.64	25	B

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

Dioxins/Furans - Quality Control

Batch BGL0752 - EPA 1613

Instrument: AUTOSPEC01 Analyst: pl

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BGL0752-BSD1)				Prepared: 02-Jan-2018 Analyzed: 04-Jan-2019 14:34							
Labeled compounds											
13C12-2,3,7,8-TCDF	*0.796*	*0.655-0.886*					*91.0*			*24-169 %*	
13C12-2,3,7,8-TCDD	*0.757*	*0.655-0.886*					*89.7*			*25-164 %*	
13C12-1,2,3,7,8-PeCDF	*1.474*	*1.318-1.783*					*86.0*			*24-185 %*	
13C12-2,3,4,7,8-PeCDF	*1.614*	*1.318-1.783*					*84.1*			*21-178 %*	
13C12-1,2,3,7,8-PeCDD	*1.688*	*1.318-1.783*					*82.8*			*25-181 %*	
13C12-1,2,3,4,7,8-HxCDF	*0.496*	*0.434-0.587*					*92.3*			*26-152 %*	
13C12-1,2,3,6,7,8-HxCDF	*0.506*	*0.434-0.587*					*93.7*			*26-123 %*	
13C12-2,3,4,6,7,8-HxCDF	*0.496*	*0.434-0.587*					*91.1*			*28-136 %*	
13C12-1,2,3,7,8,9-HxCDF	*0.491*	*0.434-0.587*					*84.6*			*29-147 %*	
13C12-1,2,3,4,7,8-HxCDD	*1.302*	*1.054-1.426*					*90.9*			*32-141 %*	
13C12-1,2,3,6,7,8-HxCDD	*1.359*	*1.054-1.426*					*101*			*28-130 %*	
13C12-1,2,3,4,6,7,8-HpCDF	*0.414*	*0.374-0.506*					*76.6*			*28-143 %*	
13C12-1,2,3,4,7,8,9-HpCDF	*0.452*	*0.374-0.506*					*72.3*			*26-138 %*	
13C12-1,2,3,4,6,7,8-HpCDD	*1.175*	*0.893-1.208*					*75.9*			*23-140 %*	
13C12-OCDD	*0.938*	*0.757-1.024*					*49.1*			*17-157 %*	
37Cl4-2,3,7,8-TCDD							*97.1*			*35-197 %*	
Duplicate (BGL0752-DUP1)		**Source: 18L0374-01**		Prepared: 02-Jan-2018 Analyzed: 04-Jan-2019 15:23							
2,3,7,8-TCDF		0.655-0.886	0.61	9.30	ND	pg/L					U
2,3,7,8-TCDD		0.655-0.886	0.97	9.30	ND	pg/L					U
1,2,3,7,8-PeCDF		1.318-1.783	0.91	9.30	ND	pg/L					U
2,3,4,7,8-PeCDF		1.318-1.783	0.81	9.30	ND	pg/L					U
1,2,3,7,8-PeCDD		1.318-1.783	0.92	9.30	ND	pg/L					U
1,2,3,4,7,8-HxCDF		1.054-1.426	0.62	9.30	ND	pg/L					U
1,2,3,6,7,8-HxCDF		1.054-1.426	0.57	9.30	ND	pg/L					U
2,3,4,6,7,8-HxCDF	1.472	1.054-1.426		9.30	0.909	pg/L					EMPC, J
1,2,3,7,8,9-HxCDF	1.609	1.054-1.426		9.30	1.76	pg/L					EMPC, J
1,2,3,4,7,8-HxCDD		1.054-1.426	0.82	9.30	ND	pg/L					U
1,2,3,6,7,8-HxCDD		1.054-1.426	0.79	9.30	ND	pg/L					U
1,2,3,7,8,9-HxCDD	0.920	1.054-1.426		9.30	1.13	pg/L					EMPC, J
1,2,3,4,6,7,8-HpCDF		0.893-1.208	0.50	9.30	ND	pg/L					U
1,2,3,4,7,8,9-HpCDF	0.891	0.893-1.208		9.30	1.00	pg/L					EMPC, J
1,2,3,4,6,7,8-HpCDD		0.893-1.208	1.48	9.30	ND	pg/L					U
OCDF		0.757-1.024	4.62	18.6	ND	pg/L					U
OCDD	0.602	0.757-1.024		18.6	6.17	pg/L			84.40	25	*, EMPC, B, J

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

Dioxins/Furans - Quality Control

Batch BGL0752 - EPA 1613

Instrument: AUTOSPEC01 Analyst: pl

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BGL0752-DUP1)	**Source: 18L0374-01**			Prepared: 02-Jan-2018 Analyzed: 04-Jan-2019 15:23							
Homologue group											
Total TCDF				9.30	ND	pg/L					U
Total TCDD				9.30	ND	pg/L					U
Total PeCDF				9.30	ND	pg/L					U
Total PeCDD				9.30	ND	pg/L					U
Total HxCDF				9.30	2.67	pg/L					
Total HxCDD				9.30	1.13	pg/L					
Total HpCDF				9.30	1.00	pg/L					
Total HpCDD				9.30	ND	pg/L					U

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

Dioxins/Furans - Quality Control

Batch BGL0752 - EPA 1613

Instrument: AUTOSPEC01 Analyst: pl

QC Sample/Analyte	Ion Ratio	Ratio Limits	EDL	Reporting Limit	Result	Units	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BGL0752-DUP1)	**Source: 18L0374-01**		Prepared: 02-Jan-2018 Analyzed: 04-Jan-2019 15:23								
Labeled compounds											
13C12-2,3,7,8-TCDF	*0.798*	*0.655-0.886*			*93.3*			*24-169 %*			
13C12-2,3,7,8-TCDD	*0.773*	*0.655-0.886*			*91.1*			*25-164 %*			
13C12-1,2,3,7,8-PeCDF	*1.675*	*1.318-1.783*			*87.9*			*24-185 %*			
13C12-2,3,4,7,8-PeCDF	*1.513*	*1.318-1.783*			*84.7*			*21-178 %*			
13C12-1,2,3,7,8-PeCDD	*1.645*	*1.318-1.783*			*82.1*			*25-181 %*			
13C12-1,2,3,4,7,8-HxCDF	*0.493*	*0.434-0.587*			*92.3*			*26-152 %*			
13C12-1,2,3,6,7,8-HxCDF	*0.478*	*0.434-0.587*			*98.9*			*26-123 %*			
13C12-2,3,4,6,7,8-HxCDF	*0.514*	*0.434-0.587*			*93.3*			*28-136 %*			
13C12-1,2,3,7,8,9-HxCDF	*0.489*	*0.434-0.587*			*83.4*			*29-147 %*			
13C12-1,2,3,4,7,8-HxCDD	*1.280*	*1.054-1.426*			*92.4*			*32-141 %*			
13C12-1,2,3,6,7,8-HxCDD	*1.326*	*1.054-1.426*			*103*			*28-130 %*			
13C12-1,2,3,4,6,7,8-HpCDF	*0.434*	*0.374-0.506*			*78.1*			*28-143 %*			
13C12-1,2,3,4,7,8,9-HpCDF	*0.461*	*0.374-0.506*			*73.2*			*26-138 %*			
13C12-1,2,3,4,6,7,8-HpCDD	*1.116*	*0.893-1.208*			*74.4*			*23-140 %*			
13C12-OCDD	*0.949*	*0.757-1.024*			*46.0*			*17-157 %*			
37Cl4-2,3,7,8-TCDD					*99.4*			*35-197 %*			

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	Reported:
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BHA0102 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHA0102-BLK1)					Prepared: 04-Jan-2019 Analyzed: 05-Jan-2019 00:06							
Barium, Dissolved	135	ND	0.0560	0.500	ug/L							U
Barium, Dissolved	137	ND	0.0530	0.500	ug/L							U
Chromium, Dissolved	52	ND	0.130	0.500	ug/L							U
Chromium, Dissolved	53	0.0800	0.0700	0.500	ug/L							J
Arsenic, Dissolved	75a	ND	0.0220	0.200	ug/L							U
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L							U
Cadmium, Dissolved	114	ND	0.0400	0.100	ug/L							U
Selenium, Dissolved	78	ND	0.440	0.500	ug/L							U
Blank (BHA0102-BLK2)					Prepared: 04-Jan-2019 Analyzed: 07-Jan-2019 17:32							
Lead, Dissolved	208	ND	0.0680	0.100	ug/L							U
Silver, Dissolved	107	ND	0.0170	0.200	ug/L							U
LCS (BHA0102-BS1)					Prepared: 04-Jan-2019 Analyzed: 05-Jan-2019 00:11							
Barium, Dissolved	135	25.7	0.0560	0.500	ug/L	25.0		103	80-120			
Barium, Dissolved	137	25.3	0.0530	0.500	ug/L	25.0		101	80-120			
Chromium, Dissolved	52	25.5	0.130	0.500	ug/L	25.0		102	80-120			
Chromium, Dissolved	53	26.6	0.0700	0.500	ug/L	25.0		106	80-120			
Arsenic, Dissolved	75a	24.8	0.0220	0.200	ug/L	25.0		99.3	80-120			
Cadmium, Dissolved	111	26.0	0.0300	0.100	ug/L	25.0		104	80-120			
Cadmium, Dissolved	114	26.2	0.0400	0.100	ug/L	25.0		105	80-120			
Selenium, Dissolved	78	75.5	0.440	0.500	ug/L	80.0		94.4	80-120			
LCS (BHA0102-BS2)					Prepared: 04-Jan-2019 Analyzed: 07-Jan-2019 17:36							
Lead, Dissolved	208	26.0	0.0680	0.100	ug/L	25.0		104	80-120			
Silver, Dissolved	107	27.6	0.0170	0.200	ug/L	25.0		110	80-120			

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BHA0104 - TWM EPA 7470A

Instrument: CVAA Analyst: SKM

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHA0104-BLK1)				Prepared: 04-Jan-2019 Analyzed: 04-Jan-2019 14:51						
Mercury, Dissolved	ND	0.000100	mg/L							U
LCS (BHA0104-BS1)				Prepared: 04-Jan-2019 Analyzed: 04-Jan-2019 14:58						
Mercury, Dissolved	0.00230	0.000100	mg/L	0.00200		115	80-120			

BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

Wet Chemistry - Quality Control

Batch BGL0554 - No Prep Wet Chem

Instrument: UV1800-1 Analyst: BF

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BGL0554-BLK1)				Prepared: 19-Dec-2018 Analyzed: 19-Dec-2018 19:41							
Hexavalent Chromium	ND	0.013	0.013	mg/L							U
LCS (BGL0554-BS1)				Prepared: 19-Dec-2018 Analyzed: 19-Dec-2018 19:41							
Hexavalent Chromium	0.620	0.013	0.013	mg/L	0.625		99.2	85-115			D

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BergerABAM	Project: BHP Grays Harbor Potash	
1301 Fifth Avenue, Suite 1200	Project Number: A17.0202.00	**Reported:**
Seattle WA, 98101	Project Manager: Victoria England	11-Jan-2019 17:26

Certified Analyses included in this Report

Analyte	Certifications
EPA 1613B in Water	
2,3,7,8-TCDF	DoD-ELAP,NELAP,WADOE
2,3,7,8-TCDD	DoD-ELAP,NELAP,WADOE
1,2,3,7,8-PeCDF	DoD-ELAP,NELAP,WADOE
2,3,4,7,8-PeCDF	DoD-ELAP,NELAP,WADOE
1,2,3,7,8-PeCDD	DoD-ELAP,NELAP,WADOE
1,2,3,4,7,8-HxCDF	DoD-ELAP,NELAP,WADOE
1,2,3,6,7,8-HxCDF	DoD-ELAP,NELAP,WADOE
2,3,4,6,7,8-HxCDF	DoD-ELAP,NELAP,WADOE
1,2,3,7,8,9-HxCDF	DoD-ELAP,NELAP,WADOE
1,2,3,4,7,8-HxCDD	DoD-ELAP,NELAP,WADOE
1,2,3,6,7,8-HxCDD	DoD-ELAP,NELAP,WADOE
1,2,3,7,8,9-HxCDD	DoD-ELAP,NELAP,WADOE
1,2,3,4,6,7,8-HpCDF	DoD-ELAP,NELAP,WADOE
1,2,3,4,7,8,9-HpCDF	DoD-ELAP,NELAP,WADOE
1,2,3,4,6,7,8-HpCDD	DoD-ELAP,NELAP,WADOE
OCDF	DoD-ELAP,NELAP,WADOE
OCDD	DoD-ELAP,NELAP,WADOE
Total TCDF	DoD-ELAP,NELAP
Total TCDD	DoD-ELAP,NELAP
Total PeCDF	DoD-ELAP,NELAP
Total PeCDD	DoD-ELAP,NELAP
Total HxCDF	DoD-ELAP,NELAP
Total HxCDD	DoD-ELAP,NELAP
Total HpCDF	DoD-ELAP,NELAP
Total HpCDD	DoD-ELAP,NELAP
13C12-2,3,7,8-TCDF	DoD-ELAP
13C12-2,3,7,8-TCDD	DoD-ELAP
13C12-1,2,3,7,8-PeCDF	DoD-ELAP
13C12-2,3,4,7,8-PeCDF	DoD-ELAP
13C12-1,2,3,7,8-PeCDD	DoD-ELAP
13C12-1,2,3,4,7,8-HxCDF	DoD-ELAP
13C12-1,2,3,6,7,8-HxCDF	DoD-ELAP
13C12-2,3,4,6,7,8-HxCDF	DoD-ELAP
13C12-1,2,3,7,8,9-HxCDF	DoD-ELAP
13C12-1,2,3,4,7,8-HxCDD	DoD-ELAP

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13C12-1,2,3,6,7,8-HxCDD	DoD-ELAP
13C12-1,2,3,4,6,7,8-HpCDF	DoD-ELAP
13C12-1,2,3,4,7,8,9-HpCDF	DoD-ELAP
13C12-1,2,3,4,6,7,8-HpCDD	DoD-ELAP
13C12-OCDD	DoD-ELAP
37Cl4-2,3,7,8-TCDD	DoD-ELAP
EPA 6020A in Water	
Silver-107	WA-DW,DoD-ELAP,NELAP
Barium-135	NELAP,WADOE,DoD-ELAP,ADEC
Barium-137	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
EPA 6020A UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP
EPA 7196A in Water	
Hexavalent Chromium	DoD-ELAP,CALAP,NELAP,WADOE
EPA 7470A in Water	
Mercury	WADOE,NELAP,DoD-ELAP,CALAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	02/07/2019
CALAP	California Department of Public Health CAELAP	2748	06/30/2019
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-011	05/12/2019
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

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Notes and Definitions

*	Flagged value is not within established control limits.
B	This analyte was detected in the method blank.
D	The reported value is from a dilution
EMPC	Estimated Maximum Possible Concentration qualifier for HRGCMS Dioxin
J	Estimated concentration value detected below the reporting limit.
U	This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
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
RPD	Relative Percent Difference
[2C]	Indicates this result was quantified on the second column on a dual column analysis.