

Memo



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To: John Pearch and Andy Smith (Washington Department of Ecology [Ecology])
CC: Richard Ducharme (Albatross Estates, LLC [Albatross]), Kim Seely (Coastline Law), and Jeff King, PE (Pacific Environmental & Remediation Corporation [PERC])
From: Joel Hecker, LHG (PIONEER Technologies Corporation [PIONEER])
Date: April 17, 2024
Subject: Treatability Study Summary Memorandum
Albatross Remedial Action Area, DuPont, Washington

PIONEER has prepared this Treatability Study (TS) Summary Memorandum (Memo) to summarize the key results from the TS completed in the Remedial Action Area (RAA) of the former DuPont Works Site (Site).

Introduction

The RAA is located within the City of DuPont in southwestern Pierce County, covering approximately 262 acres of the Site. The RAA is bordered by open space to the north and west, and residences to the south and east. The RAA was previously remediated under a consent decree (No. 03-2-10484-7) between Weyerhaeuser Company (Weyerhaeuser)/E.I. DuPont de Nemours and Company (DuPont) and Ecology (PERC and PIONEER 2007). To meet cleanup standards, restrictive covenants were filed with Pierce County to prohibit certain types of development (e.g., residential land use). The RAA is currently in compliance with the consent decree and restrictive covenants and remains protective of human health and the environment under current land uses. Albatross purchased the RAA in 2018 and desires to develop portions of the RAA for unrestricted (residential) land use. Albatross and Ecology entered into a new Agreed Order (DE 21135) requiring Albatross to complete a Remedial Investigation (RI), Feasibility Study (FS), and draft Cleanup Action Plan to enable future residential use within the RAA (Ecology 2022).

The RI Report, approved by Ecology on March 27, 2024, documented arsenic, lead, and isolated detections of monomethylamine nitrate (MMAN) in soil at concentrations exceeding soil screening levels (SLs) in the uppermost 15 feet of soil (PIONEER 2024). Based on the constituents of concern and generally surficial nature of the SL exceedances, a TS Work Plan was submitted to Ecology prior to preparation of the FS (PERC and PIONEER 2024) to aid in the selection of cleanup alternatives. The TS Work Plan's purpose was to evaluate the feasibility of implementing two Ecology-approved Model Remedies within the RAA: 1) a focused consolidation and cap remedy and 2) a large-scale soil mixing remedy. The TS Work Plan was approved by Ecology on February 21, 2024 (Ecology 2024) and successfully implemented in March 2024.

Procedures

A summary of the implemented procedures is described below. See the TS Work Plan for a full description.

- Prior to completing the TS, the test areas and associated historical sample locations with SL exceedances were staked by a licensed surveyor. The test areas and an additional approximately 50 feet in each direction were then cleared and grubbed of existing vegetation.

- A CAT 320 excavator was used to excavate a 75-foot by 75-foot section of the RAA to a depth of 6 feet within the Consolidation and Cap Test Area. An off-road truck transported excavated soil from the test area to the Stockpile Area (see Figure 1). Sidewalls were sloped at a minimum of 3:1 slope factor, and the excavation was left unfilled (the depth to groundwater is significantly deeper than the floor of the excavation). One five-point composite soil sample was collected at a depth of six feet below ground surface (bgs) to replace the existing base sample (location with arsenic SL exceedance). One five-point composite soil sample was also collected from the stockpiled soil. The stockpiled soil was covered with plastic upon completion.
- A Terex Model RS600C Road Reclaimer was used to mix the top 1 foot of soil within the 75 feet wide by 300 feet long Soil Mixing Test Area (see Figure 1). Due to steep slopes, the northwestern most corner (approximately 10 feet wide by 50 feet long) could not be mixed. The uppermost one foot of soil from this portion of the Soil Mixing Test Area was excavated and hauled to the Stockpile Area. Upon completion of soil mixing, one five-point composite sample was taken from zero to one feet bgs for each 75-foot by 75-foot area (consistent with previous arsenic sampling intervals for this area), resulting in four total samples from the Soil Mixing Test Area (see Figure 1).
- Sample locations were recorded with a handheld GPS unit with post-processing accuracy of approximately one foot.
- Samples were submitted to Libby Environmental and subcontracted to OnSite Environmental for arsenic analysis using EPA Method 6010. Samples from the Soil Mixing Test Area were also analyzed for arsenic using X-Ray Refraction (XRF). Laboratory and XRF sample results are summarized in Table 1 and the laboratory analytical reports and associated data quality review are presented in Attachment 1.

Deviations

The following minor deviations from the Work Plan were noted, but did not negatively impact project objectives:

- As stated above, due to steep slopes, the northwestern most corner (approximately 10 feet wide by 50 feet long) could not be mixed using the Road Reclaimer. The uppermost one foot of soil from this portion of the Soil Mixing Test Area was excavated and hauled to the same stockpile as the Consolidation and Cap soil (see Figure 1). Approximately 20 cubic yards of soil was included in the stockpile mostly generated from the Consolidation and Cap soil.
- Since the number of samples collected as part of this TS were fewer than anticipated, each of the collected soil samples was submitted for laboratory analysis. The TS Work Plan stated that only one soil sample from each test area would be submitted for laboratory analysis and the remainder would be analyzed via XRF.
- XRF analysis was not completed on the sample collected from the base of the Consolidation and Cap Test Area since the sample was submitted for laboratory analysis.
- Soil was stockpiled on an asphalt pad approximately 900 feet southwest of the location presented in the TS Work Plan (see Figure 1). It was determined that storing potentially contaminated soil on an impermeable surface rather than exposed soil was better practice.

- One five-point composite soil sample was collected from the combined soil stockpile and submitted for laboratory analysis in order to fully characterize it for potential future reuse or consolidation and capping. The TS Work Plan did not reference collecting a sample from the soil stockpile.

Results and Evaluation

The following paragraphs summarize the results and evaluate the data collected as part of the TS.

Consolidation and Cap Test Area

The consolidation and cap test determined that arsenic-impacted soil can be successfully excavated and transported at a reasonable production rate to another portion of the RAA for consolidation and future capping, as needed. The production rate using the single CAT 320 excavator and transport truck was approximately 105 cubic yards per hour (2 hours elapsed for the removal of soil from a 75 foot by 75 foot by 1 foot deep section). Round trip travel time from the test area to the stockpile staging area was approximately nine minutes (approximately one-mile round trip).

Laboratory analytical results confirmed that the arsenic concentration in soil at the base of the excavation was less than the unrestricted land use SL (i.e., natural Puget Sound background concentration) after excavation. The relevant historical arsenic SL exceedance (30 mg/kg) being evaluated as part of the TS is listed next to the post-excavation result in Table 1. The laboratory analytical reports are included in Attachment 1.

Soil Mixing Test Area

The soil mixing test determined that arsenic-impacted soil with concentrations up to 55 milligrams per kilogram can be successfully mixed or tilled in place with deeper, cleaner soils. The production rate was determined to be approximately one acre of successfully remediated soil every 8 hours (the one-half acre test area was completed in 4 hours).¹

Laboratory analytical results and XRF results confirmed that arsenic concentrations in soil after mixing were less than the unrestricted land use SL (i.e., natural Puget Sound background concentration). The relevant historical arsenic SL exceedances (ranging from 43 to 55 mg/kg) being evaluated as part of the TS are listed next to the 2024 post-mixing results in Table 1. The laboratory analytical reports are included in Attachment 1.

Soil mixing has widespread applicability within the RAA since a total of 262 of the 271 samples with arsenic detections greater than SLs are located within the uppermost six inches of soil. Five additional samples with arsenic exceedances are located between six and 12 inches bgs. These 267 locations are candidates for soil mixing. Only four arsenic SL exceedance locations occur at depths greater than 12 inches bgs and therefore are not candidates for this remedial method (one of which was addressed in the Consolidation and Cap Test Area).

Soil Stockpile

Arsenic was not detected above the laboratory RL in samples collected from stockpiled soil generated from the Consolidation and Cap Test Area, and the northwest corner of the Soil Mixing Test Area. Given that the stockpile was determined to be uncontaminated, the soil will likely be spread out and reused within the RAA.

¹ This is a post-vegetation clearance rate. Additional time would be required to remove vegetation prior to soil mixing.

Conclusions

Based on the results of the TS, soil mixing is the preferred remedy for surficial arsenic contamination within the RAA due to 1) the production rate at which mixing can be completed (approximately one acre per eight-hour work day), and 2) post-mixing arsenic concentrations being consistently below the unrestricted land use SL (i.e., natural Puget Sound background concentration). Additionally, the consolidation and cap remedy is feasible for impacted soil at depths greater than two feet bgs within the RAA. This TS also illustrated that soil mixing is occurring as a result of the excavation, transport, and dumping actions required as part of the consolidation and cap remedy. Analyses of the stockpiled soil generated from the Consolidation and Cap Test Area and the northwest corner of the Soil Mixing Test Area confirm that arsenic concentrations are below the unrestricted land use SL. Therefore, the stockpiled soil can likely be reused within the RAA.

References

- Ecology. 2022. Agreed Order DE21135 for Portion of the Former DuPont Works Site. October.
- Ecology. 2024. Comments on the Treatability Study Work Plan, Albatross Estates, LLC (former Dupont Works Site), DuPont, Washington. February.
- PIONEER. 2024. Remedial Investigation Report. Albatross Remedial Action Area. DuPont, Washington. January.
- PERC and PIONEER. 2007. Closure Report for the Former DuPont Works Site, DuPont, Washington. March.
- PERC and PIONEER. 2024. Treatability Study Work Plan for the Remedial Action Area of the Former DuPont Works Site, DuPont, Washington. January.

Attachments

Table 1	2024 Treatability Study Soil Sample Results and Correlating Historical Site IDs
Figure 1	Confirmation Sampling Locations
Attachment 1	Data Quality Review and Laboratory Analytical Reports for March 2024 Samples

Table 1: 2024 Treatability Study Soil Sample Results and Correlating Historical Site IDs

Site ID	Closest Correlating Historical Site ID with SL Exceedance ⁽¹⁾	Depth Interval (in ft bgs)	Pre-Mixing/Excavation Arsenic Concentration (in mg/kg)	Post-Mixing/Excavation Arsenic Concentration from Laboratory ⁽²⁾ (in mg/kg)	Post-Mixing/Excavation Arsenic Concentration from XRF (in mg/kg)
TS1	MSU-24-N	6	30	11 U	--
TS2	1-R31C26_03/10/04_1	0-0.5	50	11 U	10
TS3	01-SS-[T069]-C1_04/21/03_0	0-0.5	46	11 U	6
TS4	01-SS-[T068]-C1_04/21/03_0	0-0.5	55	11 U	8
TS5	01-SS-[T-066,067]-C1_04/21/03_0	0-0.5	43	11 U	12
Stockpile Sample ⁽³⁾	NA	0-0.5	NA	11 U	--
Screening Level ⁽⁴⁾			20	20	20

Notes:

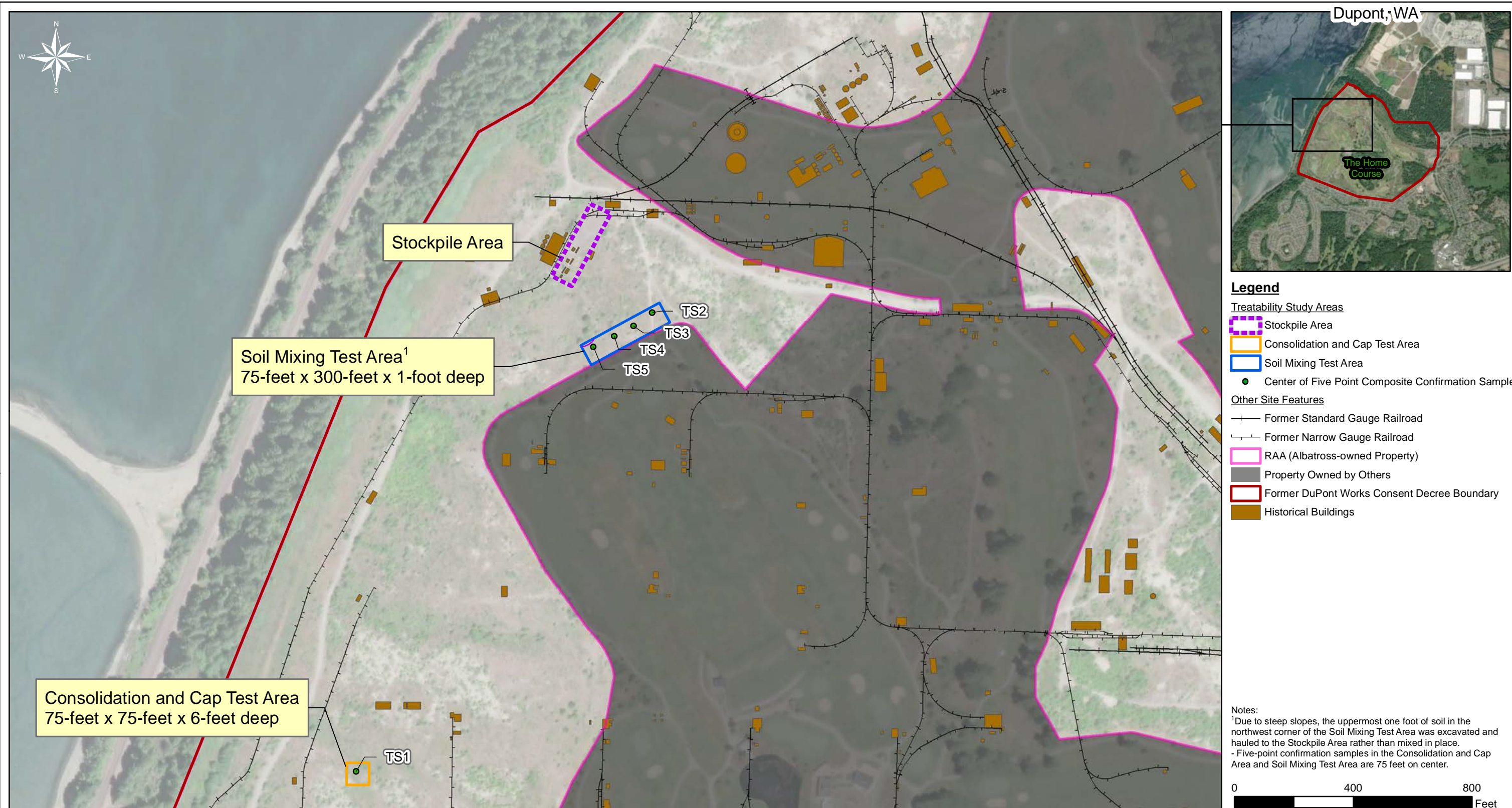
--: not analyzed; feet bgs: feet below ground surface; mg/kg: milligrams per kilogram; NA: not applicable because no historical sample was collected at this location; U: result not detected at the shown laboratory detection limit.

⁽¹⁾ The historical Site ID is the historical sample location containing an exceedance of the arsenic screening level prior to mixing.

⁽²⁾ Arsenic sample results are five-point composite results collected on a 75x75 foot grid.

⁽³⁾ A five-point composite sample was collected from the stockpiled soil removed and transported from Consolidation and Cap Test Area and the northwest corner of the Soil Mixing Test Area.

⁽⁴⁾ Screening Level is the natural Puget Sound background concentration for arsenic, per WAC 173-340-740(5)(I).



Consolidation and Cap Test Area
75-feet x 75-feet x 6-feet deep

Soil Mixing Test Area¹
75-feet x 300-feet x 1-foot deep

Stockpile Area

TS1

TS2

TS3

TS4

TS5

Consolidation and Cap Test Area
75-feet x 75-feet x 6-feet deep



Confirmation Sampling Locations
Treatability Study Summary Memo
Albatross Remedial Action Area
DuPont, Washington

Figure 1

Attachment 1

Data Quality Review

Treatability Study (TS) Summary Memorandum Albatross Remedial Action Area (RAA), DuPont, Washington

This document summarizes the data quality review performed by PIONEER Technologies Corporation (PIONEER) for the laboratory analysis results generated during the TS. Precision, accuracy, representativeness, comparability, sensitivity, and completeness were assessed during the data quality review.

1. Precision

Precision was assessed via the relative percent difference (RPD) for matrix spike (MS)/matrix spike duplicate (MSD) pairs. The MS/MSD RPDs assess the reproducibility of the analytical methods, respectively. MS/MSD RPDs were evaluated based on control limits established and updated by the laboratory based on its historical operations. The MS/MSD RPD values and control limits are presented in the laboratory reports. All MS/MSD RPDs were within control limits. The methods were identified by the laboratory to be in control (e.g., acceptable range of precision) based on the LCS/LCSD results.

2. Accuracy

Accuracy was assessed by analysis of laboratory method blanks as well as recoveries in LCS/LCSDs and MS/MSDs. Recoveries were evaluated based on control limits established and updated by the laboratory based on its historical operations. Laboratory method blank results, and LCS/LCSD and MS/MSD recoveries and control limits are presented in the laboratory reports.

Method Blanks

Method blanks were performed and analyzed daily to assess the effect of the laboratory environment on the analytical results. Arsenic was not detected in the analyzed method blanks.

Laboratory Control Samples and Laboratory Control Sample Duplicates

The LCS and LCSD is a sample matrix, free from constituents, spiked with verified known amounts of constituents or a material containing known and verified amounts of constituents. It is generally used to establish intra-laboratory or analyst specific precision and bias or to assess the performance of all or a portion of the measurement system. No exceptions were noted in the LCS/LCSD analyses.

Matrix Spike and Matrix Spike Duplicates

The MS and MSD percent recovery results were reviewed to determine whether or not the sample matrix was interfering with the laboratory analyses. All MS and MSD recoveries were within control limits.

Surrogate Spike Recoveries

No surrogate spikes occurred since no organic constituents were analyzed.

3. Representativeness

Representativeness was assessed by evaluating the sample collection, handling, preservation, and analysis procedures. All samples were collected, handled, preserved, and analyzed in accordance with the June 2023 Remedial Investigation Work Plan (RIWP; PIONEER 2023), which was designed to obtain representative samples. All samples were hand-delivered on the same day of collection or stored on ice overnight prior to delivery to the laboratory. Libby Environmental was the contracted laboratory used for submittal of samples. Libby then subcontracted arsenic analysis to OnSite Environmental. The reported temperature range of the samples was acceptable (less than 8 degrees Celsius) for all samples

upon delivery to the laboratory. In addition, all samples were extracted and analyzed within appropriate holding times listed in the RIWP.

4. Comparability

Comparability was assessed by comparing current sample collection and analysis procedures with historical procedures. The samples were collected and analyzed with standard procedures and are comparable with historical Property data as qualified by the laboratories.

5. Sensitivity

Sensitivity was assessed by comparing actual RLs to applicable SLs for all constituents analyzed in soil. Analytical methods and laboratories were selected to achieve low target RLs. All of the actual RLs were less than the unrestricted land use SL for arsenic (20 mg/kg).

6. Completeness

Completeness was assessed by calculating the percentage of useable results to all results. All of the constituent results are useable as qualified. Thus, the completeness of the analytical data is 100 percent. In addition, the actual laboratory analyses matched the requested laboratory analyses.

7. Conclusions

The quality of the laboratory analysis results obtained during this investigation appears to be acceptable and all data appear to be usable for the purposes of this investigation. No corrective action or further data qualification (beyond what was reported by the laboratory) appears to be necessary.



Libby Environmental, Inc.

3322 South Bay Road NE • Olympia, WA 98506-2957

Phone (360) 352-2110 • libbyenv@gmail.com

April 02, 2024

Joel Hecker
Pioneer Technologies Corporation
5205 Corporate Center Court SE, Suite A
Olympia, WA 98503

RE: Albatross - Dupont
Work Order Number: L24C066

Enclosed are the results of analyses for samples received by our laboratory on 3/19/2024.

Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of within 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please feel free to contact us. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry Chilcutt
Senior Chemist

Libby Environmental, Inc.

3322 South Bay Road NE

Olympia, WA 98506

Phone: (360) 352-2110

FAX: (360) 352-4154

Email: libbyenv@gmail.com

Albatross - Dupont Project
Pioneer Technologies Corporation
Libby Work Order # L24C066

Date Received 3/19/2024

Time Received 6:11 PM

Received By AA

Sample Receipt Checklist

Chain of Custody

1. Is the Chain of Custody is complete? Yes No
2. How was the sample delivered? Hand Delivered Picked Up Shipped

Log In

3. Cooler or Shipping Container is present. Yes No N/A
4. Cooler or Shipping Container is in good condition. Yes No N/A
5. Cooler or Shipping Container has Custody Seals present. Yes No N/A
6. Was an attempt made to cool the samples? Yes No N/A
7. Temperature of cooler (0°C to 8°C recommended) -3.6 °C
8. Temperature of sample(s) (0°C to 8°C recommended) -16.2 °C
9. Did all containers arrive in good condition (unbroken)? Yes No
10. Is it clear what analyses were requested? Yes No
11. Did container labels match Chain of Custody? Yes No
12. Are matrices correctly identified on Chain of Custody? Yes No
13. Are correct containers used for the analysis indicated? Yes No
14. Is there sufficient sample volume for indicated analysis? Yes No
15. Were all containers properly preserved per each analysis? Yes No
16. Were VOA vials collected correctly (no headspace)? Yes No N/A
17. Were all holding times able to be met? Yes No

Discrepancies/ Notes

18. Was client notified of all discrepancies? Yes No N/A

Person Notified: _____

Date: _____

By Whom: _____

Via: _____

Regarding: _____

19. Comments. _____



14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

April 1, 2024

Sherry Chilcutt
Libby Environmental, Inc.
3322 South Bay Road NE
Olympia, WA 98506

Re: Analytical Data for Project L24C066
Laboratory Reference No. 2403-320

Dear Sherry:

Enclosed are the analytical results and associated quality control data for samples submitted on March 21, 2024.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "DB", with a long horizontal flourish extending to the right.

David Baumeister
Project Manager

Enclosures



Date of Report: April 1, 2024
Samples Submitted: March 21, 2024
Laboratory Reference: 2403-320
Project: L24C066

Case Narrative

Samples were collected on March 19, 2024 and received by the laboratory on March 21, 2024. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below. However the soil results for the QA/QC samples are reported on a wet-weight basis.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



Date of Report: April 1, 2024
 Samples Submitted: March 21, 2024
 Laboratory Reference: 2403-320
 Project: L24C066

**TOTAL ARSENIC
 EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SO-SP-03.19.24					
Laboratory ID:	03-320-01					
Arsenic	ND	11	EPA 6010D	3-27-24	3-27-24	

Client ID:	SO-TS1-6-03.19.24					
Laboratory ID:	03-320-02					
Arsenic	ND	11	EPA 6010D	3-27-24	3-27-24	



Date of Report: April 1, 2024
 Samples Submitted: March 21, 2024
 Laboratory Reference: 2403-320
 Project: L24C066

**TOTAL ARSENIC
 EPA 6010D
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0327SM1					
Arsenic	ND	10	EPA 6010D	3-27-24	3-27-24	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	03-327-01							
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	20	

MATRIX SPIKES

Laboratory ID:	03-327-01									
	MS	MSD	MS	MSD		MS	MSD			
Arsenic	96.7	101	100	100	ND	97	101	75-125	4	20



Date of Report: April 1, 2024
Samples Submitted: March 21, 2024
Laboratory Reference: 2403-320
Project: L24C066

% MOISTURE

Client ID	Lab ID	% Moisture	Date Analyzed
SO-SP-03.19.24	03-320-01	11	3-25-24
SO-TS1-6-03.19.24	03-320-02	5	3-25-24





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
 - B - The analyte indicated was also found in the blank sample.
 - C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
 - E - The value reported exceeds the quantitation range and is an estimate.
 - F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
 - H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
 - I - Compound recovery is outside of the control limits.
 - J - The value reported was below the practical quantitation limit. The value is an estimate.
 - K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
 - L - The RPD is outside of the control limits.
 - M - Hydrocarbons in the gasoline range are impacting the diesel range result.
 - M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
 - N - Hydrocarbons in the lube oil range are impacting the diesel range result.
 - N1 - Hydrocarbons in diesel range are impacting lube oil range results.
 - O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
 - P - The RPD of the detected concentrations between the two columns is greater than 40.
 - Q - Surrogate recovery is outside of the control limits.
 - S - Surrogate recovery data is not available due to the necessary dilution of the sample.
 - T - The sample chromatogram is not similar to a typical _____.
 - U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
 - U1 - The practical quantitation limit is elevated due to interferences present in the sample.
 - V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
 - W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
 - X - Sample extract treated with a mercury cleanup procedure.
 - X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
 - X2 - Sample extract treated with a silica gel cleanup procedure.
 - Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
 - Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.
 - Z -
- ND - Not Detected at PQL
 PQL - Practical Quantitation Limit
 RPD - Relative Percent Difference





Libby Environmental, Inc.

3322 South Bay Road NE • Olympia, WA 98506-2957

**SUBCONTRACT
ORDER
L24C066**

Sending Laboratory:

Libby Environmental, Inc.
3322 South Bay Road NE
Olympia, WA 98506
Phone: 360-352-2110
Fax: 360-352-4154

Project Manager: Sherry Chilcutt
LibbyEnv@gmail.com

Subcontracted Laboratory:

03-320

OnSite Environmental, Inc.
14648 NE 95th Street
Redmond, WA 98052
Phone: (425) 883-3881
Fax:

Requested Turnaround (TAT) STD

Project: Albatross

Analysis	Comments <i>80moisture</i>
----------	----------------------------

1 Client Sample ID: SO-SP-03.19.24	Soil Sampled: 03/19/2024 16:05	<i>X</i>	Lab ID: L24C066-01
Metals SUB As		6010	

Containers Supplied:

2 Client Sample ID: SO-TS1-6-03.19.24	Soil Sampled: 03/19/2024 16:05	<i>X</i>	Lab ID: L24C066-02
Metals SUB As		6010	

Containers Supplied:

Released By *Kristina Hill* Date 3-20-24

Received By *[Signature]* Date 3/21/24
1100



Libby Environmental, Inc.

3322 South Bay Road NE • Olympia, WA 98506-2957

Phone (360) 352-2110 • libbyenv@gmail.com

March 27, 2024

Joel Hecker
Pioneer Technologies Corporation
5205 Corporate Center Court SE, Suite A
Olympia, WA 98503

RE: Albatross
Work Order Number: L24C062

Enclosed are the results of analyses for samples received by our laboratory on 3/18/2024.

Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of within 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please feel free to contact us. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry Chilcutt
Senior Chemist

Libby Environmental, Inc.

Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 03/18/24 Page: 1 of 1

Client: Pioneer Technologies Corporation

Project Manager: Joel Hecker

Address: 5205 Corporate Ctr. Ct. SE, Ste. A

Project Name: Albatross

City: Olympia State: WA Zip: 98503

Location: City, State: DuPont, WA

Phone: 360-828-3739 Fax:

Collector: KI Date of Collection: 03/18/24

Client Project # Albatross

Email: heckerj@uspioneer.com



Sample Number	Depth	Time	Sample Type	Container Type	VOC 8260	PCE & Daughter Prod.	NWTPH-Gx	BTEX (8260) / (8021)	NWTPH-HCID	PCB 8082	MTCA 5 Metals	RCRA 8 Metals	PAH 8270	Semi Vol 8270	Asbestos 610	Asbestos Via 6010	Field Notes
150-TS2-0-0.5-03.18.24	0-0.5	13:18	composite	4oz Jar													X
250-TS3-0-0.5-03.18.24	0-0.5	13:30	↓	↓													X
350-TS4-0-0.5-03.18.24	0-0.5	13:40	↓	↓													X
450-TS5-0-0.5-03.18.24	0-0.5	13:50	↓	↓													X
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	

Relinquished by: <u>Kent Ishida</u>	Date / Time <u>03/18/24 3:39</u>	Received by: <u>[Signature]</u>	Date / Time <u>3-18-24 1539</u>	Sample Receipt Good Condition? <u>Y</u> <u>N</u> Cooler Temp. <u>-1.2</u> °C Sample Temp. <u>2.3</u> °C Total Number of Containers TAT: 1-Day 2-Day <u>5-DAY</u>	Remarks:
Relinquished by:	Date / Time	Received by:	Date / Time		
Relinquished by:	Date / Time	Received by:	Date / Time		
Relinquished by:	Date / Time	Received by:	Date / Time		



14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

March 27, 2024

Sherry Chilcutt
Libby Environmental, Inc.
3322 South Bay Road NE
Olympia, WA 98506

Re: Analytical Data for Project L24C062
Laboratory Reference No. 2403-258

Dear Sherry:

Enclosed are the analytical results and associated quality control data for samples submitted on March 19, 2024.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "D. Baumeister", with a long horizontal flourish extending to the right.

David Baumeister
Project Manager

Enclosures



Date of Report: March 27, 2024
Samples Submitted: March 19, 2024
Laboratory Reference: 2403-258
Project: L24C062

Case Narrative

Samples were collected on March 18, 2024 and received by the laboratory on March 19, 2024. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below. However the soil results for the QA/QC samples are reported on a wet-weight basis.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.



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**TOTAL ARSENIC
 EPA 6010D**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	SO-TS2-0-0.5-03.18.24					
Laboratory ID:	03-258-01					
Arsenic	ND	11	EPA 6010D	3-25-24	3-26-24	

Client ID:	SO-TS3-0-0.5-03.18.24					
Laboratory ID:	03-258-02					
Arsenic	ND	11	EPA 6010D	3-25-24	3-26-24	

Client ID:	SO-TS4-0-0.5-03.18.24					
Laboratory ID:	03-258-03					
Arsenic	ND	11	EPA 6010D	3-25-24	3-26-24	

Client ID:	SO-TS5-0-0.5-03.18.24					
Laboratory ID:	03-258-04					
Arsenic	ND	11	EPA 6010D	3-25-24	3-26-24	



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**TOTAL ARSENIC
 EPA 6010D
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0325SM1					
Arsenic	ND	10	EPA 6010D	3-25-24	3-26-24	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	03-292-01							
	ORIG	DUP						
Arsenic	ND	ND	NA	NA	NA	NA	NA	20

MATRIX SPIKES

Laboratory ID:	03-292-01									
	MS	MSD	MS	MSD		MS	MSD			
Arsenic	91.6	89.8	100	100	ND	92	90	75-125	2	20



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% MOISTURE

Client ID	Lab ID	% Moisture	Date Analyzed
SO-TS2-0-0.5-03.18.24	03-258-01	7	3-25-24
SO-TS3-0-0.5-03.18.24	03-258-02	6	3-25-24
SO-TS4-0-0.5-03.18.24	03-258-03	7	3-25-24
SO-TS5-0-0.5-03.18.24	03-258-04	9	3-25-24





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
 - B - The analyte indicated was also found in the blank sample.
 - C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
 - E - The value reported exceeds the quantitation range and is an estimate.
 - F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
 - H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
 - I - Compound recovery is outside of the control limits.
 - J - The value reported was below the practical quantitation limit. The value is an estimate.
 - K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
 - L - The RPD is outside of the control limits.
 - M - Hydrocarbons in the gasoline range are impacting the diesel range result.
 - M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
 - N - Hydrocarbons in the lube oil range are impacting the diesel range result.
 - N1 - Hydrocarbons in diesel range are impacting lube oil range results.
 - O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
 - P - The RPD of the detected concentrations between the two columns is greater than 40.
 - Q - Surrogate recovery is outside of the control limits.
 - S - Surrogate recovery data is not available due to the necessary dilution of the sample.
 - T - The sample chromatogram is not similar to a typical _____.
 - U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
 - U1 - The practical quantitation limit is elevated due to interferences present in the sample.
 - V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
 - W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
 - X - Sample extract treated with a mercury cleanup procedure.
 - X1 - Sample extract treated with a sulfuric acid/silica gel cleanup procedure.
 - X2 - Sample extract treated with a silica gel cleanup procedure.
 - Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
 - Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.
 - Z -
- ND - Not Detected at PQL
 PQL - Practical Quantitation Limit
 RPD - Relative Percent Difference





Libby Environmental, Inc.

3322 South Bay Road NE • Olympia, WA 98506-2957

**SUBCONTRACT
ORDER
L24C062**

03-258

Sending Laboratory:

Libby Environmental, Inc.
3322 South Bay Road NE
Olympia, WA 98506
Phone: 360-352-2110
Fax: 360-352-4154

Project Manager: Sherry Chilcutt
LibbyEnv@gmail.com

Subcontracted Laboratory:

OnSite Environmental, Inc.
14648 NE 95th Street
Redmond, WA 98052
Phone: (425) 883-3881
Fax:

Requested Turnaround (TAT) STD

Project: Albatross

Analysis	Comments	%MOISTURE
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1 **Client Sample ID: SO-TS2-0-0.5-03.18.24** *Soil Sampled: 03/18/2024 13:18* X Lab ID: L24C062-01
 Metals SUB As 6010
Containers Supplied:

2 **Client Sample ID: SO-TS3-0-0.5-03.18.24** *Soil Sampled: 03/18/2024 13:30* X Lab ID: L24C062-02
 Metals SUB As 6010
Containers Supplied:

3 **Client Sample ID: SO-TS4-0-0.5-03.18.24** *Soil Sampled: 03/18/2024 13:40* X Lab ID: L24C062-03
 Metals SUB As 6010
Containers Supplied:

4 **Client Sample ID: SO-TS5-0-0.5-03.18.24** *Soil Sampled: 03/18/2024 13:50* X Lab ID: L24C062-04
 Metals SUB As 6010
Containers Supplied:

Released By Calvin Date 3/18/24 16:02 Received By [Signature] Date 3/19/24 1230
 Page 1 of 1 Page 9 of 9