Dixon Environmental Services LLC
4010 N 7th Street, Tacoma, WA 98406
Tel 253.380.4303
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ARSENIC AND LEAD EVALUATION

Pierce County Parcel #s 0221263043 and 5945620280
5312 North 30th Street
Tacoma, WA 98407

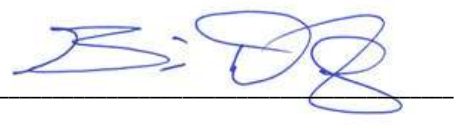
December 17, 2024

Prepared for:

Fulcrum Development Inc.
2100 N 30th Street
Tacoma, WA 98403

Prepared by:

Dixon Environmental Services LLC
4010 N 7th Street
Tacoma, WA 98406



Brian A. Dixon
President/Principal Environmental Scientist

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1.0 Introduction

On behalf of Fulcrum Development Inc., Dixon Environmental Services (Dixon ES) has prepared this Arsenic and Lead Evaluation for Pierce County Parcel #s 0221263043 and 5945620280, addressed at 5312 N 30th Street in Tacoma, Washington (the Property) (Figure 1). This assessment was conducted to evaluate surface and near surface soil conditions at the Property due to its location within an area suspected to have been impacted by the Tacoma Asarco Smelter Plume (TASP).

This report details site activities and observations, investigation methodology, sample analytical results, and provides recommendations based on the investigation findings.

2.0 Property Location, Description, and Background

2.1 Property Location and Description

The Property consists of two Pierce County Tax Parcels (#s 0221263043 and 5945620280), 2.19 acres in size, addressed at 5312 N 30th Street in Tacoma, Washington (Figure 1).

The Property is currently improved with a single-story, 2,086 square foot day care center, generally positioned on the south-east portion of Parcel #0221263043. The Property is also improved with a small playground and two inactive swimming pools.

At the time of this assessment, the on-Property structure was vacant.

2.2 Background and Environmental Setting

For almost 100 years, Asarco operated a copper smelter on the shores of Commencement Bay in Tacoma, Washington. Air pollution from the smelter, consisting of heavy metals such as arsenic and lead, settled on the surface soil of more than 1,000 square miles of the Puget Sound basin (Ecology 2021).

According to the Washington State Department of Ecology (Ecology) Tacoma Smelter Plume Map, the Property lies within an area where predicted arsenic concentrations exceed 100 milligrams per kilogram (mg/kg).

Based on these conditions, a surface and near surface soil assessment was requested by the City of Tacoma to evaluate the environmental quality of the Property prior to development.

3.0 Subsurface Investigation Tasks and Methodology

3.1 Approved Scope of Work

The approved scope of work for this assessment included:

- Development of a project work plan;
- Collection and laboratory analysis of soil samples; and,
- Preparation of this report.

3.2 Contaminants of Concern

According to Ecology's *Tacoma Smelter Plume Model Remedies Guidance, Publication #19-09-101,* dated July 2019 (TASP Guidance Document) (Ecology 2019), the primary contaminants of concern (COCs) associated with fallout from the smelter are arsenic and lead.

The concentrations of these contaminants in the samples collected during this investigation will be compared to the Model Toxics Control Act (MTCA) Method A Cleanup Levels and Ecology's definition of "elevated" levels as it relates to the TASP.

The TASP Guidance Document defines elevated levels as:

- Average arsenic and/or lead concentrations greater than their respective MTCA Method A Cleanup Levels (20mg/kg and 250mg/kg, respectively); or,
- Any one discrete sample containing arsenic and/or lead concentrations greater than double their respective MTCA Method A Cleanup Levels (40mg/kg and 500mg/kg, respectively).

3.3 Scope of Work Development

According to Ecology's TASP Guidance Document, characterization sampling requirements are based on decision units. These units are determined by both historical use and future use. Our review of information provided has identified one decision unit given the proposed relatively uniform development of the Property with residential townhomes. The following table details the required number of sampling locations per decision unit:

Sampling area (X)	Residential	Parks, Commercial	Forest and	Open Land
	Samples needed (Y)	Samples needed (Y)	Samples needed (Y)	Samples needed (Y)
Acres	Arsenic >100 ppm	Arsenic 20-100 ppm	Arsenic >100 ppm	Arsenic 20-100 ppm
0.25	10*	8	8	8
1	20	16	16	12
5	40	32	30	24
10	60	48	40	32
20	80	64	50	40
100	120	90	70	60
>100	120 + 1 per 5 acres	90 + 1 per 5 acres	70 + 1 per 10 acres	60 + 1 per 10 acres

Based on the table above, Dixon ES proposed 26 sampling locations for a property that is approximately 2.19 acres in size in an area predicted to contain arsenic at concentrations in excess of 100ppm. Samples were to be collected from 0 to 6 inches below ground surface (bgs), and at every fourth sample location, an additional sample was proposed at 6 to 12 inches bgs.

Additionally, given that a large portion of the Property is currently forested, a 6-way composite sample would be required from the forest duff.

The total number of samples proposed for this subsurface investigation was 33.

3.4 Field Activities

On December 3, 2024, Dixon ES collected 33 soil samples at the approximate locations shown on Figure 2. Samples were collected from 0-6 inches bgs at each of the 26 locations (S1 through S26), and samples were collected from 6-12 inches bgs at locations S4, S8, S14, S17, S20, and S24.

A six-way composite duff sample was also collected from the forested areas on the Property.

Samples were collected using stainless steel sampling equipment (post-hole digger, shovel, and/or spade) properly decontaminated between uses.

Samples were transferred directly into clean laboratory provided 4oz jars, then placed in a cooler and kept on ice until delivered to an Ecology Accredited Laboratory, Friedman and Bruya, Inc. (F&BI) of Seattle, Washington under standard chain of custody protocols. Laboratory analytical methods for the site specific COCs are presented below:

- Arsenic – EPA Method 6020B
- Lead – EPA Method 6020B

4.0 Investigation Results

The soil samples collected from locations S12, S23, and S24, contained arsenic concentrations in excess of double above its MTCA Method A Cleanup Level.

Upon initial review of this data, it became apparent that these samples were all collected on the south western portion of the Property, in an area that was far less disturbed relative to the remaining portions of the Property.

As such, it appeared most appropriate to separate this area into a second decision unit for purposes of data evaluation and cleanup consideration.

Decision Unit 1 is comprised of approximately 1.99 acres and is characterized by the developed and historically trafficked areas on the Property. Decision Unit 2 is comprised of approximately 0.21 acres and is characterized by the vegetated undisturbed area on the southwest corner of the Property (Figure 2). Below is a summary of the data evaluation for each decision unit.

4.1 Decision Unit 1

- Eight soil samples, collected from the 0-6-inch depth interval, contained arsenic concentrations in excess, but less than double, the MTCA Method A Cleanup Level.
- One soil sample, collected from the 6-12-inch depth interval, contained an arsenic concentration in excess, but less than double, the MTCA Method A Cleanup Level.
- No other samples contained concentrations of arsenic or lead above their respective MTCA Method A Cleanup Levels.
- The average arsenic concentrations in both the 0-6 and 6-12-inch intervals were below the MTCA Method A Cleanup Level.
- The average lead concentrations in both the 0-6 and 6-12-inch intervals were below the MTCA Method A Cleanup Level.

4.2 Decision Unit 2

- Two soil samples, collected from the 0-6-inch depth interval, contained arsenic concentrations in excess, but less than double, the MTCA Method A Cleanup Level.
- Two soil samples, collected from the 0-6-inch depth interval, contained arsenic concentrations in excess of double the MTCA Method A Cleanup Level.
- Two soil samples, collected from the 6-12-inch depth interval, contained arsenic concentrations in excess, but less than double, the MTCA Method A Cleanup Level.
- One soil sample, collected from the 6-12-inch depth interval, contained an arsenic concentration in excess of double the MTCA Method A Cleanup Level.

- No other samples contained concentrations of arsenic or lead above their respective MTCA Method A Cleanup Levels.
- The average arsenic concentrations in both the 0-6 and 6-12-inch intervals were above the MTCA Method A Cleanup Level.
- The average lead concentrations in both the 0-6 and 6-12-inch intervals were below the MTCA Method A Cleanup Level.

Sample analytical results are summarized on Table 1. Laboratory analytical reports are included in Exhibit C.

5.0 Summary, Conclusions, and Recommendations

On December 3, 2024, Dixon ES collected soil and duff samples on the Property to evaluate the potential for environmental impacts associated with the TASP. The means and methods of the assessment were performed in general accordance with Ecology's TASP Guidance Document, dated July 2019.

The results of the investigation, detailed within this report, indicate that the majority of the Property does not require remediation due to fallout from the former smelter. The concentrations of arsenic and lead detected in DU1, which is comprised of 1.99 acres of the Property, do not meet Ecology's definition of elevated levels.

A relatively small areas on the southwestern portion of the Property (DU2) does appear to require remediation, as concentrations of arsenic in both the 0-6 and 6-12-inch intervals meet Ecology's definition of elevated levels.

In accordance with the TASP Guidance Document, and in consideration of the plans for Property redevelopment, Dixon ES recommends mixing as the appropriate remedial option. The top 12 inches of soil should be mixed with cleaner deeper soils to reduce the overall contaminant concentrations. Compliance samples should then be collected to verify the effectiveness of the remedial action.

6.0 Statement of Quality Assurance

Dixon ES has performed this Arsenic and Lead Evaluation in accordance with current generally accepted environmental practices and procedures. Dixon ES has employed the degree of care and skill ordinarily exercised under similar circumstances by reputable environmental professionals practicing in this area.

Conclusions presented within this report were based on the analytical results from a limited data set, as such, there remains a possibility that additional areas or sources of contamination exist on the

Property that were not identified during this assessment. No warranty, expressed or implied, is made as to the environmental quality of the Property or risk associated with potential contamination.

7.0 References

Washington State Department of Ecology (Ecology). 2019. *Tacoma Smelter Plume Model Remedies Guidance, Publication #19-09-101*. July.

Ecology. 2021. https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites/Tacoma-smelter. Viewed November 15.

Exhibit A: Figures

DIXON
ENVIRONMENTAL SERVICES

LEGEND

★ SUBJECT PROPERTY

TOPOGRAPHIC MAP

PROJECT ADDRESS:

5312 N 30TH STREET
TACOMA, WA 98407

PAGE:

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DIXON
Environmental Services

LEGEND

▲ Soil Sample

Site Plan

Project Address:

5312 N 30th Street
Tacoma, WA 98407

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Exhibit B: Tables

Table 1
Summary of Soil Analytical Results
Arsenic and Lead

DIXON
Environmental Services

Decision Unit	Soil Sample ID	Sample Depth (Inches)	Date Sampled	Priority Pollutant Metals (mg/kg)			
				Arsenic	Average Concentration	Lead	Average Concentration
DU1	S1-6	0-6	12/3/2024	**35**	17.04	38	24.05
	S2-6	0-6	12/3/2024	**23**		15	
	S3-6	0-6	12/3/2024	14		14	
	S4-6	0-6	12/3/2024	**32**		30	
	S5-6	0-6	12/3/2024	**35**		66	
	S6-6	0-6	12/3/2024	**24**		23	
	S7-6	0-6	12/3/2024	4.0		13	
	S8-6	0-6	12/3/2024	3.9		11	
	S9-6	0-6	12/3/2024	4.9		13	
	S10-6	0-6	12/3/2024	14		19	
	S11-6	0-6	12/3/2024	7.6		7.9	
	S13-6	0-6	12/3/2024	**30**		8.5	
	S14-6	0-6	12/3/2024	**27**		82	
	S15-6	0-6	12/3/2024	15		30	
	S16-6	0-6	12/3/2024	17		21	
	S18-6	0-6	12/3/2024	16		14	
	S19-6	0-6	12/3/2024	3.4		5.6	
	S20-6	0-6	12/3/2024	15		22	
	S21-6	0-6	12/3/2024	11		21	
	S22-6	0-6	12/3/2024	**23**		47	
	S25-6	0-6	12/3/2024	12		16	
	S26-6	0-6	12/3/2024	8.1		12	
	S4-12	6-12	12/3/2024	**25**	16.50	25	17.25
	S8-12	6-12	12/3/2024	11		14	
	S14-12	6-12	12/3/2024	17		16	
	S20-12	6-12	12/3/2024	13		14	
DU2	S12-6	0-6	12/3/2024	**51**	**33.60**	59	34.00
	S17-6	0-6	12/3/2024	**21**		25	
	S18-6	0-6	12/3/2024	16		14	
	S23-6	0-6	12/3/2024	**37**		24	
	S24-6	0-6	12/3/2024	**43**		48	
	S17-12	6-12	12/3/2024	**20**	**43.00**	24	46.67
	S23-12	6-12	12/3/2024	**39**		53	
	S24-12	6-12	12/3/2024	**70**		63	
Duff	Duff	Surface	12/3/2024	8.5	4.25	15	7.45
Reference Concentrations (mg/kg)				40[1]	20[2]	500[1]	250[2]

Notes:
mg/kg = Milligrams per kilogram
MTCA = Model Toxics Control Act
[1] Double the MTCA Method A Cleanup Level
[2] MTCA Method A Cleanup Level
Bold indicates a detected concentration that is above Ecology MTCA Method A Cleanup Level
Bold Red indicates the detected concentration is double Ecology MTCA Method A Cleanup Level

Exhibit C: Laboratory Analytical Reports

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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December 13, 2024

Brian Dixon, Project Manager
Dixon Environmental Services
4010 N 7th Street
Tacoma, WA 98406

Dear Mr Dixon:

Included are the results from the testing of material submitted on December 4, 2024 from the Arcadia 0009-10, F&BI 412051 project. There are 39 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures

CASE NARRATIVE

This case narrative encompasses samples received on December 4, 2024 by Friedman & Bruya, Inc. from the Dixon Environmental Services Arcadia 0009-10, F&BI 412051 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	Dixon Environmental Services
412051 -01	S1-6
412051 -02	S2-6
412051 -03	S3-6
412051 -04	S4-6
412051 -05	S4-12
412051 -06	S5-6
412051 -07	S6-6
412051 -08	S7-6
412051 -09	S8-6
412051 -10	S8-12
412051 -11	S9-6
412051 -12	S10-6
412051 -13	S11-6
412051 -14	S12-6
412051 -15	S13-6
412051 -16	S14-6
412051 -17	S14-12
412051 -18	S15-6
412051 -19	S16-6
412051 -20	S17-6
412051 -21	S17-12
412051 -22	S18-6
412051 -23	S19-6
412051 -24	S20-6
412051 -25	S20-12
412051 -26	S21-6
412051 -27	S22-6
412051 -28	S23-6
412051 -29	S24-6
412051 -30	S24-12
412051 -31	S25-6
412051 -32	S26-6
412051 -33	Duff

All quality control requirements were acceptable.

Analysis For Total Metals By EPA Method 6020B

Client ID:	S1-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-01 x5
Date Analyzed:	12/10/24	Data File:	412051-01 x5.048
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	35
Lead	38

Analysis For Total Metals By EPA Method 6020B

Client ID:	S2-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-02
Date Analyzed:	12/09/24	Data File:	412051-02.194
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	23
Lead	15

Analysis For Total Metals By EPA Method 6020B

Client ID:	S3-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-03
Date Analyzed:	12/09/24	Data File:	412051-03.195
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	14
Lead	14

Analysis For Total Metals By EPA Method 6020B

Client ID:	S4-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-04
Date Analyzed:	12/09/24	Data File:	412051-04.196
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	32
Lead	30

Analysis For Total Metals By EPA Method 6020B

Client ID:	S4-12	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-05
Date Analyzed:	12/09/24	Data File:	412051-05.206
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	25
Lead	25

Analysis For Total Metals By EPA Method 6020B

Client ID:	S5-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-06 x5
Date Analyzed:	12/10/24	Data File:	412051-06 x5.099
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	35
Lead	66

Analysis For Total Metals By EPA Method 6020B

Client ID:	S6-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-07
Date Analyzed:	12/09/24	Data File:	412051-07.208
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	24
Lead	23

Analysis For Total Metals By EPA Method 6020B

Client ID:	S7-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-08
Date Analyzed:	12/09/24	Data File:	412051-08.218
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.0
Lead	13

Analysis For Total Metals By EPA Method 6020B

Client ID:	S8-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-09
Date Analyzed:	12/09/24	Data File:	412051-09.219
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.9
Lead	11

Analysis For Total Metals By EPA Method 6020B

Client ID:	S8-12	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-10
Date Analyzed:	12/09/24	Data File:	412051-10.220
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	11
Lead	14

Analysis For Total Metals By EPA Method 6020B

Client ID:	S9-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-11
Date Analyzed:	12/09/24	Data File:	412051-11.230
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	4.9
Lead	13

Analysis For Total Metals By EPA Method 6020B

Client ID:	S10-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-12
Date Analyzed:	12/09/24	Data File:	412051-12.231
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	14
Lead	19

Analysis For Total Metals By EPA Method 6020B

Client ID:	S11-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-13
Date Analyzed:	12/09/24	Data File:	412051-13.232
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	7.6
Lead	7.9

Analysis For Total Metals By EPA Method 6020B

Client ID:	S12-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-14 x5
Date Analyzed:	12/10/24	Data File:	412051-14 x5.100
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	51
Lead	59

Analysis For Total Metals By EPA Method 6020B

Client ID:	S13-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-15
Date Analyzed:	12/09/24	Data File:	412051-15.242
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	30
Lead	8.5

Analysis For Total Metals By EPA Method 6020B

Client ID:	S14-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-16 x5
Date Analyzed:	12/10/24	Data File:	412051-16 x5.101
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	27
Lead	82

Analysis For Total Metals By EPA Method 6020B

Client ID:	S14-12	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-17
Date Analyzed:	12/09/24	Data File:	412051-17.244
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	17
Lead	16

Analysis For Total Metals By EPA Method 6020B

Client ID:	S15-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-18
Date Analyzed:	12/09/24	Data File:	412051-18.253
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	15
Lead	30

Analysis For Total Metals By EPA Method 6020B

Client ID:	S16-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-19
Date Analyzed:	12/09/24	Data File:	412051-19.254
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	17
Lead	21

Analysis For Total Metals By EPA Method 6020B

Client ID:	S17-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-20
Date Analyzed:	12/09/24	Data File:	412051-20.255
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	21
Lead	25

Analysis For Total Metals By EPA Method 6020B

Client ID:	S17-12	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-21
Date Analyzed:	12/09/24	Data File:	412051-21.256
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	20
Lead	24

Analysis For Total Metals By EPA Method 6020B

Client ID:	S18-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-22
Date Analyzed:	12/10/24	Data File:	412051-22.103
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	16
Lead	14

Analysis For Total Metals By EPA Method 6020B

Client ID:	S19-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-23
Date Analyzed:	12/11/24	Data File:	412051-23.246
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	3.4
Lead	5.6

Analysis For Total Metals By EPA Method 6020B

Client ID:	S20-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-24 x5
Date Analyzed:	12/11/24	Data File:	412051-24 x5.247
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	15
Lead	22

Analysis For Total Metals By EPA Method 6020B

Client ID:	S20-12	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-25 x5
Date Analyzed:	12/11/24	Data File:	412051-25 x5.248
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	13
Lead	14

Analysis For Total Metals By EPA Method 6020B

Client ID:	S21-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-26
Date Analyzed:	12/11/24	Data File:	412051-26.249
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	11
Lead	21

Analysis For Total Metals By EPA Method 6020B

Client ID:	S22-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-27 x5
Date Analyzed:	12/11/24	Data File:	412051-27 x5.250
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	23
Lead	47

Analysis For Total Metals By EPA Method 6020B

Client ID:	S23-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-28
Date Analyzed:	12/11/24	Data File:	412051-28.251
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	37
Lead	24

Analysis For Total Metals By EPA Method 6020B

Client ID:	S24-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-29 x5
Date Analyzed:	12/11/24	Data File:	412051-29 x5.252
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	43
Lead	48

Analysis For Total Metals By EPA Method 6020B

Client ID:	S24-12	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-30 x5
Date Analyzed:	12/11/24	Data File:	412051-30 x5.253
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	70
Lead	63

Analysis For Total Metals By EPA Method 6020B

Client ID:	S25-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-31
Date Analyzed:	12/11/24	Data File:	412051-31.254
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	12
Lead	16

Analysis For Total Metals By EPA Method 6020B

Client ID:	S26-6	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-32
Date Analyzed:	12/10/24	Data File:	412051-32.200
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	8.1
Lead	12

Analysis For Total Metals By EPA Method 6020B

Client ID:	Duff	Client:	Dixon Environmental Services
Date Received:	12/04/24	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	412051-33
Date Analyzed:	12/10/24	Data File:	412051-33.201
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	8.5
Lead	15

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Dixon Environmental Services
Date Received:	Not Applicable	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	I4-1060 mb
Date Analyzed:	12/11/24	Data File:	I4-1060 mb.126
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	<1

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	Dixon Environmental Services
Date Received:	Not Applicable	Project:	Arcadia 0009-10, F&BI 412051
Date Extracted:	12/09/24	Lab ID:	I4-1061 mb
Date Analyzed:	12/09/24	Data File:	I4-1061 mb.178
Matrix:	Soil	Instrument:	ICPMS3
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Arsenic	<1
Lead	<1

Date of Report: 12/13/24
Date Received: 12/04/24
Project: Arcadia 0009-10, F&BI 412051

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	92	91	80-120	1
Lead	mg/kg (ppm)	10	89	86	80-120	3

Date of Report: 12/13/24
Date Received: 12/04/24
Project: Arcadia 0009-10, F&BI 412051

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	mg/kg (ppm)	10	95	99	80-120	4
Lead	mg/kg (ppm)	10	94	101	80-120	7

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria, biased low; or, the calibration results for the analyte were outside of acceptance criteria, biased high, with a detection for the analyte in the sample. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported between the method detection limit and the lowest calibration point. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

k – The calibration results for the analyte were outside of acceptance criteria, biased high, and the analyte was not detected in the sample.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

412051

SAMPLE CHAIN OF CUSTODY

ME 12-04-24

Report To Brian Dixon

Company Dixon Environmental Services

Address 4010 N 7th Street

City, State, ZIP Tacoma, WA 98406

Phone 253-380-4303 Email Brian@DixonES.com

SAMPLERS (*signature*)

PROJECT NAME: Arcadia

PO #: 0009-10

REMARKS

Project Specific RLs - Yes / No

INVOICE TO: Dixon ES

TURNAROUND TIME
- ✓ Standard Turnaround
- RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- Dispose after 30 days
- Archive Samples
- Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	As & Pb					Notes
S1-6	01	12-3-24	900	S	1							X					
S2-6	02		910									X					
S3-6	03		920									X					
S4-6	04		930									X					
S4-12	05		940									X					
S5-6	06		950									X					
S6-6	07		1000									X					
S7-6	08		1010									X					
S8-6	09		1020									X					
S8-12	10	↓	1030	↓	↓							X					

ANALYSES REQUESTED

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Brian Dixon	Dixon ES	12/4/24	1131
Received by:	Anh Phan	FBI	12/04/24	11:31
Relinquished by:		Samples received at 0°		
Received by:				

Friedman & Bruya, Inc.
5500 4th Avenue S
Seattle, WA 98108
Ph. (206) 285-8282

412051

SAMPLE CHAIN OF CUSTODY

ME 12-04-24

M4

Page # 2 of 4

Report To Brian Dixon

Company Dixon Environmental Services

Address 4010 N 7th Street

City, State, ZIP Tacoma, WA 98406

Phone 253-380-4303 Email Brian@DixonES.com

SAMPLERS (signature)

PROJECT NAME: Arcadia

PO #: 0009-10

REMARKS: Project Specific RLs - Yes / No

INVOICE TO: Dixon ES

TURNAROUND TIME
~~Standard Turnaround~~
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Archive Samples
Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	As & Pb					Notes
S9-6	11	12-3-24	1040	S								X					
S10-6	12		1050									X					
S11-6	13		1100									X					
S12-6	14		1110									X					
S13-6	15		1120									X					
S14-6	16		1130									X					
S14-12	17		1140									X					
S15-6	18		1150									X					
S16-6	19		1200									X					
S17-6	20	"	1210	"								X					

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Brian Dixon	Dixon ES	12/4/24	1131
Received by:	Anh Phan	FBI	12/04/24	11:31
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
5500 4th Avenue S
Seattle, WA 98108
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412051

SAMPLE CHAIN OF CUSTODY

ME 12-04-24 3 4 MH

Report To Brian Dixon

Company Dixon Environmental Services

Address 4010 N 7th Street

City, State, ZIP Tacoma, WA 98406

Phone 253-380-4303 Email Brian@DixonES.com

SAMPLERS (*signature*)

PROJECT NAME: Arcadia

PO #: 0009-10

REMARKS: Project Specific RLs - Yes / No

INVOICE TO: Dixon ES

Page # ____ of ____

TURNAROUND TIME
- Standard Turnaround
- RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- Dispose after 30 days
- Archive Samples
- Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	As & Pb					Notes
S17-12	21	12-3-24	1220	S	1							X					
S18-6	22		1230									X					
S19-6	23		1240									X					
S20-6	24		1250									X					
S20-12	25		1300									X					
S21-6	26		1310									X					
S22-6	27		1320									X					
S23-6	28		1330									X					
S24-6	29		1340									X					
S24-12	30	↓	1350	↓	↓							X					

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Brian Dixon	Dixon ES	12/4/24	1131
Received by:	Anh Phan	FBI	12/04/24	11:31
Relinquished by:		Samples received at Ø oC		
Received by:				

Friedman & Bruya, Inc.
5500 4th Avenue S
Seattle, WA 98108
Ph. (206) 285-8282

412051

SAMPLE CHAIN OF CUSTODY

ME 12-04-24

Page # 4 of 4 MH

Report To Brian Dixon

Company Dixon Environmental Services

Address 4010 N 7th Street

City, State, ZIP Tacoma, WA 98406

Phone 253-380-4303 Email Brian@DixonES.com

SAMPLERS (*signature*)

PROJECT NAME: Arcadia

PO #: 0009-10

REMARKS: Project Specific RLs - Yes / No

INVOICE TO: Dixon ES

TURNAROUND TIME
Standard Turnaround
RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
Dispose after 30 days
Archive Samples
Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	ANALYSES REQUESTED: NWTPH-Dx	NWTPH-Gx	BTEX EPA 8021	VOCs EPA 8260	PAHs EPA 8270	PCBs EPA 8082	As & Pb					Notes
SS5-6	31	12-3-24	1400	S	1							X					
SS6-6	32	"	1410	"	"							X					
Dupe	33	"	1420	"	"							X					

Samples received at Ø °C

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:	Brian Dixon	Dixon ES	12/4/24	1130
Received by:	Anh Phan	FBI	12/04/24	11:31
Relinquished by:				
Received by:				

Friedman & Bruya, Inc.
5500 4th Avenue S
Seattle, WA 98108
Ph. (206) 285-8282

FORMS\COC\COC.DOC

SAMPLE CONDITION UPON RECEIPT CHECKLIST

PROJECT # 412051 CLIENT Dixon ES INITIALS/ DATE: AP 12/04/24

If custody seals are present on cooler, are they intact? ☑ NA ☐ YES ☐ NO

Cooler/Sample temperature Ø °C
Thermometer ID: Fluke 96312917

Were samples received on ice/cold packs? ☑ YES ☐ NO

How did samples arrive?
☑ Over the Counter ☐ Picked up by F&BI ☐ FedEx/UPS/GSO

Is there a Chain-of-Custody* (COC)? ☑ YES ☐ NO Initials/ Date: EWS 12/4
*or other representative documents, letters, and/or shipping memos

Number of days samples have been sitting prior to receipt at laboratory 1 days

Are the samples clearly identified? (explain "no" answer below) ☑ YES ☐ NO

Were all sample containers received intact (i.e. not broken, leaking etc.)? (explain "no" answer below) ☑ YES ☐ NO

Were appropriate sample containers used? ☑ YES ☐ NO ☐ Unknown

If custody seals are present on samples, are they intact? ☑ NA ☐ YES ☐ NO

Are samples requiring no headspace, headspace free? ☑ NA ☐ YES ☐ NO

Is the following information provided on the COC, and does it match the sample label?
(explain "no" answer below)

Sample ID's	☑ Yes ☐ No	☐ Not on COC/label
Date Sampled	☐ Yes ☑ No	☑ Not on COC/label
Time Sampled	☐ Yes ☑ No	☑ Not on COC/label
# of Containers	☑ Yes ☐ No	
Relinquished	☑ Yes ☐ No	
Requested analysis	☑ Yes ☐ On Hold	

Other comments (use a separate page if needed)

Air Samples: Were any additional canisters/tubes received? ☑ NA ☐ YES ☐ NO

Number of unused TO15 canisters _____ **Number of unused TO17 tubes** _____