DALTON OLMSTED FUGLEVAND

1001 SW Klickitat Way, Suite 200B, Seattle, Washington 98134
Telephone (206) 731-7550

TECHNICAL MEMORANDUM

TO: Mohsen Kourehdar – Dept. of Ecology

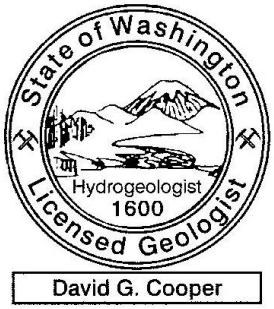
FROM: David Cooper

DATE: May 5, 2021

SUBJECT: 2020 Annual Monitoring Summary Report
Former Dunlap Mound
3009 Taylor Way
Tacoma, Washington

REF. NO: POT-002

CC: Scott Hooton – POT
Paul Fuglevand - DOF



This data report presents the results of the two-year (2019-2020) post-remedial action groundwater monitoring program being conducted at the Former Arkema 3009 Taylor Way site (aka Former Dunlap Mound) in Tacoma, Washington (Figure 1). The performance monitoring is being conducted to fulfill the requirements of Agreed Order No. DE 13124 between the Washington State Department of Ecology (Ecology) and the Port of Tacoma (Port), and the Draft Cleanup Action Plan (DCAP, DOF 2015b).

BACKGROUND

The purpose of the monitoring is to assess the performance of source control interim actions completed at the former Arkema Mound site and to confirm that groundwater cleanup levels (CULs) have been achieved for dissolved arsenic, copper and zinc in groundwater that ultimately discharges to the Hylebos Waterway. A supplemental interim action (SIA) was completed between August 2013 and February 2015. The primary goals of the SIA was to meet the industrial soil contact CUL (88 mg/kg) for arsenic and to prevent the erosion and migration of soil containing arsenic above the Commencement Bay Sediment Quality Objective (57 mg/kg) into the Hylebos Waterway. Approximately 24,560 tons of arsenic containing soil were removed from three areas of the Site and disposed in the LRI landfill. The SIA included the construction of an engineered cover, stabilization of the Hylebos shoreline, and the installation of certain utilities.

Performance/confirmation groundwater monitoring is being conducted in general accordance with the Ecology approved Performance / Confirmation Groundwater Monitoring Plan (DOF 2015c). The primary objective of the monitoring is to assess whether Upper Aquifer dissolved arsenic concentrations are below CULs near to the point where groundwater discharges to surface water (points of compliance) within two general areas of the site including:

- Along the Hylebos shoreline within the Northeast Area, and
- Along the western/southern site boundary at the head of the Kaiser Ditch.

Monitoring wells were installed in November 2016 at three locations as described below and shown on Figure 2:

- Northeast Area – One monitoring well installed in the Upper Aquifer at the approximate former location of well MW-H. This well is designated "MW-H(R)".
- Southwestern Site Boundary (downgradient of areas P10 and SB7 – near head of Kaiser Ditch) – Two monitoring wells located along the site boundary in the vicinity of former wells MW-1 and MW-E. These wells were designated "MW-1(R)" and "MW-E(R)".

The monitoring well installation methods and well construction logs were included in the 2017 Annual Summary Report (DOF 2018).

MODIFICATIONS TO THE 2019-2020 MONITORING PORGRAM

The Performance/Conformational Groundwater Monitoring Plan stipulated that monitoring would be required for two years after the interim action, that after two quarters of monitoring dissolved copper and zinc could be eliminated from further monitoring if below CULs, and after two years of monitoring modifications to the future monitoring program (locations, frequency etc.), could be considered. Based on review of the data the following modifications to the plan were in effect for the 2019-2020 monitoring:

- Eliminate copper and zinc from the monitoring program starting in July 2017
- Continue quarterly monitoring of wells MW-E(R) and MW-H(R) for an additional one to two years to establish arsenic concentration trends more firmly (DOF 2019).

SAMPLING PROCEDURES, HANDLING

Groundwater samples were collected with a peristaltic pump and dedicated downhole polyethylene tubing. Low flow sampling procedures were used to limit particulates being entrained in the samples submitted to the laboratory. Sampling was conducted at

outgoing lower tidal levels when groundwater flow was towards surface water. The depth to water was initially measured using an electric well probe. Purging was completed at a flow rate of less than 0.5 liters/minute. During purging, field parameters were monitored for pH, temperature, dissolved oxygen, conductivity, Eh, ferrous iron and turbidity. Parameters recorded are included in Table 1.

Due to irregularities in previous data showing dissolved (filtered) arsenic concentrations higher than total arsenic concentrations, sample collection methods were modified for the 2019-2020 monitoring events. Rather than samples pumped directly into laboratory provided containers, they were pumped into a single aliquot consisting of a 1-liter borosilicate glass container. This insured filtered and unfiltered samples were obtained from a homogenous single volume, eliminating any variation due to low-flow well yield.

From the single aliquot, samples were pumped directly into containers provided by the receiving laboratory, Analytical Resources Inc. (ARI), Tukwila, WA. Samples for dissolved metals analysis were field filtered using an in-line 0.45 micron filter. New/virgin tubing and factory certified filters were used between each well during each sampling event. Once the containers were filled, they were placed in chilled coolers that were delivered to the laboratory within 24 hours of collection. Sample handling was documented using standard chain-of-custody (COC) procedures.

GROUNDWATER CONCENTRATIONS AND COMPARISON TO CLEANUP LEVELS

Laboratory analyses of groundwater samples collected in 2019 and 2020 were conducted for the following dissolved and total metals:

- Arsenic – Wells MW-E(R) and MW-H(R)

ARI, a Washington State Certified Laboratory, completed the analyses using Ecology approved methods by Inductively Coupled Plasma Triple Quadrupole Mass Spectrometry (ICP-QQQ-MS). Laboratory QA/QC criteria and sample duplicates were within established limits.

Groundwater analytical data are summarized in attached Table 1, sample duplicate data in Table 2. Laboratory data reports are included as Attachment B. CULs are presented and discussed in the DCAP and are summarized in Table below.

Groundwater CULs

Constituent	Cleanup Level (ug/l)
Dissolved Arsenic	5

To assist in data interpretation, a Mann-Kendall trend analysis was completed using a spread sheet developed by GSI Environmental, Inc. The spread sheets are presented in Appendix A.

The following observations are noted based on review of the 2019-2020 analytical data.

- Well MW-E(R) - Dissolved arsenic concentrations ranged from 2.00 to 26.6 ug/l. The Mann-Kendall analysis indicates a probably decreasing trend for total arsenic and a stable trend for dissolved arsenic. Dissolved arsenic concentrations were below the CUL for three of the seven quarters monitored.

- Well MW-H(R) – Dissolved arsenic concentrations ranged from 7.51 to 47.2 ug/l. The Mann-Kendall analysis indicates a decreasing trend in both total and dissolved arsenic. Dissolved arsenic concentrations were above the CUL.

PROPOSED MODIFICATIONS TO FUTURE MONITORING PROGRAM

Based on the stable to decreasing trends of total and dissolved arsenic concentrations in groundwater it is recommended that the sampling of wells MW-E(R) and MW-H(R) be extended to 18-month intervals, consistent with other long-term monitoring sites in the Tacoma Tideflats, and that modifications to monitoring plan be considered following three additional sampling events.

REFERENCES

DOF. 2019. 2018 Annual Monitoring Summary Report, Former Arkema Mound Site, 3009 Taylor Way, Prepared for the Port of Tacoma. March 2019.

DOF. 2018. 2017 Annual Monitoring Summary Report, Former Arkema Mound Site, 3009 Taylor Way, Prepared for the Port of Tacoma. February 2018.

DOF. 2015a. Remedial Investigation, Former Arkema Mound Site, 3009 Taylor Way, Prepared for the Port of Tacoma. September 2015.

DOF. 2015b, Draft Cleanup Action Plan, 3009 Taylor Way Site, Tacoma, Washington. Prepared for the Port of Tacoma, November 20, 2015.

DOF. 2015c, Performance Confirmation Monitoring Plan, 3009 Taylor Way Site, Tacoma, Washington. Prepared for the Port of Tacoma, November 20, 2015.

Attachments
Table 1 – Groundwater Quality Data – January 2017 to December 2020
Table 2 – Groundwater Quality Duplicate Sample Data– June 2019 to December 2020

Figure 1 – Vicinity Map
Figure 2 – Interim Action Remedial Area and Monitoring Well Locations

Attachment A – Mann Kendall Trend Analysis

Attachment B – Laboratory Data Sheets

Attachment C – 2019-2020 Sample Collection Forms

Tables

TABLE 1 - Groundwater Quality Data, Former Dunlap Mound Site, 3009 Taylor Way, Tacoma, WA

Well Number - Aquifer	MW-1(R)																*Old MW-1*		CUL
Date Sampled	**1/12/17**		**4/25/17**		**7/28/17**		**10/26/17**		**1/31/18**		**4/30/18**		**7/30/18**		**10/30/18**		*2/3/11*		
Field Parameters																			
pH	**6.7**		**6.7**		**6.4**		**6.7**		**6.7**		**6.5**		**6.7**		**6.5**		*6.6*		
Conductivity (uS/cm)	**828**		**853**		**1010**		**834**		**1176**		**1130**		**1220**		**1033**		*203*		
Temperature (C)	**10.6**		**11.7**		**17.2**		**15.0**		**9.3**		**11.3**		**15.5**		**15.1**		*9.6*		
Turbidity (NTU)	**73.1**		**51.2**		**4.0**		**5.6**		**43.5**		**31.2**		**11.0**		**6.8**		*5.2*		
Dissolved oxygen (mg/l)	**0.3**		**0.1**		**0.9**		**0.7**		**0.4**		**0.1**		**0.1**		**1.1**				
ORP (mv)	**-12.9**		**-1.3**		**-26.3**		**-8.9**		**-34.3**		**-42.3**		**-99.5**		**44.8**				
Ferrous Iron (mg/l)	**4.5**		**2.8**		**4.0**		**6.9**		**2.8**		**2.8**		**3.0**		**4.0**		*0.2*		
Metals (Dissolved)																			
Arsenic (ug/l)	**0.956**	D	**0.399**	D	**4.03**		**0.825**		**0.349**		**0.247**		**1.7**		**0.344**		*43*	*D*	**5**
Copper (ug/l)	---		**---**		**---**		**---**		**---**		**---**		**---**		**---**		*<0.50*	*U*	**3.1**
Zinc (ug/l)	---		**---**		**---**		**---**		**---**		**---**		**---**		**---**		*<4.00*	*U*	**81.0**
Metals (Total)																			
Arsenic (ug/l)	**0.954**		**0.404**		**1.46**		**2.32**		**0.682**		**0.391**		**0.375**		**0.328**				
Copper (ug/l)	---		**---**		**---**		**---**		**---**		**---**		**---**		**---**				
Zinc (ug/l)	---		**---**		**---**		**---**		**---**		**---**		**---**		**---**				
Water Table																			
Date Measured	1/12/17		4/25/17		7/28/17		10/26/17		1/31/18		4/30/18		7/30/18		10/30/18				
Time	1430		1136		1243		0934		1025		1202		1340		1505				
Well depth	10.2		10.2		10.2		10.2		10.2		10.2		10.2		10.2				
Depth to water (ft.)	2.6		1.81		4.36		2.71		1.55		2.8		4.81		3.02				
Elevation (ft. MLLW)	13.35		14.14		11.59		13.24		14.40		13.15		11.14		12.93				

Shading of Metals Results by CUL

Shade	
	< CUL
	> CUL

Notes

All dissolved samples field filtered 0.45um
D = The reported value is from a dilution
- - - = Not measured-well and/or analyte not on monitoring schedule
U = Not detected at indicated detection limit
J = Estimated concentration
N.R. = Not Reported

TABLE 1 - Groundwater Quality Data, Former Dunlap Mound Site, 3009 Taylor Way, Tacoma, WA

Well Number - Aquifer	MW-E(R)															*Old MW-E*	CUL
Date Sampled	**1/12/17**	**4/25/17**	**7/28/17**	**10/26/17**	**1/31/18**	**4/30/18**	**7/30/18**	**10/30/18**	**6/28/19**	**9/26/19**	**12/30/19**	**3/31/20**	**6/30/20**	**9/29/20**	**12/23/20**	*2/3/11*	
Field Parameters																	
pH	**6.4**	**6.7**	**6.2**	**6.4**	**6.4**	**6.4**	**6.6**	**6.5**	**6.7**	**6.2**	**6.1**	**6.2**	**6.5**	**6.5**	**6.9**	*6.0*	
Conductivity (uS/cm)	**1261**	**646**	**2216**	**1845**	**612**	**1143**	**2855**	**2404**	**2837**	**2226**	**595**	**1865**	**2347**	**2445**	**745**	*562*	
Temperature (C)	**12.5**	**10.3**	**17.8**	**16.3**	**10.0**	**10.0**	**17.4**	**16.2**	**14.3**	**10.3**	**12.0**	**10.4**	**13.4**	**17.5**	**12.8**	*9.4*	
Turbidity (NTU)	**60.5**	**45.6**	**2.6**	**6.2**	**4.8**	**12.2**	**15.7**	**14.9**	**5.9**	**18.3**	**12.4**	**3.8**	**8.3**	**10.3**	**11.2**	*3.2*	
Dissolved oxygen (mg/l)	**0.4**	**0.3**	**1.0**	**0.4**	**0.3**	**1.8**	**0.4**	**2.5**	**0.7**	**0.4**	**1.3**	**3.0**	**1.4**	**1.9**	**1.5**		
ORP (mv)	**-57.0**	**17.2**	**-13.9**	**-30.7**	**-10.9**	**-86.5**	**-90.2**	**11.2**	**-116.5**	**-92.8**	**-54.6**	**-88.5**	**-3.4**	**27.3**	**33.9**		
Ferrous Iron (mg/l)	**4.5**	**5.5**	**6.5**	**3.7**	**2.8**	**2.2**	**4.0**	**2.8**	**4.5**	**3.2**	**2.8**	**3.6**	**4.5**	**6.8**	**3.5**	*5.6*	
Metals (Dissolved)																	
Arsenic (ug/l)	**15.7** D	**7.96** D	**30.3**	**25.1**	**5.36**	**40.2** D	**48.6**	**50.2**	**18.8**	**26.6**	**4.69**	**2.00** D	**11.0** D	**19.2** D	**3.61** D	*23.4 D*	**5**
Copper (ug/l)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	*<0.50 U*	**3.1**
Zinc (ug/l)	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	*<4.00 U*	**81.0**
Metals (Total)																	
Arsenic (ug/l)	**22.9**	**35.5**	**14.4**	**26.1 D**	**2.07**	**21.7**	**13.1**	**13.0**	**20.7**	**28.8**	**5.24**	**2.21**	**11.3 D**	**23.8 D**	**3.67 D**	*0.002 D*	
Copper (ug/l)	---	---	---	---	---											*39.1 D*	
Zinc (ug/l)	---	---	---	---	---											*32.7 D*	
Water Table																	
Date Measured	1/12/17	4/25/17	7/28/17	10/26/17	1/31/18	4/30/18	7/30/18	10/30/18	6/28/19	9/26/19	12/30/19	3/31/20	6/30/20	9/29/20	12/23/20	*2/1/11*	
Time	1330	1133	1246	0940	10:30	1200	1335	1506	1000	1045	1400	1500	1100	1145	1515	*1556*	
Well depth	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0		
Depth to water (ft.)	6.53	6.15	7.37	7	4.75	6.65	7.7	7.35	7.74	7.7	5.28	6.18	7.51	7.6	4.9	*5.10*	
Elevation (ft. MLLW)	10.00	10.38	9.16	9.53	11.78	9.88	8.83	9.18	8.79	8.83	11.25	10.35	9.02	8.93	11.63	*10.89*	

Shading of Metals Results by CUL

Shade	
(green)	< CUL
(red)	> CUL

Notes

All dissolved samples field filtered 0.45um
D = The reported value is from a dilution
- - - = Not measured-well and/or analyte not on monitoring schedule
U = Not detected at indicated detection limit
J = Estimated concentration
N.R. = Not Reported

TABLE 1 - Groundwater Quality Data, Former Dunlap Mound Site, 3009 Taylor Way, Tacoma, WA

Well Number - Aquifer	MW-H (R)															*Old MW-H*	CUL
Date Sampled	**1/12/17**	**4/25/17**	**7/28/17**	**10/26/17**	**1/31/18**	**4/30/18**	**7/30/18**	**10/30/18**	**6/28/19**	**9/26/19**	**12/30/19**	**3/31/20**	**6/30/20**	**9/29/20**	**12/23/20**	*2/3/11*	
Field Parameters																	
pH	**6.4**	**6.5**	**6.1**	**6.0**	**6.4**	**6.4**	**6.4**	**6.3**	**6.3**	**6.0**	**5.9**	**6.1**	**6.2**	**6.4**	**5.9**	*6.5*	
Conductivity (uS/cm)	**13538**	**9242**	**11311**	**23373**	**12883**	**8460**	**17211**	**25604**	**13618**	**24364**	**13905**	**16572**	**9933**	**20611**	**9875**	*1101*	
Temperature (C)	**11.5**	**11.5**	**18.6**	**16.1**	**10.1**	**11.1**	**17.4**	**16.2**	**14.9**	**17.4**	**12.6**	**10.9**	**13.8**	**17.0**	**12.1**	*11.3*	
Turbidity (NTU)	**12.1**	**14.6**	**4.3**	**21.8**	**4.6**	**34.9**	**6.5**	**42.9**	**25.4**	**24.3**	**32.1**	**46.2**	**12.3**	**44.4**	**24.7**	*22.5*	
Dissolved oxygen (mg/l)	**0.5**	**0.6**	**1.4**	**0.4**	**2.1**	**1.5**	**0.8**	**0.3**	**2.7**	**0.5**	**0.3**	**0.4**	**1.5**	**1.1**	**1.2**		
ORP (mv)	**18.1**	**-0.2**	**-20.1**	**15.8**	**-28.2**	**-56.8**	**-32.2**	**22.7**	**-51.2**	**2.2**	**-22.1**	**-31.6**	**115.7**	**85.2**	**18.4**		
Ferrous Iron (mg/l)	**5.0**	**4.3**	**6.0**	**5.8**	**2.2**	**3.5**	**6.5**	**4.5**	**6.0**	**5.6**	**6.0**	**7.0**	**3.8**	**7.0**	**6.5**	*4.6*	
Metals (Dissolved)																	
Arsenic (ug/l)	**67.5** D	**46.7** D	**90.2** D	**50.5** D	**50.9** D	**60.5** D	**34.7** D	**36.2** D	**47.2** D	**46.4** D	**34.7** D	**7.51** D	**32.9** D	**26.5** D	**32.8** D	*45.5 D*	**5**
Copper (ug/l)	<2.5 U	<2.50 U	---	---	---	---	---	---	---	---	---	---	---	---	---	*0.8 D*	**3.1**
Zinc (ug/l)	<20.0 U	<20.0 U	---	---	---	---	---	---	---	---	---	---	---	---	---	*<4.00 U*	**81.0**
Metals (Total)																	
Arsenic (ug/l)	**72.2**	**55.3**	**81.6** D	**60.3** D	**55.7** D	**45.8** D	**50.7** D	**54.7** D	**57.5** D	**48.1** D	**41.3** D	**20.9** D	**40.7** D	**45.9** D	**35.5** D		
Copper (ug/l)	<2.50 U	<2.50 U	---	---	---	---	---	---	---	---	---	---	---	---	---		
Zinc (ug/l)	<20.0 U	<20.0 U	---	---	---	---	---	---	---	---	---	---	---	---	---		
Water Table																	
Date Measured	1/12/17	4/25/17	7/28/17	10/26/17	1/31/18	4/30/18	7/30/18	10/30/18	6/28/19	9/26/19	12/30/19	3/31/20	6/30/20	9/29/20	12/23/20	*2/1/11*	
Time	1230	1131	1240	0930	10:35	1205	1330	1502	0930	0945	1430	1600	1000	1115	1530	*1530*	
Well depth	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1	13.1		
Depth to water (ft.)	7.15	7.20	7.36	7.85	7.09	7.62	8.11	7.25	8.09	7.9	7.21	7.22	7.48	7.81	7.21	*5.68*	
Elevation (ft. MLLW)	11.81	11.76	11.60	11.11	11.87	11.34	10.85	11.71	10.87	11.06	11.75	11.74	11.48	11.15	11.75	*11.18*	

Shading of Metals Results by CUL

Shade	
(green)	< CUL
(red)	> CUL

All dissolved samples field filtered 0.45um
D = The reported value is from a dilution
- - - = Not measured-well and/or analyte not on monitoring schedule
U = Not detected at indicated detection limit
J = Estimated concentration
N.R. = Not Reported

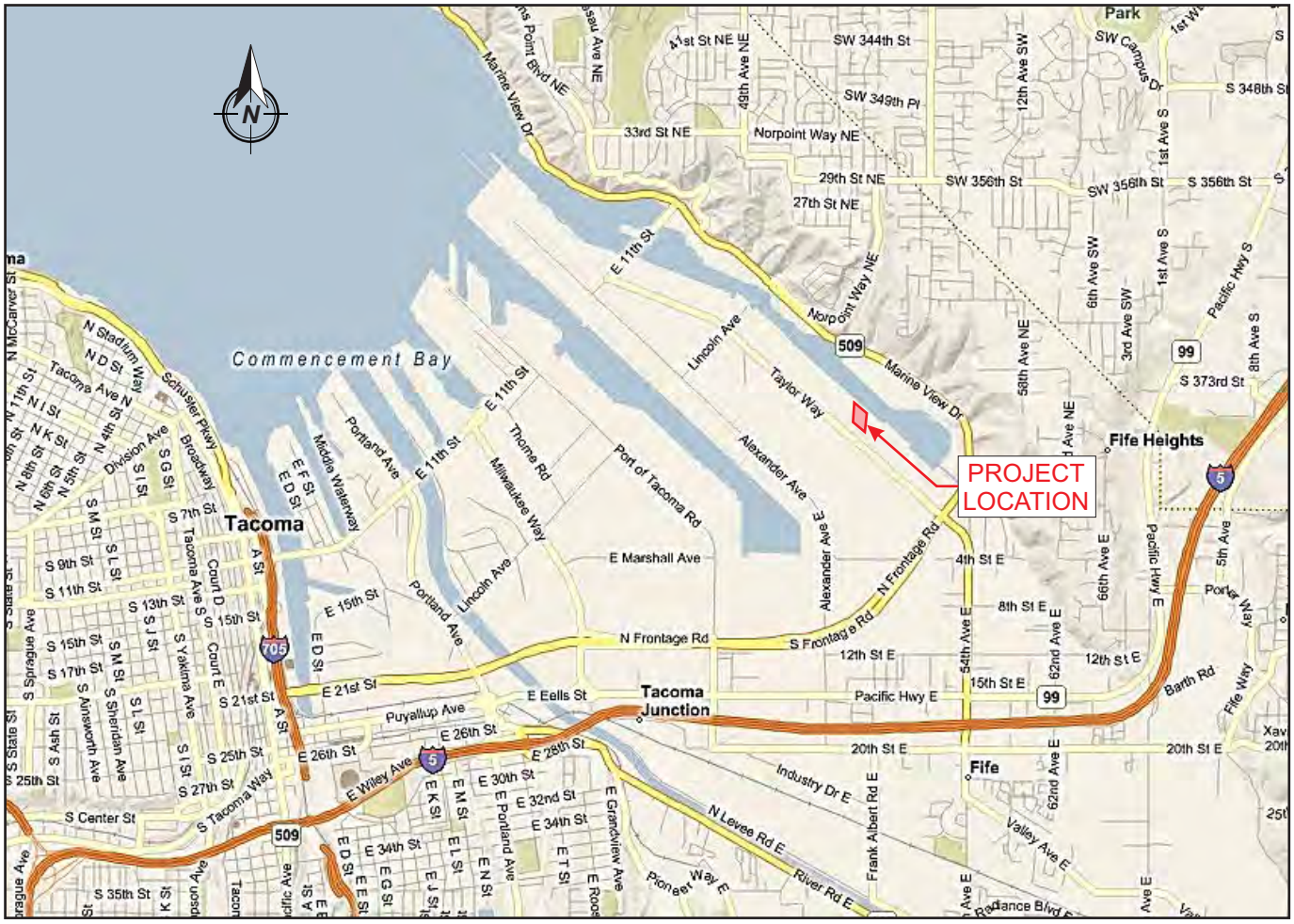
TABLE 2 - Groundwater Quality Duplicate Data, Former Dunlap Mound Site, 3009 Taylor Way, Tacoma, WA

Date Sampled	6/28/19		9/26/19		12/30/19		3/31/20		6/30/20	
Sample | Duplicate	**MW-H(R)**	**DUPL-1**	**MW-H(R)**	**DUPL-1**	**MW-H(R)**	**DUPL-1**	**MW-H(R)**	**DUPL-1**	**MW-H(R)**	**DUPL-1**
Metals (Dissolved)										
Arsenic (ug/l)	**47.2**	**45.800**	**46.4**	**46.5**	**34.7**	**35.0**	**7.51**	**8.6**	**32.9**	**34.4**
Metals (Total)										
Arsenic (ug/l)	**57.5**	**58.700**	**48.1**	**49.8**	**41.3**	**43.1**	**20.9**	**20.4**	**40.7**	**42.2**

Date Sampled	9/29/20		12/23/20	
Sample | Duplicate	**MW-H(R)**	**DUP**	**MW-H(R)**	**DUPL-1**
Metals (Dissolved)	**26.5**	**29.8**	**32.8**	**31.7**
Arsenic (ug/l)				
Metals (Total)				
Arsenic (ug/l)	**45.9**	**42.0**	**35.5**	**34.8**

Figures

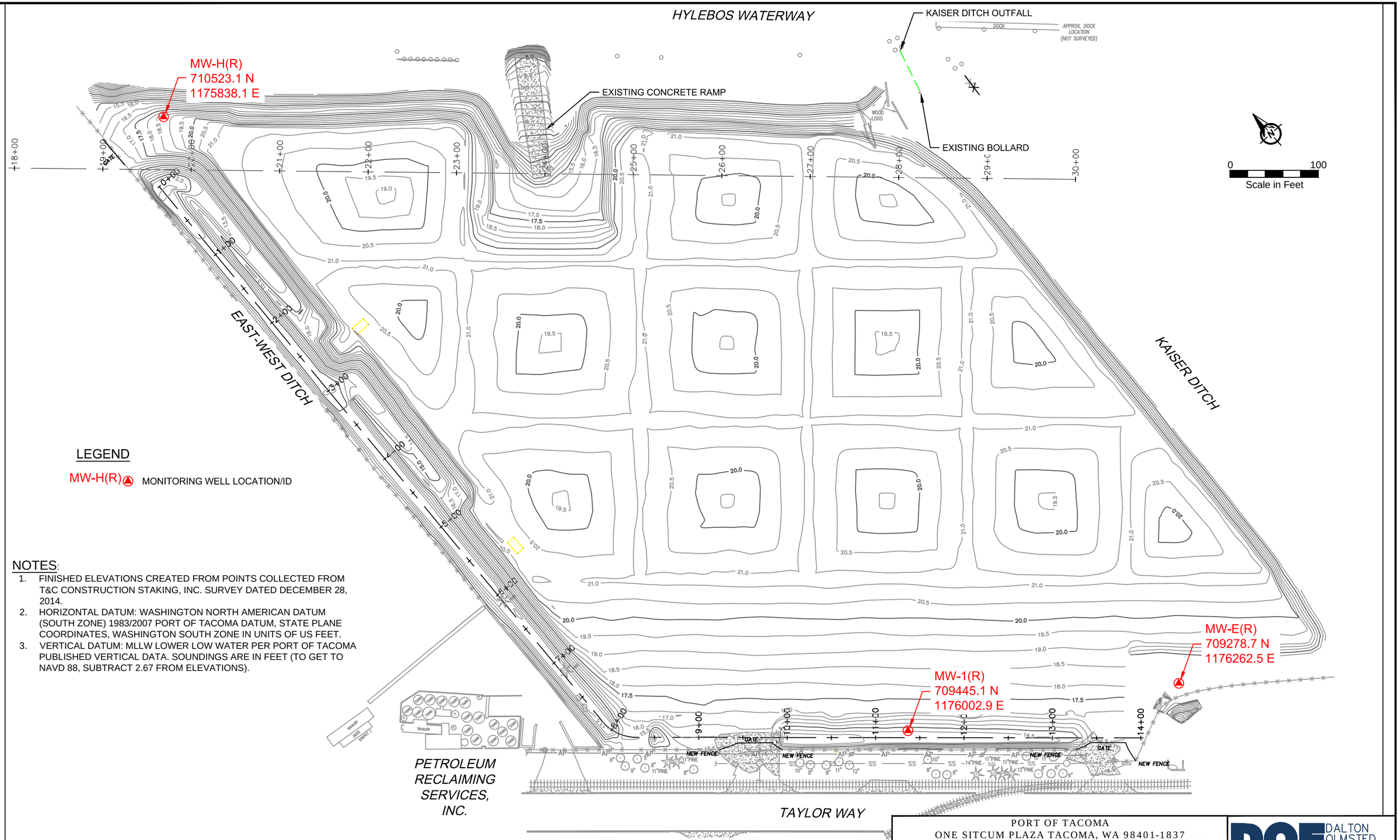
Not to Scale



Not To Scale

General Note:
Vicinity map images come from Microsoft Virtual Earth web site.

Port of Tacoma Tacoma, Washington	
Former Dunlap Mound 3009 Taylor Way, Tacoma WA **VICINITY MAP**	**FIGURE 1**
Dalton, Olmsted & Fuglevand, Inc.	February 2018



LEGEND

MW-H(R) MONITORING WELL LOCATION/ID

NOTES:

1. FINISHED ELEVATIONS CREATED FROM POINTS COLLECTED FROM T&C CONSTRUCTION STAKING, INC. SURVEY DATED DECEMBER 28, 2014.
2. HORIZONTAL DATUM: WASHINGTON NORTH AMERICAN DATUM (SOUTH ZONE) 1983/2007 PORT OF TACOMA DATUM, STATE PLANE COORDINATES, WASHINGTON SOUTH ZONE IN UNITS OF US FEET.
3. VERTICAL DATUM: MLLW LOWER LOW WATER PER PORT OF TACOMA PUBLISHED VERTICAL DATA. SOUNDINGS ARE IN FEET (TO GET TO NAVD 88, SUBTRACT 2.67 FROM ELEVATIONS).

PORT OF TACOMA
ONE SITCUM PLAZA TACOMA, WA 98401-1837

3009 TAYLOR WAY MTCA INTERIM ACTION - ECOLOGY AGREED ORDER DE 6129

SITE PLAN
WITH MONITORING WELL LOCATIONS

DALTON OLMSTED FUGLEVAND

FIGURE
2

FEB. 22, 2018

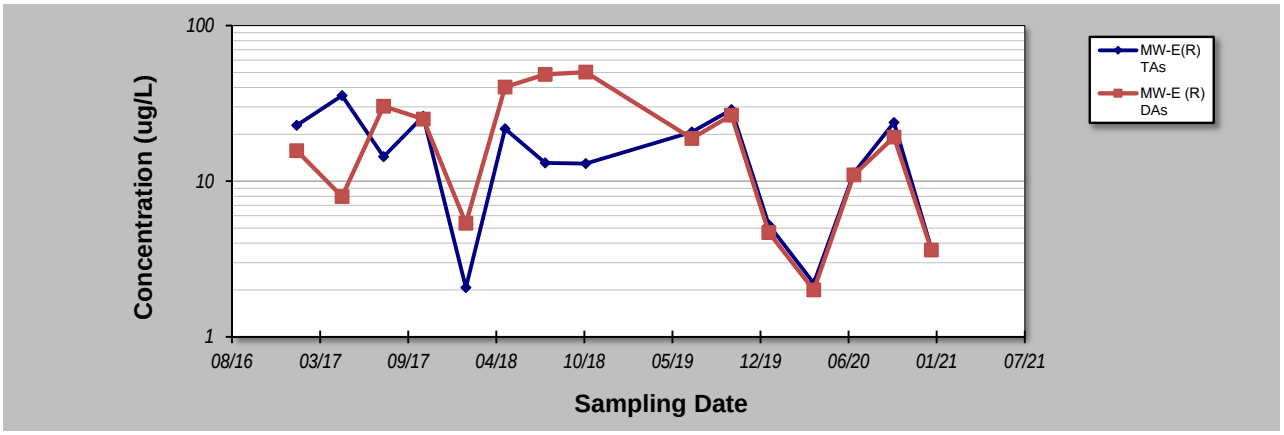
Attachment A – Trend Analysis

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 3-Mar-20
Facility Name: Former Dunlap Mound
Conducted By: Dave Cooper

Job ID: POT
Constituent: Arsenic
Concentration Units: ug/L

Sampling Point ID:	MW-E(R) TAs	MW-E (R) DAs					
Sampling Event	Sampling Date	ARSENIC CONCENTRATION (ug/L)						
1	12-Jan-17	22.9	15.7					
2	25-Apr-17	35.5	7.96					
3	28-Jul-17	14.4	30.3					
4	26-Oct-17	26.1	25.1					
5	31-Jan-18	2.07	5.36					
6	30-Apr-18	21.7	40.2					
7	30-Jul-18	13.1	48.6					
8	30-Oct-18	13.0	50.2					
9	28-Jun-19	20.7	18.8					
10	26-Sep-19	28.8	26.6					
11	20-Dec-19	5.24	4.69					
12	31-Mar-20	2.21	2					
13	30-Jun-20	11.3	11					
14	29-Sep-20	23.8	19.2					
15	23-Dec-20	3.67	3.61					
16								
17								
18								
19								
20								
Coefficient of Variation:		0.64	0.78					
Mann-Kendall Statistic (S):		-33	-21					
Confidence Factor:		94.3%	83.6%					
Concentration Trend:		Prob. Decreasing	Stable					



Notes:

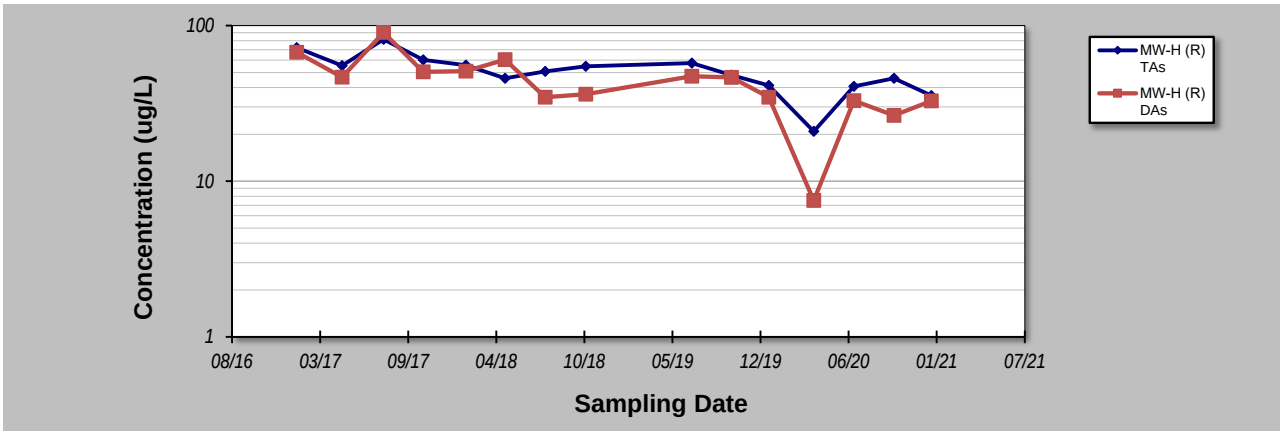
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 3/3/121
Facility Name: Former Dunlap Mound
Conducted By: Dave Cooper

Job ID: POT
Constituent: Arsenic
Concentration Units: ug/L

Sampling Point ID:	MW-H (R) TAs	MW-H (R) DAs					
Sampling Event	Sampling Date	ARSENIC CONCENTRATION (ug/L)						
1	12-Jan-17	72.2	67.5					
2	25-Apr-17	55.3	46.7					
3	28-Jul-17	81.6	90.2					
4	26-Oct-17	60.3	50.5					
5	31-Jan-18	55.7	50.9					
6	30-Apr-18	45.8	60.5					
7	30-Jul-18	50.7	34.7					
8	30-Oct-18	54.7	36.2					
9	28-Jun-19	57.5	47.2					
10	26-Sep-19	48.1	46.4					
11	20-Dec-19	41.3	34.7					
12	31-Mar-20	20.9	7.51					
13	30-Jun-20	40.7	32.9					
14	29-Sep-20	45.9	26.5					
15	23-Dec-20	35.5	32.8					
16								
17								
18								
19								
20								
Coefficient of Variation:		0.29	0.43					
Mann-Kendall Statistic (S):		-67	-68					
Confidence Factor:		>99.9%	>99.9%					
Concentration Trend:		Decreasing	Decreasing					



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

Attachment B – Laboratory Data Sheets

Analytical Resources, Incorporated
Analytical Chemists and Consultants

15 July 2019

Dave Cooper
Dalton, Olmsted & Fuglevand, Inc
1420 - 156th Ave., NE STE C1
Bellevue, WA 98007

RE: POT-Former Dunlap Mound

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)
19F0429	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 its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 19F0429	Turn-around Requested: NORMAL	Page: 1 of 1	
ARI Client Company: DOF	Phone: 206-660-3466	Date: 6/28/19	Ice Present?
Client Contact: DAVE COOPER		No. of Coolers: 1	Cooler Temps: 0, 4
Client Project Name: FORMER DUNLAP MOUND			
Client Project #: PST-002	Samplers: D COOPER		

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: TOTAL METALS As	Analysis Requested: * DISSOLVED METALS As	Notes/Comments
MW-E (R)	6/28/19	1000	WATER	2	X	X	
MW-H (R)		0930			X	X	
DUPL-1		0935			X	X	

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
- ALL METALS BY ICP-QQQ-MS * DISSOLVED METALS FIELD FILTERED 0.45 µm	Printed Name: D Cooper	Printed Name: Eric Salo	Printed Name:	Printed Name:
	Company: DOF	Company: ARI	Company:	Company:
	Date & Time: 6/28/19 1455	Date & Time: 6/28/19 1455	Date & Time:	Date & Time:

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-E(R)	19F0429-01	Water	28-Jun-2019 10:00	28-Jun-2019 14:55
MW-E(R)	19F0429-02	Water	28-Jun-2019 10:00	28-Jun-2019 14:55
MW-H(R)	19F0429-03	Water	28-Jun-2019 09:30	28-Jun-2019 14:55
MW-H(R)	19F0429-04	Water	28-Jun-2019 09:30	28-Jun-2019 14:55
DUPL-1	19F0429-05	Water	28-Jun-2019 09:35	28-Jun-2019 14:55
DUPL-1	19F0429-06	Water	28-Jun-2019 09:35	28-Jun-2019 14:55

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

Work Order Case Narrative

Sample receipt

Samples as listed on the preceding page were received June 28, 2019 under ARI work order 19F0429. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Total and Dissolved Arsenic - EPA Method 200.8

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.

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

WORK ORDER

19F0429

Client: Dalton, Olmsted & Fuglevand, Inc **Project Manager:** Amanda Volgardsen

Project: POT-Former Dunlap Mound **Project Number:** POT-Former Dunlap Mound

Analysis	Due	TAT	Expires	Comments
19F0429-01 MW-E(R) [Water] Sampled 28-Jun-2019 10:00				
Met 200.8 - As UCT	07/15/2019	10	12/25/2019	
Met 200.8 - Cu UCT	07/15/2019	10	12/25/2019	
Met 200.8 - Zn UCT	07/15/2019	10	12/25/2019	
19F0429-02 MW-E(R) [Water] Sampled 28-Jun-2019 10:00				
Met Diss 200.8 - As UCT	07/15/2019	10	12/25/2019	Field Filtered
Met Diss 200.8 - Cu UCT	07/15/2019	10	12/25/2019	Field Filtered
Met Diss 200.8 - Zn UCT	07/15/2019	10	12/25/2019	Field Filtered
19F0429-03 MW-H(R) [Water] Sampled 28-Jun-2019 09:30				
Met 200.8 - As UCT	07/15/2019	10	12/25/2019	
Met 200.8 - Zn UCT	07/15/2019	10	12/25/2019	
Met 200.8 - Cu UCT	07/15/2019	10	12/25/2019	
19F0429-04 MW-H(R) [Water] Sampled 28-Jun-2019 09:30				
Met Diss 200.8 - Cu UCT	07/15/2019	10	12/25/2019	Field Filtered
Met Diss 200.8 - As UCT	07/15/2019	10	12/25/2019	Field Filtered
Met Diss 200.8 - Zn UCT	07/15/2019	10	12/25/2019	Field Filtered
19F0429-05 DUPL-1 [Water] Sampled 28-Jun-2019 09:35				
Met 200.8 - As UCT	07/15/2019	10	12/25/2019	
Met 200.8 - Cu UCT	07/15/2019	10	12/25/2019	
Met 200.8 - Zn UCT	07/15/2019	10	12/25/2019	
19F0429-06 DUPL-1 [Water] Sampled 28-Jun-2019 09:35				
Met Diss 200.8 - As UCT	07/15/2019	10	12/25/2019	Field Filtered
Met Diss 200.8 - Cu UCT	07/15/2019	10	12/25/2019	Field Filtered
Met Diss 200.8 - Zn UCT	07/15/2019	10	12/25/2019	Field Filtered

Preservation Confirmation

Container ID	Container Type	pH	
19F0429-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0429-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19F0429-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0429-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19F0429-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19F0429-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass

JJM
Preservation Confirmed By

06/28/19
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: OOF

Project Name: Former Dunlap Mound

COC No(s): NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 19F0429

Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the 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)

Time 1455 0.4

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: D00256S

Cooler Accepted by: _____ Date: 6/28/19 Time: 1455

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
How were bottles sealed in plastic bags?	Individually	Grouped	Not
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		

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: _____ Date: 06/28/19 Time: 1620 Labels checked by: _____

*** 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:

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

MW-E(R)

19F0429-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 06/28/2019 10:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/09/2019 04:51

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19F0429-01 A 01

Preparation Batch: BHG0082 — Sample Size: 25 mL

Prepared: 03-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.200	**20.7**	ug/L	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

MW-E(R)

19F0429-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 06/28/2019 10:00
Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/11/2019 00:39

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19F0429-02 A 01
Preparation Batch: BHG0193 — Sample Size: 25 mL
Prepared: 09-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	**18.8**	ug/L	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

MW-H(R)

19F0429-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 06/28/2019 09:30
Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/09/2019 20:36

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19F0429-03 A 01
Preparation Batch: BHG0082 — Sample Size: 25 mL
Prepared: 03-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	1.00	**57.5**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

MW-H(R)

19F0429-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 06/28/2019 09:30
Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/12/2019 01:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19F0429-04 A 01
Preparation Batch: BHG0193 — Sample Size: 25 mL
Prepared: 09-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	1.00	**47.2**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

DUPL-1

19F0429-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 06/28/2019 09:35
Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/09/2019 20:41

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19F0429-05 A 01
Preparation Batch: BHG0082 — Sample Size: 25 mL
Prepared: 03-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	1.00	**58.7**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

DUPL-1

19F0429-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 06/28/2019 09:35
Instrument: ICPMS2 Analyst: MCB — Analyzed: 07/12/2019 01:17

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19F0429-06 A 01
Preparation Batch: BHG0193 — Sample Size: 25 mL
Prepared: 09-Jul-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	1.00	**45.8**	ug/L	D

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

Metals and Metallic Compounds - Quality Control

Batch BHG0082 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHG0082-BLK1)				Prepared: 03-Jul-2019 Analyzed: 03-Jul-2019 14:25							
Arsenic	75a	ND	0.200	ug/L							U
LCS (BHG0082-BS1)				Prepared: 03-Jul-2019 Analyzed: 03-Jul-2019 14:30							
Arsenic	75a	24.5	0.200	ug/L	25.0		97.9	80-120			

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BHG0193 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHG0193-BLK1)				Prepared: 09-Jul-2019 Analyzed: 10-Jul-2019 17:50							
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BHG0193-BS1)				Prepared: 09-Jul-2019 Analyzed: 10-Jul-2019 17:54							
Arsenic, Dissolved	75a	26.0	0.200	ug/L	25.0		104	80-120			

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
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	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	15-Jul-2019 16:40

Notes and Definitions

D	The reported value is from a dilution
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.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

10 October 2019

Dave Cooper
Dalton, Olmsted & Fuglevand, Inc
1420 - 156th Ave., NE STE C1
Bellevue, WA 98007

RE: POT-Former Dunlap Mound

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)
19I0460	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.

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 19I0460	Turn-around Requested: NORMAL	Page: 1 of 1	
ARI Client Company: DOF	Phone: 206-660-3466	Date: 9/27/19	Ice Present? Yes
Client Contact: DAVE COOPER		No. of Coolers: 1	Cooler Temps: 0.5°C
Client Project Name: FORMER DUNLAP MOUND			
Client Project #: POT-002	Samplers: D Cooper		

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: TOTAL METALS As	Analysis Requested: DISSOLVED METALS As	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Analysis Requested	Notes/Comments
MW-E(R)	9/26/19	1045	WATER	2	X	X							
MW-14(R)	"	0945	"	"	X	X							
DUPL-1	"	0950	"	"	X	X							

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
*FIELD FILTERED 0.45 µm - ALL METALS BY ICP-QQQ-MS	Printed Name: D Cooper	Printed Name: Jacob Haltc	Printed Name:	Printed Name:
	Company: DOF	Company: ARI	Company:	Company:
	Date & Time: 9/27/19 1205	Date & Time: 09/27/19 1205	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.

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-E(R)	19I0460-01	Water	26-Sep-2019 10:45	27-Sep-2019 12:05
MW-E(R)	19I0460-02	Water	26-Sep-2019 10:45	27-Sep-2019 12:05
MW-H(R)	19I0460-03	Water	26-Sep-2019 09:45	27-Sep-2019 12:05
MW-H(R)	19I0460-04	Water	26-Sep-2019 09:45	27-Sep-2019 12:05
DUPL-1	19I0460-05	Water	26-Sep-2019 09:50	27-Sep-2019 12:05
DUPL-1	19I0460-06	Water	26-Sep-2019 09:50	27-Sep-2019 12:05

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

Work Order Case Narrative

Sample receipt

Samples as listed on the preceding page were received September 27, 2019 under ARI work order 19I0460. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Total and Dissolved Arsenic - EPA Method 200.8

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.

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

WORK ORDER

19I0460

Client: Dalton, Olmsted & Fuglevand, Inc **Project Manager:** Amanda Volgardsen

Project: POT-Former Dunlap Mound **Project Number:** POT-Former Dunlap Mound

Analysis	Due	TAT	Expires	Comments
19I0460-01 MW-E(R) [Water] Sampled 26-Sep-2019 10:45				
Met 200.8 - As UCT	10/11/2019	10	3/24/2020	
Met 200.8 - Cu UCT	10/11/2019	10	3/24/2020	
Met 200.8 - Zn UCT	10/11/2019	10	3/24/2020	
19I0460-02 MW-E(R) [Water] Sampled 26-Sep-2019 10:45				
Met Diss 200.8 - As UCT	10/11/2019	10	3/24/2020	Field Filtered
Met Diss 200.8 - Cu UCT	10/11/2019	10	3/24/2020	Field Filtered
Met Diss 200.8 - Zn UCT	10/11/2019	10	3/24/2020	Field Filtered
19I0460-03 MW-H(R) [Water] Sampled 26-Sep-2019 09:45				
Met 200.8 - As UCT	10/11/2019	10	3/24/2020	
Met 200.8 - Zn UCT	10/11/2019	10	3/24/2020	
Met 200.8 - Cu UCT	10/11/2019	10	3/24/2020	
19I0460-04 MW-H(R) [Water] Sampled 26-Sep-2019 09:45				
Met Diss 200.8 - Cu UCT	10/11/2019	10	3/24/2020	Field Filtered
Met Diss 200.8 - As UCT	10/11/2019	10	3/24/2020	Field Filtered
Met Diss 200.8 - Zn UCT	10/11/2019	10	3/24/2020	Field Filtered
19I0460-05 DUPL-1 [Water] Sampled 26-Sep-2019 09:50				
Met 200.8 - As UCT	10/11/2019	10	3/24/2020	
Met 200.8 - Cu UCT	10/11/2019	10	3/24/2020	
Met 200.8 - Zn UCT	10/11/2019	10	3/24/2020	
19I0460-06 DUPL-1 [Water] Sampled 26-Sep-2019 09:50				
Met Diss 200.8 - As UCT	10/11/2019	10	3/24/2020	Field Filtered
Met Diss 200.8 - Cu UCT	10/11/2019	10	3/24/2020	Field Filtered
Met Diss 200.8 - Zn UCT	10/11/2019	10	3/24/2020	Field Filtered

Preservation Confirmation

Container ID	Container Type	pH	
19I0460-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19I0460-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19I0460-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19I0460-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
19I0460-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
19I0460-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass

JSW
Preservation Confirmed By

9/27/19
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOF Project Name: Former Dunlap Mound

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

Assigned ARI Job No: 19I0460 Tracking No: NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the 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)

Time 1205 0.5°C

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DOO8206

Cooler Accepted by: JS Date: 09/27/19 Time: 1205

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
How were bottles sealed in plastic bags?	Individually	Grouped	Not
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		

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JS Date: 09/27/19 Time: 1640 Labels checked by: JS

*** 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:

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

MW-E(R)

19I0460-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/26/2019 10:45

Instrument: ICPMS2 Analyst: MCB — Analyzed: 10/04/2019 23:29

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19I0460-01 A 01

Preparation Batch: BHJ0131 — Sample Size: 25 mL

Prepared: 04-Oct-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	4.00	**28.8**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

MW-E(R)

19I0460-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/26/2019 10:45

Instrument: ICPMS2 Analyst: MCB — Analyzed: 10/03/2019 04:10

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19I0460-02 A 01

Preparation Batch: BHJ0046 — Sample Size: 25 mL

Prepared: 02-Oct-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.400	**26.6**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

MW-H(R)

19I0460-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/26/2019 09:45
Instrument: ICPMS2 Analyst: MCB — Analyzed: 10/04/2019 23:35

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19I0460-03 A 01
Preparation Batch: BHJ0131 — Sample Size: 25 mL
Prepared: 04-Oct-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	4.00	**48.1**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

MW-H(R)

19I0460-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/26/2019 09:45

Instrument: ICPMS2 Analyst: MCB — Analyzed: 10/04/2019 02:35

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19I0460-04 A 01

Preparation Batch: BHJ0046 — Sample Size: 25 mL

Prepared: 02-Oct-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	10	2.00	**46.4**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

DUPL-1

19I0460-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/26/2019 09:50

Instrument: ICPMS2 Analyst: MCB — Analyzed: 10/07/2019 21:37

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19I0460-05 A 01

Preparation Batch: BHJ0131 — Sample Size: 25 mL

Prepared: 04-Oct-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	20	4.00	**49.8**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

DUPL-1

19I0460-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/26/2019 09:50
Instrument: ICPMS2 Analyst: MCB — Analyzed: 10/04/2019 02:54

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 19I0460-06 A 01
Preparation Batch: BHJ0046 — Sample Size: 25 mL
Prepared: 02-Oct-2019 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	10	2.00	**46.5**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

Metals and Metallic Compounds - Quality Control

Batch BHJ0131 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHJ0131-BLK1)				Prepared: 04-Oct-2019 Analyzed: 04-Oct-2019 15:09							
Arsenic	75a	ND	0.200	ug/L							U
LCS (BHJ0131-BS1)				Prepared: 04-Oct-2019 Analyzed: 04-Oct-2019 15:13							
Arsenic	75a	24.4	0.200	ug/L	25.0		97.6	80-120			

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BHJ0046 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BHJ0046-BLK1)				Prepared: 02-Oct-2019 Analyzed: 02-Oct-2019 16:30							
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BHJ0046-BS1)				Prepared: 02-Oct-2019 Analyzed: 02-Oct-2019 16:36							
Arsenic, Dissolved	75a	24.2	0.200	ug/L	25.0		97.0	80-120			

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
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	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	10-Oct-2019 16:49

Notes and Definitions

D	The reported value is from a dilution
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.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

11 January 2021

Dave Cooper
Dalton, Olmsted & Fuglevand, Inc
1420 - 156th Ave., NE STE C1
Bellevue, WA 98007

RE: POT-Former Dunlap Mound

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)
20L0408	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 its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 20L0408	Turn-around Requested: NORMAL	Page: 1 of 1	
ARI Client Company: DOF	Phone: 206-660-3466	Date: 12/23/20	Ice Present? Yes
Client Contact: DAVE COOPER		No. of Coolers: 1	Cooler Temps: 1, 9
Client Project Name: FORMER DUNLAP MOUND			
Client Project #: ADT-002	Samplers: D COOPER		

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: TOTAL METALS As	Analysis Requested: * DISSOLVED METALS As	Notes/Comments
MW-E(R)	12/23/20	1515	WATER	2	X	X	
MW-H(R)	"	1530	"	"	X	X	
DUPL-1	"	1535	"	"	X	X	

Comments/Special Instructions
* FIELD FILTERED 0.45µm
- ALL METALS BY ICP-QQQ-MS

	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Printed Name:	D. COOPER	Jacob Walter		
Company:	DOF	ARI		
Date & Time:	12/23/20 1550	12/23/2020 1550		

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.

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-E(R)	20L0408-01	Water	23-Dec-2020 15:15	23-Dec-2020 15:50
MW-E(R)	20L0408-02	Water	23-Dec-2020 15:15	23-Dec-2020 15:50
MW-H(R)	20L0408-03	Water	23-Dec-2020 15:30	23-Dec-2020 15:50
MW-H(R)	20L0408-04	Water	23-Dec-2020 15:30	23-Dec-2020 15:50
DUPL-1	20L0408-05	Water	23-Dec-2020 15:35	23-Dec-2020 15:50
DUPL-1	20L0408-06	Water	23-Dec-2020 15:35	23-Dec-2020 15:50

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

Work Order Case Narrative

Sample receipt

Samples as listed on the preceding page were received 23-Dec-2020 15:50 under ARI work order 20L0408. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Total and Dissolved Arsenic - EPA Method 200.8

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 blank spike (BS/LCS) percent recoveries were within control limits.

WORK ORDER

20L0408

Client: Dalton, Olmsted & Fuglevand, Inc **Project Manager:** Amanda Volgardsen Johnson

Project: POT-Former Dunlap Mound **Project Number:** POT-002

Preservation Confirmation

Container ID	Container Type	pH	
20L0408-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20L0408-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
20L0408-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20L0408-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
20L0408-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20L0408-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass

SC
Preservation Confirmed By

12/24/2020
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOF Project Name: Former Dunlap Mound

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

Assigned ARI Job No: 20L0408 Tracking No: ~~NA~~

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the 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)

Time 1550 1.9

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DOO ~~5206~~

Cooler Accepted by: JS Date: 12/23/2020 Time: 1550

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
How were bottles sealed in plastic bags?	Individually	Grouped	~~Not~~
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~~		

Were the sample(s) split by ARI? ~~NA~~ YES Date/Time: Equipment: Split by:

Samples Logged by: SC Date: 12/24/2020 Time: 0818 Labels checked by: SC

***** 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:

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

MW-E(R)

20L0408-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 01/06/2021 18:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-01 A 01

Preparation Batch: BJA0077 — Sample Size: 25 mL

Prepared: 01/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.400	3.67	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

MW-E(R)

20L0408-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:15

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/28/2020 21:19

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-02 A 01

Preparation Batch: BIL0679 — Sample Size: 25 mL

Prepared: 12/28/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.400	3.61	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

MW-H(R)

20L0408-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:30

Instrument: ICPMS1 Analyst: MCB — Analyzed: 01/06/2021 18:18

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-03 A 01

Preparation Batch: BJA0077 — Sample Size: 25 mL

Prepared: 01/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.400	35.5	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

MW-H(R)

20L0408-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:30
Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/31/2020 08:32

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-04 A 01
Preparation Batch: BIL0679 — Sample Size: 25 mL
Prepared: 12/28/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	1.00	32.8	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

DUPL-1

20L0408-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:35
Instrument: ICPMS1 Analyst: MCB — Analyzed: 01/06/2021 18:23

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-05 A 01
Preparation Batch: BJA0077 — Sample Size: 25 mL
Prepared: 01/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.400	34.8	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

DUPL-1

20L0408-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:35
Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/31/2020 08:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-06 A 01
Preparation Batch: BIL0679 — Sample Size: 25 mL
Prepared: 12/28/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	1.00	31.7	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

Metals and Metallic Compounds - Quality Control

Batch BJA0077 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJA0077-BLK1)				Prepared: 06-Jan-2021 Analyzed: 06-Jan-2021 13:29							
Arsenic	75a	ND	0.200	ug/L							U
LCS (BJA0077-BS1)				Prepared: 06-Jan-2021 Analyzed: 06-Jan-2021 13:24							
Arsenic	75a	25.1	0.200	ug/L	25.0		101	80-120			

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BIL0679 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: TCH

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BIL0679-BLK1)				Prepared: 28-Dec-2020 Analyzed: 28-Dec-2020 13:24							
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BIL0679-BS1)				Prepared: 28-Dec-2020 Analyzed: 28-Dec-2020 13:28							
Arsenic, Dissolved	75a	23.8	0.200	ug/L	25.0		95.1	80-120			

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP
Arsenic-75a	NELAP,WA-DW,DoD-ELAP
Arsenic-75a	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,DoD-ELAP
Arsenic-75a	NELAP,WA-DW,DoD-ELAP
Arsenic-75a	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

Notes and Definitions

B	This analyte was detected in the method blank.
D	The reported value is from a dilution
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.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

09 April 2020

Dave Cooper
Dalton, Olmsted & Fuglevand, Inc
1420 - 156th Ave., NE STE C1
Bellevue, WA 98007

RE: POT-Former Dunlap Mound

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)
20D0011	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 its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006

PJLA Testing
Accreditation # 66169

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 20D0011	Turn-around Requested: NORMAL	Page: 1 of 1	
ARI Client Company: DOF	Phone: 206-660-3466	Date: 4/1/20	Ice Present? Yes
Client Contact: DAVE COOPER		No. of Coolers: 1	Cooler Temps: 0.4°C
Client Project Name: FORMER DUNLAP MOUND			
Client Project #: POT-002	Samplers: D Cooper		

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: Total Metals As	Analysis Requested: * Dissolved Metals As	Notes/Comments
MW-E(R)	3/31/20	1500	WATER	2	X	X	
MW-H(R)		1600			X	X	
DUPL-1		1605			X	X	

Comments/Special Instructions
* FIELD FILTERED 0.45µm
- ALL METALS BY ICP-QQQ-MS

	Relinquished by:	Received by:	Relinquished by:	Received by:
(Signature)				
Printed Name:	N. COOPER	Jacobsen		
Company:	DOF	ARI		
Date & Time:	4/1/20 1240	04/01/2020 1240		

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.

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-E(R)	20D0011-01	Water	31-Mar-2020 15:00	01-Apr-2020 12:40
MW-E(R)	20D0011-02	Water	31-Mar-2020 15:00	01-Apr-2020 12:40
MW-H(R)	20D0011-03	Water	31-Mar-2020 16:00	01-Apr-2020 12:40
MW-H(R)	20D0011-04	Water	31-Mar-2020 16:00	01-Apr-2020 12:40
DUPL-1	20D0011-05	Water	31-Mar-2020 16:05	01-Apr-2020 12:40
DUPL-1	20D0011-06	Water	31-Mar-2020 16:05	01-Apr-2020 12:40

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

Work Order Case Narrative

Sample receipt

Samples as listed on the preceding page were received April 1, 2020 under ARI work order 20D0011. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Total and Dissolved Metals - EPA Method 200.8

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.

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

WORK ORDER

20D0011

Client: Dalton, Olmsted & Fuglevand, Inc | **Project Manager:** Amanda Volgardsen

Project: POT-Former Dunlap Mound | **Project Number:** POT-Former Dunlap Mound

Analysis	Due	TAT	Expires	Comments
20D0011-01 MW-E(R) [Water] Sampled 31-Mar-2020 15:00				
Met 200.8 - As UCT	04/15/2020	10	09/27/2020	
Met 200.8 - Cu UCT	04/15/2020	10	09/27/2020	
Met 200.8 - Zn UCT	04/15/2020	10	09/27/2020	
20D0011-02 MW-E(R) [Water] Sampled 31-Mar-2020 15:00				
Met Diss 200.8 - As UCT	04/15/2020	10	09/27/2020	Field Filtered
Met Diss 200.8 - Cu UCT	04/15/2020	10	09/27/2020	Field Filtered
Met Diss 200.8 - Zn UCT	04/15/2020	10	09/27/2020	Field Filtered
20D0011-03 MW-H(R) [Water] Sampled 31-Mar-2020 16:00				
Met 200.8 - Zn UCT	04/15/2020	10	09/27/2020	
Met 200.8 - Cu UCT	04/15/2020	10	09/27/2020	
Met 200.8 - As UCT	04/15/2020	10	09/27/2020	
20D0011-04 MW-H(R) [Water] Sampled 31-Mar-2020 16:00				
Met Diss 200.8 - Zn UCT	04/15/2020	10	09/27/2020	Field Filtered
Met Diss 200.8 - As UCT	04/15/2020	10	09/27/2020	Field Filtered
Met Diss 200.8 - Cu UCT	04/15/2020	10	09/27/2020	Field Filtered
20D0011-05 DUPL-1 [Water] Sampled 31-Mar-2020 16:05				
Met 200.8 - As UCT	04/15/2020	10	09/27/2020	
Met 200.8 - Cu UCT	04/15/2020	10	09/27/2020	
Met 200.8 - Zn UCT	04/15/2020	10	09/27/2020	
20D0011-06 DUPL-1 [Water] Sampled 31-Mar-2020 16:05				
Met Diss 200.8 - As UCT	04/15/2020	10	09/27/2020	Field Filtered
Met Diss 200.8 - Cu UCT	04/15/2020	10	09/27/2020	Field Filtered
Met Diss 200.8 - Zn UCT	04/15/2020	10	09/27/2020	Field Filtered

Preservation Confirmation

Container ID	Container Type	pH	
20D0011-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20D0011-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
20D0011-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20D0011-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
20D0011-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20D0011-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass

IAS
Preservation Confirmed By

04/01/2020
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOE

Project Name: Former Dunlap Mound

COC No(s): (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other:

Assigned ARI Job No: 20D0011

Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the 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)

Time 1240 0.4°C

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: D00,5006

Cooler Accepted by: JB Date: 04/01/2020 Time: 1240

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
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
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)		

Were the sample(s) split by ARI? (NA) YES Date/Time: Equipment: Split by:

Samples Logged by: JB Date: 04/01/2020 Time: 1343 Labels checked by: JB

*** 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:

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

MW-E(R)

20D0011-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 03/31/2020 15:00

Instrument: ICPMS2 Analyst: TCH — Analyzed: 04/02/2020 16:03

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20D0011-01 A 01

Preparation Batch: BID0030 — Sample Size: 25 mL

Prepared: 04/02/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.200	**2.21**	ug/L	

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

MW-E(R)

20D0011-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 03/31/2020 15:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 04/03/2020 20:08

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20D0011-02 A 01

Preparation Batch: BID0051 — Sample Size: 25 mL

Prepared: 04/03/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	1.00	**2.00**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

MW-H(R)

20D0011-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 03/31/2020 16:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 04/03/2020 19:57

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20D0011-03 A 01

Preparation Batch: BID0030 — Sample Size: 25 mL

Prepared: 04/02/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	1.00	**20.9**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

MW-H(R)

20D0011-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 03/31/2020 16:00

Instrument: ICPMS2 Analyst: MCB — Analyzed: 04/03/2020 20:13

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20D0011-04 A 01

Preparation Batch: BID0051 — Sample Size: 25 mL

Prepared: 04/03/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	1.00	**7.51**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

DUPL-1

20D0011-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 03/31/2020 16:05

Instrument: ICPMS2 Analyst: MCB — Analyzed: 04/03/2020 20:03

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20D0011-05 A 01

Preparation Batch: BID0030 — Sample Size: 25 mL

Prepared: 04/02/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	5	1.00	**20.4**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

DUPL-1

20D0011-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 03/31/2020 16:05
Instrument: ICPMS2 Analyst: MCB — Analyzed: 04/03/2020 20:18

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20D0011-06 A 01
Preparation Batch: BID0051 — Sample Size: 25 mL
Prepared: 04/03/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	1.00	**8.58**	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

Metals and Metallic Compounds - Quality Control

Batch BID0030 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: TCH

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BID0030-BLK1)				Prepared: 02-Apr-2020 Analyzed: 02-Apr-2020 14:35							
Arsenic	75a	ND	0.200	ug/L							U
LCS (BID0030-BS1)				Prepared: 02-Apr-2020 Analyzed: 02-Apr-2020 15:15							
Arsenic	75a	24.9	0.200	ug/L	25.0		99.5	80-120			

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BID0051 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BID0051-BLK1)				Prepared: 03-Apr-2020 Analyzed: 03-Apr-2020 15:20							
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BID0051-BS1)				Prepared: 03-Apr-2020 Analyzed: 03-Apr-2020 15:25							
Arsenic, Dissolved	75a	24.0	0.200	ug/L	25.0		96.1	80-120			

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
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	WA100006-012	05/12/2020
WADOE	WA Dept of Ecology	C558	06/30/2019
WA-DW	Ecology - Drinking Water	C558	06/30/2019

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-Former Dunlap Mound	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	09-Apr-2020 11:13

Notes and Definitions

D	The reported value is from a dilution
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.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

17 July 2020

Dave Cooper
Dalton, Olmsted & Fuglevand, Inc
1420 - 156th Ave., NE STE C1
Bellevue, WA 98007

RE: POT-Former Dunlap Mound

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)
20G0011	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.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

16 October 2020

Dave Cooper
Dalton, Olmsted & Fuglevand, Inc
1420 - 156th Ave., NE STE C1
Bellevue, WA 98007

RE: POT-Former Dunlap Mound

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)
20I0498	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.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 20I0498	Turn-around Requested: NORMAL	Page: 1 of 1	
ARI Client Company: DOE	Phone:	Date: 9/30/20	Ice Present? Yes
Client Contact: DAVE COOPER		No. of Coolers: 1	Cooler Temps: 3.9
Client Project Name: FORMER DUNLAP MOUND			
Client Project #: DOE-002	Samplers: D COOPER		

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: Total Metals As	Analysis Requested: Dissolved Metals As	Notes/Comments
MW-E(R)	9/29/20	1145	WATER	2	X	X	
MW-H(R)	"	1115	"	"	X	X	
DUP	"	1120	"	"	X	X	

Comments/Special Instructions	Relinquished by:	Received by:	Relinquished by:	Received by:
* FIELD FILTERED 0.45µm - ALL METALS BY ICP-QQQ-MS	(Signature)	(Signature)	(Signature)	(Signature)
	Printed Name: N. COOPER	Printed Name: Kenny Dang	Printed Name:	Printed Name:
	Company: DOE	Company: ARI	Company:	Company:
	Date & Time: 9/30/20 1340	Date & Time: 9/30/20 1340	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.

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-E(R)	20I0498-01	Water	29-Sep-2020 11:45	30-Sep-2020 13:40
MW-E(R)	20I0498-02	Water	29-Sep-2020 11:45	30-Sep-2020 13:40
MW-H(R)	20I0498-03	Water	29-Sep-2020 11:15	30-Sep-2020 13:40
MW-H(R)	20I0498-04	Water	29-Sep-2020 11:15	30-Sep-2020 13:40
DUP	20I0498-05	Water	29-Sep-2020 11:20	30-Sep-2020 13:40
DUP	20I0498-06	Water	29-Sep-2020 11:20	30-Sep-2020 13:40

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

Work Order Case Narrative

Sample receipt

Samples as listed on the preceding page were received 30-Sep-2020 13:40 under ARI work order 20I0498. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Total and Dissolved Arsenic - EPA Method 200.8

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 blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

WORK ORDER

20I0498

Client: Dalton, Olmsted & Fuglevand, Inc
Project Manager: Amanda Volgardsen Johnson
Project: POT-Former Dunlap Mound
Project Number: POT-Former Dunlap Mound

Preservation Confirmation

Container ID	Container Type	pH	
20I0498-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20I0498-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
20I0498-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20I0498-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
20I0498-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20I0498-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass

SC
Preservation Confirmed By

09/30/2020
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOF

Project Name: Former Dunlap Mound

COC No(s): (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: (3)

Assigned ARI Job No: 20I0498

Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the 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)

Time 1340 — 3.9

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOO S206

Cooler Accepted by: KO Date: 9/30/20 Time: 1340

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 KO	(YES)	NO
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
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)		

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: SC Date: 09/30/2020 Time: 1353 Labels checked by: SC

*** 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:

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

MW-E(R)

20I0498-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/29/2020 11:45

Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/14/2020 01:50

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20I0498-01 A 01

Preparation Batch: BIJ0387 — Sample Size: 25 mL

Prepared: 10/13/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.400	23.8	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

MW-E(R)

20I0498-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/29/2020 11:45

Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/14/2020 22:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20I0498-02 A 01

Preparation Batch: BIJ0430 — Sample Size: 25 mL

Prepared: 10/14/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.400	19.2	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

MW-H(R)

20I0498-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/29/2020 11:15
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/14/2020 21:52

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20I0498-03 A 01
Preparation Batch: BIJ0387 — Sample Size: 25 mL
Prepared: 10/13/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	2.00	45.9	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

MW-H(R)

20I0498-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/29/2020 11:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/14/2020 22:02

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20I0498-04 A 01

Preparation Batch: BIJ0430 — Sample Size: 25 mL

Prepared: 10/14/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	10	2.00	26.5	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

DUP

20I0498-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 09/29/2020 11:20
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/14/2020 21:57

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20I0498-05 A 01
Preparation Batch: BIJ0387 — Sample Size: 25 mL
Prepared: 10/13/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	2.00	42.0	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

DUP

20I0498-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 09/29/2020 11:20
Instrument: ICPMS1 Analyst: MCB — Analyzed: 10/14/2020 22:07

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20I0498-06 A 01
Preparation Batch: BIJ0430 — Sample Size: 25 mL
Prepared: 10/14/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	10	2.00	29.8	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

Metals and Metallic Compounds - Quality Control

Batch BIJ0387 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BIJ0387-BLK2)				Prepared: 13-Oct-2020 Analyzed: 13-Oct-2020 15:24							
Arsenic	75a	ND	0.200	ug/L							U
LCS (BIJ0387-BS2)				Prepared: 13-Oct-2020 Analyzed: 13-Oct-2020 15:28							
Arsenic	75a	24.6	0.200	ug/L	25.0		98.5	80-120			

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BIJ0430 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BIJ0430-BLK1)				Prepared: 14-Oct-2020 Analyzed: 14-Oct-2020 21:43							
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BIJ0430-BS1)				Prepared: 14-Oct-2020 Analyzed: 14-Oct-2020 21:48							
Arsenic, Dissolved	75a	24.8	0.200	ug/L	25.0		99.1	80-120			
Duplicate (BIJ0430-DUP1)		**Source: 20I0498-02**		Prepared: 14-Oct-2020 Analyzed: 14-Oct-2020 22:17							
Arsenic, Dissolved	75a	19.2	0.400	ug/L		19.2			0.49	20	D
Matrix Spike (BIJ0430-MS1)		**Source: 20I0498-02**		Prepared: 14-Oct-2020 Analyzed: 14-Oct-2020 22:23							
Arsenic, Dissolved	75a	45.3	0.400	ug/L	25.0	19.2	104	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP
Arsenic-75a	NELAP,WA-DW,DoD-ELAP
Arsenic-75a	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,DoD-ELAP
Arsenic-75a	NELAP,WA-DW,DoD-ELAP
Arsenic-75a	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	16-Oct-2020 17:32

Notes and Definitions

D	The reported value is from a dilution
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.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 20G0011	Turn-around Requested: NORMAL	Page: 1 of 1	
ARI Client Company: DOF	Phone:	Date: 7/1/20	Ice Present? Yes
Client Contact: DAVE COOPER		No. of Coolers: 1	Cooler Temps: 1.4°C
Client Project Name: FORMER DUNLAP MOUND			
Client Project #: POT-002	Samplers: D COOPER		

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: TOTAL METALS As	Analysis Requested: DISSOLVED METALS As *	Notes/Comments
MW-E(R)	6/30/20	1100	WATER	2	X	X	
MW-H(R)		1000			X	X	
DUP-1		1005			X	X	

Comments/Special Instructions
* FIELD FILTERED 0.45µm
- ALL METALS BY ICP-QQQ-MS

	Relinquished by:	Received by:	Relinquished by:	Received by:
(Signature)				
Printed Name:	D.G. COOPER	Jacob Salter		
Company:	DOF	ARI		
Date & Time:	7/1/20 1505	07/01/2020 1505		

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.

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-E(R)	20G0011-01	Water	30-Jun-2020 11:00	01-Jul-2020 15:05
MW-E(R)	20G0011-02	Water	30-Jun-2020 11:00	01-Jul-2020 15:05
MW-H(R)	20G0011-03	Water	30-Jun-2020 10:00	01-Jul-2020 15:05
MW-H(R)	20G0011-04	Water	30-Jun-2020 10:00	01-Jul-2020 15:05
DUPL-1	20G0011-05	Water	30-Jun-2020 10:05	01-Jul-2020 15:05
DUPL-1	20G0011-06	Water	30-Jun-2020 10:05	01-Jul-2020 15:05

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

Work Order Case Narrative

Sample receipt

Samples as listed on the preceding page were received 01-Jul-2020 15:05 under ARI work order 20G0011. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Total and Dissolved Arsenic - EPA Method 200.8

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.

The matrix spike percent recovery and duplicate RPD were within QC limits.

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

WORK ORDER

20G0011

Client: Dalton, Olmsted & Fuglevand, Inc
Project Manager: Amanda Volgardsen Johnson

Project: POT-Former Dunlap Mound
Project Number: POT-Former Dunlap Mound

Preservation Confirmation

Container ID	Container Type	pH
20G0011-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
20G0011-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
20G0011-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
20G0011-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass
20G0011-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2 pass
20G0011-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 pass

Preservation Confirmed By

7/1/2020
Date

Reviewed By

Date

WORK ORDER

20G0011

Client: Dalton, Olmsted & Fuglevand, Inc | **Project Manager: Amanda Volgardsen Johnson**

Project: POT-Former Dunlap Mound | **Project Number: POT-Former Dunlap Mound**

Report To:
Dalton, Olmsted & Fuglevand, Inc
Dave Cooper
1420 - 156th Ave., NE STE C1
Bellevue, WA 98007
Phone: (206) 660-3466
Fax: -

Invoice To:
Dalton, Olmsted & Fuglevand, Inc
Dave Cooper
1420 - 156th Ave., NE STE C1
Bellevue, WA 98007
Phone :(206) 660-3466
Fax: -

Date Due: 17-Jul-2020 18:00 (10 day TAT)

Received By: Jacob Walter
Date Received: 01-Jul-2020 15:05

Logged In By: Shelly Fishel
Date Logged In: 01-Jul-2020 15:36

Samples Received at: **1.4°C**

Intact, properly signed and dated custody seals attached to outside of cooler(s)	No	Custody papers included with the cooler	Yes
Custody papers properly filled out (in, signed, analyses requested, etc)	Yes	Was a temperature blank included in the cooler	No
Was sufficient ice used (if appropriate)	Yes	All bottles sealed in individual plastic bags	No
All bottles arrived in good condition (unbroken)	Yes	All bottle labels complete and legible	Yes
Number of containers listed on COC match number received	Yes	Bottle labels and tags agree with COC	Yes
Correct bottles used for the requested analyses	Yes	All VOC vials free of air bubbles	No
Analyses/bottles require preservation (attach preservation sheet excluding VOC)	Yes	Sufficient amount of sample sent in each bottle	Yes
Sample split at ARI	No		

20G0011-01 MW-E(R) [Water] Sampled 30-Jun-2020 11:00

Met 200.8 - As UCT	07/17/2020	10	12/27/2020

20G0011-02 MW-E(R) [Water] Sampled 30-Jun-2020 11:00

Met Diss 200.8 - As UCT	07/17/2020	10	12/27/2020

20G0011-03 MW-H(R) [Water] Sampled 30-Jun-2020 10:00

Met 200.8 - As UCT	07/17/2020	10	12/27/2020

20G0011-04 MW-H(R) [Water] Sampled 30-Jun-2020 10:00

Met Diss 200.8 - As UCT	07/17/2020	10	12/27/2020

20G0011-05 DUPL-1 [Water] Sampled 30-Jun-2020 10:05

Met 200.8 - As UCT	07/17/2020	10	12/27/2020

20G0011-06 DUPL-1 [Water] Sampled 30-Jun-2020 10:05

Met Diss 200.8 - As UCT	07/17/2020	10	12/27/2020

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOF

Project Name: Farmer Dunlap Mound

COC No(s): (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 20G0011

Tracking No: (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the 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)

Time 1505 1.4°C

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: DOO 5006

Cooler Accepted by: JM Date: 07/01/2020 Time: 1505

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
How were bottles sealed in plastic bags?	Individually	Grouped	(Not)
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)		

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: [signature] Date: 07/01/2020 Time: 1534 Labels checked by: SLF

*** 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:

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

MW-E(R)

20G0011-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 06/30/2020 11:00

Instrument: ICPMS1 Analyst: MCB — Analyzed: 07/15/2020 21:51

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20G0011-01 A 01

Preparation Batch: BIG0311 — Sample Size: 25 mL

Prepared: 07/14/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.400	11.3	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

MW-E(R)

20G0011-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 06/30/2020 11:00

Instrument: ICPMS1 Analyst: MCB — Analyzed: 07/16/2020 15:56

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20G0011-02 A 01

Preparation Batch: BIG0380 — Sample Size: 25 mL

Prepared: 07/16/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.400	11.0	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

MW-H(R)

20G0011-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 06/30/2020 10:00

Instrument: ICPMS1 Analyst: MCB — Analyzed: 07/16/2020 15:30

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20G0011-03 A 01

Preparation Batch: BIG0311 — Sample Size: 25 mL

Prepared: 07/14/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	2.00	40.7	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

MW-H(R)

20G0011-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 06/30/2020 10:00

Instrument: ICPMS1 Analyst: MCB — Analyzed: 07/16/2020 15:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20G0011-04 A 01

Preparation Batch: BIG0380 — Sample Size: 25 mL

Prepared: 07/16/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	10	2.00	32.9	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

DUPL-1

20G0011-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 06/30/2020 10:05
Instrument: ICPMS1 Analyst: MCB — Analyzed: 07/16/2020 15:44

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20G0011-05 A 01
Preparation Batch: BIG0311 — Sample Size: 25 mL
Prepared: 07/14/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	10	2.00	42.2	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

DUPL-1

20G0011-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 06/30/2020 10:05
Instrument: ICPMS1 Analyst: MCB — Analyzed: 07/16/2020 15:50

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20G0011-06 A 01
Preparation Batch: BIG0380 — Sample Size: 25 mL
Prepared: 07/16/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	10	2.00	34.4	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

Metals and Metallic Compounds - Quality Control

Batch BIG0311 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BIG0311-BLK1)				Prepared: 14-Jul-2020 Analyzed: 15-Jul-2020 12:16							
Arsenic	75a	ND	0.200	ug/L							U
LCS (BIG0311-BS1)				Prepared: 14-Jul-2020 Analyzed: 15-Jul-2020 12:20							
Arsenic	75a	24.7	0.200	ug/L	25.0		98.7	80-120			

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BIG0380 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BIG0380-BLK1)				Prepared: 16-Jul-2020 Analyzed: 16-Jul-2020 14:25							
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BIG0380-BS1)				Prepared: 16-Jul-2020 Analyzed: 16-Jul-2020 14:30							
Arsenic, Dissolved	75a	25.6	0.200	ug/L	25.0		103	80-120			
Duplicate (BIG0380-DUP1)		**Source: 20G0011-02**		Prepared: 16-Jul-2020 Analyzed: 16-Jul-2020 16:04							
Arsenic, Dissolved	75a	11.1	0.400	ug/L		11.0			1.23	20	D
Matrix Spike (BIG0380-MS1)		**Source: 20G0011-02**		Prepared: 16-Jul-2020 Analyzed: 16-Jul-2020 16:11							
Arsenic, Dissolved	75a	34.3	0.400	ug/L	25.0	11.0	93.3	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP
Arsenic-75a	NELAP,WA-DW,DoD-ELAP
Arsenic-75a	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,DoD-ELAP
Arsenic-75a	NELAP,WA-DW,DoD-ELAP
Arsenic-75a	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	17-Jul-2020 14:50

Notes and Definitions

D	The reported value is from a dilution
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.

Analytical Resources, Incorporated
Analytical Chemists and Consultants

11 January 2021

Dave Cooper
Dalton, Olmsted & Fuglevand, Inc
1420 - 156th Ave., NE STE C1
Bellevue, WA 98007

RE: POT-Former Dunlap Mound

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)
20L0408	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 its entirety.

ACCREDITED IN ACCORDANCE WITH nelac
Cert# 100006-012

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 20L0408	Turn-around Requested: NORMAL	Page: 1 of 1	
ARI Client Company: DOF	Phone: 206-660-3466	Date: 12/23/20	Ice Present? Yes
Client Contact: DAVE COOPER		No. of Coolers: 1	Cooler Temps: 1, 9
Client Project Name: FORMER DUNLAP MOUND			
Client Project #: ADT-002	Samplers: D COOPER		

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: TOTAL METALS As	Analysis Requested: * DISSOLVED METALS As	Notes/Comments
MW-E(R)	12/23/20	1515	WATER	2	X	X	
MW-H(R)	"	1530	"	"	X	X	
DUPL-1	"	1535	"	"	X	X	

Comments/Special Instructions
* FIELD FILTERED 0.45µm
- ALL METALS BY ICP-QQQ-MS

	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
Printed Name:	D. COOPER	Jacob Walter		
Company:	DOF	ARI		
Date & Time:	12/23/20 1550	12/23/2020 1550		

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.

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-E(R)	20L0408-01	Water	23-Dec-2020 15:15	23-Dec-2020 15:50
MW-E(R)	20L0408-02	Water	23-Dec-2020 15:15	23-Dec-2020 15:50
MW-H(R)	20L0408-03	Water	23-Dec-2020 15:30	23-Dec-2020 15:50
MW-H(R)	20L0408-04	Water	23-Dec-2020 15:30	23-Dec-2020 15:50
DUPL-1	20L0408-05	Water	23-Dec-2020 15:35	23-Dec-2020 15:50
DUPL-1	20L0408-06	Water	23-Dec-2020 15:35	23-Dec-2020 15:50

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

Work Order Case Narrative

Sample receipt

Samples as listed on the preceding page were received 23-Dec-2020 15:50 under ARI work order 20L0408. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Total and Dissolved Arsenic - EPA Method 200.8

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 blank spike (BS/LCS) percent recoveries were within control limits.

WORK ORDER

20L0408

Client: Dalton, Olmsted & Fuglevand, Inc **Project Manager:** Amanda Volgardsen Johnson

Project: POT-Former Dunlap Mound **Project Number:** POT-002

Preservation Confirmation

Container ID	Container Type	pH	
20L0408-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20L0408-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
20L0408-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20L0408-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass
20L0408-05 A	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass
20L0408-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	Pass

SC
Preservation Confirmed By

12/24/2020
Date

Reviewed By

Date

Analytical Resources, Incorporated
Analytical Chemists and Consultants

Cooler Receipt Form

ARI Client: DOF Project Name: Former Dunlap Mound

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

Assigned ARI Job No: 20L0408 Tracking No: ~~NA~~

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the 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)

Time 1550 1.9

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: DOO ~~5206~~

Cooler Accepted by: JS Date: 12/23/2020 Time: 1550

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
How were bottles sealed in plastic bags?	Individually	Grouped	~~Not~~
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~~		

Were the sample(s) split by ARI? ~~NA~~ YES Date/Time: Equipment: Split by:

Samples Logged by: SC Date: 12/24/2020 Time: 0818 Labels checked by: SC

***** 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:

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

MW-E(R)

20L0408-01 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:15

Instrument: ICPMS1 Analyst: MCB — Analyzed: 01/06/2021 18:12

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-01 A 01

Preparation Batch: BJA0077 — Sample Size: 25 mL

Prepared: 01/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.400	3.67	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

MW-E(R)

20L0408-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:15

Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/28/2020 21:19

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-02 A 01

Preparation Batch: BIL0679 — Sample Size: 25 mL

Prepared: 12/28/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	2	0.400	3.61	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

MW-H(R)

20L0408-03 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:30

Instrument: ICPMS1 Analyst: MCB — Analyzed: 01/06/2021 18:18

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-03 A 01

Preparation Batch: BJA0077 — Sample Size: 25 mL

Prepared: 01/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.400	35.5	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

MW-H(R)

20L0408-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:30
Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/31/2020 08:32

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-04 A 01
Preparation Batch: BIL0679 — Sample Size: 25 mL
Prepared: 12/28/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	1.00	32.8	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

DUPL-1

20L0408-05 (Water)

Metals and Metallic Compounds

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:35
Instrument: ICPMS1 Analyst: MCB — Analyzed: 01/06/2021 18:23

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-05 A 01
Preparation Batch: BJA0077 — Sample Size: 25 mL
Prepared: 01/06/2021 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	2	0.400	34.8	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

DUPL-1

20L0408-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 200.8 UCT-KED — Sampled: 12/23/2020 15:35
Instrument: ICPMS2 Analyst: MCB — Analyzed: 12/31/2020 08:38

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix — Extract ID: 20L0408-06 A 01
Preparation Batch: BIL0679 — Sample Size: 25 mL
Prepared: 12/28/2020 — Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	5	1.00	31.7	ug/L	D

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

Metals and Metallic Compounds - Quality Control

Batch BJA0077 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BJA0077-BLK1)				Prepared: 06-Jan-2021 Analyzed: 06-Jan-2021 13:29							
Arsenic	75a	ND	0.200	ug/L							U
LCS (BJA0077-BS1)				Prepared: 06-Jan-2021 Analyzed: 06-Jan-2021 13:24							
Arsenic	75a	25.1	0.200	ug/L	25.0		101	80-120			

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BIL0679 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: TCH

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BIL0679-BLK1)				Prepared: 28-Dec-2020 Analyzed: 28-Dec-2020 13:24							
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BIL0679-BS1)				Prepared: 28-Dec-2020 Analyzed: 28-Dec-2020 13:28							
Arsenic, Dissolved	75a	23.8	0.200	ug/L	25.0		95.1	80-120			

4611 S. 134th Place, Suite 100 • Tukwila, WA 98168 • Ph: (206) 695-6200 • Fax: (206) 695-6202

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

Certified Analyses included in this Report

Analyte	Certifications
EPA 200.8 UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP
Arsenic-75a	NELAP,WA-DW,DoD-ELAP
Arsenic-75a	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,DoD-ELAP
Arsenic-75a	NELAP,WA-DW,DoD-ELAP
Arsenic-75a	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,WA-DW,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	01/31/2021
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	01/01/2021

Dalton, Olmsted & Fuglevand, Inc	Project: POT-Former Dunlap Mound	
1420 - 156th Ave., NE STE C1	Project Number: POT-002	**Reported:**
Bellevue WA, 98007	Project Manager: Dave Cooper	11-Jan-2021 11:24

Notes and Definitions

B	This analyte was detected in the method blank.
D	The reported value is from a dilution
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.

Attachment C
2019 – 2020 Sample Collection Forms

Dalton, Olmsted Fuglevand, Inc.

Water Sampling Record

Former Arkema Mound
Tacoma, WA

Sampled by: D COOPER
Date: 28 JUNE 2019

Well No.	MW-H(R)	MW-E(R)	MW-I(R)	DUPL-1		
well depth (top PVC)	13.0	10.0	10.2	DUPLICATE OF MW-H(R)		
water level(top PVC)	8.09	7.74	4.47			
water height	4.9	2.2				
time	0910	0912	0914			
Casing/Volume						
type:2" PVC	2"	→	→			
type: other	SCH 40 PVC	→	→			
vol/ft						
tot. vol						
3 x vol	2.4	1.1				
Purge Volume						
gallons purged	1.5					
purge/bail/type	PERISTALTIC					
Water Sample						
Sample No.	MW-H(R)	MW-E(R)	X	DUPL-1		
Sample Method	PERISTALTIC	PERISTALTIC		PERISTALTIC		
Time	0930	1000		0935		
No. Cont.	2	2		2		
Initials	NAC	NAC		NAC		
pH						
value	6.29	6.68				
time						
Conductivity (uS/cm)						
value	1361B	2837				
time						
Temp. (Celsius)						
value	14.9	14.3				
time						
DO (mg/l)						
value	2.7	0.71				
time						
ORP (mV)						
value	-51.2	-116.5				
time						
Ferrous Iron (mg/l)						
value	6.0	4.5				
time						
Turbidity (ntu)	25.4					
value	~~56.0~~	5.88				
time						

COMMENTS: ORANGE FLOC

LOW TIDE 0.40 AM @ +1.1'

ALL WATER LEVELS RECORDED FOLLOWING 15 MIN EQUILIBRATION

DISSOLVED METALS FIELD FILTERED 0.45 µm,

SAMPLES COLLECTED IN 1L AMBER GLASS, THEN DECANTED/PUMPED/FILTERED TO PRESERVED 500ml/POLY CONTAINERS RESPECTIVELY

Well Volumes:
2" = 0.163 gal/ft x 3 = 0.5
4" = 0.653 gal/ft x 3 = 2.0

Dalton, Olmsted Fuglevand, Inc.

Water Sampling Record

Former Arkema Mound
Tacoma, WA

Sampled by: D COOPER
Date: 26 SEP 2019

Well No. MW-E(R)

well depth (top PVC)	10.0					
water level(top PVC)	7.70					
water height	2.3					
time	0935					
Casing/Volume						
type:	2" Ø					
type: other	PVC					
vol/ft						
tot. vol						
3 x vol						
Purge Volume						
gallons purged	1					
purge/bail/type	PERISTALTIC	PURGED DRY -				
Water Sample						
Sample No.	MW-E(R)					
Sample Method	PERISTALTIC					
Time	1045					
No. Cont.	2					
Initials	AEC					
pH						
value	6.23					
time						
Conductivity (S/cm)						
value	2226					
time						
Temp. (Celsius)						
value	10.3					
time						
DO (mg/l)						
value	10.37					
time						
ORP (mV)						
value	-92.9					
time						
Ferrous Iron (mg/l)						
value	3.2					
time						
Turbidity (ntu)						
value	18.3					
time						

COMMENTS:
FIELD FILTERED 0.45 µm
FILTER IN LINE DURING PURGE
PULLED BOTH SAMPLES FROM SAME VESSEL
MW-1 3.89' @ 0932

Well Volumes:
2" = 0.163 gal/ft x 3 = 0.5
4" = 0.653 gal/ft x 3 = 2.0

Dalton, Olmsted Fuglevand, Inc.

Water Sampling Record

Former Arkema Mound
Tacoma, WA

Sampled by: D Workman
Date: 26 SEPT 2014

Well No. MW-H(R)

well depth (top PVC)	13.1					
water level(top PVC)	7.90					
water height	5.2					
time	0920					
Casing/Volume						
type:	2"D					
type: other	SCH 40 PVC					
vol/ft						
tot. vol						
3 x vol	2.6					
Purge Volume						
gallons purged	0.5	1	1.5			
purge/bail/type	PERISTALTIC					
Water Sample						
Sample No.	MW-H(R)					
Sample Method	PERISTALTIC					
Time	0944					
No. Cont.	2					
Initials	NKE					
pH						
value	6.05	6.01	6.01			
time						
Conductivity (S/cm)						
value	24448	24394	24364			
time						
Temp. (Celsius)						
value	16.9	17.3	17.4			
time						
DO (mg/l)						
value	0.89	0.57	0.53			
time						
ORP (mV)						
value	+7.2	+3.0	+2.2			
time						
Ferrous Iron (mg/l)						
value			5.6			
time						
Turbidity (ntu)						
value			24.3			
time						

COMMENTS:

LOW FLOW -0.5' @ 0928 AM
DUPLICATE DUP-1 @ 0950
FIELD FILTERED 0.45µm

ORANGE FLOC AFFECTING TURBIDITY

Well Volumes:
2" = 0.163 gal/ft x 3 = 0.5
4" = 0.653 gal/ft x 3 = 2.0

Dalton, Olmsted Fuglevand, Inc.

Water Sampling Record

Project: [illegible] RUNLAP MOUND
Sampled by: D [illegible]
Date: 12/30/19

Well No.	MW-H(R)	MW-E(R)	MW-1	DUPL-1		
well depth (top PVC)						
water level(top PVC)	7.21	5.28	3.01	DUPLICATE OF		
water height						
time	1345	1349	1347	MW-H(R)		
Casing/Volume						
type:	2"	→	→			
type: other	SCH 40 PVC	→	→			
vol/ft						
tot. vol						
3 x vol						
Purge Volume						
gallons purged						
purge/bail/type	PERISTALTIC					
Water Sample						
Sample No.	MW-H(R)	MW-E(R)				
Sample Method	PERISTALTIC	→				
Time	~~1400~~ 1430	1400		1425		
No. Cont.	2	2		2		
Initials	DGL	DGL		DGL		
pH						
value	5.93	~~6.00~~				
time		6.08				
Conductivity (uS/cm)						
value	13905	~~A0~~				
time		59.5				
Temp. (Celsius)						
value	12.63	~~13.7~~				
time		11.95				
DO (mg/l)						
value	0.33	1.34				
time						
ORP (mV)						
value	-22.1	~~+167.5~~				
time		-54.6				
Ferrous Iron (mg/l)						
value	6.0	2.0				
time						
Turbidity (ntu)						
value	32.1	12.4				
time						

COMMENTS:
ALL DISSOLVED METALS FIELD FILTERED 0.45µm
SAMPLE COLLECTED FROM SINGLE 1L ALIQUOT THEN SPLIT INTO DISS/TOT
ORANGE FLOC IN MW-H(R)

Well Volumes:
2" = 0.163 gal/ft x 3 = 0.5
4" = 0.653 gal/ft x 3 = 2.0

Dalton, Olmsted Fuglevand, Inc.

Water Sampling Record

Former Arkema Mound
Tacoma, WA

Sampled by: DCOOPER
Date: 3/31/20

Well No. MW-E(R)

well depth (top PVC)	10.0					
water level(top PVC)	6.18					
water height						
time	1435					
Casing/Volume						
type:	2" Ø					
type: other	SCH 40 PVC					
vol/ft						
tot. vol						
3 x vol						
Purge Volume						
gallons purged	0.5	1	1.5			
purge/bail/type	PERISTALTIC					
Water Sample						
Sample No.	MW-E(R)					
Sample Method	PERISTALTIC					
Time	1500					
No. Cont.	2					
Initials	AGC					
pH						
value	6.3	6.2	6.2			
time						
Conductivity (uS/cm)						
value	2036	1870	1865			
time						
Temp. (Celsius)						
value	10.2	10.3	10.4			
time						
DO (mg/l)						
value	3.3	3.0	3.0			
time						
ORP (mV)						
value	-87.1	-86.2	-88.5			
time						
Ferrous Iron (mg/l)						
value			3.6			
time						
Turbidity (ntu)						
value			3.8			
time						

COMMENTS: DISSOLVED METALS FIELD FILTERED 0.45 µm

Well Volumes:
2" = 0.163 gal/ft x 3 = 0.5
4" = 0.653 gal/ft x 3 = 2.0

Dalton, Olmsted Fuglevand, Inc.

Water Sampling Record

Former Arkema Mound
Tacoma, WA

Sampled by: D COOPER
Date: 3/31/20

Well No. MW-H(R)

well depth (top PVC)	13.1					
water level(top PVC)	7.22					
water height						
time	1425					
Casing/Volume						
type:						
type: other						
vol/ft						
tot. vol						
3 x vol						
Purge Volume						
gallons purged	0.5	1.0	1.5			
purge/bail/type						
Water Sample						
Sample No.	MW-H(R)					
Sample Method	Peristaltic					
Time	1600					
No. Cont.	2					
Initials	AG					
pH						
value	6.1	6.1	6.1			
time						
Conductivity (uS/cm)						
value	17406	16721	16572			
time						
Temp. (Celsius)						
value	11.0	10.9	10.9			
time						
DO (mg/l)						
value	0.5	0.4	0.4			
time						
ORP (mV)						
value	-31.2	-31.5	-31.6			
time						
Ferrous Iron (mg/l)						
value			7.0			
time						
Turbidity (ntu)						
value			46.2			
time						

COMMENTS:

LOW TIDE 0.3' @ 1645

W.L. MW1(R) 1.18' @ 1430

DISSOLVED METALS FIELD FILTERED 0.45µm

ORANGE FLOC IN PURGE WATER

DUPLICATE DUP-1 OF MW-H(R) @ 1605

Well Volumes:
2" = 0.163 gal/ft x 3 = 0.5
4" = 0.653 gal/ft x 3 = 2.0

Dalton, Olmsted Fuglevand, Inc.

Water Sampling Record

Former Arkema Mound
Tacoma, WA

Sampled by: D Cooper
Date: 6/30/20

Well No. MW-E(D) MW-1

well depth (top PVC)	10.0					
water level(top PVC)						3.92
water height						
time						
Casing/Volume						
type:	2" ø					
type: other	Sch 40 PVC					
vol/ft						
tot. vol						
3 x vol						
Purge Volume						
gallons purged	1					
purge/bail/type	Peristaltic					
Water Sample						
Sample No.	MW-E(D)					
Sample Method	Peristaltic					
Time	1100					
No. Cont.	2 + DUP					
Initials						
pH						
value	6.52					
time						
Conductivity (uS/cm)						
value	2347					
time						
Temp. (Celsius)						
value	13.4					
time						
DO (mg/l)						
value	1.42					
time						
ORP (mV)						
value	-3.4					
time						
Ferrous Iron (mg/l)						
value	4.5					
time						
Turbidity (ntu)						
value	8.3					
time						

COMMENTS:
DUP METALS FIELD FILTERED 0.45 µm
SAMPLES FROM SINGLE ALIQUOT

Well Volumes:
2" = 0.163 gal/ft x 3 = 0.5
4" = 0.653 gal/ft x 3 = 2.0

Dalton, Olmsted Fuglevand, Inc.

Water Sampling Record

Former Arkema Mound
Tacoma, WA

Sampled by: D COOPER
Date: 6/30/20

Well No. MW-H (R) DUPL-1

well depth (top PVC)	13.1					
water level(top PVC)	7.48				DUPLICATE OF MW-H	
water height						
time						
Casing/Volume						
type:	2" Ø					
type: other	SCH 40 PVC					
vol/ft						
tot. vol						
3 x vol						
Purge Volume						
gallons purged	0.5	1	1.5			
purge/bail/type	PERISTALTIC					
Water Sample						
Sample No.	MW-H(R)				DUPL-1	
Sample Method	PERISTALTIC					
Time	1000				1005	
No. Cont.	2				2	
Initials	NGL				DG	
pH						
value	6.24	6.21	6.22			
time						
Conductivity (uS/cm)						
value	9776	9930	9933			
time						
Temp. (Celsius)						
value	13.7	13.8	13.6			
time						
DO (mg/l)						
value	1.69	1.52	1.53			
time						
ORP (mV)						
value	+140.2	+123.3	+115.7			
time						
Ferrous Iron (mg/l)						
value			3.8			
time						
Turbidity (ntu)						
value	31.7	22.1	12.3			
time						

COMMENTS: ORANGE FLOC
DISSOLVED METALS FIELD FILTERED 0.45µm
COLLECTED SINGLE ALIQUOT THEN SPLIT/FILTERED

Well Volumes:
2" = 0.163 gal/ft x 3 = 0.5
4" = 0.653 gal/ft x 3 = 2.0

Project: FORMER DUNLAP MOUNDS
Sampled by: A COOPER
Date: 9/29/20
Weather: CLEAR 70F

Water Sampling Record

DOF DALTON OLMSTED FUGLEVAND

Well No.	MW-E(R)	MW-H(R)	MW1	DUP		
well depth (top PVC)	10.00	18.1	10.2	DUPLICATE		
water level(top PVC)	7.60	7.81	4.32	OF		
water height	2.4			MW-H(R)		
time	1055	1051	1058			
Casing/Volume						
type:	2"ø	→	→			
type: other	SCH 40 PVC	→	→			
vol/ft						
tot. vol						
3 x vol	1.2					
Purge Volume						
gallons purged	1					
purge/bail/type	PERISTALTIC					
Water Sample						
Sample No.	1	MW-H(R)	X	DUP		
Sample Method	PERISTALTIC	→				
Time	1145	1115		1120		
No. Cont.	2	2		2		
Initials	DGC	DGC		DGC		
pH						
value	~~6.35~~	6.25				
time	6.52					
Conductivity (uS/cm)						
value	~~2061~~	2061				
time	2445					
Temp. (Celsius)						
value	~~17.0~~	17.0				
time	17.5					
DO (mg/l)						
value	~~1.11~~	1.11				
time	1.91					
ORP (mV)						
value	~~+85.2~~	+85.2				
time	+27.3					
Ferrous Iron (mg/l)						
value	6.8	7.0				
time						
Turbidity (ntu)						
value	~~42.9~~	44.4				
time	10.3					

COMMENTS:

LOW TIDE +0.9' @ 10:13 AM
DISSOLVED METALS FIELD FILTERED 0.45 µm
ORANGE FLOC IN MW-H
SAMPLES FROM SINGLE ALIQUOT

Well Volumes:
2" = 0.163 gal/ft x 3 = 0.5
4" = 0.653 gal/ft x 3 = 2.0

Dalton, Olmsted Fuglevand, Inc.

Water Sampling Record

Former Arkema Mound
Tacoma, WA

Sampled by: B COOPER
Date: 12/23/20

Well No.	MW-E(R)	MW-H(R)	MW-1	DUP-1		
well depth (top PVC)	10.00	13.10				
water level(top PVC)	4.90	7.21	1.70	DUPLICATE OF MW-H		
water height						
time	1500	1500	1501			
Casing/Volume						
type:	2" Ø →		→			
type: other	SCH 40 PVC →		→			
vol/ft						
tot. vol						
3 x vol						
Purge Volume						
gallons purged	1					
purge/bail/type	PERISTALTIC					
Water Sample						
Sample No.	MW-E(R)			DUP-1		
Sample Method	PERISTALTIC →					
Time	1515	1530		1535		
No. Cont.	2			2		
Initials	DLC					
pH						
value	6.94	5.89				
time						
Conductivity (uS/cm)						
value	94.5	~~106~~ 98.75				
time						
Temp. (Celsius)						
value	12.8	12.1				
time						
DO (mg/l)						
value	1.45	1.23				
time						
ORP (mV)						
value	+33.9	+18.4				
time						
Ferrous Iron (mg/l)						
value	3.5	6.5				
time						
Turbidity (ntu)						
value	11.2	24.7				
time						

COMMENTS:

LOW FLOW +2.6' @ 17:39
DISSOLVED METALS FIELD FILTERED 0.45
SAMPLES FROM SINGLE ALIQUOT

Well Volumes:
2" = 0.163 gal/ft x 3 = 0.5
4" = 0.653 gal/ft x 3 = 2.0